



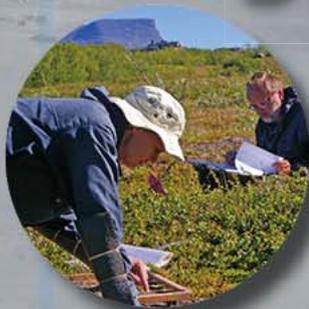
INTER⇌ACT



# INTERACT

International Network for Terrestrial Research and Monitoring in the Arctic

# Station Catalogue



**● INTERACT Stations**

- 1 Finse Alpine Research Center
- 2 Bioforsk Svanhovd Research Station
- 3 Sverdrup Station, Ny-Ålesund
- 4 Tarfala Research Station
- 5 Abisko Scientific Research Station
- 6 Kilpisjärvi Biological Station
- 7 Kolari Research Unit
- 8 Kevo Subarctic Research Station
- 9 Oulanka Research Station
- 10 Khibiny Educational and Scientific Station
- 11 Mukhrino Field Station
- 12 Numto Park Station
- 13 Samoylov Research Station
- 14 Spasskaya Pad Scientific Forest Station
- 15 Chokurdakh Scientific Tundra Station
- 16 Barrow Arctic Research Center/  
Barrow Environmental Observatory
- 17 Toolik Field Station
- 18 Kluane Lake Research Station
- 19 CEN Radisson Station
- 20 CEN Whapmagoostui-Kuujuarapik Station
- 21 CEN Clearwater Lake Station
- 22 CEN Umiujaq Research Station
- 23 CEN Boniface River Station
- 24 CEN Salluit Research Station
- 25 CEN Bylot Island Field Station
- 26 CEN Ward Hunt Island Station
- 27 Arctic Station
- 28 Greenland Institute of Natural Resources
- 29 Sermilik Research Station
- 30 Zackenberg Research Station
- 31 Litla Skard
- 32 Faroe Islands Nature Investigation (FINI)
- 33 Cairngorm

**● INTERACT Observer Stations**

- A NERC Arctic Research Station
- B Netherlands Arctic Station
- C Polish Polar Station – Hornsund
- D Petuniabukta Station
- E ALPFOR, Alpine Research and Education Station Furka
- F Sonnblick Observatory
- G Krkonoše (CZ)/Karkonosze (PL) National Park
- H Labytnangi Ecological Research Station
- I Igarka Geocryology Laboratory
- J Aktru Research Station
- K Igloolik Research Center



Map  
Location of INTERACT stations.

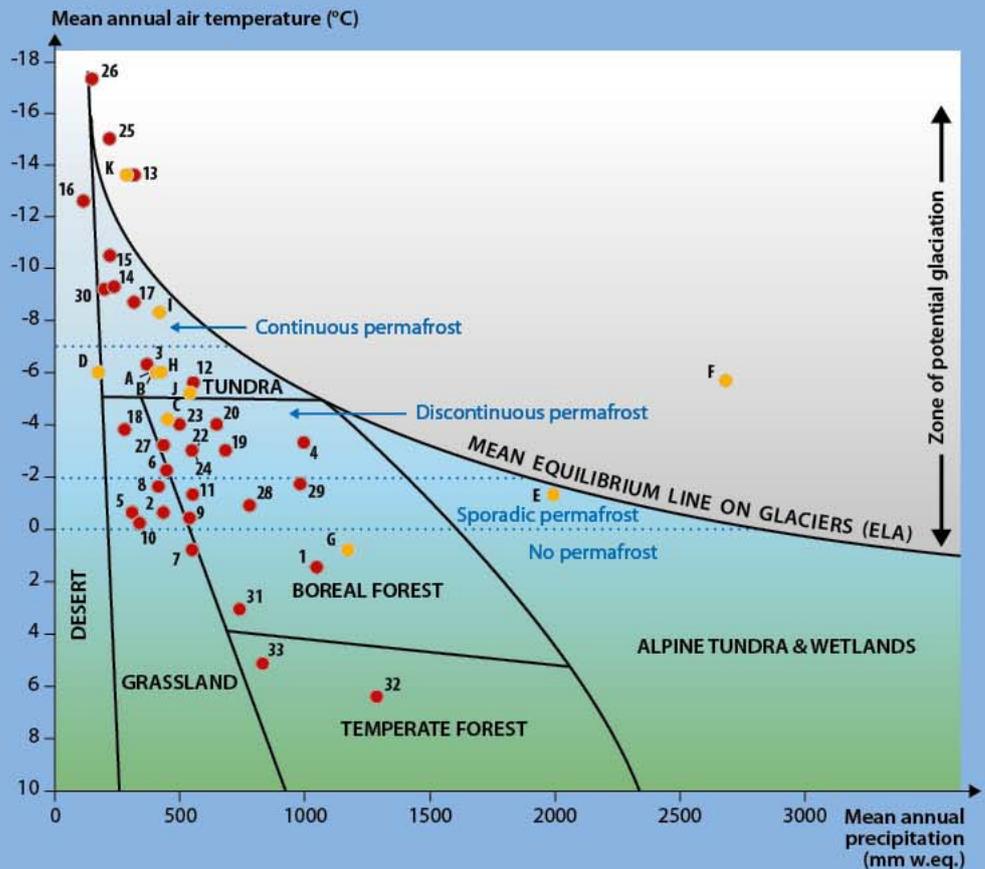


Diagram  
Location of INTERACT stations  
in 'environmental space'.

AU

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DCE - DANISH CENTRE FOR ENVIRONMENT AND ENERGY

# INTERACT

## Station Catalogue

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## INTERACT Station Catalogue

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INTERACT is a network of terrestrial field bases in arctic and mountain areas of the Northern Hemisphere. The network is funded for 2011-14 by EU's Seventh Framework Programme as an 'Integrating Activity' under the theme 'Research Infrastructures for Polar Research'.

The network has been endorsed by the International Arctic Science Committee (IASC), the Arctic Monitoring and Assessment Programme (AMAP), the Circumpolar Biodiversity Monitoring Program (CBMP), the Sustaining Arctic Observing Networks (SAON), the International Study of Arctic Change (ISAC) and the World Wildlife Foundation (WWF).

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# PREFACE



By  
**Professor Terry V. Callaghan**  
**Doctor Margareta Johansson**

## **INTERACT Coordinator and Executive Secretary**

*The Arctic is a vast area with beautiful unspoiled landscapes and a stunning but fragile biodiversity. The Arctic is home to Indigenous Peoples who have been and to a great extent still are depending on resources from the natural environment. In the past decade, the Arctic has gained widespread attention from scientists, the public and politicians because of the rapid changes occurring there. The Arctic's climate is changing faster than climate elsewhere while at the same time many other changes are taking place. These include globalization, exploitation of renewable and non-renewable resources and dramatically increased access. All of these changes provide opportunities as well as challenges to the residents of the Arctic. However, the Arctic is not isolated: the changes occurring in the Arctic have effects on the rest of the world. Retreating glaciers and shrinking ice caps increase global sea level rise that threatens many coastal areas and the people that live there, and carbon-based greenhouse gases released from thawing permafrost could potentially amplify global warming. However, new transport routes could lead to better access for exploiting new resources.*

*To maximize the opportunities at the same time as responding to challenges requires a well-developed observational record of environmental change together with process understanding that will allow us to predict future changes. Unfortunately, however, the arctic lands are vast and the human population is small. It is therefore a challenge to document and predict the changes.*

*In 2001, a small group of nine research stations in the European Arctic came together to share experiences and to develop a more efficient framework for observation and research. This SCANNET network was financed by the European Commission's 5<sup>th</sup> Framework Programme. Since then, SCANNET has grown, and in 2010 the network consisted of 32 research stations. Together with some research institutions outside the Arctic, the research stations proposed a new collaborative project to the European Commission's 7<sup>th</sup> Framework Programme. This was the start of INTERACT.*

*INTERACT is a circumarctic network of 33 terrestrial field bases in northern Europe, Russia, US, Canada, Greenland, Iceland, the Faroe Islands and Scotland together with, currently, a further twelve observer stations in Russia, Switzerland, Austria, Poland, the Czech Republic, Svalbard and Canada. Its main objective is to build capacity for identifying, understanding, predicting and responding to diverse environmental changes throughout the wide environmental and land-use envelopes of the Arctic. Together, the INTERACT stations host many thousands of scientists from around the world working in multiple disciplines, and INTERACT collaborates with many research consortia and international research and monitoring networks. Already in its first year of operation, INTERACT has made many advances. One particular achievement is to bring together for the first time descriptions of the major terrestrial research stations of the north and their activities. This Station Catalogue is an important one stop resource for information useful to scientists, policy makers and others. We are proud to commend this INTERACT product to a wide user community, and we have no doubts that a greatly increased use of activities will follow with significant and important innovations. It is a pleasure to thank all those who were involved in the production of the catalogue; from Working Group leaders to task leaders and ultimately representatives of all the stations that contributed. We hope that you will find this catalogue to be user-friendly, and we are happy to confirm that "friendliness" is a trademark of INTERACT: You are most welcome to explore the research stations in the catalogue and in reality. Welcome to the Arctic!*

**On behalf of INTERACT**  
**Professor Terry V. Callaghan, Coordinator of INTERACT**  
**Doctor Margareta Johansson, Executive Secretary of INTERACT, Lund, Sweden.**

# PREFACE



By  
Doctor Morten Rasch

## Chair of INTERACT Station Managers' Forum

*In 1996, I was employed by the former Danish Polar Center as manager of a physical geography monitoring programme at a newly established research station in Northeast Greenland, called Zackenberg Research Station. At that time, the station was only a few tents in the middle of nowhere, and the funding for the station was short-term and very limited.*

*One of those days, a biologist who was involved in the work at Zackenberg, Thomas Bjørneboe Berg, came back from an international workshop in a newly established network, called SCANTRAN. The idea behind SCANTRAN was to establish a network of research sites along a north-south gradient in Northern Europe to make coordinated studies of Climate Change effects on northerly ecosystems. Thomas told the rest of us that Zackenberg was chosen to be one of the sites in this network. It was a victory to our small group. We felt it as an important recognition of our initiative, and suddenly we considered ourselves as part of an international research initiative. Through SCANTRAN we established contact with international experts in our field of research, among them Professor Terry V. Callaghan, the chair of INTERACT and former Director of the Abisko Scientific Research Station, and these experts helped us with their expertise to further develop Zackenberg Research Station and the long-term research and monitoring programmes there, and they facilitated contact to and cooperation with important stakeholders and international organisations. This was, in my perception, one of the major reasons for our survival as a research station and the continuation of the long-term research and monitoring programme.*

*The SCANTRAN initiative led to the establishment of the network SCANNET. After the funding terminated, SCANNET was maintained as a small network of research stations and friends, with a secretariat funded and hosted by the Abisko Scientific Research Station. During that period SCANNET developed to a circum-arctic network with 32 European, North American and Russian stations participating. In 2010, the SCANNET driven initiative, INTERACT, was funded by EU with 33 participating stations. After the establishment of INTERACT, the network has grown further, and today it includes a total of 45 research stations from the Arctic to alpine regions of the Northern Hemisphere.*

*The story about the inclusion of Zackenberg Research Station in the SCANTRAN network is the story about how international cooperation and networking in a friendly atmosphere can help to improve smaller national initiatives and thereby increase the quality of science infrastructures, the long-term measurements of the state and development of the environment carried out at the research infrastructures, and eventually the services provided to the scientific community and stakeholders. It is still the ambition of INTERACT to build capacity and services for conducting science in northerly and alpine ecosystems, and this catalogue should be seen as an attempt to do so. We wish you good luck with the planning of your next field work and we hope that you will consider this catalogue a helpful tool in doing so.*

**On behalf of the INTERACT Station Managers' Forum  
Doctor Morten Rasch, Chair of INTERACT Station Managers' Forum and  
Scientific Leader of Zackenberg Research Station, Roskilde, Denmark**

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# INTRODUCTION

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## ABOUT INTERACT

INTERACT is a network of terrestrial field bases in arctic and mountain areas of the Northern Hemisphere. The network provides an efficient platform for coordinated research, monitoring and logistics by sharing experiences and coordinating activities and by making the network infrastructures available to specialised scientific networks and organisations as well as to research and monitoring programmes and projects.

A key aim of the network is to build capacity for terrestrial ecosystem research and monitoring to improve our ability to identify, understand, predict and respond to the impacts of diverse environmental changes throughout the environmental and land-use conditions represented at INTERACT sites. INTERACT seeks to improve the logistic and scientific services offered to the science community by providing a platform for activities that will increase our understanding of the processes and our knowledge of the status and trends of biota and physical characteristics.

INTERACT provides a one-stop-shop of information for scientists who are looking for one or more sites for their activities in the vast northern areas. INTERACT stations already host and operate numerous top level research and monitoring initiatives, and we welcome proposals for new initiatives from any scientific discipline related to terrestrial environments.

INTERACT comprises 45 terrestrial field stations (Station Table p. 10-11). Among these, 33 'INTERACT Stations' were included in the network already from the beginning of the project. In addition, twelve stations are currently included in the network as 'stations with observer status'. The participation of these Observer Stations is based on self-financing and their number is growing.

INTERACT is funded by the EU's 7<sup>th</sup> Framework Programme for the period 2011-2014. In addition to the focus on international cooperation and coordination, INTERACT also has a 'Joint Research Activities' component focusing on development of: (i) virtual instrumentation, (ii) improved instrumentation for measurements of feedback mechanisms from terrestrial ecosystems to climate change, and (iii) improved methods for data management. Furthermore, INTERACT has a 'Transnational Access' component that offers funding to users groups for access to 20 of the INTERACT stations in Europe and Russia. Calls for proposals are advertised biannually.

## THE INTERACT STATION CATALOGUE

What you have in front of you here is the Station Catalogue of INTERACT Terrestrial Research Infrastructures in arctic and mountain areas of the Northern Hemisphere. The catalogue is the vehicle for providing a one-stop shop for scientists and stakeholders looking for suitable terrestrial field bases for their activities.

The INTERACT Station Catalogue was developed within the INTERACT Station Managers' Forum, a group of station managers representing 45 arctic and mountain research stations. The Station Managers' Forum provides a platform for exchange of information between stations in the network and between managers and other partners of INTERACT. This group of people decided on the information to be included in the INTERACT Station Catalogue (Box page 9), and they determined how the catalogue should be structured. Afterwards, each station manager has provided the information (incl. pictures) relevant for their specific site to the catalogue.

The INTERACT Station Catalogue demonstrates the unique characteristics of each station as well as the large diversity of stations in the entire network. We hope that the standardised data of station characteristics provides a helpful opportunity for researchers, institutions, organisations and other stakeholders to identify stations that suit their specific needs in terms of environmental conditions, facilities or services offered.

The INTERACT network includes stations in Scandinavia, Svalbard, Russia, the United States of America (Alaska), Canada, Greenland, Iceland, the Faroe Islands, the United Kingdom (Scotland), and in several mountain areas of Central Europe (Map). The stations are situated in different climatic zones, and as such they cover significant latitudinal and altitudinal gradients, as well as thresholds. They therefore provide access to a great variety of environmental and geophysical conditions (Station Table and Diagram).

The INTERACT stations include sites extending from extremely cold and dry high arctic sites to relatively warm and wet sub-arctic sites. Many stations are located where thresholds occur in the environmental space, e.g. infrastructures located near the zero-degree mean annual temperature isotherm can expect severe changes in the cryosphere with increasing temperatures (Diagram). The main scientific disciplines practiced at the stations include climatology, geo-sciences, biology, ecology, cryology, and to some extent also anthropology.

The INTERACT stations range from simple city-based housing facilities with research instrumentation in the field, through small and remote cabins, to larger field-based research infrastructures housing up to more than 100 visitors at a time. Facilities and services offered at the stations vary considerably from station to station and are described for each station in this catalogue.

The accessibility to the different stations in the network also varies greatly. Some stations can be reached by public transportation from a nearby town or airport. In contrast, the charter of a boat, an airplane, or a helicopter is required to reach others, or you have to endure a long and healthy hike.

## STRUCTURE OF THE CATALOGUE

This catalogue is intended to be a useful tool for selecting the most appropriate station/ stations for planning and designing proposed research or monitoring activities. In the catalogue, we first present INTERACT Stations (numbers 1-33) and then Observer Stations (letters A-K). Stations are grouped according to the country of their location starting at longitude 0 and moving eastward, country by country. Each station is presented by a chapter of four pages including text and facts about the station as well as representative photos of the station and its surroundings.

The map, diagram and table (inside of cover and p. 10-11) provide an overview of location and key climate and environmental conditions for all INTERACT and Observer Stations. We hope that this will be a useful guide that will help you to identify potential suitable stations – to be explored in more detail by consulting relevant station descriptions.

If you need further information about specific sites or stations, you are always welcome to contact the individual stations directly or to visit our website [www.eu.interact.org](http://www.eu.interact.org).

## Let's INTERACT !

INTERACT encourages new stations to join our network to share experiences and to develop cooperation within a strong coordinated platform for science in cold terrestrial environments. If your station wants to join the network, please consult our website [www.eu-interact.org](http://www.eu-interact.org) for further information and contact details.

### Information presented for all stations included in this catalogue

#### Text descriptions including

- Station name and owner
- Location
- Biodiversity and natural environment
- History and facilities
- General research and databases
- Human dimension
- Access

#### Fact box information including

- Administrative issues
- Location
- Climate
- Characteristics of the study area
- Facilities and services
- Access
- Main science disciplines represented at the station

| No*                               | Station name   | Location                  | Owner Country             | Latitude | Longitude | Altitude of study area (m a.s.l.) |      |
|-----------------------------------|--|---------------------------|---------------------------|----------|-----------|-----------------------------------|------|
|                                   |  |                           |                           |          |           | Min.                              | Max. |
| <b>INTERACT Stations</b>          |  |                           |                           |          |           |                                   |      |
| 1                                 | Finse Alpine Research Center                                       | Norway                    | Norway                    | 60°36' N | 07°30' E  | 1000                              | 1876 |
| 2                                 | Bioforsk Svanhovd Research Station                                 | Norway                    | Norway                    | 69°27' N | 30°03' E  | 0                                 | 250  |
| 3                                 | Sverdrup Station, Ny-Ålesund                                       | Svalbard                  | Norway                    | 78°55' N | 11°56' E  | 0                                 | 1500 |
| 4                                 | Tarfala Research Station   | Sweden                    | Sweden                    | 67°55' N | 18°35' E  | -                                 | 2097 |
| 5                                 | Abisko Scientific Reseach Station                                  | Sweden                    | Sweden                    | 68°21' N | 18°49' E  | 345                               | 1700 |
| 6                                 | Kilpisjärvi Biological Station                                     | Finland                   | Finland                   | 69°03' N | 20°50' E  | 470                               | 1320 |
| 7                                 | Kolari Research Unit   | Finland                   | Finland                   | 67°21' N | 23°50' E  | 200                               | 800  |
| 8                                 | Kevo Subarctic Research Station                                    | Finland                   | Finland                   | 69°45' N | 27°01' E  | 75                                | 500  |
| 9                                 | Oulanka Research Station   | Finland                   | Finland                   | 66°22' N | 29°19' E  | 155                               | 500  |
| 10                                | Khibiny Educational and Scientific Station                         | Russia                    | Russia                    | 67°38' N | 33°44' E  | 150                               | 1200 |
| 11                                | Mukhrino Field Station   | Russia                    | Russia                    | 60°54' N | 68°42' E  | 25                                | 120  |
| 12                                | Numto Park Station   | Russia                    | Russia                    | 63°42' N | 70°54' E  | -                                 | -    |
| 13                                | Samoylov Research Station  | Russia                    | Russia/Germany            | 72°22' N | 126°28' E | 0                                 | 50   |
| 14                                | Spasskaya Pad Scientific Forest Station                            | Russia                    | Russia                    | 62°14' N | 129°37' E | -                                 | -    |
| 15                                | Chokurdakh Scientific Tundra Station                               | Russia                    | Russia                    | 70°49' N | 147°29' E | -                                 | 30   |
| 16                                | Barrow Arctic Research Center/<br>Barrow Environmental Observatory | USA                       | USA                       | 71°18' N | 156°35' W | 0                                 | 10   |
| 17                                | Toolik Field Station   | USA                       | USA                       | 68°38' N | 149°36' W | -                                 | -    |
| 18                                | Kluane Lake Research Station                                       | Canada                    | Canada                    | 61°02' N | 138°25' W | 790                               | 5959 |
| 19                                | CEN Radisson Station   | Canada                    | Canada                    | 53°47' N | 77°38' W  | 0                                 | 160  |
| 20                                | CEN Whapmagoostui-Kuujuarapik Station                              | Canada                    | Canada                    | 55°17' N | 77°45' W  | 0                                 | 140  |
| 21                                | CEN Clearwater Lake Station  | Canada                    | Canada                    | 56°20' N | 74°27' W  | 215                               | 400  |
| 22                                | CEN Umiujaq Research Station                                       | Canada                    | Canada                    | 56°33' N | 76°33' W  | 0                                 | 400  |
| 23                                | CEN Boniface River Station   | Canada                    | Canada                    | 57°45' N | 76°10' W  | 90                                | 300  |
| 24                                | CEN Salluit Research Station                                       | Canada                    | Canada                    | 62°12' N | 75°38' W  | 0                                 | 460  |
| 25                                | CEN Bylot Island Field Station                                     | Canada                    | Canada                    | 73°08' N | 80°00' W  | 0                                 | 1300 |
| 26                                | CEN Ward Hunt Island Station                                       | Canada                    | Canada                    | 83°06' N | 74°10' W  | 0                                 | 400  |
| 27                                | Arctic Station   | Greenland                 | Denmark                   | 69°15' N | 53°34' W  | 0                                 | 800  |
| 28                                | Greenland Institute of Natural Resources (GINR)                    | Greenland                 | Greenland                 | 64°11' N | 51°41' W  | 0                                 | 1600 |
| 29                                | Sermilik Research Station  | Greenland                 | Denmark                   | 65°40' N | 38°10' W  | 0                                 | 937  |
| 30                                | Zackenber Research Station   | Greenland                 | Greenland                 | 74°28' N | 20°34' W  | 0                                 | 1492 |
| 31                                | Litla Skard  | Iceland                   | Iceland                   | 64°44' N | 21°38' W  | 115                               | 229  |
| 32                                | Faroe Islands Nature Investigation (FINI)                          | Faroe Islands             | Faroe Islands             | 62°04' N | 06°58' W  | 0                                 | 882  |
| 33                                | Cairngorm  | United Kingdom            | United Kingdom            | 57°07' N | 03°49' W  | 350                               | 1100 |
| <b>INTERACT Observer Stations</b> |  |                           |                           |          |           |                                   |      |
| A                                 | NERC Arctic Research Station                                       | Svalbard                  | United Kingdom            | 78°55' N | 11°55' E  | 0                                 | 500  |
| B                                 | Netherlands Arctic Station   | Svalbard                  | Netherlands               | 78°55' N | 11°56' E  | 0                                 | 500  |
| C                                 | Polish Polar Station – Hornsund                                    | Svalbard                  | Poland                    | 77°00' N | 15°33' E  | 0                                 | 750  |
| D                                 | Petuniabukta Station   | Svalbard                  | Czech Republic            | 78°40' N | 16°23' E  | 0                                 | 935  |
| E                                 | ALPFOR, Alpine Research and Education Station Furka                | Switzerland               | Switzerland               | 46°35' N | 08°25' E  | 1500                              | 3400 |
| F                                 | Sonnblick Observatory  | Austria                   | Austria                   | 47°03' N | 12°57' E  | 1600                              | 3254 |
| G                                 | Krkonoše (CZ)/Karkonosze (PL) National Park                        | Czech Republic/<br>Poland | Czech Republic/<br>Poland | 50°44' N | 15°44' E  | 920                               | 1602 |
| H                                 | Labytnangi Ecological Research Station                             | Russia                    | Russia                    | 66°40' N | 66°25' E  | 0                                 | 1000 |
| I                                 | Igarka Geocryology Laboratory                                      | Russia                    | Russia                    | 67°27' N | 86°32' E  | 2                                 | 1100 |
| J                                 | Aktru Research Station   | Russia                    | Russia                    | 50°06' N | 87°40' E  | 1500                              | 4075 |
| K                                 | Igloolik Research Center   | Canada                    | Canada                    | 69°23' N | 81°48' E  | 0                                 | 20   |

**Station Table.** \* Numbers and letters refer to numbers and letters on the Cover Map.

|  | Climate zone |            |            |                | Mean temp (°C) |           |      | Precipitation (mm/year) | Permafrost |               |          |        |      | Features in study area |                       |          |        |           | Max. visitors at a time | Distance to nearest town/settlement (km) |        |           |
|--|--------------|------------|------------|----------------|----------------|-----------|------|-------------------------|------------|---------------|----------|--------|------|------------------------|-----------------------|----------|--------|-----------|-------------------------|--|--------|-----------|
|  | High Arctic  | Low Arctic | Sub-Arctic | Montane/Alpine | Annual         | Feb (Jan) | July |                         | Continuous | Discontinuous | Sporadic | Palsas | None | Ice cap or glacier     | Permanent snowpatches | Mountain | Valley | Shoreline |                         |  | Tundra | Tree line |
|  |              |            |            | •              | 1.5            | -6.9      | 10.5 | 1092                    |            |               | •        |        |      | •                      | •                     | •        | •      |           |                         |  | 14     | 2         |
|  |              |            | •          |                | -0.6           | -13       | 14   | 435                     |            |               |          | •      |      |                        | •                     | •        | •      |           |                         |  | 80     | 0         |
|  | •            |            |            |                | -6.3           | -14.6     | 4.9  | 370                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         |                         |  | 150    | 100       |
|  |              |            | •          |                | -3.3           | -10.9     | 7.4  | 1000                    |            | •             |          |        |      | •                      | •                     | •        | •      | •         |                         |  | 30     | 27        |
|  |              |            | •          |                | -0.6           | -11       | 11   | 310                     |            | •             |          |        |      |                        | •                     | •        | •      | •         | •                       |  | 90     | 1         |
|  |              |            | •          |                | -2.2           | -13       | 11   | 447                     |            |               | •        |        |      |                        | •                     | •        | •      | •         |                         |  | 60     | 40        |
|  |              |            | •          |                | 0.8            | -18.4     | 15.4 | 552                     |            |               |          | •      |      |                        | •                     | •        |        | •         | •                       |  | 10     | 4         |
|  |              |            | •          |                | -1.6           | -13.7     | 12.9 | 415                     |            |               | •        |        |      |                        | •                     | •        | •      | •         | •                       |  | 70     | 20        |
|  |              |            | •          |                | -0.4           | -14       | 14.9 | 540                     |            |               |          | •      |      |                        | •                     | •        | •      |           | •                       |  | 100    | 55        |
|  |              | •          |            |                | -0.2           | -11.5     | 12.6 | 340                     |            |               | •        |        |      |                        | •                     | •        | •      |           | •                       | •  | 80     | 3         |
|  |              |            | •          |                | -1.3           | -         | 17.1 | 553                     |            |               |          | •      |      |                        |                       |          |        |           |                         |  | 20     | 28        |
|  |              |            | •          |                | -5.6           | -         | 15   | 555                     |            | •             |          |        |      |                        |                       |          |        |           |                         |  | 6      | 4         |
|  |              | •          |            |                | -13.6          | (-33.2)   | 9.3  | 319                     | •          |               |          |        |      |                        | •                     | •        | •      | •         |                         |  | 13     | 120       |
|  |              |            | •          |                | -9.3           | -40       | 19   | 238                     | •          |               |          |        |      |                        | •                     | •        |        | •         |                         |  | 15     | 18        |
|  |              | •          |            |                | -10.5          | (-34.6)   | 9.5  | 221                     | •          |               |          |        |      |                        | •                     | •        |        | •         | •                       |  | 14     | 28        |
|  | •            |            |            |                | -12.6          | -27.7     | 4.1  | 115                     | •          |               |          |        |      |                        |                       |          | •      | •         |                         |  | 42     | 5         |
|  |              | •          |            |                | -8.7           | (-20.7)   | 10.8 | 318                     | •          |               |          |        |      |                        | •                     | •        |        | •         |                         |  | 150    | 210       |
|  |              |            | •          | •              | -3.8           | -18       | 13   | 280                     |            | •             |          |        |      | •                      | •                     | •        | •      | •         | •                       | •  | 30     | 65        |
|  |              |            | •          |                | -3.0           | (-21.6)   | 13.7 | 684                     |            |               | •        |        |      |                        |                       | •        | •      |           |                         |  | 28     | 0         |
|  |              |            | •          |                | -4.0           | -22.4     | 12.7 | 648                     |            | •             |          |        |      |                        |                       |          | •      |           |                         |  | 28     | 0         |
|  |              |            | •          |                | -3.0           | (-22.4)   | 11.8 | 550                     |            | •             |          |        |      |                        | •                     | •        | •      | •         | •                       |  | 11     | 135       |
|  |              |            | •          |                | -3.0           | -22.4     | 12.2 | 550                     |            | •             |          |        |      |                        | •                     | •        | •      | •         | •                       |  | 9      | 0         |
|  |              |            | •          |                | -4.0           | -24       | 12.5 | 500                     |            | •             |          |        |      |                        | •                     | •        | •      | •         | •                       |  | 9      | 130       |
|  |              | •          |            |                | -3.0           | -23.1     | 9.6  | 550                     | •          |               |          |        |      |                        | •                     | •        | •      | •         |                         |  | 9      | 0         |
|  | •            |            |            |                | -15.0          | -35       | 6.1  | 220                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 18     | 85        |
|  | •            |            |            |                | -17.3          | -33       | -1   | 150                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 9      | 800       |
|  |              | •          |            |                | -3.2           | -11.6     | 7.6  | 436                     |            | •             |          |        |      | •                      | •                     | •        | •      | •         |                         |  | 26     | 1         |
|  |              | •          |            |                | -0.9           | -7.8      | 6.9  | 782                     |            |               | •        |        |      | •                      | •                     | •        | •      | •         |                         |  | 25     | 0         |
|  |              | •          |            |                | -1.7           | (-7.5)    | 6.4  | 984                     |            | •             |          |        |      | •                      | •                     | •        | •      | •         |                         |  | 6      | 20        |
|  | •            |            |            |                | -9.2           | -19.4     | 6.1  | 200                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 18     | 450       |
|  |              | •          |            |                | 3.1            | -1.8      | 10.8 | 740                     |            |               |          | •      |      |                        |                       | •        |        |           |                         |  | 6      | 25        |
|  |              |            | •          |                | 6.5            | 3.6       | 10.3 | 1284                    |            |               |          | •      |      |                        | •                     | •        | •      |           |                         |  | 20     | 15        |
|  |              |            | •          |                | 5.1            | 0         | 10.5 | 835                     |            |               |          | •      |      |                        | •                     | •        |        |           | •                       |  | 80     | 10        |
|  |              |            |            |                |                |           |      |                         |            |               |          |        |      |                        |                       |          |        |           |                         |  |        |           |
|  | •            |            |            |                | -6.0           | -14.6     | 4.9  | 400                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 20     | 100       |
|  | •            |            |            |                | -6.0           | -14.6     | 4.9  | 400                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 7      | 115       |
|  | •            |            |            |                | -4.2           | -10.7     | 4.4  | 453                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 20     | 180       |
|  | •            |            |            |                | -6.0           | -12       | 7.5  | 175                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 20     | 60        |
|  |              |            | •          |                | -1.3           | -8.7      | 6.4  | 2000                    |            | •             |          |        |      | •                      | •                     | •        | •      |           | •                       | •  | 100    | 12        |
|  |              |            | •          |                | -5.7           | -11.2     | 1.8  | 2680                    |            | •             |          |        |      | •                      | •                     | •        | •      |           |                         |  | 10     | 20        |
|  |              |            | •          | •              | 0.8            | -4        | 13   | 1177                    |            |               |          | •      |      |                        | •                     | •        |        | •         | •                       |  | -      | 5         |
|  |              |            | •          |                | -6.0           | -22.4     | 14.4 | 425                     | •          |               |          |        |      | •                      | •                     | •        |        | •         | •                       |  | 25     | 0         |
|  |              |            | •          |                | -8.3           | -24.8     | 15.4 | 420                     |            | •             |          |        |      | •                      | •                     | •        |        | •         |                         |  | 20     | 0         |
|  |              |            | •          |                | -5.2           | -18.5     | 9.5  | 542                     | •          |               |          |        |      | •                      | •                     | •        | •      | •         | •                       |  | 20     | 45        |
|  | •            |            |            |                | -13.6          | -31.2     | 7    | 286                     | •          |               |          |        |      | •                      |                       |          | •      | •         |                         |  | 10     | 0         |

# INTER



# ACT



# STATIONS



# FINSE



## STATION NAME AND OWNER

Finse Alpine Research Centre is owned by the Faculty of Mathematics and Natural Sciences of the University of Oslo. Even though the University of Oslo is the official owner, state funding for building the station was provided on the condition that the Universities of Bergen and Oslo have equal rights to the use of the station for research and education. The station is managed by the Department of Biology, University of Oslo.

## LOCATION

The Alpine Research Center is located 1.5 km east of the Finse railway station on the north-western corner of the Hardangervidda mountain plateau in south central Norway (60°36' N, 7°30' E). The closest town is Geilo, about 50 km to the east. Finse lies in the low alpine zone at 1200 meters a.s.l. and about 250 meters above the tree line. The snow-free period is normally between mid-July and October. The station is located just outside Halingskarvet National Park to the north and east and Skaupsjøen-Hardangerjøkulen landscape protection area to the south and west. The Hardangerjøkulen glacier is 4 km south of the station.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area has continuous vascular vegetation up to about 1300 m a.s.l. – mainly oligotrophic mountain heaths. There are rich breeding-grounds for many species of shorebirds, rock ptarmigan, rough legged buzzard, gyrfalcon, and many passerines. The small-rodent community consists of Norwegian lemmings, root/tundra voles, field voles, bank voles and grey-sided voles. Other mammals include common shrew, stoat, hare, and reindeer. Arctic fox has been released in a reintroduction program since 2010. There are numerous clearwater lakes with trout and Arctic char.

## HISTORY AND FACILITIES

The station has been in operation since 1972 and consists of a research unit that contains 14 beds, kitchen, labs, and sauna, in addition to a course and conference unit with 44 beds, kitchen, dining hall, lecture room, and sauna.





### GENERAL RESEARCH AND DATABASES

The station has a long history of research in biology, limnology, and geosciences. The station is mainly used for research projects run by Norwegian universities, including Master and PhD projects, but also attracts international visitors. An automatic climatological station has been in operation since 1969 which now also includes UV radiation sensors. The station has historic time-series data on small mammals and insects, and mass balance data is available from the Hardanger Jøkulen glacier. See descriptions of current research projects at <http://www.finse.uio.no/research/projects/>.

### HUMAN DIMENSION

The area is much used for recreation including skiing, kite skiing (on the glacier), hiking, cycling, fishing, and hunting. There is a hotel and a hiker's lodge at Finse, and there are many private cabins in the area.

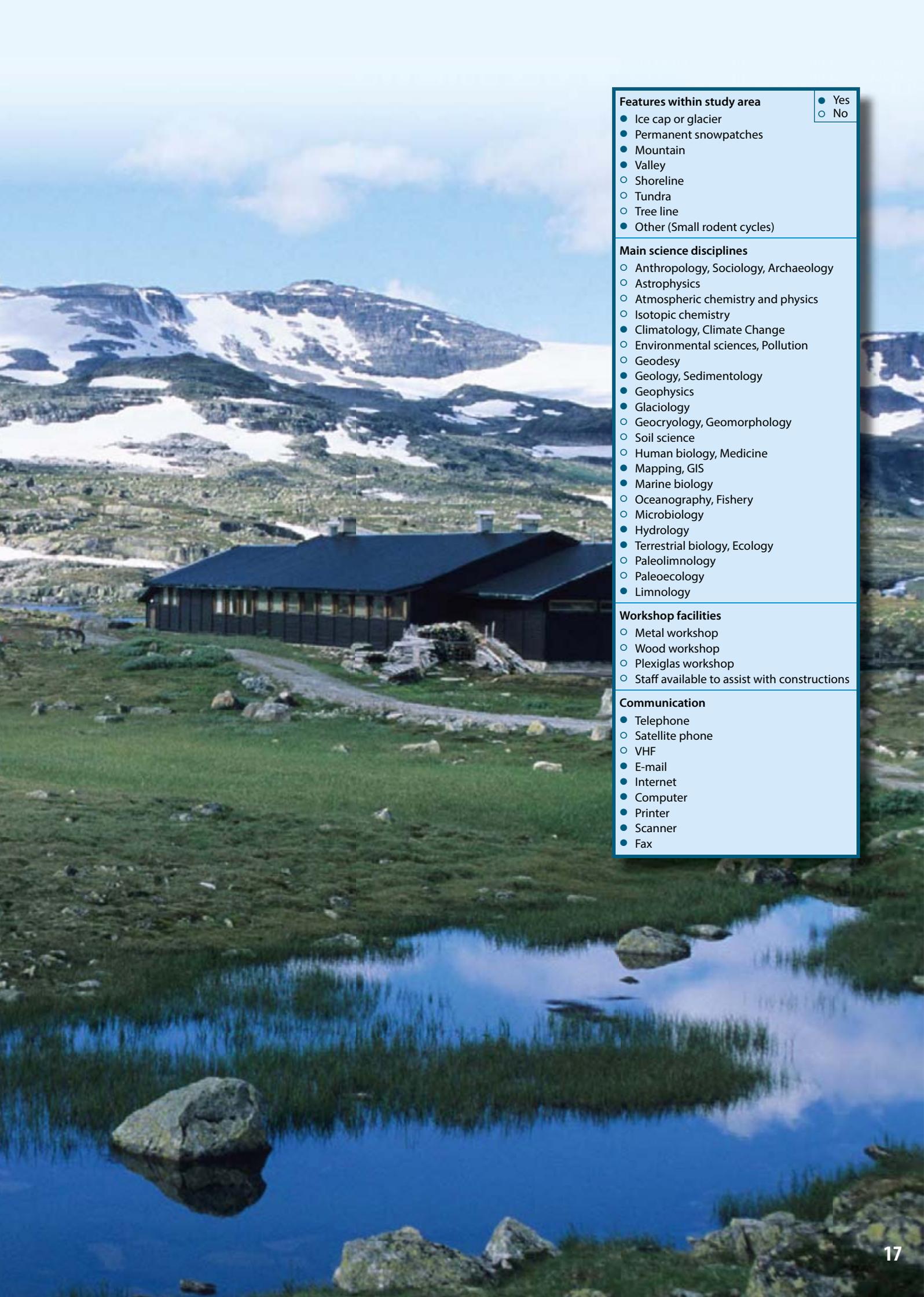
### ACCESS

There are no public roads to the station, but the station is accessible year-round by train (4.5 hours from Oslo and 2.5 hours from Bergen). The research station is located about 1.5 km east of the railway station and transport to the station is available by van or snowmobile except for the snowmelt period which is normally from May to July.



| Category                     | Sub-Category  | Finse Alpine Research Center  |
|------------------------------|---|---|
| Website                      |   | www.finse.uio.no  |
| Country                      |   | Norway  |
| Opening year                 |   | 1965  |
| Operational period           |   | June-September (year-round)   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | Yes<br>Yes<br>torbjorn.ergon@bio.uio.no/e.a.leslie@bio.uio.no   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | University of Oslo<br>Government<br>Departement of Biology<br>torbjorn.ergon@bio.uio.no/e.a.leslie@bio.uio.no<br>www.uio.no   |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 60°36' N, 07°30' E<br>1215 m a.s.l.<br>1000 m a.s.l.<br>1876 m a.s.l.<br>Finse (5 inhabitants)<br>2 km<br>1:50 000  |
| Climate                      | Climate zone  | Low-Alpine  |
|                              | Permafrost  | Sporadic  |
|                              | Years measured  | May 2011-April 2012   |
|                              | Mean annual temperature   | 1.45 °C   |
|                              | Mean temperature in February  | -6.9 °C   |
|                              | Mean temperature in July  | 10.5 °C   |
|                              | Mean annual wind speed  | 7.8 m/s   |
|                              | Max. wind speed   | 30 m/s  |
|                              | Dominant wind direction   | W   |
|                              | Total annual precipitation  | 1092 mm   |
| Precipitation type           | Snow, rain  |   |
| Ice break up                 | Lake: July-September  |   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 700 m <sup>2</sup><br>70 m <sup>2</sup><br>7 m <sup>2</sup><br>14 (14 beds), 7 laboratories, 1 livingroom, 1 cantine<br>2/0<br>14<br>Yes<br>–<br>240 V (two-pin plug)<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | –<br>–  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Basic<br>–<br>–<br>2 hours, depending on train time table (1 hour with helicopter)<br>Mobil phone or VHF radio<br>First aid kit, map and compass  |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | – (It is not allowed to land in the national parks)<br>–<br>–<br>–  |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>Snow scooter/van depends on wheather   |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Walking, railway, snowmobile depends on wheather<br>–<br>– (Railway departs 8 times a day)  |





| Features within study area   | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
|--|--|
| <ul style="list-style-type: none"><li><input checked="" type="radio"/> Ice cap or glacier</li><li><input checked="" type="radio"/> Permanent snowpatches</li><li><input checked="" type="radio"/> Mountain</li><li><input checked="" type="radio"/> Valley</li><li><input type="radio"/> Shoreline</li><li><input type="radio"/> Tundra</li><li><input type="radio"/> Tree line</li><li><input checked="" type="radio"/> Other (Small rodent cycles)</li></ul>   |  |
| <b>Main science disciplines</b>  |  |
| <ul style="list-style-type: none"><li><input type="radio"/> Anthropology, Sociology, Archaeology</li><li><input type="radio"/> Astrophysics</li><li><input type="radio"/> Atmospheric chemistry and physics</li><li><input type="radio"/> Isotopic chemistry</li><li><input checked="" type="radio"/> Climatology, Climate Change</li><li><input type="radio"/> Environmental sciences, Pollution</li><li><input type="radio"/> Geodesy</li><li><input checked="" type="radio"/> Geology, Sedimentology</li><li><input checked="" type="radio"/> Geophysics</li><li><input checked="" type="radio"/> Glaciology</li><li><input type="radio"/> Geocryology, Geomorphology</li><li><input type="radio"/> Soil science</li><li><input type="radio"/> Human biology, Medicine</li><li><input checked="" type="radio"/> Mapping, GIS</li><li><input checked="" type="radio"/> Marine biology</li><li><input type="radio"/> Oceanography, Fishery</li><li><input type="radio"/> Microbiology</li><li><input checked="" type="radio"/> Hydrology</li><li><input checked="" type="radio"/> Terrestrial biology, Ecology</li><li><input type="radio"/> Paleolimnology</li><li><input type="radio"/> Paleoecology</li><li><input checked="" type="radio"/> Limnology</li></ul> |  |
| <b>Workshop facilities</b>   |  |
| <ul style="list-style-type: none"><li><input type="radio"/> Metal workshop</li><li><input type="radio"/> Wood workshop</li><li><input type="radio"/> Plexiglas workshop</li><li><input type="radio"/> Staff available to assist with constructions</li></ul>   |  |
| <b>Communication</b>   |  |
| <ul style="list-style-type: none"><li><input checked="" type="radio"/> Telephone</li><li><input type="radio"/> Satellite phone</li><li><input type="radio"/> VHF</li><li><input checked="" type="radio"/> E-mail</li><li><input checked="" type="radio"/> Internet</li><li><input checked="" type="radio"/> Computer</li><li><input checked="" type="radio"/> Printer</li><li><input checked="" type="radio"/> Scanner</li><li><input checked="" type="radio"/> Fax</li></ul>  |  |



# SVANHOVD

## STATION NAME AND OWNER

The Bioforsk Svanhovd research station belongs to the Norwegian Institute for Agricultural and Environmental Research (Bioforsk).

## LOCATION

Bioforsk Svanhovd is located in the Pasvik area in NE Norway (69°27' N, 30°03' E), approximately 40 km south of the fjords of the Barents Sea, 400 km north of the Arctic Circle, and in close vicinity to Russia and Finland. Bioforsk Svanhovd is situated in Svanvik, a small village in the Pasvik Valley. It is located at the western shore of the Pasvik River that originates from the huge Lake Inari in Finland and flows northwards into the Barents Sea and defines the border between Norway and Russia.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The surroundings in the Pasvik Valley are part of the western distribution limit of the Russian taiga and the fauna and flora has a strong eastern influence, with many species not found in other areas of Europe, e.g. interesting aquatic flora. The area includes

old-growth pine forest, wetlands, lakes, rivers, mountain birch forest, tundra, seashore, and fjords. Most groups of organisms in the area are poorly studied with many still unknown species in certain taxa. The area is also found to be the northernmost distribution of several species and the Pasvik River has a very high biological diversity compared to other rivers in Norway. The area is exposed to several invading species.

## HISTORY AND FACILITIES

Svanhovd was established in 1934 as a governmental demonstration farm to provide expertise and aid to the settlers of the Pasvik Valley. In the early 1990s, a change of activity towards environmental research was motivated in particular due to large emissions from the metal smelters in the Russian city Nikel (9 km away from Svanhovd). 2001, a visitor centre for the Øvre Pasvik National Park was established and, in 2006, Svanhovd Environmental Centre became a part of the Norwegian Institute for Agricultural and Environmental Research.

The laboratory at Bioforsk Svanhovd has facilities for microbiological,





chemical-physical, and DNA-analysis. It is accredited for DNA analyses of brown bears. Bioforsk Svanhovd has a conference centre with accommodation for 50 persons (in single and double rooms, with private bathrooms). Guests are free to use Svanhovds fireplace, TV lounge, sauna, and laundry room. The conference centre offers an auditorium for 80 persons, and smaller meeting rooms for 5 to 30 persons. Additional accommodation can be arranged in Svanvik (walking distance) and at hotels in Kirkenes (45 minutes by car).

### GENERAL RESEARCH AND DATABASES

The region offers 'round-the-corner ecological laboratories' for several important research areas: Pristine nature in sub-arctic ecosystems, changes in land use (farming and abandoned land), climatic and environmental gradients, etc. Bioforsk Svanhovd works with issues related to natural resources, protected areas, biological diversity, and environmental research in the Barents Region. Some work on agricultural issues is also carried out. Each year, surveys within the national brown-bear monitoring programme in Norway, Finland, Sweden, and Russia is carried out.

### HUMAN DIMENSION

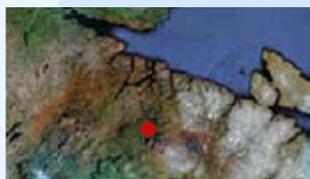
The Pasvik Valley offers nature tourism, fishing, bird-watching, hunting, forestry, northern agriculture, reindeer husbandry, mining, and research. Kirkenes (c. 3400 inhabitants), that is located 40 km NW of Svanhovd, was established in late nineteenth century as a port town for the mining industry at Bjørnevåtn a few km away and for forestry. The area has been inhabited by Sami people for several centuries.

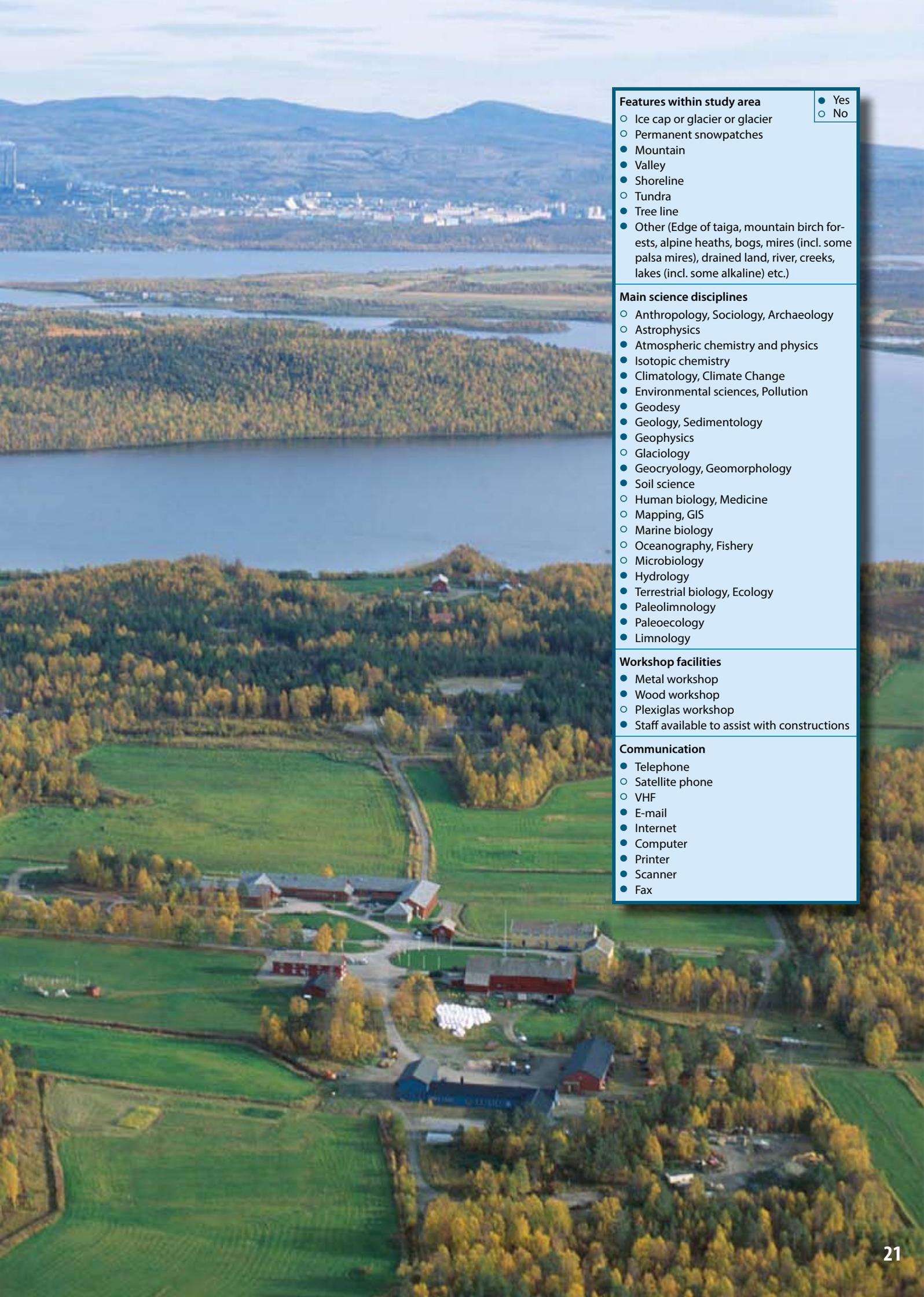
### ACCESS

Svanhovd is an excellent meeting point for researchers and visitors from all over the world, situated in NE Norway in close vicinity to Russia, Finland, and Sweden, and with the facilities offered by Svanhovd Conference Centre. The Botanical Garden at Svanhovd demonstrates the diversity of plants and trees in the Pasvik Valley. It is easy to come to Svanhovd, with daily flights from Oslo Gardermoen Airport to Kirkenes Airport (Høybukta-moen), with about 2 hours flight time (SAS and Norwegian), and then 45 minutes (40 km) by car to Svanhovd (Road 885). Taxi or rental cars are available at Kirkenes Airport.



| Category                     | Sub-Category  | Bioforsk Svanhovd Research Station  |
|------------------------------|---|---|
| Website                      |   | www.bioforsk.no/svanhovd  |
| Country                      |   | Norway  |
| Opening year                 |   | 1934  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>Lars-Ola.Nilsson@Bioforsk.no  |
| Facility owner and manager   | Name of the facility owner<br><br>Owner status<br>Institution responsible for managing the station<br><br>Contact (access to station)<br>Website (institution)                                    | Bioforsk – Norwegian Institute for Agricultural and Environmental Research<br>Government<br>Bioforsk – Norwegian Institute for Agricultural and Environmental Research<br>Lars-Ola.Nilsson@Bioforsk.no<br>www.bioforsk.no                     |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map    | 69°27'10" N, 30°03'17" E<br>35 m a.s.l.<br>0 m a.s.l.<br>250 m a.s.l.<br>Kirkenes/Svanik (3400/800 inhabitants)<br>40/0 km<br>1:10 000 , 1:50 000, 1:5000   |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Palsas  |
|                              | Years measured  | –   |
|                              | Mean annual temperature   | -0.6 °C   |
|                              | Mean temperature in February  | -13 °C  |
|                              | Mean temperature in July  | 14 °C   |
|                              | Mean annual wind speed  | 1.5 m/s   |
|                              | Max. wind speed   | 14.5 m/s  |
|                              | Dominant wind direction   | WSW   |
|                              | Total annual precipitation  | 435 mm  |
|                              | Precipitation type  | Snow, rain  |
|                              | Ice break up  | Rivers and lakes: April-June; Sea: ice free all year  |
|                              | Station facilities  | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Microbiological, chemical-physical and DNA-analysis (brown bear), simple field labs, weather and radioactivity station<br>Baseline climate and phenology data etc.  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment | Standard (basic)<br>–<br>–<br>40 km (45 minutes by car)<br>First aid kit, defibrillator<br>–  |
| Landing facilities           | Airstrip (Length × Width)<br><br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 1755 m (length) Kirkenes Airport<br>–<br>–<br>Port: Kirkenes (40 km away; with e.g. Hurtigruta)   |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>Car, taxi, bus   |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Car, taxi, bus<br>Daily (Kirkenes, year-round)<br>Daily (Kirkenes, year-round)  |



**Features within study area**

Yes  
 No

- Ice cap or glacier or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Edge of taiga, mountain birch forests, alpine heaths, bogs, mires (incl. some palsa mires), drained land, river, creeks, lakes (incl. some alkaline) etc.)

**Main science disciplines**

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax

# SVERDRUP, NY-ÅLESUND



## STATION NAME AND OWNER

The Sverdrup Research Station is owned and managed by the Norwegian Polar Institute.

## LOCATION

The Sverdrup Research Station is located in the research village Ny-Ålesund at the northern side of Brøgger Peninsula at the southern shore of Kongsfjorden, Svalbard. The infrastructure in Ny-Ålesund is run by the Kings Bay Company. The town hosts many national research stations, and the Sverdrup Research Station is the Norwegian station in Ny-Ålesund. The nearest civilian settlement is Longyearbyen, 100 km south of Ny-Ålesund.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Ny-Ålesund is surrounded by arctic tundra and river plains, while the mountains in the inner part of the Brøgger Peninsula have many small glaciers. Large glacier tongues flow into Kongsfjorden on the eastern and northern side of the fjord. Most of the birds living in Svalbard are breeding on small islands or on bird cliffs in Kongsfjorden. Reindeer and foxes are common visitors in Ny-Ålesund. Seals are often seen close to the settlement, and sometimes also walrus and beluga.

## HISTORY AND FACILITIES

Ny-Ålesund was a mining town until the 1960s. After the mining was stopped, Ny-Ålesund started to develop into a research town, beginning with the Norwegian Polar Institute that established a permanent research station in 1968. Today, more than 10 nations have a station in Ny-Ålesund and scientists from many more nations visit Ny-Ålesund to conduct research. The Sverdrup Research Station hosts all Norwegian projects and research groups from nations without their own station in Ny-Ålesund. The station provides logistical support (snow scooters, boats, and equipment), workshop, office facilities, and field storage, while





laboratory space is available through the Kings Bay Marine Laboratory. One of the main activities of the Norwegian Polar Institute is to run the Zeppelin Station (which is on top of the Zeppelin Mountain (474 m a.s.l.) and accessible by cable car) for long-term atmospheric monitoring. Up to approximately 150 people can be accommodated in the summer peak season.

#### GENERAL RESEARCH AND DATABASES

The Kongsfjorden area is especially attractive for arctic research since almost any topic can be studied in close vicinity to Ny-Ålesund. Glaciologists will find glaciers within walking distance, biologists may find bird cliffs and land mammals close by, atmospheric scientists find clean arctic air suitable for their research, and the ocean is easily accessible for marine research of any kind. An overview on research in Ny-Ålesund can be found in the RIS-database at [www.ssf.npolar.no/pages/database.htm](http://www.ssf.npolar.no/pages/database.htm)

#### HUMAN DIMENSION

The research village Ny-Ålesund is in general only accessible for researchers, who are accommodated by Kings Bay, which provides boarding and lodging as well as take care of the daily run-



ning of the town. During the peak season (July-August) 150-180 persons stay in Ny-Ålesund, but their number drops drastically to 40-60 people in spring and autumn. Only the permanent staff (30-40 people) is present during the winter months.

#### ACCESS

Longyearbyen can be reached by regular air traffic; from there an air shuttle service twice a week connects Longyearbyen with Ny-Ålesund. The flight takes c. 25 minutes with 14-17 persons per flight. A limited number of researchers arrive by ship, but there is no regular ship transport to Ny-Ålesund except one monthly freight ship during the summer.



| Category | Sub-Category | Sverdrup Station, Ny-Ålesund |
|----------|--------------|------------------------------|
|----------|--------------|------------------------------|

|                              |  |  |
|------------------------------|--|--|
| Website                      |  | <a href="http://sverdrup.npolar.no">http://sverdrup.npolar.no</a>  |
| Country                      |  | Norway (Svalbard/Spitsbergen)  |
| Opening year                 |  | 1968   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | Yes<br>Yes<br>stationmanager@npolar.no   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Norwegian Polar Institute<br>Government<br>Norwegian Polar Institute<br>stationmanager@npolar.no<br>www.npolar.no  |
| Other institutions           | Name<br>Country  | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 78°55' N, 11°56' E<br>5 m a.s.l.<br>0 m a.s.l.<br>1500 m a.s.l.<br>Longyearbyen/Ny-Ålesund (2000/c. 30 inhabitants)<br>100 km to Longyearbyen/located in Ny-Ålesund<br>1:30 000 , 1:100 000, 1:250 000, air photos, satellite images |
| Climate                      | Climate zone   | High Arctic  |
|                              | Permafrost   | Continuous   |
|                              | Years measured   | Means 1961-1990  |
|                              | Mean annual temperature  | -6.3 °C  |
|                              | Mean temperature in February   | -14.6 °C   |
|                              | Mean temperature in July   | 4.9 °C   |
|                              | Mean annual wind speed   | –  |
|                              | Max. wind speed  | 24 m/s   |
|                              | Dominant wind direction  | E  |
|                              | Total annual precipitation   | 370 mm (1975-89)   |
|                              | Precipitation type   | Rain, snow   |
| Ice break up                 | April/May  |  |
| Station facilities           | Area under roof  | 585 m <sup>2</sup>   |
|                              | Scientific laboratories  | Access to Kings Bay laboratory   |
|                              | Logistic   | –  |
|                              | Number of rooms (beds)   | Access to Kings Bay  |
|                              | Number of staff on station (peak/off season)   | 5/4  |
|                              | Max. number of visitors at a time  | 150 (total capacity of Ny-Ålesund, shared between all stations)  |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | Yes  |
| Scientific equipment         | Power supply (type)  | 220 V EU type  |
|                              | Power supply   | All day hours  |
| Scientific equipment         | Specific device  | Instruments for atmospheric, radiation, and hydrologic measurements, and others  |
|                              | Scientific services offered  | Monitoring long term measurements, support for visitors  |
| Medical facilities           | Medical facilities   | Basic  |
|                              | Medical suite  | Yes  |
|                              | No. of staff with basic medical training or doctor   | – (nurse sometimes in summer)  |
|                              | Distance to hospital (estimated time)  | 100 km to Longyearbyen (1 hour)  |
|                              | Compulsory safety equipment  | First aid kit, glacier rescue, satellite phone, VHF  |
| Landing facilities           | Recommended safety equipment   | –  |
|                              | Airstrip (Length × Width)  | Kings Bay operated   |
|                              | Airstrip surface   | Gravel   |
|                              | Helipad  | Yes  |
| Vehicles at station          | Ship landing facilities  | Port, landing wharf, pier, ponton (operated by Kings Bay)  |
|                              | Sea transportation   | –  |
| Transport and freight        | Land transportation  | –  |
|                              | Transport to station   | 95% by plane   |
|                              | Number of ship visits per year (period)  | Many freight and sailing ships, no regular person transport (May-September)  |
|                              | Number of flight visits per year (period)  | 2-4 per week (year-round)  |





**Features within study area**

- Yes
- No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Sea ice)

**Main science disciplines**

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# TARFALA



## NAME AND OWNER

Tarfala Research Station is owned and run by the Department of Physical Geography and Quaternary Geology, Stockholm University, Sweden.

## LOCATION

Tarfala Research Station is located at 1130 m a.s.l. in the high-alpine Kebnekaise Mountains, northern Sweden. The catchment reaches from 700 to 2100 m a.s.l. and includes several small glaciers of which Storglaciären is extensively studied. The nearest settlement is the Sami village Nikkaluokta, 25 km southeast of the station. There is a mountain tourist station 7 km, and a tourist hut 1 km from Tarfala.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Tarfala Research Station is situated in a rapidly changing environment, which offers good opportunities for a variety of bio-geochemical studies. The Storglaciären is one of the best studied glaciers in the World. The long mass-balance record shows how the glacier has responded

to seasonal climate variability during the last 67 years. The retreat of the glacier since the early 1900s is also well documented. Permafrost in the catchment is patchy, the vegetation ranges from high-alpine flora to mountain birch forest at the tree-line. The area provides the headwaters for the unregulated Kalix River. Wildlife in the area includes reindeer, wolverine, fox, hare, stout, lemmings, and ptarmigan.

## HISTORY AND FACILITIES

The measurements of mass balance on Storglaciären started in the spring of 1946. At that time the scientists used a simple tourist hut as base-camp. In the 1950s, a couple of buildings were built on the present location of the station. The facility could welcome the first students and international scientists in the early 1960s. Today, Tarfala Research Station is a modern facility offering research and education opportunities in a unique sub-arctic high-alpine setting.





Tarfala has c. 25 beds for guests. Rooms with two to four beds are located in houses with running water and dry toilets. Included in the per diem price is breakfast, packed lunch, and dinner. There are no shops in the vicinity. Tarfala Research Station has a modern lecture hall and a well equipped workshop. Internet access via GSM antenna is provided.

#### GENERAL RESEARCH AND DATABASES

Research at Tarfala Research Station focuses on the coupling between climate and glaciers, glacier dynamics, glacial hydrology, high alpine geomorphology, mountain meteorology, and permafrost. New efforts include studies of vegetation development and biogeochemistry in ice, snow, water, and soil. Tarfala Research Station has its own program for monitoring climate effects on the sub-arctic nature including glacier mass balance, mountain meteorology, glacial hydrology, snow-chemistry, and permafrost. The data gives scientists unique and detailed



information on the short- and long- term effects of climate change and is freely accessible.

#### HUMAN DIMENSION

The nearest village is Nikkaluokta, inhabited by c. 30, mainly Sami people.

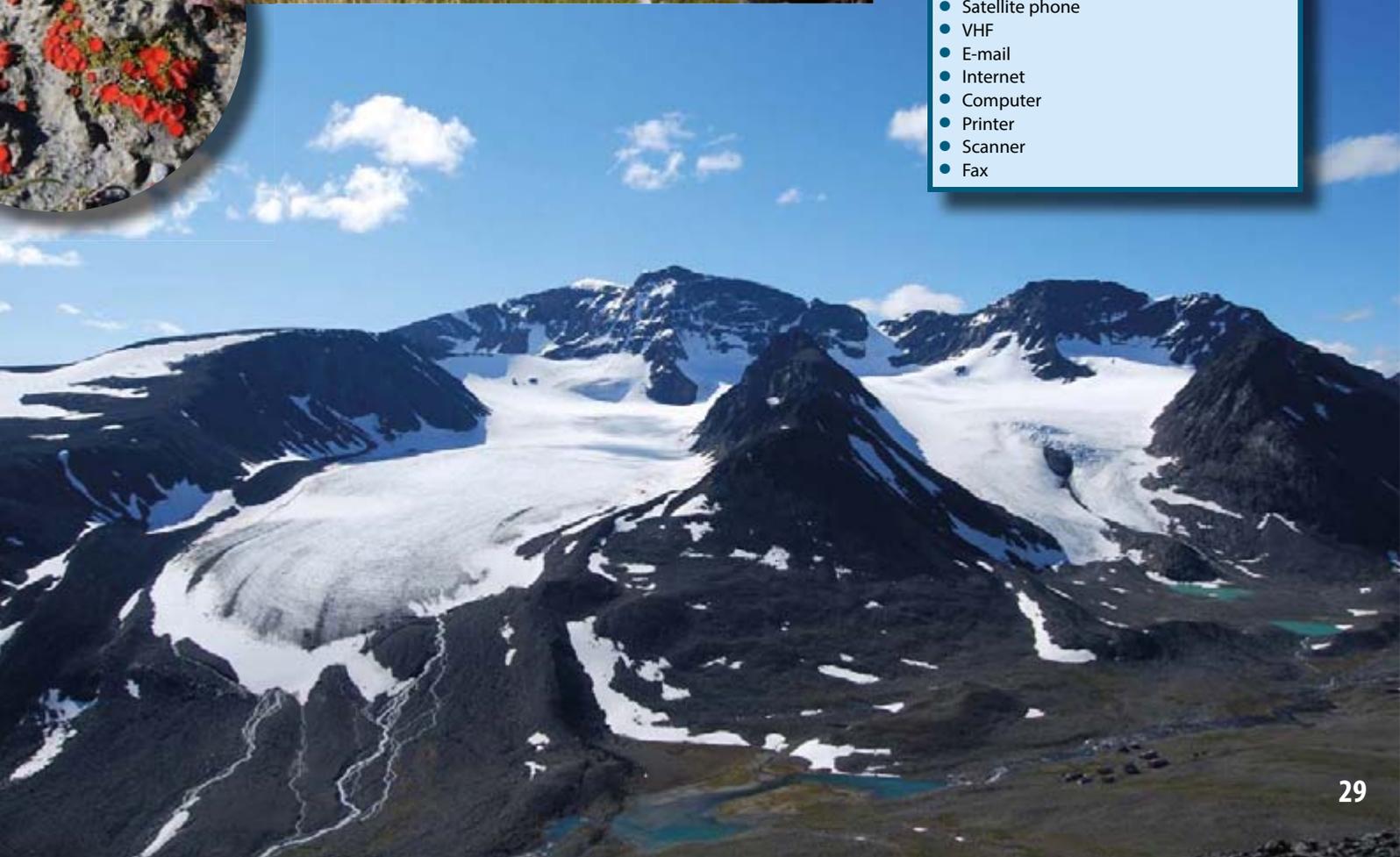
#### ACCESS

Tarfala is located c. 25 km from the nearest village, Nikkaluokta, and 7 km from the Kebnekaise tourist station from where hiking and skiing to the station is possible. Local transport can be arranged from Nikkaluokta to Tarfala by snowmobile in winter and by helicopter in summer. Nikkaluokta is located 60 km west of Kiruna, which can be reached by plane or train from Stockholm.



| Category                                     | Sub-Category   | Tarfala Research Station  |
|--|--|---|
| Website                                      |  | www.tarfala.su.se   |
| Country                                      |  | Sweden  |
| Opening year                                 |  | 1946  |
| Operational period                           |  | March-April, June-September   |
| Permitting issues categories                 | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>–<br>tarfala@natgeo.su.se  |
| Facility owner and manager                   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Stockholm University<br>Government<br>Department of Physical Geography & Quaternary Geology<br>tarfala@natgeo.su.se<br>www.ink.su.se  |
| Other institutions                           | Name<br>Country  | –<br>–  |
| Location                                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 67°55' N, 18°35' E<br>1130 m a.s.l.<br>–<br>2097 m a.s.l.<br>Nikkaluokta (30 inhabitants)<br>27 km<br>Maps: Tarfala valley 1:20 000 , Glacier maps 1:10 000 ; aerial image; satellite image; Google Earth |
| Climate                                      | Climate zone   | Sub-Arctic  |
|  | Permafrost   | Discontinuous   |
|  | Years measured   | 1965-2011   |
|  | Mean annual temperature  | -3.3 °C   |
|  | Mean temperature in February   | -10.9 °C  |
|  | Mean temperature in July   | 7.4 °C  |
|  | Mean annual wind speed   | 3 m/s   |
|  | Max. wind speed  | 81 m/s  |
|  | Dominant wind direction  | N   |
|  | Total annual precipitation   | 1000 mm   |
|  | Precipitation type   | Rain, snow  |
|  | Ice break up   | 15 July   |
|  | Station facilities   | Area under roof   |
| Scientific laboratories                      |  | 40 m <sup>2</sup>   |
| Logistic                                     |  | 100 m <sup>2</sup>  |
| Number of rooms (beds)                       |  | 16 bedrooms (36 beds); 1 wet lab, 1 electrical dry lab, 1 workshop, 1 lecture hall, 1 kitchen, 1 lounge, 1 suana  |
| Number of staff on station (peak/off season) |  | 6/0   |
| Max. number of visitors at a time            |  | 30  |
| Showers                                      |  | Yes   |
| Laundry facilities                           |  | Yes   |
| Power supply (type)                          |  | 220 V two pin plugs   |
| Power supply                                 |  | 24 hours per day  |
| Scientific equipment                         | Specific device  | AWS, dGPS, GPS, georadar, ice and snow sampling kits, basic laboratory equipment  |
|  | Scientific services offered  | Technical support, free access to data (glacier mass balance, hydrology, permafrost, local climate)   |
| Medical facilities                           | Medical facilities   | –   |
|  | Medical suite  | –   |
|  | No. of staff with basic medical training or doctor   | 1   |
|  | Distance to hospital (estimated time)  | 90 km (weather dependent: summer 2 hours, winter 2 to 3 hours)  |
|  | Compulsory safety equipment<br>Recommended safety equipment  | VHF, GPS, glacier safety<br>VHF, GPS, glacier safety  |
| Landing facilities                           | Airstrip (Length × Width)  | –   |
|  | Airstrip surface   | –   |
|  | Helipad  | Yes (natural helicopter landing)  |
|  | Ship landing facilities  | –   |
| Vehicles at station                          | Sea transportation   | –   |
|  | Land transportation  | Snowmobile  |
| Transport and freight                        | Transport to station   | Helicopter, hike (June-September), skiing (March-April)   |
|  | Number of ship visits per year (period)  | –   |
|  | Number of flight visits per year (period)  | –   |





#### Features within study area

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other

Yes  
 No

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

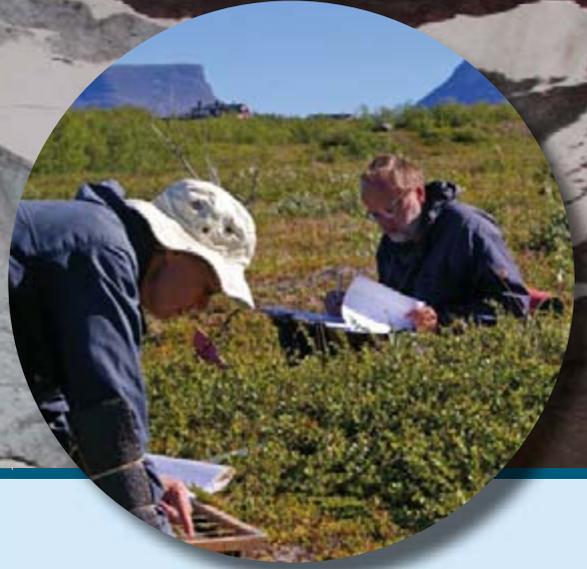
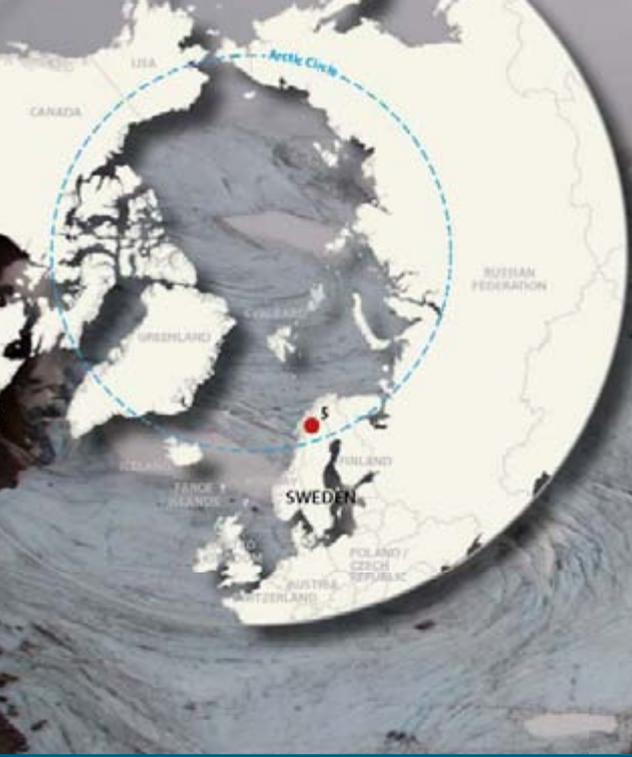
#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax

# ABISKO



## STATION NAME AND OWNER

The Abisko Scientific Research Station is owned by the Swedish Polar Research Secretariat.

## LOCATION

The station is located about 200 km north of the Arctic Circle and approximately 385 m a.s.l., on the south shore of the lake Torneträsk. It is situated in a 46-hectare nature reserve bordering the Abisko National Park, which covers 75 km<sup>2</sup>. The station is located in birch forest and the nearby area offers a great variety in topography, geomorphology, geology, and climate, as well as flora and fauna. The highest mountain in the area reaches 1991 m a.s.l.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The average annual temperature is approximately 0°C. Annual precipitation for the lake varies greatly over an east west gradient with 1000 mm in the west to 400 mm in the east. Mean annual temperature and the length of the growing season have been increasing over the last decades. The vegetation is extremely varied, ranging from the simple communities that follow retreating glaciers to more complex mountain birch forest ecosystems.

About 40% of the surroundings are above the treeline. The area is sparsely populated and land use is minimal being dominated by reindeer husbandry, hunting, fishing, tourism, and research.

## HISTORY AND FACILITIES

The Abisko Scientific Research Station was established in 1913. The station can host almost 100 visitors. Accommodation is available in 28 double rooms, seven 4-bed-rooms and four family apartments. In addition, there are also laboratories, offices, workshops and lecture theatres. Meals are either prepared by the visiting scientists themselves in one of the self-catering kitchens available at the station or, during the tourist season, obtainable at tourist hotels and guest houses within 15 minutes walk. In the nearby village Abisko there is a well equipped grocery store.

## GENERAL RESEARCH AND DATABASES

Research focuses on plant ecology, geomorphology, and meteorology. The main objectives of the ecological studies are the





dynamics of plant populations, identification of the controlling factors at species latitudinal and altitudinal limits, understanding of ecosystem structure and function, and prediction of impacts of global environmental change. The meteorological projects deal with recent Climate Change in the region and local variations in the microclimate. The geomorphology research focuses on the mass-wasting of mountains and sediment transport. Existing databases includes bibliography of publications arising from research at the station, climate records, biological and physical parameters modelling.

### HUMAN DIMENSION

The nearest settlement is the village Abisko which lies about 1 km from the station. The main occupations of the approximately 180 inhabitants are within tourism, transports, and trade. In Abisko there is also both a kindergarden and a school up to the ninth grade. There are a number of tourist hotels in the area, providing a base for both summer and winter tourism. The area is also inhabited by the Sami people who use the area for reindeer husbandry.

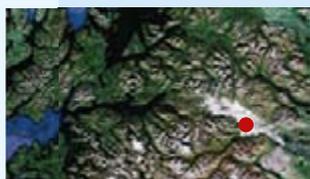
### ACCESS

The Abisko Scientific Research Station is easily accessible by train, car, bus, and airplane. There are direct trains from the Swedish capital Stockholm to Abisko. The closest railway station is situated less than 1 km away. The research station is located just along the main road between Kiruna (Sweden) and Narvik (Norway). Both in Kiruna (100 km away) and Narvik (75 km away) there are airports with several daily flight connections to Oslo and Stockholm. During the tourist season there are bus connections from Kiruna airport to Abisko.



| Category | Sub-Category | Abisko Scientific Research Station |
|----------|--------------|------------------------------------|
|----------|--------------|------------------------------------|

|                              |  |  |
|------------------------------|--|--|
| Website                      |  | www.polar.se/abisko  |
| Country                      |  | Sweden   |
| Opening year                 |  | 1913   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station       | –  |
|                              | Permits required for studies                     | Yes (permits for studies only required for more permanent installations, like met stations, OTC's etc) |
|                              | Contact (permit issues)                          | christer.jonasson@ans.polar.se or office@polar.se  |
| Facility owner and manager   | Name of the facility owner                       | Swedish Polar Research Secretariat   |
|                              | Owner status                                     | Government   |
|                              | Institution responsible for managing the station | Swedish Polar Research Secretariat   |
|                              | Contact (access to station)                      | christer.jonasson@ans.polar.se or office@polar.se  |
|                              | Website (institution)                            | www.polar.se   |
| Other institutions           | Name   | Swedish Polar Research Secretariat   |
|                              | Country  | Sweden   |



|          |                                     |                          |
|----------|-------------------------------------|--------------------------|
| Location | Geographical coordinates            | 68°21' N, 18°49' E       |
|          | Altitude of station                 | 385 m a.s.l.             |
|          | Min. altitude within study area     | 345 m a.s.l.             |
|          | Max. altitude within study area     | 1700 m a.s.l.            |
|          | Nearest town/settlement             | Abisko (180 inhabitants) |
|          | Distance to nearest town/settlement | 1 km                     |
|          | Map                                 | Yes                      |

|         |                              |                           |
|---------|------------------------------|---------------------------|
| Climate | Climate zone                 | Sub-Arctic                |
|         | Permafrost                   | Discontinuous             |
|         | Years measured               | –                         |
|         | Mean annual temperature      | -0.6 °C                   |
|         | Mean temperature in February | -11 °C                    |
|         | Mean temperature in July     | 11 °C                     |
|         | Mean annual wind speed       | 3.9 m/s                   |
|         | Max. wind speed              | 51.5 m/s                  |
|         | Dominant wind direction      | W                         |
|         | Total annual precipitation   | 310 mm                    |
|         | Precipitation type           | Snow, hail, rain          |
|         | Ice break up                 | Lake Torneträsk: May/June |

|                    |  |                     |
|--------------------|--|---------------------|
| Station facilities | Area under roof                              | 5000 m <sup>2</sup> |
|                    | Scientific laboratories                      | 600 m <sup>2</sup>  |
|                    | Logistic                                     | 500 m <sup>2</sup>  |
|                    | Number of rooms (beds)                       | 44 (102)            |
|                    | Number of staff on station (peak/off season) | 9/7                 |
|                    | Max. number of visitors at a time            | 90                  |
|                    | Showers                                      | Yes                 |
|                    | Laundry facilities                           | Yes                 |
|                    | Power supply (type)                          | 220 V               |
|                    | Power supply                                 | 24 hours per day    |

|                      |                             |  |
|----------------------|-----------------------------|--|
| Scientific equipment | Specific device             | Yes (basic lab and field work equipment - contact the station for details) |
|                      | Scientific services offered | Technical and field-work support, sampling, etc. year-round by technicians |

|                    |  |                        |
|--------------------|--|------------------------|
| Medical facilities | Medical facilities                                 | –                      |
|                    | Medical suite                                      | –                      |
|                    | No. of staff with basic medical training or doctor | –                      |
|                    | Distance to hospital (estimated time)              | 100 km (1 hour by car) |
|                    | Compulsory safety equipment                        | –                      |
|                    | Recommended safety equipment                       | –                      |

|                    |                           |  |
|--------------------|---------------------------|--|
| Landing facilities | Airstrip (Length × Width) | –  |
|                    | Airstrip surface          | –  |
|                    | Helipad                   | Yes (helipad 2 km distance, run by private helicopter) |
|                    | Ship landing facilities   | Port, however only local 70 km wide lake Torneträsk    |

|                     |                     |                 |
|---------------------|---------------------|-----------------|
| Vehicles at station | Sea transportation  | –               |
|                     | Land transportation | Car, snowmobile |

|                       |   |  |
|-----------------------|---|--|
| Transport and freight | Transport to station                      | Flight (100 km); Bus (1 km); Railway (1 km); Car |
|                       | Number of ship visits per year (period)   | –  |
|                       | Number of flight visits per year (period) | –  |



| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input checked="" type="radio"/> | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input checked="" type="radio"/> | Tree line                                    |
| <input type="radio"/>            | Other  |
| <b>Main science disciplines</b>  |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input type="radio"/>            | Paleoecology                                 |
| <input type="radio"/>            | Limnology                                    |
| <b>Workshop facilities</b>       |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input checked="" type="radio"/> | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| <b>Communication</b>             |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input type="radio"/>            | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input checked="" type="radio"/> | Fax  |





# KILPISJÄRVI

## STATION NAME AND OWNER

The Kilpisjärvi Biological Station belongs to the University of Helsinki (Faculty of Biological and Environmental Sciences).

## LOCATION

The station is situated in the community of Enontekiö in the northwestern part of Finnish Lapland (69°03' N, 20°50' E) on the shore of Lake Kilpisjärvi at 475 m a.s.l. close to Sweden and Norway.

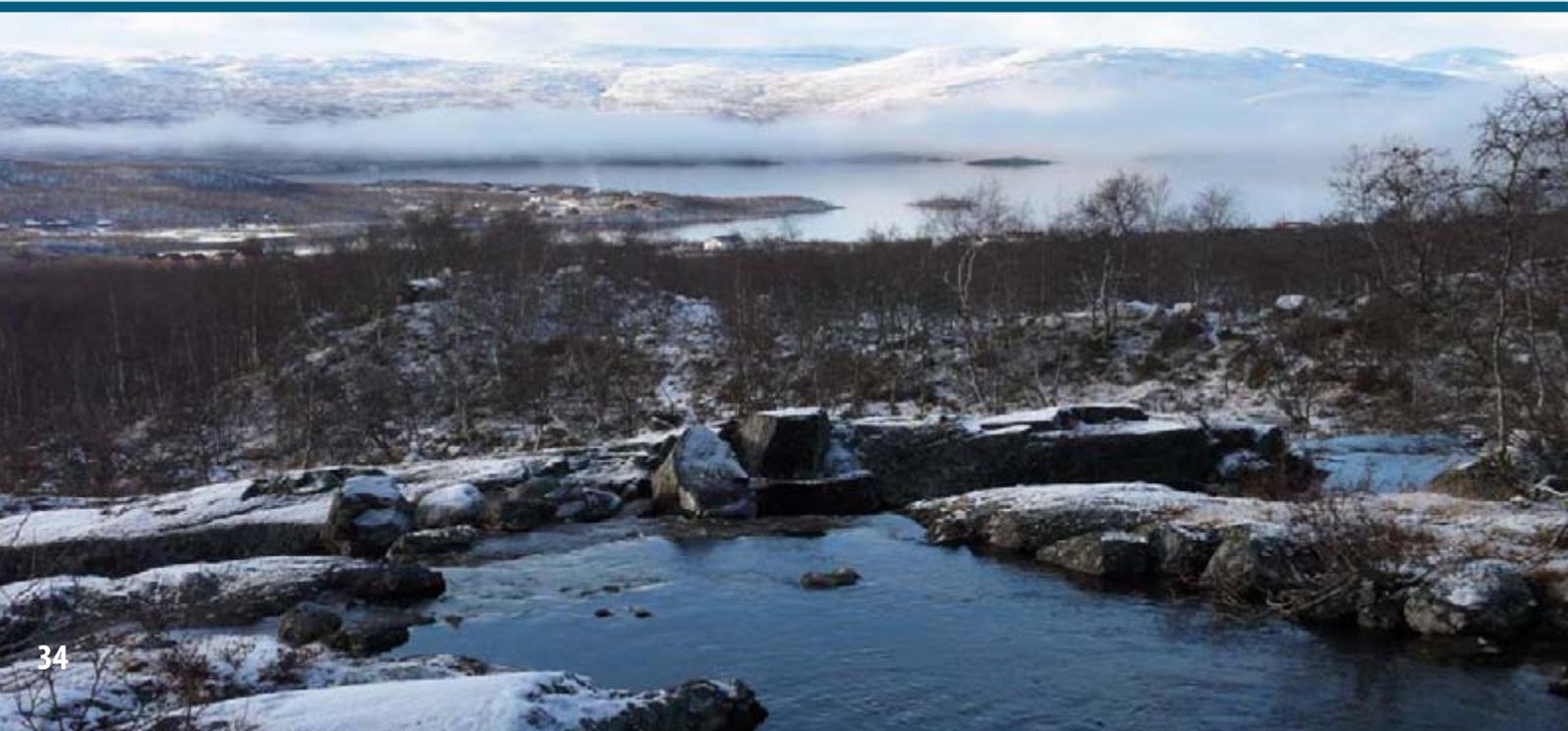
## BIODIVERSITY AND NATURAL ENVIRONMENT

The landscape around the station is dominated by "Fjells" (mountains or high plateaus above the tree line) extending into the Scandinavian mountain range, e.g. Fjell Saana (1029 m a.s.l.) and Pikku-Malla (738 m a.s.l.). The research station lies c.100 km north of continuous coniferous forest and belongs to the sub-alpine birch forest zone, with mountain birch being the dominant plant species. The area is dominated by a wide range of ecosystems from mountain birch forest at low altitude (480-600 m) to alpine tundra (above 600 m). The majority of the area is a mosaic of treeless alpine heath and ponds.

Due to the calcareous bedrock, the Kilpisjärvi area is a hotspot for many calcophilic and endangered mountain plant species. As a consequence, the lepidofauna in this area is exceptionally diverse (more than 340 species are recorded). The Kilpisjärvi region is also famous for rich avifauna of northern and mountainous species, like the bluethroat (*Luscinia svecica*), the ring ouzel (*Turdus torquatus*), and the dotterel (*Charadrius morinellus*). The Norwegian lemming (*Lemmus lemmus*) is the most characteristic mammal species.

## HISTORY AND FACILITIES

The station with its four buildings was officially opened in 1964. In the main building, there are two lecture halls (with space for either 30 or 60 people, one of which also serves as dining room), computer room, library, kitchen, and laboratory facilities. Laboratories have a supply of electricity, gas, compressed air, and running water, and are equipped with refrigerator, ovens, freezers, spectrophotometer, micro- and macro-scales, microscopes, centrifuge, pH- and conductivity meters, thermometers, etc. Also a wide variety of field equipment is available, together with boats and snow scooters. Ars Bioarctica bioart laboratory is affiliated to the station (<http://bioartsociety.fi/ars-bioarctica>). The library contains a collection of zoological, botanical, geographi-





cal, and statistical handbooks. Telephone, fax, copy machines, and computers with access to internet are provided. WLAN is accessible in the station area. The accommodation capacity is about 50 persons, and meals are served daily at the station. There is a permanent staff of eight persons.

### GENERAL RESEARCH AND DATABASES

Widely respected long-term follow-up studies form the core of the scientific activities at the station. The longest observation series (>50 years) are on fluctuations of small rodent densities. Population dynamics of passerines have been monitored since 1957. Long-term research projects also include the periodicity in quality and quantity of vegetation in the mountain region. Effects of environmental changes have been monitored for instance in the International Tundra Experiment (ITEX). The specific long-term studies are backed by more extensive studies on climate, vegetation, soils, rodents, birds, predators, etc. Limnology is a rising branch of research. Lately research activities have extended from animal and botanical ecology to hydrobiological and paleolimnological research. Projects such as MOLAR, CHILL, LAPBIAT and SCANNET have been carried out in Kilpisjärvi in addition to regular

studies on geography and geophysics. The Kilpisjärvi Biological Station is the Finnish representative in the ITEX-project. Since 2007 the station has been part of the Finnish Northern LTSER program, in which data from long-term follow-up studies will be organised and digitized in an EU-funded LTER-project.

A bibliography of publications arising from research at the station is available. There is also an extensive collection of climate records and biological data on plants and animals available from the station. The station publishes its own newsletter "Kilpisjärvi Notes".

### HUMAN DIMENSION

Reindeer husbandry, tourism, and research dominate in the area. Recent construction and development plans in the village may pose a threat for the future of some of the long-term studies.

### ACCESS

The station is easily accessible by air or bus (via Rovaniemi). Within a two hours car journey there are two airports, Enontekiö in Finland and Tromsø in Norway. Also Kiruna airport in Sweden is relatively close to the station.



| Category                     | Sub-Category  | Kilpisjärvi Biological Station  |
|------------------------------|---|---|
| Website                      |   | www.helsinki.fi/kilpis  |
| Country                      |   | Finland   |
| Opening year                 |   | 1964  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br><br>Contact (permit issues)   | –<br>– (Permits working in the Malla nature reserve or other protected areas required. Permits are authorized by Metsähallitus, see: <a href="http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/SpeciesandHabitats/PermitsforResearchandPhotography/Sivut/ResearchorPhotographyPermitInformation.aspx">http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/SpeciesandHabitats/PermitsforResearchandPhotography/Sivut/ResearchorPhotographyPermitInformation.aspx</a> )<br>– |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | University of Helsinki<br>Government<br>Kilpisjärvi Biological Station<br>bio-kilpis@helsinki.fi<br>www.helsinki.fi/kilpis  |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map        | 69°03' N, 20°50' E<br>480 m a.s.l.<br>470 m a.s.l.<br>1320 m a.s.l.<br>Skibotn, Norway (750 inhabitants)<br>40 km<br>Google Earth   |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Sporadic  |
|                              | Years measured  | 1951-2011   |
|                              | Mean annual temperature   | -2.23 °C  |
|                              | Mean temperature in February  | -13 °C  |
|                              | Mean temperature in July  | 11 °C   |
|                              | Mean annual wind speed  | 2.52 m/s  |
|                              | Max. wind speed   | 40 m/s  |
|                              | Dominant wind direction   | NW  |
|                              | Total annual precipitation  | 447 mm  |
|                              | Precipitation type  | Snow, rain  |
|                              | Ice break up  | Mid-June  |
|                              | Station facilities  | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply   |
| Scientific equipment         | Specific device<br>Scientific services offered  | –<br>–  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br><br>Compulsory safety equipment<br>Recommended safety equipment | Standard<br>–<br>–<br>160 km (Tromsø, Norway), 200 km (Muonio, Finland)<br>(2 hours by car, helicopter assistance under extreme conditions)<br>–<br>–   |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | –<br>–<br>–<br>–  |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>Cars, snowmobile   |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Car<br>–<br>–   |





**Features within study area**

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Lake shore)

**Main science disciplines**

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





# KOLARI

## STATION NAME AND OWNER

The Kolari Research Unit belongs to the Finnish Forest Research Institute METLA.

## LOCATION

The Kolari Research Unit is located in northwest Finland at 67° N, close to the Swedish border. The surrounding area consists of northern boreal taiga forests and swamps, as well as mountains up to 700 m a.s.l. Kolari village is approximately 4 km, and the Muonio River is approximately 300 meters away from the station. The Pallas-Ylläs National Park is located 30 km from station. With almost half a million annual visitors, it is Finland's best known national park.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Geographically, the Kolari area is located between Northern Finland, Forest Lapland and Fell Lapland, making it a very varied and interesting habitat. Kolari is situated at the western limit of the Russian taiga. The area is characterised as a mixture zone of eastern and western species of flora and fauna and includes old pine forest, wetlands, lakes, and rivers. Bears, moose, and reindeer are

found in the area, the latter both as wild game and domesticated. Snow covers the landscape from November to May.

## HISTORY AND FACILITIES

The Kolari Research Unit was established in 1964 for the study of peat lands. Today we focus on sustainable use of northern timberline forests and integration of different nature-based livelihoods also with respect to rapidly growing mining activities in this area. The station has 15 offices, high speed internet, and guestrooms for visitors. Kolari village offers various services, and a broad range of outdoor activities is possible in the nearby Ylläs National Park.

## GENERAL RESEARCH AND DATABASES

The research at Kolari focuses on the integration of different nature-based livelihoods at the timberline (tourism, reindeer herding, and forestry), ecologically sustainable forestry, nature protection, and plant ecology. The main objectives of the ecological projects are to study the dynamics of natural forests and disturbance dynamics of forest fires. Existing databases include a bibliography of publications arising from research at the station,





as well as long term ecological data concerning timberline regeneration, rodents, seed yield, and phenology.

### HUMAN DIMENSION

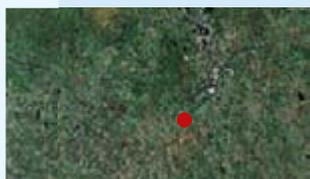
The nearest community is Kolari village (five km away) with approximately 1500 inhabitants. A bit larger is the Swedish Pajala (c. 6200 inhabitants) which is located 30 km from the Kolari Research Unit. Most of the local people are of Finnish origin with long and strong ties to the area and also to the Sami people. The border to the Finnish Sami region is 100 km to the north but it is only two km away from the Swedish Sami region. Tourism and public services are nowadays the main economic factors, but reindeer herding still plays an important role in the area as well as other land uses like forestry and agriculture. Fishing, hunting, and recreational use of the nature are all essential parts of the local culture and provide great opportunities for various outdoor activities.

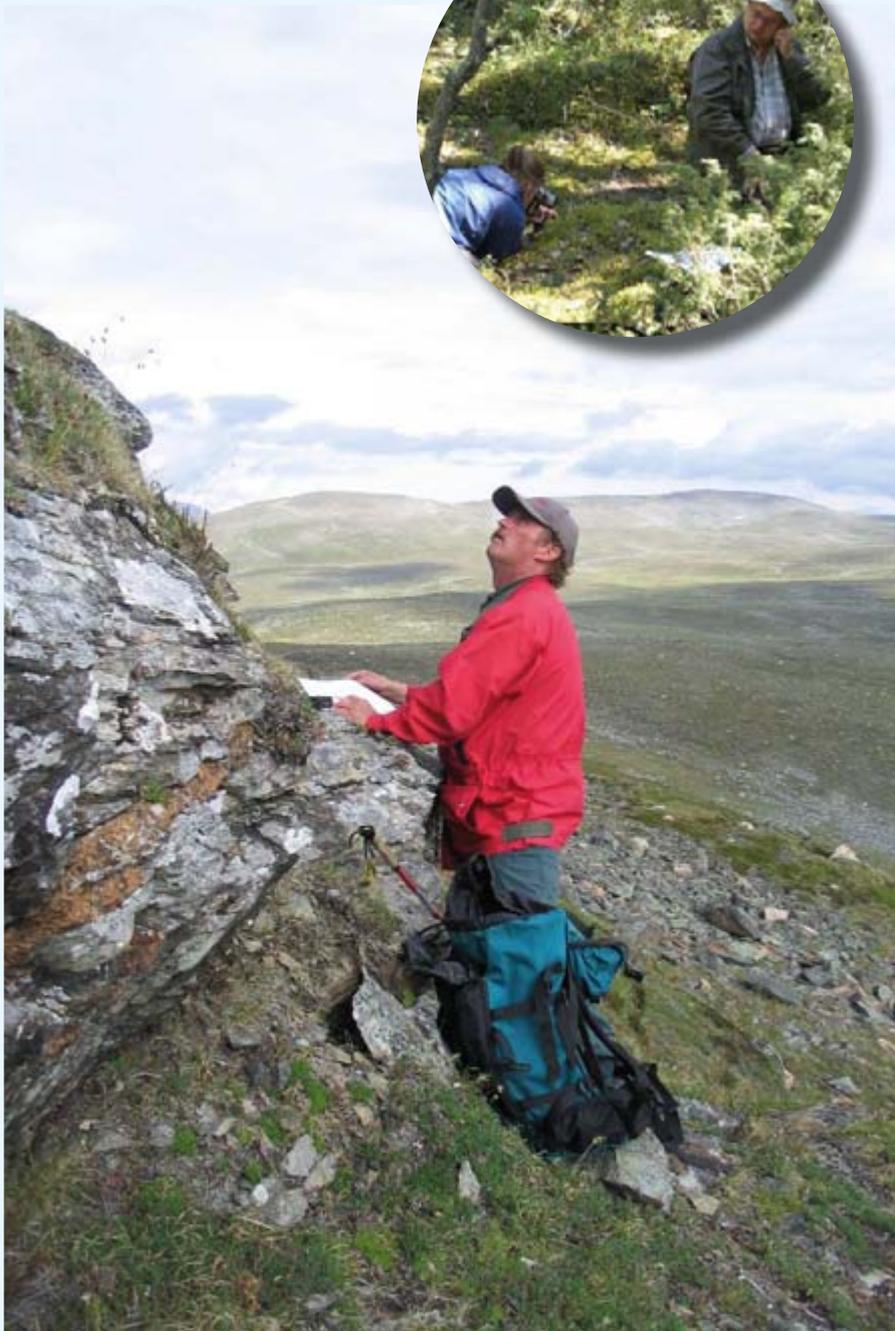
### ACCESS

You can reach Kolari Research Unit easily by car, train or airplane. We are located along Highway 21 from Tornio to Kilpisjärvi. The railway station is less than one km away. Nearest airport is Kittilä Airport 75 km from the station.



| Category                     | Sub-Category                                       | Kolari Research Unit   |
|------------------------------|--|--|
| Website                      |  | <a href="http://www.metla.fi/ko/index-en.htm">http://www.metla.fi/ko/index-en.htm</a>                |
| Country                      |  | Finland  |
| Opening year                 |  | 1964   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station         | Yes  |
|                              | Permits required for studies                       | Yes  |
|                              | Contact (permit issues)                            | mirja.vuopio@metla.fi  |
| Facility owner and manager   | Name of the facility owner                         | Finnish Forest Research Institute METLA  |
|                              | Owner status                                       | Government   |
|                              | Institution responsible for managing the station   | Finnish Forest Research institute METLA  |
|                              | Contact (access to station)                        | mikko.jokinen@metla.fi   |
|                              | Website (institution)                              | www.metla.fi   |
| Other institutions           | Name   | –  |
|                              | Country  | –  |
| Location                     | Geographical coordinates                           | 67°21'16" N, 23°49'46" E   |
|                              | Altitude of station                                | 221 m a.s.l.   |
|                              | Min. altitude within study area                    | 200 m a.s.l.   |
|                              | Max. altitude within study area                    | 800 m a.s.l.   |
|                              | Nearest town/settlement                            | Kolari (1500 inhabitants)  |
|                              | Distance to nearest town/settlement                | 4 km   |
|                              | Map  | Several maps, air photographs, satellite images, open access to digital maps of Finland              |
| Climate                      | Climate zone                                       | Sub-Arctic (Northern-Boreal)   |
|                              | Permafrost   | –  |
|                              | Years measured                                     | Since 2010   |
|                              | Mean annual temperature                            | 0.8 °C   |
|                              | Mean temperature in February                       | -18.4 °C   |
|                              | Mean temperature in July                           | 15.4 °C  |
|                              | Mean annual wind speed                             | 2 m/s  |
|                              | Max. wind speed                                    | 10.1 m/s   |
|                              | Dominant wind direction                            | S  |
|                              | Total annual precipitation                         | 491.5 mm (2010), 612.7 mm (2011)   |
|                              | Precipitation type                                 | Rain, snow, hail   |
| Ice break up                 | May  |  |
| Station facilities           | Area under roof                                    | 640 m <sup>2</sup>   |
|                              | Scientific laboratories                            | 36 m <sup>2</sup>  |
|                              | Logistic   | 120 m <sup>2</sup>   |
|                              | Number of rooms (beds)                             | 3 guest rooms (6 beds)   |
|                              | Number of staff on station (peak/off season)       | 10/10  |
|                              | Max. number of visitors at a time                  | 5-10   |
|                              | Showers  | Yes  |
|                              | Laundry facilities                                 | Yes  |
|                              | Power supply (type)                                | 230 V, 50 hz AC power. DIN standard  |
| Power supply                 | 24 hours per day                                   |  |
| Scientific equipment         | Specific device                                    | Light table, 2 heat closets, 5 exsiccator, 4 microscopes, 4 scales, ultra-sonic washer, fume chamber |
|                              | Scientific services offered                        | –  |
| Medical facilities           | Medical facilities                                 | Basic  |
|                              | Medical suite                                      | –  |
|                              | No. of staff with basic medical training or doctor | 10   |
|                              | Distance to hospital (estimated time)              | 5 km (10 minutes, 2 hours to central hospital)   |
|                              | Compulsory safety equipment                        | –  |
| Recommended safety equipment | –  |  |
| Landing facilities           | Airstrip (Length × Width)                          | –  |
|                              | Airstrip surface                                   | –  |
|                              | Helipad  | –  |
|                              | Ship landing facilities                            | –  |
| Vehicles at station          | Sea transportation                                 | –  |
|                              | Land transportation                                | Car, ATV, snowmobile   |
| Transport and freight        | Transport to station                               | Car, railway, boat, plane (airport 75 km away)   |
|                              | Number of ship visits per year (period)            | –  |
|                              | Number of flight visits per year (period)          | –  |



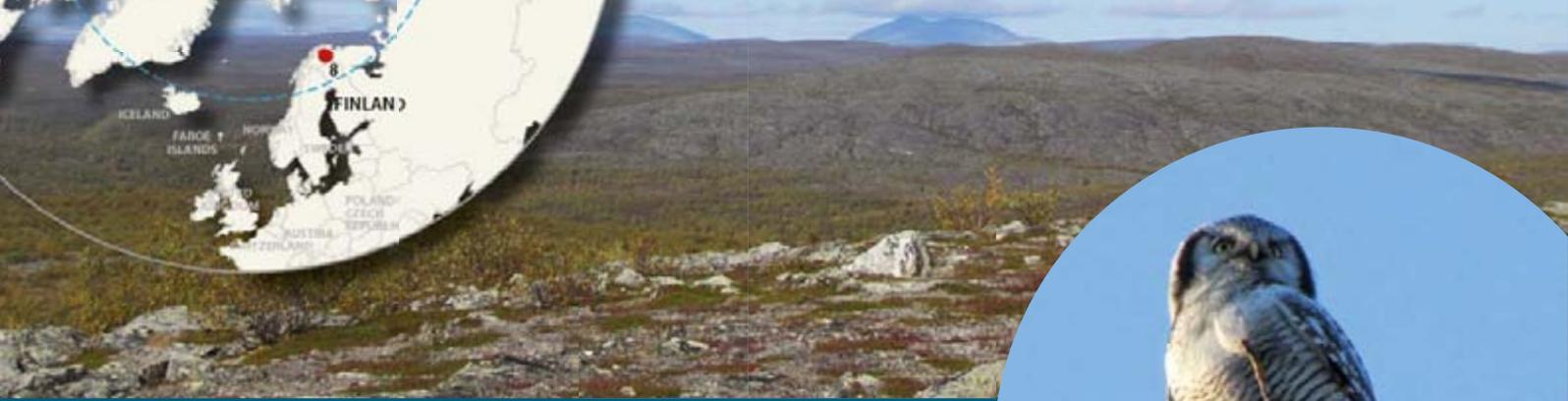


|   |  |
|---|--|
| <b>Features within study area</b>   | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
| <input type="radio"/> Ice cap or glacier<br><input type="radio"/> Permanent snowpatches<br><input checked="" type="radio"/> Mountain<br><input checked="" type="radio"/> Valley<br><input type="radio"/> Shoreline<br><input checked="" type="radio"/> Tundra<br><input checked="" type="radio"/> Tree line<br><input type="radio"/> Other  |  |
| <b>Main science disciplines</b>   |  |
| <input checked="" type="radio"/> Anthropology, Sociology, Archaeology<br><input type="radio"/> Astrophysics<br><input type="radio"/> Atmospheric chemistry and physics<br><input type="radio"/> Isotopic chemistry<br><input checked="" type="radio"/> Climatology, Climate Change<br><input type="radio"/> Environmental sciences, Pollution<br><input type="radio"/> Geodesy<br><input checked="" type="radio"/> Geology, Sedimentology<br><input checked="" type="radio"/> Geophysics<br><input type="radio"/> Glaciology<br><input type="radio"/> Geocryology, Geomorphology<br><input type="radio"/> Soil science<br><input type="radio"/> Human biology, Medicine<br><input checked="" type="radio"/> Mapping, GIS<br><input checked="" type="radio"/> Marine biology<br><input checked="" type="radio"/> Oceanography, Fishery<br><input checked="" type="radio"/> Microbiology<br><input checked="" type="radio"/> Hydrology<br><input checked="" type="radio"/> Terrestrial biology, Ecology<br><input type="radio"/> Paleolimnology<br><input type="radio"/> Paleocology<br><input type="radio"/> Limnology |  |
| <b>Workshop facilities</b>  |  |
| <input type="radio"/> Metal workshop<br><input type="radio"/> Wood workshop<br><input type="radio"/> Plexiglas workshop<br><input checked="" type="radio"/> Staff available to assist with constructions  |  |
| <b>Communication</b>  |  |
| <input checked="" type="radio"/> Telephone<br><input checked="" type="radio"/> Satellite phone<br><input type="radio"/> VHF<br><input checked="" type="radio"/> E-mail<br><input checked="" type="radio"/> Internet<br><input checked="" type="radio"/> Computer<br><input checked="" type="radio"/> Printer<br><input checked="" type="radio"/> Scanner<br><input type="radio"/> Fax   |  |





# KEVO



## STATION NAME AND OWNER

The Kevo Subarctic Research Station is managed by the Kevo Subarctic Research Institute which is based at the University of Turku.

## LOCATION

Kevo Subarctic Research Station is located in Utsjoki at the northernmost tip of Finland only about hundred kilometres from the coast of the Arctic Ocean (69°45' N, 27°01' E) right next to Kevo Strict Nature Reserve (712 km<sup>2</sup>). It lies about 60 km north of the continuous pine forest line and belongs to the sub-arctic Mountain Birch Forest Zone close to both the local pine tree line and the birch tree line at the forest-tundra ecotone.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is close to a wide range of ecosystems from pine stands at low altitudes to mountain birch forests and low alpine tundra as well as mires (also palsas), lakes, and rivers. Several large-scale outbreaks of birch feeding moth larvae are characteristic for the birch forests. The latest outbreak in 2005-2009 destroyed about 400 km<sup>2</sup> of the treeline birch forests in Utsjoki. Grazing by semi-domesticated reindeer is another important

factor that shapes the ecosystems. The area is part of the basin of the river Teno/Tana which is one of the top salmon rivers in Europe.

## HISTORY AND FACILITIES

The station was founded in 1958. The station, including a weather station of Finnish Meteorological Institute, consists of several buildings. It has the capacity to accommodate about 40 guests in winter and up to 70 in summertime. It is open year-round, but full-board meals will be offered only during the main field season (from May to September), except for larger groups. The station provides laboratories, a workshop, a lecture hall, and accommodation buildings. During recent years the station has had about 80 Finnish and 60 foreign visiting scientists each year.





### GENERAL RESEARCH AND DATABASES

Kevo Subarctic Research Station has got a long tradition in manipulative experiments addressing cause-effect relationships of anthropogenic environmental changes. In ecological science it is known for the research on plant herbivore interactions and in geographical science for research on palsas mires. There are long-term field experiments studying the effects of aerial pollutants and the impacts of reindeer grazing. The station has got arboretums with different origins of arctic treeline species. There is monitoring data available on population dynamics of moths, rodents, birds, plant phenology, pollen deposits, and meteorological data. The station also holds up to 50-year old biogeographical mapping data of the surrounding area.

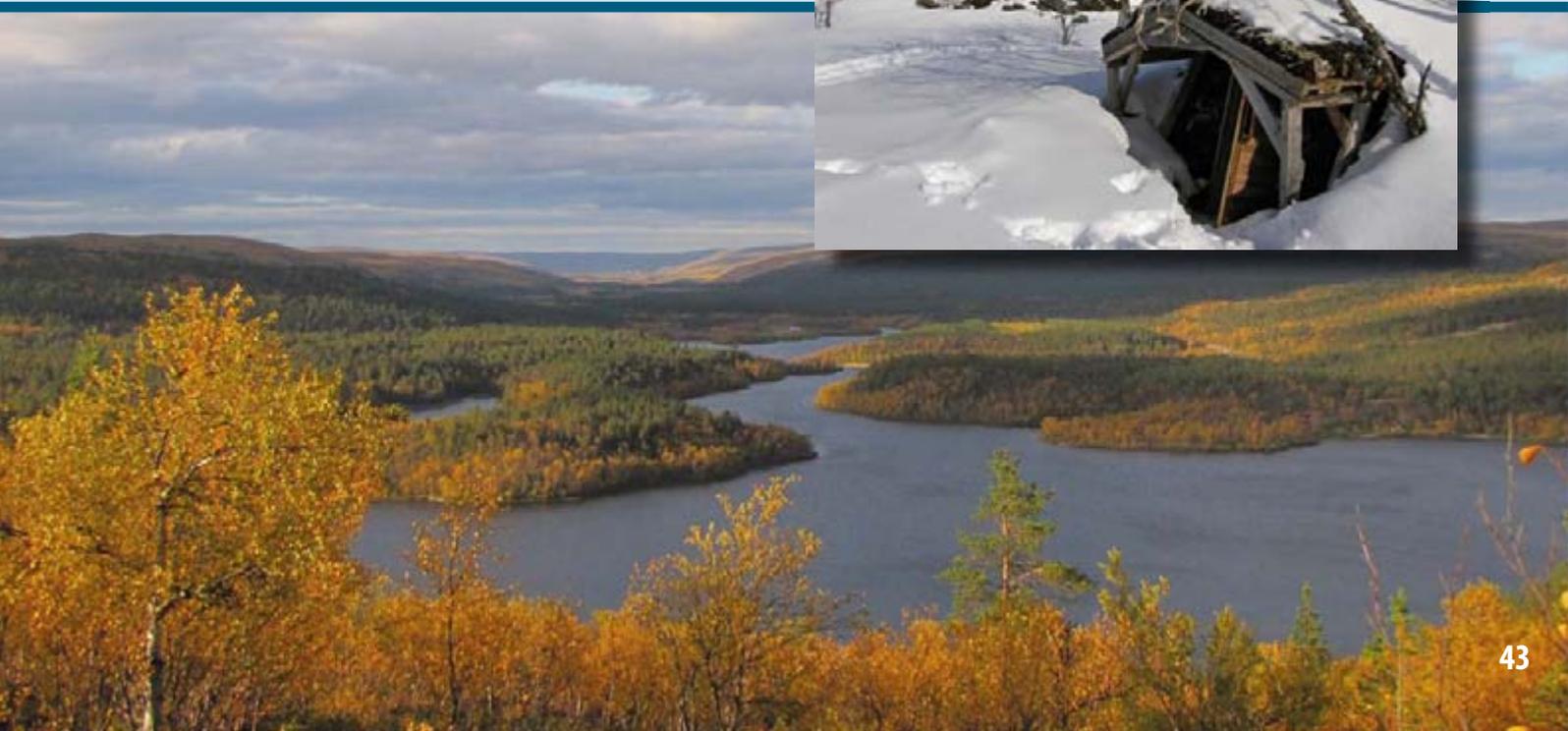
### HUMAN DIMENSION

Utsjoki is the only municipality in Finland with Sámi majority for whom the traditional reindeer herding and fishing are still important livelihoods, even though it is in general a normal modern community with modern services. In Utsjoki village (18 km north of Kevo) there are grocery shops, a post office, a library, a swimming hall, accommodation providers, pubs, a bank, and

a health centre. Anthropological, sociological, and archaeological studies on the local community have been managed by the research station.

### ACCESS

The station is located close to a main road and can be reached by car. Access to the station is across Lake Kevojärvi (250 m, in summer by boat and in winter over the ice) or via a small road (5 km). The closest airport in Finland is in Ivalo with a bus connection from Ivalo to Kevo (c. 150 km). There are also airports in Norway at about the same distance (Lakselv, Vadsø, Kirkenes). Alternatively, a train connection exists from southern Finland to Rovaniemi followed by a bus trip via Ivalo to Kevo (450 km).

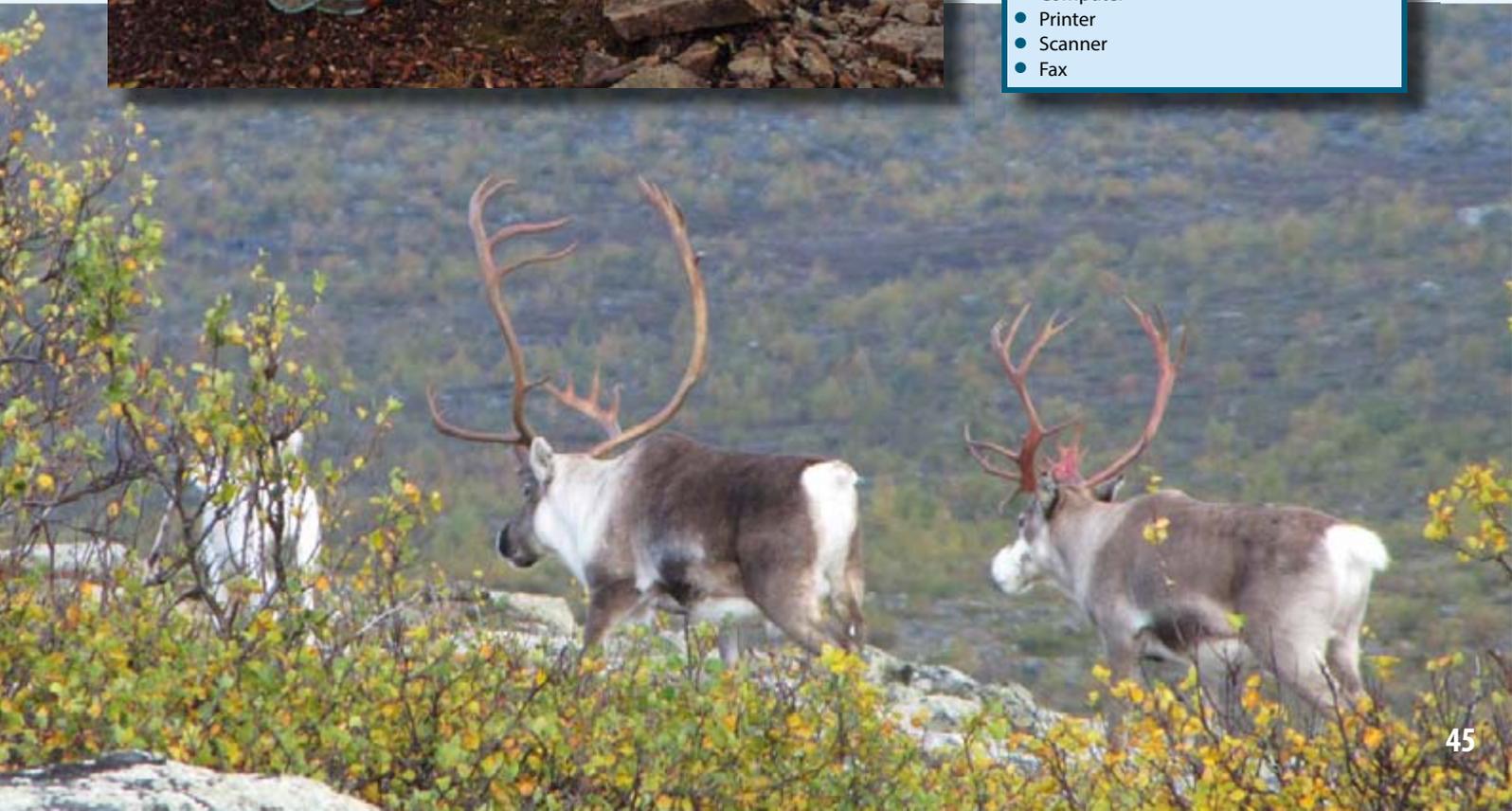


| Category                     | Sub-Category                                       | Kevo Subarctic Research Station  |
|------------------------------|--|--|
| Website                      |  | <a href="http://www.kevo.utu.fi/">http://www.kevo.utu.fi/</a>  |
| Country                      |  | Finland  |
| Opening year                 |  | 1958   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station         | –  |
|                              | Permits required for studies                       | Yes (Permits for working inside Kevo Strict Nature Reserve<br><a href="http://www.outdoors.fi/destinations/otherprotectedareas/kevo/Pages/Default.aspx">http://www.outdoors.fi/destinations/otherprotectedareas/kevo/Pages/Default.aspx</a> )<br>kevo@utu.fi |
| Facility owner and manager   | Contact (permit issues)                            | kevo@utu.fi  |
|                              | Name of the facility owner                         | University of Turku  |
|                              | Owner status                                       | NGO  |
|                              | Institution responsible for managing the station   | Kevo Subarctic Research Institute, University of Turku   |
| Other institutions           | Contact (access to station)                        | kevo@utu.fi  |
|                              | Website (institution)                              | <a href="http://www.kevo.utu.fi/">http://www.kevo.utu.fi/</a>  |
|                              | Name   | Finnish Meteorological Institute, Finnish Geodetic Institute, Seismological Institute  |
|                              | Country  | Finland  |
| Location                     | Geographical coordinates                           | 69°45' N, 27°01' E   |
|                              | Altitude of station                                | 80 m a.s.l.  |
|                              | Min. altitude within study area                    | 75 m a.s.l.  |
|                              | Max. altitude within study area                    | 500 m a.s.l.   |
|                              | Nearest town/settlement                            | Utsjoki (600 inhabitants)  |
|                              | Distance to nearest town/settlement                | 20 km  |
|                              | Map  | <a href="http://www.kevo.utu.fi/en/location/">http://www.kevo.utu.fi/en/location/</a>  |
| Climate                      | Climate zone                                       | Sub-Arctic (tree line)   |
|                              | Permafrost   | Sporadic   |
|                              | Years measured                                     | –  |
|                              | Mean annual temperature                            | -1.6 °C  |
|                              | Mean temperature in February                       | -13.7 °C   |
|                              | Mean temperature in July                           | 12.9 °C  |
|                              | Mean annual wind speed                             | 11.8 m/s (mean monthly maximum wind speed)   |
|                              | Max. wind speed                                    | 26 m/s (in a valley)   |
|                              | Dominant wind direction                            | W  |
|                              | Total annual precipitation                         | 415 mm   |
|                              | Precipitation type                                 | Rain, snow   |
|                              | Ice break up                                       | Lake: May/June   |
| Station facilities           | Area under roof                                    | 3000 m <sup>2</sup>  |
|                              | Scientific laboratories                            | 750 m <sup>2</sup>   |
|                              | Logistic   | –  |
|                              | Number of rooms (beds)                             | 15 buildings with different rooms from apartments to laboratories and sauna (plus 11 cabins for summertime use)  |
|                              | Number of staff on station (peak/off season)       | 20/7   |
|                              | Max. number of visitors at a time                  | 40 in winter, 70 in summer   |
|                              | Showers  | Yes  |
|                              | Laundry facilities                                 | Yes  |
|                              | Power supply (type)                                | Regular commercial (+ a generator for reserve power)   |
|                              | Power supply                                       | 24 hours per day   |
| Scientific equipment         | Specific device                                    | –  |
|                              | Scientific services offered                        | –  |
| Medical facilities           | Medical facilities                                 | –  |
|                              | Medical suite                                      | Yes  |
|                              | No. of staff with basic medical training or doctor | 0/0  |
|                              | Distance to hospital (estimated time)              | Health centre 20 km, hospital 440 km   |
|                              | Compulsory safety equipment                        | –  |
| Landing facilities           | Recommended safety equipment                       | –  |
|                              | Airstrip (Length × Width)                          | – (lake: yes)  |
|                              | Airstrip surface                                   | –  |
|                              | Helipad  | –  |
| Vehicles at station          | Ship landing facilities                            | Ponton, sledges  |
|                              | Sea transportation                                 | Outboard motor boats   |
| Transport and freight        | Land transportation                                | Minibus, van, ATV, snowmobiles   |
|                              | Transport to station                               | Bus, car   |
|                              | Number of ship visits per year (period)            | –  |
|                              | Number of flight visits per year (period)          | –  |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input checked="" type="radio"/> | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input checked="" type="radio"/> | Tree line                                    |
| <input checked="" type="radio"/> | Other (Palsa mires)                          |
| Main science disciplines         |  |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input type="radio"/>            | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| Workshop facilities              |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input checked="" type="radio"/> | Fax  |



# OULANKA



## STATION NAME AND OWNER

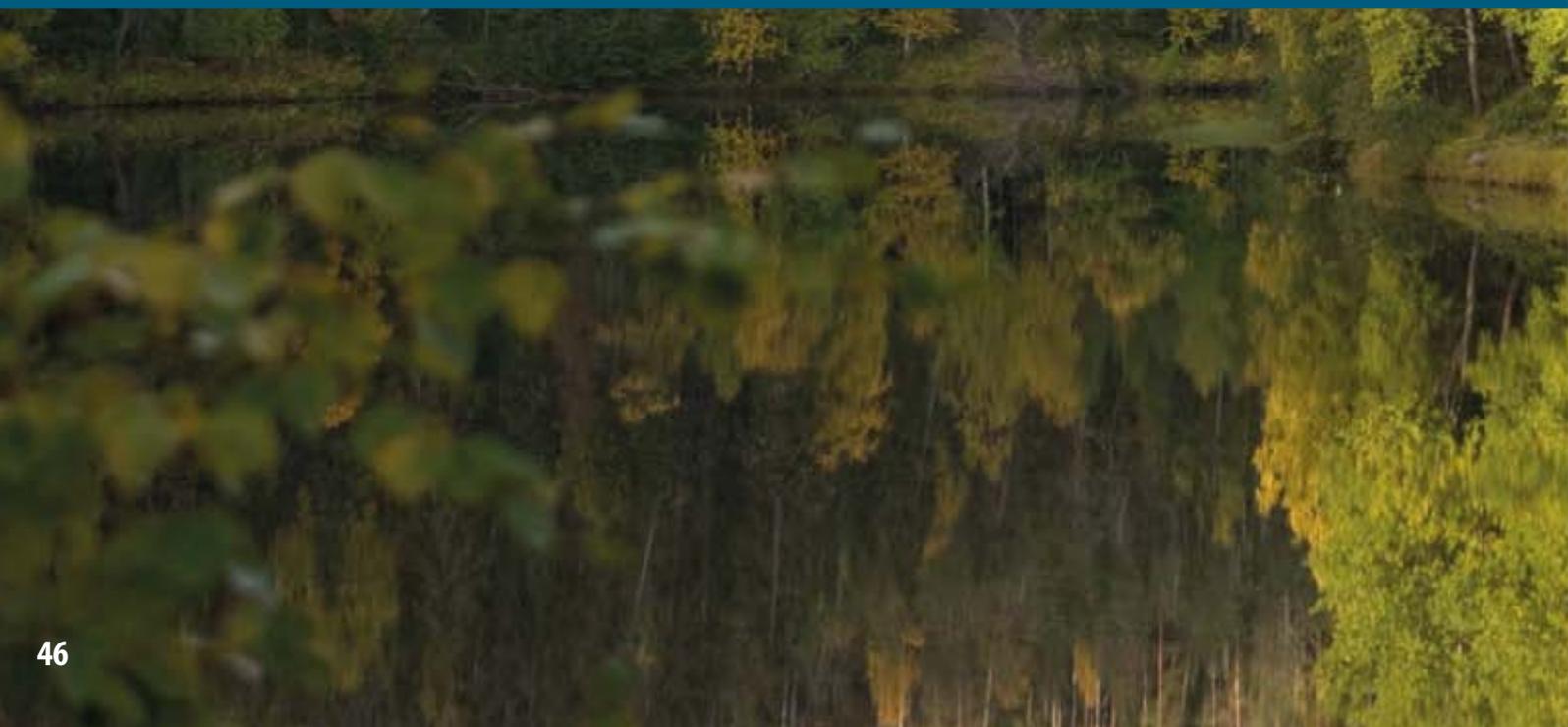
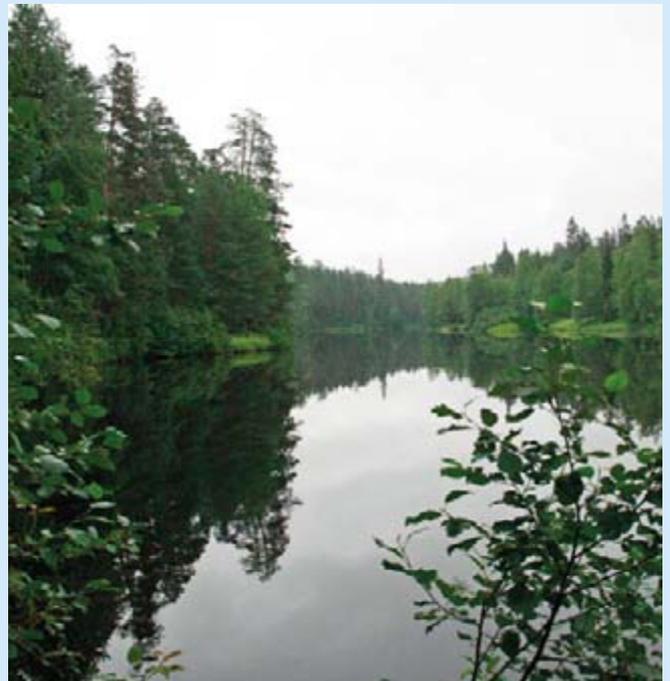
Oulanka Research Station was founded in 1966. It belongs to the Thule Institute, and is a regional unit of the University of Oulu in Kuusamo, Finland.

## LOCATION

Oulanka Research Station is situated in the river valley of Oulanka within the Oulanka National Park (66°22' N, 29°19' E, 166.5 m a.s.l.). The station is c. 25 km south of the Arctic Circle, 13 km west of the Russian border, about 280 km northeast of Oulu, and 55 km north of Kuusamo.

## HISTORY AND FACILITIES

Oulanka Research Station operates and offers access to visitors throughout the year. The station is a primary location for field courses at Oulu University (especially biology and geography) with 5-8 different courses and roughly 1500 person-days per year. The station lies in the heart of the Oulanka National Park at an optimal distance to various field research locations. Being a multi-disciplinary research station, Oulanka is open to almost all kinds of research activities. The station has 95 beds, three well-





equipped laboratories, an auditorium, classrooms, workshops, and high-speed internet.

### **BIODIVERSITY AND NATURAL ENVIRONMENT**

Oulanka National Park is a northern biodiversity hot-spot, thanks to the calcium-rich bedrock, varying topography, and large environmental gradients within a small area. Moreover, it has historically been at the cross-roads for movement of northern, southern and eastern species. Unlike most of Finland, the local rivers drain towards the Northeast, i.e. to the White Sea.

### **GENERAL RESEARCH AND DATABASES**

The study area includes the towns of Kuusamo, Posio, Taivalkoski, and Salla, and covers an area of roughly 100 × 200 km. Most of the research activity is concentrated in and around the Oulanka National Park. Historically research has been focussed on animal and plant ecology as well as geography. Recently sociological aspects have been included as well. Oulanka has a broad range of long-term data series available for researchers. These include both, biological and physical/ chemical datasets, and many of them have been collected since 1966. The datasets cover time-

series on meteorology, water chemistry of streams and lakes, phenology, ice cover, snow cover, active layer depth, air pollution as well as different plant and animal species, etc.

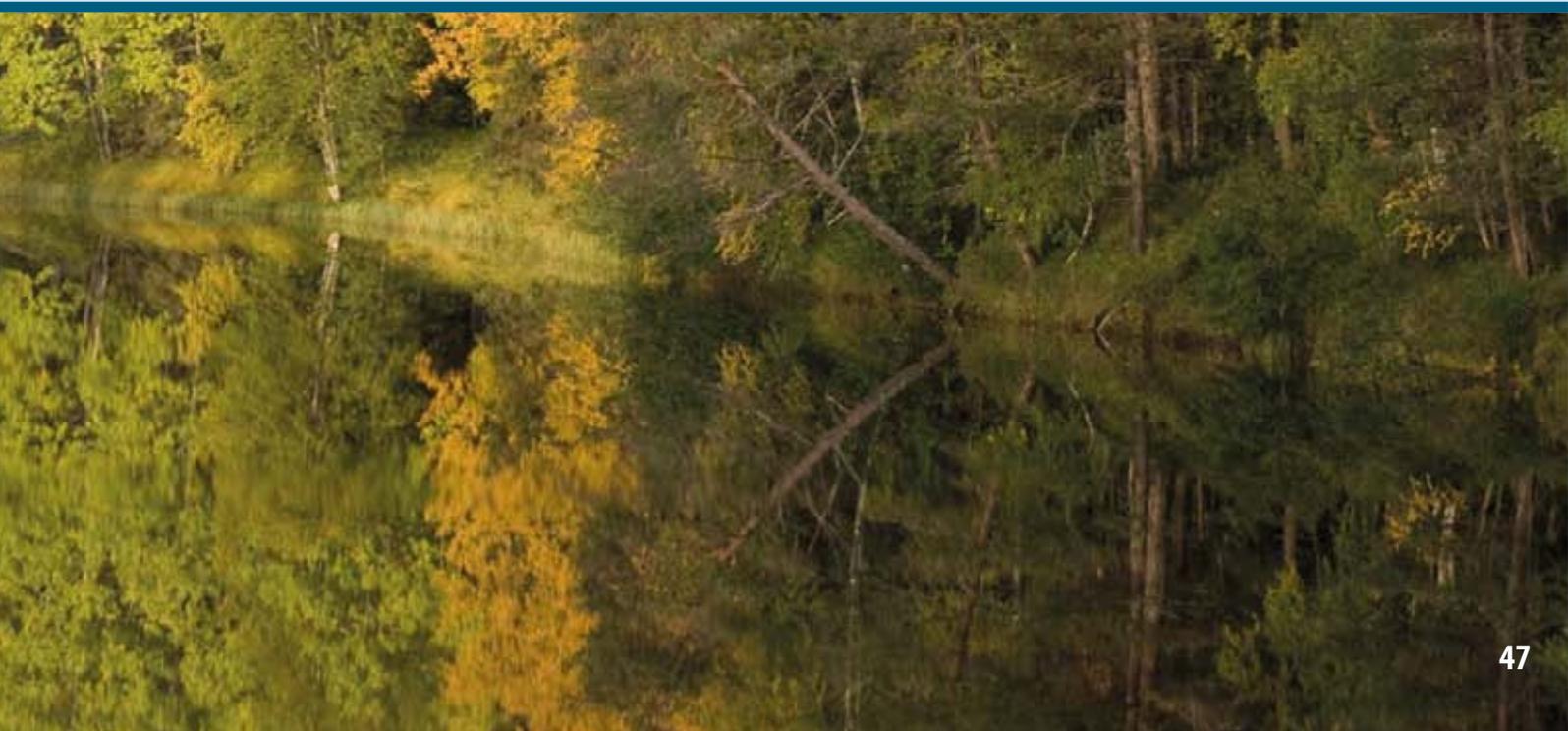
Oulanka also offers a recently acquired, extremely comprehensive (70 x 90 km) set of high-resolution aerial photographs covering three different eras, i.e. the early 1950s, the early 1980s, and c. 2005.

### **HUMAN DIMENSION**

The nearest village with stores and services is 13 km away while the ski centre of Ruka is 30 km away. Outside the villages and towns, the area is sparsely populated, but tourism is an important activity with associated impacts on nature. In addition to tourism, forestry, and mining are the other major human impacts in the area.

### **ACCESS**

Oulanka Research Station can be reached by car, by bus or by plane to Kuusamo (55 km from the station) year-round.



| Category                     | Sub-Category   | Oulanka Research Station  |
|------------------------------|--|---|
| Website                      |  | <a href="http://www.oulu.fi/oulanka/en_index.html">http://www.oulu.fi/oulanka/en_index.html</a>   |
| Country                      |  | Finland   |
| Opening year                 |  | 1966  |
| Operational period           |  | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>Yes (study permit required for some activities/species)<br>oulanka@oulu.fi   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | University of Oulu<br>NGO<br>Thule institute<br>oulanka@oulu.fi<br><a href="http://thule.oulu.fi/englanti/index.html">http://thule.oulu.fi/englanti/index.html</a>  |
| Other institutions           | Name<br>Country  | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 66°22' N, 29°19' E<br>165 m a.s.l.<br>155 m a.s.l.<br>500 m a.s.l.<br>Kuusamo (16 300 inhabitants)<br>55 km<br>Aerial images, satellite images, plus paper and digital maps 1:10 000  |
| Climate                      | Climate zone   | Sub-Arctic (Boreal zone)  |
|                              | Permafrost   | –   |
|                              | Years measured   | 1966-2011   |
|                              | Mean annual temperature  | -0.4 °C   |
|                              | Mean temperature in February   | -14 °C  |
|                              | Mean temperature in July   | 14.9 °C   |
|                              | Mean annual wind speed   | –   |
|                              | Max. wind speed  | –   |
|                              | Dominant wind direction  | –   |
|                              | Total annual precipitation   | 540 mm  |
|                              | Precipitation type   | Rain, snow  |
| Ice break up                 | Lakes and rivers: May  |   |
| Station facilities           | Area under roof  | 2329 m <sup>2</sup>   |
|                              | Scientific laboratories  | 163 m <sup>2</sup>  |
|                              | Logistic   | 146.5 m <sup>2</sup>  |
|                              | Number of rooms (beds)   | 42 accommodation (106 beds), 9 kitchens, 1 dining-room, 2 lecture rooms, sauna, 3 laboratories, 6 administration (3 offices, computer room, 2 researcher rooms), laundry  |
|                              | Number of staff on station (peak/off season)   | 10-14/5   |
|                              | Max. number of visitors at a time  | 100   |
|                              | Showers  | Yes   |
|                              | Laundry facilities   | Yes   |
|                              | Power supply (type)  | 230 V 50 Hz grid (Eurasian two/three-pin plug)  |
| Power supply                 | 24 hours per day   |   |
| Scientific equipment         | Specific device  | Advanced weather station, differential GPS, basic laboratory equipment, different surveying equipment, state-of-the-art microscope systems (stereo, light, plankton, polarizing, phase contrast, fluorescence, Z-stacking, real-time video, imaging system), highly equipped analysis lab, EMEP-station (FMI owned) |
|                              | Scientific services offered  | Tech support, some field support, access to time-series biological and phys.chem data, analysis lab access/assistance   |
| Medical facilities           | Medical facilities   | Basic   |
|                              | Medical suite  | –   |
|                              | No. of staff with basic medical training or doctor   | 3   |
|                              | Distance to hospital (estimated time)  | 55 km (1 hour by car)   |
|                              | Compulsory safety equipment  | Mobile phone  |
| Recommended safety equipment | First aid kit, satellite communication device  |   |
| Landing facilities           | Airstrip (Length × Width)  | Airstrip is in Kuusamo town, not station's own  |
|                              | Airstrip surface   | Tarmac  |
|                              | Helipad  | –   |
|                              | Ship landing facilities  | –   |
| Vehicles at station          | Sea transportation   | Motor boat, canoe   |
|                              | Land transportation  | 4x4 car, van, snowmobile, bicycles  |
| Transport and freight        | Transport to station   | Car (plane to Kuusamo town possible and cheap)  |
|                              | Number of ship visits per year (period)  | –   |
|                              | Number of flight visits per year (period)  | –   |





| Features within study area       |   |
|----------------------------------|---|
| <input type="radio"/>            | Ice cap or glacier                                    |
| <input type="radio"/>            | Permanent snowpatches                                 |
| <input checked="" type="radio"/> | Mountain  |
| <input checked="" type="radio"/> | Valley  |
| <input checked="" type="radio"/> | Shoreline   |
| <input type="radio"/>            | Tundra  |
| <input checked="" type="radio"/> | Tree line   |
| <input checked="" type="radio"/> | Other (Rivers, streams, springs, forest, bogs, mires) |
| Main science disciplines         |   |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology                  |
| <input type="radio"/>            | Astrophysics  |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics                     |
| <input type="radio"/>            | Isotopic chemistry                                    |
| <input checked="" type="radio"/> | Climatology, Climate Change                           |
| <input checked="" type="radio"/> | Environmental sciences, Pollution                     |
| <input checked="" type="radio"/> | Geodesy   |
| <input checked="" type="radio"/> | Geology, Sedimentology                                |
| <input checked="" type="radio"/> | Geophysics  |
| <input type="radio"/>            | Glaciology  |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                            |
| <input checked="" type="radio"/> | Soil science  |
| <input checked="" type="radio"/> | Human biology, Medicine                               |
| <input checked="" type="radio"/> | Mapping, GIS  |
| <input checked="" type="radio"/> | Marine biology  |
| <input type="radio"/>            | Oceanography, Fishery                                 |
| <input type="radio"/>            | Microbiology  |
| <input checked="" type="radio"/> | Hydrology   |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                          |
| <input checked="" type="radio"/> | Paleolimnology  |
| <input checked="" type="radio"/> | Paleoecology  |
| <input checked="" type="radio"/> | Limnology   |
| Workshop facilities              |   |
| <input checked="" type="radio"/> | Metal workshop  |
| <input checked="" type="radio"/> | Wood workshop   |
| <input checked="" type="radio"/> | Plexiglas workshop                                    |
| <input checked="" type="radio"/> | Staff available to assist with constructions          |
| Communication                    |   |
| <input checked="" type="radio"/> | Telephone   |
| <input type="radio"/>            | Satellite phone                                       |
| <input checked="" type="radio"/> | VHF   |
| <input checked="" type="radio"/> | E-mail  |
| <input checked="" type="radio"/> | Internet  |
| <input checked="" type="radio"/> | Computer  |
| <input checked="" type="radio"/> | Printer   |
| <input checked="" type="radio"/> | Scanner   |
| <input checked="" type="radio"/> | Fax   |





# KHIBINY



## STATION NAME AND OWNER

The Khibiny Educational and Scientific Station is owned and managed by the Faculty of Geography, M.V. Lomonosov Moscow State University, Moscow, Russia.

## LOCATION

The station is situated in the heart of the Khibiny Mountains on the Kola Peninsula (northwest Russia, 67°38'14" N, 33°43'31" E). The nearest cities are Kirovsk (2 km) and Apatity (23 km).

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Khibiny Mountains are located in the central part of the Kola Peninsula which is located within two vegetation zones – tundra and taiga. The vertical zonation is characterised by a shift from forest-tundra low in the terrain to tundra vegetation at higher

altitudes. The Khibiny Mountains are covered mostly by trees, dwarf shrubs, lichen-shrub, and lichen dominated tundra formations. The Kola Peninsula is the oldest part of the East European Craton with c. 2.5 billion year old Precambrian metamorphic rocks (e.g. greenstone belts, banded iron formations) and associated ore deposits (mainly apatite and iron). The deepest borehole on earth (12 261 m, 1970-1987) was drilled in Sapoljarny (in the NW of the Kola Peninsula close to the Norwegian border, c. 230 km NNE of Khibiny).

## HISTORY AND FACILITIES

The Khibiny Educational and Scientific Station was founded in 1948 by Prof. G.K. Tushinskiy and is a year-round operating field station for scientists and students. The scientific staff on the station includes four research scientists. During the International





Geophysical Year 1957-1958, the station organised many observations and expeditions; and during the International Polar Year 2007-2008 it was involved in numerous international projects. The station facilities include a student accommodation building with dormitories, lecture room, laboratory, and dining room, as well as a staff accommodation building with a few flats available for visiting researchers. A minibus and a 4 WD truck with drivers are available on request. Every year the station hosts summer field courses and winter scientific expeditions for students as well as researchers with specific field projects (in total more than 200 visitors per year).

### GENERAL RESEARCH AND DATABASES

The Khibiny Educational and Scientific Station cooperates with the Centre of Avalanche Protection of JSC "Apatit" (a town-planning company) and the Laboratory of Snow Avalanches and Mudflows of the Moscow State University. The scientific work carried out at the station is fully cooperative and researchers work in collaboration with various units of the Faculty of Geography (Moscow State University) and other research organisations in Russia. Post-graduate students and scientists carry out research

on glaciology, soil science, bio-geography, landscape science, meteorology, and geomorphology.

The main research fields are: GIS-mapping ("Khibiny Mountain GIS"), avalanche research (compilation of an avalanche database, avalanche mapping, estimation of activity, hazards and risks of avalanches, GIS), snow cover observations and modelling (GIS and SnowPack Software), meteorological and small glacier observations, and investigation of nival processes in the Khibiny Mountains.

### HUMAN DIMENSION

The nearest cities are Kirovsk (2 km away, with 32 000 inhabitants) and Apatity (23 km away, with 60 000 inhabitants). 85 km from the station lies Lovozero, a settlement of the local Sami communities (c. 3000 inhabitants).

### ACCESS

The Khibiny Educational and Scientific Station can be reached by car, bus or train. The nearest international airport is Murmansk, c. 120 km north of Khibiny, the nearest domestic one is in Apatity (23 km away).



| Category                     | Sub-Category                                       | Khibiny Educational and Scientific Station  |
|------------------------------|--|---|
| Website                      |  | <a href="http://www.eng.geogr.msu.ru/practics/stations/khibiny">http://www.eng.geogr.msu.ru/practics/stations/khibiny</a> |
| Country                      |  | Russia  |
| Opening year                 |  | 1948  |
| Operational period           |  | Year-round  |
| Permitting issues categories | Permits required for access to the station         | Yes   |
|                              | Permits required for studies                       | Yes   |
|                              | Contact (permit issues)                            | khibiny_msu@mail.ru   |
| Facility owner and manager   | Name of the facility owner                         | The Faculty of Geography M.V. Lomonosov Moscow State University   |
|                              | Owner status                                       | Government  |
|                              | Institution responsible for managing the station   | The Faculty of Geography M.V. Lomonosov Moscow State University   |
|                              | Contact (access to station)                        | khibiny_msu@mail.ru   |
| Other institutions           | Name   | –   |
|                              | Country  | –   |
| Location                     | Geographical coordinates                           | 67°38'14" N, 33°43'31" E  |
|                              | Altitude of station                                | 362 m a.s.l.  |
|                              | Min. altitude within study area                    | 150 m a.s.l.  |
|                              | Max. altitude within study area                    | 1200 m a.s.l.   |
|                              | Nearest town/settlement                            | Kirovsk (30 000 inhabitants)  |
|                              | Distance to nearest town/settlement                | 3 km  |
|                              | Map  | Map (1:250 000), satellite image, Google Earth with low resolution  |
| Climate                      | Climate zone                                       | Low Arctic  |
|                              | Permafrost   | Sporadic  |
|                              | Years measured                                     | 1976-2011   |
|                              | Mean annual temperature                            | -0.2 °C   |
|                              | Mean temperature in February                       | -11.5 °C  |
|                              | Mean temperature in July                           | 12.6 °C   |
|                              | Mean annual wind speed                             | 5 m/s   |
|                              | Max. wind speed                                    | 27 m/s  |
|                              | Dominant wind direction                            | NNW   |
|                              | Total annual precipitation                         | 340 mm  |
|                              | Precipitation type                                 | Rain, snow, hail  |
|                              | Ice break up                                       | Lake: May/June  |
| Station facilities           | Area under roof                                    | 2000 m <sup>2</sup>   |
|                              | Scientific laboratories                            | 200 m <sup>2</sup>  |
|                              | Logistic   | 500 m <sup>2</sup>  |
|                              | Number of rooms (beds)                             | 20 (for accomodation, 70 beds), 1 cantine, 3 laboratories/auditoriums, 1 library, 8 kitchens                              |
|                              | Number of staff on station (peak/off season)       | 10/5-6  |
|                              | Max. number of visitors at a time                  | 80  |
|                              | Showers  | Yes   |
|                              | Laundry facilities                                 | Yes   |
|                              | Power supply (type)                                | Electricity 220 V   |
|                              | Power supply                                       | 24 hours per day  |
| Scientific equipment         | Specific device                                    | Basic laboratory equipment; advanced weather station, etc.  |
|                              | Scientific services offered                        | Free technical support; free access to sets of data   |
| Medical facilities           | Medical facilities                                 | Standard (basic)  |
|                              | Medical suite                                      | –   |
|                              | No. of staff with basic medical training or doctor | –   |
|                              | Distance to hospital (estimated time)              | 2 km (20 min)   |
|                              | Compulsory safety equipment                        | –   |
| Landing facilities           | Recommended safety equipment                       | –   |
|                              | Airstrip (Length × Width)                          | –   |
|                              | Airstrip surface                                   | –   |
|                              | Helipad  | –   |
| Vehicles at station          | Ship landing facilities                            | –   |
|                              | Sea transportation                                 | –   |
|                              | Land transportation                                | 4x4 Truck, minibus  |
| Transport and freight        | Transport to station                               | Bus, train, plane (50 km), car  |
|                              | Number of ship visits per year (period)            | –   |
|                              | Number of flight visits per year (period)          | –   |





|   |  |  |
|---|--|--|
| <b>Features within study area</b>   |  | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
| <input type="radio"/> Ice cap or glacier<br><input checked="" type="radio"/> Permanent snowpatches<br><input checked="" type="radio"/> Mountain<br><input checked="" type="radio"/> Valley<br><input type="radio"/> Shoreline<br><input checked="" type="radio"/> Tundra<br><input checked="" type="radio"/> Tree line<br><input type="radio"/> Other   |  |  |
| <b>Main science disciplines</b>   |  |  |
| <input checked="" type="radio"/> Anthropology, Sociology, Archaeology<br><input type="radio"/> Astrophysics<br><input checked="" type="radio"/> Atmospheric chemistry and physics<br><input type="radio"/> Isotopic chemistry<br><input checked="" type="radio"/> Climatology, Climate Change<br><input type="radio"/> Environmental sciences, Pollution<br><input type="radio"/> Geodesy<br><input type="radio"/> Geology, Sedimentology<br><input type="radio"/> Geophysics<br><input type="radio"/> Glaciology<br><input checked="" type="radio"/> Geocryology, Geomorphology<br><input checked="" type="radio"/> Soil science<br><input type="radio"/> Human biology, Medicine<br><input checked="" type="radio"/> Mapping, GIS<br><input checked="" type="radio"/> Marine biology<br><input type="radio"/> Oceanography, Fishery<br><input type="radio"/> Microbiology<br><input checked="" type="radio"/> Hydrology<br><input checked="" type="radio"/> Terrestrial biology, Ecology<br><input type="radio"/> Paleolimnology<br><input type="radio"/> Paleoecology<br><input type="radio"/> Limnology |  |  |
| <b>Workshop facilities</b>  |  |  |
| <input checked="" type="radio"/> Metal workshop<br><input checked="" type="radio"/> Wood workshop<br><input type="radio"/> Plexiglas workshop<br><input checked="" type="radio"/> Staff available to assist with constructions  |  |  |
| <b>Communication</b>  |  |  |
| <input checked="" type="radio"/> Telephone<br><input type="radio"/> Satellite phone<br><input type="radio"/> VHF<br><input checked="" type="radio"/> E-mail<br><input checked="" type="radio"/> Internet<br><input checked="" type="radio"/> Computer<br><input checked="" type="radio"/> Printer<br><input checked="" type="radio"/> Scanner<br><input checked="" type="radio"/> Fax   |  |  |





# MUKHRINO

## STATION NAME AND OWNER

Mukhrino Field Station is owned and run by the UNESCO Chair on Environmental Dynamics and Climate Change at the Yugra State University, Khanty-Mansiysk, Russia.

## LOCATION

The Mukhrino Field Station is located at the east bank of the Irtysh River near the confluence with the Ob River in the central taiga area of Western Siberia (60°54' N, 68°42' E), 26 km west of the town of Khanty-Mansiysk (60 000 inhabitants).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Due to the severe continental climate, the environmental conditions in the region are comparable with the sub-arctic zone of Northern Europe. The research site is representative for the Western Siberian pristine carbon accumulating peatland ecosystem ("plain mires"). The mires cover c. 60 % of the land surface and can be regarded as important sources/sinks of greenhouse gases and aerosols.

The main mire type of the site is raised bogs of the type "Pine-dwarf shrubs-bogs" ("ryam") characterised by pine trees, *Ledum*

*palustre* and dwarf shrubs, with areas of *Sphagnum fuscum*.

Interspersed are mires of the type "poor fens" (partly drained in the summer) dominated by *Carex lasiocarpa* and other graminoids, and *Sphagnum balticum*. Also ridge-hollow complexes, consisting of bog ridges and poor fen hollows are present. The (avi-) fauna includes many species typical for the peatland and extensive river floodplains near the station and of the relatively dry mixed forests between the peatlands and the floodplains.

## HISTORY AND FACILITIES

The Mukhrino Field Station was opened in 2009. It is a two-storey wooden building with study/laboratory rooms, beds for 14 persons, a simple dining room with kitchen, and a Russian sauna. The experimental field is equipped with 1 km long walking boards, which cross the main mire ecosystem types and facilitate researcher's access to perform experiments and measurements in and above the mires, without disturbing the ecosystems. In the centre of the field site, an equipment shelter has been built. Distributed across the field site are clusters of thermologgers, water level recorders, and nine semi-automatic chambers (1 m<sup>2</sup>) for measurements of greenhouse gas fluxes.





### GENERAL RESEARCH AND DATABASES

The Mukhrino Field Station was primarily established for studies of the biodiversity (fauna, vegetation, mycology) and hydrology of the mire ecosystems, of the carbon storage in the peat layers, and for measurements of greenhouse gas fluxes to and from the pristine peatland complex, located next to the field station. The station is also used for analyses of Climate Change effects in peatland ecosystems and carbon balance, and the spatial comparison of key areas in S-N transects (57-67° N) as an analogue for Climate Change over time. The station houses specialists in vegetation science, remote sensing, mycology, hydrology, and greenhouse gas emission measurements. The Mukhrino Field Station welcomes foreign and national guests for collaboration, research and educational purposes.

### HUMAN DIMENSION

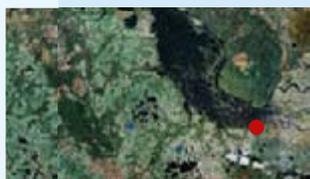
Near the Mukhrino Field Station, a limited number of local people, mostly from Khanty-Mansiysk town, can be met while fishing in the rivers and lakes. Hunting is mainly a winter activity using snowmobiles. The wider area is part of oil/gas concession area, but no activities are expected near the station for this decade.

### ACCESS

The Mukhrino Field Station is accessible from Khanty-Mansiysk by road (first 20 km) and then either by boat (in spring and early summer only), by foot (7 km, in late summer) or by snowmobile (in winter and spring). Khanty-Mansiysk has an international airport with daily connections to Moscow.



| Category                     | Sub-Category  | Mukhrino Field Station   |
|------------------------------|---|--|
| Website                      |   | <a href="http://www.ugrasu.ru/UNESCO_Chair/">http://www.ugrasu.ru/UNESCO_Chair/</a>  |
| Country                      |   | Russia   |
| Opening year                 |   | 2009   |
| Operational period           |   | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>Yes<br><a href="mailto:w.bleuten@uu.nl">w.bleuten@uu.nl</a> , <a href="mailto:e_lapshina@ugrasu.ru">e_lapshina@ugrasu.ru</a>  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Yugra State University<br>Government<br>UNESCO Chair on Environmental Dynamics and Climate Change<br><a href="mailto:w.bleuten@uu.nl">w.bleuten@uu.nl</a> , <a href="mailto:e_lapshina@ugrasu.ru">e_lapshina@ugrasu.ru</a><br><a href="http://www.ugrasu.ru/UNESCO_Chair_en_muhrino/">http://www.ugrasu.ru/UNESCO_Chair_en_muhrino/</a>    |
| Other institutions           | Name<br>Country   | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 60°54' N, 68°42' E<br>60 m a.s.l.<br>25 m a.s.l.<br>120 m a.s.l.<br>Khanty-Mansiysk (60 000 inhabitants)<br>28 km<br>Satellite images (resolution 30, 12 and 2 m), maps (1:25 000 and smaller)   |
| Climate                      | Climate zone  | Sub-Arctic   |
|                              | Permafrost  | Palsas   |
|                              | Years measured  | –  |
|                              | Mean annual temperature   | -1.3 °C  |
|                              | Mean temperature in February  | –  |
|                              | Mean temperature in July  | 17.1 °C  |
|                              | Mean annual wind speed  | –  |
|                              | Max. wind speed   | –  |
|                              | Dominant wind direction   | NW, W, SW  |
|                              | Total annual precipitation  | 553 mm   |
| Precipitation type           | Rain, hails, snow (40% of the total)  |  |
| Ice break up                 | Lakes and rivers: c. mid May  |  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br><br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 240 m <sup>2</sup><br>80 m <sup>2</sup><br>200 m <sup>2</sup><br>A two-floor wooden building with study/laboratory rooms, simple equipped dining room and kitchen, beds for 14 persons and a (Russian) sauna<br><br>1-3 (year-round)<br>20<br>–<br>–<br>230 V Eurasian two/three-pin plug and 12 V (solar, wind power)<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | –<br>–   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Basic<br>–<br>–<br>28 km<br>–<br>–   |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | –<br>–<br>–<br>Port, landing wharf, pontoon  |
| Vehicles at station          | Sea transportation<br>Land transportation   | Ship (30 m), 2 boats (4 m)<br>Car/pick-up, ATV, 3 Snowscooters   |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Ship/boat/car/hike/snowmobile (depending on the season)<br>June-September<br>–   |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input type="radio"/>            | Mountain                                     |
| <input type="radio"/>            | Valley                                       |
| <input type="radio"/>            | Shoreline                                    |
| <input type="radio"/>            | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Middle taiga (Boreal))                |
| <input type="radio"/>            | Yes  |
| <input type="radio"/>            | No   |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input type="radio"/>            | Geology, Sedimentology                       |
| <input type="radio"/>            | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input checked="" type="radio"/> | Oceanography, Fishery                        |
| <input checked="" type="radio"/> | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input type="radio"/>            | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input type="radio"/>            | Limnology                                    |
| Workshop facilities              |  |
| <input type="radio"/>            | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input type="radio"/>            | Scanner                                      |
| <input type="radio"/>            | Fax  |





# NUMTO PARK

## STATION NAME AND OWNER

The Numto Park Station belongs to the UNESCO Chair on Environmental Dynamics and Climate Change at the Yugra State University, Khanty-Mansiysk, Russia.

## LOCATION

The Numto Park Station is located in Western Siberia (south of Yamal Peninsula), c. 300 km south of the mouth of the Ob River in the regional park "Numto" (63°42' N, 70°54' E).

## HISTORY AND FACILITIES

The Numto Park Station is a newly built station at the location of the old meteorological station of Roshydromet. The station was officially opened in 2011 and welcomes guests from 2012 on.

It has basic field accommodation and welcomes foreign and national guests for research cooperation and educational purposes. The station includes an automatic meteorological station.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located at the southern margin of the forest tundra zone. The area includes frozen and unfrozen peatlands and mires (discontinuous permafrost). Typically, the landscape consists of raised flat palsas, fens, raised bogs, and numerous lakes which are partly the result of thermokarst. The higher parts, i.e. flat palsas, are underlain by permafrost. Between the palsas unfrozen fens and raised bogs ("ryam") are present. Also some of the thermokarst lakes have been drained by thawing of permafrost and have changed into fen like vegetation.





Numto Regional Park is famous for the high number of birds, both breeding and migrating species. It is a major stop-over area for migrating birds.

#### GENERAL RESEARCH AND DATABASES

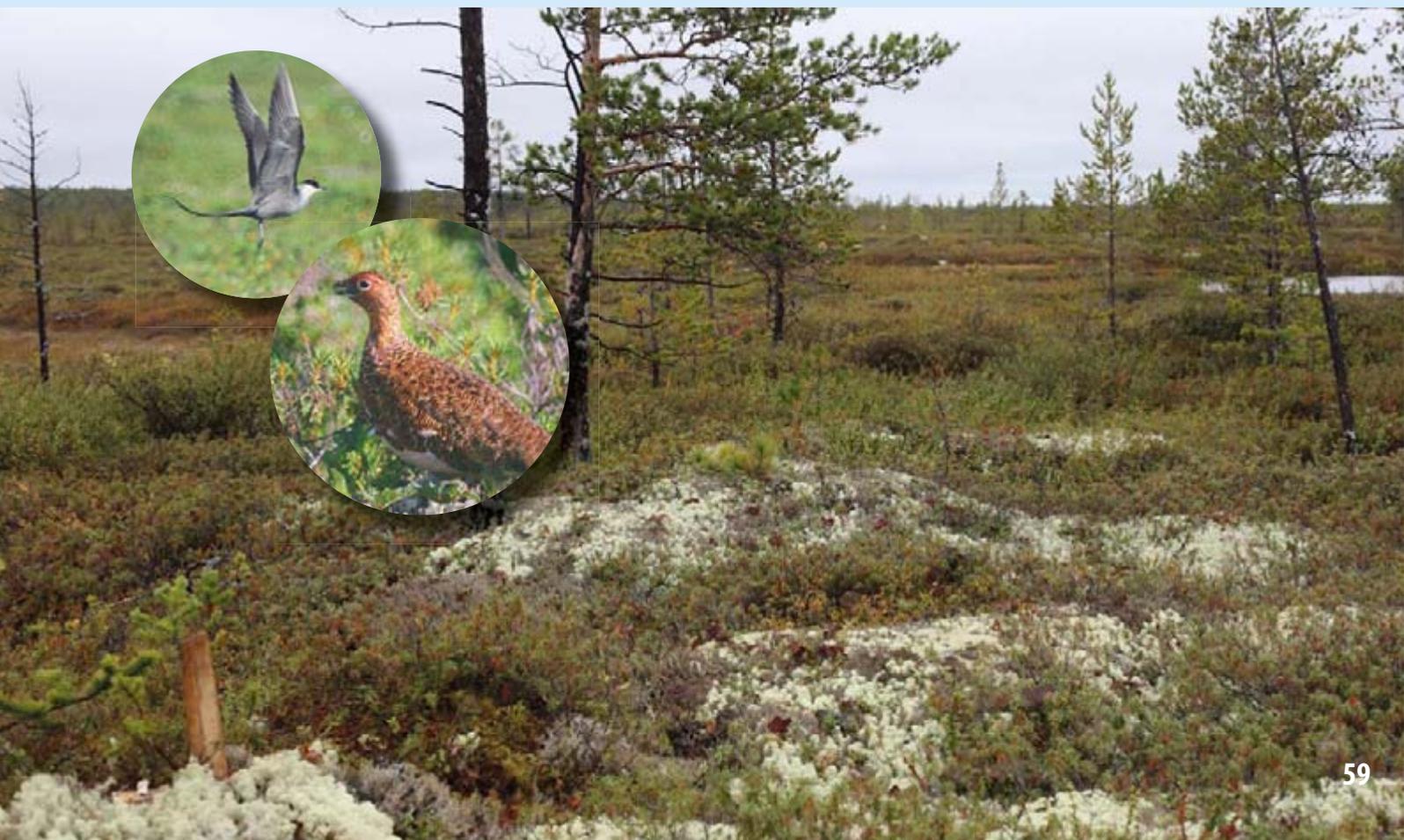
The Numto Park Station is a site under development. Staff from Yugra State University (including specialists in vegetation science, climatology, and land classification) is involved in setting up and developing the station. One major research topic will be the effects of climate warming and permafrost thawing on the frozen and unfrozen peatland ecosystems. Breeding and migrating birds as well as other fauna are being monitored by rangers of the Numto Regional Park. The Numto Regional Park has historical meteorological and faunal data.

#### HUMAN DIMENSION

Small groups of indigenous people live in Numto Village and in the Numto Regional Park where they fish and hunt. Few families herd reindeers in isolated areas.

#### ACCESS

Numto Park Station is located near the small Numto Village, which can be reached by helicopter and 4WD car (snowmobile in winter). The nearest airports is in Surgut (200 km by normal and 100 km by dirt road). In winter, the station is easier to reach by winter roads. From the international airport Khanty-Mansiysk, the distance by helicopter is 260 km, by road 350-450 km (depending on the road). There is no summer road connection between the station and the nearest Numto Village.



| Category                     | Sub-Category                                       | Numto Park Station  |
|------------------------------|--|---|
| Website                      |  | <a href="http://www.ugrasu.ru/UNESCO_Chair/">http://www.ugrasu.ru/UNESCO_Chair/</a>                                   |
| Country                      |  | Russia  |
| Opening year                 |  | 2012  |
| Operational period           |  | Year-round  |
| Permitting issues categories | Permits required for access to the station         | –   |
|                              | Permits required for studies                       | Yes   |
|                              | Contact (permit issues)                            | <a href="mailto:e_lapshina@ugrasu.ru">e_lapshina@ugrasu.ru</a>  |
| Facility owner and manager   | Name of the facility owner                         | Yugra State University  |
|                              | Owner status                                       | Government  |
|                              | Institution responsible for managing the station   | UNESCO Chair on Environmental Dynamics and Climate Change   |
|                              | Contact (access to station)                        | <a href="mailto:w.bleuten@uu.nl">w.bleuten@uu.nl</a> , <a href="mailto:e_lapshina@ugrasu.ru">e_lapshina@ugrasu.ru</a> |
| Other institutions           | Name   | –   |
|                              | Country  | –   |
| Location                     | Geographical coordinates                           | 63°42' N, 70°54'E   |
|                              | Altitude of station                                | –   |
|                              | Min. altitude within study area                    | –   |
|                              | Max. altitude within study area                    | –   |
|                              | Nearest town/settlement                            | Numto (60 inhabitants)  |
|                              | Distance to nearest town/settlement                | 4 km  |
|                              | Map  | Satellite images (resolution 30, 12 m), maps (1:50 000 and smaller)   |
| Climate                      | Climate zone                                       | Sub-Arctic  |
|                              | Permafrost   | Discontinuous   |
|                              | Years measured                                     | –   |
|                              | Mean annual temperature                            | -5.6 °C   |
|                              | Mean temperature in February                       | –   |
|                              | Mean temperature in July                           | 15 °C   |
|                              | Mean annual wind speed                             | –   |
|                              | Max. wind speed                                    | –   |
|                              | Dominant wind direction                            | N, NW, W, SW  |
|                              | Total annual precipitation                         | 555 mm  |
|                              | Precipitation type                                 | Rain, hails, snow (40% of the total)  |
| Ice break up                 | Lakes: c. at the beginning of June                 |   |
| Station facilities           | Area under roof                                    | 48 m <sup>2</sup>   |
|                              | Scientific laboratories                            | –   |
|                              | Logistic   | –   |
|                              | Number of rooms (beds)                             | 1 room  |
|                              | Number of staff on station (peak/off season)       | 1/1   |
|                              | Max. number of visitors at a time                  | 6   |
|                              | Showers  | –   |
|                              | Laundry facilities                                 | –   |
|                              | Power supply (type)                                | Aggregate 230 V   |
| Power supply                 | On demand  |   |
| Scientific equipment         | Specific device                                    | None, station in development  |
|                              | Scientific services offered                        | –   |
| Medical facilities           | Medical facilities                                 | Basic   |
|                              | Medical suite                                      | –   |
|                              | No. of staff with basic medical training or doctor | –   |
|                              | Distance to hospital (estimated time)              | 450 km  |
|                              | Compulsory safety equipment                        | –   |
| Landing facilities           | Recommended safety equipment                       | –   |
|                              | Airstrip (Length × Width)                          | –   |
|                              | Airstrip surface                                   | –   |
|                              | Helipad  | Helipad in nearby village   |
| Vehicles at station          | Ship landing facilities                            | –   |
|                              | Sea transportation                                 | –   |
| Transport and freight        | Land transportation                                | ATV, snowscooter, snowmobile  |
|                              | Transport to station                               | Car and hike or car and snowmobile (depending on the season)  |
|                              | Number of ship visits per year (period)            | –   |
|                              | Number of flight visits per year (period)          | –   |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input type="radio"/>            | Mountain                                     |
| <input type="radio"/>            | Valley                                       |
| <input type="radio"/>            | Shoreline                                    |
| <input type="radio"/>            | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Forest Tundra)                        |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input type="radio"/>            | Geology, Sedimentology                       |
| <input type="radio"/>            | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input checked="" type="radio"/> | Oceanography, Fishery                        |
| <input checked="" type="radio"/> | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input type="radio"/>            | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input type="radio"/>            | Limnology                                    |
| Workshop facilities              |  |
| <input type="radio"/>            | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input type="radio"/>            | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input type="radio"/>            | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input type="radio"/>            | E-mail                                       |
| <input type="radio"/>            | Internet                                     |
| <input type="radio"/>            | Computer                                     |
| <input type="radio"/>            | Printer                                      |
| <input type="radio"/>            | Scanner                                      |
| <input type="radio"/>            | Fax  |





# SAMOYLOV

## STATION NAME AND OWNER

The Russian-German Research Station Samoylov is owned and run by the Lena Delta Reserve (Russia) and the Alfred Wegener Institute for Polar and Marine Research (Germany).

## LOCATION

Samoylov Research Station is located at the southern coast of Samoylov Island in the southern part of the Lena River Delta, Northeast Siberia, close to the Laptev Sea (72°22' N, 126°28' E). The Lena River Delta is the largest delta system in the Arctic and Samoylov Island is part of the Lena Delta Reserve, the largest protected area in Russia. The nearest settlement is Tiksi, located about 115 km to the southeast, and home to c. 5000 inhabitants.

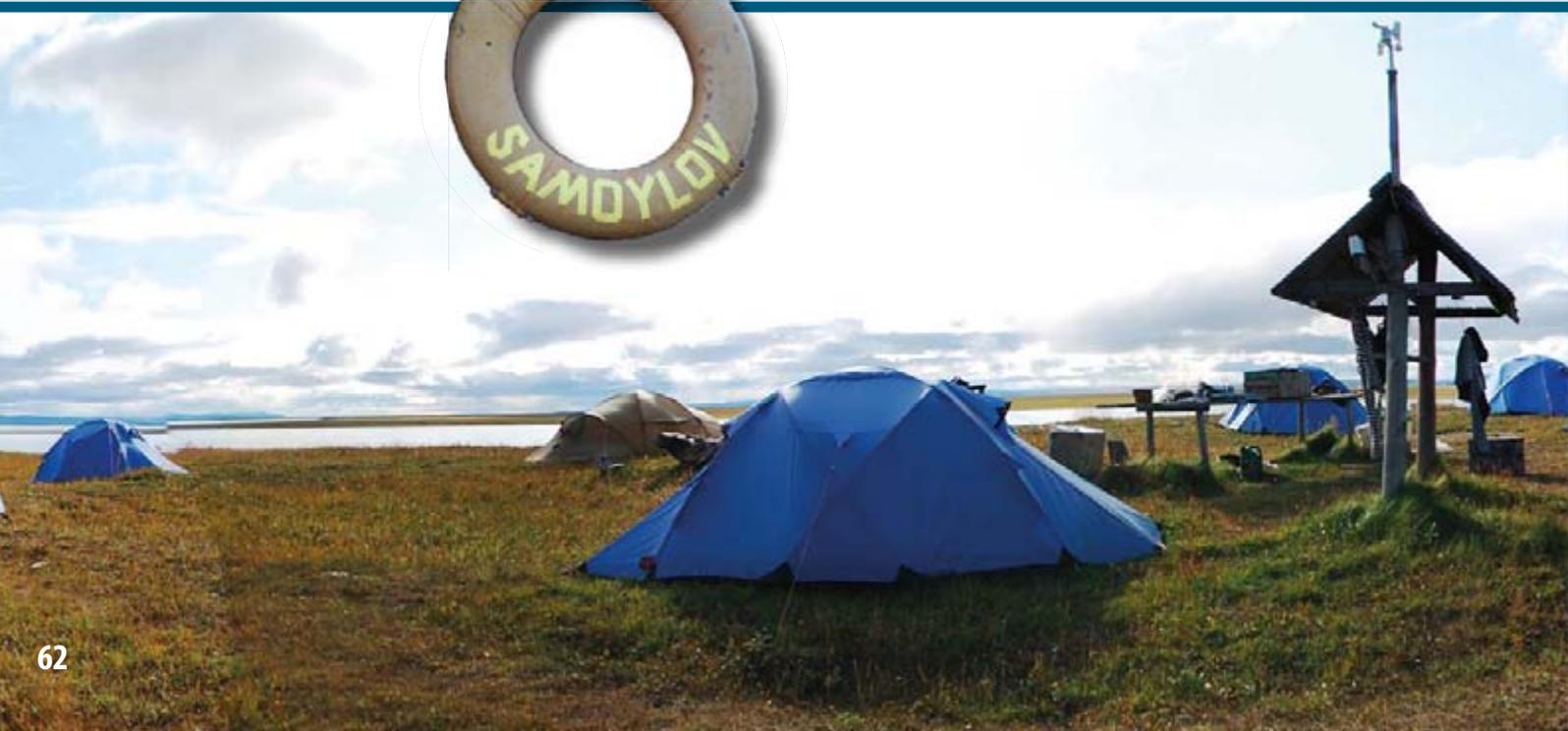
## BIODIVERSITY AND NATURAL ENVIRONMENT

Samoylov Island is situated in the youngest part of the Lena Delta in the zone of continuous permafrost. It covers an area of about 5 km<sup>2</sup> and is dominated by wet polygonal tundra, characterised by low-centered ice-wedge polygons. The regional arctic-continental climate allows maximum thaw depths of about 0.5 m.

Hydrophytic sedges such as *Carex aquatilis*, *Carex chordorrhiza*, and *Carex rariflora*, as well as mosses (e.g. *Drepanocladus revolvens*, *Meesia triquetra*, and *Aulacomnium turgidum*) dominate the vegetation in the wet polygon centers and on their edges. Mesophytic dwarf shrubs such as *Dryas octopetala* and *Salix glauca*, forbs (*Astragalus frigidus*), and mosses (*Hylocomium splendens*, *Timmia austriaca*) dominate the polygon rims.

## HISTORY AND FACILITIES

The station was originally built as a logistics base for the Lena Delta Reserve. After its extension in 2005, it became an official Russian-German research station (in 2006). Altogether, the station can accommodate ten people during winter time and up to 16 people in the summer when tents can also be used. The station also includes working space, laboratories, cold storage in a permafrost cellar (Russian = lednik), and a separate sauna. Long-term experimental plots – including automatic climate and soil stations as well as devices for trace gas flux measurements – can easily be reached by a twenty minutes walk from the station. In 2011, the construction of a new Russian station (owned by the Siberian Branch of the Russian Academy of Sciences) was initi-





ated and it is expected to open in the spring of 2013, to replace the existing Samoylov Station.

### GENERAL RESEARCH AND DATABASES

The Lena Delta is a key area for studies of the dynamics and development of permafrost in the Siberian Arctic. The research focuses on the ecosystem-atmosphere interactions on various spatial and temporal scales in order to assess and predict climate and environmental changes in the Lena River Delta region. The main objectives are to study the community, structure, and dynamics of microbial populations involved in the methane cycle as well as the processes controlling exchange of methane,

carbon dioxide, and energy on different scales. Other important long-term studies focus on climate and permafrost monitoring, paleo-environmental reconstruction, river hydrology, geomorphology, permafrost dynamics, arctic coastal dynamics, and hydrobiology (e.g. zooplankton dynamics). For more information see Hubberten, H.-W. et al. 2003 (published 2006): *Polarforschung* 73, 111-116. Data and results from Samoylov can be found in the PANGAEA database ([www.pangaea.de](http://www.pangaea.de)).

### HUMAN DIMENSION

The human influence on the Lena Delta is minimal due to its status as a nature reserve with three rangers living in the reserve throughout most of the year. However, there is some subsistence fishing in the summer, and occasionally river cruise ships pass by.

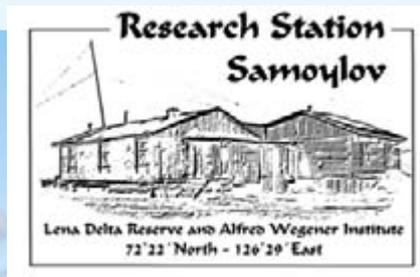
### ACCESS

The Russian-German Research Station Samoylov can be reached from Tiksi (connected by regular air service to Moscow and Yakutsk) by helicopter in about 45 minutes and by river boat in about 12 hours. Winter transport is also possible by truck or tank on the ice of the Lena River.



| Category                                     | Sub-Category                                       | Samoylov Research Station  |                    |
|--|--|--|--------------------|
| Website                                      |  | www.awi.de/en/infrastructure/stations/samoylov_station   |                    |
| Country                                      |  | Russia   |                    |
| Opening year                                 |  | 1998   |                    |
| Operational period                           |  | (April-May), June-August, (September-November)   |                    |
| Permitting issues categories                 | Permits required for access to the station         | Yes  |                    |
|  | Permits required for studies                       | Yes  |                    |
|  | Contact (permit issues)                            | waldemar.schneider@awi.de  |                    |
| Facility owner and manager                   | Name of the facility owner                         | Lena Delta Reserve (Russia) and Alfred Wegener Institute for Polar and Marine Research (Germany) |                    |
|  | Owner status                                       | Private  |                    |
|  | Institution responsible for managing the station   | Alfred Wegener Institute for Polar and Marine Research   |                    |
|  | Contact (access to station)                        | moritz.langer@awi.de   |                    |
|  | Website (institution)                              | www.awi.de   |                    |
| Other institutions                           | Name   | AWI, LDR, PIY  |                    |
|  | Country  | Germany, Russia  |                    |
| Location                                     | Geographical coordinates                           | 72°22' N, 126°28' E  |                    |
|  | Altitude of station                                | 12 m a.s.l.  |                    |
|  | Min. altitude within study area                    | 0 m a.s.l.   |                    |
|  | Max. altitude within study area                    | 50 m a.s.l.  |                    |
|  | Nearest town/settlement                            | Tiksi (5000 inhabitants)   |                    |
|  | Distance to nearest town/settlement                | 120 km   |                    |
|  | Map  | Aerial image, satellite image, Google Earth with low resolution                                  |                    |
| Climate                                      | Climate zone                                       | Low Arctic   |                    |
|  | Permafrost   | Continuous   |                    |
|  | Years measured                                     | 1998-2010 (with gaps)  |                    |
|  | Mean annual temperature                            | -13.6 °C   |                    |
|  | Mean temperature in February                       | -33.2 °C   |                    |
|  | Mean temperature in July                           | 9.3 °C   |                    |
|  | Mean annual wind speed                             | 4.35 m/s   |                    |
|  | Max. wind speed                                    | 17.7 m/s   |                    |
|  | Dominant wind direction                            | NE   |                    |
|  | Total annual precipitation                         | 319 mm   |                    |
|  | Precipitation type                                 | Rain, snow   |                    |
|  | Ice break up                                       | Lena River backwater, May  |                    |
|  | Station facilities                                 | Area under roof  | 103 m <sup>2</sup> |
|  |  | Scientific laboratories  | 25 m <sup>2</sup>  |
| Logistic                                     |  | 12 m <sup>2</sup> (storage)  |                    |
| Number of rooms (beds)                       |  | 4 sleeping rooms (10 beds), 1 living room, 2 labs, 1 kitchen                                     |                    |
| Number of staff on station (peak/off season) |  | 1/0  |                    |
| Max. number of visitors at a time            |  | 13   |                    |
| Showers                                      |  | -  |                    |
| Laundry facilities                           |  | -  |                    |
| Power supply (type)                          |  | 6 kVA diesel generator and 400 W wind generator (under reconstruction)                           |                    |
| Power supply                                 |  | 6-12 hours diesel, 24 hours wind   |                    |
| Scientific equipment                         | Specific device                                    | -  |                    |
|  | Scientific services offered                        | -  |                    |
| Medical facilities                           | Medical facilities                                 | -  |                    |
|  | Medical suite                                      | -  |                    |
|  | No. of staff with basic medical training or doctor | 1-2  |                    |
|  | Distance to hospital (estimated time)              | 120 km (1 hour by helicopter)  |                    |
|  | Compulsory safety equipment                        | -  |                    |
| Recommended safety equipment                 | -  |  |                    |
| Landing facilities                           | Airstrip (Length × Width)                          | -  |                    |
|  | Airstrip surface                                   | -  |                    |
|  | Helipad  | No helipad, just tundra  |                    |
|  | Ship landing facilities                            | -  |                    |
| Vehicles at station                          | Sea transportation                                 | Zodiac (rubber boot)   |                    |
|  | Land transportation                                | Quad with hanger   |                    |
| Transport and freight                        | Transport to station                               | Commercial flight to Tiksi, then by helicopter or boat   |                    |
|  | Number of ship visits per year (period)            | No regular intervals   |                    |
|  | Number of flight visits per year (period)          | Once every two weeks (May – October)   |                    |





#### Features within study area

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Ice-rich permafrost, ice-wedge polygons, thermokarst lakes, river delta)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

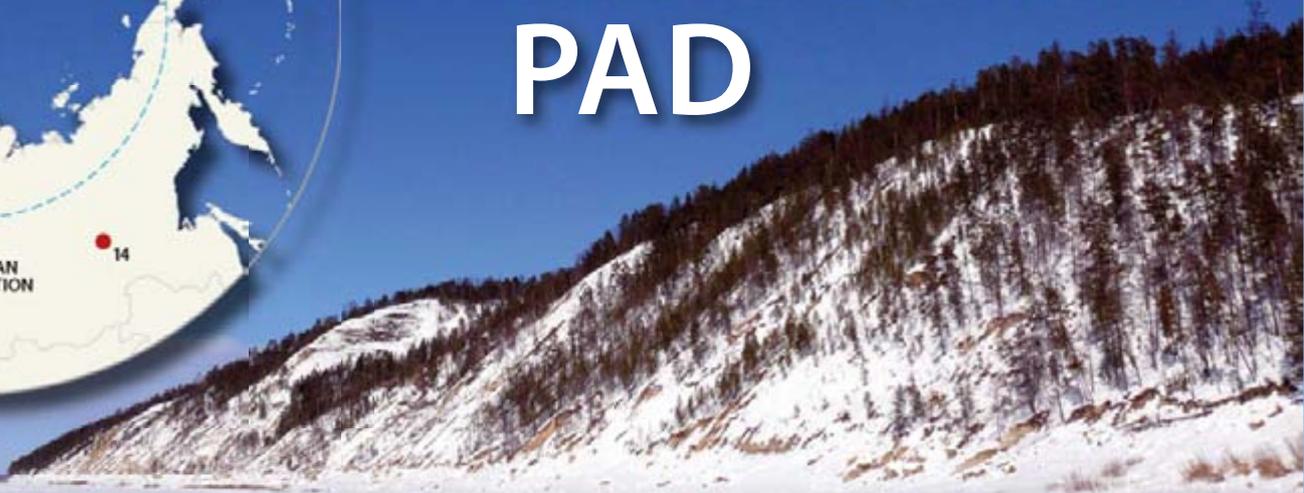
#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail (via satellite)
- Internet
- Computer (only one computer for the e-mail system)
- Printer
- Scanner
- Fax





# SPASSKAYA PAD



## STATION NAME AND OWNER

The Spasskaya Pad Scientific Forest Station is owned and run by the Institute for Biological Problems of Cryolithozone (Siberian Branch of the Russian Academy of Sciences – IBPC SB RAS).

## LOCATION

The Spasskaya Pad Scientific Forest Station (62°14' N, 129°37' E; elevation approx. 220 m a.s.l.; study area 4.43 km<sup>2</sup>) is located on a Pleistocene terrace at the western bank of the middle sections of the Lena River in Central Yakutia region of Republic of Sakha (Yakutia), Russian Federation, approximately 20 km north of the city of Yakutsk and around 480 km south of Arctic Circle. This area is located in the zone of continuous permafrost (permafrost thickness over 150 m).

## BIODIVERSITY AND NATURAL ENVIRONMENT

The main ecosystem around the station is boreal light taiga, but there are also pine and birch forests along with alases (specific Yakutian thermokarst formations), meadows, and mixed forests. Main forest types are red-bilberry larch (*Laricetum vacciniosum*), cowberry pines (*Pinetum arctostaphylosum*), and herby birches (*Betuletum mixtoherbosum*).

## HISTORY AND FACILITIES

The Spasskaya Pad Scientific Forest Station was founded in 1952 by the Krasnoyarsk Forest Institute (SB RAS). In 1992, the station was transferred to IBPC SB RAS. It consists of several new or recently renovated buildings. The station is fully equipped with year-round accommodation facilities (10-12 beds, water supply, and kitchen), heating, electricity, portable electrical generators, radiotelephone, computer, printer, scanner, e-mail and internet access, etc. A laboratory is available, equipped with some basic tool-boxes and instruments, drying ovens, refrigerators, scales, etc. There is year-round available sauna and summer-time showers. Outdoor storehouses are available. The station can accommodate up to 30 persons during the summer.

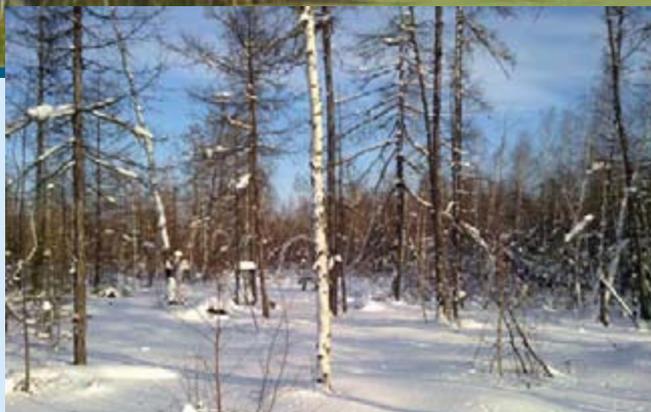
There are two observational towers (32 m in larch forest and 24 m in pine forest) with a wide range of micrometeorological devices and eddy-covariance systems. Three 20 m high crown-access towers with full access to any tree level in larch forest are available for botanical, morphological, and eco-physiological studies.





### GENERAL RESEARCH AND DATABASES

Inter-disciplinary research is conducted at the station with focus on understanding fundamental characteristics and processes of the atmosphere, the biosphere, the hydrosphere, and the cryolithosphere. Ecosystem dynamics and biodiversity are also studied to assess the impact of global environmental change. Research also includes short term monitoring of different aspects of human activity. The obtained data are available at the web-sites of GEWEX-GAME-Siberia, JST CREST, PIN-MATRA, TCOS-Siberia, and CarboEuroFlux projects.

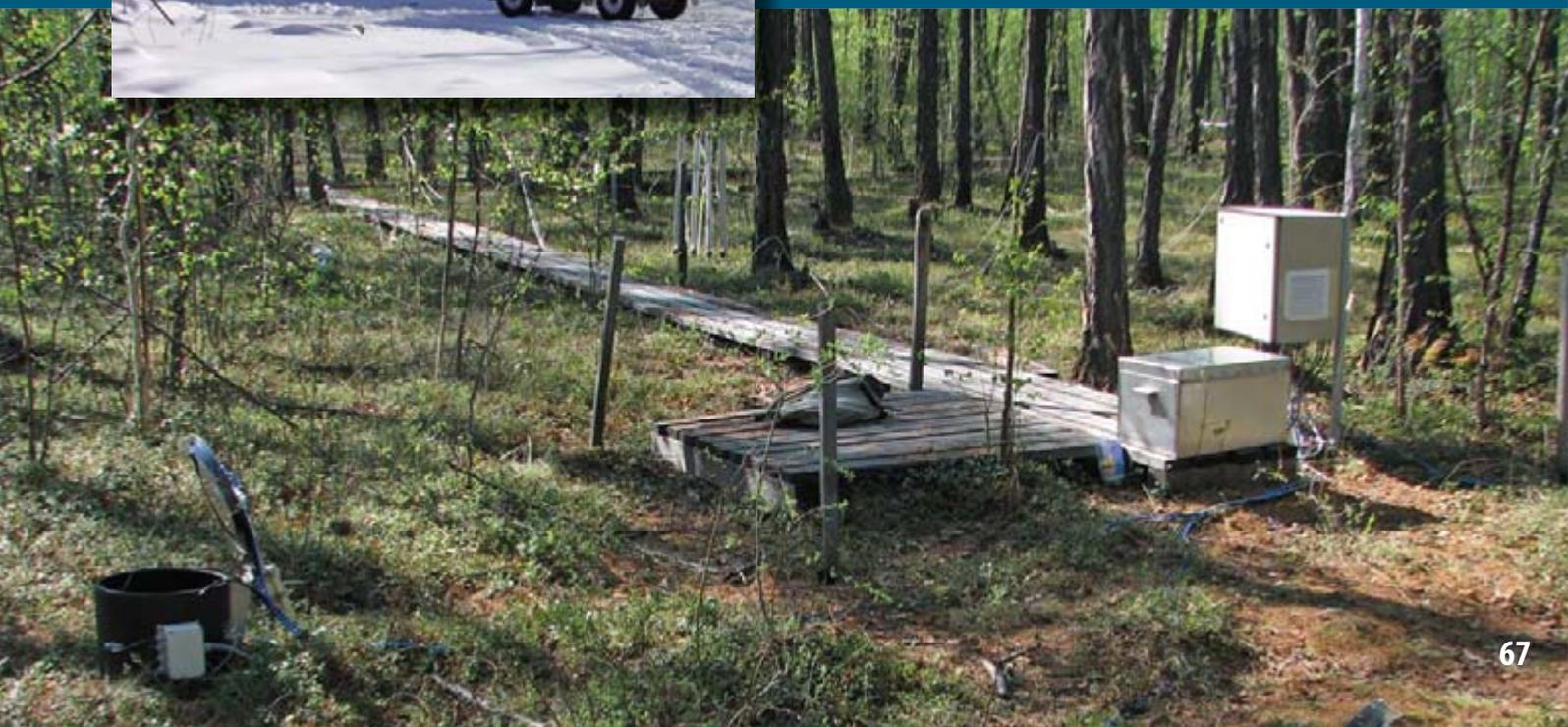


### HUMAN DIMENSION

The main human activities in the areas surrounding the Spasskaya Pad Scientific Forest Station comprise picking berries, collecting mushrooms, and breeding horses.

### ACCESS

The Spasskaya Pad Scientific Forest Station is reached year-round by car within 1.5 hours from Yakutsk city. Yakutsk has an airport with daily flights to Moscow as well as a river port (Lena River).



| Category                                     | Sub-Category                                       | Spasskaya Pad Scientific Forest Station  |
|--|--|--|
| Website                                      |  | –  |
| Country                                      |  | Russia   |
| Opening year                                 |  | 1952   |
| Operational period                           |  | May–October (November–April)   |
| Permitting issues categories                 | Permits required for access to the station         | –  |
|  | Permits required for studies                       | Yes  |
|  | Contact (permit issues)                            | t.c.maximov@ibpc.ysn.ru, tcmax@mail.ru   |
| Facility owner and manager                   | Name of the facility owner                         | Institute for Biological Problems of Cryolithozone, Siberian Branch of the Russian Academy of Sciences (IBPC SB RAS) |
|  | Owner status                                       | Government   |
|  | Institution responsible for managing the station   | IBPC SB RAS  |
|  | Contact (access to station)                        | t.c.maximov@ibpc.ysn.ru, tcmax@mail.ru   |
|  | Website (institution)                              | –  |
| Other institutions                           | Name   | Nagoya University, Hokkaido University, JAMSTEC, Tokyo University; Vrije Universiteit Amsterdam                      |
|  | Country  | Japan; The Netherlands   |
| Location                                     | Geographical coordinates                           | 62°14' N, 129°37' E  |
|  | Altitude of station                                | 220 m a.s.l.   |
|  | Min. altitude within study area                    | –  |
|  | Max. altitude within study area                    | –  |
|  | Nearest town/settlement                            | Tulagino (8000 inhabitants)  |
|  | Distance to nearest town/settlement                | 18 km  |
|  | Map  | Aerial image, satellite image, Google Earth with low resolution  |
| Climate                                      | Climate zone                                       | Sub-Arctic   |
|  | Permafrost   | Continuous   |
|  | Years measured                                     | –  |
|  | Mean annual temperature                            | -9.3 °C  |
|  | Mean temperature in February                       | -40 °C (January)   |
|  | Mean temperature in July                           | 19 °C  |
|  | Mean annual wind speed                             | 1.8 m/s  |
|  | Max. wind speed                                    | –  |
|  | Dominant wind direction                            | WNW  |
|  | Total annual precipitation                         | 238 mm   |
|  | Precipitation type                                 | Rain, snow   |
|  | Ice break up                                       | Lake: June; River: May–June  |
|  | Station facilities                                 | Area under roof  |
| Scientific laboratories                      |  | 30 m <sup>2</sup>  |
| Logistic                                     |  | 3 m <sup>2</sup> (storage)   |
| Number of rooms (beds)                       |  | 12 for accommodation (30 beds), 2 laboratories, 1 living room, 1 kitchen   |
| Number of staff on station (peak/off season) |  | 6/2  |
| Max. number of visitors at a time            |  | 15   |
| Showers                                      |  | Yes  |
| Laundry facilities                           |  | Yes  |
| Power supply (type)                          |  | Electricity 380 and 220 V, 7 kVA diesel generator, 2.5 kVA fossil fuel generator                                     |
| Power supply                                 |  | 24 hours per day   |
| Scientific equipment                         | Specific device                                    | –  |
|  | Scientific services offered                        | –  |
| Medical facilities                           | Medical facilities                                 | –  |
|  | Medical suite                                      | –  |
|  | No. of staff with basic medical training or doctor | –  |
|  | Distance to hospital (estimated time)              | 1 hour by car  |
|  | Compulsory safety equipment                        | –  |
| Landing facilities                           | Recommended safety equipment                       | –  |
|  | Airstrip (Length × Width)                          | –  |
|  | Airstrip surface                                   | –  |
|  | Helipad  | –  |
| Vehicles at station                          | Ship landing facilities                            | –  |
|  | Sea transportation                                 | –  |
| Transport and freight                        | Land transportation                                | Car  |
|  | Transport to station                               | Car  |
|  | Number of ship visits per year (period)            | –  |
|  | Number of flight visits per year (period)          | –  |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input type="radio"/>            | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Lakes)                                |
| <input checked="" type="radio"/> | Yes  |
| <input type="radio"/>            | No   |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input checked="" type="radio"/> | Isotopic chemistry                           |
| <input type="radio"/>            | Climatology, Climate Change                  |
| <input type="radio"/>            | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input type="radio"/>            | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input type="radio"/>            | Limnology                                    |
| Workshop facilities              |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input type="radio"/>            | Scanner                                      |
| <input type="radio"/>            | Fax  |





# CHOKURDAKH

## STATION NAME AND OWNER

The Chokurdakh Scientific Tundra Station is owned by the Institute for Biological Problems of the Cryolithozone (Siberian Branch of the Russian Academy of Sciences).

## LOCATION

The Chokurdakh Scientific Tundra Station (70°49'28" N, 147°29'23" E; elevation 11 m a.s.l.) is situated in the Kytalyk Wildlife Reserve, located on the north bank of the Elon' (Berelekh) River in Northeastern Yakutia, Republic of Sakha (Yakutia), Russian Federation, approximately 25 km north of the Chokurdakh settlement and around 480 km north of Arctic Circle.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The research area consists of three different morphological units, i.e. (i) the present, frequently flooded river floodplain, (ii) the river terrace with tundra vegetation, and (iii) higher (10-30 m) plateaus with well-drained soils. The ice-rich continuous permafrost reaches more than 300 m depths. The levees on the floodplains are overgrown with *Salix* brush. The backswamps consist of meadows with low grass (*Arctophila fulva*) and sedges (*Carex*

*arctisiberica*, *C. glacialis*) grading into shallow lakes. In the tundra, the main vegetation types are dry heath with *Betula nana* on higher sites (polygon rims, palsas); moist tundra with *Eriophorum tussocks*; wet sites with Sphagnum and *Carex* sp., and wet sites with a species-poor vegetation of *Carex* and some *Eriophorum*. At several sites the Sphagnum vegetation overlies a very thin active layer of loose moss peat (<20 cm thickness).

## HISTORY AND FACILITIES

The station was established in 2001 by the Siberian Branch of the Russian Academy of Sciences and the Vrije University of Amsterdam (Netherlands) with financial support from the government of Netherlands and with permission and help of the Ministry for Nature Protection of the Republic of Sakha (Yakutia). For accommodation, there is one 4x8 m large living house with four beds and firewood and kerosene heating. Additional tent accommodation for 4-6 peoples is possible during summer time. Kitchen is available. In addition, a big house for 10-12 peoples and a





conditions and the role of permafrost ecosystems in Climate Change. This includes the interaction between the atmosphere, the biosphere, the hydrosphere, and the cryolithosphere with respect to biodiversity and global environmental change. Short-term monitoring data exists for different aspects of human activity. Data is available at the web-sites of PIN-MATRA and TCOS-Siberia projects.

#### HUMAN DIMENSION

The Chokurdakh Scientific Station is situated in the Kytalyk Wildlife Reserve of the World Wide Fund for Nature, which is dedicated to the preservation of the white crane (*Grus leucogeranus*). Human activity is restricted to fishing and reindeer herding.

sauna can be rented from the Kytalyk Wildlife Reserve. There are two 5 m high observational towers for meteorological and flux measurements. Basic instruments are available at the station. Electrical power supply is provided by solar power and wind generator (12 V DC) and portable electrical generators (220 V AC).

#### GENERAL RESEARCH AND DATABASES

The interdisciplinary research at the Chokurdakh Scientific Tundra station mainly focuss on studies of the environmental

#### ACCESS

The Chokurdakh Scientific Tundra Station can be reached from Chokurdakh settlement which is 3.5 hours by airplane from Yakutsk. From June to September, the transport to the station is possible by boat (2 hours from Chokurdakh along Berelekh River). In winter-time (November-April), transport takes place by snowmobile/sledge (2 hours from Chokurdakh).



| Category                                     | Sub-Category                                       | Chokurdakh Scientific Tundra Station   |
|--|--|--|
| Website                                      |  | -  |
| Country                                      |  | Russia   |
| Opening year                                 |  | 2002   |
| Operational period                           |  | May-September (March-April, October-November)  |
| Permitting issues categories                 | Permits required for access to the station         | -  |
|  | Permits required for studies                       | Yes  |
|  | Contact (permit issues)                            | t.c.maximov@ibpc.ysn.ru, tcmax@mail.ru   |
| Facility owner and manager                   | Name of the facility owner                         | Institute for Biological Problems of Cryolithozone, Siberian Branch of the Russian Academy of Sciences (IBPC SB RAS) |
|  | Owner status                                       | Government   |
|  | Institution responsible for managing the station   | IBPC SB RAS  |
|  | Contact (access to station)                        | t.c.maximov@ibpc.ysn.ru, tcmax@mail.ru   |
|  | Website (institution)                              | -  |
| Other institutions                           | Name   | Vrije Universiteit Amsterdam   |
|  | Country  | The Netherlands  |
| Location                                     | Geographical coordinates                           | 70°49' N, 147°29' E  |
|  | Altitude of station                                | 8 m a.s.l.   |
|  | Min. altitude within study area                    | -  |
|  | Max. altitude within study area                    | 30 m a.s.l.  |
|  | Nearest town/settlement                            | Chokurdakh (2000 inhabitants)  |
|  | Distance to nearest town/settlement                | 28 km  |
|  | Map  | Aerial image, satellite image, Google Earth with low resolution  |
| Climate                                      | Climate zone                                       | Low Arctic   |
|  | Permafrost   | Continuous   |
|  | Years measured                                     | 1965-2003  |
|  | Mean annual temperature                            | -10.5 °C   |
|  | Mean temperature in February                       | -34.6 °C (January)   |
|  | Mean temperature in July                           | 9.5 °C   |
|  | Mean annual wind speed                             | -  |
|  | Max. wind speed                                    | -  |
|  | Dominant wind direction                            | NNE  |
|  | Total annual precipitation                         | 221 mm   |
|  | Precipitation type                                 | Rain, snow   |
|  | Ice break up                                       | Lake: June-July; River: June   |
|  | Station facilities                                 | Area under roof  |
| Scientific laboratories                      |  | 30 m <sup>2</sup>  |
| Logistic                                     |  | 1 m <sup>2</sup> (storage)   |
| Number of rooms (beds)                       |  | 5 for accommodation (24 beds), 1 laboratory, 1 living room, 1 kitchen  |
| Number of staff on station (peak/off season) |  | 4/1  |
| Max. number of visitors at a time            |  | 14   |
| Showers                                      |  | Yes  |
| Laundry facilities                           |  | Yes  |
| Power supply (type)                          |  | 7 kVA diesel generator, 2.5 kVA fossil fuel generator and two wind generators  |
| Power supply                                 |  | 24 hours per day   |
| Scientific equipment                         | Specific device                                    | -  |
|  | Scientific services offered                        | -  |
| Medical facilities                           | Medical facilities                                 | -  |
|  | Medical suite                                      | -  |
|  | No. of staff with basic medical training or doctor | -  |
|  | Distance to hospital (estimated time)              | 2 hours by boat or snowmobile  |
|  | Compulsory safety equipment                        | -  |
| Recommended safety equipment                 | -  |  |
| Landing facilities                           | Airstrip (Length × Width)                          | Nearest airport in Chokurdakh  |
|  | Airstrip surface                                   | -  |
|  | Helipad  | -  |
|  | Ship landing facilities                            | -  |
| Vehicles at station                          | Sea transportation                                 | -  |
|  | Land transportation                                | -  |
| Transport and freight                        | Transport to station                               | By plane to Chokurdakh, then 2 hours by boat (June-September) snowmobile or sledge (November-April)                  |
|  | Number of ship visits per year (period)            | 2 (July)   |
|  | Number of flight visits per year (period)          | -  |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input checked="" type="radio"/> | Tree line                                    |
| <input checked="" type="radio"/> | Other (Thermokarst lakes)                    |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input type="radio"/>            | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input type="radio"/>            | Geodesy                                      |
| <input type="radio"/>            | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input checked="" type="radio"/> | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input type="radio"/>            | Paleolimnology                               |
| <input type="radio"/>            | Paleoecology                                 |
| <input type="radio"/>            | Limnology                                    |
| Workshop facilities              |  |
| <input type="radio"/>            | Metal workshop                               |
| <input type="radio"/>            | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input type="radio"/>            | Staff available to assist with constructions |
| Communication                    |  |
| <input type="radio"/>            | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input type="radio"/>            | VHF  |
| <input type="radio"/>            | E-mail                                       |
| <input type="radio"/>            | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input type="radio"/>            | Scanner                                      |
| <input type="radio"/>            | Fax  |





# BARROW



## STATION NAME AND OWNER

The Barrow Arctic Research Center and Barrow Environmental Observatory are managed by UMIAQ, a business unit of the Ukpęagvik Iñupiat Corporation.

## LOCATION

Barrow (c. 4000 inhabitants) is located at the northern tip of Alaska (USA) on the Arctic Coastal Plain north of the Brooks Range Mountains, at the junction of the Chukchi and Beaufort Seas. The adjacent Barrow Environmental Observatory comprises 30.21 km<sup>2</sup> of tundra, lakes, and wetlands reserved for scientific research including long-term environmental monitoring and habitat manipulation experiments.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Barrow is characterised by a polar maritime climate but is semi-arid (c. 150 mm annual precipitation). It lies north of the tree-line so the dominant vegetation types are grass, moss and sedge. Virtually all land in the area is underlain by permafrost within a few meters of the surface. The landscape is characterised by thermokarst lakes and drained lake basins

undergoing plant succession. Polar bears and Arctic foxes are endemic to the region. A large number of transient bird species migrate to the North Slope during the summer including snowy owl, tundra swan, snow bunting, and various species of geese and ducks, including the endangered Steller's and spectacled eiders. Caribou are frequently observed in the area. During the spring, bowhead whales migrate close to shore, and both gray and beluga whales are often sighted during the summer.

## HISTORY AND FACILITIES

Barrow has a long research history starting with the establishment of an observation station during the First International Polar Year (1882-1883) – hosting near-continuous measurements since then. The Arctic Research Laboratory was established in 1947 and has supported a vast number of atmospheric, biological, oceanic, and terrestrial research activities. Present facilities include modern laboratories, storage, internet access, local accommodations, and cafeteria or self catering facilities. Vehicle support can also be arranged. Restaurants, supplies, and a grocery store are available in town. Several other programs funded through the US government maintain additional facilities in Barrow including the National Weather Service and Earth





System Research Laboratory (both part of the National Oceanic and Atmospheric Admin.), Atmospheric Radiation Measurement Climate Research Facility (Dept. of Energy), and the US Fish and Wildlife Service (Dept. of Interior). Additionally, the North Slope Borough Department of Wildlife Management is based in Barrow.

#### GENERAL RESEARCH AND DATABASES

Approximately 40 individual research projects are supported annually. Much of the work at Barrow involves atmospheric chemistry, ecosystem dynamics, plant/animal phenology studies, and Climate Change monitoring. Many sea ice studies are also based in the area. Limnological and large animal physiology projects are occasionally undertaken.

#### HUMAN DIMENSION

Barrow has been occupied by humans for at least 1200 years, and a strong Inuit culture is still practiced today including subsistence hunting and whaling activities. English is the predominant language but many residents speak Iñupiaq. The village is the political, logistical, and administrative hub of the 245 000 km<sup>2</sup> North Slope Borough, and as a result most modern conveni-

ences are available. Summer tourism is an important part of the economy, and nearby resource extraction is becoming more prevalent. Several mobile phone carriers provide reliable service. Off-road access to the tundra (i.e. for hiking) requires a local land use permit. There are several gymnasiums open to the public and Barrow High School provides opportunities for spectator sports. Iliisaġvik College provides continuing education and vocational training to students throughout the region.

#### ACCESS

There is no road access to Barrow, but the town is serviced by commercial airlines (Alaska Airlines, Era Alaska) with multiple daily flights, year-round. Both fixed-wing aircrafts and helicopters can be chartered for research activities from vendors based in Fairbanks (800 km away) or Anchorage (1200 km away) and staged from the Barrow Airport. Additionally, Northern Air Cargo provides commercial shipping services and the US Postal Service delivers mail and small packages daily. There is no port facility, but resupply barges and boat access are available during the summer. Research facilities are located approximately 5 km north of the village and can be reached via the local road system.



| Category                     | Sub-Category   | Barrow Arctic Research Center/<br>Barrow Environmental Observatory   |
|------------------------------|--|--|
| Website                      |  | www.polarfield.com/barrow  |
| Country                      |  | USA  |
| Opening year                 |  | 1992   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>Yes<br>karl.newyear@uicumiaq.com  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Ukpeagvik Inupiat Corporation<br>Private<br>UMIAQ<br>marvin.hanson@uicumiaq.com<br>www.ukpik.com   |
| Other institutions           | Name<br>Country  | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 71°18' N, 156°35' W<br>5 m a.s.l.<br>0 m a.s.l.<br>10 m a.s.l.<br>Barrow (4000 inhabitants)<br>5 km<br>–   |
| Climate                      | Climate zone   | High Arctic (maritime, desert)   |
|                              | Permafrost   | Continuous   |
|                              | Years measured   | –  |
|                              | Mean annual temperature  | -12.6 °C   |
|                              | Mean temperature in February   | -27.7 °C   |
|                              | Mean temperature in July   | 4.1 °C   |
|                              | Mean annual wind speed   | 6 m/s  |
|                              | Max. wind speed  | 35 m/s   |
|                              | Dominant wind direction  | E  |
|                              | Total annual precipitation   | 115 mm   |
|                              | Precipitation type   | Rain, snow   |
|                              | Ice break up   | Lakes: May; Sea ice: June  |
| Station facilities           | Area under roof  | 850 m <sup>2</sup> residential; 1200 m <sup>2</sup> staging/storage; 300 m <sup>2</sup> labs;<br>150 m <sup>2</sup> office/meeting rooms; 100 m <sup>2</sup> field huts  |
|                              | Scientific laboratories  | 300 m <sup>2</sup>   |
|                              | Logistic   | 1200 m <sup>2</sup> staging/storage; 150 m <sup>2</sup> office/meeting rooms   |
|                              | Number of rooms (beds)   | 42 rooms in total: 9 huts (1-4 bedrooms each, living space, kitchen, bathroom); 2 apartments (bedrooms, kitchen, living space, bathroom); 3 meeting rooms; 5 laboratories; 3 warehouses/staging space; 2 cold rooms (lab or storage space) |
|                              | Number of staff on station (peak/off season)   | 8/5  |
|                              | Max. number of visitors at a time  | 42   |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | Yes  |
|                              | Power supply (type)  | 120V 60Hz US two/three-pin plug  |
|                              | Power supply   | 24 hours per day   |
| Scientific equipment         | Specific device  | Differential GPS, fume hoods, cold storage and work space, type I water  |
|                              | Scientific services offered  | Assistance obtaining permits, community outreach, cargo pickup/storage   |
| Medical facilities           | Medical facilities   | Well equipped  |
|                              | Medical suite  | Yes  |
|                              | No. of staff with basic medical training or doctor   | Samuel Simmonds Memorial Hospital <a href="http://www.arcticslope.org/">http://www.arcticslope.org/</a>  |
|                              | Distance to hospital (estimated time)  | 5 km (10 minutes)  |
|                              | Compulsory safety equipment<br>Recommended safety equipment  | –<br>Weapons, first aid kit, VHF radio   |
| Landing facilities           | Airstrip (Length × Width)  | 2164 × 46 m  |
|                              | Airstrip surface   | Tarmac   |
|                              | Helipad  | Yes  |
|                              | Ship landing facilities  | Barge landings available   |
| Vehicles at station          | Sea transportation   | Small craft (8 meters), inflatable boats   |
|                              | Land transportation  | Truck, snowmobiles, ATV  |
| Transport and freight        | Transport to station   | Airplane, cargo barge (Alaska Airlines <a href="http://www.alaskaair.com">www.alaskaair.com</a><br>Northern Air Cargo <a href="http://www.nacargo.com">www.nacargo.com</a> )   |
|                              | Number of ship visits per year (period)  | 1 (August)   |
|                              | Number of flight visits per year (period)  | 1000 (year-round)  |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input type="radio"/>            | Mountain                                     |
| <input type="radio"/>            | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Sea ice, rivers, wetlands)            |
| <input checked="" type="radio"/> | Yes  |
| <input type="radio"/>            | No   |
| Main science disciplines         |  |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input type="radio"/>            | Geology, Sedimentology                       |
| <input type="radio"/>            | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input checked="" type="radio"/> | Oceanography, Fishery                        |
| <input checked="" type="radio"/> | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| Workshop facilities              |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input checked="" type="radio"/> | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input type="radio"/>            | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input type="radio"/>            | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input checked="" type="radio"/> | Fax  |



# TOOLIK



## STATION NAME AND OWNER

The Toolik Field Station (TFS) belongs to the Institute of Arctic Biology of the University of Alaska Fairbanks.

## LOCATION

TFS is located 210 km south of Deadhorse and 600 km north of Fairbanks in arctic Alaska. The field station is situated north of Gates of the Arctic National Park, and its location allows scientists to access the Brooks Range, the arctic foothills and the arctic coastal plain.

## BIODIVERSITY AND NATURAL ENVIRONMENT

TFS is situated in the arctic foothills province of the North Slope, which is characterised by rolling hills and broad valleys underlain by continuous permafrost. The area is dotted with lakes, and the vegetation is dominated by dwarf-shrub and tussock tundra. Caribou and Arctic ground squirrels are frequently observed at the field station, and moose, musk-oxen and grizzly bears are encountered occasionally.

## HISTORY AND FACILITIES

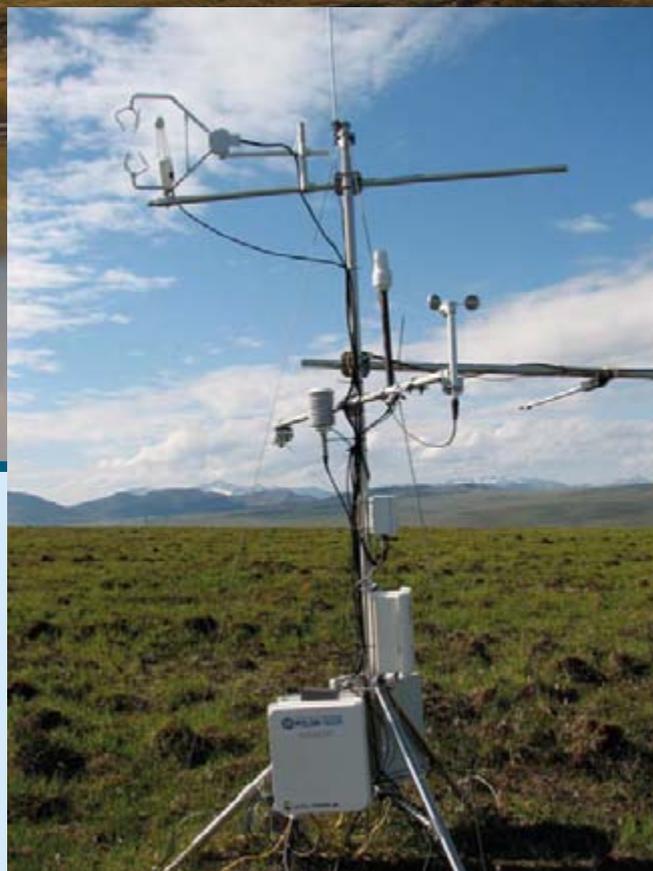
TFS was first established in 1975 to support an aquatic research program. The field station evolved from a 10-person tent camp into a premier arctic research laboratory and science support facility capable of supporting up to 150 researchers. The field station includes several laboratory trailers and tents, a lecture hall, various dormitory accommodation styles, a kitchen and dining hall, shower and laundry facilities, and a tool shop. TFS is open year-round and provides transportation to and from the station, basic science support, high-speed internet, GIS services, general-use laboratory and field equipment, herbarium, and baseline environmental and meteorological data.





### GENERAL RESEARCH AND DATABASES

Research themes at TFS are wide-ranging and dynamic and currently include the structure and function of terrestrial and aquatic ecosystems of the arctic foothills and tundra, the effects of Climate Change in these regions and the feedbacks to global Climate Change through gas and hydrological fluxes. TFS-based research has also led to significant discoveries on the adaptations of plants and animals to the Arctic and to population-level changes in phenologies and distributions. Existing databases hosted at TFS include climate records and baseline environmental monitoring. A substantial body of research data collected by the arctic LTER program are also available from their website.



### HUMAN DIMENSION

TFS is located in the North Slope Borough of northern Alaska close to the Dalton High-way. Anaktuvuk is the closest native village, which is situated in the Brooks Range about 150 km west of TFS by air.



### ACCESS

TFS is accessible by road from Deadhorse and Fairbanks. The field station provides transportation to and from these towns, and snowmobiles, boats, trucks, and bicycles are available for local transportation. A helicopter scheduled through the National Science Foundation is based at TFS.

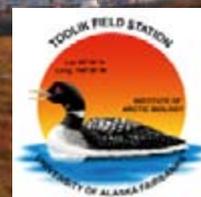




| Category                     | Sub-Category  | Toolik Field Station   |
|------------------------------|---|--|
| Website                      |   | <a href="http://toolik.alaska.edu">http://toolik.alaska.edu</a>  |
| Country                      |   | USA  |
| Opening year                 |   | 1975   |
| Operational period           |   | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | Yes (permits only required on BLM land)<br>Yes<br><a href="http://www.blm.gov">www.blm.gov</a>   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Institute of Arctic Biology<br>Government<br>Institute of Arctic Biology, University of Alaska Fairbanks<br><a href="mailto:maabels@alaska.edu">maabels@alaska.edu</a><br><a href="http://toolik.alaska.edu">http://toolik.alaska.edu</a>  |
| Other institutions           | Name<br>Country   | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 68°37'40" N, 149°35'41" W<br>720 m a.s.l.<br>–<br>–<br>Deadhorse (25-50 inhabitants)<br>210 km<br>Maps 1:2000 to 1:25 000 , aerial images, satellite images, Google Earth shape files  |
| Climate                      | Climate zone<br>Permafrost<br>Years measured<br>Mean annual temperature<br>Mean temperature in February<br>Mean temperature in July<br>Mean annual wind speed<br>Max. wind speed<br>Dominant wind direction<br>Total annual precipitation<br>Precipitation type<br>Ice break up | Low Arctic<br>Continuous<br>Since 1988<br>-8.7 °C<br>-20.7 °C<br>10.8 °C<br>3.1 m/s (at 5 m above terrain)<br>23.6 m/s<br>S<br>318 mm<br>Snow, rain<br>Lake: mid June  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br><br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply                               | 4895 m <sup>2</sup><br>1202 m <sup>2</sup><br>241 m <sup>2</sup><br>212 total (80 sleeping rooms, 165 beds, 53 labs, 25 storages, 1 dining hall, 1 community center, 1 classroom)<br><br>19/3<br>150<br>Yes<br>Yes<br>Fossil fuel generator distribution at 480 V, stepped down to 208 V/110 V, 60 Hz, North American two/three pin plugs<br>24 hours per day  |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Meteorological station; GPS; herbarium; general-use equipment (deionized water, microscope, drying oven, muffle furnace, autoclave, freeze dryer, centrifuge, balances, -80° C freezer, leaf area meter, incubation facility, water column profiler, spectral analyzer, etc.)<br><br>Basic mechanical, electrical and carpentry support; GIS and mapping; online baseline environmental and climate data; limited fieldwork assistance |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br><br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Standard (well equipped first aid kit)<br>–<br>EMT on site (summer) and 3-4 staff members with Wilderness First Response training<br>220 km (3 hours to medical facility in Prudhoe Bay)<br>–<br>First aid kit, bear spray, satellite phone  |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | –<br>–<br>Yes<br>–   |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>Bicycles, car/pick-up, snowmobiles  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Car<br>–<br>–  |



| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier                           |
| <input type="radio"/>            | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input type="radio"/>            | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Lakes and thermokarst)                |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input checked="" type="radio"/> | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input checked="" type="radio"/> | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| Workshop facilities              |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input checked="" type="radio"/> | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input checked="" type="radio"/> | Fax  |





# KLUANE LAKE



### LOCATION

KLRS is located at the shore of Kluane Lake in the southwest corner of the Yukon Territory, Canada. The study area traverses First Nations Traditional Territories, public land, and the Kluane National Park and Reserve. The National Park is a UNESCO World Heritage Site.

### BIODIVERSITY AND NATURAL ENVIRONMENT

The location for KLRS was chosen for its easy access to a variety of ecosystems. Within a 30 km radius of the station there are boreal forest, alpine, and ice-cap eco-regions. The ice cap, composed of the St. Elias Mountains, including Mt. Logan, Canada's highest mountain, has a very high density of surge type glaciers. There is extensive alpine, unfragmented boreal forest and grasslands around the KLRS.

### HISTORY AND FACILITIES

KLRS was established in 1961 by Walter Wood and the Arctic Institute of North America. Wood had been mapping, photographing, and collecting climate data in the area since 1935. The station has evolved from a few tents beside a military airstrip to a

### STATION NAME AND OWNER

The Kluane Lake Research Station (KLRS) is owned and managed by the Arctic Institute of North America (AINA).





comfortable base camp providing support for several satellite field camps. Up to 30 researchers can use the facility at a time (from April to September).

#### GENERAL RESEARCH AND DATABASES

KLRS has hosted a wide variety of disciplines over the last 50 years. The main projects have been related to geology, glaciology and geophysics in the ice-field region, high-altitude physiology on Mt. Logan, a massive collaborative project investigating interactions within the boreal forest over several decades, climate modelling, and remote sensing throughout the region. The KLRS Bibliography can be accessed via [www.arctic.ucalgary.ca/research/kluane-lake-research-station](http://www.arctic.ucalgary.ca/research/kluane-lake-research-station). The Arctic Institute of North America also maintains a major data base called ASTIS and publishes the quarterly journal "Arctic".

#### HUMAN DIMENSION

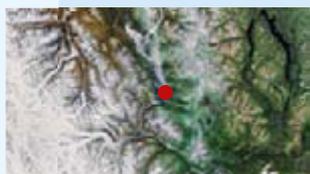
The study area at Kluane is within the traditional territory of Champagn Aishihik (CAFN), Kluane (KFN) or White River First Nations (WRFN). KFN citizens were very instrumental in the early years of the research station. We now work together sharing information and developing programs that will interest young people in research.

#### ACCESS

The Station can be accessed by the Alaska Highway via Whitehorse, a community of 25 000, with an international airport receiving at least five flights from major Canadian cities each day. Vehicle rental is available in Whitehorse. The drive to the research station takes two hours on a paved highway.



| Category                     | Sub-Category   | Kluane Lake Research Station   |
|------------------------------|--|--|
| Website                      |  | www.arctic.ucalgary.ca/research/kluane-lake-research-station   |
| Country                      |  | Canada   |
| Opening year                 |  | 1961   |
| Operational period           |  | April-September, (October- March)  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>Yes<br>sian.williams@ucalgary.ca  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Arctic Institute of North America<br>NGO<br>Sian Williams, Lance Goodwin<br>sian.williams@ucalgary.ca<br>www.arctic.ucalgary.ca  |
| Other institutions           | Name<br>Country  | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 61°01'39" N, 138°24'39" W<br>793 m a.s.l.<br>790 m a.s.l.<br>5959 m a.s.l.<br>Haines Jct. or Whitehorse (800 or 25 000 inhabitants)<br>65 km Haines Jct, or 210 km Whitehorse<br>Map (1:50 000 ), aerial image, satellite image, Google Earth with high resolution |
| Climate                      | Climate zone   | Sub-Arctic, Alpine (Boreal Forest)   |
|                              | Permafrost   | Discontinuous  |
|                              | Years measured   | –  |
|                              | Mean annual temperature  | -3.8 °C  |
|                              | Mean temperature in February   | -18 °C   |
|                              | Mean temperature in July   | 13 °C  |
|                              | Mean annual wind speed   | 3.6 m/s  |
|                              | Max. wind speed  | 27.7 m/s   |
|                              | Dominant wind direction  | E  |
|                              | Total annual precipitation   | 280 mm   |
|                              | Precipitation type   | Snow, rain   |
| Ice break up                 | Kluane Lake: June  |  |
| Station facilities           | Area under roof  | 1100 m <sup>2</sup>  |
|                              | Scientific laboratories  | 370 m <sup>2</sup>   |
|                              | Logistic   | 210 m <sup>2</sup>   |
|                              | Number of rooms (beds)   | 23 buildings (1 mess, 1 wash house, 4 labs, 2 equipment storage, 2 utilities, 13 cabins with 30 beds)  |
|                              | Number of staff on station (peak/off season)   | 5/2  |
|                              | Max. number of visitors at a time  | 30   |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | Yes  |
|                              | Power supply (type)  | 30 kW diesel generator, 110/240 V  |
|                              | Power supply   | 24 hours per day   |
| Scientific equipment         | Specific device  | Fume hood, scales, drying ovens  |
|                              | Scientific services offered  | Sharing of equipment and data between principal investigators  |
| Medical facilities           | Medical facilities   | Standard (first aid)   |
|                              | Medical suite  | –  |
|                              | No. of staff with basic medical training or doctor   | One with current first aid   |
|                              | Distance to hospital (estimated time)  | Nursing station 65 km, hospital 220 km (3-4 hours by ambulance)  |
|                              | Compulsory safety equipment  | –  |
| Recommended safety equipment | Sat phone or PLB, pepper spray, first aid kit  |  |
| Landing facilities           | Airstrip (Length × Width)  | 1000 × 30 m (Lake: yes)  |
|                              | Airstrip surface   | Gravel   |
|                              | Helipad  | Yes  |
|                              | Ship landing facilities  | –  |
| Vehicles at station          | Sea transportation   | –  |
|                              | Land transportation  | Vehicle (easy access via paved Alaska Highway)   |
| Transport and freight        | Transport to station   | Plane or vehicle   |
|                              | Number of ship visits per year (period)  | –  |
|                              | Number of flight visits per year (period)  | –  |



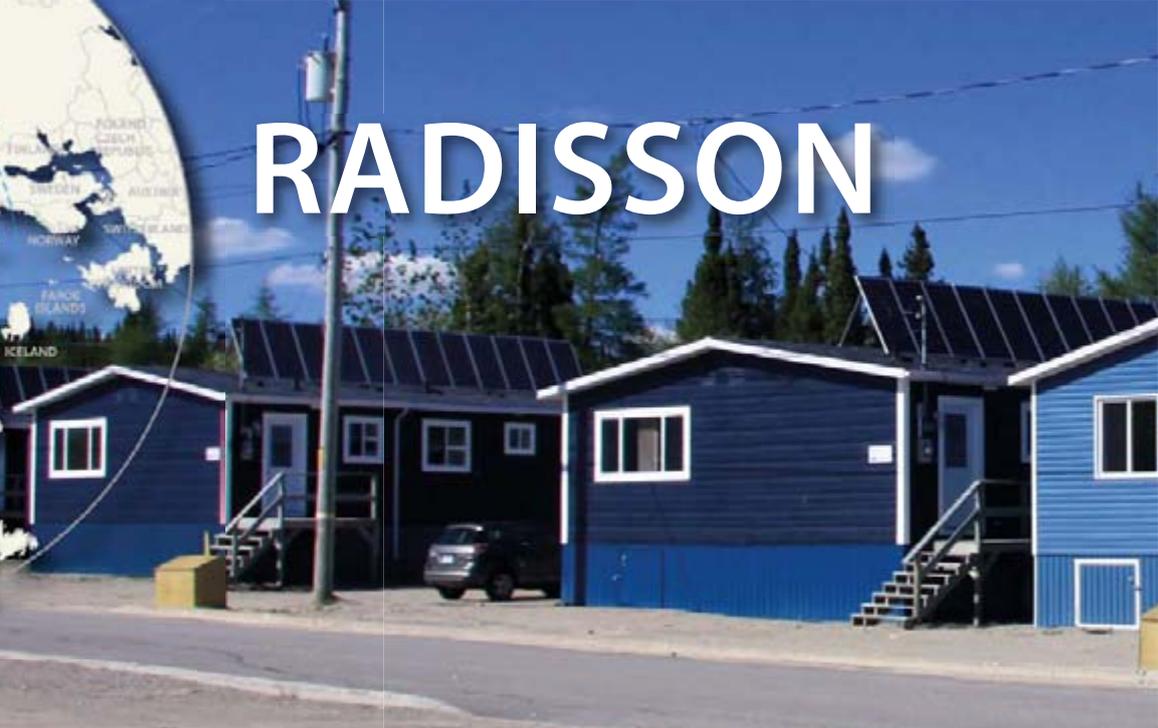


|  |  |
|--|--|
| <b>Features within study area</b>  | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
| <ul style="list-style-type: none"> <li>● Ice cap or glacier (30 km)</li> <li>● Permanent snowpatches</li> <li>● Mountain</li> <li>● Valley</li> <li>● Shoreline</li> <li>● Tundra</li> <li>● Tree line</li> <li>● Other (Grasslands)</li> </ul>  |  |
| <b>Main science disciplines</b>  |  |
| <ul style="list-style-type: none"> <li>● Anthropology, Sociology, Archaeology</li> <li>● Astrophysics</li> <li>● Atmospheric chemistry and physics</li> <li>● Isotopic chemistry</li> <li>● Climatology, Climate Change</li> <li>● Environmental sciences, Pollution</li> <li>● Geodesy</li> <li>● Geology, Sedimentology</li> <li>● Geophysics</li> <li>● Glaciology</li> <li>● Geocryology, Geomorphology</li> <li>● Soil science</li> <li>● Human biology, Medicine</li> <li>● Mapping, GIS</li> <li>● Marine biology</li> <li>○ Oceanography, Fishery</li> <li>○ Microbiology</li> <li>● Hydrology</li> <li>● Terrestrial biology, Ecology</li> <li>● Paleolimnology</li> <li>● Paleoecology</li> <li>● Limnology</li> </ul> |  |
| <b>Workshop facilities</b>   |  |
| <ul style="list-style-type: none"> <li>● Metal workshop</li> <li>● Wood workshop</li> <li>● Plexiglas workshop</li> <li>● Staff available to assist with constructions</li> </ul>  |  |
| <b>Communication</b>   |  |
| <ul style="list-style-type: none"> <li>● Telephone</li> <li>● Satellite phone</li> <li>● VHF</li> <li>● E-mail</li> <li>● Internet (bandwidth limited)</li> <li>● Computer</li> <li>● Printer</li> <li>● Scanner</li> <li>● Fax</li> </ul>   |  |





# RADISSON



## STATION NAME AND OWNER

CEN Radisson Ecological Research Station (Station de recherche écologique de Radisson). The station is the property of the Radisson municipality. It is run and operated by the following three member institutions of the Centre d'études Nordiques (CEN: Centre for Northern Studies): Université Laval, Université du Québec à Rimouski and Centre Eau, Terre et Environnement of the Institut national de la recherche scientifique. The station has a long-term lease with the municipality. The CEN secretariat based at Université Laval oversees the management of the station. This station is part of the CEN Network, more precisely the Qaujisarvik Network of stations, and is the most southerly station of the network at 53°N.

The vast expanse of the Québec territory, adjacent to James Bay, is administered by the Société d'énergie de la Baie James which is a subsidiary of Hydro Québec. Hydro Québec is responsible for emergency services and requires an annual logistical and security plan for all visitors.

## LOCATION

The station is in the centre of the village of Radisson (53°47'29" N, 77°37'37" W), a small village of approximately 350 inhabitants situated on the margins of the Robert-Bourassa hydroelectric dam (LG2), which is part of the La Grande River hydroelectric complex.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Radisson is surrounded by the eastern Canadian Shield taiga with Boreal forest that is dominated by black spruce and grey pine. The region is relatively poor in terms of plant species diversity with a count of about 350 vascular plant species, yet the diversity in wildlife is rich with forty mammal and sixty bird species. Forest fires are a very dynamic element of the region, sculpting the landscape into natural mosaics nested between rocky hills which confine the lower wetlands (mainly lakes and bogs). Radisson is situated in a postglacial marine invasion with limited drainage due to the presence of clay in the lowlands.

From 1989 to 1996, fires within the town of Radisson considerably changed the landscape. The region has been studied and monitored extensively since 1974 in the context of the development of the hydroelectric complex. Consequently, Hydro-Québec and the Société d'énergie de la baie de James have produced several syntheses on the area.





### HISTORY AND FACILITIES

Researchers from the CEN have been working in this region since 1994, but the station was established in 1999 and was upgraded in 2010. The facility consists of three houses (3 bedrooms each), with a total capacity for 25 people, a laboratory building with a chemical hut, a meeting room, and a workshop.

### GENERAL RESEARCH AND DATABASES

Past research has focused on regional ecosystem dynamics, specifically on the response of the forest to disturbances such as fire and insect outbreaks, dendrochronology, riparian vegetation, snow, secular variations in water levels, hydrology, climate and reservoirs, greenhouse gas emission by reservoirs, and limnology. Research topics have covered issues on wildlife (birds, caribou, small mammals, and fish) and vegetation (biodiversity). CEN operates three climate stations in the area, one of which is near the town, another is in the centre of the LG2 reservoir, and a

third is approximately 350 km inland on an island of the LaForge 1 reservoir. Besides scientific literature, CEN has also collected extensive climate datasets since 1996, which are available upon request ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).

### HUMAN DIMENSION

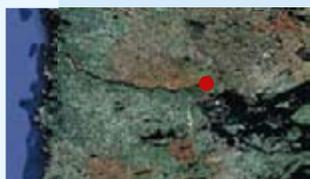
The town of Radisson is located on the south shore of the La Grande River which drains the water from the LaGrande hydroelectric complex. It is the most northern French speaking community of Québec. It is also the only non-aboriginal community north of 53°N. Despite its remoteness, Radisson offers a wide array of services: i.e. gas station, hardware and grocery store, and a small hotel.

### ACCESS

Radisson is accessible by road. From Matagami, the James Bay route covers over 624 km. This route provides access to several Cree villages and trans-taiga ecosystems which border the hydroelectric reservoirs. It is a private road requiring user registration at the entry gate for security reasons. Contact CEN for more information ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).



| Category                     | Sub-Category   | CEN Radisson Station   |
|------------------------------|--|--|
| Website                      |  | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationradisson">http://www.cen.ulaval.ca/en/page.aspx?lien=stationradisson</a>                              |
| Country                      |  | Canada   |
| Opening year                 |  | 1999   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>–<br>cen@cen.ulaval.ca  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Centre d'études Nordiques (CEN)<br>Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca            |
| Other institutions           | Name<br>Country  | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 53°47'29" N, 77°37'37" W<br>135 m a.s.l.<br>0 m a.s.l.<br>160 m a.s.l.<br>Radisson (300 inhabitants)<br>0 km (in town of Radisson)<br>Aerial image, Google Earth |
| Climate                      | Climate zone   | Sub-Arctic   |
|                              | Permafrost   | Sporadic   |
|                              | Years measured   | Since 1995 (LaGrande)  |
|                              | Mean annual temperature  | -3 °C  |
|                              | Mean temperature in February   | -21.6 °C   |
|                              | Mean temperature in July   | 13.7 °C  |
|                              | Mean annual wind speed   | 4.5 m/s  |
|                              | Max. wind speed  | 37 m/s   |
|                              | Dominant wind direction  | W  |
|                              | Total annual precipitation   | 684 mm   |
|                              | Precipitation type   | All  |
|                              | Ice break up   | River and sea in May   |
| Station facilities           | Area under roof  | 5860 m <sup>2</sup>  |
|                              | Scientific laboratories  | 1260 m <sup>2</sup>  |
|                              | Logistic   | 948 m <sup>2</sup>   |
|                              | Number of rooms (beds)   | 11 rooms (24 beds)   |
|                              | Number of staff on station (peak/off season)   | 0/0  |
|                              | Max. number of visitors at a time  | 28   |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | Yes  |
|                              | Power supply (type)<br>Power supply  | Solar, hydroelectric<br>24 hours per day   |
| Scientific equipment         | Specific device  | Local guides and translators available for hire  |
|                              | Scientific services offered  | Access to extensive climate data records   |
| Medical facilities           | Medical facilities   | Standard   |
|                              | Medical suite  | –  |
|                              | No. of staff with basic medical training or doctor   | CLSC in village (community hospital), 4 nurses and 1 doctor  |
|                              | Distance to hospital (estimated time)  | In town  |
|                              | Compulsory safety equipment<br>Recommended safety equipment  | –<br>Pepper spray, satellite phone, weapon   |
| Landing facilities           | Airstrip (Length × Width)  | 1970 × 45 m (lake: yes)  |
|                              | Airstrip surface   | Asphalt  |
|                              | Helipad  | Yes  |
|                              | Ship landing facilities  | Port in Chisasibi, landing wharf, pier   |
| Vehicles at station          | Sea transportation   | Zodiac, boat, canoe  |
|                              | Land transportation  | ATVs, snowmobiles, small car, 4x4 trucks   |
| Transport and freight        | Transport to station   | Accessible by road and commercial flights  |
|                              | Number of ship visits per year (period)  | –  |
|                              | Number of flight visits per year (period)  | –  |





#### Features within study area

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Boreal forest, approx. 100 km to James Bay, hydroelectric reservoirs (La Grande), lakes, rivers, mines, forest fires)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop (in town)
- Wood workshop (in town)
- Plexiglas workshop (in town)
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





### STATION NAME AND OWNER

The CEN Whapmagoostui-Kuujuarapik Station is owned and run by the Centre d'études Nordiques (CEN: Centre for Northern Studies) with its secretariat based at the Université Laval, Québec, Canada. It is on Cree land and is run in collaboration with the Cree First Nation of Whapmagoostui.

### LOCATION

The CEN Whapmagoostui-Kuujuarapik Station (55°16'50" N, 77°45'10" W) is located on the eastern shore of Hudson Bay at the maritime limit of James Bay, and in the adjacent villages of Whapmagoostui (Cree First Nation) and Kuujuarapik (Inuit).

### BIODIVERSITY AND NATURAL ENVIRONMENT

The climate at Whapmagoostui-Kuujuarapik is strongly influenced by the proximity of Hudson Bay, and the recent pronounced loss of sea ice in this sector of northern Canada has been accompanied by large increases in air temperature. Discontinuous or scattered permafrost occurs throughout the region and is degrading rapidly. Whapmagoostui-Kuujuarapik is located at the terrestrial boundary between taiga and tundra. South of the Great Whale River is the

taiga zone (Boreal forest), while north of the river, the forest tundra zone progressively dominates the landscape. The vegetation type is coastal forest tundra, with some 400 recorded species. Parabolic dunes occur along the coast and are strongly influenced by plant cover. Paleocological studies have documented the Holocene evolution of landscapes, including lakes, wetlands, and forests. The Manitounuk Islands, located just a little north along the coast, are part of the Hudsonian cuestas that are characterized by rocky beaches and vertiginous cliffs.

### HISTORY AND FACILITIES

The first signs of human occupation in the Whapmagoostui-Kuujuarapik region have been dated at 3800 BP. In the past, the English name Great Whale and the French name Poste-de-la-Baleine have been used to designate this community. The Hudson Bay Company (HBC) established the first fur trade post here in 1750 and marked the onset of continuous occupation. This station is the CEN's principal field station and has operated since the 1970s, with diverse research projects on past and present environments. In 2010, major upgrades to the station were undertaken, consisting of the construction of a state-of-art





# WHAPMAGOOSTUI-KUJJUARAPIK

Community Science Centre to serve the needs of the circumpolar science community for research planning, information exchange, national research workshops, and coordination of field operations, and the local communities for information exchange, identification of northern research needs, science training of northerners, exchange of traditional knowledge, and outreach activities. The centre offers a conference room with a capacity for 50 participants, a permanent, interactive display on local natural history and on CEN research activities. In addition to this new building, the station also has wet and dry laboratories, a greenhouse, a dormitory, a cafeteria (with full-meal services during the summer season), vehicles for rent, wireless internet, rental of sampling and camping equipment, and an onsite station manager.

## GENERAL RESEARCH AND DATABASES

Current projects include work on biodiversity and dynamics of northern aquatic ecosystems; impacts of thawing permafrost in the context of global warming; wetland paleoecology; restoration of vegetation in degraded sites, and research on mercury dynamics (in relation to air, precipitation, snow). An overview of past studies in this region is given in: Bhiry, N., et al., 2011:

Ecoscience 18: 182-203. CEN operates several climate stations in the area. In addition to the available scientific literature, CEN has extensive climate data recorded since 1957 which is available upon request ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).

## HUMAN DIMENSION

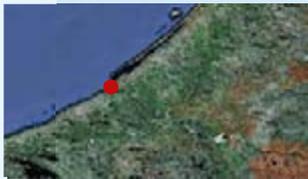
This bicultural community represents the ancestral limit of the Cree and Inuit territories. It is both the northernmost Cree community and the southernmost Inuit community in Quebec. Whapmagoostui-Kuujuarpaik has a population of about 1600 inhabitants. The spoken languages are Cree, Inuktitut, and English with some French. Rapid social, economic, and environmental change, initiated in the mid-20<sup>th</sup> century, continues to this day.

## ACCESS

Whapmagoostui-Kuujuarpaik is only accessible by commercial airlines. All research activities must be planned well in advance. Local guides and translators are available for hire. Access to the surrounding area by chartered flights, boat, and all-terrain vehicles can be organized by the station manager.



| Category                     | Sub-Category  | CEN Whapmagoostui-Kuujuarapik Station   |
|------------------------------|---|---|
| Website                      |   | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationkuujuarapik">http://www.cen.ulaval.ca/en/page.aspx?lien=stationkuujuarapik</a>   |
| Country                      |   | Canada  |
| Opening year                 |   | 1971  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>cen@cen.ulaval.ca   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Centre d'études Nordiques (CEN) and the First Nations Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca                              |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br><br>Distance to nearest town/settlement<br>Map  | 55°16'50" N, 77°45'10" W<br>50 m a.s.l.<br>0 m a.s.l.<br>140 m a.s.l.<br>Whapmagoostui (1400 inhabitants, communities of Whapmagoostui and Kuujuarapik combined)<br>0 km (station in town)<br>–       |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Discontinuous   |
|                              | Years measured  | Since 1957  |
|                              | Mean annual temperature   | -4 °C   |
|                              | Mean temperature in February  | -22.4 °C  |
|                              | Mean temperature in July  | 12.7 °C   |
|                              | Mean annual wind speed  | 4.7 m/s   |
|                              | Max. wind speed   | 26.9 m/s  |
|                              | Dominant wind direction   | ESE (changes to WNW in winter)  |
|                              | Total annual precipitation  | 648 mm  |
|                              | Precipitation type  | All   |
|                              | Ice break up  | River and sea in May  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 5860 m <sup>2</sup><br>1260 m <sup>2</sup><br>948 m <sup>2</sup><br>13 rooms (28 beds)<br>3/1<br>28<br>Yes<br>Yes<br>Solar, electrical<br>24 hours per day  |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Laboratory equipment: wet and dry lab, drying oven, electronic balance, microscope/binocular, glassware, greenhouse<br>Greenhouse available for experiments; access to extensive climate data records |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Well equipped (standard)<br>Yes<br>CLSC in village (community hospital) with 4 nurses, 1 doctor<br>180 km; 1 hour to Chisasibi (by plane)<br>–<br>Pepper spray, satellite phone, weapon               |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 1531 × 45 m (lake: yes)<br>Gravel<br>Yes<br>Port, landing wharf, pier, pontoon  |
| Vehicles at station          | Sea transportation<br>Land transportation   | Motor boat, freighter, zodiac<br>Trucks (4x4), ATVs, snowmobiles, bicycles  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Commercial flights, helicopter, ship<br>3 cargos, 1 barge (June and August, September and October )<br>2 flights per day (year-round)   |





#### Features within study area

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Trees are present, below treeline; thermokarst lakes, cuestas, sporadic permafrost, isostatic uplift, raised beaches, glacial features, deltaic environments, sand dunes)

#### Main science disciplines

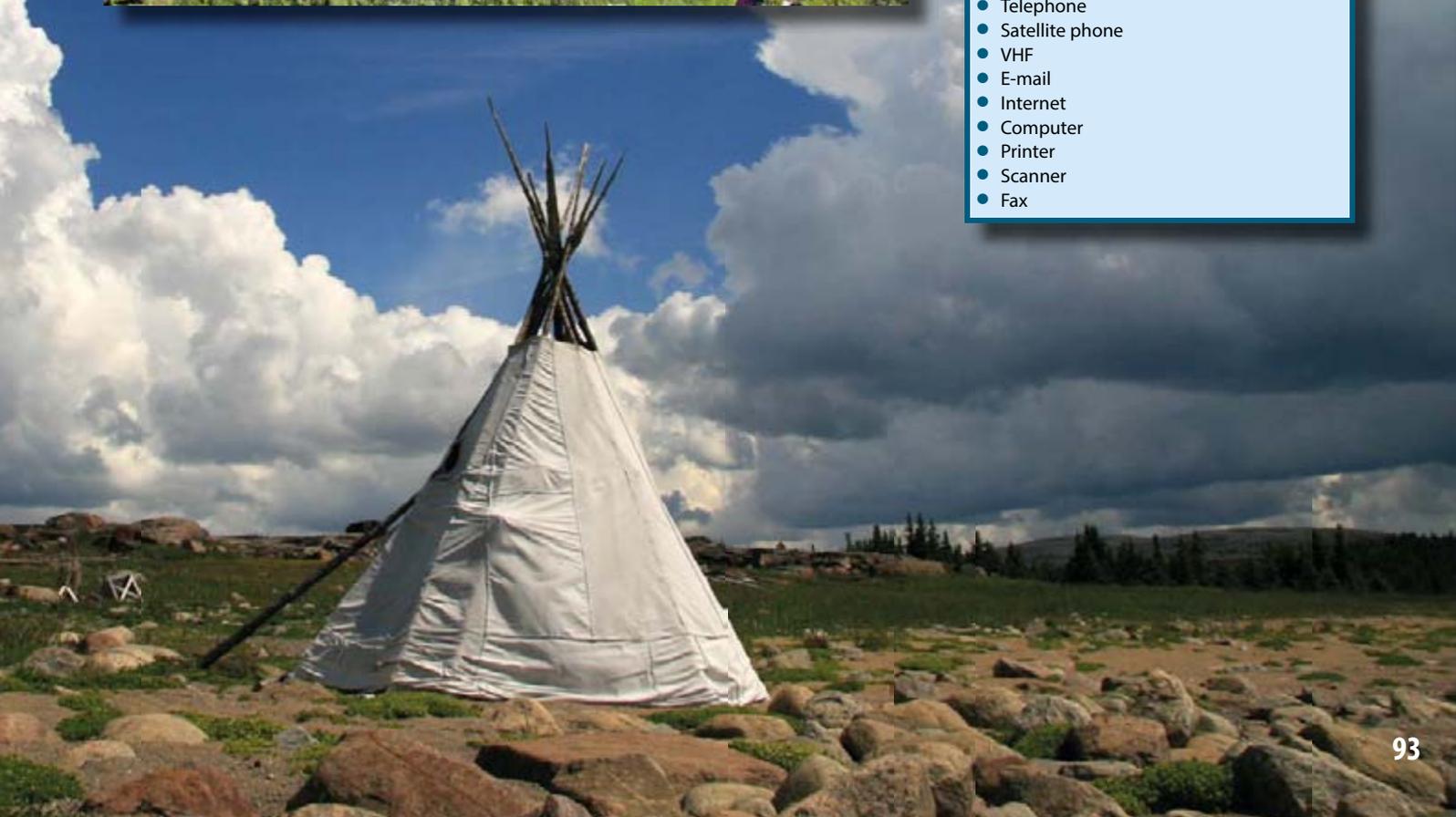
- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

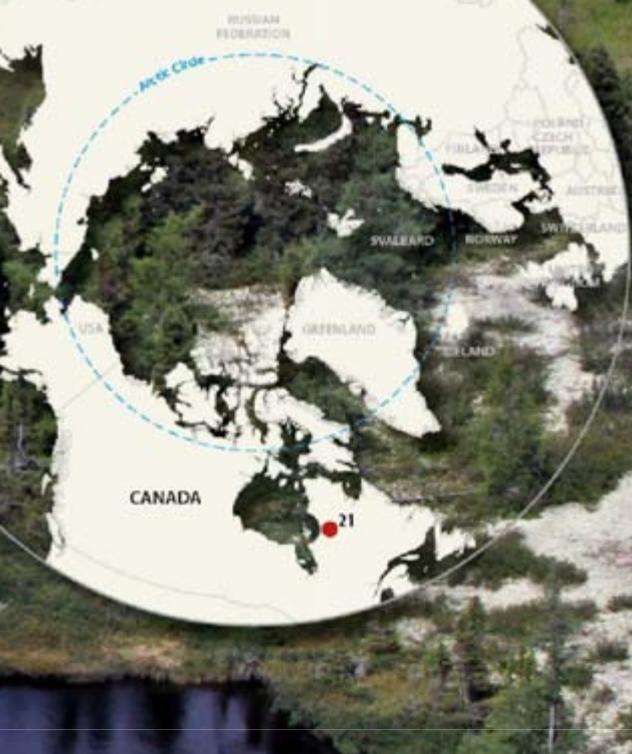
#### Workshop facilities

- Metal workshop (in town)
- Wood workshop (in town)
- Plexiglas workshop (in town)
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





# CLEARWATER LAKE

## STATION NAME AND OWNER

The CEN Clearwater Lake Research Station is legally owned by the Kativik Regional Government (KRG), but is operated by the Centre d'études Nordiques (CEN: Centre for Northern Studies) through a long term lease. This station is part of the CEN Network, more precisely the Qaujisarvik Network of stations and is part of a provincial park that is co-managed by KRG and the government of Québec (Tursujuq National Park).

## LOCATION

Situated in Nunavik on the shores of Clearwater Lake (Lac à l'Eau Claire, 56°20'N, 74°27'W), the station is about 125 km inland from the eastern coast of Hudson Bay.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Clearwater Lake is the second largest natural lake of the province of Québec (2243 km<sup>2</sup>). It sits at an altitude of 240 m, the limit reached by the postglacial sea, and drains into Hudson Bay via Clearwater River (Rivière à l'Eau-Claire) with a maximum outflow rate of 150 m<sup>3</sup>/s. The lake features two adjacent, circular basins (26 and 36 km in diameter) that were created by a meteoritic

impact about 290 ± 20 million years ago (Permian Age). Even though vascular plant diversity is low on regional granite gneisses, the volcanic breccias (clastic-textured extrusive igneous rocks) situated on the islands of the western basin (11 islands forming a circle) are populated by 250 vascular species, 15% of which are specific to the shores. Avifauna is abundant and the islands constitute an enclave for shrub tundra in an area that is rather characterised by forest tundra.

## HISTORY AND FACILITIES

CEN research has been conducted here since 1980, but the station buildings are recent, built in 2000 and upgraded in 2011. The buildings were originally built by outfitters but have been considerably upgraded by the CEN. The three buildings can accommodate nine people. They are equipped with solar-powered electricity, running water, dry toilettes, and oil heating. The station is accessible from June to October by float plane or helicopter. About 10 km to the southeast, there is a natural airstrip maintained by Air Inuit. However, a river separates the station from the airstrip.





### GENERAL RESEARCH AND DATABASES

Past research has focused on regional ecosystem dynamics, specifically on the response of the forest to disturbances such as fire and insect outbreaks, dendrochronology, riparian vegetation and biodiversity, periglacial processes, secular variations in water levels, and hydrology. Other research topics have covered limnology of the two basins, geological and geomorphological history, and biophysical features of the area. Wildlife studies (birds, caribou, small mammals, fish, and biting insects) have also been conducted, as well as archeological studies (recently). CEN operates three climate stations in and around the western basin of the lake, one of which is on a small island directly in the centre of the basin. In addition to scientific literature, CEN has extensive climate data since 1986 which is available upon request ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).

### HUMAN DIMENSION

Clearwater Lake is situated within the boundaries of a provincial park and on aboriginal land. First Nations people, the Cree, still use the land extensively for hunting and fishing, especially during spring and autumn. There are no permanent settlements

around the station, the closest village Umiujaq is about 135 km west on the shores of Hudson Bay. Access to the station is organised by CEN from the Whapmagoostui-Kuujuarapik Research Station.

### ACCESS

Clearwater Lake is an isolated station in a provincial park; therefore all research activities must be proposed and planned in advance. Contact CEN for more information ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).



| Category                     | Sub-Category  | CEN Clearwater Lake Station   |
|------------------------------|---|---|
| Website                      |   | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationlec">http://www.cen.ulaval.ca/en/page.aspx?lien=stationlec</a>   |
| Country                      |   | Canada  |
| Opening year                 |   | 2005  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>cen@cen.ulaval.ca   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Centre d'études Nordiques<br>Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca   |
| Other institutions           | Name<br>Country   | Kativik Regional Government ( <a href="http://www.krg.ca">www.krg.ca</a> )<br>Canada  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 56°20' N, 74°27' W<br>224 m a.s.l.<br>215 m a.s.l.<br>400 m a.s.l.<br>Umiujaq (< 400 inhabitants)<br>135 km<br>Aerial image, Google Earth   |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Discontinuous   |
|                              | Years measured  | Since 1995  |
|                              | Mean annual temperature   | -3 °C   |
|                              | Mean temperature in February  | -22.4 °C  |
|                              | Mean temperature in July  | 11.8 °C   |
|                              | Mean annual wind speed  | 5.9 m/s   |
|                              | Max. wind speed   | 28.3 m/s  |
|                              | Dominant wind direction   | S   |
|                              | Total annual precipitation  | 500-600 mm  |
|                              | Precipitation type  | All   |
| Ice break up                 | June (year dependent)   |   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 50 m <sup>2</sup><br>25 m <sup>2</sup><br>25 m <sup>2</sup><br>4 rooms (11 beds), 1 living area, 1 kitchen<br>0/0<br>11<br>Yes<br>–<br>Solar and heated by oil, propane and generator available<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | Local guides and translators available for hire<br>Access to extensive climate data records   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br><br>Compulsory safety equipment<br>Recommended safety equipment   | –<br>–<br>–<br>Heli lifted out to Umiujaq and then 45 min. to Puvirnituk (by plane, 1-2 hours in total)<br><br>Weapon, satellite phone<br>Pepper spray, weapon, first aid kit                                       |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 600 × 400 m (lake: yes)<br>Sand (also accessible by floatplane)<br>– (helicopter lands on level ground)<br>–  |
| Vehicles at station          | Sea transportation<br>Land transportation   | Boat, zodiac<br>Snowmobile in winter  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Chartered helicopter or floatplane, Twin Otter in winter<br>–<br>–  |





| Features within study area       |  |
|----------------------------------|--|
| <input type="radio"/>            | Ice cap or glacier   |
| <input type="radio"/>            | Permanent snowpatches  |
| <input checked="" type="radio"/> | Mountain   |
| <input checked="" type="radio"/> | Valley   |
| <input checked="" type="radio"/> | Shoreline  |
| <input checked="" type="radio"/> | Tundra   |
| <input checked="" type="radio"/> | Tree line  |
| <input checked="" type="radio"/> | Other (Thermokarst lakes, permafrost, raised beaches, glacial features, land-locked marine species, migrating treeline, deep lake created by meteorite impact) |
| <b>Main science disciplines</b>  |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology   |
| <input type="radio"/>            | Astrophysics   |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics  |
| <input checked="" type="radio"/> | Isotopic chemistry   |
| <input checked="" type="radio"/> | Climatology, Climate Change  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution  |
| <input checked="" type="radio"/> | Geodesy  |
| <input checked="" type="radio"/> | Geology, Sedimentology   |
| <input checked="" type="radio"/> | Geophysics   |
| <input checked="" type="radio"/> | Glaciology   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology   |
| <input checked="" type="radio"/> | Soil science   |
| <input type="radio"/>            | Human biology, Medicine  |
| <input checked="" type="radio"/> | Mapping, GIS   |
| <input checked="" type="radio"/> | Marine biology   |
| <input checked="" type="radio"/> | Oceanography, Fishery  |
| <input checked="" type="radio"/> | Microbiology   |
| <input checked="" type="radio"/> | Hydrology  |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology   |
| <input checked="" type="radio"/> | Paleolimnology   |
| <input checked="" type="radio"/> | Paleoecology   |
| <input checked="" type="radio"/> | Limnology  |
| <b>Workshop facilities</b>       |  |
| <input type="radio"/>            | Metal workshop   |
| <input type="radio"/>            | Wood workshop  |
| <input type="radio"/>            | Plexiglas workshop   |
| <input type="radio"/>            | Staff available to assist with constructions   |
| <b>Communication</b>             |  |
| <input type="radio"/>            | Telephone  |
| <input checked="" type="radio"/> | Satellite phone  |
| <input checked="" type="radio"/> | VHF  |
| <input type="radio"/>            | E-mail   |
| <input type="radio"/>            | Internet   |
| <input type="radio"/>            | Computer   |
| <input type="radio"/>            | Printer  |
| <input type="radio"/>            | Scanner  |
| <input type="radio"/>            | Fax  |



# UMIUJQAQ



## STATION NAME AND OWNER

The Umiujaq Research Station is owned and run by the Centre d'études Nordiques (CEN: Centre for Northern Studies) whose secretariat is based at Université Laval, Québec, Canada. This station is part of the CEN Network.

## LOCATION

The station is in the village of Umiujaq, situated on the shores of the eastern Hudson Bay in Nunavik, Québec, Canada (56°33'07" N, 76°32'57" W).

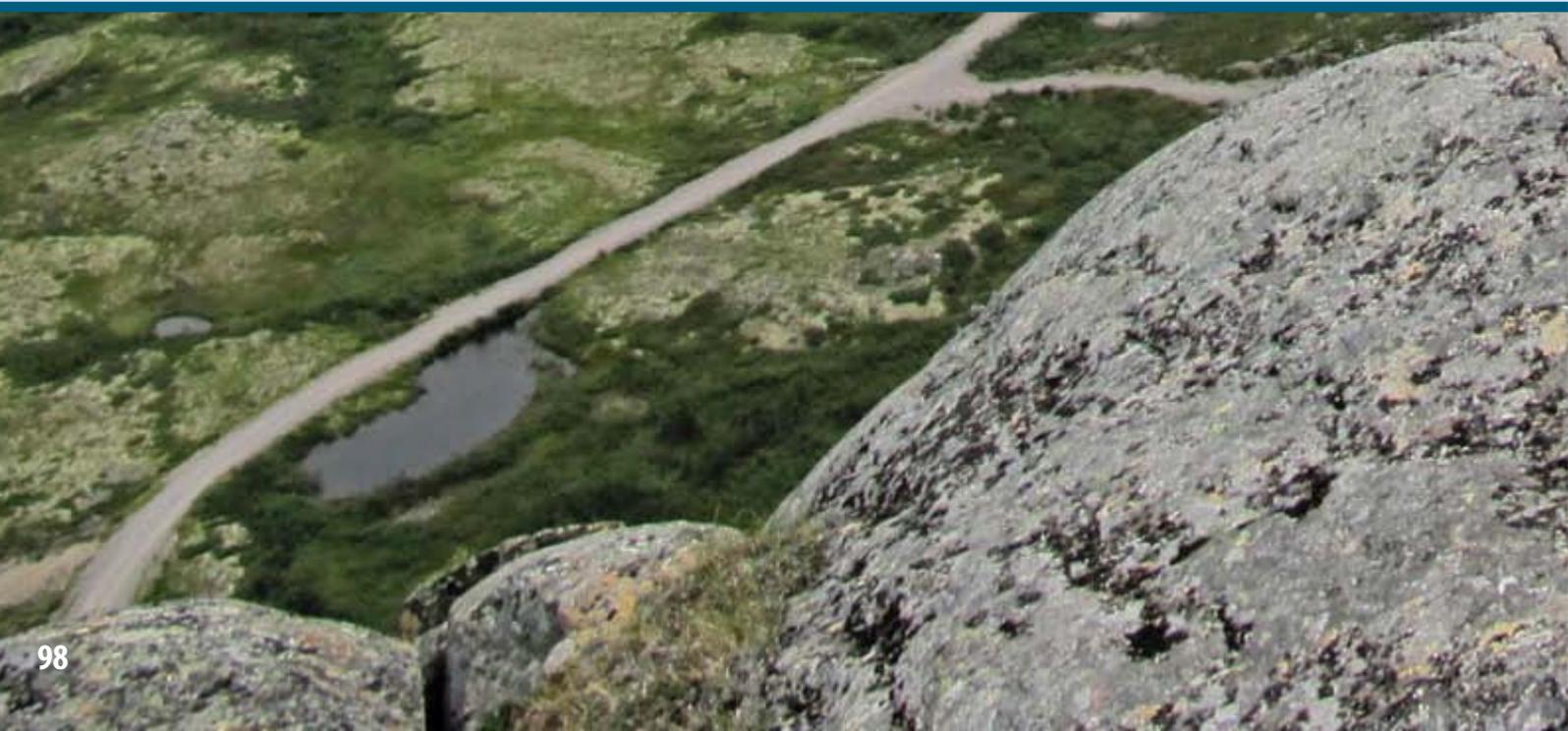
## BIODIVERSITY AND NATURAL ENVIRONMENT

The village is located 15 km north of Richmond Gulf (Lac Guillaume-Delisle), an immense inland bay connected to the Hudson Bay via a rocky gulch resembling a canyon. The many rivers flowing into the Gulf make its waters brackish and rich in brook trout, whitefish, seal, and beluga. The sheltered maritime environment features sporadic black spruce and larch, but the surrounding area is rather characterised by shrub tundra, discontinuous permafrost (mostly palsa bogs), and thermokarst lakes. In front of the village are the Nastapoka Islands (cuestas)

where many species of birds, such as common loons, eider ducks, and peregrine falcons, find summer shelter and nest. The steep cliffs plunge into the Nastapoka Sound with waters up to 110 m deep. About 30 km north of Umiujaq is the Nastapoka River with its scenic 30 m high falls. The river estuary is extraordinarily rich and diverse with landlocked freshwater seals, salmon, and many fish species. Access to the Tursujuq Provincial Park, as well as to the marine/coastal-, river-, lake-, mountainous-, deltaic-, and shrub tundra environments, and the migrating treeline, is from Umiujaq.

## HISTORY AND FACILITIES

Umiujaq was established in 1986 by Inuit from Kuujjuarapik, 160 km to the south, who decided to relocate in the region where they hoped to better preserve their traditional lifestyle in an area where fish and game were not threatened by development. CEN's research has been conducted here since 1980. In previous years, CEN researchers used a meat plant/warehouse that has shared ownership (CEN, Annituvik Landholding Corporation, and Makivik Corporation). In 2010, CEN undertook major station upgrades and restored the warehouse (still shared





with its partners), built a vehicle garage, and a three-bedroom house. The facility is next to a pier for easy maritime access and can accommodate seven to eight people at a time. The house is equipped with partial solar powered electricity, running water (kitchen, toilet, and laundry), and oil heating.

#### GENERAL RESEARCH AND DATABASES

Past and present research has focused on permafrost studies, coastal geology, and geomorphological characterisation of the region. Other research topics cover biodiversity and dynamics of northern aquatic ecosystems, impacts of thawing permafrost in the context of global warming, wetlands paleoecology, research on mercury dynamics (air, precipitation, snow), snow and ice dynamics, greenhouse gas emissions from thermokarst ponds and tundra, sea and lake bottom mapping, and plant community dynamics and response of northern plants to Climate Change. Archeological studies and community based monitoring activities have also taken place. CEN operates four climate stations in the area and thermistor cables are installed to monitor permafrost temperature. CEN has extensive climate data since 1997 which is available upon request ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)).

#### HUMAN DIMENSION

Umiujaq has a population of about 500 inhabitants, mainly Inuit. The people speak Inuktitut and English with some French. Some research on the social dimensions has been conducted over time.

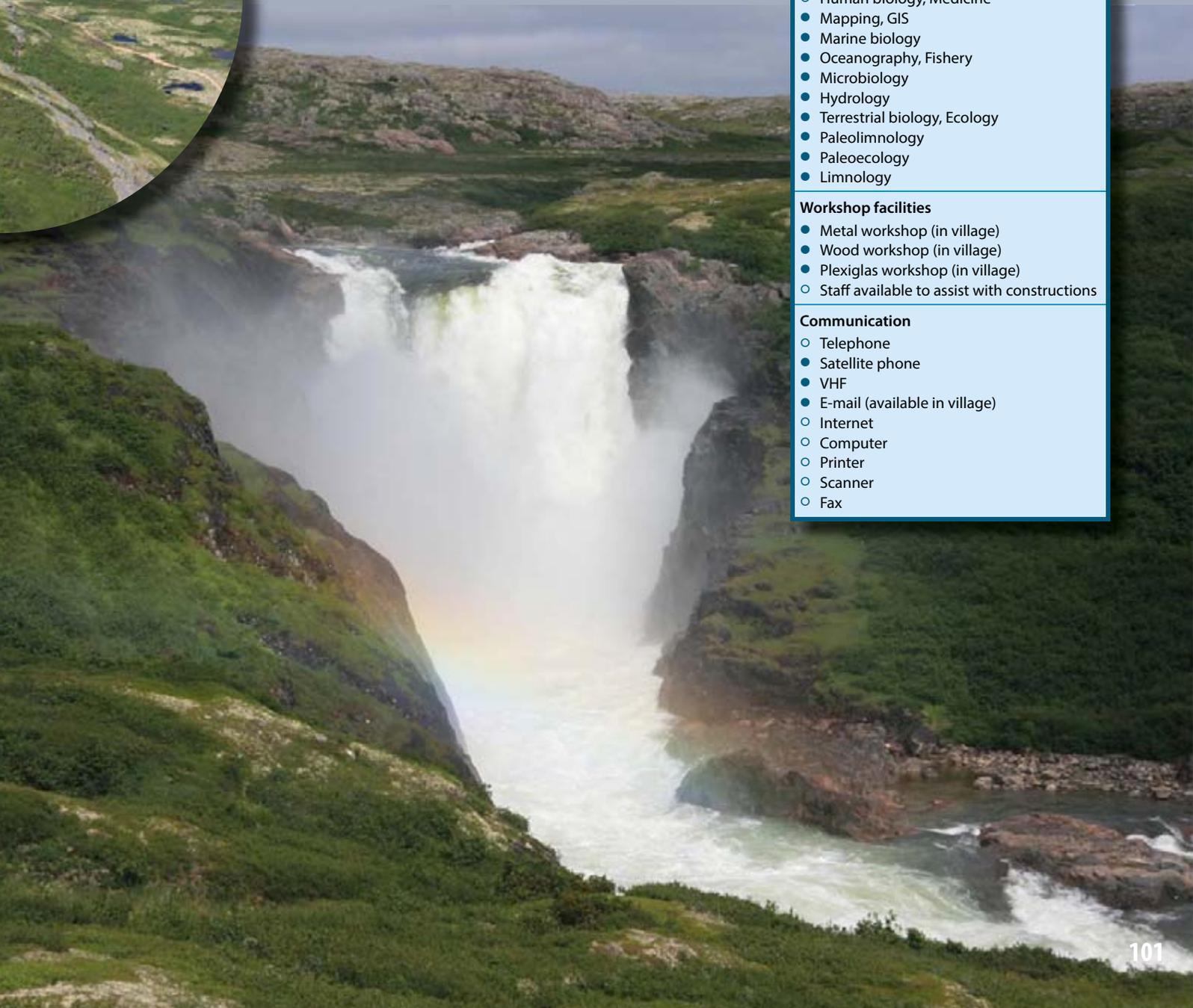
#### ACCESS

Umiujaq is only accessible by commercial airlines. All research activities must be planned in advance. Maritime transport is available twice a year. Local guides and translators are available for hire. Access to the surrounding area by chartered flights (floatplane and helicopter) can be organized by CEN from the Whapmagoostui-Kuujuarapik Research Station. Contact CEN ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)) for more information.



| Category                     | Sub-Category  | CEN Umiujaq Research Station  |
|------------------------------|---|---|
| Website                      |   | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationumiujaq">http://www.cen.ulaval.ca/en/page.aspx?lien=stationumiujaq</a>   |
| Country                      |   | Canada  |
| Opening year                 |   | 2011  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>cen@cen.ulaval.ca   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Centre d'études Nordiques (CEN)<br>Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca   |
| Other institutions           | Name<br><br>Country   | Nunavik Research Institute ( <a href="http://www.makivik.org">www.makivik.org</a> ) and<br>Annituvik Landholding Corporation<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 56°33'07" N, 76°32'57" W<br>5 m a.s.l.<br>0 m a.s.l.<br>400 m a.s.l.<br>Umiujaq village (400 inhabitants)<br>0 km (station in village)<br>Aerial image, Google Earth  |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Discontinuous   |
|                              | Years measured  | Since 1997  |
|                              | Mean annual temperature   | -3 °C   |
|                              | Mean temperature in February  | -22.4 °C  |
|                              | Mean temperature in July  | 12.2 °C   |
|                              | Mean annual wind speed  | 5.9 m/s   |
|                              | Max. wind speed   | 28.3 m/s  |
|                              | Dominant wind direction   | S   |
|                              | Total annual precipitation  | 500-600 mm  |
|                              | Precipitation type  | All   |
|                              | Ice break up  | May or June (year dependant)  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 50 m <sup>2</sup><br>100 m <sup>2</sup><br>Garage 60 m <sup>2</sup><br>3 rooms (6 beds plus 1 pullout couch), 1 living room, 1 kitchen<br>0/0<br>8 to 9<br>Yes<br>Yes<br>Solar, hydroelectric<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | Local guides and translators available for hire<br>Access to extensive climate data records   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br><br>Compulsory safety equipment<br>Recommended safety equipment   | Standard<br>–<br>Yes – community hospital in village<br>In village, 2 staff with basic medical training<br>(45 min. to Puvirnituq by plane)<br>First aid kit, satellite phone<br>Weapon, pepper spray             |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 1174 × 30 (lake: yes)<br>Gravel<br>Yes<br>Port, landing wharf, pier, sledge rental in village   |
| Vehicles at station          | Sea transportation<br><br>Land transportation   | –, upcoming 26 foot aluminum Silver Dolphin equipped with bottom mapping<br>ATVs, snowmobiles, 4x4 truck  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Commercial flights<br>2 (approximately May-June and August-September)<br>Daily (year-round)   |





| Features within study area       |   |
|----------------------------------|---|
| <input type="radio"/>            | Ice cap or glacier or glacier   |
| <input type="radio"/>            | Permanent snowpatches   |
| <input checked="" type="radio"/> | Mountain  |
| <input checked="" type="radio"/> | Valley  |
| <input checked="" type="radio"/> | Shoreline   |
| <input checked="" type="radio"/> | Tundra  |
| <input checked="" type="radio"/> | Tree line   |
| <input checked="" type="radio"/> | Other (Thermokarst lakes, cuestas, permafrost, isostatic uplift, raised beaches, glacial features, landlocked marine species, migrating treeline, deltaic environments) |
| Main science disciplines         |   |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology  |
| <input type="radio"/>            | Astrophysics  |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics   |
| <input checked="" type="radio"/> | Isotopic chemistry  |
| <input checked="" type="radio"/> | Climatology, Climate Change   |
| <input checked="" type="radio"/> | Environmental sciences, Pollution   |
| <input checked="" type="radio"/> | Geodesy   |
| <input checked="" type="radio"/> | Geology, Sedimentology  |
| <input checked="" type="radio"/> | Geophysics  |
| <input checked="" type="radio"/> | Glaciology  |
| <input checked="" type="radio"/> | Geocryology, Geomorphology  |
| <input checked="" type="radio"/> | Soil science  |
| <input type="radio"/>            | Human biology, Medicine   |
| <input checked="" type="radio"/> | Mapping, GIS  |
| <input checked="" type="radio"/> | Marine biology  |
| <input checked="" type="radio"/> | Oceanography, Fishery   |
| <input checked="" type="radio"/> | Microbiology  |
| <input checked="" type="radio"/> | Hydrology   |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology  |
| <input checked="" type="radio"/> | Paleolimnology  |
| <input checked="" type="radio"/> | Paleoecology  |
| <input checked="" type="radio"/> | Limnology   |
| Workshop facilities              |   |
| <input checked="" type="radio"/> | Metal workshop (in village)   |
| <input checked="" type="radio"/> | Wood workshop (in village)  |
| <input checked="" type="radio"/> | Plexiglas workshop (in village)   |
| <input type="radio"/>            | Staff available to assist with constructions  |
| Communication                    |   |
| <input type="radio"/>            | Telephone   |
| <input checked="" type="radio"/> | Satellite phone   |
| <input checked="" type="radio"/> | VHF   |
| <input checked="" type="radio"/> | E-mail (available in village)   |
| <input type="radio"/>            | Internet  |
| <input type="radio"/>            | Computer  |
| <input type="radio"/>            | Printer   |
| <input type="radio"/>            | Scanner   |
| <input type="radio"/>            | Fax   |



# BONIFACE RIVER



## STATION NAME AND OWNER

The CEN Boniface River Station is owned and run by the Centre d'études Nordiques (CEN: Centre for Northern Studies) whose secretariat is based at Université Laval, Québec, Canada. This station is part of the CEN Network.

## LOCATION

The Boniface River Research Station is situated within the forest tundra less than 10 km from the tree limit and some 30 km inland from Hudson Bay (57°45' N, 76°10' W).

## BIODIVERSITY AND NATURAL ENVIRONMENT

The landscape around the station is composed of both wooded hills (30 %) and hills dominated by tundra vegetation (70 %). The most protected sites are generally forested except for areas that have been affected by fire and consequently induced an opening in the forest cover. Landscape features of scientific interest are discontinuous permafrost, thermokarst ponds, palsas, the Boniface River, and the treeline.

## HISTORY AND FACILITIES

The Boniface River Research Station was constructed in 1985 by Professor Serge Payette to conduct research on past treeline and tree growth dynamics in the context of Climate Change. It was upgraded in 2010. Presently, the station is comprised of three individual buildings (one with a shower) that serve primarily as laboratories and a kitchen building. These are powered by solar energy and heated with an oil furnace. Onsite there are two zodiac-style boats. Access to the different research sites is primarily by helicopter or by the Boniface River, which is navigable for some 20 km. Dormitory tents and sleeping bags for researchers and students can be provided by the CEN. Typically, between five and twenty people can be found at the research station during the summer season.





### GENERAL RESEARCH AND DATABASES

Meteorological stations installed within the proximity of the research station have been recording the prevailing conditions at the tree limit, including the thermal contrast (air and soil) between tundra and forest environments, since 1988. In addition, tree growth has been measured with the aid of a dozen electronic dendrometers since the summer of 2005. Data is available upon request at [cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca).

Topics which are studied at the station include the following, but are not exclusive to these: Vegetation dynamics of a sub-arctic topo-sequence and the interaction between climate and forest fires, genetic homogeneity in the ecological heterogeneity of Québec sub-arctic forests in relation to climatic change, black spruce growth as an indicator of Climate Change at the treeline in northern Quebec, origin and dynamics of wooded palsas

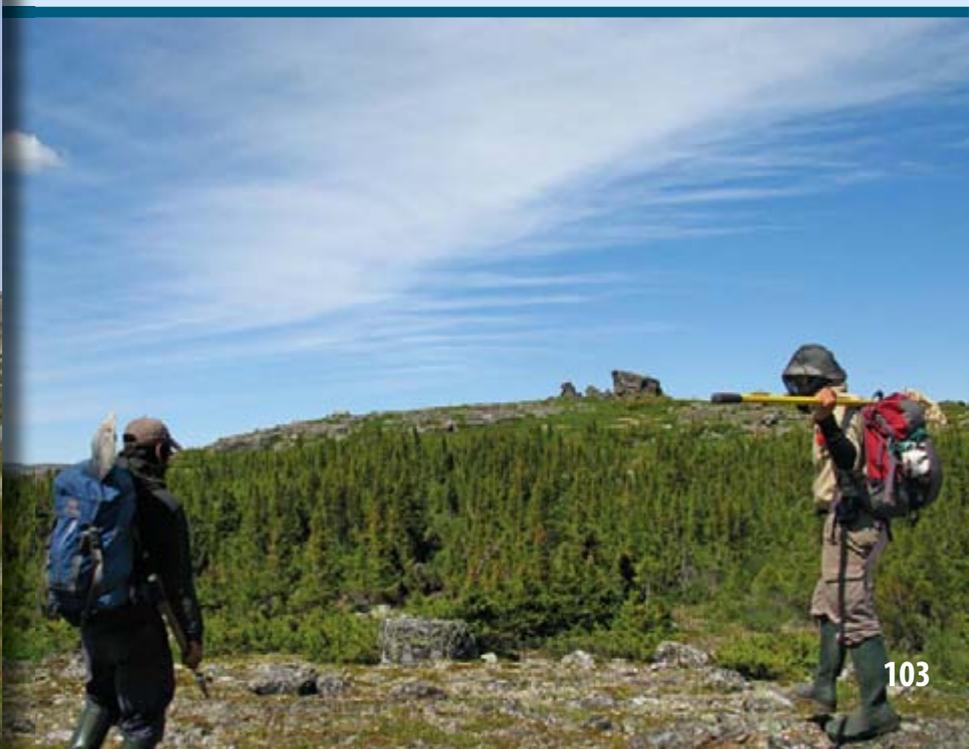
in the Boniface River region, dwarf birch (*Betula glandulosa*) densification since 1950, the influence of permafrost on riverine ecosystem dynamics, fire history of the Boniface River region, long black spruce tree-ring chronology, riparian ecosystem dynamics, Holocene evolution of a palsa plateau at the tree limit, and structural dynamics of an ancient spruce lichen woodland at the northern forest limit.

### HUMAN DIMENSION

No communities live at or near Boniface River Station. The nearest community is Inukjuak more than 120 km away and on the shores of eastern Hudson Bay.

### ACCESS

Beginning in the summer of 2001, supplies for the research station have been delivered primarily by fixed winged aircraft, i.e. Twin Otter, thanks to the construction of a 300 m long airstrip situated on the opposite shore of the research station. Access to the station is by chartered helicopter or Twin Otter, departing from Whapmagoostui-Kuujuarapik.



| Category                     | Sub-Category  | CEN Boniface River Station  |
|------------------------------|---|---|
| Website                      |   | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationboniface">http://www.cen.ulaval.ca/en/page.aspx?lien=stationboniface</a>   |
| Country                      |   | Canada  |
| Opening year                 |   | 1988  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>cen@cen.ulaval.ca   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Centre d'études Nordiques (CEN)<br>Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca   |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 57°45' N, 76°10' W<br>100 m a.s.l.<br>90 m a.s.l.<br>300 m a.s.l.<br>Umiujaq and Inukjuak (< 400 inhabitants)<br>130 km<br>Aerial image, Google Earth   |
|                              | Climate zone<br>Permafrost<br>Years measured<br>Mean annual temperature<br>Mean temperature in February<br>Mean temperature in July<br>Mean annual wind speed<br>Max. wind speed<br>Dominant wind direction<br>Total annual precipitation<br>Precipitation type<br>Ice break up | Sub-Arctic<br>Discontinuous<br>Since 1988<br>-4 °C<br>-24 °C<br>12.5 °C<br>4 m/s<br>21 m/s<br>S<br>500 mm<br>All<br>May or June (year dependent)  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply                                   | 50 m <sup>2</sup><br>25 m <sup>2</sup><br>25 m <sup>2</sup><br>2 rooms (6 beds under 2 roofs), 1 living area, 1 kitchen<br>0/0<br>8 to 9<br>Yes<br>–<br>Solar and heated by oil<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | Local guides and translators available for hire<br>Access to extensive climate data records   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br><br>Compulsory safety equipment<br>Recommended safety equipment   | –<br>–<br>–<br>Heli lifted out of Umiujaq and then 45 min. to Puvirnituq (by plane, 1-2 hours in total)<br>Weapon, satellite phone<br>Pepper spray, weapon, first aid kit                           |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 300 × 40 m (lake: yes)<br>Sand<br>– (Helicopter lands on level ground)<br>–   |
| Vehicles at station          | Sea transportation<br>Land transportation   | Boat, zodiac<br>Snowmobile in winter  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Chartered helicopter or floatplane, Twin Otter in winter<br>–<br>–  |



Climate



#### Features within study area

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Thermokarst lakes, permafrost, river(s), peatlands, lakes, glacial features)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoeology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# SALLUIT

## STATION NAME AND OWNER

CEN Salluit Research Station is owned and run by Centre d'études Nordiques (CEN: Centre for Northern Studies) whose secretariat is based at Université Laval, Québec, Canada.

## LOCATION

The station is situated in the Inuit community of Salluit, Nunavik, Québec, Canada (62°12' N, 75°38' W).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Salluit is located in the low arctic tundra in the continuous permafrost zone. The hilly bedrock consists principally of gneissic rocks from the Precambrian belonging to the Canadian Shield. The village is located in a valley that opens to the shore of Sugluk inlet (a fjord). The surrounding landscape consists of rocky plateaus with a hilly topography. The region was deglaciated about 8000 years ago and sectors below the elevation of 150 m were inundated by the post-glacial d'Iberville Sea. Till and some glacio-fluvial sediments are the major surficial materials on the plateaus, while the Salluit valley and the other valleys that connect with the fjord (particularly at the fjord head) are floored with fluvial sediments in terraces and marine clay. The geology and the oceanography of the fjord are poorly studied. The fjord opens to Hudson Strait. Mean annual air temperature is c. -8 °C and annual precipitation c. 300 mm (50 % snow).





### HISTORY AND FACILITIES

Research has been conducted in the region in both natural and human sciences since the early 1960s by various groups. Permafrost research by the CEN began in 1987. In the context of Climate Change, a major research program was undertaken in 2002 to support community adaptation to changing permafrost and to assist the community in addressing housing and infrastructure needs for the rapidly growing population. The field station (a house) was built in 2010 thanks to a grant acquired from a federal research infrastructure program.

### GENERAL RESEARCH AND DATABASES

Numerous theses and research papers have been published on permafrost, periglacial geomorphology (ice-wedges, slope processes), archaeology, climatology, paleo-climate (paleo-soils and lake cores), population, culture and land management in the area. Climate and permafrost temperature data from automatic stations, in operation since August 2002, are available upon request at [cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca). Surficial geology and permafrost maps have also been produced for the territory.

### HUMAN DIMENSION

Inuit and their ancestors have occupied the region for over 3500 years. Many of the key archaeological sites of the Hudson Strait region are along the fjord coastline and along Hudson Strait. The shift from a nomadic lifestyle to permanent settlement led to the growth of the village in the 1930s with the installation of the Hudson Bay Company and churches. The population size has reached about 1350 inhabitants, with youths constituting an important part of the population.

### ACCESS

Access is by commercial airlines from Montréal and Québec city. Every summer, several cargo ships allow shipping of heavy equipment and materials, though this requires planning in advance. The station has no permanent staff. Local support for services and field work is available in the community. Station users are instructed to do their cleaning and take good care of the premises and do minimal maintenance, if needed. Contact CEN ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)) for more information.



| Category                     | Sub-Category  | CEN Salluit Research Station   |
|------------------------------|---|--|
| Website                      |   | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationsalluit">http://www.cen.ulaval.ca/en/page.aspx?lien=stationsalluit</a>  |
| Country                      |   | Canada   |
| Opening year                 |   | 2011   |
| Operational period           |   | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>cen@cen.ulaval.ca  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Centre d'études Nordiques (CEN)<br>Government<br>CEN at Université Laval<br>christine.barnard@cen.ulaval.ca or cen@cen.ulaval.ca<br>www.cen.ulaval.ca  |
| Other institutions           | Name<br>Country   | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 62°12' N, 75°38' W<br>35 m a.s.l.<br>0 m a.s.l.<br>460 m a.s.l.<br>Salluit village (1350 inhabitants)<br>0 km<br>Aerial image, Google Earth  |
| Climate                      | Climate zone  | Low Arctic   |
|                              | Permafrost  | Continuous   |
|                              | Years measured  | Since 1997   |
|                              | Mean annual temperature   | -3 °C  |
|                              | Mean temperature in February  | -23.1 °C   |
|                              | Mean temperature in July  | 9.6 °C   |
|                              | Mean annual wind speed  | 6 m/s  |
|                              | Max. wind speed   | 34 m/s   |
|                              | Dominant wind direction   | SSE  |
|                              | Total annual precipitation  | 500-600 mm   |
| Precipitation type           | All   |  |
| Ice break up                 | May or June (year dependant)  |  |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 50 m <sup>2</sup><br>–<br>–<br>3 rooms (6 beds plus 1 pullout couch), 1 living room, 1 kitchen<br>0/0<br>8 to 9<br>Yes<br>Yes<br>Solar, electrical<br>24 hours per day   |
| Scientific equipment         | Specific device<br>Scientific services offered  | Local guides and translators available for hire<br>Access to extensive climate data records  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br><br>Compulsory safety equipment<br>Recommended safety equipment   | Standard<br>–<br>Yes – community hospital in village<br>In village, 2 staff with basic medical training<br>(45 min. to Puvirnituq by plane)<br><br>First aid kit, satellite phone<br>Weapon, pepper spray, satellite phone |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 1174 × 30 m (lake: yes)<br>Gravel<br>Yes<br>Landing wharf and marina in Salluit  |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>ATVs, snowmobiles, 4x4 truck  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Commercial flights<br>2 (approximately May-June and August-September)<br>Daily (year-round)  |





#### Features within study area

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Permafrost (ice-rich), glacial features, Pingaluit National Park, coast, rivers, lakes, fjords, thermokarst lakes )

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

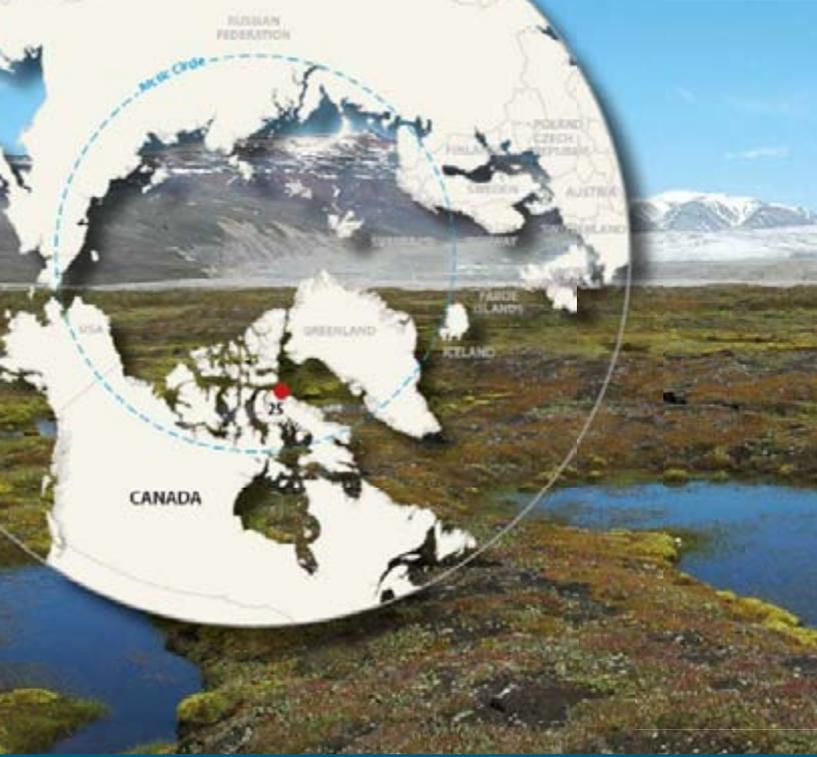
#### Workshop facilities

- Metal workshop (in village)
- Wood workshop (in village)
- Plexiglas workshop (in village)
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail (available in village)
- Internet (access via rented router to use with personal computer)
- Computer
- Printer (available in village)
- Scanner (available in village)
- Fax (available in village)





# BYLOT ISLAND



## STATION NAME AND OWNER

The Bylot Island Research Station is owned and run by the Centre d'études Nordiques (CEN: Centre for Northern Studies) and in collaboration with Parks Canada (<http://www.pc.gc.ca/index.aspx>). The CEN secretariat is based at Université Laval, Québec, Canada.

## LOCATION

Bylot Island is located off the northern tip of Baffin Island, Nunavut, Canada. It is accessible through the communities of Pond Inlet (Mittimatalik) and Nanisivik, both found on Northern Baffin Island. The field research covers the south plain of the island (1600 km<sup>2</sup>), but the research station is located in a large glacial valley at the southwest end of the island (73°08' N, 80°00' W).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Much of Bylot Island is covered by high mountain peaks and glaciers. The remainder of Bylot Island, and in particular its southern plain, is characterised by extensive low-elevation areas covered by heterogeneous tundra vegetation.

The vegetation found in the wetlands is characterised by the presence of sedges, grasses, and many brown moss species. In

contrast to the wetlands, dryer areas are found on slopes, hills and elevated terraces surrounding the valley lowlands, as well as on the rims surrounding tundra polygons. The better drained, dryer soils of these habitats allows for distinct plant communities, including forbs, grasses, and shrubs. These uplands, account for 90% of the south plain surface whereas wetlands account for only 10%. The wetlands of the south plain are a habitat of rare plant quality and productivity for an arctic environment. Benefiting from this "polar oasis" are more than 360 species of plants, 10 mammal species, and 74 bird species. Considered as an important site for many migratory birds, Bylot Island was declared a Migratory Bird Sanctuary in 1965.

The south plain holds one of the world's largest breeding colonies of greater snow geese and the wetlands of the Qarlikturvik valley represent their main brood-rearing site on the island. In addition to the geese, other herbivores are the brown and collared lemmings, Arctic hare, caribou, and rock ptarmigan. The main terrestrial predators are the Arctic fox, long-tailed jaeger, parasitic jaeger, glaucous gull, common raven, and snowy owl. Food web relationships are summarised in Gauthier et al. (2011): *Ecoscience* 18: 223-235.





## HISTORY

The current ecological studies on Bylot Island started in 1988 as a joint collaboration between Université Laval (CEN) and the Canadian Wildlife Service (Quebec region). The initial goals of the study were to initiate a demographic study of the greater snow geese population through a long-term marking program, and to assess the impact of goose grazing on the tundra vegetation. However, over the years, the research program has broadened considerably and now includes many other components of the terrestrial ecosystem.

## GENERAL RESEARCH AND DATABASES

A central theme of the research conducted here is trophic interactions in the arctic tundra in relation to environmental changes and greater snow goose ecology, but also long-term monitoring of animal populations, vegetation and climate of the Arctic tundra, impacts of bird populations and Climate Change on lake ecosystems, and geomorphology of ice wedge polygons. Over the years, the Bylot Island research project has grown into one of the largest and longest ecological studies in Nunavut.

Established in 2001, Sirmilik National Park encompasses most of Bylot Island, except for a few pockets that are Inuit-owned lands. Covering an area of 22 000 km<sup>2</sup>, this park extends to the northern part of Baffin Island. Sirmilik (which means “place of glaciers” in Inuktitut) reflects the complex of glaciers and ice caps covering most of Bylot Island. Extensive climate data records are available upon request. For requests concerning ecological monitoring data, please contact the lead researcher Gilles Gauthier (gilles.gauthier@bio.ulaval.ca).

## HUMAN DIMENSION

No communities are present on Bylot Island. The nearest community is Pond Inlet (Mittimatalik) found on northern Baffin Island, Nunavut, Canada.

## ACCESS

The research station is accessible by chartered flights from Pond Inlet (Mittimatalik). Research must be planned well in advance and coordinated with the station’s primary and secondary contacts Gilles Gauthier and Dominique Berteaux (dominique\_berteaux@uqar.qc.ca).



| Category | Sub-Category | CEN Bylot Island Field Station |
|----------|--------------|--------------------------------|
|----------|--------------|--------------------------------|

|  |   |  |                    |
|--|---|--|--------------------|
| Website                                      |   | www.cen.ulaval.ca/bylot/   |                    |
| Country                                      |   | Canada   |                    |
| Opening year                                 |   | 1989   |                    |
| Operational period                           |   | May-August   |                    |
| Permitting issues categories                 | Permits required for access to the station          | Yes (must be required via Parks Canada; <a href="http://www.pc.gc.ca/apps/rps/page1_e.asp">http://www.pc.gc.ca/apps/rps/page1_e.asp</a> )            |                    |
|  | Permits required for studies                        | Yes  |                    |
|  | Contact (permit issues)                             | cen@cen.ulaval.ca  |                    |
| Facility owner and manager                   | Name of the facility owner                          | Centre d'études Nordiques (CEN)  |                    |
|  | Owner status  | Government   |                    |
|  | Institution responsible for managing the station    | CEN at Université Laval  |                    |
|  | Contact (access to station)                         | gilles.gauthier@bio.ulaval.ca  |                    |
|  | Website (institution)                               | www.cen.ulaval.ca  |                    |
| Other institutions                           | Name  | –  |                    |
|  | Country   | –  |                    |
| Location                                     | Geographical coordinates                            | 73°8'N, 80°00'W  |                    |
|  | Altitude of station                                 | 20 m a.s.l.  |                    |
|  | Min. altitude within study area                     | 0 m a.s.l.   |                    |
|  | Max. altitude within study area                     | 1300 m a.s.l.  |                    |
|  | Nearest town/settlement                             | Pond Inlet (Mittimatalik; 1300 inhabitants)  |                    |
|  | Distance to nearest town/settlement                 | 85 km  |                    |
|  | Map   | Google Earth with low resolution   |                    |
| Climate                                      | Climate zone  | High Arctic  |                    |
|  | Permafrost  | Continuous   |                    |
|  | Years measured                                      | Since 1994   |                    |
|  | Mean annual temperature                             | -15 °C   |                    |
|  | Mean temperature in February                        | -35 °C   |                    |
|  | Mean temperature in July                            | 6.1 °C   |                    |
|  | Mean annual wind speed                              | 1.9 m/s  |                    |
|  | Max. wind speed                                     | 9.6 m/s  |                    |
|  | Dominant wind direction                             | E  |                    |
|  | Total annual precipitation                          | 220 mm   |                    |
|  | Precipitation type                                  | Snow, rain   |                    |
|  | Ice break up  | Lake: June/July; River: May/June; Sea: July  |                    |
|  | Station facilities                                  | Area under roof  | 132 m <sup>2</sup> |
|  |   | Scientific laboratories  | 26 m <sup>2</sup>  |
| Logistic                                     |   | 106 m <sup>2</sup>   |                    |
| Number of rooms (beds)                       |   | 3 bedrooms (2 bunkbeds each, 12 beds total), 1 laboratory, 1 kitchen, dome tents are also available  |                    |
| Number of staff on station (peak/off season) |   | 0/0  |                    |
| Max. number of visitors at a time            |   | 18   |                    |
| Showers                                      |   | Yes  |                    |
| Laundry facilities                           |   | –  |                    |
| Power supply (type)                          |   | Solar with a back-up fossil fuel generator (12V/110V), North American two/three-pin plugs (type A/B)   |                    |
| Power supply                                 |   | 24 hours per day   |                    |
| Scientific equipment                         | Specific device                                     | Some laboratory equipment available (drying oven, electronic balance, microscope/binocular, glassware)   |                    |
|  | Scientific services offered                         | Access to extensive climate data records   |                    |
| Medical facilities                           | Medical facilities                                  | –  |                    |
|  | Medical suite                                       | –  |                    |
|  | No. of staff with basic medical training or doctor  | – Pond Inlet: nurses only; Iqaluit: doctors and nurses   |                    |
|  | Distance to hospital (estimated time)               | By plane – Health Centre in Pond Inlet (85 km) and Hospital in Iqaluit (1200 km, duration depends on helicopter availability and weather conditions) |                    |
|  | Compulsory safety equipment                         | VHF radio  |                    |
| Recommended safety equipment                 | Pepper spray, first aid kit, scaring pistol, weapon |  |                    |
| Landing facilities                           | Airstrip (Length × Width)                           | Twin Otter on skis (until ~31 May; landing on lake 50 m from camp) or wheels (June to August; landing strip 5 km from camp), length unknown          |                    |
|  | Airstrip surface                                    | Snow, gravel or clay   |                    |
|  | Helipad   | Yes (landing area 50 m from camp)  |                    |
|  | Ship landing facilities                             | –  |                    |
| Vehicles at station                          | Sea transportation                                  | –  |                    |
|  | Land transportation                                 | Snowmobile (snow season only)  |                    |
| Transport and freight                        | Transport to station                                | Commercial flights to Pond Inlet airport only; Twin Otter, helicopter or snowmobile from there   |                    |
|  | Number of ship visits per year (period)             | –  |                    |
|  | Number of flight visits per year (period)           | Every week (several times depending of season, May and August)   |                    |





#### Features within study area

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (High mountain peaks and glaciers, extensive low-elevation areas covered by heterogeneous tundra vegetation, wetlands, lakes, coastline, glaciers, glacial features, permafrost)

#### Main science disciplines

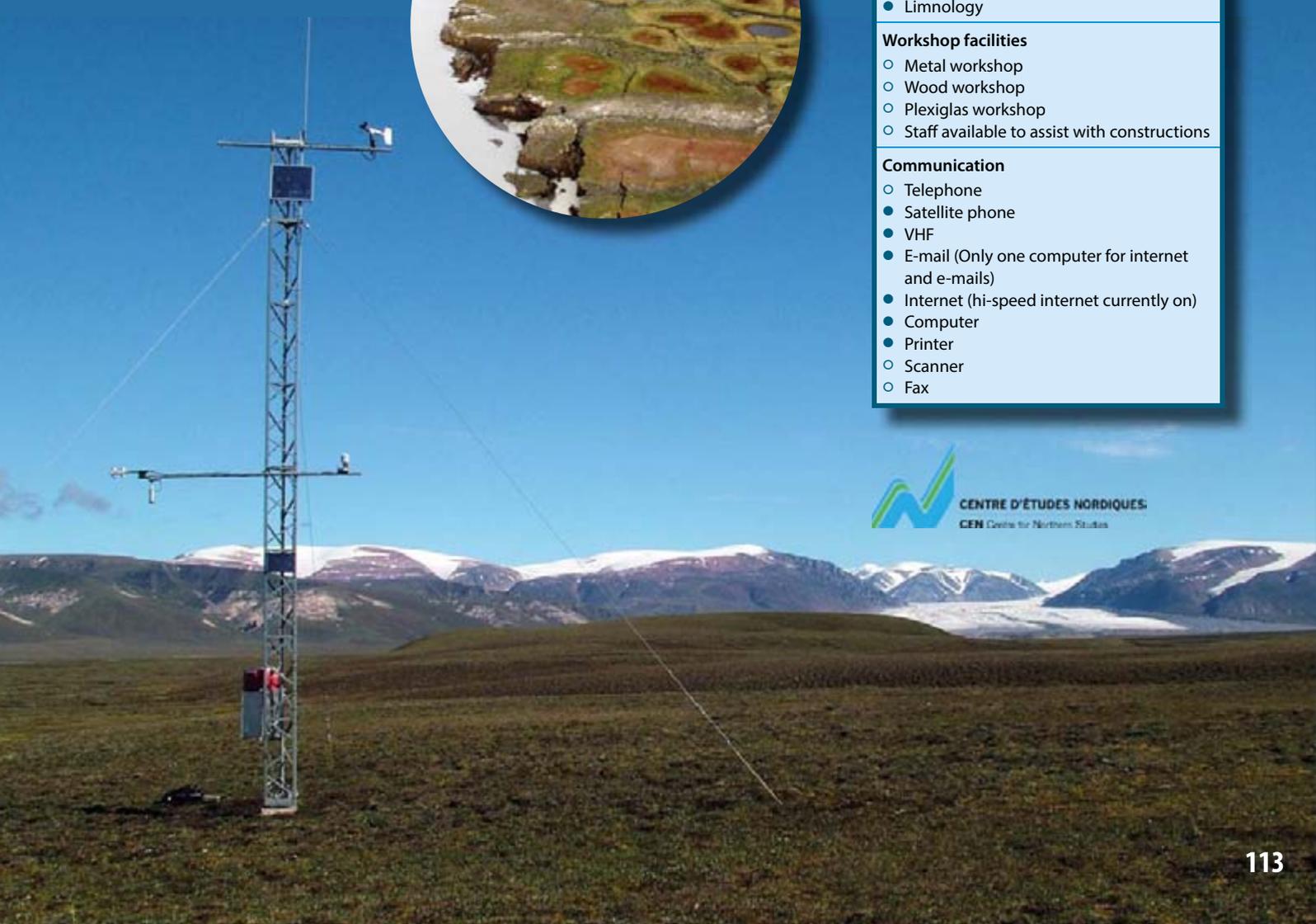
- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

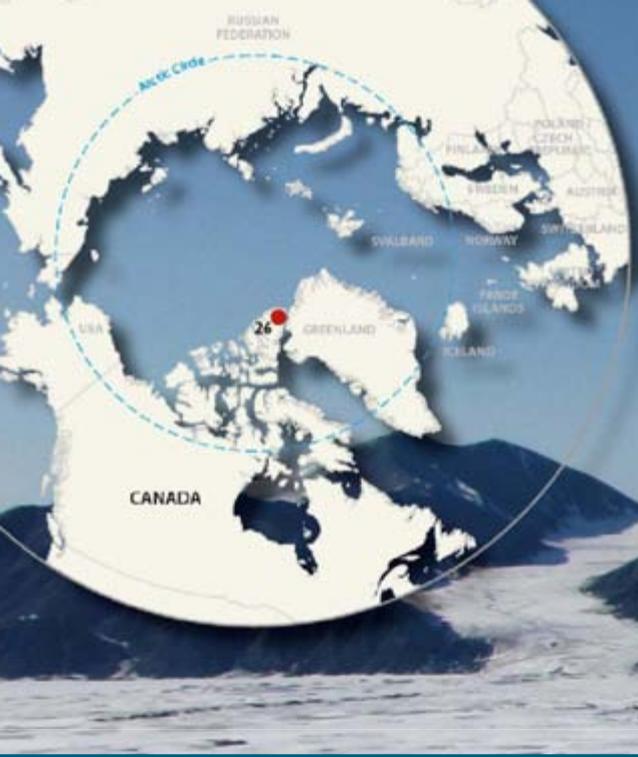
#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail (Only one computer for internet and e-mails)
- Internet (hi-speed internet currently on)
- Computer
- Printer
- Scanner
- Fax





# WARD HUNT ISLAND



## STATION NAME AND OWNER

The Ward Hunt Island Observatory research station is owned and run by the Centre d'études Nordiques (CEN: Centre for Northern Studies) in collaboration with Parks Canada (<http://www.pc.gc.ca/index.aspx>).

## LOCATION

Ward Hunt Island is located at the northernmost tip of Canada, off the coast of northern Ellesmere Island and is part of Quttinirpaaq National Park, Nunavut, Canada (83°06' N, 74°10' W). Quttinirpaaq means "top of the world" in Inuktitut and reflects this station's location, situated about 750 km from the North Pole.

## BIODIVERSITY AND NATURAL ENVIRONMENT

This island in the high arctic is 6.5 km long (from east to west) and 3.3 km wide. The climate regime is typical of polar deserts, with dry and extremely cold temperatures (annual mean temperature of -17.3°C). The natural environment features lakes, ice shelves, fjords, epishelf lakes, ice caps and glaciers, sea ice, mountains, and valleys. The desert terrain has a low plant and animal diversity, but the region contains diverse microbial communities

such as cyanobacterial mats that survive in these extreme environments. An overview of past studies in this region is given in: Vincent, W.F., et al. 2011: Extreme ecosystems and geosystems in the Canadian High Arctic: Ward Hunt Island and vicinity (*Ecoscience* 18: 236-261).

## HISTORY AND FACILITIES

The first known sighting was in 1876 by Pelham Aldrich, a lieutenant with the George Nares expedition, and named for George Ward Hunt, First Lord of the Admiralty (1874-1877). Ward Hunt Island was briefly used as a weather station during the International Geophysical Year of 1957-58, and since then it has been used as the starting point for a number of attempts to reach the North Pole, beginning with Ralph Plaisted in 1968. Scientists have been working at the station since the 1950s. Parks Canada has three Weatherhaven shelters with oil burner furnaces, each can host 12 people for sleeping. CEN operates three automated, year-round climate stations of SILA Network in the region. A laboratory made of insulated fiberglass and powered by solar panels was built in 2010 thanks to a federal infrastructure grant.





### GENERAL RESEARCH AND DATABASES

Main research fields comprise the structure and functioning of lake and river ecosystems at high latitudes, dynamics of northern ice shelves, microbial ecology, geomorphology of polar desert landscapes, impacts of UV radiation, and Climate Change on aquatic ecosystems. Extensive climate data records are available upon request: [cen@cen.ulaval.c](mailto:cen@cen.ulaval.c). For requests concerning ecological monitoring data, please contact the leading researcher, Warwick Vincent ([warwick.vincent@bio.ulaval.ca](mailto:warwick.vincent@bio.ulaval.ca)).

### HUMAN DIMENSION

No communities live on Ward Hunt Island. The nearest community is Grise Fjord, located 800 km away on southern Ellesmere Island. Grise Fjord, (Inuktitut: Ajuittuq, "place that never thaws"; Inuktitut syllabics: ᐱᐅᐅᐅᐅᐅᐅ) is a small Inuit hamlet in the Qikiqtaaluk Region in the territory of Nunavut, Canada. With a population of 141 residents (as of the Canada 2006 Census), it is the only Inuit community on Ellesmere Island. It is also one of the coldest inhabited places in the world, with an average yearly temperature of  $-16.5^{\circ}\text{C}$ . Grise Fjord lies 1160 km north of the Arctic Circle in the Arctic Cordillera mountain range which is the

only major mountain system east of the Canadian Rockies. The Canadian military base Alert is 170 km to the East and slightly to the South of Ward Hunt Island.

### ACCESS

Given that this is an extremely isolated station in a national park, all research activities must be planned and proposed at least one year in advance. Contact CEN for more information ([cen@cen.ulaval.ca](mailto:cen@cen.ulaval.ca)). For information on access and permits, contact Quttinirpaaq Park Manager (<http://www.pc.gc.ca/pn-np/nu/quttinirpaaq/plan.aspx>) and the Polar Continental Shelf Project (PCSP) for appropriate application forms to access the site via chartered flights (<http://polar.nrcan.gc.ca/>).



| Category                                     | Sub-Category                                       | CEN Ward Hunt Island Station  |
|--|--|---|
| Website                                      |  | <a href="http://www.cen.ulaval.ca/en/page.aspx?lien=stationwardhunt">www.cen.ulaval.ca/en/page.aspx?lien=stationwardhunt</a>  |
| Country                                      |  | Quttinirpaaq National Park, Nunavut, Canada   |
| Opening year                                 |  | 1998  |
| Operational period                           |  | June-August   |
| Permitting issues categories                 | Permits required for access to the station         | Yes   |
|  | Permits required for studies                       | Yes   |
|  | Contact (permit issues)                            | Via Parks Canada ( <a href="http://www.pc.gc.ca/apps/rps/page1_e.asp">www.pc.gc.ca/apps/rps/page1_e.asp</a> ) and Nunavut Research Institute ( <a href="http://www.nri.nu.ca/">www.nri.nu.ca/</a> ) |
| Facility owner and manager                   | Name of the facility owner                         | Centre d'études Nordiques (CEN) and Parks Canada  |
|  | Owner status                                       | Government  |
|  | Institution responsible for managing the station   | CEN at Université Laval   |
|  | Contact (access to station)                        | <a href="mailto:warwick.vincent@cen.ulaval.ca">warwick.vincent@cen.ulaval.ca</a> or <a href="mailto:cen@cen.ulaval.ca">cen@cen.ulaval.ca</a>  |
|  | Website (institution)                              | <a href="http://www.cen.ulaval.ca">www.cen.ulaval.ca</a> , <a href="http://www.pc.gc.ca/eng/index.aspx">www.pc.gc.ca/eng/index.aspx</a>   |
| Other institutions                           | Name   | –   |
|  | Country  | –   |
| Location                                     | Geographical coordinates                           | 83°06' N, 74°10' W  |
|  | Altitude of station                                | 5 m a.s.l.  |
|  | Min. altitude within study area                    | 0 m a.s.l.  |
|  | Max. altitude within study area                    | 400 m a.s.l.  |
|  | Nearest town/settlement                            | Grise Fiord (140 inhabitants)   |
|  | Distance to nearest town/settlement                | 800 km  |
|  | Map  | Aerial image, Google Earth  |
| Climate                                      | Climate zone                                       | High Arctic   |
|  | Permafrost   | Continuous  |
|  | Years measured                                     | Since 1995  |
|  | Mean annual temperature                            | -17.3 °C  |
|  | Mean temperature in February                       | -33 °C  |
|  | Mean temperature in July                           | -1 °C   |
|  | Mean annual wind speed                             | 3.3 m/s   |
|  | Max. wind speed                                    | 29 m/s  |
|  | Dominant wind direction                            | SSW   |
|  | Total annual precipitation                         | 150 mm  |
|  | Precipitation type                                 | All   |
|  | Ice break up                                       | July or August  |
|  | Station facilities                                 | Area under roof   |
| Scientific laboratories                      |  | 25 m <sup>2</sup>   |
| Logistic                                     |  | 25 m <sup>2</sup>   |
| Number of rooms (beds)                       |  | 3 rooms (8 beds), 1 living area, 1 kitchen, 1 lab   |
| Number of staff on station (peak/off season) |  | 0/0   |
| Max. number of visitors at a time            |  | 8 to 9  |
| Showers                                      |  | –   |
| Laundry facilities                           |  | –   |
| Power supply (type)                          |  | Solar and heated by oil and propane, generator on site  |
| Power supply                                 |  | 24 hours per day  |
| Scientific equipment                         | Specific device                                    | Some basic laboratory equipment available (microscope/binocular, glassware)   |
|  | Scientific services offered                        | Access to extensive climate data records  |
| Medical facilities                           | Medical facilities                                 | –   |
|  | Medical suite                                      | –   |
|  | No. of staff with basic medical training or doctor | –   |
|  | Distance to hospital (estimated time)              | Chartered 2000 km flight to Iqaluit, Nunavut (several hours)  |
|  | Compulsory safety equipment                        | Weapon, first aid kit, satellite phone  |
| Recommended safety equipment                 |  | Weapon, first aid kit, satellite phone, pepper spray  |
|  |  |   |
| Landing facilities                           | Airstrip (Length × Width)                          | 300 × 40 m  |
|  | Airstrip surface                                   | Gravel  |
|  | Helipad  | – (helicopter lands on level ground)  |
|  | Ship landing facilities                            | –   |
| Vehicles at station                          | Sea transportation                                 | Boat, zodiac for freshwater work  |
|  | Land transportation                                | –   |
| Transport and freight                        | Transport to station                               | Chartered flight, helicopter  |
|  | Number of ship visits per year (period)            | –   |
|  | Number of flight visits per year (period)          | –   |





#### Features within study area

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (High Arctic desert, epishelf lakes, fjords, lakes, coastline, glaciers, glacial features)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleocology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





# ARCTIC STATION



## STATION NAME AND OWNER

Owner of the Arctic Station in Greenland is the Faculty of Science at the University of Copenhagen, Denmark.

## LOCATION

The Arctic Station is located on the south coast of the Disko Island in central West Greenland (69°15' N, 53°34' W). It is facing the Disko Bay/Davis Strait and is characterised by a low arctic, coastal climate. Some of the world's largest icebergs drift by the Arctic Station .

## BIODIVERSITY AND NATURAL ENVIRONMENT

The surroundings of Arctic Station are characterised by a large variety in landscape, flora, and fauna. The station and the nearby town Qeqertarsuaq are situated on a ridge of Precambrian gneisses overlain by massive basalts from the Tertiary. The surrounding mountains have an altitude of 600-800 m a.s.l. Three major valley glaciers, Lyngmarksbræen, Chamberlain's Glacier, and Petersen's Glacier, can be visited on a single day trip. The area around Qeqertarsuaq is situated in the transition zone between continuous and discontinuous permafrost. A large

variety of periglacial phenomena can be studied, i.e. ice- and sand wedges, stone polygons, mud circles as well as palsa and pingo formations. The coastline is situated only 300 m south of the station along a 100 m wide sandy coastal barrier. The vegetation within the immediate surroundings of the Arctic Station is unique to low arctic Greenland. This is illustrated by the number of species of flowering plants within walking distance from the station: 212 of the 513 Greenlandic flower species occur in the area. This plant diversity is caused by a relatively favourable local climate, a high altitudinal gradient, rich soils, and several homothermic springs.

## HISTORY AND FACILITIES

The botanist Morten Petersen Porsild founded the Arctic Station ("Den Danske Arktiske Station") in 1906. The locality selected was c. 1 km east of the town Qeqertarsuaq (formerly Godhavn) which is located on the south coast of the Disko Island – also named Qeqertarsuaq. The idea of establishing an arctic research facility in Greenland was supported by famous explorers of the northern polar regions, e.g. Knud Rasmussen, Ludwig Mylius-Erichsen, and Fridtjof Nansen. The University of Copenhagen became the





owner of the research facility in 1953. Arctic Station has around 150 Danish and international visitors, students, and researchers each year. Arctic Station has rooms for 26 people. Kitchen, living room, seminar room, scientific library, and laboratories are found at the station.

#### GENERAL RESEARCH AND DATABASES

The surroundings of Arctic Station offer both terrestrial and marine environments, which makes the research station ideal for botanists, zoologists, geologists, geophysicists, and physical geographers. A meteorological station was established in 1990, and a full record of climate data exists since 1991. These monitoring data are available through Dr. Birger Ulf Hansen, University of Copenhagen, Institute for Geology and Geography (buh@geoku.dk).

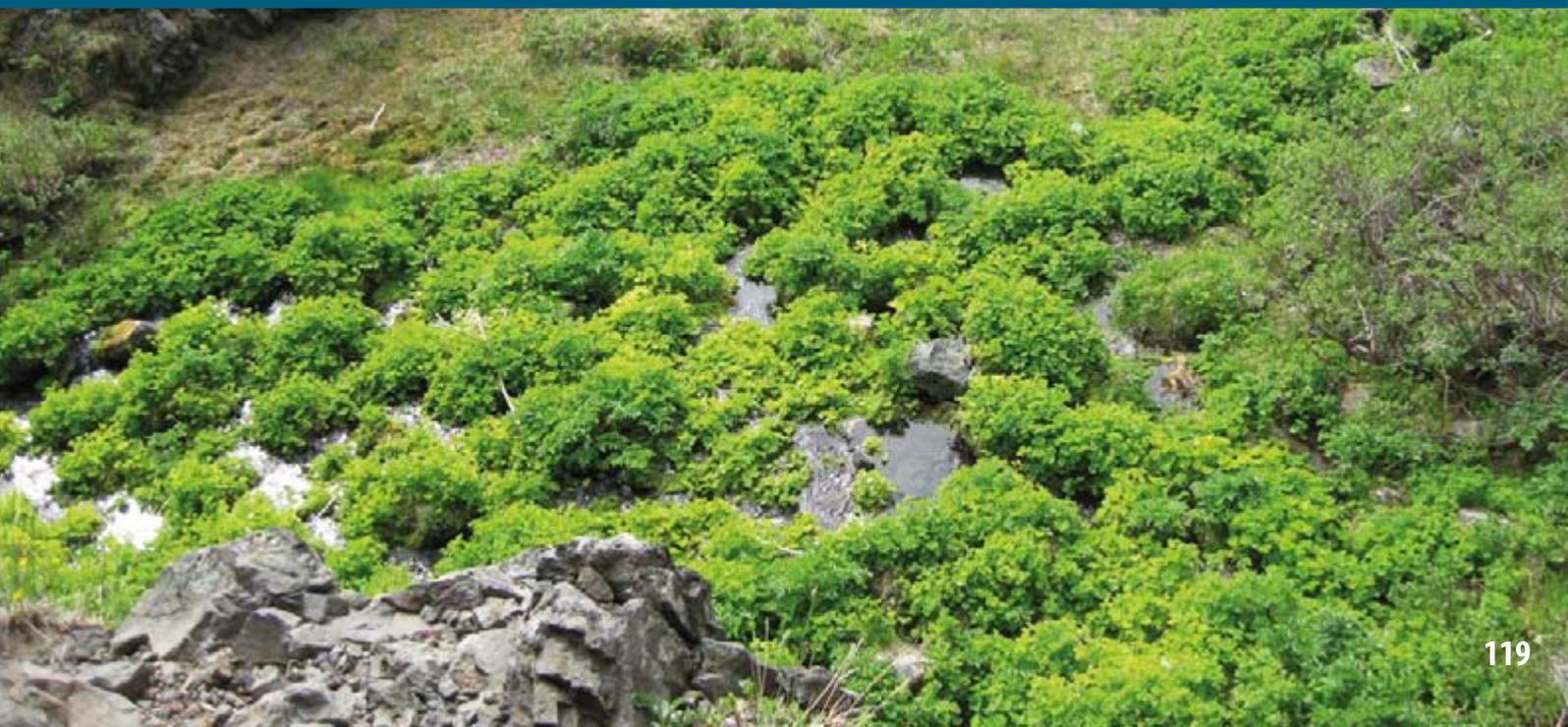
#### HUMAN DIMENSION

Arctic Station is located only 1 km east of the town Qeqertarsuaq (Godhavn) with a population of around 1000 inhabitants.

The city was established in 1773 by Sven Sandgren. Whaling has always been very important for the city. Fishing and hunting are still among the primary occupations for the island's inhabitants. Tourism is another major business. As something quite unique for Greenland, it is possible to ride a dog sledge on the local glaciers at Qeqertarsuaq under the midnight sun during summer. One can hike to the top of the Lyngmarks-fjeld where efforts are rewarded by a fantastic view of Disko Bay and the gigantic icebergs at Ilulissat Icefjord almost 100 kilometres away.

#### ACCESS

The Arctic Station can be visited without problems throughout the year. Qeqertarsuaq Heliport is served in winter by the Sikorsky S-61N helicopter. Air Greenland operates winter-only air services from Qeqertarsuaq Heliport to Ilulissat, Qasigianguit, and Aasiaat. During summer and autumn, when the waters of Disko Bay are ice-free, transport between towns and settlements is by sea only. A ferry (Diskoline) links Qeqertarsuaq with Ilulissat, Aasiaat, and Qasigianguit. For further information see [www.diskoline.gl](http://www.diskoline.gl).



| Category                     | Sub-Category   | Arctic Station   |
|------------------------------|--|--|
| Website                      |  | <a href="http://arktiskstation.ku.dk/english/">http://arktiskstation.ku.dk/english/</a>  |
| Country                      |  | Greenland/Denmark  |
| Opening year                 |  | 1953   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | Yes<br>Yes<br>as-science@greennet.gl   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br><br>Contact (access to station)<br>Website (institution)                                     | Faculty of Science, University of Copenhagen<br>Government<br>Arctic Station administration, Faculty of Science, University of Copenhagen<br>as-science@greennet.gl or be@geo.ku.dk<br>arktiskstation.ku.dk/english/ |
| Other institutions           | Name<br>Country  | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 69°15'N, 53°34'W<br>20 m a.s.l.<br>0 m a.s.l.<br>800 m a.s.l.<br>Qeqertarsuaq (1100 inhabitants)<br>1 km<br>Various maps are available at the station, satellite images and Google Earth                             |
| Climate                      | Climate zone   | Low/High Arctic  |
|                              | Permafrost   | Discontinuous and continuous   |
|                              | Years measured   | –  |
|                              | Mean annual temperature  | -3.2 °C  |
|                              | Mean temperature in February   | -11.6 °C (January)   |
|                              | Mean temperature in July   | 7.6 °C   |
|                              | Mean annual wind speed   | 4.3 m/s (6 m above terrain)  |
|                              | Max. wind speed  | 23.6 m/s   |
|                              | Dominant wind direction  | E and W  |
|                              | Total annual precipitation   | 436 mm   |
|                              | Precipitation type   | Rain, snow   |
|                              | Ice break up   | Lake: May; Sea: ice free the last few years  |
| Station facilities           | Area under roof  | 955 m <sup>2</sup>   |
|                              | Scientific laboratories  | 225 m <sup>2</sup>   |
|                              | Logistic   | 70 m <sup>2</sup> (storage)  |
|                              | Number of rooms (beds)   | 26 (26 beds), 1 classroom, 3 laboratories, 1 livingroom, 1 kitchen   |
|                              | Number of staff on station (peak/off season)   | 3/3  |
|                              | Max. number of visitors at a time  | 26   |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | Yes  |
|                              | Power supply (type)  | 220V – 50 kHz AC   |
| Power supply                 | 24 hours per day   |  |
| Scientific equipment         | Specific device  | Please contact station for full list   |
|                              | Scientific services offered  | Technical and logistical support, access to extensive baseline data  |
| Medical facilities           | Medical facilities   | Standard (first aid kit)   |
|                              | Medical suite  | –  |
|                              | No. of staff with basic medical training or doctor   | –  |
|                              | Distance to hospital (estimated time)  | In town (less than 2 km, less than an hour)  |
|                              | Compulsory safety equipment  | VHF radio  |
| Recommended safety equipment | Weapon and first aid kit   |  |
| Landing facilities           | Airstrip (Length × Width)  | –  |
|                              | Airstrip surface   | –  |
|                              | Helipad  | – (open for winter landing)  |
|                              | Ship landing facilities  | Yes  |
| Vehicles at station          | Sea transportation   | Ship (for rent), small boat  |
|                              | Land transportation  | Bicycles, (snowmobile and small boats for rent)  |
| Transport and freight        | Transport to station   | Winter: helicopter; Summer: ship   |
|                              | Number of ship visits per year (period)  | 3-5 per week (summer)  |
|                              | Number of flight visits per year (period)  | Helicopter (weekly during winter)  |





**Features within study area**

● Yes  
○ No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Numerous homothermic springs)

**Main science disciplines**

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





# GREENLAND INSTITUTE OF NATURAL RESOURCES



## STATION NAME AND OWNER

Greenland Institute of Natural Resources is owned by the Government of Greenland.

## LOCATION

The Greenland Institute of Natural Resources (GINR) with its main buildings, laboratories, and living quarters is located in Nuuk, Greenland (64°11'N, 51°41'W). Additional facilities include field stations in Kobbefjord, Nuuk (64°08'N, 51°23'W) and Niaqornat, Uummannaq (70°47'N, 53°40'W).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Nuuk and the Kobbefjord field station provide access to low arctic ecosystems in West Greenland with different biotopes such as dwarf-shrub heaths, fens, grasslands, and lakes. The ecosystem in Niaqornat, Uummannaq is at the border between Low and High Arctic. Monitoring of a variety of parameters on vegetation, arthropods, mammals (both terrestrial and marine), birds, freshwater lakes, and the marine environment has been carried out for several years at GINR.

## HISTORY AND FACILITIES

GINR's main building of c. 3000 m<sup>2</sup> houses all facilities necessary for the Institute's activities: offices, laboratories, deep-freeze rooms, storage rooms, conference room, and meeting rooms. Adjacent to the main building, there is an 850 m<sup>2</sup> annex with a large multi-room used for meetings and seminars. Furthermore, the annex contains five apartments and eight rooms for visiting researchers, as well as a garage/storage room. GINR has a third building near the city centre in Nuuk with furnished guest rooms for students, and visiting scientists. In addition to the buildings in Nuuk, GINR owns two field stations: one in Kobbefjord, near Nuuk and the other in Niaqornat, in the Uummannaq area in Northwest Greenland. These field stations function as bases for small research teams and accommodate four people each. GINR also owns two ships, Sanna and Paamiut, which are used for scientific investigations in both sheltered and open waters, as well as two small boats and three aluminium dinghies. For transport on land, GINR owns three cars and two snowmobiles.

## GENERAL RESEARCH AND DATABASES

Research and monitoring activities focus on living marine resources (fish, shellfish, marine mammals, and birds), land-based resources (land





mammals and vegetation), as well as physical and chemical processes in the environment in relation to Climate Change and its impact on society. Population assessments and management advice are produced and reviewed in scientific committees under various international bodies where GINR is represented. GINR takes also part in the monitoring programme “Greenland Ecosystem Monitoring” in the High Arctic at Zackenberg/Daneborg in North East Greenland and in the Low Arctic at Nuuk, West Greenland. The latter is realised from GINR facilities. As an integrated part of the activities at GINR and the Greenland Climate Research Centre, a long-term monitoring programme of the marine (since 2005) and terrestrial ecosystems (since 2008) is carried out. The objective is to provide long-term data series of the natural innate oscillations and plasticity of arctic ecosystems. This is accomplished through monitoring of selected biotic parameters and elements (BioBasis and MarineBasis) throughout the year on a long-term basis. These sub-programmes run parallel and in close coordination with the Zackenberg Basic programme. Data from the monitoring is provided free of charge.

### HUMAN DIMENSION

GINR is located in Nuuk, the capital of Greenland, with c. 16 000 inhabitants. The Niaqornat field station is located in a small settlement (with c. 70 people) close to Uummannaq in North-west Greenland. GINR actively communicates with users of the environment (fishermen, hunters, and recreational users) and with direct recipients of scientific advice (e.g. politicians). Users of the environment, and their comprehensive knowledge of the natural environment, are included during planning and implementation of the Institute’s activities. Fishing and hunting is part of the traditional culture and is still practised professionally and for recreational purposes.

### ACCESS

Nuuk can be reached by plane either via Kangerlussuaq, West Greenland ([www.airgreenland.com](http://www.airgreenland.com)) or via Reykjavik, Iceland ([www.airiceland.is](http://www.airiceland.is)). Transportation to the field station in Kobbefjord is by one of GINR’s own smaller boats carrying up to 12 persons. The field station in Niaqornat can be reached twice a week by helicopter from Uummannaq.



**Greenland Institute of Natural Resources (GINR)  
with field stations in Kobbefjord (KB) and Niaqornat (NQ)**

| Category                     | Sub-Category   |   |
|------------------------------|--|---|
| Website                      |  | www.natur.gl, www.g-e-m.dk  |
| Country                      |  | Greenland   |
| Opening year                 |  | GINR 1998 (KB 2010, NQ 2007)  |
| Operational period           |  | Year-round (KB: May-September)  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | -<br>-<br>-   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Greenland Institute of Natural Resources<br>Government<br>Greenland Institute of Natural Resources<br>info@natur.gl, booking@natur.gl<br>www.natur.gl   |
| Other institutions           | Name<br>Country  | -<br>-  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 64°11'00"N, 51°41'00"W<br>(KB: 64°08'00"N, 51°23'00"W; NQ: 70°47'00"N, 53°40'00"W)<br>50 m a.s.l. (KB: 5 m a.s.l., NQ: 30 m a.s.l.)<br>0 m a.s.l.<br>1600 m a.s.l.<br>Nuuk (16 000 inhabitants); NQ: Uummannaq (1200 inhabitants)<br>Nuuk: 0 km (KB: 20 km, NQ: 60 km)<br>Map (1:75 000), aerial image, satellite image, Google Earth |
| Climate                      | Climate zone   | Low Arctic  |
|                              | Permafrost   | Sporadic (NQ: discontinuous)  |
|                              | Years measured   | 1958-2010 (NQ: 1961-2006)   |
|                              | Mean annual temperature  | -0.9 °C (KB: -0.9 °C; NQ: -4.4 °C)  |
|                              | Mean temperature in February   | -7.8 °C (KB: -7.8 °C; NQ: -13.8 °C)   |
|                              | Mean temperature in July   | 6.9 °C (KB: 6.9 °C; NQ: 8.1 °C)   |
|                              | Mean annual wind speed   | 5.9 m/s (KB: 5.9 m/s; NQ: 3.7 m/s)  |
|                              | Max. wind speed  | 36 m/s  |
|                              | Dominant wind direction  | N   |
|                              | Total annual precipitation   | 782 mm (KB: 782 mm; NQ: 200 mm)   |
| Precipitation type           | Rain, snow (NQ: snow, rain)  |   |
| Ice break up                 | Lakes: May/June; fjord: May (KB);<br>Sea: open water all year round (NQ: June)   |   |
| Station facilities           | Area under roof  | 1850 m <sup>2</sup> (KB: 55 m <sup>2</sup> ; NQ: 69 m <sup>2</sup> )  |
|                              | Scientific laboratories  | C. 250 m <sup>2</sup> (KB: 15 m <sup>2</sup> , NQ: 90 m <sup>2</sup> )  |
|                              | Logistic   | 1500 m <sup>2</sup> (KB: 40 m <sup>2</sup> ; NQ: 69 m <sup>2</sup> )  |
|                              | Number of rooms (beds)   | Nuuk: 48 offices, 8 laboratories, 4 meeting rooms, 9 storage rooms, 13 rooms/apartments (21 beds), 1 canteen; KB: 1 room (4 beds), 1 lab; NQ: 2 rooms (4 beds), 1 living room   |
|                              | Number of staff on station (peak/off season)   | 50/50 (KB: 4/0; NQ 0/0)   |
|                              | Max. number of visitors at a time  | 20-25 (KB: 4, plus tents; NQ: 7)  |
|                              | Showers  | Yes (KB: yes; NQ: no)   |
|                              | Laundry facilities   | Yes (only in Nuuk)  |
|                              | Power supply (type)  | Nuuk and NQ: 230 V (Eurasian type plugs);<br>KB: fossil fuel generator (230 V)  |
|                              | Power supply   | 24 hours per day  |
| Scientific equipment         | Specific device  | Advanced laboratory equipment (only in Nuuk)  |
|                              | Scientific services offered  | Free technical support (Nuuk); free access to extensive ecosystem baseline data (Nuuk, KB)  |
| Medical facilities           | Medical facilities   | Nuuk: well equipped; KB: standard; NQ: basic  |
|                              | Medical suite  | Yes (only in Nuuk)  |
|                              | No. of staff with basic medical training or doctor   | Nuuk Hospital with staff (KB, NQ: none)   |
|                              | Distance to hospital (estimated time)  | 5 km, 5 min (KB: 20 km, 1 hour by boat;<br>NQ: 60 km to Uummannaq, 1 hour by helicopter)  |
|                              | Compulsory safety equipment  | VHF radio   |
| Recommended safety equipment | First aid kit, satellite phone, weapon (in some cases)   |   |
| Landing facilities           | Airstrip (Length × Width)  | 950 × 18 m (only in Nuuk: airport is regular operated by "Greenland Airports")  |
|                              | Airstrip surface   | Tarmac  |
|                              | Helipad  | Yes (KB: helicopter may land, but no helipad)   |
|                              | Ship landing facilities  | Nuuk: port, langing wharf, pier, pontoon; KB: sledges;<br>NQ: landing wharf   |
| Vehicles at station          | Sea transportation   | Ship, motor boat, zodiack, smaller motor boat for KB and NQ   |
|                              | Land transportation  | Car (only Nuuk), foot (KB, NQ), snowmobile, dog sledge (NQ)   |
| Transport and freight        | Transport to station   | Plane, helicopter (Nuuk, NQ), Boat (KB)   |
|                              | Number of ship visits per year (period)  | Nuuk: c. 55, KB: 2-3 weekly by small motorboat (May-December);<br>NQ: 13 freight ships annually (May-December)  |
|                              | Number of flight visits per year (period)  | Nuuk: several per day; KB: none; NQ: 1-2 per week (year-round)  |





**Features within the study area**

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other

Yes  
 No

**Main science disciplines**

- Anthropology, sociology, archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# SERMILIK

## STATION NAME AND OWNER

The Sermilik Station is owned by the Department of Geography and Geology, Geocenter Denmark, University of Copenhagen.

## LOCATION

The station is located at 65°40'N and 38°10'W in southeast Greenland, about 20 km north of the small town Tasilaq (Ammassalik). The station is situated on the shore of the Sermilik Fjord on the west side of Ammassalik Island adjacent to the Mittivakkat Glacier, a local small ice cap.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The research area is situated in the low arctic coastal vegetation zone, and demonstrates a large flora diversity. It is dominated by dwarf-shrub heaths, snow-bed communities, and open fell-field communities. Fens, herb slopes, and copses are present but are only found in smaller niches in the alpine dominated landscape.

## HISTORY AND FACILITIES

During an expedition in 1933, led by the famous polar researcher Knud Rasmussen, the first surveys of glaciers and geomor-

phology were carried out on Ammassalik Island and at the Mittivakkat Glacier. In 1970 a permanent field station, the Sermilik Research Station, was established, to provide a logistic base for the ongoing glaciological, hydrological, and geomorphological investigations of the Mittivakkat Glacier and its catchment. In 1993, an automatic meteorological station was established at a nunatak situated close to the equilibrium line of the Mittivakkat Glacier to study the glacier climate (515 m a.s.l.). In 1997, a second meteorological station was established, to study the climate in the coastal region. A third meteorological station was established at about 200 m a.s.l. in 2009, comprising data on short wave incoming radiation, temperature, relative humidity, wind (direction and speed), and precipitation. The main building of the station is an insulated





wooden house of 60 m<sup>2</sup> with three rooms for scientists, a dining room, a living room, a kitchen, a toilet, and a storage room. A second, non-insulated building of 50 m<sup>2</sup> holds workshop, equipment, generator, a rubber boat, as well as optional accommodation for four persons in a separate room. The station buildings allow for accommodation of 6-10 researchers. During student summer field courses a tent camp is established at the station.

#### GENERAL RESEARCH AND DATABASES

The station supports a comprehensive year-round monitoring programme covering basic climatology and local climate gradients in the Mittivakkat Glacier drainage basin, glacier mass balance, run-off and sediment transport, and the development of coastal and delta geomorphology. Data are available on request from the three climate stations and a hydrometric station. Glacier mass-balance measurements and glacier surveys has been carried out since the mid 1980s and delta surveys since 1989. Maps, digital 3D terrain models, satellite data, and aerial photographs, in addition to a complete bibliography of publications arising from research at the Sermilik Research Station are available on request.

#### HUMAN DIMENSION

More than half of the population of East Greenland (c. 3000 inhabitants) live in the town Tasiilaq (c. 1700 inhabitants) which is located 20 km south of the research station. Even though the traditional Inuit culture still plays a major role in daily life, Tasiilaq is also a modern community. Fishing, hunting, service industries, and tourism are the major businesses in the town. The Ammassalik Island and the valleys behind the town have a unique flora and are popular places for hiking.

#### ACCESS

The Sermilik Research station can be reached by commercial air carrier via Island to Kulusuk Airport (Greenland Air or charter flights) followed by a helicopter flight to Tasiilaq. From Tasiilaq to the station a boat or a helicopter charter is recommended depending on the weather, snow or ice conditions, and the amount of luggage/cargo. It is also possible to reach the station after a 15-20 km hike. It is highly recommended to book favourable air tickets half a year in advance and to plan at least two travel days to reach Sermilik Station from Europe.



| Category | Sub-Category | Sermilik Research Station |
|----------|--------------|---------------------------|
|----------|--------------|---------------------------|

|                              |  |  |
|------------------------------|--|--|
| Website                      |  | www.geo.ku.dk  |
| Country                      |  | Greenland/Denmark  |
| Opening year                 |  | -  |
| Operational period           |  | Mid June - Mid September   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | Yes<br>Yes<br>mp@geo.ku.dk   |
| Facility owner and manager   | Name of the facility owner<br><br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)                                     | Department for Geography and Geology,<br>University of Copenhagen, Denmark<br>Government<br>University of Copenhagen, Denmark<br>Mp@geo.ku.dk<br>www.geo.ku.dk |
| Other institutions           | Name<br>Country  | -<br>-   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 65°40' N, 38°10' W<br>15 m a.s.l.<br>0 m a.s.l.<br>937 m a.s.l.<br>Tasiilaq (25 000 inhabitants)<br>20 km<br>1:10 000 0 tourist map                            |
| Climate                      | Climate zone   | Low Arctic   |
|                              | Permafrost   | Discontinuous  |
|                              | Years measured   | -  |
|                              | Mean annual temperature  | -1.7 °C  |
|                              | Mean temperature in February   | -7.5°C (January)   |
|                              | Mean temperature in July   | 6.4 °C   |
|                              | Mean annual wind speed   | -  |
|                              | Max. wind speed  | -  |
|                              | Dominant wind direction  | -  |
|                              | Total annual precipitation   | 984 mm   |
|                              | Precipitation type   | Snow, rain   |
|                              | Ice break up   | Lakes and sea: June  |
| Station facilities           | Area under roof  | 100 m <sup>2</sup>   |
|                              | Scientific laboratories  | Ad hoc   |
|                              | Logistic   | 20 m <sup>2</sup>  |
|                              | Number of rooms (beds)   | 4 (10 beds)  |
|                              | Number of staff on station (peak/off season)   | 0/0  |
|                              | Max. number of visitors at a time  | 6  |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | -  |
|                              | Power supply (type)  | 220 V by 4000 W generator  |
| Power supply                 | 24 hours per day   |  |
| Scientific equipment         | Specific device  | Climate station  |
|                              | Scientific services offered  | Data base  |
| Medical facilities           | Medical facilities   | Basic  |
|                              | Medical suite  | -  |
|                              | No. of staff with basic medical training or doctor   | -  |
|                              | Distance to hospital (estimated time)  | 20 km (app. 1 hour)  |
|                              | Compulsory safety equipment  | -  |
| Recommended safety equipment | Riffle   |  |
| Landing facilities           | Airstrip (Length × Width)  | -  |
|                              | Airstrip surface   | -  |
|                              | Helipad  | Yes  |
|                              | Ship landing facilities  | Landing wharf  |
| Vehicles at station          | Sea transportation   | Boat   |
|                              | Land transportation  | -  |
| Transport and freight        | Transport to station   | Hike, boat or helicopter   |
|                              | Number of ship visits per year (period)  | -  |
|                              | Number of flight visits per year (period)  | -  |





| Features within study area       |  |
|----------------------------------|--|
| <input checked="" type="radio"/> | Ice cap or glacier                           |
| <input checked="" type="radio"/> | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input type="radio"/>            | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Lakes)                                |
| <input type="radio"/>            | Yes  |
| <input type="radio"/>            | No   |
| Main science disciplines         |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input type="radio"/>            | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input checked="" type="radio"/> | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input checked="" type="radio"/> | Oceanography, Fishery                        |
| <input checked="" type="radio"/> | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| Workshop facilities              |  |
| <input type="radio"/>            | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input type="radio"/>            | Staff available to assist with constructions |
| Communication                    |  |
| <input type="radio"/>            | Telephone                                    |
| <input checked="" type="radio"/> | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input type="radio"/>            | E-mail                                       |
| <input type="radio"/>            | Internet                                     |
| <input type="radio"/>            | Computer                                     |
| <input type="radio"/>            | Printer                                      |
| <input type="radio"/>            | Scanner                                      |
| <input type="radio"/>            | Fax  |





### STATION NAME AND OWNER

Zackenberg Research Station is owned by the government of Greenland. Aarhus University (Denmark) is responsible for running the station.

### LOCATION

Zackenberg Research Station is located in Young Sund – Tyrolerfjord complex in Northeast Greenland. The station is situated in the southern part of the National Park of North and East Greenland, the largest national park in the world (approximately 1 million km<sup>2</sup>). The nearest settlement is the military outpost Daneborg (with a marine research facility) 25 km southeast of the station. The nearest town is Ittoqqortoormiit, 450 km south of the station.

### BIODIVERSITY AND NATURAL ENVIRONMENT

Zackenberg Research Station is situated in the High Arctic in an area with continuous permafrost. The study area comprises the drainage basin of the river Zackenbergelven, with a total size of c. 500 km<sup>2</sup>. A great variety of biotopes like ponds, fens, heaths, fell field plateaus and grasslands occur within the core study area. Muskoxen, lemming, Arctic fox, and Arctic hare are among the

common mammals in the area, while polar bear and Arctic wolf are occasional visitors.

### HISTORY AND FACILITIES

In 1974, a national park was established in Northeast Greenland, which became a UNESCO Man and Biosphere Reserve in 1977. In 1991, the first expedition under the research programme Zackenberg Ecological Research Operations was made to Zackenberg. In 1995, a temporary field station was established, and in 1997 Zackenberg Research Station was officially opened. Each year, the station is manned from 1 May to 31 October. In the remaining part of the year, the station is only in use if needed. The station has 25 beds, two laboratories, a workshop, a mess with cook, and satellite-based telephone, fax, and email service. An accommodation and laboratory facility for marine research is located next to the military outpost Daneborg. This facility accommodates 10 scientists.

### GENERAL RESEARCH AND DATABASES

Zackenberg Research Station provides facilities for specific but comprehensive research projects



# ZACKENBERG



and for an extensive long-term research/ monitoring programme, called Zackenberg Basic. Zackenberg Basic consists of five sub-programmes: ClimateBasis (monitoring the climate), GeoBasis (monitoring the carbon balance of the ecosystem, other feedbacks to Climate Change, and physical landscape processes), BioBasis (monitoring the living nature), MarineBasis (monitoring physical and biological processes in the marine ecosystem), and GlacioBasis (monitoring the mass balance of local glaciers). At the station, there are approximately 25 ongoing projects per year, of which about two third focus on Climate Change feedbacks. Results from the research and monitoring at Zackenberg are reported in the ZERO Annual Reports published by Aarhus University. PDF-versions of the annual reports are available at [www.zackenberg.dk](http://www.zackenberg.dk). The database of the Zackenberg Basic monitoring is available for direct access through the internet at [www.zackenberg.dk](http://www.zackenberg.dk). This homepage also holds the manuals for the different monitoring sub-programmes. All data from Zackenberg Basic are provided free-of-charge to any scientist interested in making use of the data for scientific purposes. Existing databases also include a bibliography of publications arising from research at the station

since it opened in 1995, and a GIS of the study area with access through the internet.

## HUMAN DIMENSION

The nearest town is Ittoqqortoormiit, 450 km to the south. The population in Ittoqqortoormiit is approximately 450 people. Zackenberg Research Station cooperates with other field stations in Greenland (Arctic Station, Sermilik Station, and Greenland Institute of Natural Resources), and two Greenlandic research institutes (Asiaq and Pinngortitalerifik) are involved in the work at Zackenberg.

## ACCESS

Transport to and from Zackenberg Research Station is handled by the Zackenberg Secretariat at Aarhus University as a package solution from any airport serviced by Icelandair. Travels are based on a combination of commercial flights (to Akureyri on Iceland) and chartered flights (from Akureyri to Zackenberg). It is mandatory to submit an application to the Zackenberg Secretariat prior to the visit of the station. The application will be reviewed by a scientific committee and afterwards the secretariat will take care of all practicalities in relation to logistics.

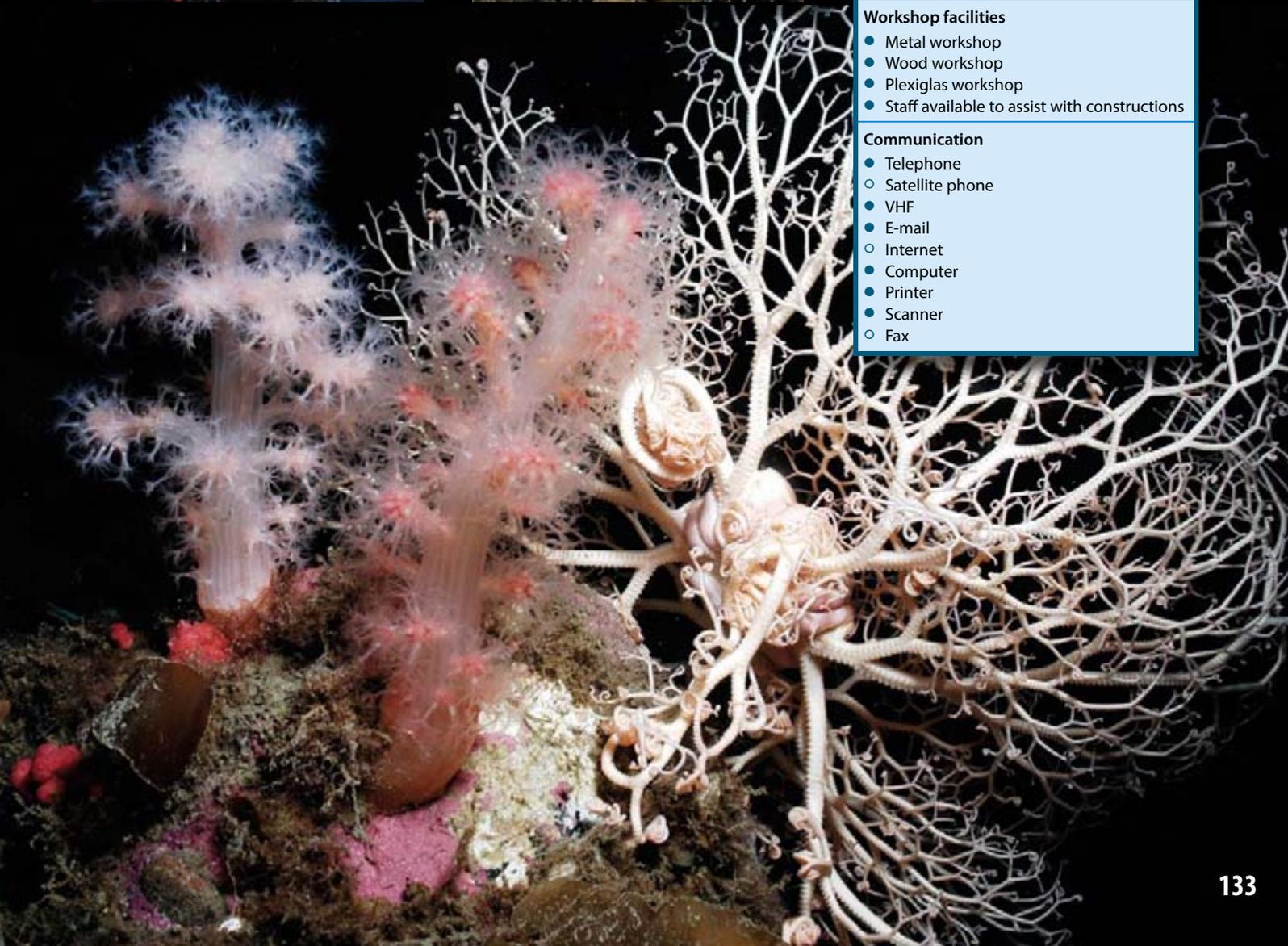


| Category                     | Sub-Category  | Zackenberg Research Station  |
|------------------------------|---|--|
| Website                      |   | www.zackenberg.dk, www.g-e-m.dk  |
| Country                      |   | Greenland/Denmark  |
| Opening year                 |   | 1995   |
| Operational period           |   | (March-April), May-October   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | Yes<br>Yes<br>zackenberg@dmu.dk  |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Asiaq, Government of Greenland<br>Government<br>Department of Bioscience, Aarhus University<br>zackenberg@dmu.dk<br>www.au.dk  |
| Other institutions           | Name<br>Country   | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 74°28'07" N, 20°34'00" W<br>(substation Daneborg: 74°18'00" N, 20°13'34" W)<br>38 m a.s.l.<br>0 m a.s.l.<br>1492 m a.s.l.<br>Ittoqqortoormiit (503 inhabitants)<br>450 km<br>Map 1:250 000, aerial image, satellite image, Google Earth with low resolution  |
| Climate                      | Climate zone<br>Permafrost<br>Years measured<br>Mean annual temperature<br>Mean temperature in February<br>Mean temperature in July<br>Mean annual wind speed<br>Max. wind speed<br>Dominant wind direction<br>Total annual precipitation<br>Precipitation type<br>Ice break up | High Arctic<br>Continuous<br>–<br>-9.2 °C<br>-19.4 °C<br>6.1 °C<br>2.8 m/s (2 m above terrain), 3.4 m/s (7.5 m above terrain)<br>29.6 m/s<br>NNW<br>200 mm<br>Snow, rain<br>Lake: May/June (date of 50% ice cover); River: May/June; Sea: July   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br><br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply                               | 650 m <sup>2</sup> at Zackenberg, 290 m <sup>2</sup> at Daneborg<br>40 m <sup>2</sup> at Zackenberg, 50 m <sup>2</sup> at Daneborg<br>150 m <sup>2</sup> at Zackenberg, 120 m <sup>2</sup> at Daneborg<br>Zackenberg: 15 rooms for accomodation (24 beds), 5 laboratories, 1 living room, 1 cantine; 10 beds at Daneborg<br><br>4/1-3<br>18 at Zackenberg, 10 at Daneborg<br>Yes<br>Yes<br>Fossil fuel generator (400 V/230 V, 50 hz AC power. DIN standard)<br>24 hours per day |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Advanced climate stations, differential GPS, basic laboratory equipment, different surveying equipment, microscopes<br>Free technical support, free access to extensive ecosystem baseline data  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Standard (well equipped first aid kit)<br>–<br>1-2<br>1000 km (5 hours)<br>Different weapons, VHF radio, PLB<br>First aid kit  |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 380 × 20 m<br>Gravel<br>Yes<br>–   |
| Vehicles at station          | Sea transportation<br>Land transportation   | Different types of rubberboats<br>ATV, snowmobiles   |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Persons: by air; Cargo: by air and sea<br>1 (August)<br>20 (May-October)   |





| Features within study area       |   |
|----------------------------------|---|
| <input checked="" type="radio"/> | Ice cap or glacier  |
| <input checked="" type="radio"/> | Permanent snowpatches   |
| <input checked="" type="radio"/> | Mountain  |
| <input checked="" type="radio"/> | Valley  |
| <input checked="" type="radio"/> | Shoreline   |
| <input checked="" type="radio"/> | Tundra  |
| <input type="radio"/>            | Tree line   |
| <input checked="" type="radio"/> | Other (Size of drainage basin: 514 km <sup>2</sup> , ice cap 30 km away from station) |
| Main science disciplines         |   |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology  |
| <input checked="" type="radio"/> | Astrophysics  |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics   |
| <input checked="" type="radio"/> | Isotopic chemistry  |
| <input checked="" type="radio"/> | Climatology, Climate Change   |
| <input checked="" type="radio"/> | Environmental sciences, Pollution   |
| <input checked="" type="radio"/> | Geodesy   |
| <input checked="" type="radio"/> | Geology, Sedimentology  |
| <input checked="" type="radio"/> | Geophysics  |
| <input checked="" type="radio"/> | Glaciology  |
| <input checked="" type="radio"/> | Geocryology, Geomorphology  |
| <input checked="" type="radio"/> | Soil science  |
| <input type="radio"/>            | Human biology, Medicine   |
| <input checked="" type="radio"/> | Mapping, GIS  |
| <input checked="" type="radio"/> | Marine biology  |
| <input checked="" type="radio"/> | Oceanography, Fishery   |
| <input checked="" type="radio"/> | Microbiology  |
| <input checked="" type="radio"/> | Hydrology   |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology  |
| <input checked="" type="radio"/> | Paleolimnology  |
| <input checked="" type="radio"/> | Paleoecology  |
| <input checked="" type="radio"/> | Limnology   |
| Workshop facilities              |   |
| <input checked="" type="radio"/> | Metal workshop  |
| <input checked="" type="radio"/> | Wood workshop   |
| <input checked="" type="radio"/> | Plexiglas workshop  |
| <input checked="" type="radio"/> | Staff available to assist with constructions  |
| Communication                    |   |
| <input checked="" type="radio"/> | Telephone   |
| <input type="radio"/>            | Satellite phone   |
| <input checked="" type="radio"/> | VHF   |
| <input checked="" type="radio"/> | E-mail  |
| <input type="radio"/>            | Internet  |
| <input checked="" type="radio"/> | Computer  |
| <input checked="" type="radio"/> | Printer   |
| <input checked="" type="radio"/> | Scanner   |
| <input type="radio"/>            | Fax   |





# LITLA-SKARD



## STATION NAME AND OWNER

Litla-Skard is not a typical research station but a bio-monitoring site. The site is operated jointly by the Agricultural University of Iceland, the Icelandic Institute of Natural History, the Icelandic Meteorological Office, the Environmental and Food Agency of Iceland, and the Iceland Forest Service.

## LOCATION

The Litla-Skard bio-monitoring area is located in the lowlands of western Iceland (64°43'36" N, 21°37'48" W), about 38 km from the shore-line and 100 km north of Reykjavik.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Litla-Skard area exhibits birch shrubs, moss heaths, sedge mires, grassland as well as, sparsely vegetated fell fields. Also a small lake is found within the area. In total, 101 vascular plant species and 19 moss species have been recorded at the site. Birds dominate the vertebrate fauna with 22 species recorded in the area. Most notable of these are whooper swans (*Cygnus cygnus*), great northern divers (*Gavia immer*), and redwings (*Turdus iliacus*) in summer; snow bunting (*Plectrophenax nivalis*)

in winter and raven (*Corvus corax*) and ptarmigan (*Lagopus muta*) year around. Three species of mammals occur at the site: Arctic fox (*Alopex lagopus*), American mink (*Mustela vison*), and wood mouse (*Apodemus sylvaticus*). Two species of fish occur in the lake: three-spined stickleback (*Gasterosteus aculeatus*) and brown trout (*Salmo trutta*).

## HISTORY AND FACILITIES

The Litla-Skard site was designated as a bio-monitoring area in 1996. Litla-Skard is an old, lowland farm. The site is now owned by the Iceland Forest Service. In the past most of the area was used for grazing livestock, mainly sheep. The site has not been grazed since 1985. Afforestation at the site is very limited and disturbance level from human activities is low. The total land area of the Litla-Skard bio-monitoring area is 3 km<sup>2</sup> with an elevation of 60-230 m a.s.l. At Litla-Skard there are no research buildings or laboratories, and permanent staff is not located at the site. However, accommodation and laboratory space are available at the campus of the Agricultural University of Iceland in Hvanneyri, 27 km away from the site.





### GENERAL RESEARCH AND DATABASES

Litla-Skard is a national site for the International Cooperative Program on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP IM). The main research emphasis till now has been on chemistry of precipitation, climate, and hydrology. A vegetation inventory has been carried out at the site and the main vegetation and soil types have been mapped. The research is mostly confined to a 560 000 m<sup>2</sup> catchment area. Automated weather and hydrological stations were set up at the site in 2000. Existing data bases include climatic records, data on catchment hydrology and water chemistry as well as limited biological records.

### HUMAN DIMENSION

Before the Litla-Skard area was established as a research and monitoring site in 1996, farmsteads and sheep grazing dominated the land-use. Currently there are no farms in the area and domestic grazing animals have been absent for over 20 years.

### ACCESS

Litla-Skard is reached by car throughout the year. It is located by the main central highway, c. 100 km from Reykjavik. Keflavik International Airport is situated about two hours drive from the site.



| Category                                     | Sub-Category   | Litla-Skard  |
|--|--|--|
| Website                                      |  | www.ust.is/litla_skard/  |
| Country                                      |  | Iceland  |
| Opening year                                 |  | 1996   |
| Operational period                           |  | Year-round   |
| Permitting issues categories                 | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)  | –<br>Yes<br>hlynur@lbhi.is   |
| Facility owner and manager                   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)   | Iceland Forest Service<br>Government<br>Agricultural University of Iceland and Icelandic Meteorological Office<br>hlynur@lbhi.is<br>www.lbhi.is  |
| Other institutions                           | Name<br>Country  | Environment Agency of Iceland, Iceland Forest Service, Icelandic Institute of Natural History<br>Iceland   |
| Location                                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map | 64°43'36" N, 21°37'48" W<br>115 m a.s.l.<br>115 m a.s.l.<br>229 m a.s.l.<br>Borgarnes (2000 inhabitants)<br>25 km<br>Map (1:250 000), aerial image, SPOT satellite image, Google Earth with low resolution |
| Climate                                      | Climate zone   | Low Arctic   |
|  | Permafrost   | –  |
|  | Years measured   | 15   |
|  | Mean annual temperature  | 3.1 °C   |
|  | Mean temperature in February   | -1.8 °C  |
|  | Mean temperature in July   | 10.8 °C  |
|  | Mean annual wind speed   | 4.2 m/s  |
|  | Max. wind speed  | 33.5 m/s   |
|  | Dominant wind direction  | NE   |
|  | Total annual precipitation   | 740 mm   |
|  | Precipitation type   | Snow, rain   |
|  | Ice break up   | Lake Silungatjörn: April/May   |
|  | Station facilities   | Area under roof  |
| Scientific laboratories                      |  | At a nearby campus, 40 m <sup>2</sup>  |
| Logistic                                     |  | –  |
| Number of rooms (beds)                       |  | 6 (6 beds)   |
| Number of staff on station (peak/off season) |  | –  |
| Max. number of visitors at a time            |  | 6  |
| Showers                                      |  | Yes  |
| Laundry facilities                           |  | Yes  |
| Power supply (type)<br>Power supply          |  | Eurasian two-pin plug, 220 V<br>24 hours per day   |
| Scientific equipment                         | Specific device  | Climate station  |
|  | Scientific services offered  | Free access to baseline data   |
| Medical facilities                           | Medical facilities   | Standard (In the nearby town of Borgarnes, 25 km away)   |
|  | Medical suite  | –  |
|  | No. of staff with basic medical training or doctor   | –  |
|  | Distance to hospital (estimated time)  | 110 km (1.5 hour)  |
|  | Compulsory safety equipment<br>Recommended safety equipment  | –<br>–   |
| Landing facilities                           | Airstrip (Length × Width)  | –  |
|  | Airstrip surface   | –  |
|  | Helipad  | –  |
|  | Ship landing facilities  | –  |
| Vehicles at station                          | Sea transportation   | –  |
|  | Land transportation  | –  |
| Transport and freight                        | Transport to station   | Car  |
|  | Number of ship visits per year (period)  | –  |
|  | Number of flight visits per year (period)  | –  |





| Features within study area       |   |
|----------------------------------|---|
| <input type="radio"/>            | Ice cap or glacier                      |
| <input type="radio"/>            | Permanent snowpatches                   |
| <input checked="" type="radio"/> | Mountain                                |
| <input checked="" type="radio"/> | Valley                                  |
| <input type="radio"/>            | Shoreline                               |
| <input type="radio"/>            | Tundra                                  |
| <input type="radio"/>            | Tree line                               |
| <input checked="" type="radio"/> | Other (Size of drainage basin: 55.5 ha) |

| Main science disciplines         |                                      |
|----------------------------------|--------------------------------------|
| <input type="radio"/>            | Anthropology, Sociology, Archaeology |
| <input type="radio"/>            | Astrophysics                         |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics    |
| <input type="radio"/>            | Isotopic chemistry                   |
| <input checked="" type="radio"/> | Climatology, Climate Change          |
| <input checked="" type="radio"/> | Environmental sciences, Pollution    |
| <input checked="" type="radio"/> | Geodesy                              |
| <input type="radio"/>            | Geology, Sedimentology               |
| <input type="radio"/>            | Geophysics                           |
| <input type="radio"/>            | Glaciology                           |
| <input type="radio"/>            | Geocryology, Geomorphology           |
| <input type="radio"/>            | Soil science                         |
| <input type="radio"/>            | Human biology, Medicine              |
| <input checked="" type="radio"/> | Mapping, GIS                         |
| <input checked="" type="radio"/> | Marine biology                       |
| <input type="radio"/>            | Oceanography, Fishery                |
| <input type="radio"/>            | Microbiology                         |
| <input checked="" type="radio"/> | Hydrology                            |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology         |
| <input type="radio"/>            | Paleolimnology                       |
| <input type="radio"/>            | Paleoecology                         |
| <input checked="" type="radio"/> | Limnology                            |

| Workshop facilities   |  |
|-----------------------|--|
| <input type="radio"/> | Metal workshop                               |
| <input type="radio"/> | Wood workshop                                |
| <input type="radio"/> | Plexiglas workshop                           |
| <input type="radio"/> | Staff available to assist with constructions |

| Communication (at University campus) |                 |
|--------------------------------------|-----------------|
| <input checked="" type="radio"/>     | Telephone       |
| <input type="radio"/>                | Satellite phone |
| <input type="radio"/>                | VHF             |
| <input checked="" type="radio"/>     | E-mail          |
| <input checked="" type="radio"/>     | Internet        |
| <input checked="" type="radio"/>     | Computer        |
| <input checked="" type="radio"/>     | Printer         |
| <input checked="" type="radio"/>     | Scanner         |
| <input checked="" type="radio"/>     | Fax             |



# FINI

## STATION NAME AND OWNER

The Faroe Islands Nature Investigation (FINI) belongs to Jarðfeingi (Faroese Earth and Energy Directorate) and partners.

## LOCATION

FINI comprises a growing number of monitoring sites placed on public and private land in the Faroe Islands. The 18 islands form a self-governing country under the sovereignty of the Kingdom of Denmark. The total area is approximately 1400 km<sup>2</sup> and has a population of almost 50 000 people (2010). The monitoring sites are placed on mountain slopes and summits that are accessible within an hour hike from the road and within an hour drive by car from the capital Tórshavn.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Faroe Islands are a group of islands situated between the Norwegian Sea and the northeast Atlantic Ocean with more than 300 km distance to the next land area (approximately half way between Scotland and Iceland). The islands have an oceanic sub-arctic climate and are characterised by a high relief. The mountain areas are heavily grazed by sheep. The floral and faunal

biodiversity is low, reflecting the isolated location, the extreme oceanic climate, the steep topography, and intensive land use. The most dominant vegetation in the Faroe Islands is grassland, found from sea level to the mountain tops. *Racomitrium* heaths and fell-field vegetation dominate the alpine vegetation. *Calluna* heaths are common in the lowlands. Birds dominate the terrestrial wild life.

## HISTORY AND FACILITIES

Most of the monitoring sites of FINI are less than 10 years old. FINI has no station facilities at the sites, but can offer office facilities including internet access, other logistic support and advice at FINI, Jarðfeingi, in Tórshavn.





The language is Faroese which has close roots in the Old Norse language.

#### ACCESS

You can arrive to the Faroe Islands all year by ship or by plane. The ferry leaves from Hanstholm, Denmark and Seyðisfjørður, Iceland. Look for [www.smyrilline.com](http://www.smyrilline.com). Flight connections to the Faroe Islands leave from Copenhagen (Denmark), Aalborg (Denmark), Billund (Denmark), Reykjavik (Iceland), Bergen (Norway), London (UK) and Barcelona (Spain). Look for [www.atlantic.fo](http://www.atlantic.fo). The local infrastructure in the Faroe Islands is well developed with busses and ferries. It is also possible to rent cars and helicopter routes are fairly cheap. Look for [www.visitfaroeislands.fo](http://www.visitfaroeislands.fo).

#### GENERAL RESEARCH AND DATABASES

The research at the FINI sites focuses on geohazards, meteorology, geophysics, and plant ecology. The existing database includes a bibliography of publications based on monitoring data.

#### HUMAN DIMENSION

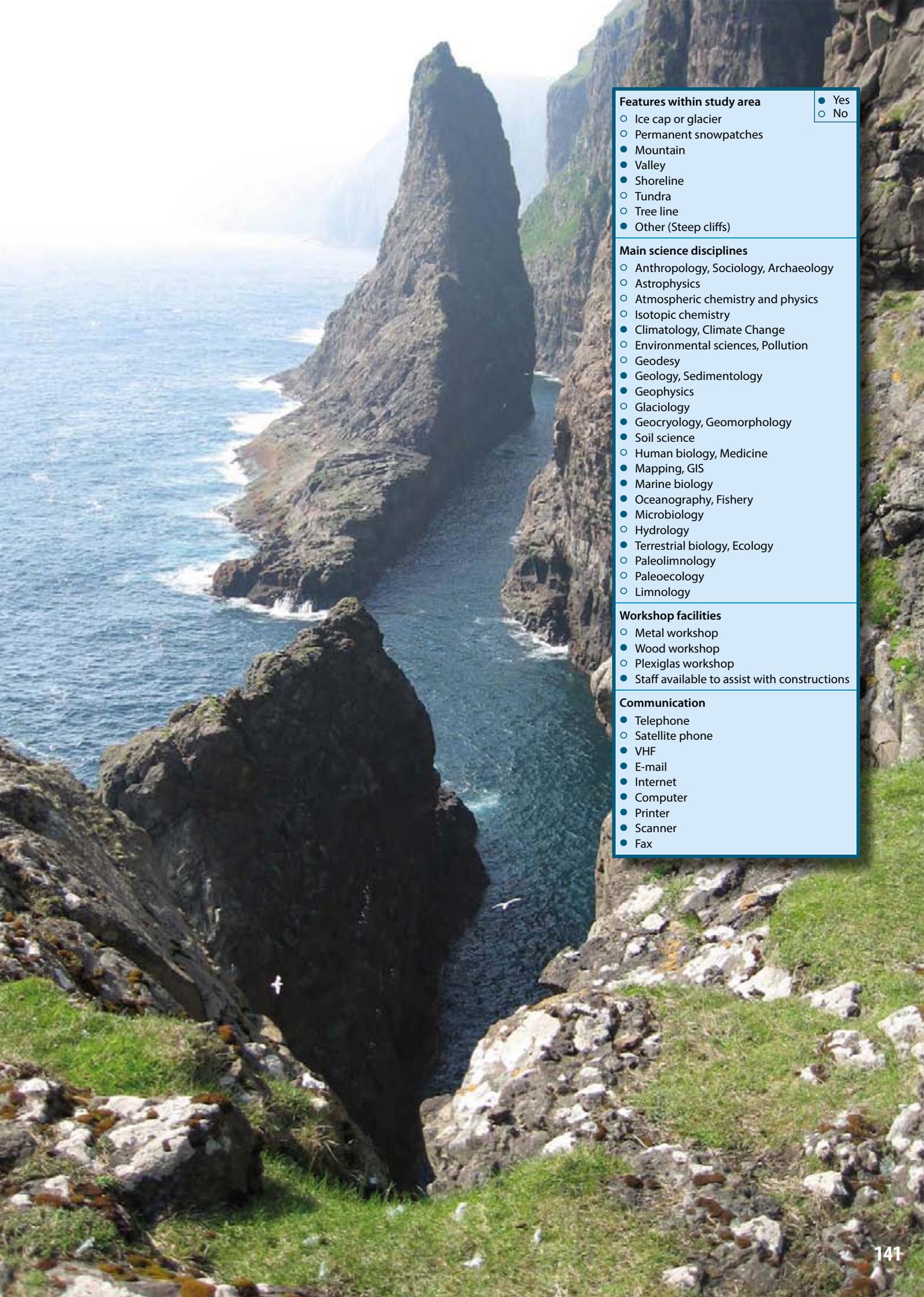
People in towns and villages live a modern European life. Houses are modern, the infrastructure is well developed and it is easy to travel by car. At the same time rich elements of traditional Faroese culture are deeply rooted in daily life: fishing, bird and whale hunting, traditional food and singing, and chain dancing.



| Category | Sub-Category | Faroe Islands Nature Investigation (FINI) |
|----------|--------------|---|
|----------|--------------|---|

|                              |   |   |
|------------------------------|---|---|
| Website                      |   | www.jf.fo   |
| Country                      |   | Faroe Islands/Denmark   |
| Opening year                 |   | 1999  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>Yes (Permit required for permanent stations)<br>lm@jf.fo   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | Jarðfeingi and partners<br>Government<br>Jarðfeingi and partners<br>lm@jf.fo<br>www.jf.fo   |
| Other institutions           | Name<br>Country   | Náttúrugripasavnið, Landsverk, Umhvørvisstovan<br>Faroe Islands/Denmark   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 62°04' N, 06°58' W<br>725 m a.s.l.<br>0 m a.s.l.<br>882 m a.s.l.<br>Tórshavn (18 000 inhabitants)<br>15 km<br>Map (1:20 000 and 1:100 000 ), aerial image, satellite image, Google Earth                                    |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | –   |
|                              | Years measured  | –   |
|                              | Mean annual temperature   | 6.5 °C  |
|                              | Mean temperature in February  | 3.6 °C  |
|                              | Mean temperature in July  | 10.3 °C   |
|                              | Mean annual wind speed  | 5.9 m/s   |
|                              | Max. wind speed   | 43.2 m/s  |
|                              | Dominant wind direction   | SW  |
|                              | Total annual precipitation  | 1284 mm   |
|                              | Precipitation type  | Rain, snow, hails   |
| Ice break up                 | No ice  |   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | No station facilities, accomodation in Tórshavn<br>30 m <sup>2</sup> (in Tórshavn)<br>50 m <sup>2</sup> (in Tórshavn)<br>Accomodation in Tórshavn (2 rooms)<br>1/1<br>20<br>–<br>–<br>Electricity 220 V<br>24 hours per day |
| Scientific equipment         | Specific device<br>Scientific services offered  | –<br>Logistical scientific services   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | –<br>–<br>–<br>15 km (30 minutes)<br>–<br>–   |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | –<br>–<br>In Tórshavn<br>Port in Tórshavn   |
| Vehicles at station          | Sea transportation<br>Land transportation   | –<br>Car, bus (not at the station)  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Flight or ferry to the Faroe Islands<br>Weekly (summer)<br>Daily (year-round)   |





| Features within study area  | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
|---|--|
| <input type="radio"/> Ice cap or glacier                                      |  |
| <input type="radio"/> Permanent snowpatches                                   |  |
| <input checked="" type="radio"/> Mountain                                     |  |
| <input checked="" type="radio"/> Valley                                       |  |
| <input checked="" type="radio"/> Shoreline                                    |  |
| <input type="radio"/> Tundra  |  |
| <input type="radio"/> Tree line   |  |
| <input checked="" type="radio"/> Other (Steep cliffs)                         |  |
| <b>Main science disciplines</b>   |  |
| <input type="radio"/> Anthropology, Sociology, Archaeology                    |  |
| <input type="radio"/> Astrophysics  |  |
| <input type="radio"/> Atmospheric chemistry and physics                       |  |
| <input type="radio"/> Isotopic chemistry                                      |  |
| <input checked="" type="radio"/> Climatology, Climate Change                  |  |
| <input type="radio"/> Environmental sciences, Pollution                       |  |
| <input type="radio"/> Geodesy   |  |
| <input checked="" type="radio"/> Geology, Sedimentology                       |  |
| <input checked="" type="radio"/> Geophysics                                   |  |
| <input type="radio"/> Glaciology  |  |
| <input checked="" type="radio"/> Geocryology, Geomorphology                   |  |
| <input checked="" type="radio"/> Soil science                                 |  |
| <input type="radio"/> Human biology, Medicine                                 |  |
| <input checked="" type="radio"/> Mapping, GIS                                 |  |
| <input checked="" type="radio"/> Marine biology                               |  |
| <input checked="" type="radio"/> Oceanography, Fishery                        |  |
| <input checked="" type="radio"/> Microbiology                                 |  |
| <input type="radio"/> Hydrology   |  |
| <input checked="" type="radio"/> Terrestrial biology, Ecology                 |  |
| <input type="radio"/> Paleolimnology  |  |
| <input type="radio"/> Paleoecology  |  |
| <input type="radio"/> Limnology   |  |
| <b>Workshop facilities</b>  |  |
| <input type="radio"/> Metal workshop  |  |
| <input checked="" type="radio"/> Wood workshop                                |  |
| <input type="radio"/> Plexiglas workshop                                      |  |
| <input checked="" type="radio"/> Staff available to assist with constructions |  |
| <b>Communication</b>  |  |
| <input checked="" type="radio"/> Telephone                                    |  |
| <input type="radio"/> Satellite phone   |  |
| <input checked="" type="radio"/> VHF  |  |
| <input checked="" type="radio"/> E-mail                                       |  |
| <input checked="" type="radio"/> Internet                                     |  |
| <input checked="" type="radio"/> Computer                                     |  |
| <input checked="" type="radio"/> Printer                                      |  |
| <input checked="" type="radio"/> Scanner                                      |  |
| <input checked="" type="radio"/> Fax  |  |



# CAIRNGORM

## STATION NAME AND OWNER

The ECN Cairngorm site is owned by Scottish National Heritage, a Scottish government funded body that looks after Scotland's landscapes whilst research is managed by Centre for Ecology and Hydrology. ECN stands for the UK Environmental Change Network, and is the UK's long-term environmental monitoring and research programme. The ECN makes regular measurements of air, soil, water, and a range of animals and plants across a network of sites to determine how and why the natural environment is changing (see [www.ecn.ac.uk](http://www.ecn.ac.uk) for more information).

## LOCATION

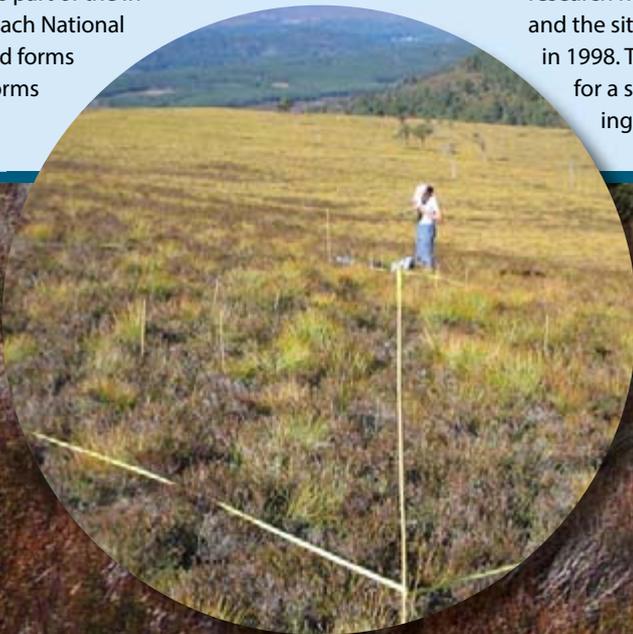
The ECN Cairngorm site is a north facing granite catchment overlain with peat situated in the Cairngorms Mountains of Scotland (57°07' N, 03°49' W), rising from about 350 m through the tree line at 500 m to the highest summit at 1111 m. The catchment area is 10 km<sup>2</sup>. The site is part of the Invereshie and Inshriach National Nature Reserve, and forms part of the Cairngorms National Park.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The catchment is composed of a wide range of ecosystems from pine forest at low altitude, through bog communities on ground with impeded drainage, to alpine vegetation including moss and lichen heaths on the highest ground. The charismatic capercaillie, a member of the grouse family (IUCN Red listed) is found in the pine woods along with pine martin. Several species of deer can be found grazing a variety of habitats from the forests to the summits. The site has virtually no natural tree line due to past overgrazing but is now being extensively re-colonised by *Pinus sylvestris*.

## HISTORY AND FACILITIES

From the middle of the nineteenth century the site was mainly used as deer forest, as part of a large sporting estate in private ownership (Invereshie Estate). It became part of the Cairngorms National Nature Reserve in 1954. Ecological and environmental research has been undertaken in the area since the early 1960s and the site joined the Environmental Change Network of the UK in 1998. There are no buildings on the site but accommodation for a small number of visitors can be arranged on site (camping), and there are local hotels and guest houses nearby.





### GENERAL RESEARCH AND DATABASES

Research on the site includes both terrestrial and freshwater environmental monitoring as part of the ECN and also as part of the Austrian GLORIA programme ([www.gloria.ac.at/](http://www.gloria.ac.at/)) examining temperature effects on vegetation across Alpine Europe. The site has been the subject of intensive hydrological and snow related research since the early 1990s. The Cairngorms area has been the focus of many land use change and tourism impact studies since c. 1980s and the data is being used in current ecosystem service research.

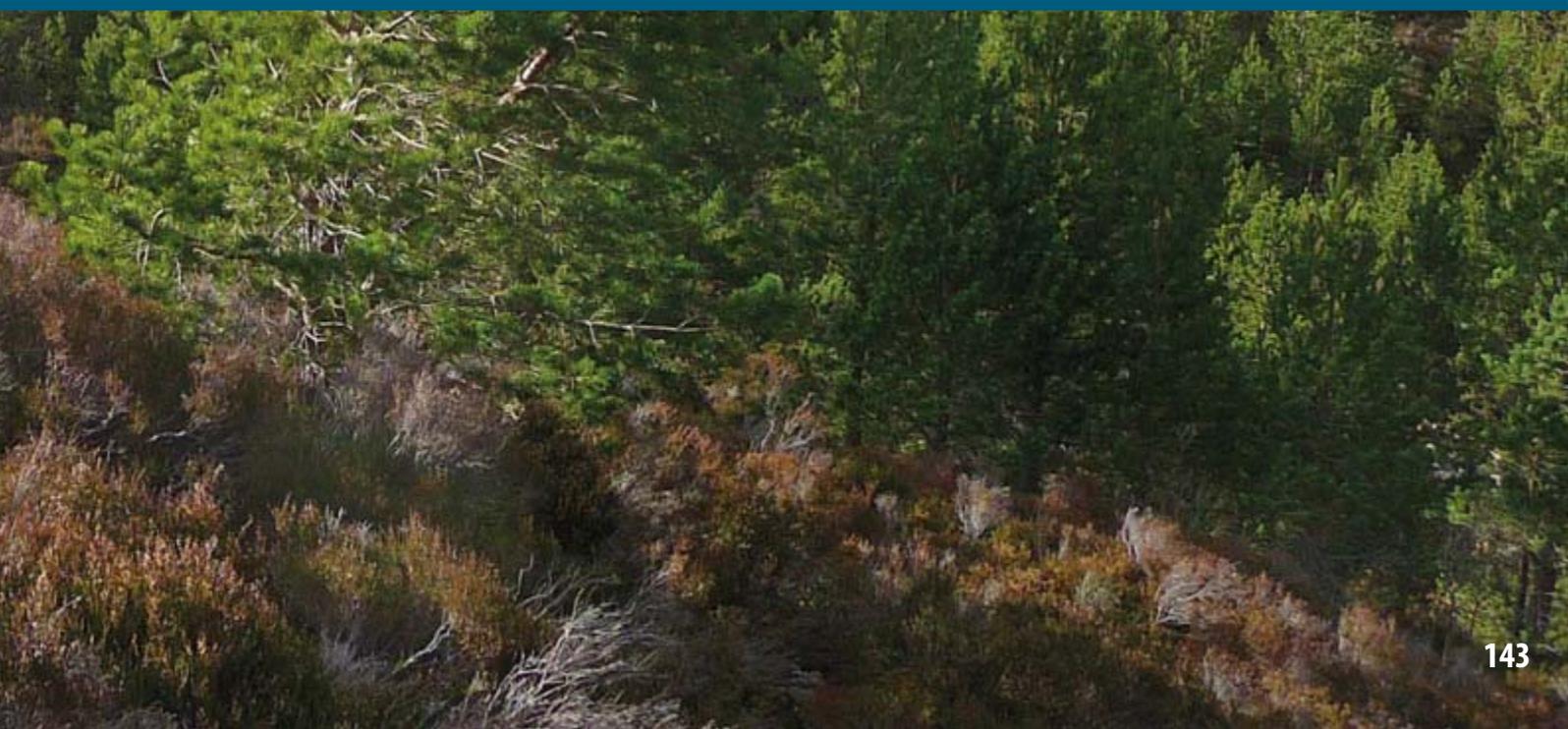
### HUMAN DIMENSION

The research site is uninhabited and used for recreation; hiking, trekking, and mountain biking. Aviemore, the nearest town, has a

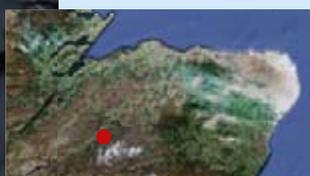
population of around 2500 and became one of the first skiing resorts to be established in Scotland with the opening of the chairlift in 1961. The resort has since grown into the UK's most visited ski resort during the winter months.

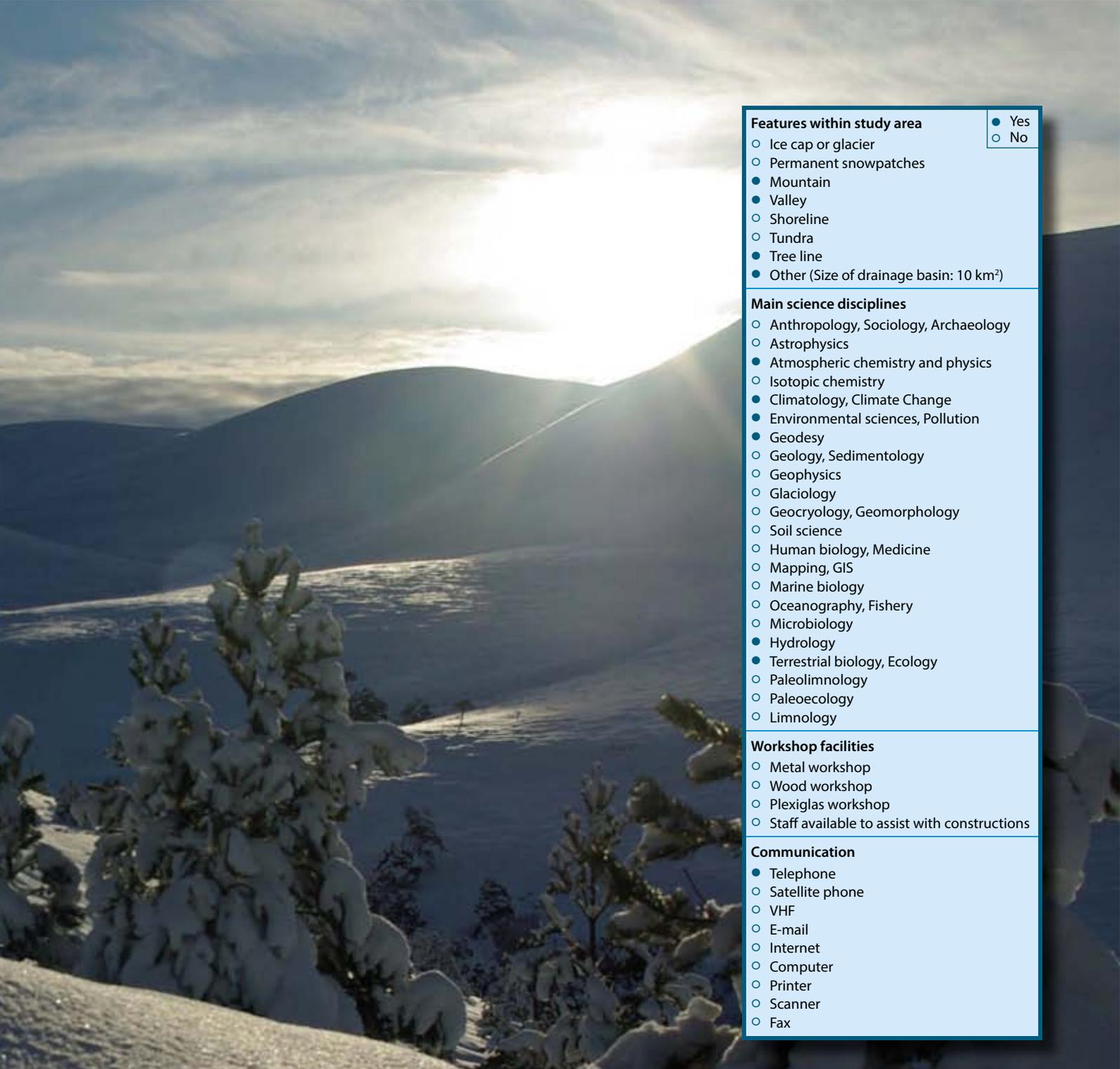
### ACCESS

The research site is close to Aviemore, which has good rail and bus services to Edinburgh (approximately 3 hours) and Inverness (less than an hour). A full suite of laboratory facilities are available at the Centre for Ecology and Hydrology, Edinburgh (CEH) located 10 km south of Edinburgh.



| Category                     | Sub-Category                                       | Cairngorm  |
|------------------------------|--|--|
| Website                      |  | www.ecn.ac.uk  |
| Country                      |  | Scotland, UK   |
| Opening year                 |  | 1998   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station         | –  |
|                              | Permits required for studies                       | Yes  |
|                              | Contact (permit issues)                            | jand@ceh.ac.uk   |
| Facility owner and manager   | Name of the facility owner                         | Scottish Natural Heritage  |
|                              | Owner status                                       | Government   |
|                              | Institution responsible for managing the station   | Center for Ecology and Hydrology   |
|                              | Contact (access to station)                        | jand@ceh.ac.uk   |
|                              | Website (institution)                              | www.ceh.ac.uk  |
| Other institutions           | Name   | –  |
|                              | Country  | –  |
| Location                     | Geographical coordinates                           | 57°07' N, 03°49' W   |
|                              | Altitude of station                                | 700 m a.s.l.   |
|                              | Min. altitude within study area                    | 350 m a.s.l.   |
|                              | Max. altitude within study area                    | 1100 m a.s.l.  |
|                              | Nearest town/settlement                            | Aviemore (2500 inhabitants)  |
|                              | Distance to nearest town/settlement                | 10 km  |
|                              | Map  | Map 1:250 000, aerial image, satellite image, Google Earth with low resolution |
| Climate                      | Climate zone                                       | Alpine (temperate forest and heath)  |
|                              | Permafrost   | –  |
|                              | Years measured                                     | 14   |
|                              | Mean annual temperature                            | 5.09 °C  |
|                              | Mean temperature in February                       | 0 °C   |
|                              | Mean temperature in July                           | 10.5 °C  |
|                              | Mean annual wind speed                             | 7.3 m/s  |
|                              | Max. wind speed                                    | 29.3 m/s   |
|                              | Dominant wind direction                            | SW   |
|                              | Total annual precipitation                         | 835 mm   |
|                              | Precipitation type                                 | Snow, rain, hail   |
|                              | Ice break up                                       | –  |
| Station facilities           | Area under roof                                    | –  |
|                              | Scientific laboratories                            | Use facilities at CEH Edinburgh (over 500 m <sup>2</sup> )                     |
|                              | Logistic   | Use facilities at CEH Edinburgh (over 500 m <sup>2</sup> )                     |
|                              | Number of rooms (beds)                             | –  |
|                              | Number of staff on station (peak/off season)       | 0/0  |
|                              | Max. number of visitors at a time                  | 80   |
|                              | Showers  | –  |
|                              | Laundry facilities                                 | –  |
| Power supply (type)          |  | –  |
|                              | Power supply                                       | –  |
| Scientific equipment         | Specific device                                    | Automatic weather station, variety of survey equipment                         |
|                              | Scientific services offered                        | Free technical support; free access to extensive ecosystem baseline data       |
| Medical facilities           | Medical facilities                                 | –  |
|                              | Medical suite                                      | –  |
|                              | No. of staff with basic medical training or doctor | 2 at CEH Edinburgh   |
|                              | Distance to hospital (estimated time)              | 30 km (1 hour by car)  |
|                              | Compulsory safety equipment                        |  |
| Recommended safety equipment |  |  |
| Landing facilities           | Airstrip (Length × Width)                          | –  |
|                              | Airstrip surface                                   | –  |
|                              | Helipad  | –  |
|                              | Ship landing facilities                            | –  |
| Vehicles at station          | Sea transportation                                 | –  |
|                              | Land transportation                                | No motorised transport   |
| Transport and freight        | Transport to station                               | Car/hike   |
|                              | Number of ship visits per year (period)            | –  |
|                              | Number of flight visits per year (period)          | –  |





|  |  |
|--|--|
| <b>Features within study area</b>  | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
| <input type="radio"/> Ice cap or glacier<br><input type="radio"/> Permanent snowpatches<br><input checked="" type="radio"/> Mountain<br><input checked="" type="radio"/> Valley<br><input type="radio"/> Shoreline<br><input type="radio"/> Tundra<br><input checked="" type="radio"/> Tree line<br><input checked="" type="radio"/> Other (Size of drainage basin: 10 km <sup>2</sup> )   |  |
| <b>Main science disciplines</b>  |  |
| <input type="radio"/> Anthropology, Sociology, Archaeology<br><input type="radio"/> Astrophysics<br><input checked="" type="radio"/> Atmospheric chemistry and physics<br><input type="radio"/> Isotopic chemistry<br><input checked="" type="radio"/> Climatology, Climate Change<br><input checked="" type="radio"/> Environmental sciences, Pollution<br><input checked="" type="radio"/> Geodesy<br><input type="radio"/> Geology, Sedimentology<br><input type="radio"/> Geophysics<br><input type="radio"/> Glaciology<br><input type="radio"/> Geocryology, Geomorphology<br><input type="radio"/> Soil science<br><input type="radio"/> Human biology, Medicine<br><input type="radio"/> Mapping, GIS<br><input type="radio"/> Marine biology<br><input type="radio"/> Oceanography, Fishery<br><input type="radio"/> Microbiology<br><input checked="" type="radio"/> Hydrology<br><input checked="" type="radio"/> Terrestrial biology, Ecology<br><input type="radio"/> Paleolimnology<br><input type="radio"/> Paleoecology<br><input type="radio"/> Limnology |  |
| <b>Workshop facilities</b>   |  |
| <input type="radio"/> Metal workshop<br><input type="radio"/> Wood workshop<br><input type="radio"/> Plexiglas workshop<br><input type="radio"/> Staff available to assist with constructions  |  |
| <b>Communication</b>   |  |
| <input checked="" type="radio"/> Telephone<br><input type="radio"/> Satellite phone<br><input type="radio"/> VHF<br><input type="radio"/> E-mail<br><input type="radio"/> Internet<br><input type="radio"/> Computer<br><input type="radio"/> Printer<br><input type="radio"/> Scanner<br><input type="radio"/> Fax  |  |



# INTER



# OBSERVER

# ACT



# STATIONS



# NERC ARCTIC STATION

## STATION NAME AND OWNER

The Natural Environment Research Council (NERC), UK, has funded the NERC Arctic Research Station which is managed by the British Antarctic Survey.

## LOCATION

Ny-Ålesund, 78°55' N, 11°55' E is situated on the southern shore of Kongsfjord on the west coast of Spitsbergen, the largest island in the Svalbard archipelago.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Due to the influence of the North Atlantic Current, the climate on the west coast of Spitsbergen is milder than any other locations at that latitude. The southern side of Kongsfjord, on which Ny-Ålesund is situated, has 50 km<sup>2</sup> of tundra and alluvial plain. Glaciers and sea confine a plant protection area at the head of the fjord. Numerous glaciers of various types occur in the area. Most bird species found in Svalbard are represented in the area with barnacle geese, eiders, auks, terns and kittiwakes nesting in large numbers. Land mammals include reindeer, fox and the occasionally polar bear. The local fjord is home to ringed, bearded and common seals, walrus and beluga.

## HISTORY AND FACILITIES

The UK has maintained a research station at Ny-Ålesund continuously since 1972. The NERC Arctic Research Station opened in 1991. The station comprises 440 m<sup>2</sup> of laboratory, workshop, and storage space plus single bedrooms. Additional accommodation can be provided by Kings Bay Company. The station provides laboratory, field equipment, telephone, computer facilities (fast web link), VHF radios, satellite telephones, firearms, and boats. Rental of snowmobiles for specific projects can be arranged.

## GENERAL RESEARCH AND DATABASES

The location is particularly suitable for ecological research, glacial/ periglacial geomorphology, hydrology, and atmospheric chemistry.

## HUMAN DIMENSION

In 1991, Ny-Ålesund and the surrounding environment were designated as an area solely for scientific research. There are now 14 research stations owned by 10 nations. The Kings Bay Company provides a service infrastructure including air and



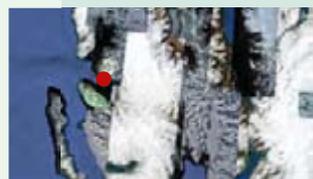


sea link, power, water, buildings, and a dining facility. During the summer months, June to September, the population in Ny Ålesund reaches 150 persons. During the winter months it decreases to c. 25 persons.

#### ACCESS

There are regular flights between Ny-Ålesund and Longyearbyen (30 minute flight) serviced by a 14 seat Dornier aircraft. Longyearbyen is served by scheduled flights from Norway. The northern shore and islands are easily accessible by boat.





| Category                     | Sub-Category                                       | NERC Arctic Research Station  |
|------------------------------|--|---|
| Website                      |  | www.arctic.ac.uk  |
| Country                      |  | Svalbard/UK   |
| Opening year                 |  | 1991  |
| Operational period           |  | 3-9   |
| Permitting issues categories | Permits required for access to the station         | Yes   |
|                              | Permits required for studies                       | Yes   |
|                              | Contact (permit issues)                            | nc@bas.ac.uk  |
| Facility owner and manager   | Name of the facility owner                         | Natural Environment Research Council  |
|                              | Owner status                                       | Government  |
|                              | Institution responsible for managing the station   | British Antarctic Survey  |
|                              | Contact (access to station)                        | nc@bas.ac.uk  |
|                              | Website (institution)                              | www.arctic.ac.uk  |
| Other institutions           | Name   | -   |
|                              | Country  | -   |
| Location                     | Geographical coordinates                           | 78°58' N, 11°58' E  |
|                              | Altitude of station                                | Shoreline   |
|                              | Min. altitude within study area                    | 0 m a.s.l.  |
|                              | Max. altitude within study area                    | 500 m a.s.l.  |
|                              | Nearest town/settlement                            | Longyearbyen (1500 inhabitants)   |
|                              | Distance to nearest town/settlement                | 100 km  |
|                              | Map  | 1:100 000   |
| Climate                      | Climate zone                                       | High Arctic   |
|                              | Permafrost   | Continuous  |
|                              | Years measured                                     | -   |
|                              | Mean annual temperature                            | -6 °C   |
|                              | Mean temperature in February                       | -14.6 °C  |
|                              | Mean temperature in July                           | 4.9 °C  |
|                              | Mean annual wind speed                             | -   |
|                              | Max. wind speed                                    | Gale force  |
|                              | Dominant wind direction                            | E   |
|                              | Total annual precipitation                         | 400 mm  |
|                              | Precipitation type                                 | Snow, rain  |
|                              | Ice break up                                       | Lakes: May/June; Sea: May   |
| Station facilities           | Area under roof                                    | 442 m <sup>2</sup>  |
|                              | Scientific laboratories                            | 77 m <sup>2</sup>   |
|                              | Logistic   | 100 m <sup>2</sup>  |
|                              | Number of rooms (beds)                             | 4 laboratories, computer room, office, living room, store rooms wash and drying rooms, garage, workshop, 7 beds plus extra provided by Kings Bay AS |
|                              | Number of staff on station (peak/off season)       | 1 station manager plus Kings Bay staff  |
|                              | Max. number of visitors at a time                  | 20  |
|                              | Showers  | Yes   |
|                              | Laundry facilities                                 | Yes   |
|                              | Power supply (type)                                | Generator power 220 V outlet  |
|                              | Power supply                                       | 24 hours per day  |
| Scientific equipment         | Specific device                                    | Drying ovens, freezers, fridges, centrifuge, fume cupboard, microscopes, balances etc   |
|                              | Scientific services offered                        | -   |
| Medical facilities           | Medical facilities                                 | Standard  |
|                              | Medical suite                                      | -   |
|                              | No. of staff with basic medical training or doctor | 1   |
|                              | Distance to hospital (estimated time)              | 100 km (2 hours)  |
|                              | Compulsory safety equipment                        | Weapons, VHF radio, map, compass, first-aid kit   |
| Landing facilities           | Recommended safety equipment                       | Spare clothing, food  |
|                              | Airstrip (Length × Width)                          | 800 × 60 m  |
|                              | Airstrip surface                                   | Gravel  |
|                              | Helipad  | Yes   |
| Vehicles at station          | Ship landing facilities                            | Port, landing wharf, pier, pontoon, sledges   |
|                              | Sea transportation                                 | Polarcirkel 560 Workboat  |
| Transport and freight        | Land transportation                                | Bicycle and hand carts, snowmobiles   |
|                              | Transport to station                               | Plane   |
|                              | Number of ship visits per year (period)            | Freight only 1 per summer month (May to November)   |
|                              | Number of flight visits per year (period)          | 2 per week (year-round)   |



| Features within study area          |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Ice cap or glacier                           |
| <input checked="" type="checkbox"/> | Permanent snowpatches                        |
| <input checked="" type="checkbox"/> | Mountain                                     |
| <input checked="" type="checkbox"/> | Valley                                       |
| <input checked="" type="checkbox"/> | Shoreline                                    |
| <input checked="" type="checkbox"/> | Tundra                                       |
| <input type="checkbox"/>            | Tree line                                    |
| <input checked="" type="checkbox"/> | Other (Islands)                              |
| Main science disciplines            |  |
| <input type="checkbox"/>            | Anthropology, Sociology, Archaeology         |
| <input type="checkbox"/>            | Astrophysics                                 |
| <input checked="" type="checkbox"/> | Atmospheric chemistry and physics            |
| <input checked="" type="checkbox"/> | Isotopic chemistry                           |
| <input checked="" type="checkbox"/> | Climatology, Climate Change                  |
| <input checked="" type="checkbox"/> | Environmental sciences, Pollution            |
| <input checked="" type="checkbox"/> | Geodesy                                      |
| <input checked="" type="checkbox"/> | Geology, Sedimentology                       |
| <input checked="" type="checkbox"/> | Geophysics                                   |
| <input type="checkbox"/>            | Glaciology                                   |
| <input checked="" type="checkbox"/> | Geocryology, Geomorphology                   |
| <input checked="" type="checkbox"/> | Soil science                                 |
| <input checked="" type="checkbox"/> | Human biology, Medicine                      |
| <input checked="" type="checkbox"/> | Mapping, GIS                                 |
| <input checked="" type="checkbox"/> | Marine biology                               |
| <input checked="" type="checkbox"/> | Oceanography, Fishery                        |
| <input checked="" type="checkbox"/> | Microbiology                                 |
| <input checked="" type="checkbox"/> | Hydrology                                    |
| <input checked="" type="checkbox"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="checkbox"/> | Paleolimnology                               |
| <input checked="" type="checkbox"/> | Paleoecology                                 |
| <input checked="" type="checkbox"/> | Limnology                                    |
| Workshop facilities                 |  |
| <input checked="" type="checkbox"/> | Metal workshop                               |
| <input checked="" type="checkbox"/> | Wood workshop                                |
| <input type="checkbox"/>            | Plexiglas workshop                           |
| <input checked="" type="checkbox"/> | Staff available to assist with constructions |
| Communication                       |  |
| <input checked="" type="checkbox"/> | Telephone                                    |
| <input checked="" type="checkbox"/> | Satellite phone                              |
| <input checked="" type="checkbox"/> | VHF  |
| <input checked="" type="checkbox"/> | E-mail                                       |
| <input checked="" type="checkbox"/> | Internet                                     |
| <input checked="" type="checkbox"/> | Computer                                     |
| <input checked="" type="checkbox"/> | Printer                                      |
| <input checked="" type="checkbox"/> | Scanner                                      |
| <input checked="" type="checkbox"/> | Fax  |



# NETHERLANDS ARCTIC STATION



## STATION NAME AND OWNER

The Netherlands Arctic Station is owned and run by the Arctic Centre of the University of Groningen.

## LOCATION

The Netherlands Arctic Station is situated in Kongsfjorden on the island of Spitsbergen and is part of an international research community in the former mining town of Ny-Ålesund, Svalbard. In this town, more than 10 nations have their own station while using shared facilities for meals and recreation. The whole local community is focussed on science and maintenance of infrastructure. Several stations have independent terrestrial research programmes and the Netherlands Arctic Station is the smallest of all.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Kongsfjorden is a beautiful high arctic environment with several glaciers terminating in the fjord. The raised beach terraces are sparsely vegetated with dense moss cover around small tundra lakes and below bird cliffs. Locally there are clear traces of former human activity by trappers and from coal mining. At present, the whole area is well-protected and a special permission is needed

to enter the islands during the bird breeding season. In 1978, reindeer was re-introduced and since 1982 barnacle geese have established a colony and are regularly feeding between the houses. Both herbivores have a clear impact on the vegetation.

## HISTORY AND FACILITIES

From 1916 to 1968, the village of Ny-Ålesund was a coal mining settlement. This village has now developed into a unique mix of stations, laboratories, and research infrastructure. There is a small international community of 25 to 110 people – all temporal residents. Tourists are discouraged to stay overnight. In 1990, the University of Groningen initiated a project on barnacle geese and later joined the shared facilities with the establishment of Netherlands Arctic Station. The station consists of two small buildings for lodging with electricity but no plumbing. Shared facilities in town offer unique high-standard science and logistic support.

## GENERAL RESEARCH AND DATABASES

Research focusses on the role of barnacle geese in the arctic ecosystem. Nutrient cycles, plant productivity, and vegetation





patterns are studied to understand plant-herbivore interactions. Behaviour, timing, and breeding success of individually ringed geese are observed over their lifetime, and the effect of predators is studied as a dynamic interaction. Population trends of plants, herbivores, and predators are monitored in a warming environment. Long term experiments include grazing enclosures and greenhouses on paired vegetation plots. There are also projects focussing on the history of human exploitation and the effect of tourism on cultural heritage.

### HUMAN DIMENSION

The local community in Ny-Ålesund is a mixture of nationalities from the various stations. The area is owned by a company called Kings Bay, taking care of the logistics for the entire village. Ny-Ålesund has no permanent residents and all activity is linked to science. The closest town is the Norwegian village of Longyearbyen, which is the main hub of Svalbard. In Longyearbyen, permanent residents are few (c. 2000). There are no indigenous people and most inhabitants originate from the Norwegian mainland and live on Svalbard

only because of their temporal job assignment. Tourism, local administration, science, and coal mining are the most important sources of income.

### ACCESS

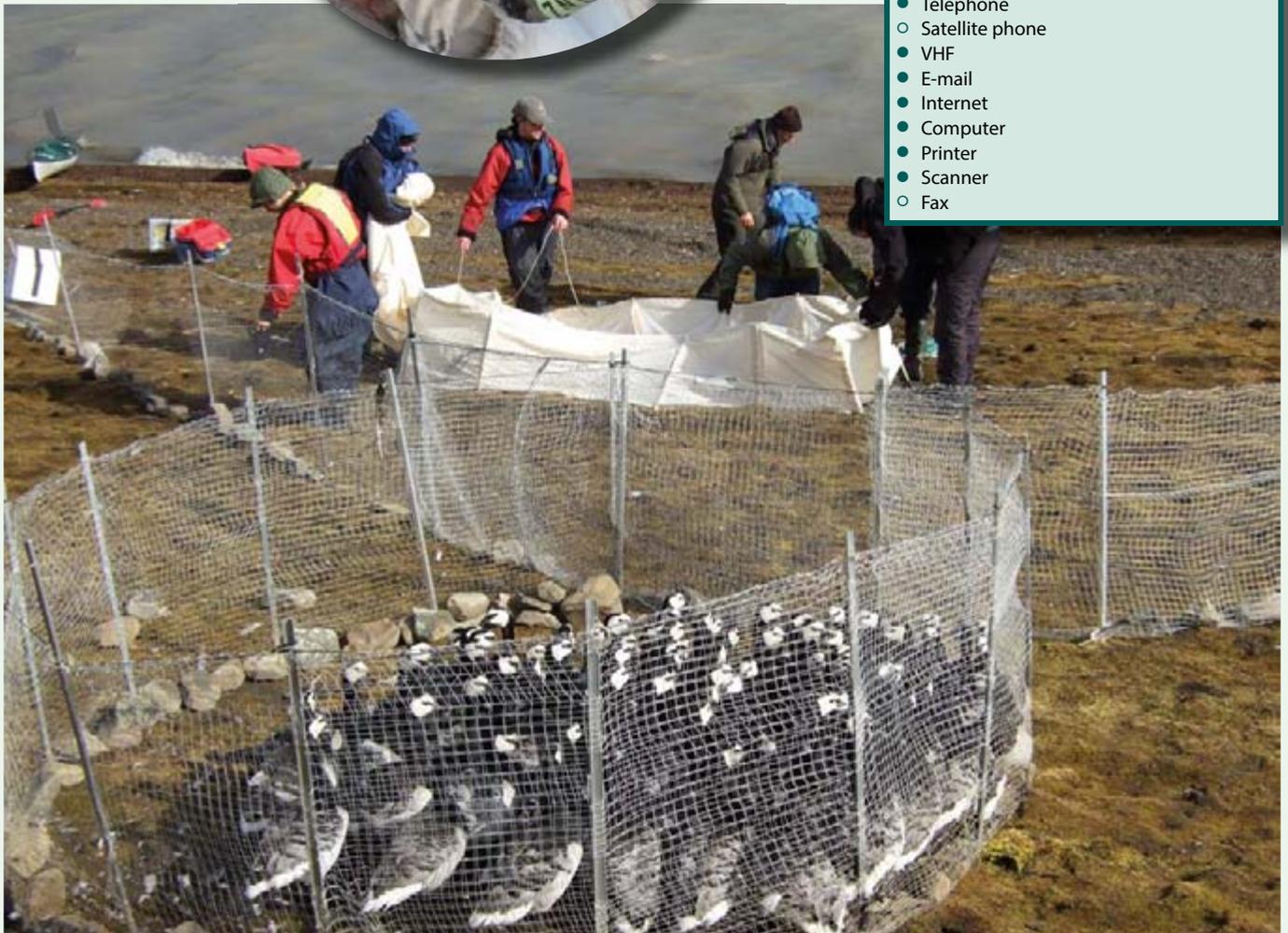
Throughout the year, Kings Bay organises two flights per week with a small plane (14 passengers) between Longyearbyen and Ny-Ålesund. In summer, there are about 30000 tourists landing by boat for just a few hours. There is

only a limited amount of roads near the village. Local transportation is possible by car, bicycle, snowmobile, or foot. Small boats are used for transportation inside the fjord.





| Category                     | Sub-Category  | Netherlands Arctic Station  |
|------------------------------|---|---|
| Website                      |   | www.arcticstation.nl  |
| Country                      |   | Svalbard/The Netherlands  |
| Opening year                 |   | 1995  |
| Operational period           |   | Mid June to mid August  |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | Yes<br>Yes<br>m.j.j.e.loonen@rug.nl   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br>Contact (access to station)<br>Website (institution)  | University of Groningen, Arctic Centre<br>Private<br>University of Groningen, Arctic Centre<br>m.j.j.e.loonen@rug.nl<br>www.rug.nl/arcticcentre |
| Other institutions           | Name<br>Country   | –<br>–  |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 78°55'32" N, 11°56'05" E<br>10 m a.s.l.<br>0 m a.s.l.<br>500 m a.s.l.<br>Longyearbyen (2060 inhabitants)<br>115 km<br>1:100 000                 |
| Climate                      | Climate zone<br>Permafrost<br>Years measured<br>Mean annual temperature<br>Mean temperature in February<br>Mean temperature in July<br>Mean annual wind speed<br>Max. wind speed<br>Dominant wind direction<br>Total annual precipitation<br>Precipitation type<br>Ice break up | High Arctic<br>Continuous<br>–<br>-6 °C<br>-14.6 °C<br>4.9 °C<br>4 m/s<br>21.6 m/s<br>NW<br>400 mm<br>Snow, rain<br>Lakes: May/June; Sea: May   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply                                   | 114 m <sup>2</sup><br>16 m <sup>2</sup><br>16 m <sup>2</sup><br>6 rooms (8 beds)<br>1/0<br>7<br>–<br>–<br>220 V<br>24 hours per day             |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Very basic, blood sampling<br>–   |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Basic<br>–<br>–<br>115 km<br>Weapon, VHF radio, survival kit<br>–   |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | 800 × 50 m<br>Gravel<br>Yes<br>Port, landing wharf, pier, pontoon   |
| Vehicles at station          | Sea transportation<br>Land transportation   | Aluminium small boats<br>Bicycle  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br><br>Number of flight visits per year (period)  | Plane<br>Freight once per summer month, tourist cruiseships daily (May to November)<br>2 per week all year (year-round)                         |



| Features within study area       |  |
|----------------------------------|--|
| <input checked="" type="radio"/> | Ice cap or glacier                           |
| <input checked="" type="radio"/> | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input checked="" type="radio"/> | Shoreline                                    |
| <input checked="" type="radio"/> | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input checked="" type="radio"/> | Other (Bird cliffs and small islands)        |
| Main science disciplines         |  |
| <input checked="" type="radio"/> | Anthropology, Sociology, Archaeology         |
| <input type="radio"/>            | Astrophysics                                 |
| <input type="radio"/>            | Atmospheric chemistry and physics            |
| <input type="radio"/>            | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input type="radio"/>            | Geology, Sedimentology                       |
| <input type="radio"/>            | Geophysics                                   |
| <input type="radio"/>            | Glaciology                                   |
| <input type="radio"/>            | Geocryology, Geomorphology                   |
| <input type="radio"/>            | Soil science                                 |
| <input type="radio"/>            | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input type="radio"/>            | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input type="radio"/>            | Paleolimnology                               |
| <input type="radio"/>            | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| Workshop facilities              |  |
| <input type="radio"/>            | Metal workshop                               |
| <input type="radio"/>            | Wood workshop                                |
| <input type="radio"/>            | Plexiglas workshop                           |
| <input type="radio"/>            | Staff available to assist with constructions |
| Communication                    |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input type="radio"/>            | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input type="radio"/>            | Fax  |



# HORNSUND



## STATION NAME AND OWNER

The Polish Polar Station, Hornsund belongs to the Institute of Geophysics of the Polish Academy of Sciences.

## LOCATION

The station is situated on the northern shore of the Hornsund Fjord in the centre of the South Spitsbergen National Park (8504 km<sup>2</sup>), Svalbard Archipelago. Longyearbyen – the capital of Svalbard with harbor and airport is located approximately 180 km northward.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Pristine environment surrounds the station, where glaciers, mountains, valleys, lakes, and rivers are not affected by humans. In 2002, the Polish station, together with the Hornsund Fjord, was recognized as one of six the European Marine Biodiversity Flagship Sites (<http://www.iopan.gda.pl/projects/biodaff/>). Tundra with many species of lichens, mosses, flowers, and shrubs occupy the raised marine terraces and the lower parts of the mountain slopes. Reindeers, Arctic foxes, and polar bears together with many bird species are living around the station.

## HISTORY AND FACILITIES

The Polish Polar Station was established in 1957, as a winter base during the 3<sup>rd</sup> International Geophysical Year 1957/1958. In the 1970s, it was used by Polish research expeditions during summers only. The station was renovated in 1978 and has been in operation year-round since then. Today, the station is a modern research platform with access to well-equipped laboratories, satellite communication, and internet. Accommodation, washing, and cooking facilities for 20 visitors (in addition to the permanent staff of 10 persons) are in the same building. There is also a well equipped workshop, a boat house, and storage for instruments and field equipment. The station lounge has a multimedia projector, white screen, and a 60" HD LCD TV and is used for scientific seminars and conferences for up to 20-30 participants.

## GENERAL RESEARCH AND DATABASES

The research at the Polish Polar Station focuses on meteorology, glaciology, monitoring of geophysical fields (i.e. seismology, geomagnetism, atmospherical electricity), permafrost, and geomorphic processes. The main study objectives are related to the evolution of the high arctic environment with respect to Climate





Change. Projects include the research on mass and energy balance of glaciers, fluctuations and changes of their hydrothermal state, and dynamics of tidewater glaciers and their interaction with the ocean. Changes in marine and terrestrial ecosystems are systematically studied, including a strong ornithological component.

Existing databases include meteorological and glaciological records (<http://www.glacio-topoclim.org>), geophysical data (collected in several world data centers), as well as marine and terrestrial biological parameters. There is a bibliography of publications arising from research at the station.

### HUMAN DIMENSION

The closest town Longyearbyen is administrative center and the largest settlement of Svalbard with more than 2000 inhabitants. There are harbours and airport with regular flight connections with Tromsø and Oslo. In the town are also hotels, restaurants, shops, galleries, hospital, school, and the University Center of Svalbard (UNIS) with c. 350 students and 40 persons in the staff. Longyearbyen is also the seat of the Norwegian Governor of Svalbard with police station and helicopter rescue station as well.

### ACCESS

There are no roads between any settlement and the Polish Polar Station. During the summer season, the station can be reached by ships or yachts. Flights by helicopter may be used all year-round. The trip by ship from Longyearbyen to Hornsund takes 12-24 hours and by helicopter c. 1 hour. In winter and spring, Hornsund can be reached by snow scooters, if two fjords between Longyearbyen and the station have stable and thick enough sea ice cover.



| Category | Sub-Category | Polish Polar Station – Hornsund |
|----------|--------------|---------------------------------|
|----------|--------------|---------------------------------|

|  |   |   |
|--|---|---|
| Website  |   | www.hornsund.com, www.hornsund.igf.edu.pl   |
| Country  |   | Svalbard  |
| Opening year                                   |   | 1957  |
| Operational period                             |   | Year-round  |
| Permitting issues categories                   | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | Yes<br>Yes (permission for work given by the Governor of Svalbard)<br>firmapost@sysselmannen.no   |
| Facility owner and manager                     | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br><br>Contact (access to station)<br>Website (institution)                                | Institute of Geophysics, Polish Academy of Sciences<br>NGO<br>Department of Polar Research, Institute of Geophysics, Polish Academy of Sciences<br>polar@igf.edu.pl, hornsund@igf.edu.pl<br>www.igf.edu.pl                |
| Other institutions                             | Name<br>Country   | –<br>–  |
| Location                                       | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest settlement<br>Map | 77°00' N, 15°33' E<br>9 m a.s.l.<br>0 m a.s.l.<br>750 m a.s.l.<br>Longyearbyen (2000 inhabitants)<br>180 km<br>Map (1:25 000), orthophotomaps (1:10 000), aerial image, satellite image, Google Earth with low resolution |
| Climate  | Climate zone  | High Arctic   |
|  | Permafrost  | Continuous  |
|  | Years measured  | 1979-2010   |
|  | Mean annual temperature   | -4.2 °C   |
|  | Mean temperature in February  | -10.7 °C  |
|  | Mean temperature in July  | 4.4 °C  |
|  | Mean annual wind speed  | 5-6 m/s   |
|  | Max. wind speed   | 35 m/s (max. wind gust = 49 m/s)  |
|  | Dominant wind direction   | E   |
|  | Total annual precipitation  | 452.6 mm  |
|  | Precipitation type  | Snow, rain  |
|  | Ice break up  | Lake: June/July; Rivers: May/June; Sea: April/May   |
|  | Station facilities  | Area under roof   |
| Scientific laboratories                        |   | 120 m <sup>2</sup>  |
| Logistic                                       |   | 500 m <sup>2</sup>  |
| Number of rooms (beds)                         |   | 19 (accomodation: 36 beds), 9 Laboratories, 2 Common/Seminar rooms, 1 Medical suite, 1 Kitchen, 1 Fitnessroom   |
| Number of staff on station (peak / off season) |   | 16/10   |
| Max. number of visitors at a time              |   | 20  |
| Showers  |   | Yes   |
| Laundry facilities                             |   | Yes   |
| Power supply (type)<br>Power supply            |   | Diesel generator 400/230 V 50Hz european two/three pin plug<br>24 hours per day   |
| Scientific equipment                           | Specific device   | Standard chemical laboratory equipment, Liquid Ion chromatography, Differential GPS, Geodetic surveying equipment, Automatic Weather Station  |
|  | Scientific services offered   | Technical support, chemical analyses  |
| Medical facilities                             | Medical facilities  | Basic   |
|  | Medical suite   | Basic   |
|  | No. of staff with basic medical training or doctor  | Yes   |
|  | Distance to hospital (estimated time)   | 2-3 hours (1 hour helicopter flight)  |
|  | Compulsory safety equipment<br>Recommended safety equipment   | 180 km (3 hours to Longyearbyen hospital)<br>Signal pistol, first aid kit, Avalanche Beacon, Spot - Satellite Personal Tracker  |
| Landing facilities                             | Airstrip (Length × Width)   | – (flat place on tundra, far away from buildings and antennas)  |
|  | Airstrip surface  | –   |
|  | Helipad   | –   |
|  | Ship landing facilities   | Landing wharf, pontoon (ships can anchor c. 500 m from the coast-line; transport only possible with boats and amphibious vehicles)  |
| Vehicles at station                            | Sea transportation  | Rubber boats (RIB, Bombard, Zodiac), plastik and aluminium motor boats, amphibious vehicles   |
|  | Land transportation   | Snowmobiles (during winter and spring and on glaciers)  |
| Transport and freight                          | Transport to station  | Ship, helicopter, snowmobiles   |
|  | Number of ship visits per year (period)   | 1-2 (supply vessels) + 3-5 other ships (June-October)   |
|  | Number of flight visits per year (period)   | Not regular intervals (year-round)  |





#### Features within study area

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Proximity of Hansbreen glacier and non glaciated experimental drainage basin)

Yes  
 No

#### Main science disciplines

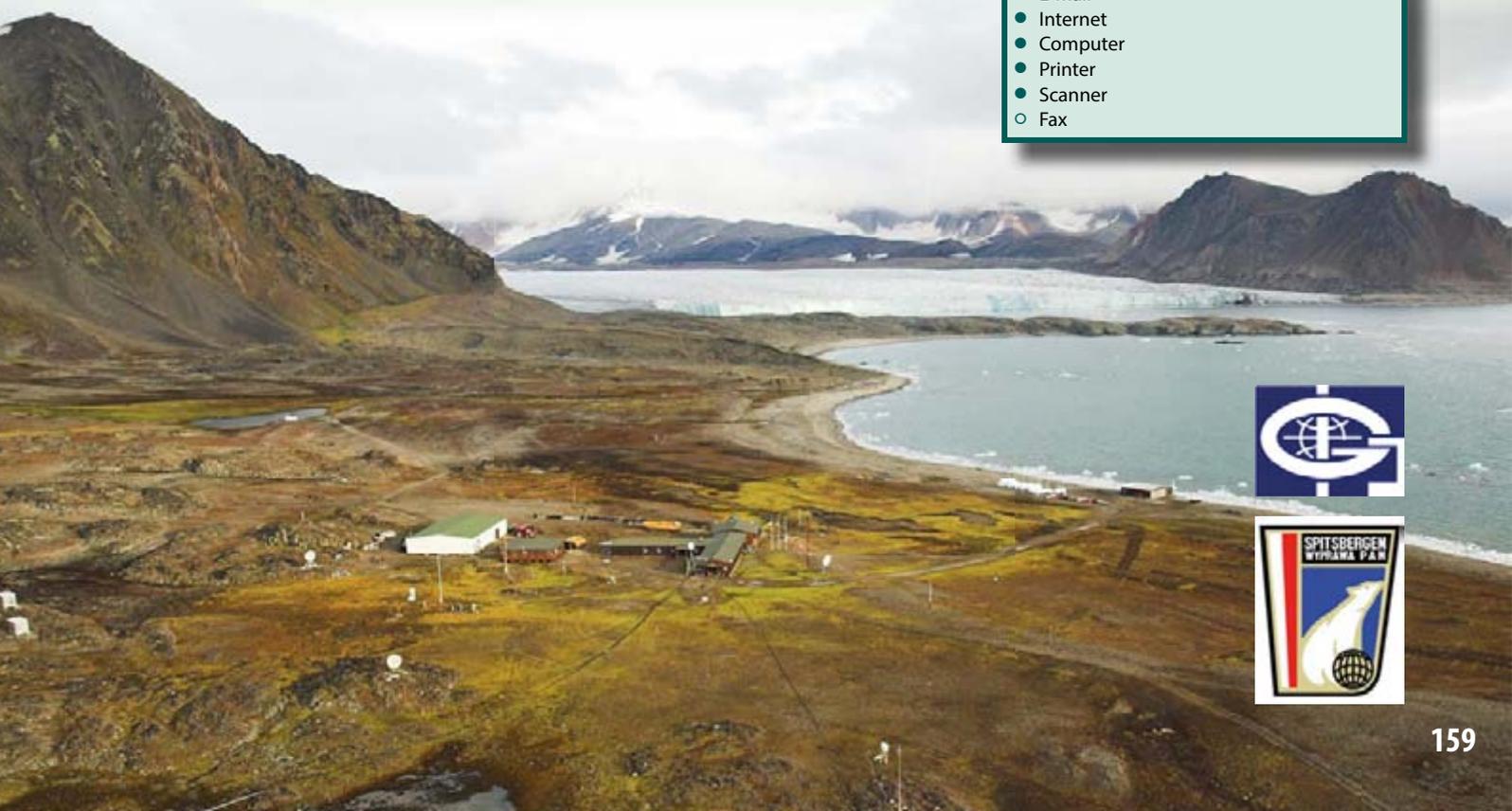
- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleocology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





# PETUNIA- BUKTA

## STATION NAME AND OWNER

Petuniabukta Station is an observer station in INTERACT. It is owned by the University of South Bohemia in the Czech Republic.

## LOCATION

Petuniabukta Station is located in central Spitsbergen, near the old Russian mining town Pyramiden in the Petunia Bay in the northern part of Billefjorden. The station is situated a short distance from the shore-line of the fjord and is flanked by mountains reaching altitudes up to 1000 m a.s.l. Three national parks are located in close vicinity of the station, i.e. Sassen-Bunsow Land, Norde Isfjorden, and Indre Wijdefjorden. The nearest settlement is Longyearbyen, located 60 km to the south.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in the High Arctic climate zone in the central part of Spitsbergen, which is more continental and drier than the western part of the archipelago. The station lies in a coastal zone

neighbouring by steep mountains with a high altitudinal gradient. Various habitats can be accessed within walking distance of the station, i.e. sandy beaches, waterlogged tundra, seepages, dry tundra, bird cliffs, small lakes, glacier rivers, and glaciers. The area is rich in wildlife including gulls, kittiwakes, terns, barnacle geese, eider, reindeer, Arctic foxes, and polar bears.

## HISTORY AND FACILITIES

Since the beginning of the 1980s, Czechoslovakian scientists have conducted research on Spitsbergen, especially in the south-western and central part near the Russian mining towns Barentsburg and Pyramiden. The present Petuniabukta Station was established in 2007, when two containers (one for storage and one for living) were installed on a landing wharf in Pyramiden. During the summer season, a Russian hunting hut (built in 1980s), located c. 6 km north of Pyramiden, is used for research activities in the area. The hut is rented from the Russian mining company Arktikugol and has been used by our research group since 2008. Present facilities are rather limited: the hut can accommodate up to 12 persons (plus six in a container) and is equipped with a small laboratory, kitchen, and shared bedroom. Communication





is possible with VHF radio and satellite phones. Two zodiacs are used for transportation in the Billefjorden area.

### GENERAL RESEARCH AND DATABASES

Research is focused on biodiversity and ecosystem dynamics. Investigations of plant ecology, phycology, parasitology, and bioclimatology have a relatively long research history in the area, while new scientific fields such as geomorphology or hydrology emerged more recently. Meteorological monitoring was established at the station in 2007. A recent pilot project of a Czech research group is focussing on biological and climatic diversity, including ecological, phytological, zoological, and parasitological research. A second larger inter-disciplinary project focuses on glacier dynamics by gathering information from the fields of geology, geomorphology, glaciology, climatology, and hydrology.

### HUMAN DIMENSION

The station is located in an area with strong Russian influence and is neighbouring the old mining town of Pyramiden. This was abandoned in 1998 and now supports a population of c. 15 people in summer and two people in the winter. The largest settle-

ment on Svalbard and home of the Norwegian administration is Longyearbyen. The town has about 2000 inhabitants, and includes impress-

ing infrastructure for such a small municipality, i.e. shops, airport, hospital, university, church, etc. Traditionally, the population was employed in fishery (whaling) and later in the coal mining industry. Tourism and university level education have become increasingly important economic factors for Svalbard within the last decades.

### ACCESS

There are regular commercial flights to Longyearbyen (three hours from Oslo). To reach the station, two local cruising companies organise tourist trips with stop in Pyramiden directly on the landing wharf with the containers and approximately 6 km from the hut. From Longyearbyen it usually takes about 5-6 hours to reach Pyramiden. It is also possible to rent a boat in Longyearbyen from a private company or from the University Centre in Svalbard. Reaching the station by zodiac from Longyearbyen requires good weather conditions and a calm sea.





| Category                     | Sub-Category                                       | Petuniabukta Station  |
|------------------------------|--|---|
| Website                      |  | <a href="http://polar.prf.jcu.cz/station.htm">http://polar.prf.jcu.cz/station.htm</a>   |
| Country                      |  | Czech Republic – Svalbard/Norway  |
| Opening year                 |  | 2007  |
| Operational period           |  | July-September  |
| Permitting issues categories | Permits required for access to the station         | –   |
|                              | Permits required for studies                       | Yes (depends on the field of studies, see: <a href="http://www.sysselmannen.no/enkel.aspx?m=63084">www.sysselmannen.no/enkel.aspx?m=63084</a> )                               |
|                              | Contact (permit issues)                            | <a href="mailto:czechpolar@gmail.com">czechpolar@gmail.com</a> ,<br><a href="http://www.sysselmannen.no/hoved.aspx?m=44365">http://www.sysselmannen.no/hoved.aspx?m=44365</a> |
| Facility owner and manager   | Name of the facility owner                         | University of South Bohemia, Czech Republic   |
|                              | Owner status                                       | Government  |
|                              | Institution responsible for managing the station   | Center for Polar ecology, Faculty of Science, University of South Bohemia, Ceske Budejovice, Czech Republic   |
|                              | Contact (access to station)                        | <a href="mailto:czechpolar@gmail.com">czechpolar@gmail.com</a>  |
|                              | Website (institution)                              | <a href="http://polar.prf.jcu.cz/">http://polar.prf.jcu.cz/</a>   |
| Other institutions           | Name   | –   |
|                              | Country  | –   |
| Location                     | Geographical coordinates                           | 78°40' N, 16°23' E  |
|                              | Altitude of station                                | 2 m a.s.l.  |
|                              | Min. altitude within study area                    | 0 m a.s.l.  |
|                              | Max. altitude within study area                    | 935 m a.s.l.  |
|                              | Nearest town/settlement                            | Pyramiden (6 inhabitants), Longyearbyen (2000 inhabitants)  |
|                              | Distance to nearest town/settlement                | 0.5 km (Pyramiden), 60 km (Longyearbyen)  |
|                              | Map  | Map (1:50 000), satellite image, Google Earth with low resolution   |
| Climate                      | Climate zone                                       | High Arctic   |
|                              | Permafrost   | Continuous  |
|                              | Years measured                                     | –   |
|                              | Mean annual temperature                            | -6 °C   |
|                              | Mean temperature in February                       | -12 °C  |
|                              | Mean temperature in July                           | 7.5 °C  |
|                              | Mean annual wind speed                             | 4 m/s   |
|                              | Max. wind speed                                    | 24 m/s  |
|                              | Dominant wind direction                            | S   |
|                              | Total annual precipitation                         | 150-200 mm  |
|                              | Precipitation type                                 | Snow, rain  |
| Ice break up                 | Lake: June; Sea: June                              |   |
| Station facilities           | Area under roof                                    | 20 m <sup>2</sup> + 60 m <sup>2</sup> (hut)   |
|                              | Scientific laboratories                            | 20 m <sup>2</sup> (hut)   |
|                              | Logistic   | 10 m <sup>2</sup> + 10 m <sup>2</sup> (hut)   |
|                              | Number of rooms (beds)                             | Container: 1 room (6 beds); hut: kitchen, lab, bedrooms (12 beds)   |
|                              | Number of staff on station (peak/off season)       | 8/0   |
|                              | Max. number of visitors at a time                  | 20  |
|                              | Showers  | –   |
|                              | Laundry facilities                                 | –   |
|                              | Power supply (type)                                | 1.5 kW Fossil fuel generator (400V/ 230V)   |
|                              | Power supply                                       | On demand   |
| Scientific equipment         | Specific device                                    | Climate stations, GPS, basic laboratory equipment, different surveying equipment, diving equipment, coring device, OTC, etc.  |
|                              | Scientific services offered                        | –   |
| Medical facilities           | Medical facilities                                 | –   |
|                              | Medical suite                                      | –   |
|                              | No. of staff with basic medical training or doctor | 1   |
|                              | Distance to hospital (estimated time)              | 60 km (2-3 hours, according to the weather conditions by helicopter, rubber boat)   |
|                              | Compulsory safety equipment                        | Weapon, VHF   |
|                              | Recommended safety equipment                       | Flare gun, first aid kit  |
| Landing facilities           | Airstrip (Length × Width)                          | –   |
|                              | Airstrip surface                                   | –   |
|                              | Helipad  | –   |
|                              | Ship landing facilities                            | Port, landing wharf   |
| Vehicles at station          | Sea transportation                                 | Zodiac  |
|                              | Land transportation                                | –   |
| Transport and freight        | Transport to station                               | Cargo is transported to Svalbard in advance via cargoship (from Gdynia or Tromsø), other transport by plane to Longyearbyen and then by a cruise ship to the station          |
|                              | Number of ship visits per year (period)            | No regular intervals (only during summer season)  |
|                              | Number of flight visits per year (period)          | –   |



**Features within study area**

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other

- Yes
- No

**Main science disciplines**

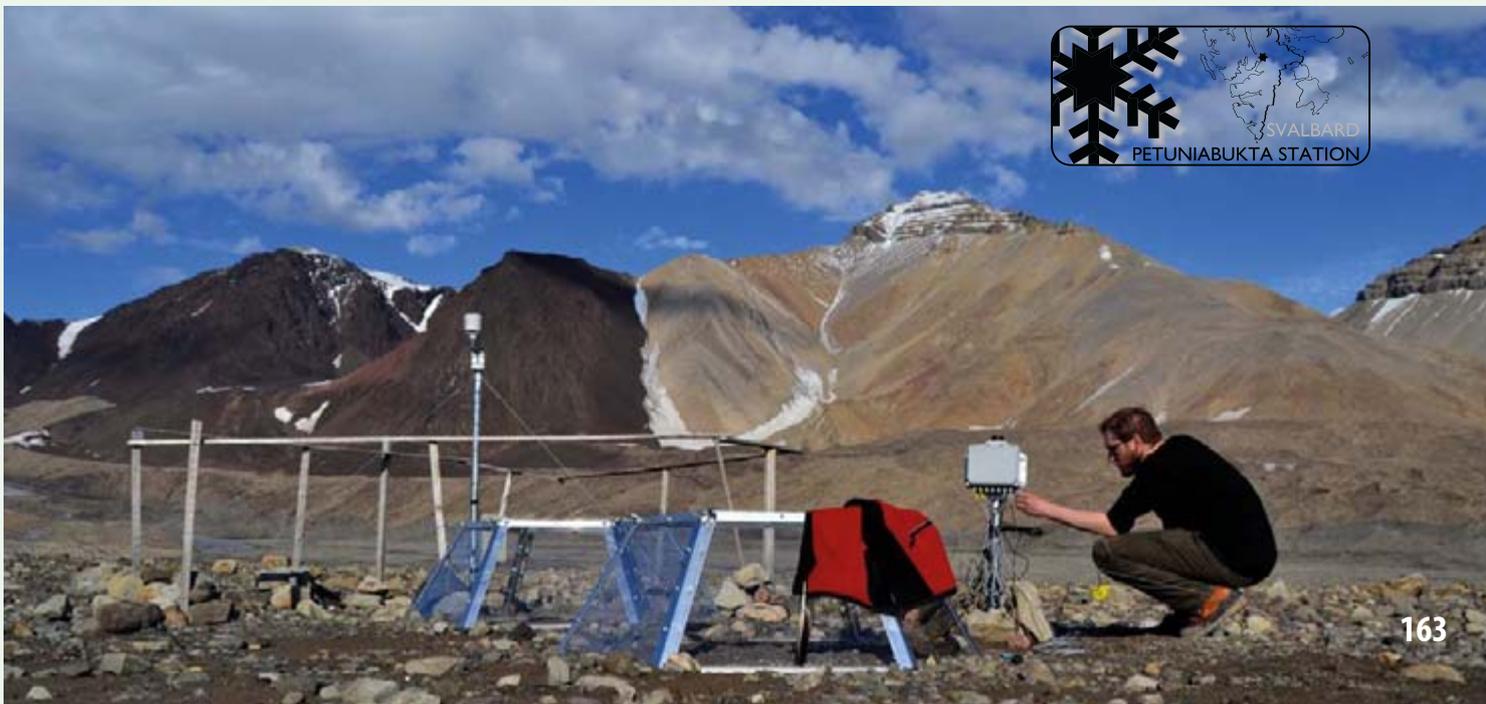
- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax





### STATION NAME AND OWNER

The 'Alpine Research and Education Station Furka' (ALPFOR) is managed by the non-profit association ALPFOR, which is related to the University of Basel.

### LOCATION

ALPFOR is situated close to the summit of the Furka Pass at an elevation of 2435 m a.s.l. in the Swiss Central Alps, canton Uri (46°34'36" N, 8°25'17" E). The nearest larger community is Andermatt at the Gotthard Pass Road to Italy with approximately 1300 inhabitants. Land owner is the Korporation Ursern (a regional authority).

### BIODIVERSITY AND NATURAL ENVIRONMENT

ALPFOR is placed in a small zone of mesozoic calcareous layers ('Ursernzzone') within the granitic, gneissic, and phyllitic (mica schist) core of the central Alps. The pass itself and the summits around, with elevations above 3500 m a.s.l., form the watershed of three major European river systems (Rhone, Rhine, and Po). All glaciers around the Furka Pass are at a rapid retreat, accompanied by permafrost thawing, rock glacier melting, and the release of new terrain from ice. Floristically, the Furka Pass is one of the

richest parts of the Alps, i.e. within 1 km around the ALPFOR station, the alpine flora comprises close to 300 species of flowering plants, which is more than half of the total Swiss alpine flora. This biological richness is explained by the local geology and the topographic diversity. By area, the two largest habitats are alpine grassland dominated by *Carex curvula* and open fell field/rock vegetation. There are wet and very dry microhabitats (cotton grass - *Eriophorum sp.*, and succulents – *Sempervivum sp.*).

### HISTORY AND FACILITIES

ALPFOR adopted three buildings from the former military station in 2008-2011. House Carex (a former health station) is mainly used by permanent staff. It offers beds for 12 people in two storeys. House Rumex (also two-storey) has a small lecture room for 25 people, a 'Flora gallery' and a little tea-kitchen in the basement, and a 10-bed dormitory in the upper floor. House Ibex (former canteen and accommodation for officers) is a three-storey building with a large kitchen, a dining hall/lecture room for up to 100 people, and eight rooms with 2-4 beds. Several working rooms and modern sanitary facilities are offered in all three houses. ALPFOR can host up to 30 visitors at a time.



# ALPFOR



## GENERAL RESEARCH AND DATABASES

The Furka Pass is an ideal region for alpine research. Since 1991, diverse studies have strongly shaped our understanding of the alpine ecosystem, which contributed to 'Alpine Plant Life' (Ch. Körner, Springer Publishers, 2003). Major research projects at ALPFOR deal with the influence of elevated CO<sub>2</sub> concentration on growth, productivity, and water relations of alpine grassland and glacier forefield vegetation; the impact of nitrogen deposition, climatic warming, and sheep trampling on alpine grassland; microclimatology of alpine vegetation; population biology and reproductive ecology of alpine plants; molecular genetics of alpine plant populations (gene-ecology); hydrological consequences of land use change. For an overview on these research projects see: <http://pages.unibas.ch/botschoen/alpfor/research.shtml>.

We offer alpine ecology summer courses to undergraduate and graduate students. Our students prepare for the summer school through a web-based teaching tool (English and Spanish version) that is freely offered to all users ([www.alpandino.org](http://www.alpandino.org)).

## HUMAN DIMENSION

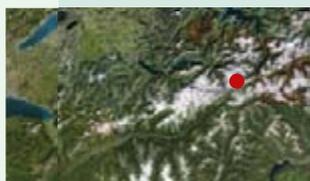
The major human influence in this area is pastoralism, which have existed here for more than a thousand years and is currently in rapid decline at lower elevations (with massive *Alnus* shrub encroachment). Higher elevations are facing uncontrolled increases in the number of sheep, leading to an intensification of grazing on the remaining, easily accessible parcels. The *Alnus* problem is the most immediate threat, because it leads to soil acidification, nitrogen eutrophication, plant diversity decline and it prevents natural reforestation by indigenous species (pristine forest was cleared already in the 11<sup>th</sup> century).

## ACCESS

The Furka Pass Road is open from May to October. The station is open from the 1<sup>st</sup> of June to the 30<sup>th</sup> September. There is a post-bus service from Andermatt and Oberwald twice a day from each side of the pass. Andermatt and Oberwald have train stations less than 15 km away from the Furka pass. The link to the main Swiss rail system is at Göschenen. A trip from Basel or Zurich takes approximately three hours.



| Category                     | Sub-Category                                       | ALPFOR<br>Alpine Research and Education Station Furka   |
|------------------------------|--|---|
| Website                      |  | <a href="http://pages.unibas.ch/botschoen/alpfor">http://pages.unibas.ch/botschoen/alpfor</a> |
| Country                      |  | Switzerland   |
| Opening year                 |  | 2009  |
| Operational period           |  | 6-9   |
| Permitting issues categories | Permits required for access to the station         | Yes   |
|                              | Permits required for studies                       | Yes   |
|                              | Contact (permit issues)                            | sekretariat-botschoen@unibas.ch   |
| Facility owner and manager   | Name of the facility owner                         | ALPFOR  |
|                              | Owner status                                       | NGO   |
|                              | Institution responsible for managing the station   | ALPFOR  |
|                              | Contact (access to station)                        | sekretariat-botschoen@unibas.ch   |
|                              | Website (institution)                              | <a href="http://pages.unibas.ch/botschoen/">http://pages.unibas.ch/botschoen/</a>             |
| Other institutions           | Name   | -   |
|                              | Country  | -   |
| Location                     | Geographical coordinates                           | 46°34'36" N, 8°25'17" E   |
|                              | Altitude of station                                | 2435 m a.s.l.   |
|                              | Min. altitude within study area                    | 1500 m a.s.l.   |
|                              | Max. altitude within study area                    | 3400 m a.s.l.   |
|                              | Nearest town/settlement                            | Andermatt (1300 inhabitants)  |
|                              | Distance to nearest town/settlement                | 12 km   |
|                              | Map  | 1:25 000  |
| Climate                      | Climate zone                                       | High alpine above treeline, lower latitude  |
|                              | Permafrost   | Mountain permafrost   |
|                              | Years measured                                     | -   |
|                              | Mean annual temperature                            | -1.3 °C   |
|                              | Mean temperature in February                       | -8.7 °C   |
|                              | Mean temperature in July                           | 6.4 °C  |
|                              | Mean annual wind speed                             | 3-8 m/s   |
|                              | Max. wind speed                                    | 20-35 m/s   |
|                              | Dominant wind direction                            | W   |
|                              | Total annual precipitation                         | 2000 mm   |
|                              | Precipitation type                                 | Rain, snow  |
| Ice break up                 | Lake: end of June                                  |   |
| Station facilities           | Area under roof                                    | 350 m <sup>2</sup>  |
|                              | Scientific laboratories                            | 80 m <sup>2</sup>   |
|                              | Logistic   | 80 m <sup>2</sup>   |
|                              | Number of rooms (beds)                             | 12 (45 beds)  |
|                              | Number of staff on station (peak/off season)       | 10/0  |
|                              | Max. number of visitors at a time                  | 100   |
|                              | Showers  | Yes   |
|                              | Laundry facilities                                 | Yes   |
|                              | Power supply (type)                                | 220 V   |
| Power supply                 | 24 hours per day                                   |   |
| Scientific equipment         | Specific device                                    | -   |
|                              | Scientific services offered                        | -   |
| Medical facilities           | Medical facilities                                 | -   |
|                              | Medical suite                                      | -   |
|                              | No. of staff with basic medical training or doctor | -   |
|                              | Distance to hospital (estimated time)              | 12 km (1 hour)  |
|                              | Compulsory safety equipment                        | -   |
| Landing facilities           | Recommended safety equipment                       | -   |
|                              | Airstrip (Length × Width)                          | -   |
|                              | Airstrip surface                                   | -   |
|                              | Helipad  | -   |
| Vehicles at station          | Ship landing facilities                            | -   |
|                              | Sea transportation                                 | -   |
|                              | Land transportation                                | Car   |
| Transport and freight        | Transport to station                               | Car   |
|                              | Number of ship visits per year (period)            | -   |
|                              | Number of flight visits per year (period)          | -   |





#### Features within study area

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other

- Yes
- No

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
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# SONNBLICK

## STATION NAME AND OWNER

The Sonnblick Observatory is owned by Sonnblick Verein and managed by the Zentralanstalt für Meteorologie und Geodynamik in cooperation with the Sonnblick Verein.

## LOCATION

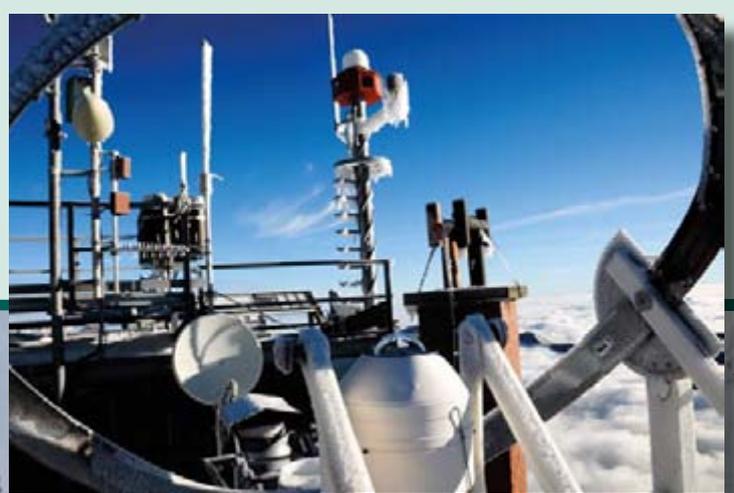
Sonnblick Observatory is located in the Austrian Central Alps at an elevation of 3100 m a.s.l. It is situated at the alpine main divide, which is a clear climatological border. It also lies in the "Nationalpark Hohe Tauern" which covers 1856 km<sup>2</sup> of the Austrian Alps at the border between the provinces of Salzburg, Carinthia and Tyrol. Nearest villages are Heiligenblut to the South (10 km away) and Rauris to the North (20 km away). One important reason for the establishment of the Sonnblick Observatory in 1886 was the available infrastructure from gold mining activities.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The natural environment is high-alpine with year-round snow-cover, glaciers, and permafrost. Sonnblick region covers mountain ecosystems.

## HISTORY AND FACILITIES

Sonnblick Observatory was built in 1886 at the summit of Sonnblick Mountain, motivated from the need for information on meteorology in higher altitudes of the atmosphere. Very soon other scientific disciplines became interested in the extreme location of the observatory, e.g. Nobel-prize winner V.F. Hess for his measurements of cosmic rays. In 1986, the observatory was rebuilt to a modern observatory with cable car access, electricity, and a large research platform. From that time onwards investigations on atmospheric chemistry became a new research field at Sonnblick. Today, Sonnblick is a station of interdisciplinary research covering the atmosphere, the cryosphere, the biosphere, the lithosphere, and the hydrosphere.





### GENERAL RESEARCH AND DATABASES

Research of Sonnblick is currently formulated in the research programme ENVISON. It covers three main topics (the atmosphere, the cryosphere, and the biosphere) in an extensive monitoring programme and with many research projects. Sonnblick is outstanding with respect to its long-term climate observations and studies on glacier changes. Thus, the impact of Climate Change on the cryosphere is a major research topic at Sonnblick. Since 1886, Sonnblick was also involved in many international projects on atmospheric chemistry and atmospheric physics. The research is described on [www.sonnblick.net](http://www.sonnblick.net). Sonnblick Observatory cooperates with several Austrian and international universities/research institutions. Within the frame of the GAW-DACH cooperation, Sonnblick has a special partnership with the observatories Jungfrauoch (in Switzerland), Zugspitze and Hohenpeissenberg (both Germany) for common research on atmospheric processes and Climate Change (GAW: Global Atmosphere Watch in Germany, Austria, and Switzerland: D-A-CH).

### HUMAN DIMENSION

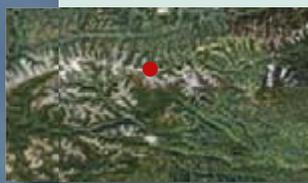
The nearest settlements are Rauris (c. 30 inhabitants) in the North and Heiligenblut, at the foot of Austria's highest peak Großglockner (3798 m), in the South. Both villages are well known tourist centres for mountain-related summer and winter activities (all kind of skiing, hiking, climbing, cycling, etc.). The Valley of Rauris is the largest community of the Salzburg province, and has more than 420 000 bed-nights related to tourism per year. Heiligenblut has 1090 inhabitants (January 2011) and is the end point of the Großglockner Hochalpenstraße (high alpine road).

### ACCESS

Access to Sonnblick Observatory is possible throughout the year either by cable car from the North (20 minutes trip from Rauris valley) or by hiking from Rauris valley from the north or from Heiligenblut from the south (about 5 hours hike from both sides). As Sonnblick is situated within the "Nationalpark Hohe Tauern" the use of helicopters is restricted. However, scientific activities usually will get permission for required helicopter flights. Because of its remote location in the Alps potential mountain hazards have to be considered during field work. Sonnblick Observatory is built together with an alpine hut "Zittelhaus" which offers additional accommodation and space.

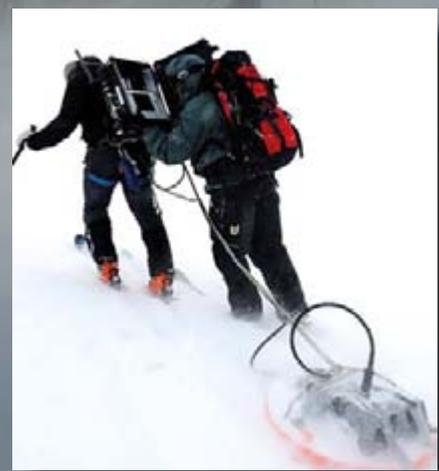


| Category                     | Sub-Category                                       | Sonnblick Observatory                                   |
|------------------------------|--|---|
| Website                      |  | www.sonnblick.net                                       |
| Country                      |  | Austria   |
| Opening year                 |  | 1886  |
| Operational period           |  | Year-round  |
| Permitting issues categories | Permits required for access to the station         | –   |
|                              | Permits required for studies                       | Yes   |
|                              | Contact (permit issues)                            | bernhard.niedermoser@zamg.ac.at                         |
| Facility owner and manager   | Name of the facility owner                         | Sonnblick Verein  |
|                              | Owner status                                       | Private   |
|                              | Institution responsible for managing the station   | Zentralanstalt für Meteorologie und Geodynamik          |
|                              | Contact (access to station)                        | bernhard.niedermoser@zamg.ac.at                         |
|                              | Website (institution)                              | www.zamg.ac.at  |
| Other institutions           | Name   | –   |
|                              | Country  | –   |
| Location                     | Geographical coordinates                           | 47°03'15" N, 12°57'28" E                                |
|                              | Altitude of station                                | 3105 m a.s.l.   |
|                              | Min. altitude within study area                    | 1600 m a.s.l.   |
|                              | Max. altitude within study area                    | 3254 m a.s.l.   |
|                              | Nearest town/settlement                            | Rauris (3050 inhabitants)                               |
|                              | Distance to nearest town/settlement                | 20 km   |
|                              | Map  | Yes   |
| Climate                      | Climate zone                                       | Alpine  |
|                              | Permafrost   | Discontinuous   |
|                              | Years measured                                     | 125   |
|                              | Mean annual temperature                            | -5.7 °C   |
|                              | Mean temperature in February                       | -11.2 °C  |
|                              | Mean temperature in July                           | 1.8 °C  |
|                              | Mean annual wind speed                             | 5.6 m/s   |
|                              | Max. wind speed                                    | 67 m/s  |
|                              | Dominant wind direction                            | SW  |
|                              | Total annual precipitation                         | 2680 mm   |
|                              | Precipitation type                                 | Snow, rain  |
|                              | Ice break up                                       | –   |
| Station facilities           | Area under roof                                    | 200 m <sup>2</sup>                                      |
|                              | Scientific laboratories                            | 20 m <sup>2</sup>                                       |
|                              | Logistic   | 80 m <sup>2</sup>                                       |
|                              | Number of rooms (beds)                             | 4 rooms (8 beds) plus 80 beds in the hut of Alpenverein |
|                              | Number of staff on station (peak/off season)       | 2/2   |
|                              | Max. number of visitors at a time                  | 10  |
|                              | Showers  | Yes   |
|                              | Laundry facilities                                 | Yes   |
|                              | Power supply (type)                                | Power supply from cable 230 V 50Hz                      |
| Power supply                 | 24 hours per day                                   |   |
| Scientific equipment         | Specific device                                    | –   |
|                              | Scientific services offered                        | WLAN  |
| Medical facilities           | Medical facilities                                 | Standard  |
|                              | Medical suite                                      | –   |
|                              | No. of staff with basic medical training or doctor | 2   |
|                              | Distance to hospital (estimated time)              | 40 km (15 min with helicopter)                          |
|                              | Compulsory safety equipment                        | For outdoor: mountaineering at glacier                  |
| Recommended safety equipment | –  |   |
| Landing facilities           | Airstrip (Length × Width)                          | –   |
|                              | Airstrip surface                                   | –   |
|                              | Helipad  | Yes   |
|                              | Ship landing facilities                            | –   |
| Vehicles at station          | Sea transportation                                 | –   |
|                              | Land transportation                                | –   |
| Transport and freight        | Transport to station                               | Cable car   |
|                              | Number of ship visits per year (period)            | –   |
|                              | Number of flight visits per year (period)          | –   |





| Features within study area       |  |
|----------------------------------|--|
| <input checked="" type="radio"/> | Ice cap or glacier                           |
| <input checked="" type="radio"/> | Permanent snowpatches                        |
| <input checked="" type="radio"/> | Mountain                                     |
| <input checked="" type="radio"/> | Valley                                       |
| <input type="radio"/>            | Shoreline                                    |
| <input type="radio"/>            | Tundra                                       |
| <input type="radio"/>            | Tree line                                    |
| <input type="radio"/>            | Other  |
| <b>Main science disciplines</b>  |  |
| <input type="radio"/>            | Anthropology, Sociology, Archaeology         |
| <input checked="" type="radio"/> | Astrophysics                                 |
| <input checked="" type="radio"/> | Atmospheric chemistry and physics            |
| <input checked="" type="radio"/> | Isotopic chemistry                           |
| <input checked="" type="radio"/> | Climatology, Climate Change                  |
| <input checked="" type="radio"/> | Environmental sciences, Pollution            |
| <input checked="" type="radio"/> | Geodesy                                      |
| <input checked="" type="radio"/> | Geology, Sedimentology                       |
| <input checked="" type="radio"/> | Geophysics                                   |
| <input checked="" type="radio"/> | Glaciology                                   |
| <input checked="" type="radio"/> | Geocryology, Geomorphology                   |
| <input checked="" type="radio"/> | Soil science                                 |
| <input checked="" type="radio"/> | Human biology, Medicine                      |
| <input checked="" type="radio"/> | Mapping, GIS                                 |
| <input checked="" type="radio"/> | Marine biology                               |
| <input type="radio"/>            | Oceanography, Fishery                        |
| <input type="radio"/>            | Microbiology                                 |
| <input checked="" type="radio"/> | Hydrology                                    |
| <input checked="" type="radio"/> | Terrestrial biology, Ecology                 |
| <input checked="" type="radio"/> | Paleolimnology                               |
| <input checked="" type="radio"/> | Paleoecology                                 |
| <input checked="" type="radio"/> | Limnology                                    |
| <b>Workshop facilities</b>       |  |
| <input checked="" type="radio"/> | Metal workshop                               |
| <input checked="" type="radio"/> | Wood workshop                                |
| <input checked="" type="radio"/> | Plexiglas workshop                           |
| <input checked="" type="radio"/> | Staff available to assist with constructions |
| <b>Communication</b>             |  |
| <input checked="" type="radio"/> | Telephone                                    |
| <input type="radio"/>            | Satellite phone                              |
| <input checked="" type="radio"/> | VHF  |
| <input checked="" type="radio"/> | E-mail                                       |
| <input checked="" type="radio"/> | Internet                                     |
| <input checked="" type="radio"/> | Computer                                     |
| <input checked="" type="radio"/> | Printer                                      |
| <input checked="" type="radio"/> | Scanner                                      |
| <input checked="" type="radio"/> | Fax  |





### STATION NAME AND OWNER

Krkonoše (CZ)/Karkonosze (PL) Mountains National Parks are state properties of the Czech Republic and Poland. The parks are a trans-boundary UNESCO Man and Biosphere Reserve. Two Observer Stations, a Czech station called Krkonoše and a Polish station called Karkonosze, are situated in the park. Because of their location within the same mountains, this catalogue gives a combined description of the two stations.

### LOCATION

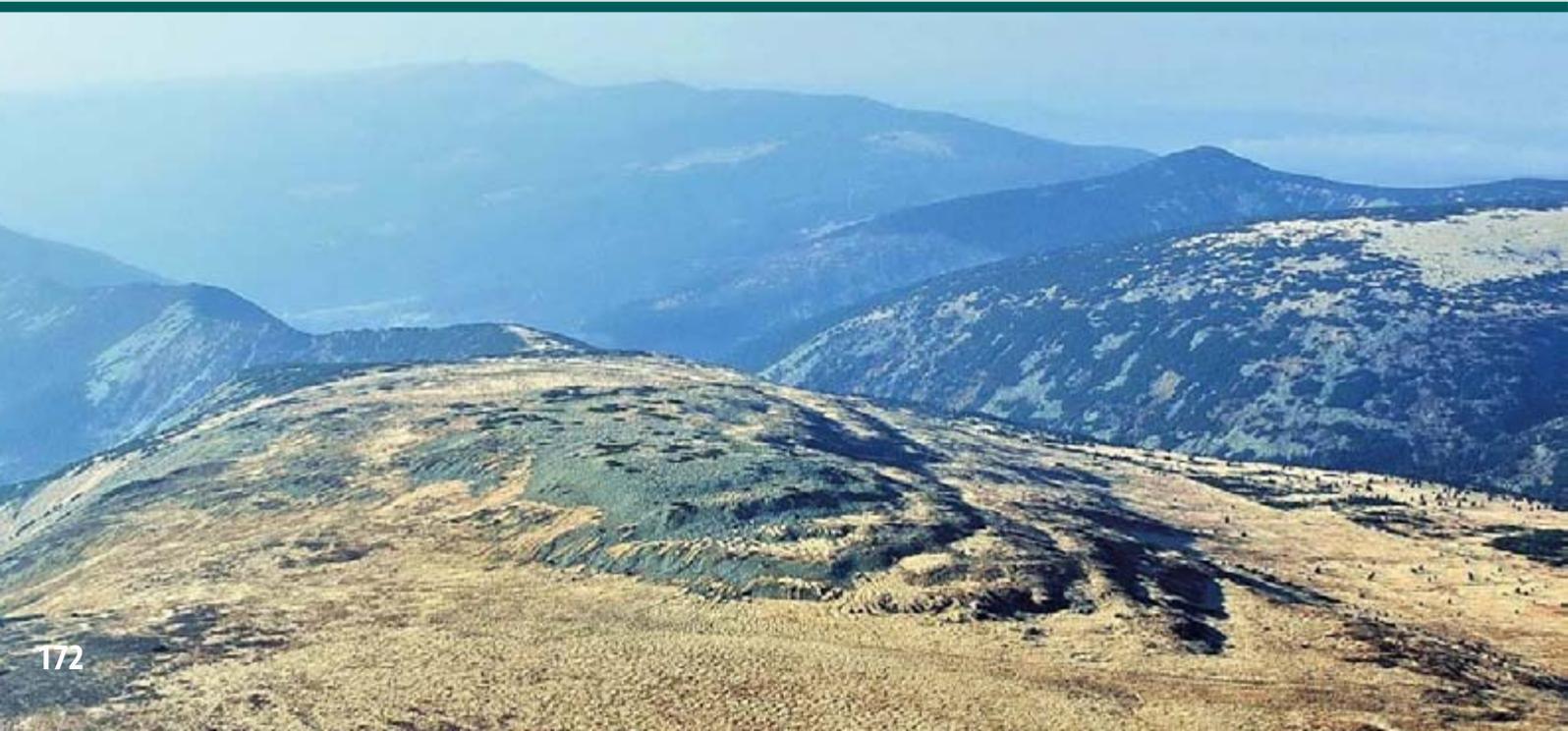
The area is known for its high biodiversity in four altitudinal vegetation belts, from sub-montane to alpine. The Krkonoše/Karkonosze Mountains National Parks (NPs) are situated on both sides of the Czech/Poland state border and form the highest part of the Hercynian mountain system in Central Europe. The stations are situated in the tundra which covers the subalpine/alpine belt of both NPs. The mountain belt is densely occupied by mountain chalets. Nearest towns are Karpacz (PL, 8 km to the north) and Vrchlabí (CZ, 10 km to the south).

### BIODIVERSITY AND NATURAL ENVIRONMENT

The tundra – above the *Picea abies* tree line – has the unique character of a relic island of the sub-arctic-alpine tundra (thanks to its isolation from Scandinavia, the Alps and the Carpathians since the end of Pleistocene). Three zones are distinguishable within it: 1. “stony-lichen tundra” with a mosaic of lichens, bryophytes, low grasses, and bushes on alpine peaks, 2. “grassy tundra” with grasses, subarctic mires, and shrubs of *Pinus mugo* (vicariance of *Betula nana* and *B. czerepanovii*) in the lower plateaus, and 3. “flower rich tundra” with tall herbs and grasses in the lee of the glacial corries. The area exhibits many plants and animal species with arctic-alpine distribution.

### HISTORY AND FACILITIES

The Polish Karkonosze Park Narodowy was established in January 1959 and the Czech Krkonoše National Park in 1963. However, scientific research in this area started already in 1786. At present, 400 different scientific projects are carried out each year on both sides of the border. We can offer local accommodation, high speed internet connection and several well equipped stores in the neighbourhood.



# KRKONOŠE/ KARKONOSZE

## GENERAL RESEARCH AND DATABASES

The research focuses on fauna, flora, lichens, bryophytes, algae, GIS, geology, geomorphology (waterfalls), environmental chemistry, climatology (avalanches), forest management, pedology, recreation, speleology, sociology (socioeconomic), former ore mining, agriculture, archaeology (history) etc. In addition, a lot of different databases containing data from animate (biotic) and inanimate (abiotic) nature are available.

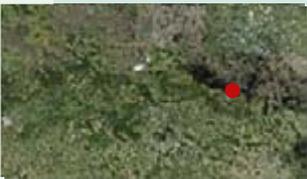
## HUMAN DIMENSION

The Krkonoše/Karkonosze Mountains has been inhabited for a long time. Besides nature protection and research, the area is also used for forestry, agriculture, tourism, and sports. The Krkonoše/Karkonosze Mountains is a popular tourist destination for hikers and skiers with about 5-6 million visitors per year on the Czech and 2.5-3 million on the Polish side (2002).

## ACCESS

Krkonoše/Karkonosze Mountains can be reached by car, bus, and train. It will take around two hours by car from Prague airport to Vrchlabí and another 30 min from Vrchlabí to the tundra zone. Access from Poland is via Karpacz.



| Category                                     | Sub-Category   | Krkonoše (CZ)/Karkonosze (PL) National Park   |
|--|--|---|
| Website                                      |  | www.krnap.cz/www.kpnmab.pl  |
| Country                                      |  | Czech Republic, Poland  |
| Opening year                                 |  | 1963/1959   |
| Operational period                           |  | Year-round  |
| Permitting issues categories                 | Permits required for access to the station                                       | Yes (only for car entrance)   |
|  | Permits required for studies   | Yes   |
|  | Contact (permit issues)  | jandrle@krnap.cz or roksana@kpnmab.pl   |
| Facility owner and manager                   | Name of the facility owner   | State property (Czech Republic/Poland)  |
|  | Owner status   | Government  |
|  | Institution responsible for managing the station                                 | Krkonoše (CZ)/Karkonosze (PL) National Park Administration  |
|  | Contact (access to station)  | jandrle@krnap.cz or roksana@kpnmab.pl   |
|  | Website (institution)  | www.krnap.cz or www.kpnmab.pl   |
| Other institutions                           | Name   | –   |
|  | Country  | –   |
| Location                                     | Geographical coordinates   | 50°44' N, 15°44' E  |
|  | Altitude of station  | 1400 m a.s.l.   |
|  | Min. altitude within study area  | 920 m a.s.l.  |
|  | Max. altitude within study area  | 1602 m a.s.l.   |
|  | Nearest town/settlement  | Vrchlabí/Karpacz (12 000/5000 inhabitants)  |
|  | Distance to nearest town/settlement  | 10/5 km   |
|  | Map  | Yes   |
|  |  |   |
| Climate                                      | Climate zone   | Alpine/Sub-Arctic   |
|  | Permafrost   | –   |
|  | Years measured   | 130 years (data from the highest peak of Krkonoše/Karkonosze 1602 m a.s.l.). The conditions can differ from those on tundra plateau |
|  | Mean annual temperature  | 0.8 °C  |
|  | Mean temperature in February   | -4 °C   |
|  | Mean temperature in July   | 13 °C   |
|  | Mean annual wind speed   | 12.7 m/s  |
|  | Max. wind speed  | 67 m/s (10 minutes measurement)   |
|  | Dominant wind direction  | SW  |
|  | Total annual precipitation   | 1177 mm   |
|  | Precipitation type   | Rain, snow, fogs, hails   |
|  | Ice break up   | Lakes: April/May  |
|  | Station facilities   | Area under roof   |
| Scientific laboratories                      |  | 15 m <sup>2</sup>   |
| Logistic                                     |  | –   |
| Number of rooms (beds)                       |  | 10-30   |
| Number of staff on station (peak/off season) |  | –   |
| Max. number of visitors at a time            |  | –   |
| Showers                                      |  | Yes   |
| Laundry facilities                           |  | –   |
| Power supply (type)                          |  | 230 V   |
| Power supply                                 | 24 hours per day   |   |
| Scientific equipment                         | Specific device  | –   |
|  | Scientific services offered  | –   |
| Medical facilities                           | Medical facilities   | Well-equipped   |
|  | Medical suite  | Yes   |
|  | No. of staff with basic medical training or doctor                               | –   |
|  | Distance to hospital (estimated time)  | 15-20 km (10-30 min.)   |
|  | Compulsory safety equipment  | –   |
| Recommended safety equipment                 | First aid kit, avalanche seeker  |   |
| Landing facilities                           | Airstrip (Length × Width)  | –   |
|  | Airstrip surface   | –   |
|  | Helipad  | Yes   |
|  | Ship landing facilities  | –   |
| Vehicles at station                          | Sea transportation   | –   |
|  | Land transportation  | Car, snowmobiles  |
| Transport and freight                        | Transport to station   | Car, railway  |
|  | Number of ship visits per year (period)  | –   |
|  | Number of flight visits per year (period)  | –   |





#### Features within study area

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Glacial corries, valleys and lakes)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax

# LABYTNANGI



## STATION NAME AND OWNER

The Labytnangi Ecological Research Station is owned and managed by the Institute of Plant and Animal Ecology of the Ural Branch of the Russian Academy of Sciences.

## LOCATION

The station is located in the town Labytnangi (66°39'34.5" N, 66°24'31.9" E), Tyumen region, Russia. It belongs to the Yamal-Nenets Autonomous District. The nearest larger town is Salekhard (less than 20 km to the Southeast). Labytnangi is situated on the bank of the Ob River – one of the largest rivers in the world.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Labytnangi (c. 25 000 inhabitants) is situated in the forest-tundra zone of the Yamal Peninsula. The taiga zone begins more than ten kilometers up the Ob River, and the shrubby tundra zone begins ten kilometers to the north. The Yamal Peninsula is a bio-geographical interesting area supporting the most eastern populations of many European animal species, and the most westerly populations of many Siberian species. Both taiga and

tundra animals species are present in the area. The Polar Ural Mountains are just 50 km west of Labytnangi.

## HISTORY AND FACILITIES

The station was established in 1954, driven by two main aims, i.e. (i) to conduct ecological investigations on a year-round basis, and (ii) to create a logistics base for the core activities of the Institute of Plant and Animal Ecology. The 32 000 m<sup>2</sup> of station area consists of offices and lab buildings, a garage, and storage for expedition equipment. Telephone, fax, copy machines, and computer with access to the internet are also available. The station can host 20-25 people at a time and a wide variety of field equipment is available for rent.

## GENERAL RESEARCH AND DATABASES

Long-term studies on small rodents have been carried out for more than 50 years in different vegetation zones of the Yamal Peninsula. Population dynamics of birds have been monitored since 1970. These long-term studies are backed-up by more





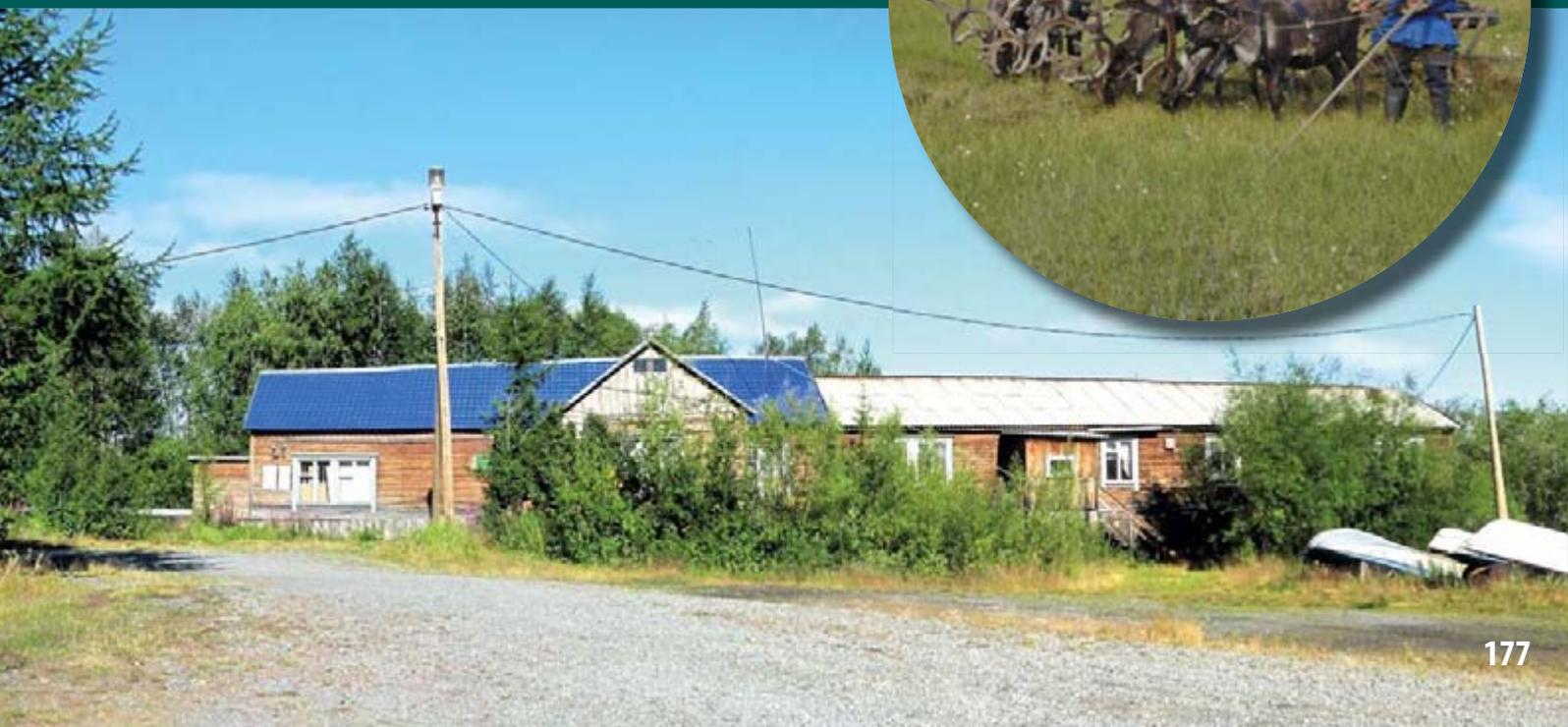
extensive studies on vegetation, rodents, and other mammals such as predators (Arctic fox), birds, etc. Labytnangi Ecological Research Station cooperates with a number of international partners. Since 2007, the station has been part of the Norwegian-Russian IPY project "Arctic predators". Another project on "Satellite tracking of Northern Eurasian Peregrines" is undertaken in collaboration with International Wildlife Consultants Ltd. (UK).

### HUMAN DIMENSION

The Yamal-Nenets Autonomous District is one of the largest regions in the Russian Federation. It occupies a vast territory of over 750 000 km<sup>2</sup>, and is primarily known for its large deposits of hydrocarbon raw materials. The population of indigenous people (Nenets) is about 37 000. Yamal is one of the few places in the world where the traditional way of life is well preserved and about 13 000 of the inhabitants still live a traditional nomadic life. Yamal's domestic reindeer population exceeds 650 000, the largest regional domestic reindeer population in the world.

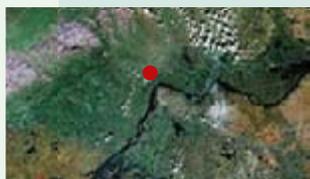
### ACCESS

There is a railway station in Labytnangi with daily trains to Moscow (48 hours trip). The airport is situated in Salekhard, just on the other bank of the Ob River, with daily flights to Moscow (3 hours trip) and Tyumen (1.5 hours). Regular helicopter flights to small villages are also available. For visiting Labytnangi or Salekhard, you must obtain a special permit for entering the border zone of the Russian Federation.



| Category | Sub-Category | Labytnangi Ecological Research Station |
|----------|--------------|--|
|----------|--------------|--|

|                              |   |   |
|------------------------------|---|---|
| Website                      |   | –   |
| Country                      |   | Russia  |
| Opening year                 |   | 1954  |
| Operational period           |   | Year-round  |
| Permitting issues categories | Permits required for access to the station                  | Yes   |
|                              | Permits required for studies                                | –   |
|                              | Contact (permit issues)                                     | sokhol@yandex.ru  |
| Facility owner and manager   | Name of the facility owner                                  | Institute of Plant and Animal Ecology Ural Branch,<br>Russian Academy of Sciences |
|                              | Owner status  | Government  |
|                              | Institution responsible for managing the station            | Institute of Plant and Animal Ecology Ural Branch,<br>Russian Academy of Sciences |
|                              | Contact (access to station)<br>Website (institution)        | sokhol@yandex.ru<br>www.ipae.uran.ru  |
| Other institutions           | Name  | –   |
|                              | Country   | –   |
| Location                     | Geographical coordinates                                    | 66°39'34.5" N, 66°24'31.9" E  |
|                              | Altitude of station   | 20 m a.s.l.   |
|                              | Min. altitude within study area                             | 0 m a.s.l.  |
|                              | Max. altitude within study area                             | 1000 m a.s.l.   |
|                              | Nearest town/settlement                                     | Labytnangi (25 000 inhabitants)   |
|                              | Distance to nearest town/settlement                         | 0 km  |
|                              | Map   | Yes   |
| Climate                      | Climate zone  | Sub-Arctic  |
|                              | Permafrost  | Continuous  |
|                              | Years measured  | –   |
|                              | Mean annual temperature                                     | -6 °C   |
|                              | Mean temperature in February                                | -22.4 °C  |
|                              | Mean temperature in July                                    | 14.4 °C   |
|                              | Mean annual wind speed                                      | –   |
|                              | Max. wind speed   | –   |
|                              | Dominant wind direction                                     | NNW   |
|                              | Total annual precipitation                                  | 425 mm  |
|                              | Precipitation type  | Snow, rain  |
|                              | Ice break up  | River Ob: May   |
| Station facilities           | Area under roof   | 700 m <sup>2</sup>  |
|                              | Scientific laboratories                                     | 200 m <sup>2</sup>  |
|                              | Logistic  | 500 m <sup>2</sup>  |
|                              | Number of rooms (beds)                                      | 7 for accomodation (20 beds), 7 laboratories, 3 kitchens                          |
|                              | Number of staff on station (peak/off season)                | 5/5   |
|                              | Max. number of visitors at a time                           | 20-25   |
|                              | Showers   | –   |
|                              | Laundry facilities  | Yes   |
|                              | Power supply (type)<br>Power supply                         | 220 V<br>24 hours per day   |
| Scientific equipment         | Specific device   | –   |
|                              | Scientific services offered                                 | Technical support, transportation support   |
| Medical facilities           | Medical facilities  | Well equipped   |
|                              | Medical suite   | –   |
|                              | No. of staff with basic medical training or doctor          | –   |
|                              | Distance to hospital (estimated time)                       | 3 km (5 minutes)  |
|                              | Compulsory safety equipment<br>Recommended safety equipment | –<br>–  |
| Landing facilities           | Airstrip (Length × Width)                                   | Airport 20 km from the station  |
|                              | Airstrip surface  | –   |
|                              | Helipad   | 5 km from the station   |
|                              | Ship landing facilities                                     | –   |
| Vehicles at station          | Sea transportation  | Ship 30 m length, 10 passengers capacity, motor boats                             |
|                              | Land transportation   | Lorry, track, car, ATV, snowmobile  |
| Transport and freight        | Transport to station  | Plain, railroad, ship   |
|                              | Number of ship visits per year (period)                     | Weekly (June-September)   |
|                              | Number of flight visits per year (period)                   | Daily (year-round)  |





**Features within study area**

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other

**Main science disciplines**

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

**Workshop facilities**

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

**Communication**

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# IGARKA



## STATION NAME AND OWNER

The Igarka Geocryology Laboratory is a scientific affiliation of the Melnikov Permafrost Institute in Yakutsk (Siberian Branch of the Russian Academy of Sciences).

## LOCATION

The Igarka Geocryology Laboratory is situated in Igarka (67°27'11" N, 86°32'07" E), on the right bank of the largest Russian river Yenisei, 120 km north of the Arctic Circle. Igarka belongs to the Turukhansk District (Krasnoyarsk Region), and it has 4892 inhabitants (2011).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Igarka is situated at the north-western part of the Siberian platform, on the western edge of the Tunguska syncline, one of the largest sedimentary basins of the world. The terrain is a glacio-lacustrine plain, about 70 m above the low level of Yenisei River. It is shaped by a variety of permafrost processes, with thermokarst lakes, glacial processes, and pingos. The climate in Igarka is moderate continental, with low winter temperatures and relatively warm summers. The air temperatures are below zero for about

225 days per year, with an average of 70 rainy and 130 snowy days. The area is dominated by the Yenisei River with a mean annual discharge of about 18 000 m<sup>3</sup>/s and a peak flow of about 160 000 m<sup>3</sup>/s. The hydrological network is well developed with typical Western Siberian tundra rivers (Yenisei River left bank) and Eastern Siberian taiga rivers (Yenisei River right bank). Due to permafrost degradation, i.e. ground ice thawing, thermokarst lakes are widely distributed. The Northern taiga with relatively dense taiga forests (dominated by larch, fir, birch, and Siberian pine) is the common vegetation type. In the shrub layer, willow and alder are widespread, together with marsh tea and blueberries. Tundra communities dominate the watershed divides, widely represented by peatbogs covered with carex, cloudberries, cotton grass, and bog moss. The hydroclimatic conditions lead to the formation of different permafrost-affected gley soils.

## HISTORY AND FACILITIES

Since the establishment in 1930, researchers of the Igarka Geocryology Laboratory have conducted construction-engineering tests and regional permafrost studies. The research resulted in the development of new construction techniques in permafrost. In-





tensive studies regarding the physical and mechanical properties of frozen soils, permafrost processes, soil moisture migration in freeze-thaw cycles, and frost heave have been carried out. The use of novel engineering techniques in permafrost in the Soviet-era was strongly linked to the Igarka Research Station. Regional features were also extensively studied: Igarka was used as a “base camp” for field research in Western and Eastern Siberia, and northern and southern parts of the Krasnoyarsk Region. There is also the Museum of Permafrost (founded in 1965) with frozen tunnels more than 5 m below the surface.

#### GENERAL RESEARCH AND DATABASES

Nowadays the laboratory is continuing the research in regional and engineering geocryology. Current projects include long-term monitoring of ground ice from the Arctic Circle to Norilsk, a 100×100 m grid of the CALM project (Circumpolar Active Layer Monitoring), geothermal measurements in a network of boreholes, studies of permafrost processes, permafrost hydrology, water turbidity, and sediment-flux. Methods of construction on

high-temperature, ice-rich permafrost and the development of new foundation types are the main engineering research aspects.

#### HUMAN DIMENSION

The Igarka Geocryology Laboratory is situated in the town of Igarka. Until the early 1990s the Igarka Timber Factory was the key economic activity in the area, but after the prohibition of lumber floating down the river, the factory was closed, thus undermining the city’s economy. Current economy is mainly determined by the river and sea ports, the modern airport, and the service departments of “Vankoroil”, the Vankor Oil Field operator (the oil field is located about 130 km west of Igarka).

#### ACCESS

Igarka can be reached by air and water transport. Igarka Airport has a modern infrastructure and accepts all major aircraft and helicopter types. Flights are performed to Krasnoyarsk and Surgut. Water transport connects Igarka with Dudinka and Norilsk (including Alykel Airport) to the north, and Krasnoyarsk to the south, from early June to early October twice a week. Helicopter lease is available.



| Category                     | Sub-Category  | Igarka Geocryology Laboratory  |
|------------------------------|---|--|
| Website                      |   | <a href="http://mpi.ysn.ru/index.php/news/39">http://mpi.ysn.ru/index.php/news/39</a>  |
| Country                      |   | Russia   |
| Opening year                 |   | 1930   |
| Operational period           |   | Year-round   |
| Permitting issues categories | Permits required for access to the station<br>Permits required for studies<br>Contact (permit issues)   | –<br>–<br>igl@igarka.net   |
| Facility owner and manager   | Name of the facility owner<br>Owner status<br>Institution responsible for managing the station<br><br>Contact (access to station)<br>Website (institution)  | Russian Academy of Sciences<br>Government<br>P.I. Mel'nikov Permafrost Institute, Siberian Branch,<br>Russian Academy of Sciences<br>nikita.tananaev@gmail.com<br><a href="http://mpi.ysn.ru/index.php/category/9">http://mpi.ysn.ru/index.php/category/9</a>  |
| Other institutions           | Name<br>Country   | –<br>–   |
| Location                     | Geographical coordinates<br>Altitude of station<br>Min. altitude within study area<br>Max. altitude within study area<br>Nearest town/settlement<br>Distance to nearest town/settlement<br>Map  | 67°27'10.6" N, 86°32'06.8" E<br>30 m a.s.l.<br>2 m a.s.l.<br>1100 m a.s.l.<br>Igarka (4900 inhabitants)<br>0 km<br>State 1:100 000, Landsat 7 ETM+ satellite images<br>Google Earth high-resolution  |
| Climate                      | Climate zone  | Sub-Arctic   |
|                              | Permafrost  | Discontinuous  |
|                              | Years measured  | –  |
|                              | Mean annual temperature   | -8.3 °C  |
|                              | Mean temperature in February  | -24.8 °C   |
|                              | Mean temperature in July  | 15.4 °C  |
|                              | Mean annual wind speed  | 5 m/s (2 m above surface)  |
|                              | Max. wind speed   | –  |
|                              | Dominant wind direction   | NNW  |
|                              | Total annual precipitation  | 420 mm   |
|                              | Precipitation type  | Rain, snow   |
|                              | Ice break up  | Lakes: June; Rivers: late May/early June   |
| Station facilities           | Area under roof<br>Scientific laboratories<br>Logistic<br>Number of rooms (beds)<br><br>Number of staff on station (peak/off season)<br>Max. number of visitors at a time<br>Showers<br>Laundry facilities<br>Power supply (type)<br>Power supply | 450 m <sup>2</sup> (main building) + 90 m <sup>2</sup> (apartment)<br>60 m <sup>2</sup><br>100 (storage) m <sup>2</sup><br>Main building: 15 (lab, storage and workshops);<br>Apartment: 4 (3 for accommodation, 6 beds and canteen)<br>11/11<br>15-20<br>Yes<br>Yes<br>220 V 50 Hz AC<br>24 hours per day |
| Scientific equipment         | Specific device<br><br>Scientific services offered  | Soil physics laboratory, basic chem laboratory equipment, surveying and temp logging equipment<br>Tech support, library, cold samples storage  |
| Medical facilities           | Medical facilities<br>Medical suite<br>No. of staff with basic medical training or doctor<br>Distance to hospital (estimated time)<br>Compulsory safety equipment<br>Recommended safety equipment   | Standard<br>–<br>1<br>5 km<br>Flares<br>VHF radio  |
| Landing facilities           | Airstrip (Length × Width)<br>Airstrip surface<br>Helipad<br>Ship landing facilities   | Civil aviation airport 10 km from the station<br>–<br>Yes<br>Port, pier, pontoon, sledges  |
| Vehicles at station          | Sea transportation<br>Land transportation   | Motor boat, rubber boat<br>Car, SUV  |
| Transport and freight        | Transport to station<br>Number of ship visits per year (period)<br>Number of flight visits per year (period)  | Flight, ship<br>40-50 (June–October)<br>Daily (year-round)   |





#### Features within study area

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Thermokarst lakes, massive ground ice)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# AKTRU



## STATION NAME AND OWNER

The Aktru Research Station belongs to the National Research Tomsk State University, Russia.

## LOCATION

The Aktru Research Station is located in the southeastern part of the Altai Republic close to the borders to Mongolia and China in the centre of the Eurasian Continent (50°06'03" N, 87°40'14" E). With an altitude of 2150 m a.s.l., the station is situated in the high alpine part of the Altai Mountains. The nearest settlement is Kuray village about 30 km southeast of the station. The nearest town is Gorno-Altaysk, about 250 km northwest of the station.

## BIODIVERSITY

The Aktru Research Station is surrounded by a wide range of ecosystems changing with altitude: Kuray basin intermountain steppe, steppe belt on the mountain slopes, forest belt, high-mountain belt with alpine landscapes and glaciers, high-mountain tundra ("goltsy") as well as cryophyte steppe landscapes. A typical high-mountain vegetation is the "Pseudo-tundra", formed in the periphery of glacial fields under Pleistocene continental

climate conditions. Some rare animal species reside in Aktru valley, e.g. snow leopards, wolverines, lynx, musk deer, mountain goats, cranes, and lama ducks.

## HISTORY AND FACILITIES

The Aktru Research Station was founded in 1956 by V.M. Tronov and has been in operation until today. From 1975 to 1995, a meteorological station was operated by the State Hydrometeorological Service. Since 2008 new buildings were constructed comprising a staff house, a dining room for 150 persons, a summer cafeteria for 30 persons, a diesel station as well as showers and toilets. The older buildings, recently renovated includes a 'hospital', classrooms, three apartments (housing c. 60 people), a warehouse, a Banya (Russian sauna), and a tent camp for 200 persons.

## GENERAL RESEARCH AND DATABASES

The research at Aktru Research Station focuses on glaciology, hydrology, meteorology, geomorphology, ecology, botany, zoology, and soil science. The main aims are to study climate-driven glaciers dynamics, hydrological regimes, cryogenic processes, landscape patterns, and biota.





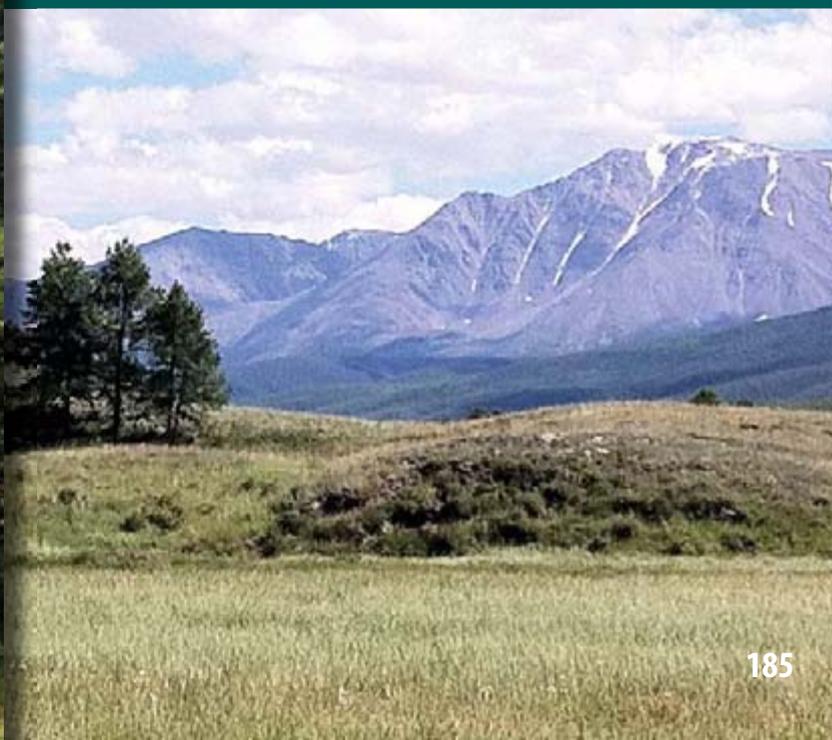
Different international projects investigate mountain mires in terms of climate-driven changes of landscape patterns, biogeochemistry, and productivity. Kuray Basin, an inter-mountain depression, situated at the foot of the North-Chuya Range (10 km from Aktru Station) is a key site for studying the Altai megafloods. Existing databases contain records on climate, hydrology, and glacier dynamics as well as on plants and vegetation-cover ecology.

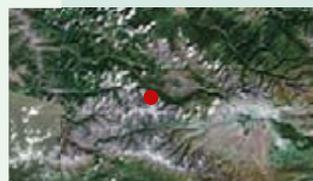
#### HUMAN DIMENSION

The traditional Altai's and Kazakh's culture still plays a major role in the daily life of the region (nomadic animal husbandry, fishing, and hunting). Also ecological tourism, alpine tourism, and research are important for the local economy.

#### ACCESS

The Aktru Research Station can be reached from Kuray village (30 km of bad road, four-wheel drive vehicles are strongly recommended and can be rented in Kuray village). The nearest airports are Barnaul (650 km), Tolmachevo in Novosibirsk (880 km), and Bogashevo in Tomsk (1150 km). All these airports are connected to Moscow by daily flights.





| Category                     | Sub-Category                                       | Aktru Research Station   |
|------------------------------|--|--|
| Website                      |  | –  |
| Country                      |  | Russia   |
| Opening year                 |  | 1956   |
| Operational period           |  | 5-10   |
| Permitting issues categories | Permits required for access to the station         | Yes  |
|                              | Permits required for studies                       | Yes  |
|                              | Contact (permit issues)                            | kirp@mail.tsu.ru   |
| Facility owner and manager   | Name of the facility owner                         | National Research Tomsk State University                         |
|                              | Owner status                                       | Government   |
|                              | Institution responsible for managing the station   | National Research Tomsk State University                         |
|                              | Contact (access to station)                        | kirp@mail.tsu.ru   |
|                              | Website (institution)                              | www.tsu.ru   |
| Other institutions           | Name   | –  |
|                              | Country  | –  |
| Location                     | Geographical coordinates                           | 50°06'03" N, 87°40'14" E   |
|                              | Altitude of station                                | 2150 m a.s.l.  |
|                              | Min. altitude within study area                    | 1500 m a.s.l.  |
|                              | Max. altitude within study area                    | 4075 m a.s.l.  |
|                              | Nearest town/settlement                            | Kurai village (600 inhabitants)                                  |
|                              | Distance to nearest town/settlement                | 45 km  |
|                              | Map  | Aerial image, satellite image, Google Earth with low resolution  |
| Climate                      | Climate zone                                       | Alpine   |
|                              | Permafrost   | Continuous   |
|                              | Years measured                                     | –  |
|                              | Mean annual temperature                            | -5.2 °C  |
|                              | Mean temperature in February                       | -18.5 °C   |
|                              | Mean temperature in July                           | 9.5 °C   |
|                              | Mean annual wind speed                             | 3 m/s  |
|                              | Max. wind speed                                    | 25 m/s   |
|                              | Dominant wind direction                            | SW   |
|                              | Total annual precipitation                         | 542 mm   |
|                              | Precipitation type                                 | Snow, rain   |
|                              | Ice break up                                       | May/June   |
| Station facilities           | Area under roof                                    | 3000 m <sup>2</sup>  |
|                              | Scientific laboratories                            | 30 m <sup>2</sup>  |
|                              | Logistic   | 150 m <sup>2</sup>   |
|                              | Number of rooms (beds)                             | 5 (25 beds)  |
|                              | Number of staff on station (peak/off season)       | 5/1  |
|                              | Max. number of visitors at a time                  | 20   |
|                              | Showers  | Yes  |
|                              | Laundry facilities                                 | Yes  |
|                              | Power supply (type)                                | Diesel generator (220V)  |
| Power supply                 | 6-12 hours   |  |
| Scientific equipment         | Specific device                                    | Meteostation, different surveying equipment                      |
|                              | Scientific services offered                        | Free access to extensive ecosystem baseline data, mountaineering |
| Medical facilities           | Medical facilities                                 | Standard (well equipped first aid kit)                           |
|                              | Medical suite                                      | –  |
|                              | No. of staff with basic medical training or doctor | 1  |
|                              | Distance to hospital (estimated time)              | 100 km (min 6 hours for evacuation)                              |
|                              | Compulsory safety equipment                        | Radio  |
| Recommended safety equipment | First aid kit                                      |  |
| Landing facilities           | Airstrip (Length × Width)                          | –  |
|                              | Airstrip surface                                   | –  |
|                              | Helipad  | Yes  |
|                              | Ship landing facilities                            | –  |
| Vehicles at station          | Sea transportation                                 | –  |
|                              | Land transportation                                | Car  |
| Transport and freight        | Transport to station                               | Car  |
|                              | Number of ship visits per year (period)            | –  |
|                              | Number of flight visits per year (period)          | –  |



#### Features within study area

Yes  
 No

- Ice cap or glacier
- Permanent snowpatches
- Mountain
- Valley
- Shoreline
- Tundra
- Tree line
- Other (Size of drainage basin: 42.9 km<sup>2</sup> including 16 km<sup>2</sup> of glacier area)

#### Main science disciplines

- Anthropology, Sociology, Archaeology
- Astrophysics
- Atmospheric chemistry and physics
- Isotopic chemistry
- Climatology, Climate Change
- Environmental sciences, Pollution
- Geodesy
- Geology, Sedimentology
- Geophysics
- Glaciology
- Geocryology, Geomorphology
- Soil science
- Human biology, Medicine
- Mapping, GIS
- Marine biology
- Oceanography, Fishery
- Microbiology
- Hydrology
- Terrestrial biology, Ecology
- Paleolimnology
- Paleoecology
- Limnology

#### Workshop facilities

- Metal workshop
- Wood workshop
- Plexiglas workshop
- Staff available to assist with constructions

#### Communication

- Telephone
- Satellite phone
- VHF
- E-mail
- Internet
- Computer
- Printer
- Scanner
- Fax



# IGLOOLIK

## STATION NAME AND OWNER

The Igloolik Research Center is owned by the Department of Environment of the Government of Nunavut, CANADA.

## LOCATION

The Igloolik Research Center (IRC) with its main building with offices and laboratories, as well as warm and cold warehouses is located in the hamlet of Igloolik, Nunavut, Canada (69°22'34" N, 81°48'11" W). The center is located on a small island at the northern tip of the Foxe Basin, in between the continent and the large Baffin Island. Additional facilities include stations in Kugluktuk (67°49' N, 115°06' W), Arviat (61°06' N, 94°03' W), Pond Inlet (72°41'57" N, 77°57'33" W), and Iqaluit (63°44' N, 68°31' W).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Igloolik is located in the tundra zone and is part of the northern arctic ecozone. Snow cover usually remains from September to June. Extremely low temperatures are common (-30°C as a mean temperature during winter month). The average precipitation per year is c. 280 mm. Much of the landscape is composed of barren plains covered by frost-patterned soils and rock outcrop.

This area is rich in sea mammals and seabirds, with charismatic polar bears, belugas, and killer whales. The terrestrial wildlife includes in particular caribou (although declining in abundance), Arctic foxes, several waterfowl species, snow geese, falcons, and lemmings.

## HISTORY AND FACILITIES

The facility was established by the federal government of Canada in the early 1970s to strengthen research in the Eastern Canadian Arctic. Within the main building, eight offices and two labs lead radially from a central area used for meetings. The research centre supplies local transportation with trucks, snowmobiles, sledges, boats with outboard motors, and all-terrain vehicles all stored in a warm and a cold warehouse. Biologists, social scientists, and technicians of the Department of Environment, conduct research on a variety of terrestrial wildlife and management issues.

## GENERAL RESEARCH AND DATABASES

Research focuses on terrestrial wildlife and habitats with a special mandate on species directly linked to the traditional life of Inuit, i.e. caribou, polar bears, and muskoxen.





The main research objectives of the station are to provide up-to-date information from various sources, including in-house scientific research and Inuit Qaujimagatuqangit, to co-management partners in order to make responsible wildlife management and land use decisions.

Existing data bases include reports and publications arising from research at the station, climate records, terrestrial wildlife survey and trends, as well as habitat mapping, wildlife monitoring, and ecosystem modelling.

### HUMAN DIMENSION

Nunavut is the newest territory in Canada and is one of the most remote and sparsely populated regions in the world. It covers a large area of c. 2 millions km<sup>2</sup>. The Igloodik hamlet is located almost

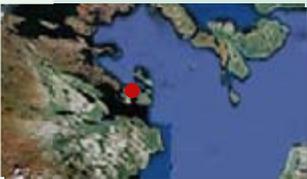
centrally in Nunavut and harbors approximately 1600 inhabitants (1/20 of the total population in Nunavut). The traditional Inuit culture still plays a major role in the daily life. Fishing and hunting is very important to local residents, all year round, focusing in particular on caribou, polar bears, seals, and beluga whales.

### ACCESS

During the summer, there are commercial plane and boat services available to reach the station.

Regular flights are available from Iqaluit (Nunavut capital), which is connected every day to Montreal and Ottawa. For local transportation the center offers logistical support to researchers working on site and in the larger area. This includes snowmobiles, a 4X4 truck, ATVs, and boats.



| Category                     | Sub-Category   | Igloodik Research Center   |
|------------------------------|--|--|
| Website                      |  | <a href="http://env.gov.nu.ca/wildlife/resources">http://env.gov.nu.ca/wildlife/resources</a>                |
| Country                      |  | Nunavut/Canada   |
| Opening year                 |  | 1975   |
| Operational period           |  | Year-round   |
| Permitting issues categories | Permits required for access to the station                                       | Yes  |
|                              | Permits required for studies   | Yes  |
|                              | Contact (permit issues)  | wildlife_research@gov.nu.ca  |
| Facility owner and manager   | Name of the facility owner   | Government of Nunavut  |
|                              | Owner status   | Government   |
|                              | Institution responsible for managing the station                                 | Department of Environment, Government of Nunavut   |
|                              | Contact (access to station)  | wildlife_research@gov.nu.ca, nlecome@gov.nu.ca   |
|                              | Website (institution)  | <a href="http://env.gov.nu.ca/">http://env.gov.nu.ca/</a>  |
| Other institutions           | Name   | –  |
|                              | Country  | –  |
| Location                     | Geographical coordinates   | 69°22'34" N, 81°48'11" W   |
|                              | Altitude of station  | 23 m a.s.l.  |
|                              | Min. altitude within study area  | 0 m a.s.l.   |
|                              | Max. altitude within study area  | 20 m a.s.l.  |
|                              | Nearest town/ settlement   | Igloodik (1600 inhabitants)  |
|                              | Distance to nearest settlement   | 0 km   |
|                              | Map  | Map (1:250 000), aerial image, satellite image, Google Earth with high resolution                            |
|                              |  |  |
| Climate                      | Climate zone   | High Arctic  |
|                              | Permafrost   | Continuous   |
|                              | Years measured   | –  |
|                              | Mean annual temperature  | -13.6 °C   |
|                              | Mean temperature in February   | -31.2 °C   |
|                              | Mean temperature in July   | 7  |
|                              | Mean annual wind speed   | –  |
|                              | Max. wind speed  | –  |
|                              | Dominant wind direction  | NNW  |
|                              | Total annual precipitation   | 285.9 mm   |
|                              | Precipitation type   | Snow, little rain  |
|                              | Ice break up   | Lakes: June; sea: August   |
| Station facilities           | Area under roof  | –  |
|                              | Scientific laboratories  | –  |
|                              | Logistic   | –  |
|                              | Number of rooms (beds)   | 8 offices, 2 laboratories, 1 canteen, 2 garages<br>(no beds, accomodation possibilities in Igloodik village) |
|                              | Number of staff on station (peak / off season)                                   | 12/12  |
|                              | Max. number of visitors at a time  | 10   |
|                              | Showers  | Yes  |
|                              | Laundry facilities   | –  |
|                              | Power supply (type)  | Northamerican systems (Volt) Field generator and regular electricity supply                                  |
|                              | Power supply   | 24 hours per day   |
| Scientific equipment         | Specific device  | Different surveying equipment, freezers, microscopes   |
|                              | Scientific services offered  | Free technical support; restricted access to extensive ecosystem baseline data                               |
| Medical facilities           | Medical facilities   | Basic  |
|                              | Medical suite  | –  |
|                              | No. of staff with basic medical training or doctor                               | 10 persons with first-aid course   |
|                              | Distance to hospital (estimated time)  | 1000 km (5 hours) but a health center is close-by  |
|                              | Compulsory safety equipment  | Weapon, VHF radio, PLB   |
| Recommended safety equipment | Pepper spray, first aid kit, shot gun for bears                                  |  |
| Landing facilities           | Airstrip (Length × Width)  | 1360 × 40 m (commercial airport and lake)  |
|                              | Airstrip surface   | Gravel   |
|                              | Helipad  | –  |
|                              | Ship landing facilities  | Port, pontoon, sledges   |
| Vehicles at station          | Sea transportation   | Motor boats  |
|                              | Land transportation  | ATV, truck, snowmobiles  |
| Transport and freight        | Transport to station   | Persons (flight); freight (ship and flight)  |
|                              | Number of ship visits per year (period)  | 1 (August)   |
|                              | Number of flight visits per year (period)  | 150 (year-round)   |





|   |  |  |
|---|--|--|
| <b>Features within study area</b>   |  | <input checked="" type="radio"/> Yes<br><input type="radio"/> No |
| <input type="radio"/> Ice cap or glacier                                      |  |  |
| <input type="radio"/> Permanent snowpatches                                   |  |  |
| <input type="radio"/> Mountain  |  |  |
| <input type="radio"/> Valley  |  |  |
| <input checked="" type="radio"/> Shoreline                                    |  |  |
| <input checked="" type="radio"/> Tundra                                       |  |  |
| <input type="radio"/> Tree line   |  |  |
| <input checked="" type="radio"/> Other (Island)                               |  |  |
| <b>Main science disciplines</b>   |  |  |
| <input type="radio"/> Anthropology, Sociology, Archaeology                    |  |  |
| <input type="radio"/> Astrophysics  |  |  |
| <input type="radio"/> Atmospheric chemistry and physics                       |  |  |
| <input type="radio"/> Isotopic chemistry                                      |  |  |
| <input checked="" type="radio"/> Climatology, Climate Change                  |  |  |
| <input checked="" type="radio"/> Environmental sciences, Pollution            |  |  |
| <input checked="" type="radio"/> Geodesy                                      |  |  |
| <input type="radio"/> Geology, Sedimentology                                  |  |  |
| <input type="radio"/> Geophysics  |  |  |
| <input type="radio"/> Glaciology  |  |  |
| <input type="radio"/> Geocryology, Geomorphology                              |  |  |
| <input type="radio"/> Soil science  |  |  |
| <input type="radio"/> Human biology, Medicine                                 |  |  |
| <input checked="" type="radio"/> Mapping, GIS                                 |  |  |
| <input checked="" type="radio"/> Marine biology                               |  |  |
| <input type="radio"/> Oceanography, Fishery                                   |  |  |
| <input type="radio"/> Microbiology  |  |  |
| <input type="radio"/> Hydrology   |  |  |
| <input checked="" type="radio"/> Terrestrial biology, Ecology                 |  |  |
| <input type="radio"/> Paleolimnology  |  |  |
| <input type="radio"/> Paleoecology  |  |  |
| <input type="radio"/> Limnology   |  |  |
| <b>Workshop facilities</b>  |  |  |
| <input checked="" type="radio"/> Metal workshop                               |  |  |
| <input checked="" type="radio"/> Wood workshop                                |  |  |
| <input checked="" type="radio"/> Plexiglas workshop                           |  |  |
| <input checked="" type="radio"/> Staff available to assist with constructions |  |  |
| <b>Communication</b>  |  |  |
| <input checked="" type="radio"/> Telephone                                    |  |  |
| <input checked="" type="radio"/> Satellite phone                              |  |  |
| <input checked="" type="radio"/> VHF  |  |  |
| <input checked="" type="radio"/> E-mail                                       |  |  |
| <input checked="" type="radio"/> Internet                                     |  |  |
| <input checked="" type="radio"/> Computer                                     |  |  |
| <input checked="" type="radio"/> Printer                                      |  |  |
| <input checked="" type="radio"/> Scanner                                      |  |  |
| <input checked="" type="radio"/> Fax  |  |  |



## LIST OF PHOTOGRAPHERS FOR INTERACT STATION CATALOGUE

|   |   |
|---|---|
| Cover; front circles; back circles                                    | Katrine Raundrup; Morten Rasch, Nils Åke Andersson; Pirkko Siikamäki, Henning Thing                       |
| Imprint   | Katrine Raundrup  |
| Content   | Kirsten Elger   |
| Page 12/13 (Interact Stations)  | Marek Szymocha  |
| Page 146/147 (Observer Stations)                                      | Jan Vaněk   |
| 1 Finse Alpine Research Center  | Erika Leslie  |
| 2 Bioforsk Svanhovd Research Station                                  | Tor-Arne Bjørn, Espen Aarnes, Kirsten Elger, and Ragnar Våga Pedersen                                     |
| 3 Sverdrup Station, Ny-Ålesund  | Max König, and Li Gang  |
| 4 Tarfala Research Station  | Gunhild Rosqvist, and Peter Jansson   |
| 5 Abisko Scientific Research Station                                  | Nils Åke Andersson, Philipp Theuring, and Christer Jonasson   |
| 6 Kilpisjärvi Biological Station                                      | Tuomas Heikkilä, Antero Jarvinen, Oula Kalttopää, Rauni Partanen, and Kilpisjärvi Biological Station      |
| 7 Kolari Research Unit  | Hannu Herva, Mikko Jokinen, Heikki Kauhanen, and Erkki Oksanen  |
| 8 Kevo Subarctic Research Station                                     | Otso Suominen, Ilkka Syvänperä, and Elina Vainio  |
| 9 Oulanka Research Station  | Pirkko Siikamäki  |
| 10 Khibiny Educational and Scientific Station                         | Sergey Konyaev  |
| 11 Mukhrino Field Station   | Wladimir Bleuten  |
| 12 Numto Park Station   | Iliya Filippov  |
| 13 Samoylov Research Station  | Julia Boike, Niko Bornemann, Maren Grüber, Moritz Langer, Thomas Opel, and Konstanze Piel                 |
| 14 Spasskaya Pad Scientific Forest Station                            | Trofim Maximov  |
| 15 Chokurdakh Scientific Tundra Station                               | Trofim Maximov, Frans-Jan Parmentier, Roman Petrov, and Andrea Schneider                                  |
| 16 Barrow Arctic Research Center/<br>Barrow Environmental Observatory | Karl Newyear  |
| 17 Toolik Field Station   | Syndonia Bret-Harte, and Anja Kade  |
| 18 Kluane Lake Research Station                                       | Lance Goodwin   |
| 19 CEN Radisson Station   | Yves Bégin, Martin Fortier, and Denis Sarrazin  |
| 20 CEN Whapmagoostui-Kuujuarapik Station                              | Frederic Bouchard, Isabelle Laurion, Denis Sarrazin, and Claude Tremblay                                  |
| 21 CEN Clearwater Lake Station  | Martin Fortier, and Denis Sarrazin  |
| 22 CEN Umiujaq Research Station                                       | Richard Fortier, and Denis Sarrazin   |
| 23 CEN Boniface River Station   | Sebastian Bourget, Melanie Jean, and Denis Sarrazin   |
| 24 CEN Salluit Research Station                                       | Richard Fortier, J. Foucher, Tania Giberyen, Emmanuel L'Hérault, and Denis Sarrazin                       |
| 25 CEN Bylot Island Field Station                                     | Gilles Gauthier, Isabelle Laurion, and Denis Sarrazin   |
| 26 CEN Ward Hunt Island Station                                       | Sébastien Bourget, Denis Sarrazin, and Warwick F. Vincent   |
| 27 Arctic Station   | Louise Berg, and Bo Elberling   |
| 28 Greenland Institute of Natural Resources (GINR)                    | Carsten Egevang, Katrine Kruse, Bula Larsen, Henrik Lund, and Katrine Raundrup                            |
| 29 Sermilik Research Station  | Lea Hansen  |
| 30 Zackenberg Research Station  | Peter Bondo Christensen, Thomas Juul-Pedersen, Henrik Spanggård Munch, Mikkel Tamstorf, and Henning Thing |
| 31 Litla Skard  | Hlynur Oskarsson  |
| 32 Faroe Islands Nature Investigation (FINI)                          | Lis Mortensen   |
| 33 Cairngorm  | ECN Cairngorm team including Jan Dick, Chris Andrews, Kevin Ingleby, and Ben Hayes                        |
| A NERC Arctic Research Station  | Nick Cox, and Linda Backen  |
| B Netherlands Arctic Station  | Maarten J.J.E. Loonen, and Vincent Munster  |
| C Polish Polar Station – Hornsund                                     | Adam Nawrot, Liliana Keslinka-Nawrot, Zbigniew Sobierajski, and Marek Szymocha                            |
| D Petuniabukta Station  | Jan Kavan   |
| E ALPFOR, Alpine Research and Education Station Furka                 | E. Hiltbrunner, and C. Körner   |
| F Sonnblick Observatory   | Reinhard Böhm, Ludwig Rasser, Wolfgang Schoener, and Gernot Weys  |
| G Krkonoše (CZ)/Karkonosze (PL) National Park                         | Jan Vaněk   |
| H Labytnangi Ecological Research Station                              | Valery Belov, Nicolas Lecomte, Ivan Ovechkin and Aleksandr Sokolov  |
| I Igarka Geocryology Laboratory                                       | Leonid Reznikov, and unnamed colleagues from Halle-Wittenberg University                                  |
| J Aktru Research Station  | Terry Callaghan, and Sergey Kirpotin  |
| K Igloolik Research Center  | Nicolas Lecomte   |

## ORGANISATIONS WORKING WITH INTERACT



The **International Arctic Science Committee (IASC)** is a non-governmental, international scientific organization. The IASC mission is to encourage and facilitate cooperation in all aspects of arctic research, in all countries engaged in arctic research and in all areas of the arctic region.

[www.iasc.org](http://www.iasc.org)



The **Arctic Monitoring and Assessment Programme (AMAP)** is an Arctic Council initiative with the objective of providing reliable and sufficient information on the status of, and threats to, the arctic environment, and providing scientific advice on actions to be taken in order to support arctic governments in their efforts to take remedial and preventive actions relating to contaminants.

[www.amap.no](http://www.amap.no)



The **Circumpolar Biodiversity Monitoring Program (CBMP)** is an Arctic Council initiative supporting an international network of scientists, governments, Indigenous organizations and conservation groups working to harmonize and integrate efforts to monitor the Arctic's living resources.

[www.caff.is/monitoring](http://www.caff.is/monitoring)



**Sustaining Arctic Observing Networks (SAON)** is an Arctic Council initiative that supports and strengthens the development of multinational engagement for sustained and coordinated pan-arctic observing and data sharing systems that serve societal needs, particularly related to environmental, social, economic and cultural issues.

[www.arcticobserving.org](http://www.arcticobserving.org)



The **International Study of Arctic Change (ISAC)** is a program that provides a scientific and organizational framework focused around its key science questions for pan-arctic research including long-term planning and priority setting. ISAC establishes new and enhances existing synergies among scientists and stakeholders engaged in arctic environmental research and governance.

[www.arcticchange.org](http://www.arcticchange.org)



The **WWF Global Arctic Programme** has coordinated WWF's work in the Arctic since 1992. WWF works through offices in six arctic countries, with experts in circumpolar issues like governance, climate change, resilience, fisheries, oil and gas, and polar bears.

[www.wwf.org](http://www.wwf.org)

## INTERACT STATION MANAGERS' FORUM

The Station Managers' Forum under INTERACT provides a platform for exchange of information between research station managers and disseminates this information to the network, associated partners, local communities and other interested stakeholders.

The Station Managers' Forum produces a number of deliverables related to ecosystem research and monitoring, as well as station management and administration. This catalogue is a deliverable of the forum and upcoming products include reports on station management and administration, and research and monitoring undertaken at INTERACT stations.

Managers exchange and share information through biannual meetings, provide input to reports and can ask other managers for advice through a web-initiated dialogue forum. The Station Managers' Forum meetings are open to external partners (non-consortium members) and will be used to provide information from the different infrastructures to other managers and INTERACT work package deliverables.

[www.eu-interact.org](http://www.eu-interact.org)



# INTERACT

## International Network for Terrestrial Research and Monitoring in the Arctic

The INTERACT network is a one-stop shop for access to research infrastructures in the Arctic and mountain areas of the Northern Hemisphere.

The main objective of the INTERACT network is to build capacity for identifying, understanding, predicting and responding to changes throughout the wide environmental and land-use envelopes of the Arctic and mountain areas of the Northern Hemisphere.

The INTERACT network of field stations provides a unique platform for terrestrial sciences and the network hosts and operates top level research and monitoring projects and programmes within a wide range of scientific disciplines.

In this catalogue you will find details of all the INTERACT stations that can be used for selecting research infrastructures that suit your specific scientific needs. It is our hope that you will find this catalogue useful in the planning of your scientific activities or simply enjoy an interesting tour of a variety of terrestrial field basis in the INTERACT network.

**Let's INTERACT !**

[www.eu-interact.org](http://www.eu-interact.org)

