# INTERACT

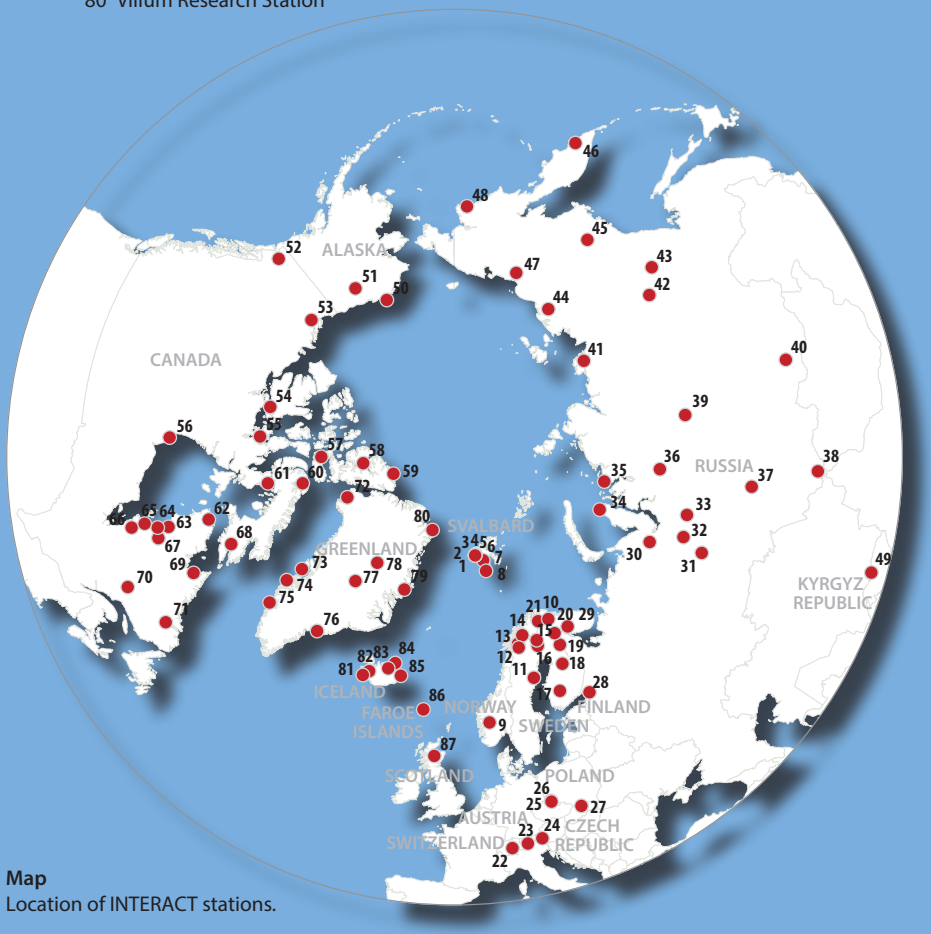
International Network for Terrestrial Research and Monitoring in the Arctic

# Station Catalogue

2020

● **INTERACT Stations**

1 AWIPEV Arctic Research base
2 CNR Arctic Station "Dirigibile Italia"
3 Ny-Ålesund Research Station – NPI Sverdrup
4 UK Arctic Research Station
5 Netherlands' Arctic Station
6 Adam Mickiewicz University Polar Station "Petuniabukta"
7 Czech Arctic Research Station of Josef Svoboda
8 Polish Polar Station Hornsund
9 Finse Alpine Research Centre
10 Nibio Svanhovd Research Station
11 Svartberget Research Station
12 Tarfala Research Station
13 Abisko Scientific Research Station
14 Kilpisjärvi Biological Station
15 Pallas-Sodankylä Stations
16 Kolari Research Unit
17 Hyytiälä Forest Research Station
18 Kainuu Fisheries Research Station
19 Oulanka Research Station
20 Värriö Subarctic Research Station
21 Kevo Subarctic Research Station
22 Alpine Research and Education Station Furka
23 Station Hintereis
24 Sonnblick Observatory
25 Krkonoše Mountains National Park
26 Karkonosze Mountains National Park
27 M&M Kłapa Research Station
28 Lammin-Suo Peatland Station
29 Khibiny Educational and Scientific Station
30 The Arctic Research Station
31 Mukhrino Field Station
32 Numto Park Station
33 Khanymey Research Station
34 Beliy Island Research Station
35 Willem Barentsz Biological Station
36 Igarka Geocryology Laboratory
37 Kajbasovo Research Staton
38 Aktru Research Station
39 Evenkian Field Station
40 International Ecological Educational Center "Istomino"
41 Research Station Samoylov Island
42 Spasskaya Pad Scientific Forest Station
43 Elgeeii Scientific Forest station
44 Chokurdakh Scientific Tundra Station
45 Orotuk Field Station
46 Avachinsky Volcano Field Station
47 North-East Science Station
48 Meinypil'gyno Community Based Biological Station
49 Adygine Research Station
50 Barrow Arctic Research Center/ Barrow Environmental Observatory
51 Toolik Field Station
52 Kluane Lake Research Station
53 Western Arctic Research Centre
54 Canadian High Arctic Research Station
55 M'Clintock Channel Polar Research Cabins
56 Churchill Northern Studies Centre
57 Flashline Mars Arctic Research Station
58 Polar Environment Atmospheric Research Laboratory
59 CEN Ward Hunt Island Research Station
60 CEN Bylot Island Field Station
61 Igloolik Research Center
62 CEN Salluit Research Station
63 CEN Boniface River Field Station
64 CEN Umiujaq Research Station
65 CEN Whapmagoostui-Kuujjuarapik Research Station
66 CEN Radisson Ecological Research Station
67 CEN Clearwater Lake Research Station
68 Nunavut Research Institute
69 CEN Kangiqsualujjuaq Sukuijarvik Research Station
70 Uapishka Research Station
71 Labrador Institute Research Station
72 DMI Geophysical Observatory – Qaanaaq
73 Arctic Station
74 Arctic DTU, ARTEK Research Station
75 Greenland Institute of Natural Resources
76 Sermilik Research Station
77 Summit Station
78 EGRIP Field Station
79 Zackenberg Research Station
80 Villum Research Station
81 Sudurnes Science and Learning Center
82 Litla-Skard
83 China-Iceland Arctic Observatory
84 RIF Field Station
85 Skálanes Nature and Heritage Center
86 Faroe Islands Nature Investigation
87 ECN Cairngorms




**Map**
Location of INTERACT stations.

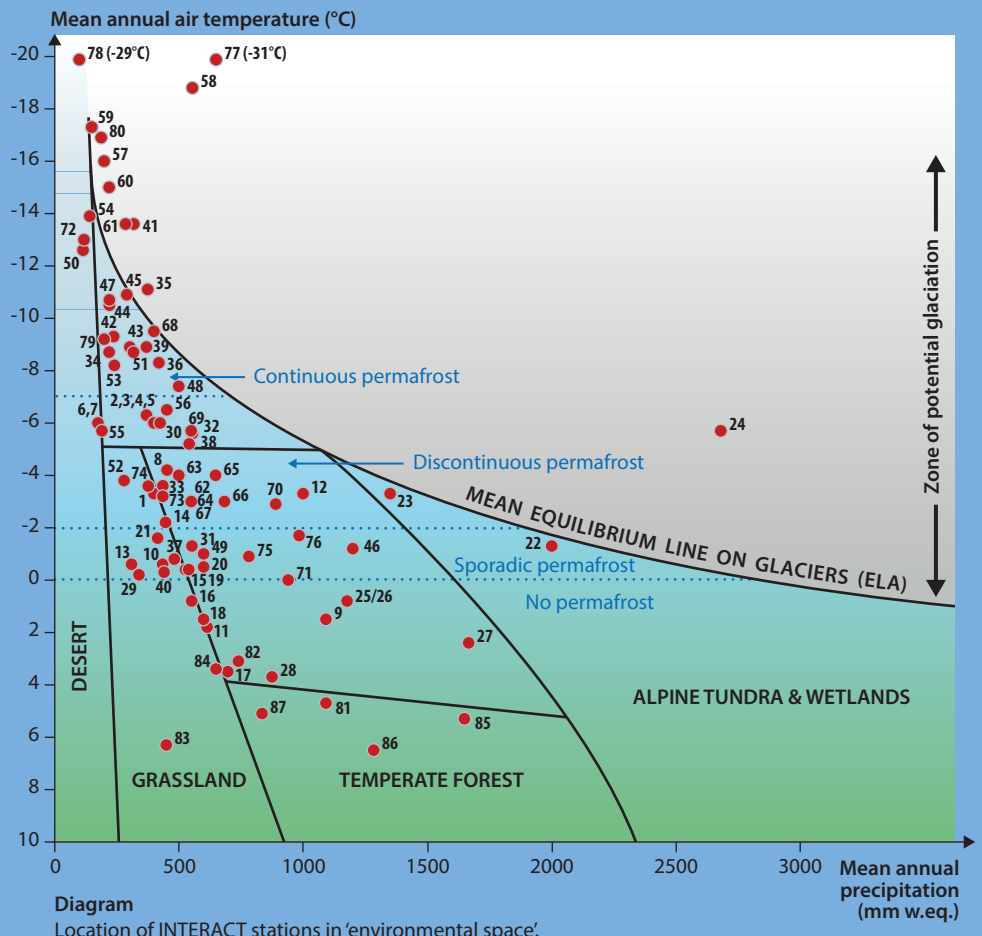



**Diagram**
Location of INTERACT stations in 'environmental space'.

AARHUS
UNIVERSITY
DCE – DANISH CENTRE FOR ENVIRONMENT AND ENERGY

# INTERACT
## Station Catalogue • 2020

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**Marie Frost Arndal and Elmer Topp-Jørgensen**

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# CONTENT

## INTERACT STATIONS

Numbers assigned to the stations are continuously updated as the network exspands and may therefore not follow the numbering in other INTERACT publications.

## INTERACT STATIONS

# INTRODUCTION

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**Elmer Topp-Jørgensen**

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## ABOUT INTERACT

INTERACT is a network of 87 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 is funded by the EU's Horizon 2020 Programme for the period October 2016 – September 2020. In addition to the focus on international cooperation and coordination, INTERACT also has a 'Joint Research Activities' component focusing on development of: (i) Rapid response to environmental emergency alerts, (ii) Improving and harmonizing biodiversity monitoring, (iii) Developing technology for drones for scaling up from research stations, and (iv) Adapting to environmental change.

Furthermore, INTERACT has a 'Transnational Access' component that offers funding to user groups for access to more than 40 of the INTERACT stations. INTERACT also offers Remote Access (station assisted sampling and data collection) and Virtual Access (online access to environmental data from the station).

## THE DEVELOPMENT OF THE INTERACT STATION CATALOGUE

The INTERACT Station Catalogue was developed within the INTERACT Station Managers' Forum, a group of station managers, now representing more than 85 arctic, boreal and alpine research stations.

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 and Kyrgyz Republic (see 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.

The INTERACT stations include sites extending from extremely cold and dry high arctic sites to relatively warm and wet subarctic 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 (see diagram inside of cover). The main scientific disciplines practiced at the stations include climatology, geosciences, 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.

The INTERACT Station Catalogue was developed as a resource for scientists looking for the ideal station to conduct their research and hence include both information about the facilities and natural environment as well as contact and access information.

## THE INTERACT STATION CATALOGUE

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

## PRINTED VERSION

Due to a steadily increasing number of stations, the printed version of the catalogue has been reduced in size to allow room for all 87 station included in the network. Remaining are text sections and selected facts (see table p. 10).

Station presentations are grouped according to country, and the numbering starts at longitude 0, moving north to south through Europe and then eastwards country by country. This will ease identification of station locations when knowing the number of the station. Each station is presented on two pages including text and selected facts about the station as well as representative photos of the station and its surroundings.

The map (inside of cover) provides an overview of location and key climate and environmental conditions for all INTERACT 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 INTERACT GIS and station websites.

## ONLINE VERSION

**INTERACT GIS www.interact-gis.org**

The online edition of the INTERACT Station catalogue includes full text descriptions and all facts about the station, its facilities, monitoring efforts and natural environment. This system includes a search function allowing scientists to search for specific facilities, data (or data gaps) or environmental features of relevance to their study.

The online version of the catalogue allows station managers themselves to edit the information about their station. This means that the information will be updated regularly and thus always function as an up-to-date inspirational tool for scientists looking for the most appropriate station/stations for planning and designing proposed research or monitoring activities.

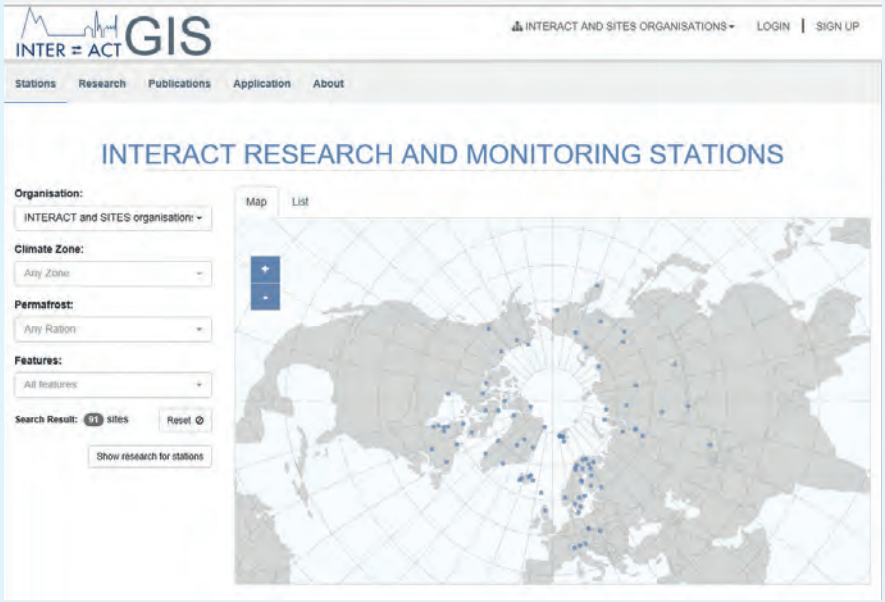
### Information presented for all stations included in this catalogue

**Text descriptions including**

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

**Fact box information including**

- Website
- Country
- Opening year
- Operational period
- Contact (access to station)
- Geograpical coordinates
- Nearest town/settlement (distance)
- Climate zone
- Mean annual temperature, mean temperature in February and July
- Total annual precipitation (precipitation type)




INTERACT GIS includes the following information

- Station descriptions (text)
- Facts about the station (ownership, contact details, facilities, etc.)
- Environmental conditions and natural features
- Scientific disciplines and monitored parameter groups
- Research projects, past and present
- Publications

As part of the development effort, the operative platform has been changed into the latest available technology, facilitating INTERACT GIS to operate in accordance with EU's General Data Protection Regulation (GDPR) safety standards.

### CONNECTING WITH INTERACT GIS

Anyone can use the system to explore stations in the network for fun or for identifying relevant stations for their work.

The INTERACT GIS also offers an application module for stations, where users can apply for access to the station directly. The number of stations using this feature will likely increase in the future, thus also making searchable project metadata part of the system. To apply for access online, you simply need to visit www.interact-gis.org as a public user and get an account using the Sign-up menu available at the upper-right corner of the user interface.

If you want to apply for access to stations that have their own application system, you simply find a link or contact information under the relevant station in INTERACT GIS.

### CONTACT INFO FOR STATIONS

If you need further information about specific sites or stations, you are always welcome to contact the individual stations directly or visit our website 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 for further information and contact details.

# PREFACE

**By**
**Doctor Morten Rasch**
**Department of Geosciences and Natural Resource Management,**
**University of Copenhagen, Denmark**

*This is the third edition of the INTERACT Station Catalogue. It now includes 87 stations in the Arctic and Northern Boreal and Alpine areas. The first edition was published in 2012 and included 44 research stations.*

*I was among the four editors of the first edition, and I remember our enthusiasm in the last hectic days before handing over the manuscript to the printing house. We were driven by the wish that the publication could be of help to scientists in the Arctic, and we hoped that it would also be a mean for increasing the cross-country mobility of polar scientists and cross-country cooperation in Arctic Science. However, we had no idea that it would also become an inspiration for other communities using the outline of the INTERACT Station Catalogue as a paradigm for similar infrastructure dictionaries. Among them was the Antarctic research infrastructure community through their coordinating organization, COMNAP – Council of Managers of National Antarctic Programs, and the EU Commission through the project EU-PolarNet. We are extremely grateful for these collaborations that gave us an opportunity to increase our international cooperation with other research communities.*

*The two editors of this version of the INTERACT Station Catalogue have in cooperation with all the station managers in INTERACT decided to reduce the number of pages for the presentation of each station from four to two. This is in my perception a wise choice. The INTERACT Station Catalogue was originally meant to be a handy tool that scientists could obtain free-of-charge for decision making when choosing the most appropriate field site for their research. However, with 87 INTERACT stations now being included in the catalogue, it would have turned into a heavy brick instead of a handy tool. For more detailed searches for research stations, the users of the INTERACT Station Catalogue can however still make relevant comparisons by entering the more extensive online station catalogue with in depth descriptions and facts about station facilities and their surrounding natural environment on www.interact-gis.org.*

*As with all other INTERACT products, this book is mainly based on information gathered by the 87 stations being involved in the Station Managers' Forum. However, on behalf of all the station managers in INTERACT I will use the opportunity to extend a sincere 'Thank You', to our great INTERACT colleagues, Marie Frost Arndal, Juana Jacobsen and Elmer Topp-Jørgensen, for making all the information available in an easily accessible and esthetically welcoming form.*

**On behalf of INTERACT Station Managers' Forum**
**Morten Rasch**

| No* | Station name | Location | Nation/region of operating institution | Latitude | Longitude | Altitude of study area (m a.s.l.) | |
|---|---|---|---|---|---|---|---|
| INTERACT Stations | | | | | | Min. | Max. |
| 1 | AWIPEV Arctic Research Base | Svalbard, Norway | Germany/France | 78°55′N | 11°55′E | 0 | 1500 |
| 2 | CNR Arctic Station "Dirigibile Italia" | Svalbard, Norway | Italy | 78°55′N | 11°56′E | 0 | 556 |
| 3 | Ny-Ålesund Research Station – NPI Sverdrup | Svalbard, Norway | Norway | 78°55′N | 11°56′E | 0 | 556 |
| 4 | UK Arctic Research Station | Svalbard, Norway | United Kingdom | 78°55′N | 11°55′E | 0 | 556 |
| 5 | Netherlands' Arctic Station | Svalbard, Norway | Netherlands | 78°55′N | 11°56′E | 0 | 556 |
| 6 | Adam Mickiewicz University Polar Station "Petuniabukta" | Svalbard, Norway | Poland | 78°41′N | 16°27′E | 0 | 1127 |
| 7 | Czech Arctic Research Station of Josef Svoboda | Svalbard, Norway | Czech Republic | 78°13′N | 15°40′E | 0 | 1127 |
| 8 | Polish Polar Station Hornsund | Svalbard, Norway | Poland | 77°00′N | 15°33′E | 0 | 750 |
| 9 | Finse Alpine Research Centre | Norway | Norway | 60°36′N | 07°30′E | 1000 | 1876 |
| 10 | Nibio Svanhovd Research Station | Norway | Norway | 69°27′N | 30°03′E | 0 | 250 |
| 11 | Svartberget Research Station | Sweden | Sweden | 64°14′N | 19°45′E | 160 | 320 |
| 12 | Tarfala Research Station | Sweden | Sweden | 67°55′N | 18°35′E | – | 2097 |
| 13 | Abisko Scientific Research Station | Sweden | Sweden | 68°21′N | 18°49′E | 345 | 1700 |
| 14 | Kilpisjärvi Biological Station | Finland | Finland | 69°03′N | 20°50′E | 470 | 1320 |
| 15 | Pallas-Sodankylä Research Station | Finland | Finland | 67°22′N | 26°39′E | 170 | 800 |
| 16 | Kolari Research Unit | Finland | Finland | 67°21′N | 23°49′E | 200 | 800 |
| 17 | Hyytiälä Forest Research Station | Finland | Finland | 61°51′N | 24°17′E | 150 | 200 |
| 18 | Kainuu Fisheries Research Station | Finland | Finland | 64°24′N | 27°30′E | 110 | 385 |
| 19 | Oulanka Research Station | Finland | Finland | 66°22′N | 29°19′E | 155 | 500 |
| 20 | Värriö Subarctic Research Station | Finland | Finland | 67°44′N | 29°36′E | 320 | 620 |
| 21 | Kevo Subarctic Research Station | Finland | Finland | 69°45′N | 27°01′E | 75 | 500 |
| 22 | Alpine Research and Education Station Furka | Switzerland | Switzerland | 46°34′N | 08°25′E | 1500 | 3400 |
| 23 | Station Hintereis | Austria | Austria | 46°47′N | 10°45′E | 1900 | 3739 |
| 24 | Sonnblick Observatory | Austria | Austria | 47°03′N | 12°57′E | 1600 | 3254 |
| 25 | Krkonoše Mountains National Park | Czech Republic | Czech Republic | 50°44′N | 15°44′E | 920 | 1602 |
| 26 | Karkonosze Mountains National Park | Poland | Poland | 50°44′N | 15°44′E | 920 | 1602 |
| 27 | M&M Kłapa Research Station | Poland | Poland | 49°14′N | 20°00′E | 800 | 2301 |
| 28 | Lammin-Suo Peatland Station | Russia | Russia | 60°14′N | 29°48′E | 30 | 80 |
| 29 | Khibiny Educational and Scientific Station | Russia | Russia | 67°38′N | 33°43′E | 150 | 1200 |
| 30 | The Arctic Research Station | Russia | Russia | 66°39′N | 66°24′E | 0 | 1000 |
| 31 | Mukhrino Field Station | Russia | Russia | 60°54′N | 68°42′E | 25 | 120 |
| 32 | Numto Park Station | Russia | Russia | 63°38′N | 70°63′E | – | – |
| 33 | Khanymey Research Station | Russia | Russia | 63°43′N | 75°57′E | – | – |
| 34 | Beliy Island Research Station | Russia | Russia | 73°03′N | 69°57′E | 0 | 12 |
| 35 | Willem Barentsz Biological Station | Russia | Russia | 73°21′N | 80°32′E | 0 | 160 |
| 36 | Igarka Geocryology Laboratory | Russia | Russia | 67°27′N | 86°32′E | 2 | 1100 |
| 37 | Kajbasovo Research Station | Russia | Russia | 57°15′N | 84°11′E | – | – |
| 38 | Aktru Research Station | Russia | Russia | 50°06′N | 87°40′E | 1500 | 4075 |
| 39 | Evenkian Field Station | Russia | Russia | 64°17′N | 100°11′E | 130 | 1100 |
| 40 | International Ecological Educational Center "Istomino" | Russia | Russia | 52°08′N | 106°17′E | 457 | 468 |
| 41 | Research Station Samoylov Island | Russia | Russia/Germany | 72°22′N | 126°29′E | 0 | 50 |
| 42 | Spasskaya Pad Scientific Forest Station | Russia | Russia | 62°14′N | 129°37′E | – | – |
| 43 | Elgeeii Scientific Forest Station | Russia | Russia | 60°01′N | 133°49′E | 110 | 240 |
| 44 | Chokurdakh Scientific Tundra Station | Russia | Russia | 70°49′N | 147°29′E | – | 30 |



**Station Table.** * Numbers refer to numbers 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 | Subarctic | Montane/Alpine | Boreal | Annual | February (January) | July | | Continuous | Discontinuous | Sporadic | Palsa mires | Ice cap or glacier | Permanent snowpatches | Mountain | Valley | Lake/River | Shoreline | Tree line | Desert | Tundra | Peatlands/Weetlands | Forest | Human activity | | |
| • | | | | | -3.3 | -9.3 | 6.1 | 400 | • | | | | • | • | • | • | • | • | | | • | • | | • | 24 | 110 |
| • | | | | | -6.3 | -14.6 | 4.9 | 385 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 7 | 110 |
| • | | | | | -6.3 | -14.6 | 4.9 | 370 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 150 | 100 |
| • | | | | | -6.0 | -14.6 | 4.9 | 400 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 20 | 115 |
| • | | | | | -6.3 | -14.6 | 4.9 | 400 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 7 | 100 |
| • | | | | | -6.0 | -12.0 | 7.5 | 100-200 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 12 | 60 |
| • | | | | | -6.0 | -12.0 | 7.5 | 100-200 | • | | | | • | • | • | • | • | • | | • | • | • | | • | 15 | 0 |
| • | | | | | -4.2 | -10.7 | 4.4 | 453 | • | | | | • | • | • | • | • | • | | | • | | | | 20 | 140 |
| | | | • | | 1.5 | -6.9 | 10.5 | 1092 | | | • | | • | • | • | • | • | • | | | • | • | | • | 54 | 2 |
| | | • | | | -0.6 | -13.0 | 14.0 | 435 | | | | • | | | • | • | • | • | • | | | • | • | • | 80 | 40 |
| | | | | • | 1.8 | -8.9 | 14.6 | 614 | | | | | | | • | • | • | | | | | • | • | • | 20 | 6 |
| | | • | | | -3.3 | -10.9 | 7.4 | 1000 | | • | | | • | • | • | • | • | | • | | • | | | • | 30 | 27 |
| | | • | | | -0.6 | -11.0 | 11.0 | 310 | | • | | • | | • | • | • | • | • | • | | • | • | • | • | 90 | 1 |
| | | • | | | -2.2 | -13.0 | 11.0 | 447 | | | • | • | | • | • | • | • | • | • | | | • | • | • | 60 | 40 |
| | | • | | • | -0.4 | -12.7 | 14.5 | 527 | | | | | | | | • | • | | • | | | • | • | • | 25 | 7 |
| | | • | | • | 0.8 | -18.4 | 15.4 | 552 | | | | | | | • | • | • | | • | | • | • | • | • | 10 | 4 |
| | | | | • | 3.5 | -7.7 | 16.0 | 697 | | | | | | | | | • | • | | | | • | • | • | 150 | 10 |
| | | | | • | 1.5 | -17.0 | 15.0 | 625 | | | | | | | | | • | • | | | | • | • | • | 14 | 16 |
| | | • | | • | -0.4 | -14.0 | 14.9 | 540 | | | | | | | • | • | • | • | • | | • | • | • | • | 94 | 55 |
| | | • | | | -0.5 | -8.2 | 12.1 | 600 | | | | | | | • | • | • | • | • | | • | • | • | • | 50 | 100 |
| | | • | | | -1.6 | -13.7 | 12.9 | 415 | | | | • | • | | • | • | • | • | • | | • | • | • | • | 70 | 20 |
| | | | • | | -1.3 | -8.7 | 6.4 | 2000 | | • | | | • | • | • | • | | | • | | • | | | | 100 | 12 |
| | | | • | | -3.3 | -12.2 | 5.2 | 1350 | | • | | | • | • | • | • | • | | • | | | • | • | • | 8 | 15 |
| | | | • | | -5.7 | -11.2 | 1.8 | 2680 | | • | | | • | • | • | • | | | | | | | | | 10 | 20 |
| | | • | • | | 0.8 | -4.0 | 13.0 | 1177 | | | | | | | • | • | • | | • | | • | • | • | • | – | 10 |
| | | • | • | | 0.8 | -4.0 | 13.0 | 1177 | | | | | | | • | • | • | | • | | • | • | • | • | – | 8 |
| | | | • | | 2.4 | -5.8 | 10.7 | 1666 | | | • | | | • | • | • | • | | • | | | | | | 4 | 5 |
| | | | | • | 3.7 | -8.8 | 16.8 | 875 | | | | • | • | | | | • | • | | | | • | • | • | 10 | 3 |
| | • | | | | -0.2 | -11.5 | 12.6 | 340 | | | • | | | • | • | • | • | | • | • | • | • | • | • | 80 | 3 |
| | | • | | | -6.0 | -22.4 | 14.4 | 425 | • | | | | | • | • | • | • | | • | | • | | | | 25 | 0 |
| | | • | | • | -1.3 | – | 17.1 | 553 | | | | | | | | • | • | | | | | • | • | • | 20 | 28 |
| | | • | | | -5.6 | – | 15.0 | 555 | | • | | • | | • | | • | • | | | | | • | • | • | 6 | 4 |
| | | • | | | -3.6 | -25.1 | 15.8 | 436 | | • | | • | | | | | • | | • | | • | • | • | • | 15 | 20 |
| | • | | | | – | -24.0 | 5.0 | 220 | • | | | | | | | | • | • | | | | • | | • | 12 | 500 |
| • | | | | | -11.1 | -25.4 | 4.9 | 375 | • | | | | | • | | • | • | • | | | • | • | | • | 10 | 18 |
| | | • | | | -8.3 | -24.8 | 15.4 | 420 | | • | | • | | | | • | • | | | | • | • | • | • | 20 | 0 |
| | | | | • | -0.8 | -17.1 | 18.7 | 482 | | | | | | | | | • | | | | | • | • | • | 10 | 12 |
| | | | • | | -5.2 | -18.5 | 9.5 | 542 | • | | | | • | • | • | • | | | • | | • | | | | 20 | 45 |
| | | | | • | -8.9 | -31.5 | 16.6 | 370 | • | | | | | | • | • | • | | • | | • | • | • | • | 20 | 0 |
| | | • | | | -0.3 | -18.3 | 17.1 | 441 | | | • | | | | | | • | • | • | | | • | • | • | 65 | 0 |
| | • | | | | -13.6 | -33.2 | 9.3 | 319 | | | | | | | | | • | • | | | | • | | | 25 | 120 |
| | | • | | • | -9.3 | -40.0 | 19.0 | 238 | | | | | | | • | | • | • | | | | | • | | 15 | 18 |
| | | | | • | -8.9 | -33.9 | 18.5 | 303 | • | | | | | | | • | • | • | | | | • | • | • | 20 | 60 |
| | • | | | | -10.5 | (-34.6) | 9.5 | 221 | • | | | | | | • | • | • | • | • | | | | | | 14 | 28 |

| No* | Station name | Location | Nation/region of operating institution | Latitude | Longitude | Altitude of study area (m a.s.l.) | |
|---|---|---|---|---|---|---|---|
| INTERACT Stations | | | | | | Min. | Max. |
| 45 | Orotuk Field Station | Russia | Russia | 62°03′N | 148°39′E | 470 | 2200 |
| 46 | Avachinsky Volcano Field Station | Russia | Russia | 53°15′N | 158°44′E | 130 | 3456 |
| 47 | North-East Science Station | Russia | Russia | 68°73′N | 161°38′E | 0 | 1040 |
| 48 | Meinypil'gyno Community Based Biological Station | Russia | Russia | 62°32′N | 177°03′E | 0 | 1350 |
| 49 | Adygine Research Station | Kyrgyz Republic | Kyrgyz Republic | 42°30′N | 74°35′ E | 3200 | 4200 |
| 50 | Barrow Arctic Research Center/ Barrow Environmental Observatory | Alaska | Alaska | 71°18′N | 156°35′W | 0 | 10 |
| 51 | Toolik Field Station | Alaska | Alaska | 68°37′N | 149°35′W | – | – |
| 52 | Kluane Lake Research Station | Canada | Canada | 61°01′N | 138°24′W | 790 | 5959 |
| 53 | Western Arctic Research Centre | Canada | Canada | 68°21′N | 133°43′W | 0 | 1700 |
| 54 | Canadian High Arctic Research Station | Canada | Canada | 69°07′N | 105°03′W | 0 | 225 |
| 55 | M'Clintock Channel Polar Research Cabins | Canada | Canada | 68°37′N | 95°52′W | 0 | – |
| 56 | Churchill Northern Studies Centre | Canada | Canada | 58°44′N | 93°49′W | 0 | 150 |
| 57 | Flashline Mars Arctic Research Station | Canada | USA | 75°25′N | 89°49′W | – | – |
| 58 | Polar Environment Atmospheric Research Laboratory | Canada | Canada | 80°03′N | 86°24′W | 0 | 183 |
| 59 | CEN Ward Hunt Island Research Station | Canada | Canada | 83°06′N | 74°10′W | 0 | 400 |
| 60 | CEN Bylot Island Field Station | Canada | Canada | 73°09′N | 79°58′W | 0 | 1300 |
| 61 | Igloolik Research Center | Canada | Canada | 69°22′N | 81°48′W | 0 | 20 |
| 62 | CEN Salluit Research Station | Canada | Canada | 62°12′N | 75°38′W | 0 | 160 |
| 63 | CEN Boniface River Field Station | Canada | Canada | 57°45′N | 76°10′W | 90 | 300 |
| 64 | CEN Umiujaq Research Station | Canada | Canada | 56°33′N | 76°32′W | 0 | 400 |
| 65 | CEN Whapmagoostui-Kuujjuarapik Research Station | Canada | Canada | 55°16′N | 77°45′W | 0 | 140 |
| 66 | CEN Radisson Ecological Research Station | Canada | Canada | 53°47′N | 77°36′W | 0 | 135 |
| 67 | CEN Clearwater Lake Research Station | Canada | Canada | 56°20′N | 74°27′W | 215 | 400 |
| 68 | Nunavut Research Institute | Canada | Canada | 63°45′N | 68°31′W | 0 | 2200 |
| 69 | CEN Kangiqsualujjuaq Sukuijarvik Research Station | Canada | Canada | 58°41′N | 65°56′W | 0 | 1646 |
| 70 | Uapishka Research Station | Canada | Canada | 51°28′N | 68°14′W | 350 | 1104 |
| 71 | Labrador Institute Research Station | Canada | Canada | 53°31′N | 60°08′W | 0 | 1600 |
| 72 | DMI Geophysical Observatory – Qaanaaq | Greenland | Denmark | 77°28′N | 69°13′W | 0 | 1100 |
| 73 | Arctic Station | Greenland | Denmark | 69°15′N | 53°34′W | 0 | 800 |
| 74 | Arctic DTU, ARTEK Research Station | Greenland | Denmark | 66°55′N | 53°40′W | 0 | 1648 |
| 75 | Greenland Institute of Natural Resources | Greenland | Greenland | 64°11′N | 51°41′W | 0 | 1600 |
| 76 | Sermilik Research Station | Greenland | Denmark | 65°40′N | 38°10′W | 0 | 937 |
| 77 | Summit Station | Greenland | USA | 72°35′N | 38°25′W | 3210 | 3210 |
| 78 | EGRIP Field Station | Greenland | Denmark | 75°38′N | 36°00′W | 2600 | 2800 |
| 79 | Zackenberg Research Station | Greenland | Denmark | 74°28′N | 20°34′W | 0 | 1492 |
| 80 | Villum Research Station | Greenland | Denmark | 81°36′N | 16°39′W | 0 | 100 |
| 81 | Sudurnes Science and Learning Center | Iceland | Iceland | 64°02′N | 22°42′W | 0 | 400 |
| 82 | Litla-Skard | Iceland | Iceland | 64°43′N | 21°37′W | 115 | 229 |
| 83 | China-Iceland Arctic Observatory | Iceland | Iceland | 65°42′N | 17°22′W | 50 | 301 |
| 84 | Rif Field Station | Iceland | Iceland | 66°27′N | 15°57′W | 0 | 284 |
| 85 | Skálanes Nature and Heritage Center | Iceland | Iceland | 65°15′N | 13°42′W | 1 | 923 |
| 86 | Faroe Islands Nature Investigation | Faroe Islands | Faroe Islands | 62°04′N | 06°58′W | 0 | 882 |
| 87 | ECN Cairngorms | Scotland | United Kingdom | 57°07′N | 03°49′W | 350 | 1100 |



**Station Table.** * Numbers refer to numbers 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 | Subarctic | Montane/Alpine | Boreal | Annual | February (January) | July | | Continuous | Discontinuous | Sporadic | Palsa mires | Ice cap or glacier | Permanent snowpatches | Mountain | Valley | Lake/River | Shoreline | Tree line | Desert | Tundra | Peatlands/Weetlands | Forest | Human activity | | |
| | | ● | | ● | -10.9 | -35.0 | 15.9 | 291 | ● | | | | | ● | ● | ● | ● | | ● | | ● | ● | ● | ● | 4 | 10 |
| | | ● | | | – | (-16.0) | 12.0 | 1200 | | | | | | ● | ● | ● | ● | | ● | | ● | | ● | | 24 | 28 |
| | ● | | | | -10.7 | -30.7 | 13.1 | 221 | ● | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 40 | 5 |
| | ● | | | | -7.4 | -20.5 | 10.3 | 500 | | | ● | | | ● | ● | ● | ● | ● | | | ● | ● | | ● | 14 | 0 |
| | | ● | | | -1.0 | -15.0 | 9.0 | 600 | ● | | | | ● | ● | ● | ● | ● | | | | | | | ● | 16 | 8 |
| ● | | | | | -12.6 | -27.7 | 4.1 | 115 | ● | | | | | | | | ● | ● | | ● | ● | ● | | ● | 75 | 5 |
| | ● | | | | -8.7 | -20.7 | 10.8 | 318 | ● | | | ● | | | ● | ● | ● | | | | ● | ● | | | 150 | 210 |
| | | ● | ● | ● | -3.8 | -18.0 | 13.0 | 280 | | ● | | | ● | ● | ● | ● | ● | ● | ● | | ● | | ● | | 30 | 65 |
| | | ● | | | -8.2 | -25.5 | 14.1 | 241 | ● | | | ● | | | ● | ● | ● | ● | ● | | ● | ● | ● | ● | 75 | 0 |
| | ● | | | | -13.9 | -32.5 | 8.9 | 142 | ● | | | | | | | | ● | ● | | ● | ● | ● | | ● | – | 0 |
| ● | | | | | -5.7 | -15.6 | 0.9 | 191 | ● | | | | | | | | | ● | | | | | | ● | – | 0 |
| | | ● | | | -6.5 | -24.5 | 12.7 | 452 | ● | ● | | | | | | | ● | ● | ● | | ● | ● | ● | ● | 84 | 23 |
| ● | | | | | -16.0 | – | -2.8 | <200 | | | ● | | | ● | | | | | | ● | | | | | 7 | 145 |
| ● | | | | | -18.8 | -37.4 | 6.1 | 635 | ● | | | | | | ● | ● | | ● | | ● | | | | | 40 | 183 |
| ● | | | | | -17.5 | -33.0 | 1.0 | 150 | ● | | | | ● | ● | ● | ● | ● | ● | | ● | ● | | | | 9 | 800 |
| ● | | | | | -15.0 | -35.0 | 6.1 | 220 | | | | | ● | ● | ● | ● | ● | ● | | ● | ● | ● | | | 18 | 85 |
| ● | | | | | -13.6 | -31.2 | 7.0 | 286 | ● | | | | | | | | | ● | | | | | | | 12 | 0 |
| | ● | | | | -8.5 | -25.2 | 7.1 | 300 | ● | | | | | | ● | ● | ● | ● | | | ● | ● | | ● | 6 | 0 |
| | | ● | | | -4.0 | -24.0 | 12.5 | 500 | | ● | | ● | | | | ● | ● | ● | ● | | ● | ● | ● | | 9 | 140 |
| | | ● | | | -3.0 | -22.4 | 12.2 | 500-600 | | ● | | ● | | | | ● | ● | ● | ● | | ● | ● | ● | ● | 6 | 0 |
| | | ● | | ● | -4.0 | -22.4 | 12.7 | 648 | | ● | | ● | | | | ● | ● | ● | ● | | ● | ● | ● | ● | 28 | 0 |
| | | ● | | ● | -3.0 | -21.6 | 13.7 | 684 | | | ● | ● | | | | ● | ● | ● | | | | ● | ● | ● | 28 | 0 |
| | | ● | | | -3.0 | -22.4 | 11.8 | 500-600 | | ● | | ● | | | ● | ● | ● | ● | ● | | ● | ● | | | 11 | 135 |
| | ● | | | | -9.5 | -28.0 | 3.6 | 404 | ● | | | | ● | ● | ● | ● | ● | ● | | | ● | ● | | ● | 30 | 0 |
| | | ● | | | -5.7 | -20.33 | 10.6 | 500-600 | | ● | | ● | | ● | ● | ● | ● | ● | ● | | ● | | ● | ● | 6 | 0 |
| | | | | ● | -2.9 | – | – | 890 | | | | | | | ● | ● | ● | | ● | | ● | ● | | ● | 48 | 230 |
| | | | | ● | 0.0 | -15.7 | 15.1 | 940 | | | ● | ● | | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | – | 0 |
| ● | | | | | -13 | -26 | 4 | 119 | ● | | | | ● | ● | ● | ● | | ● | | ● | | | | ● | 4 | 0 |
| ● | ● | | | | -3.2 | -11.6 | 7.6 | 436 | ● | ● | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | | ● | 26 | 1 |
| | ● | | | | -3.6 | -13.9 | 7.1 | 377 | ● | ● | | | ● | ● | ● | ● | ● | ● | | ● | ● | ● | | ● | 20 | 0 |
| | ● | | | | -0.9 | -7.8 | 6.9 | 782 | | | | | ● | | ● | ● | ● | ● | | | ● | ● | | ● | 28 (+8) | 0 |
| | ● | | | | -1.7 | (-7.5) | 6.4 | 984 | | ● | | | ● | | ● | ● | ● | ● | | | ● | | | | 6 | 20 |
| ● | | | | | -31 | -40 | -12 | 650 | | | | | ● | ● | | | | | | | | | | | 34 | 593 |
| ● | | | | | -29 | -50 | -10 | 100 | | | | | ● | ● | | | | | | | | | | | 20 | 690 |
| ● | | | | | -9.2 | -19.4 | 6.1 | 200 | ● | | | | ● | ● | ● | ● | ● | ● | | | ● | ● | | | 21 | 450 |
| ● | | | | | -16.9 | -30.9 | 3.4 | 188 | ● | | | | ● | | | | ● | ● | | ● | ● | ● | | | 24 | 715 |
| | | ● | | | 4.7 | 0.7 | 10.6 | 1092 | | | | | | | ● | | ● | ● | | | | ● | | ● | 12 | 0 |
| | ● | | | | 3.1 | -1.8 | 10.8 | 740 | | | | | | | ● | ● | ● | | ● | ● | ● | ● | ● | | 6 | 25 |
| | | ● | | | 6.3 | -4.1 | 9.9 | 450 | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 20+ | 1.5 |
| | | ● | | | 3.4 | -0.7 | 9.1 | 650 | | | | | | | ● | | ● | ● | | | | ● | | ● | 8 | 0 |
| | | ● | | | 5.3 | 2.3 | 9.8 | 1649 | | | | | | ● | ● | ● | ● | ● | | | ● | ● | | ● | 30 | 17 |
| | | ● | | | 6.5 | 3.6 | 10.3 | 1284 | | | | | | | ● | ● | | ● | | | | | | | 20 | 15 |
| | | | ● | | 5.1 | 0.0 | 10.5 | 835 | | | | | | | ● | ● | ● | | ● | | ● | ● | ● | | 80 | 10 |

# INTER

# ACT

# STATIONS

# AWIPEV


## STATION NAME AND OWNER

The German Alfred Wegener Institute (AWI) and the French Polar Institute Paul Emile Victor (IPEV) operate AWIPEV Arctic Research Base at Ny-Ålesund / Spitsbergen, which run their research stations as the joint French-German Arctic Research Base. Buildings are owned and provided in Ny-Ålesund by the Norwegian company Kings Bay AS.

## LOCATION

AWIPEV Arctic Research Base is located in the research village of Ny-Ålesund situated on the southern shore of Kongsfjorden on the island of Spitsbergen. The village hosts more than 10 national research stations, which shares facilities run by the Kings Bay company. AWIPEV operates and runs a second research base Jean Corbel situated at 5 km southeast of Ny-Ålesund.

## BIODIVERSITY AND NATURAL ENVIRONMENT

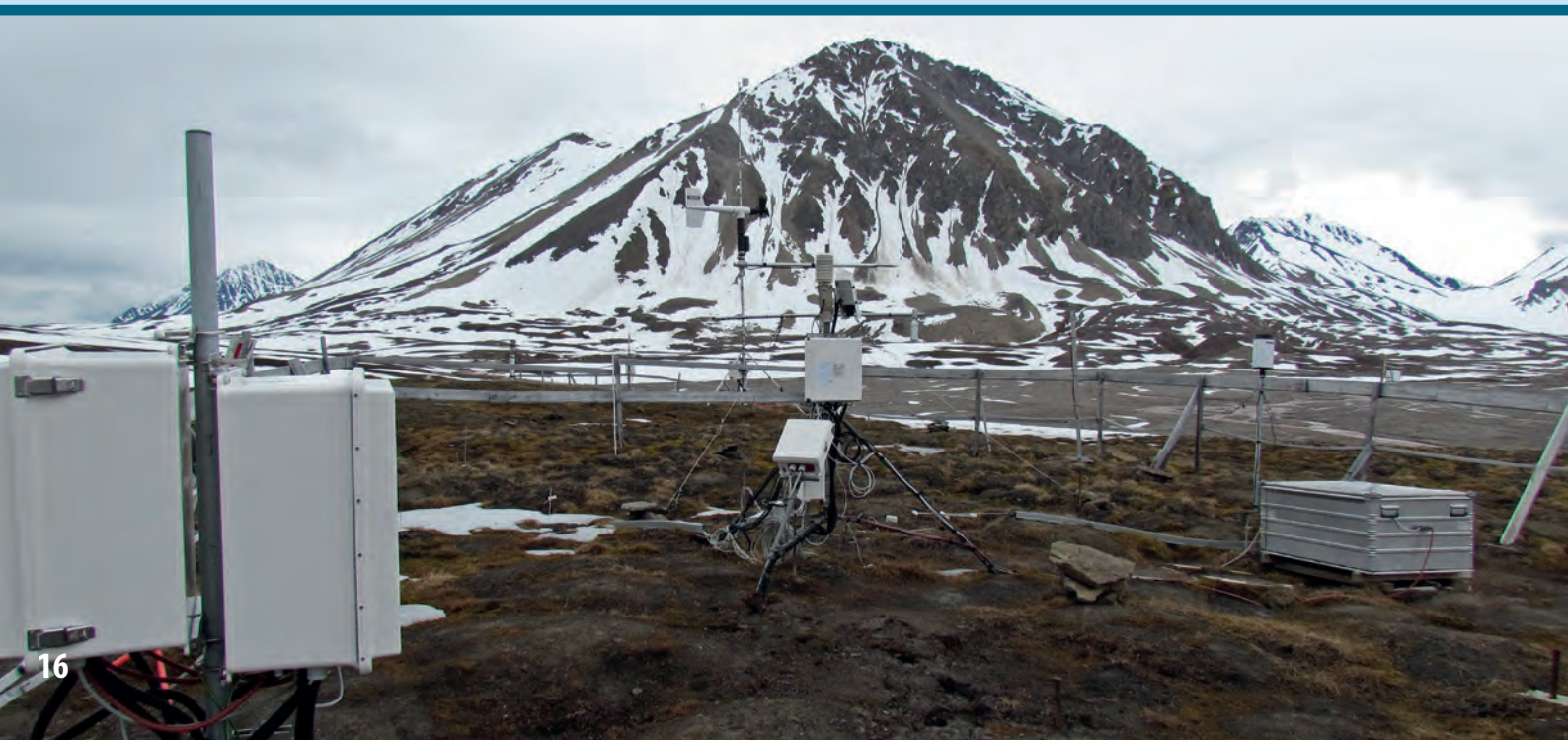
Spitsbergen belongs to one of the northernmost archipelagos in the Arctic. Ny-Ålesund on the west coast is an international center for various modern Arctic research activities. The village is one of the world's northernmost human settlements and is surrounded by glaciers, moraines, rivers, mountains and a typical tundra system. Most of the fauna living in Svalbard is represented in the area with birds (auks, kittiwakes, terns, barnacle geese, etc.), reindeers, foxes, polar bears and often visible in the fjord are seals and sometimes belugas and walrus.

## HISTORY

Ny-Ålesund was a mining town for commercial exploitation of the coal deposits in the Kongsfjorden area from 1916 to the closure of the mines in 1963. The French research base Jean Corbel was established in 1963 c. 5 km from Ny-Ålesund village. In 2003, AWI and IPEV decided to jointly operate their three stations (Koldewey, Rabot and Corbel) as the AWIPEV Arctic Research base.

## GENERAL RESEARCH AND DATABASES

Research covers a large field of scientific disciplines. Both long term and short term projects of atmospheric studies, marine and terrestrial biology, as well as cryosphere studies, are carried out at the AWIPEV Arctic Research Base. Many different measurements as well as field expeditions are possible at the base. Prominent examples are atmospheric long term measurements,



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scientific diving, glacier expeditions, seabirds as indicators of global changes in the marine ecosystems, installation of measuring systems in the permafrost and in the fjord, and launches of research balloons. An overview on research programmes at AWIPEV and accessible data can be found at http://www.awipev.eu/science/ and the observatories are listed at http://www.awipev.eu/awipev-observatories/

## HUMAN DIMENSION

There is no permanent population living in the area and activities are mainly linked to science.

## ACCESS

A regular air shuttle service organized by Kings Bay AS with a small plane (14 passengers) connects Longyearbyen with Ny-Ålesund. Access is also possible by ship but there are no regular ship transport to Ny-Ålesund. Transport of freight is possible with a monthly freight ship except during winter. Fjord shores and islands are easily accessible using small boats and local transportation is possible by cars, snowmobiles or bicycles.

| AWIPEV Arctic Research Base | |
|---|---|
| Website | http://www.awipev.eu/ |
| Country | Svalbard/Germany/France |
| Opening year | 2003 |
| Operational period | Year-round |
| Contact (access to station) | management@awipev.eu |
| Geographical coordinates | 78°55′N, 11°55′E |
| Altitude of station | 20 m a.s.l. |
| Nearest town/settlement | Longyearbyen (110 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -3.3 °C (-9.3 °C, 6.1 °C) |
| Total annual precipitation (type) | 400 mm (snow, rain) |

AWIPEV 79°N
Arctic Research Base Ny-Ålesund


## STATION NAME AND OWNER

The CNR Arctic Station "Dirigibile Italia" is named in honor of the Airship expedition by Umberto Nobile. The station is owned, funded and managed by the National Research Council of Italy (CNR).

## LOCATION

The station is located in Ny-Ålesund, along the west coast of Spitzbergen, the largest island of the Svalbard archipelago. The area around the village is geographically diverse and complex, including the fjord with several islands, a plateau, alluvial plains, mountains with large glaciers and extensive moraine systems, glacial rivers, coastal lagoons, and small lakes.

## BIODIVERSITY AND NATURAL ENVIRONMENT

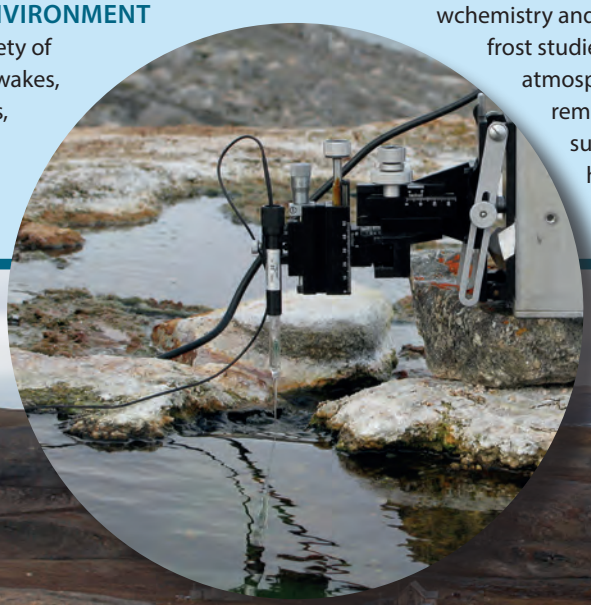
The fauna is dominated by a large variety of birds, including Arctic terns, auks, kittiwakes, gulls, barnacle geese, northern fulmars, Svalbard ptarmigans, and Arctic skuas. Mammals include Svalbard reindeer, Arctic foxes, and a sporadic presence of polar bears, also seals and less frequently whales, are spotted in the fjord. The whole area lies within the Dryas octopetala zone of the high arctic fell field vegetation.

## HISTORY

The Italian presence in Ny Ålesund dates back to the beginning of 20th century Mining activity in Ny-Ålesund lasted until 1963 and during the 1990's the village transformed into a multidisciplinary science settlement. The Arctic Station "Dirigibile italia" was established in 1997.

## GENERAL RESEARCH AND DATABASES

Research programmes currently developed at the station deals with microbial ecology and evolution, soil science, biogeochemistry and energy fluxes; vegetation and permafrost studies; oceanography, marine biomarkers; atmosphere, aerosols, gases and clouds; remote sensing of the environment; sun-earth relations and space weather; human biology and medicine. Basically the activities are focused on long



# CNR ARCTIC STATION "DIRIGIBILE ITALIA"



term monitoring of the essential climate variables but a great support is also provided for short period/seasonal campaigns. Data are collected online and offline and are managed and stored in a database named Italian Arctic Data Center (iadc.cnr.it)

## HUMAN DIMENSION

In Ny-Ålesund up to 10 stations of different nations host researchers from up to 20 different countries. Research is coordinated by the Ny-Ålesund Science Managers Committee (NySMAC) and the Svalbard Science Forum (SSF). Italy is also partner in SIOS consortium.

## ACCESS

Regular flights between Ny-Ålesund and Longyearbyen take place four times per week in summer and twice per week in winter. Ny-Ålesund can be reached by boat from Longyearbyen. The access to the station must be requested booking to through the Research in Svalbard (RIS) web portal.

| CNR Arctic Station "Dirigibile Italia" | |
|---|---|
| Website | Arctic.cnr.it ; iadc.cnr.it |
| Country | Italy |
| Opening year | 1997 |
| Operational period | Year-round |
| Contact (access to station) | info.arctic@cnr.it |
| Geographical coordinates | 78°55′ N, 11°56′ E |
| Altitude of station | 10 m a.s.l. |
| Nearest town/settlement | Longyearbyen (100 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -6.3 °C (-14.6 °C, 4.9 °C) |
| Total annual precipitation (type) | 400 mm (rain, snow) |

Consiglio Nazionale delle Ricerche


## STATION NAME AND OWNER

Ny-Ålesund Research Station – NPI Sverdrup is owned and managed by the Norwegian Polar Institute (NPI).

## LOCATION

NPI Sverdrup is part of Ny-Ålesund Research Station which is located on the northern side of the Brøgger Peninsula at the southern shore of Kongsfjorden, Svalbard, Norway.

Ny-Ålesund Research Station is a Norwegian research and monitoring infrastructure site, hosting a number of national and international institutions' long term research programmes and projects.

## 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 occur.

## HISTORY

Ny-Ålesund was a mining town until the 1960s, when the coal mining activity was shut down. After a few years of inactivity Kings Bay AS was revived as an infrastructure provider, and Ny-Ålesund entered a new phase - as a location dedicated to research and environmental monitoring. NPI Sverdrup provides logistical support (snowmobiles, boats, and equipment), workshops, office facilities, and field storage, while common specialised laboratory space is available through Kings Bay. NPI Sverdrup can provide office space for up to 25 people.

# NY-ÅLESUND RESEARCH STATION – NPI SVERDRUP



## GENERAL RESEARCH AND DATABASES

Research and environmental monitoring activities at Ny-Ålesund Research Station are organised in four flagship programmes focusing on marine, terrestrial, atmospheric, and glaciological research.

The SIOS Data Management System is establishing a virtual data centre offering unified access to the relevant data. Observations from Ny-Ålesund Research Station is a subset of these, and can be accessed from there.

## HUMAN DIMENSION

Ny-Ålesund Research Station is only accessible for researchers. During the peak season (June-August), 150-180 persons stay at the station, but the number typically drops to 40-60 people in autumn and winter.

## ACCESS

Longyearbyen can be reached by commercial aircrafts. From there an air shuttle service normally twice a week connects Longyearbyen with Ny-Ålesund.

| Ny-Ålesund Research Station – NPI Sverdrup | |
|---|---|
| Website | http://sverdrup.npolar.no |
| Country | Norway (Svalbard/Norway) |
| Opening year | 1968 |
| Operational period | Year-round |
| Contact (access to station) | headnpi.nya@npolar.no |
| Geographical coordinates | 78°55′N, 11°56′E |
| Altitude of station | 5 m a.s.l. |
| Nearest town/settlement | Longyearbyen (110 km)/ Ny-Ålesund (0 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -3.1 °C (-8.5 °C, 6.0 °C) |
| Total annual precipitation (type) | 550 mm (rain, snow) |


# UK ARCTIC RESEARCH STATION

## STATION NAME AND OWNER

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

## LOCATION

Ny-Ålesund 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$^2$ 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 occasional polar bear. The local fjord is home to ringed, bearded and common seals, walrus, and beluga.

## HISTORY

The UK has maintained a research station at Ny-Ålesund continuously since 1972. The NERC Arctic Research Station opened in1991.

## 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.

4

| UK Arctic Research Station | |
|---|---|
| Website | www.arctic.ac.uk |
| Country | Svalbard/UK |
| Opening year | 1991 |
| Operational period | March-September |
| Contact (access to station) | nc@bas.ac.uk |
| Geographical coordinates | 78°55′N, 11°56′E |
| Altitude of station | 2 m |
| Nearest town/settlement | Longyearbyen (110 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -3.1 °C (-8.5 °C, 6.0 °C) |
| Total annual precipitation (type) | 550 mm (rain, snow) |

## ACCESS

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.

NATURAL ENVIRONMENT RESEARCH COUNCIL

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL


# 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. Several stations have independent terrestrial research programmes and the Netherlands' Arctic Station is the smallest of all.

## BIODIVERSITY AND NATURAL ENVIRONMENT

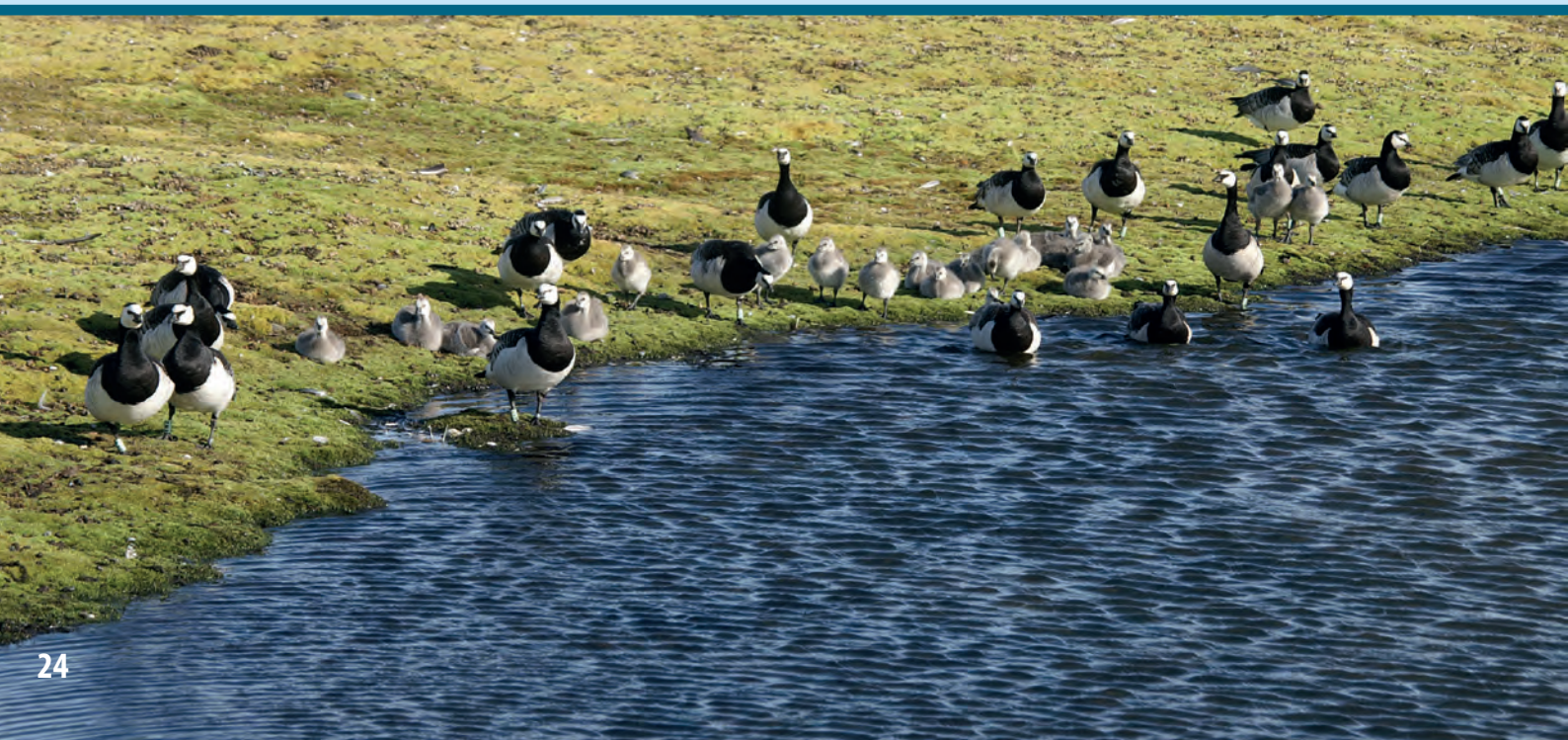
Kongsfjorden is a beautiful high arctic environment with several glaciers terminating in the fjord. The raised beach terraces are sparsely vegetated with dense moss cover around small tundra lakes and below bird cliffs. Locally there are clear traces of former human activity by trappers and from coal 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

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 180 people – all temporal residents. Tourists are discouraged to stay overnight.

## 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 exclosures 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. 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.

| Netherlands' Arctic Station | |
|---|---|
| Website | www.arcticstation.nl |
| Country | Svalbard/The Netherlands |
| Opening year | 1995 |
| Operational period | June-August |
| Contact (access to station) | m.j.j.e.loonen@rug.nl |
| Geographical coordinates | 78°55' N, 11°56' E |
| Altitude of station | 5 m a.s.l. |
| Nearest town/settlement | Longyearbyen (110 km)/ Ny-Ålesund (0 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) 2018/2019: | -6.3 °C (-14.6 °C, 4.9 °C) -2.8 °C (-11.2 °C, 7.4 °C) |
| Total annual precipitation (type) 2018/2019: | 385 mm (rain, snow) 530 mm |


# AMUPS "PETUNIABUKTA"

## STATION NAME AND OWNER

Adam Mickiewicz University Polar Station "Petuniabukta" (AMUPS) is owned by Adam Mickiewicz University in Poznan, Poland.

## LOCATION

The station is located on the western coast of Petunia Bay (Norwegian: Petuniabukta), north-easternmost part of Isfjorden, central Spitsbergen west coast largest fjord, built at the foot of Pyramiden mountain. Central part of Spitsbergen island (Svalbard) enraptures its unique character of the inner fjord landscape, with a variety of morphogenetic environments and biota, from the coastline to surrounding mountains, reaching 1000 m of altitude, diversified ice masses in extensive valleys and flowing down from ice plateau to the sea.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The surrounding environment is characterised by high latitude conditions (>78°N), and due to the distance from the west coast of Spitsbergen, the oceanic influences is distinctly smaller than elsewhere on Svalbard. High Arctic climate is then quasicontinental, perceptibly warmer and dryer in summer. It is also an area that is less glaciated compared to other areas. Except glacial and past-glacial features, vast areas are exhibiting periglacial influences in the zone of continuous permafrost, thawing to the depth of 1.5-2.0 m. High Arctic tundra characteristic plants are dwarf shrubs and mosses. In the vicinity of the station, it is possible to meet reindeers, Arctic foxes, various birds, but also more frequently polar bears. Therefore, safety training and carrying the riffle is mandatory.

## HISTORY

Adam Mickiewicz University staff has studied the area since 1984, using the old hut "Skottehytta" as a base until 2009. In 2011, a temporary station was built nearby. It was moved to the western coast of the bay and expanded to the current size in 2015.

## GENERAL RESEARCH AND DATABASES

Scientific investigations at the station cover monitoring of both biotic and abiotic compartments of the natural environment. Meteorological surveys are based on stationary observations at the station, as well as automatic weather stations around the



bay. Sites of permafrost studies, comprising ground temperature measurements are established and during the summer, glaciological, hydrological, geomorphological, geological, geochemical, botanical observations are performed. Data are acquired according to standards of the Polish Governmental Integrated Monitoring system.

## HUMAN DIMENSION

In the vicinity of the station, remnants of the Russian coal mine, Pyramiden – abandoned in 1998, are visible. Nowadays Pyramiden (about 20 people) is operated mostly for tourists. In Pyramiden there is a helipad, hotel and bar.

## ACCESS

The most convenient way to access Longyearbyen is by regular flights from Norway. From Longyearbyen you can get to the station in summer by daily tourist ships (one way trip 4-5 hours) to Pyramiden. To get to the station from the pier in Pyramiden (4 km from the station) takes up to one hour walking or faster by zodiac. Zodiac boats are used for transportation within the fjord. On land, only walking is allowed.

| Adam Mickiewicz University Polar Station "Petuniabukta" | |
|---|---|
| Website | www.polar.amu.edu.pl |
| Country | Svalbard/Poland |
| Opening year | 2011 |
| Operational period | July-September |
| Contact (access to station) | svalbard@amu.edu.pl |
| Geographical coordinates | 78˚41′ N, 16˚27′ E |
| Altitude of station | 2 m a.s.l. |
| Nearest town/settlement | Longyearbyen (60 km)/ Pyramiden (4 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -6.0 °C (-12.0 °C, 7.5 °C) |
| Total annual precipitation (type) | 150-200 mm (snow, rain) |


# CZECH ARCTIC RESEARCH STATION

## STATION NAME AND OWNER

The Czech Arctic Research Station of Josef Svoboda is owned by the University of South Bohemia in the Czech Republic.

## LOCATION

The Czech research facilities in Svalbard consist of a research base in Longyearbyen called "Payer's house" and a field camp in the central part of Svalbard in Billefjorden (called Nostoc houses). Field activities are mainly taking place in Petuniabukta in the northernmost part of Billefjorden.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Czech Arctic Research Station of Josef Svoboda is situated in the High Arctic. The mean annual temperature is -6 °C, and the mean annual precipitation is 150-200 mm. Petuniabukta, where the field camp is located, is in the central part of the Svalbard archipelago, which is more continental and drier than the western part. There is a steep elevation gradient in the area (the highest mountains reach 1000 m a.s.l.). Various habitats can be accessed within walking distance in the study area, i.e. sandy beaches, waterlogged tundra, seepages, dry tundra, bird cliffs, lakes, snowmelt and glacial streams, glaciers, etc. Rich wildlife, incl. gulls, kittiwakes, terns, barnacle geese, eiders, reindeer, Arctic foxes, and polar bears are present as well.

## HISTORY

The station in Longyearbyen was established in 2013. Accommodation is available for up to 16 people, and the station further includes laboratories for standard laboratory work. Field camp in Petuniabukta is used during the summer season since 2008, with new facilities opened in 2015. The maximum capacity is 15 persons.

## GENERAL RESEARCH AND DATABASES

Research mainly focuses on biodiversity and ecosystem dynamics. Relatively long research records on plant ecology, phy-



cology, parasitology, and bioclimatology exist. Today, studies on geomorphology and hydrology are developing in the area. Regular meteorological measurements were established in 2007.

## HUMAN DIMENSION

The station is located in Longyearbyen with a predominantly Norwegian population of c. 2100 inhabitants. Historically, the population was employed in fishery, hunting, and whaling, later in the coal mining industry. Today, tourism is becoming the main business. The field camp is near the old mining town of Pyramiden, an area with strong Russian influence.

## ACCESS

There are regular commercial flights to Longyearbyen (3 hours from Oslo). To reach the field camp, local cruising companies organise tourist trips to Pyramiden approximately 5 km from the field camp. It usually takes 5-6 hours to reach Pyramiden from Longyearbyen. There is also the possibility of renting a boat in Longyearbyen from a private company. Reaching the station in a rubber boat requires good weather conditions and calm sea. Distance from Longyearbyen is c. 60 km by boat.

| Czech Arctic Research Station of Josef Svoboda | |
|---|---|
| Website | https://www.prf.jcu.cz/en/cpe/josef-svoboda-station.html |
| Country | Svalbard/Czech Republic |
| Opening year | 2007 |
| Operational period | Year-round (Longyearbyen station) |
| Contact (access to station) | University of South Bohemia, czechpolar@gmail.com |
| Geographical coordinates | 78°13′ N, 15°40′ E |
| Altitude of station | 2 m a.s.l. |
| Nearest town/settlement | Longyearbyen (0 km; field camp: 60 km)/ Pyramiden (field camp: 5 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -6 °C (-12 °C, 7.5 °C) |
| Total annual precipitation (type) | 150-200 mm (snow, rain) |

CENTRE FOR POLAR ECOLOGY
CZECH REPUBLIC

# HORNSUND


## STATION NAME AND OWNER

The Polish Polar Station Hornsund is operated by the Institute of Geophysics, Polish Academy of Sciences.

## LOCATION

The station is located on the shore of the Hornsund fjord in the southern part of Spitsbergen, the largest island of the Svalbard archipelago. The station lies within the boundaries of the South Spitsbergen National Park. Its location makes it the northernmost year-round Polish research infrastructure.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The landscape of the South Spitsbergen National Park is dominated by mountains and glaciers. A narrow band of plains and raised marine terraces covered with tundra vegetation (including various species of lichens, mosses, flowers, and shrubs) stretches along the shores of the fjord. Reindeers, Arctic foxes, polar bears and many bird species can be observed in the vicinity of the station.

## HISTORY

The Polish Polar Station Hornsund was established in 1957 as a winter base during the International Geophysical Year 1957/1958. Over the next few years, it served as a base for summer research expeditions. The station was thoroughly renovated in 1978 and has been in year-round operation since then.

## GENERAL RESEARCH AND DATABASES

The research at the Polish Polar Station Hornsund focuses on climate, glaciology, monitoring of geophysical fields (seismology, geomagnetism, atmospheric electricity), permafrost and geomorphic processes. The main study objectives are related to the



evolution of the high arctic environment with respect to climate change. Marine and terrestrial ecosystems are systematically studied. Existing databases include meteorological and glaciological records, geophysical data, as well as marine and terrestrial biological parameters.

## HUMAN DIMENSION

There are no settlements located in the near vicinity of the station, which in general is only accessible for research purposes. Longyearbyen, the administrative center and the largest settlement of Svalbard, is situated approximately 140 km north of the station.

## ACCESS

The Station can be reached from Longyearbyen by boat (summer season), snowmobiles (spring season) or by helicopter (year-round). There are no roads between the station and other Svalbard's settlements.

| Polish Polar Station Hornsund | |
|---|---|
| Website | www.hornsund.pl<br>www.hornsund.igf.edu.pl |
| Country | Svalbard/Poland |
| Opening year | 1957 |
| Operational period | Year-round |
| Contact (access to station) | hornsund@igf.edu.pl |
| Geographical coordinates | 77°00′ N, 15°33′ E |
| Altitude of station | 9 m a.s.l. |
| Nearest town/settlement | Longyearbyen (140 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -4.2 °C (-10.7 °C, 4.4 °C) |
| Total annual precipitation (type) | 453 mm (snow, rain) |

HORNSUND
POLISH POLAR STATION


# FINSE

## STATION NAME AND OWNER

Finse Alpine Research Centre is owned by the Faculty of Mathematics and Natural Sciences of the University of Oslo, Norway. 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 northwestern corner of the Hardangervidda mountain plateau in south central Norway. 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 Hallingskarvet 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, Eurasian pygmy 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

The station has been in operation since 1972 and consists of a research unit that contains 14 beds, kitchen, labs, 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 mass balance data is available from the Hardanger Jøkulen glacier. See descriptions of current research projects at www.finse.uio.no/research/projects.

## HUMAN DIMENSION

The area is much used for recreation including skiing, kite skiing, 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 normally includes most of May and June.

| Finse Alpine Research Centre | |
|---|---|
| Website | www.finse.uio.no |
| Country | Norway |
| Opening year | 1965 |
| Operational period | June-September (year-round) |
| Contact (access to station) | torbjorn.ergon@bio.uio.no<br>e.a.leslie@bio.uio.no |
| Geographical coordinates | 60°36′ N, 07°30′ E |
| Altitude of station | 1215 m a.s.l. |
| Nearest town/settlement | Finse (2 km) |
| Climate zone | Low-Alpine |
| Mean temperature: Annual (Feb., Jul.) | 1.5 °C (-6.9 °C, 10.5 °C) |
| Total annual precipitation (type) | 1092 mm (snow, rain) |

UiO : University of Oslo


# NIBIO SVANHOVD

## STATION NAME AND OWNER

The Nibio Svanhovd Research Station belongs to the Norwegian Institute for Agricultural and Environmental Research (Nibio).

## LOCATION

Nibio Svanhovd is located in the Pasvik area in NE Norway 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. Nibio Svanhovd is situated in Svanvik, a small village in the Pasvik Valley.

## 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

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). In 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.

## GENERAL RESEARCH AND DATABASES

The region offers 'round-the-corner ecological laboratories' for several important research areas: Pristine nature in subarctic ecosystems, changes in land use (farming and abandoned land), climatic and environmental gradients, etc.



Nibio 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 are 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 Bjørnevatn a few km away and for forestry. The area has been inhabited by Sami people for several centuries.

## ACCESS

It is easy to come to Svanhovd, with daily flights from Oslo Gardermoen Airport to Kirkenes Airport (Høybukt-moen), and 40 km by car to Svanhovd.

| Nibio Svanhovd Research Station | |
|---|---|
| Website | www.nibio.no/svanhovd |
| Country | Norway |
| Opening year | 1934 |
| Operational period | Year-round |
| Contact (access to station) | Snorre.Hagen@nibio.no |
| Geographical coordinates | 69°27′ N, 30°03′ E |
| Altitude of station | 35 m a.s.l. |
| Nearest town/settlement | Kirkenes (40 km)/ Svanik (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -0.6 °C (-13 °C, 14 °C) |
| Total annual precipitation (type) | 435 mm (snow, rain) |


# SVARTBERGET

## STATION NAME AND OWNER

Svartberget Reseach Station belongs to the Faculty of Forest Sciences, Swedish University of Agricultural Sciences (SLU).

## LOCATION

The research station is located in the northwestern part of Sweden in the province of Västerbotten. The station is surrounded by a 2500 ha research area including forests, mires, lakes, and waterways. Since 1923, the area has been used for research only. Mixed coniferous forest dominates the experimental site and the bedrock consists almost entirely of gneiss. The dominating type of soil is moraine of various thickness. SLU and the Faculty of Forest Sciences have the mandate from the Government of Sweden to take national responsibility for forestry related research. To do this, SLU has four field stations, including Svartberget, all being manned throughout the year. The research station at Svartberget is located near Vindeln, 60 km west of Umeå, close to the Vindel River, which is a protected national river, free of hydropower dams.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The climate is characterized as cold temperate and humid with persistent snow cover during the winter season. Moose are frequently observed and brown bears live in the area. The region is a winter grazing area for domestic reindeer.

## HISTORY

The research station was established in 1923. The current field station was built in 1979 and offers laboratory facilities, offices, internet, power tool workshops and equipment for instrument calibration.



## GENERAL RESEARCH AND DATABASES

The field research infrastructure hosts a number of closely integrated, long-term field research programs that individually offer state-of-the-art experimental platforms, empirical data, and field opportunities.

## HUMAN DIMENSION

The town Vindeln, 6 km from the station, has approximately 2500 inhabitants and offers grocery stores, gas stations, a hardware shop, a drugstore, and a district health care center. There are several small villages along the Vindel River (450 km). Forestry and manufacturing forest industry are the main employers in the region.

## ACCESS

The research station is one hour's drive from the Umeå Airport and the two universities of Umeå: SLU and Umeå University. The research facilities are located 6 km north of the town Vindeln and can be reached by road throughout the year. Vindeln can be reached by bus or train, and the field station can at times provide transportation between Vindeln and the station.

| Svartberget Research Station | |
|---|---|
| Website | www.slu.se |
| Country | Sweden |
| Opening year | 1923 |
| Operational period | Year-round |
| Contact (access to station) | Charlotta.Erefur@slu.se |
| Geographical coordinates | 64°14′ N, 19°45′ E |
| Altitude of station | 230 m a.s.l. |
| Nearest town/settlement | Vindeln (6 km) |
| Climate zone | Boreal |
| Mean temperature: Annual (Feb., Jul.) | 1981-2010: 1.8 °C (-8.9 °C, 14.6 °C) |
| Total annual precipitation (type) | 1981-2010: 614 mm (rain, snow) |

SLU

SITES
Swedish Infrastructure for Ecosystem Science


# TARFALA

## STATION NAME AND OWNER

Tarfala Research Station is run by the Department of Physical Geography, 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 biogeochemical studies. The Storglaciären is one of the best studied glaciers in the World. The long mass balance record shows how the glacier responds to seasonal climate variability. The retreat of other local glaciers since the early 1900s is also well documented. Permafrost in the catchment is patchy in the lower parts of the valleys but is continuous at higher altitudes. The vegetation ranges from high alpine flora to mountain birch forest at the tree line. Wildlife in the area includes reindeer, moose, brown bear, wolverine, fox, hare, stoat, lemmings, and ptarmigan.

## HISTORY

The measurements of mass balance on Storglaciären started in the spring of 1946. At that time the scientists used a simple tourist hut as basecamp. 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 subarctic high-alpine setting.

## GENERAL RESEARCH AND DATABASES

Research at Tarfala Research Station focuses on the coupling between climate and glaciers, glacier dynamics, glacial hydrology, geomorphology, mountain meteorology, permafrost, vegetation development, and ecosystem changes, as well as biogeochemistry in ice, snow, water and soil. Tarfala Research Station has its



own program for monitoring climate effects on the subarctic environment including glacier mass balance, mountain meteorology, glacial hydrology, snow-chemistry, permafrost, and ecosystem change. 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. 7 km from the Kebnekaise tourist station from where hiking and skiing to the station is possible. Local transport can be arranged from the nearest village, Nikkaluokta (25 km) 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.

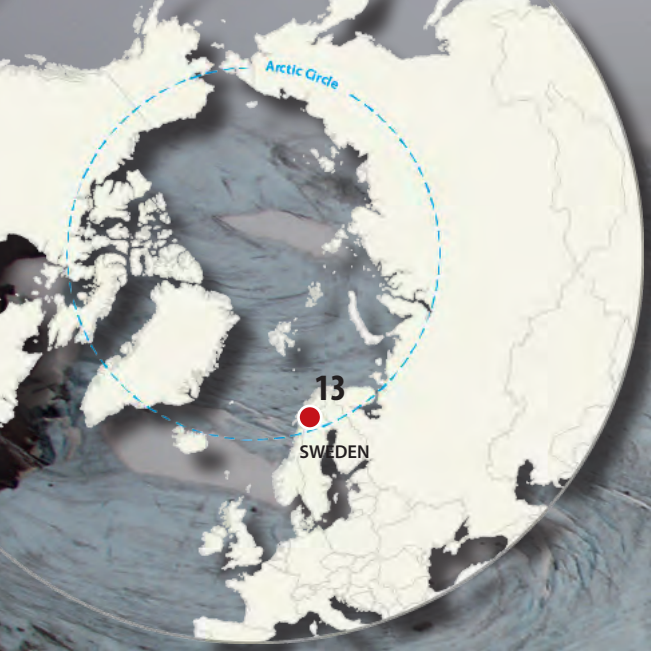
| Tarfala Research Station | |
|---|---|
| Website | www.tarfala.su.se |
| Country | Sweden |
| Opening year | 1946 |
| Operational period | March-April, June-September |
| Contact (access to station) | tarfala@natgeo.su.se |
| Geographical coordinates | 67°55′N, 18°35′E |
| Altitude of station | 1130 m a.s.l. |
| Nearest town/settlement | Nikkaluokta (27 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -3.3 °C (-10.9 °C, 7.4 °C) |
| Total annual precipitation (type) | 1000 mm (rain, snow) |

TARFALA RESEARCH STATION

Stockholm University

SITES
Swedish Infrastructure for Ecosystem Science

# 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$^2$. 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 tree line. The area is sparsely populated and land use is minimal being dominated by reindeer husbandry, hunting, fishing, tourism, and research.

## HISTORY

The Abisko Scientific Research Station was established in 1913. The station can host almost 100 visitors. 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.

## GENERAL RESEARCH AND DATABASES

Research focuses on 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.

## 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). During the tourist season there are bus connections from Kiruna airport to Abisko.

| Abisko Scientific Research Station | |
|---|---|
| Website | www.polar.se/abisko |
| Country | Sweden |
| Opening year | 1913 |
| Operational period | Year-round |
| Contact (access to station) | magnus.augner@polar.se or ans@ans.polar.se |
| Geographical coordinates | 68°21′N, 18°49′E |
| Altitude of station | 385 m a.s.l. |
| Nearest town/settlement | Abisko (1 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -0.6 °C (-11 °C; 11 °C) |
| Total annual precipitation (type) | 310 mm (snow, hail, rain) |

ABISKO NATURVETENSKAPLIGA STATION ANS

POLARFORSKNINGS SEKRETARIATET
SWEDISH POLAR RESEARCH SECRETARIAT


# 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 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. 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

The station with its four buildings was officially opened in 1964. Ars Bioarctica bioart laboratory is affiliated to the station (http://bioart-society.fi/ars-bioarctica).

## 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. 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 Kilpisjärv. 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. There is an 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.

| Kilpisjärvi Biological Station | |
|---|---|
| Website | www.helsinki.fi/kilpis |
| Country | Finland |
| Opening year | 1964 |
| Operational period | Year-round |
| Contact (access to station) | bio-kilpis@helsinki.fi |
| Geographical coordinates | 69°03′ N, 20°50′ E |
| Altitude of station | 480 m a.s.l. |
| Nearest town/settlement | Skibotn, Norway (40 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -2.2 °C (-13 °C, 11 °C) |
| Total annual precipitation (type) | 447 mm (snow, rain) |

KILPISJÄRVI BIOLOGICAL STATION
FINNISH LAPLAND

UNIVERSITY OF HELSINKI
FACULTY OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

# PALLAS-SODANKYLÄ




## STATION NAME AND OWNER

The Pallas-Sodankylä Research Station consist of a clean air research station in Pallas and the Arctic Research Centre in Sodankylä. The distance between the two sites is 125 km. Both of these units are hosted and owned by the Finnish Meteorological Institute.

## LOCATION

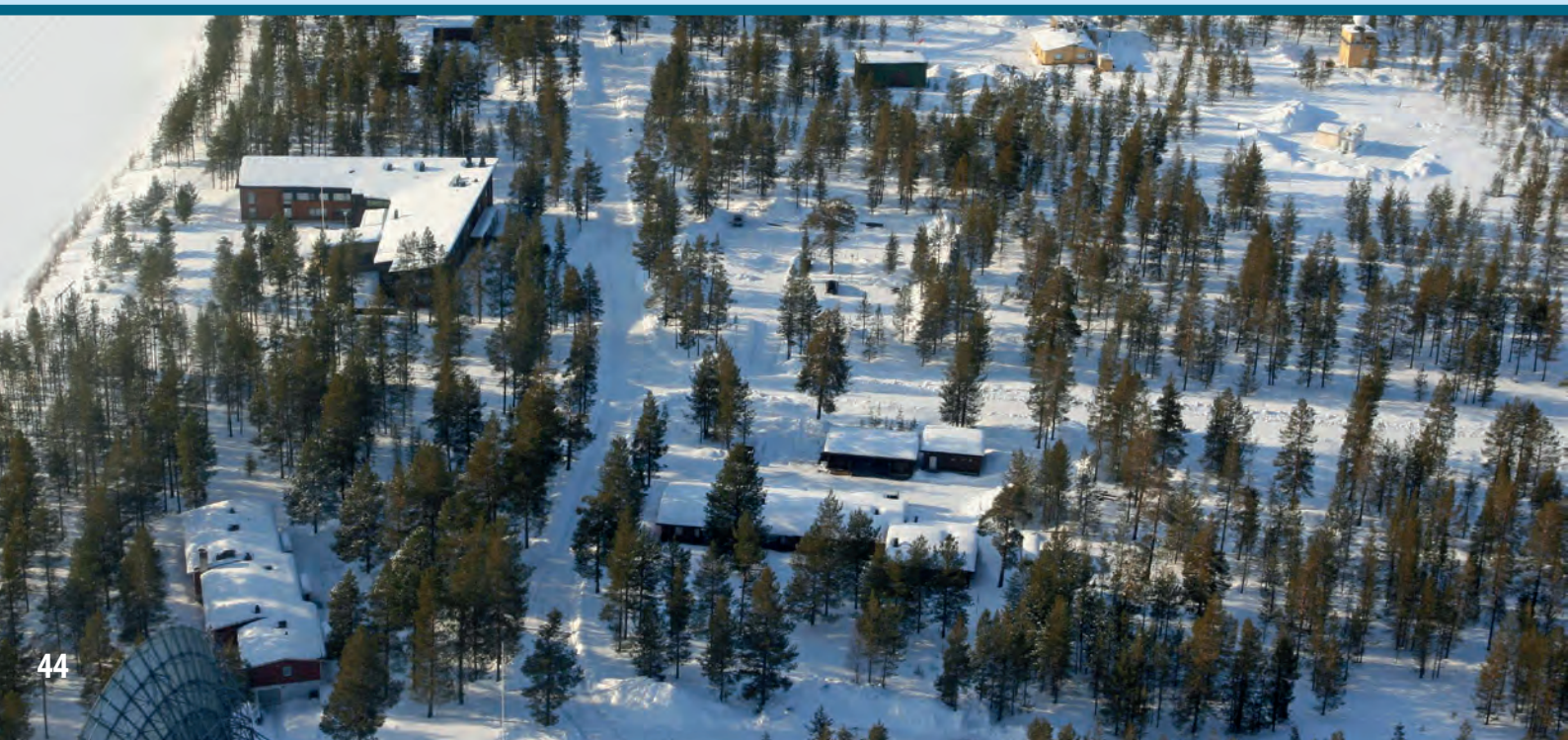
Pallas is located in western Lapland (67°58′ N, 24°07′ E) in Pallas fell. The station is part of a national park with limited access to the public. The Sodankylä facility (67°22′ N, 26°39′ E) is located in central Lapland within the boreal forest region. The station is not part of any national park, but the area (c. 2 km$^2$) is dedicated to atmospheric and geological research, and therefore has limited public access. The area is surrounded by forest and swamps owned by the Finnish government.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area around Pallas Station is boreal forest. Willow grouse, rabbit, and reindeer are the most typical animals. Sodankylä Station is located at a river bank in the middle of a boreal forest. Black grouse, rabbit, and reindeer are the most typical animals.

## HISTORY

The Finnish Global Atmosphere Watch (GAW) station Pallas-Sodankylä has been operating since 1994. The Sodankylä Station was established in 1949, but continuous homogenized synoptic weather records have been made since 1908.





## GENERAL RESEARCH AND DATABASES

There are five measuring stations in the Pallas area, i.e. an automatic weather station (AWS) in Laukukero (68°04′ N, 24°02′ E, 765 m a.s.l.) and four stations measuring air composition. The Sodankylä facility hosts programs exploring upper air chemistry and physics, atmospheric column measurements, snow/soil hydrology, biosphere-atmosphere interaction, and satellite calibration-validation studies.

## HUMAN DIMENSION

Nearest village is Sodankylä (7 km). Sodankylä has c. 6000 inhabitants (8500 in the municipality). Main employers are the military, mining industry, smaller industry, agriculture, reindeer farmers, and research institutes.

## ACCESS

Seven km from the research station is the bus station in Sodankylä. The distance to the nearest airport and railway station in Rovaniemi is 130 km. A helicopter station is located 4 km from the station. Travel time from the airport is typically less than 2 hours by car/bus.

| Pallas-Sodankylä Research Station | |
|---|---|
| Website | http://fmiarc.fmi.fi |
| Country | Finland |
| Opening year | 1949 |
| Operational period | Year-round |
| Contact (access to station) | riitta.aikio@fmi.fi |
| Geographical coordinates | Pallas: 67°58′ N, 24°07′ E; Sodankylä: 67°22′ N, 26°39′ E |
| Altitude of station | Sodankylä station at 179 m a.s.l., Sammaltunturi station at 565 m a.s.l. |
| Nearest town/settlement | Sodankylä (7 km) |
| Climate zone | Subarctic (Northern-Boreal) |
| Mean temperature: Annual (Feb., Jul.) | - 0.4 °C (-12.7 °C, 14.5 °C) |
| Total annual precipitation (type) | 527 mm (rain, snow) |


# KOLARI

## STATION NAME AND OWNER

The Kolari Research Unit belongs to the Natural Resources Institute Finland.

## LOCATION

The Kolari Reseach Unit is located in north-west 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 away, 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

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.

## 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.

| Kolari Research Unit | |
|---|---|
| Website | www.luke.fi/en |
| Country | Finland |
| Opening year | 1964 |
| Operational period | Year-round |
| Contact (access to station) | mikko.jokinen@luke.fi |
| Geographical coordinates | 67°21′N, 23°49′E |
| Altitude of station | 221 m a.s.l. |
| Nearest town/settlement | Kolari (4 km) |
| Climate zone | Subarctic (Northern-Boreal) |
| Mean temperature: Annual (Feb., Jul.) | 0.8 °C (-18.4 °C, 15.4 °C) |
| Total annual precipitation (type) | 550 mm (rain, snow, hail) |

Luke
NATURAL RESOURCES INSTITUTE FINLAND


# HYYTIÄLÄ

## STATION NAME AND OWNER

The Hyytiälä Forest Research Station is managed by University of Helsinki, Department of Forest Sciences and the SMEAR II station (Station for Measuring Ecosystem Atmosphere Relations) by Department of Physics.

## LOCATION

The area is a boreal mixed-coniferous forest with several small lakes and wetlands. The overall altitude is about 180 m a.s.l. Most forests in the vicinity are state owned and managed with normal forestry practices in cooperation with the station. Several protected mire ecosystems are located in Siikaneva, 10 km southwest of the station. The nearest larger city, Tampere (c. 200 000 inhabitants), is located about 60 km from the research station.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in a rather homogenous Scots pine stand on a flat terrain, 220 km northwest of Helsinki. The managed stand was established in 1962 by sowing, after the area had first been treated with prescribed burning and light soil preparation. Sightings of moose are frequent, but also wolves and bears have recently been encountered in the region.

## HISTORY

The research station was established in 1910 as a practice area for forestry students. In 1995, the SMEAR II station started continuous measurements of ecosystem-atmosphere interactions.

## GENERAL RESEARCH AND DATABASES

Multidisciplinary research on forests, peat lands and atmosphere is the core of research at SMEAR II. A central topic is the role of forests and peat lands in relation to climate change. Additionally, close to 250 long-term experimental sites representing different tree species compositions, developmental classes, site conditions, and management histories are located nearby. The SMEAR-station participates in many research networks and infrastructures, including the European Integrated Carbon Observation System (ICOS), the European Long-Term Ecosystem Research Network (LTER) and EXPEER/AnaEE on experimental ecosystem research. All data are stored in an open, searchable database.



## HUMAN DIMENSION

The surroundings are sparsely populated forest and agricultural regions. The nearest local village is Juupajoki, about 10 km away, with c. 2000 inhabitants. The forests in the nearest region are in intensive forestry use. Juupajoki also has some medium sized industry including two sawmills.

## ACCESS

The station can be accessed via a small paved road. The closest towns are Juupajoki (10 km), Orivesi (22 km), and Ruovesi (25 km). Coaches travelling along the national highway, Route 66, have a stop at the turn-off to Hyytiälä (Hyytiälä th), 1.5 km from the research station. There are daily coach connections to Hyytiälä directly from both Helsinki and Tampere. The nearest airport is in Tampere, about an hour's drive from the station. The closest railway stations are in Juupajoki (10 km) and Orivesi (25 km).

| Hyytiälä Forest Research Station | |
|---|---|
| Website | www.atm.helsinki.fi/SMEAR/index.php/smear-ii |
| Country | Finland |
| Opening year | 1995 |
| Operational period | Year-round |
| Contact (access to station) | janne.levula@helsinki.fi |
| Geographical coordinates | 61°51′N, 24°17′E |
| Altitude of station | 180 m a.s.l |
| Nearest town/settlement | Juupajoki (10 km) |
| Climate zone | Boreal |
| Mean temperature: Annual (Feb., Jul.) | 3.5 °C (-7.7 °C, 16 °C) |
| Total annual precipitation (type) | 697 mm (rain, snow) |

University of Helsinki


# KAINUU

## STATION NAME AND OWNER

Kainuu Fisheries Research Station belongs to the Natural Resources Institute Finland.

## LOCATION

The Kainuu Fisheries Research Station is located c. 320 km south of the Arctic Circle, 135 km east of Oulu, 55 km west of Kajaani and c. 120 km west from the Russian border. The station lies in the commune of Paltamo, Finland and is situated on the bank of the River Varisjoki which flows into the Lake Oulujärvi.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The natural landscape of Kainuu is exceptionally diverse consisting of fells, forests, water areas, and wetlands. Lake Oulujärvi (surface area 928 km$^2$) is Finland's fourth largest lake. The island of Manamansalo is situated in the center of the lake and is a national recreational area. The nature of the area attracts various fauna including predators like lynx, bears, and wolfs. Fish species present in the area are (in alphabetical order) bleak, bream, brown trout, bullhead, burbot, crucian carp, dace, eel, ide, minnow, nine-spined stickleback, northern pike, perch, pike-perch, roach, ruff, salmon, smelt, stone loach, vendace, and whitefish. Continental and oceanic climate meet in Kainuu, which usually means dry, warm summers and cold, snowy winters. Ice cover season lasts from early November until mid-May.

## HISTORY

The history of the Kainuu Research Station started when the aquaculture activities was initiated in 1935. The main parts of the present station were built in 1994. Since 2002 the station was equipped to focus on experimental fish and aquatic ecology research.

## GENERAL RESEARCH AND DATABASES

The station provides excellent opportunities to carry out ecological, environmental or management related research in laboratory and on a semi-natural scale. The research facilities include both indoor and outdoor setups of streams, indoor pools, outdoor pools, and combined stream pool systems with video arrays and PIT-telemetry devices for observing and monitoring purposes.



Water (max 750 l/s) for the streams and pools is taken from Lake Kivesjärvi (surface area 27 km$^2$, mean water pH 6.7, oxygen 9.2 mg/l, total P 17.0 µg/l, and conductivity 3.5 mS/m).

## HUMAN DIMENSION

The municipality of Paltamo consists of different villages. The closest village with stores and services is called Paltamo and lies 16 km from the research station. There are about 3500 inhabitants in Paltamo and c. 80 000 in the whole Kainuu area. The main livelihoods are information and communication technologies together with electronics and businesses focusing on natural resources and tourism.

## ACCESS

The Kainuu Research Station can be reached by car, bus, or train to Paltamo (16 km), or by plane to Kajaani (62 km) or Oulu (139 km) year-round.

| Kainuu Fisheries Research Station | |
|---|---|
| Website | www.kfrs.fi |
| Country | Finland |
| Opening year | 1935 |
| Operational period | Year-round |
| Contact (access to station) | pekka.hyvarinen@rktl.fi<br>pekkak.korhonen@rktl.fi |
| Geographical coordinates | 64°24′ N, 27°30′ E |
| Altitude of station | 135 m a.s.l. |
| Nearest town/settlement | Kajaani (55 km)/<br>Paltamo (16 km) |
| Climate zone | Middle boreal |
| Mean temperature: Annual (Feb., Jul.) | 1.5 °C (-17.0 °C, 15 °C) |
| Total annual precipitation (type) | 625 mm (rain, snow) |

Luke
NATURAL RESOURCES INSTITUTE FINLAND


# 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, 167 m a.s.l.). The station is located 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

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 multidisciplinary research station, Oulanka is open to almost all kinds of research activities.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Oulanka National Park is a northern biodiversity hotspot, 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 focused 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 × 90 km) set of high-resolution aerial photographs covering three different areas, i.e. the early 1950's, the early 1980's, and c. 2005.

## HUMAN DIMENSION

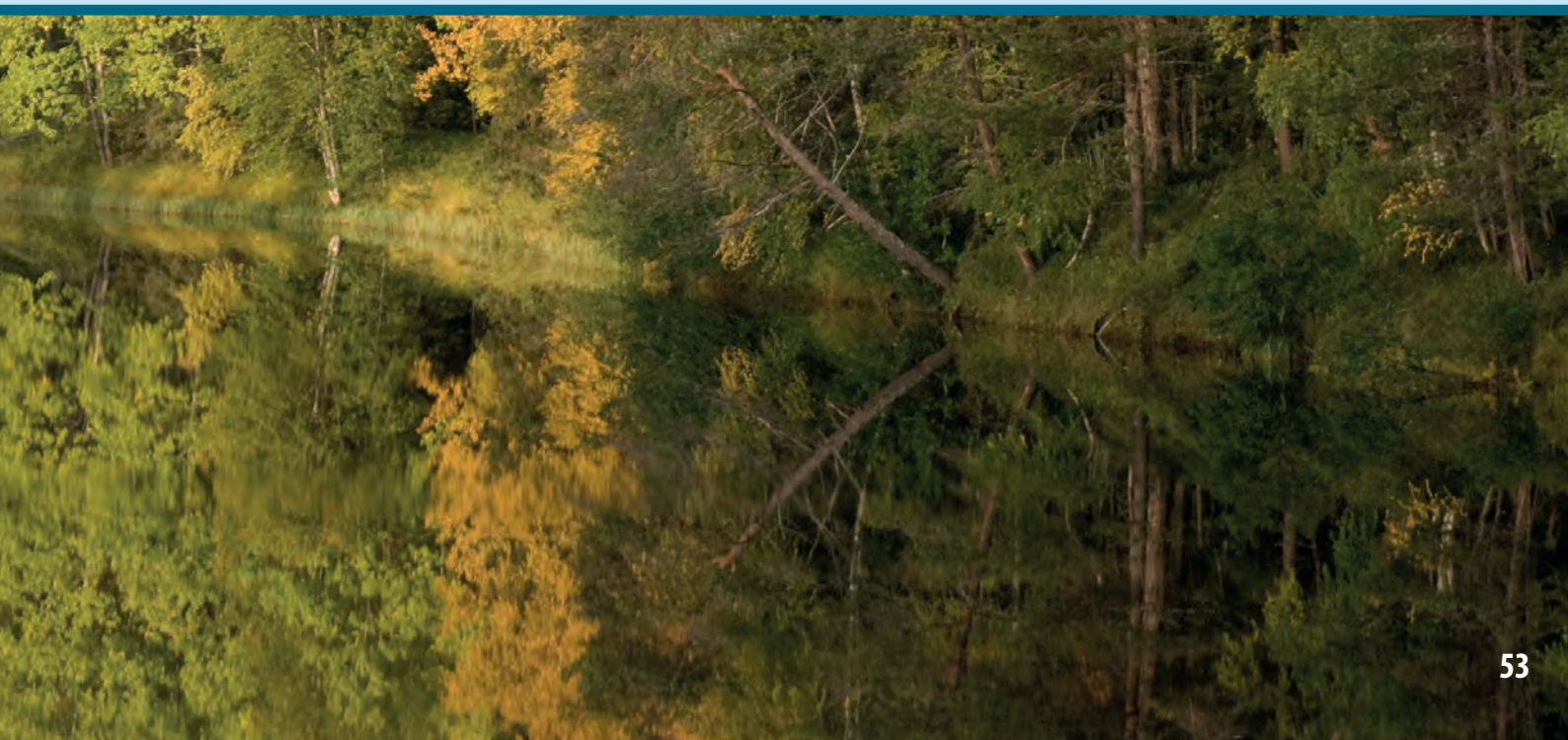
The nearest village with stores and services is 13 km away, while the ski centre of Ruka is 30 km away. Outside the villages and towns, the area is sparsely populated, but tourism is an important activity with associated impacts on nature. In addition to tourism, forestry, and mining are the other major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

| Oulanka Research Station | |
|---|---|
| Website | www.oulu.fi/oulankaresearchstation |
| Country | Finland |
| Opening year | 1966 |
| Operational period | Year-round |
| Contact (access to station) | oulanka@oulu.fi |
| Geographical coordinates | 66°22′ N, 29°19′ E |
| Altitude of station | 165 m a.s.l. |
| Nearest town/settlement | Kuusamo (55 km) |
| Climate zone | Subarctic (Boreal) |
| Mean temperature: Annual (Feb., Jul.) | -0.4 °C (-14 °C, 14.9 °C) |
| Total annual precipitation (type) | 540 mm (rain, snow) |

Oulangan tutkimusasema
Oulun yliopisto
Oulanka Research Station
University of Oulu




# VÄRRIÖ

## STATION NAME AND OWNER

Värriö Subarctic Research Station is managed by University of Helsinki, Department of Physics.

## LOCATION

The area is a subarctic pine forest with several mountains and ridges reaching 500–600 m a.s.l. The station is located in the Värriö Strict Nature Reserve, and thus access without permission is forbidden. Small lakes, wetlands, and rivers are located around the station, which lies on the south facing slope of a small hill. Nearest population centers and industry are 100 km away.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in a nature reserve, and thus the natural state of the environment in the region is protected. The alpine tree line (*Pinus sylvestris*, *Betula pubescens subsp. czerepanovii*, and *Betula nana*) lies at about 470 m a.s.l. Below it, old growth pine forests with some open mires and spruce swamps are the main vegetation types. Open dry tundra heath lies above the tree line. The climate is sub-continental with an annual mean air temperature of -0.5°C and an annual precipitation of 600 mm. There are several rare northern and eastern species nesting in the nature reserve, e.g. dotterel (*Charadrius morinellus*) and redflanked bluetail (*Tarsiger cyanurus*).

## HISTORY

The station was established in 1967 when the first 50 $m^2$ log cabin was built in the middle of the wilderness. Later on, the station has been extended, and currently it can accommodate c. 20 researchers indoors and more outdoors in tents.

## GENERAL RESEARCH AND DATABASES

The research focuses on interactions between the subarctic ecosystems and the atmosphere. The core is at the SMEAR I (Station for Measuring Ecosystem Atmosphere Relations) station at the Kotovaara hill (800 m from the station). Since early 1990's, continuous measurements on tree gas exchange (photosynthesis, transpiration), soil respiration, tree growth, weather, gas, and aerosol concentrations and fluxes, and pollutant transport have been performed. The measurements are online and maintained throughout the year. The data are stored in an open database. In addition, several long (over 40 years) observation series on e.g.



snow conditions, nesting birds, and phenology, as well as shorter term campaigns, on e.g. forest fire regimes and tree regeneration, exist in the station data repositories.

## HUMAN DIMENSION

The nearest local village is Savukoski, c. 100 km to the south-west. The forests are used intensively for forestry and reindeer husbandry. The nearby Urho Kekkonen National Park and other protected areas as well as fish-rich rivers fascinate large numbers of tourists. Recently, plans have been proposed for opening a large open pit phosphorus mine and a concentration plant in the close vicinity of Värriö Strict Nature Reserve.

## ACCESS

The station is accessed by foot (during summer) or by ski (during winter), assistance with snowmobile or a quad bike is available for instruments and larger luggage. The walking distance from the nearest unpaved road to the station is about 7 km. The distance to the nearest airport (Rovaniemi) is c. 300 km, while the nearest railway station (Kemijärvi) is c. 190 km away. From Kemijärvi there are regular bus and post taxi connections on weekdays.

| Värriö Subarctic Research Station | |
|---|---|
| Website | www.atm.helsinki.fi/varrio/fi |
| Country | Finland |
| Opening year | 1967 |
| Operational period | Year-round |
| Contact (access to station) | Jaana.back@helsinki.fi |
| Geographical coordinates | 67°44′ N, 29°36′ E |
| Altitude of station | 388 m a.s.l. |
| Nearest town/settlement | Savukoski (100 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -0.5 °C (-8.2 °C, 12.1 °C) |
| Total annual precipitation (type) | 600 mm (rain, snow) |

University of Helsinki

# 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 kilometers from the coast of the Arctic Ocean right next to Kevo Strict Nature Reserve (712 km$^2$). It lies about 60 km north of the continuous pine forest line and belongs to the subarctic 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$^2$ 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

The station was founded in 1958. The station, including a weather station of Finnish Meteorological Institute, consists of several buildings.

## GENERAL RESEARCH AND DATABASES

Kevo Subarctic Research Station has 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 palsa mires. There are long-term field experiments studying the effects of aerial pollutants and the impacts of reindeer grazing. The station has arboretums



with different origins of arctic tree line 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.

## 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).

| Kevo Subarctic Research Station | |
|---|---|
| Website | www.utu.fi/kevo |
| Country | Finland |
| Opening year | 1958 |
| Operational period | Year-round |
| Contact (access to station) | reservations-kevo@utu.fi<br>kevo@utu.fi |
| Geographical coordinates | 69°45′ N, 27°01′ E |
| Altitude of station | 80 m a.s.l. |
| Nearest town/settlement | Utsjoki (20 km) |
| Climate zone | Subarctic (tree line) |
| Mean temperature: Annual (Feb., Jul.) | -1.6 °C (-13.7 °C, 12.9 °C) |
| Total annual precipitation (type) | 415 mm (rain, snow) |

UNIVERSITY OF TURKU | Biodiversity

**KEVO SUBARCTIC RESEARCH INSTITUTE**

UTSJOKI – KEVO


## 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. Land owner is the Korporation Ursern (a regional authority).

## BIODIVERSITY AND NATURAL ENVIRONMENT

ALPFOR is placed in a small zone of mesozoic calcareous layers ('Ursernzone') 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. 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. 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.

## HISTORY

ALPFOR adopted three buildings from the former military station in 2008-2011. House Carex (a former health station) is mainly used by permanent staff.

## 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. Korner, Springer Publishers, 2003). Major research projects at ALPFOR deal with the influence of elevated $CO_2$ 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

# ALPFOR



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).

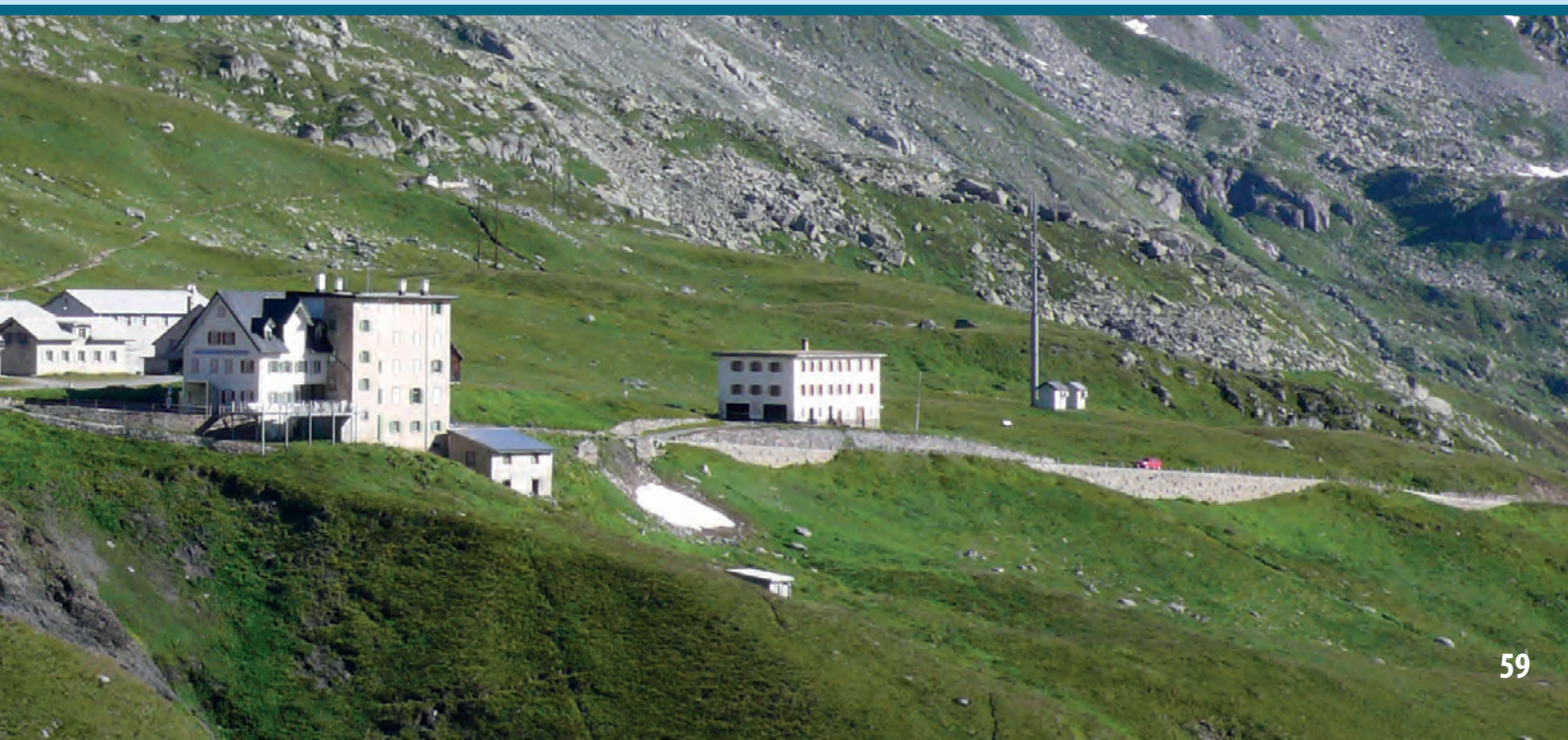
## HUMAN DIMENSION

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.

## ACCESS

The Furka Pass Road is open from May to October. 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 Goschenen.

| Alpine Research and Education Station Furka | |
|---|---|
| Website | http://www.alpfor.ch/general.shtml |
| Country | Switzerland |
| Opening year | 2009 |
| Operational period | June-September |
| Contact (access to station) | sekretariat-botschoen@unibas.ch |
| Geographical coordinates | 46°34′ N, 8°25′ E |
| Altitude of station | 2435 m a.s.l. |
| Nearest town/settlement | Andermatt (12 km) |
| Climate zone | High alpine |
| Mean temperature: Annual (Feb., Jul.) | -1.3 °C (-8.7 °C, 6.4 °C) |
| Total annual precipitation (type) | 2000 mm (rain, snow) |




# HINTEREIS

## STATION NAME AND OWNER

Station Hintereis (St-HE) is situated near Hintereisferner (HEF) in the catchment of Rofen Valley. Department of Atmospheric and Cryospheric Sciences, University of Innsbruck (ACINN) runs the station, which is built on land owned by the Austrian Governmental Forestry Administration.

## LOCATION

The St-HE is situated 200 m from the 1970s mean equilibrium line of HEF, an approximately 7 km$^2$ valley glacier. HEF is one of several glaciers in the high alpine catchment of Rofenache (Rofen river), Otztal Alps, Austria, on the border to Italy.

## BIODIVERSITY AND NATURAL ENVIRONMENT

St-HE is totally surrounded by alpine glaciers covering peaks as high as almost 3800 m a.s.l. The immediate surroundings of the HEF are characterized by freshly exposed rocks and debris resulting from ongoing glacial retreat. Due to its high elevation and somehow difficult access, St-HE is not suitable for studying the lower parts of the Rofen Valley. Main focus is on glaciology and atmospheric studies.

## HISTORY

HEF is mentioned in 1601 for the first time and then in 1678, 1774, 1770, 1816 in the context of pro-glacial lake formation and related glacial lake outburst floods. Glacier extent observations began in 1847, and the earliest maps are from 1870, 1888, and 1893. Research was intensified since the International Geophysical Year and during the International Hydrologica Decade/ Program of UNESCI/IHP. HEF has been the key research site for glaciological studies at ACINN ever since. In 1966, St-HE was built to logistically support the ongoing scientific activities.

## GENERAL RESEARCH AND DATABASES

HEF has one of the longest time series on glacier mass balance for any glaciers on Earth, based on series of geodetic maps starting in the 19$^{th}$ century. Since 2001 1-2 airborne LIDAR surveys are carried out per year for determining ice volume changes. Since 2018 terrestrial LIDAR surveys are possible from a permanent instrumentation. Length changes have been measured annually since 1847, and a mass balance time series dates back to 1953. Complementary studies of ice-atmosphere interactions, ice dynamics, and glacier hydrology has accumulated rich data sets.

## HUMAN DIMENSION

The nearest settlements are Vent in Austria, 15 km from St-HE (150 permanent inhabitants, alpine farming and tourism) and Kurzras/Maso Corto and Schnals/Senales in Italy (approximately 10 permanent inhabitants, year-round glacier ski tourism).

## ACCESS

St-HE is accessed from Innsbruck Airport either by car (2 hours) or train/bus (4 hours) to Vent. From there, it is a 5-6 hours walk to the station. (The Hochjoch Hospiz mountain hut is half way). Helicopter transport is also possible but expensive.

| Station Hintereis | |
|---|---|
| Website | https://www.uibk.ac.at/projects/station-hintereis-opal-data |
| Country | Austria |
| Opening year | 1966 |
| Operational period | Episodic |
| Contact (access to station) | rainer.prinz@uibk.ac.at |
| Geographical coordinates | 46°47′ N, 10°45′ E |
| Altitude of station | 3026 m a.s.l. (ROF, HEF) |
| Nearest town/settlement | Vent, Austria (15 km*)/ Kurzras, Italy (3 km*) |
| Climate zone | Alpine |
| Mean temperature: Annual (Feb., Jul.) | -3.3 °C (-12.2 °C, 5.2 °C) |
| Total annual precipitation (type) | 2005-2013: 1350 mm |

* all accesses are by walking and traversing a glacier!

universität innsbruck
Department of Atmospheric and Cryospheric Sciences


# SONNBLICK OBSERVATORY

## STATION NAME AND OWNER

The Sonnblick Observatory (SBO) is owned by the association Sonnblick Verein and managed by the Zentralanstalt fur 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". 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

Sonnblick Observatory was built in 1886 at the summit of Mt. Hoher Sonnblick, motivated from the need for information on meteorology in higher altitudes of the atmosphere. 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, SBO is a station of interdisciplinary research covering the atmosphere, the cryosphere, the biosphere, the lithosphere, and the hydrosphere.

## GENERAL RESEARCH AND DATABASES

Research of the Sonnblick Observatory 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, the SBO was also involved in many international projects on atmospheric chemistry and atmo-



spheric physics. The research is described on www.sonnblick.net. Sonnblick Observatory cooperates with several Austrian and international universities/research institutions. Within the frame of the GAW-DACH cooperation. The SBO has a special partnership with the observatories Jungfraujoch (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 Grosglockner (3798 m), in the South.

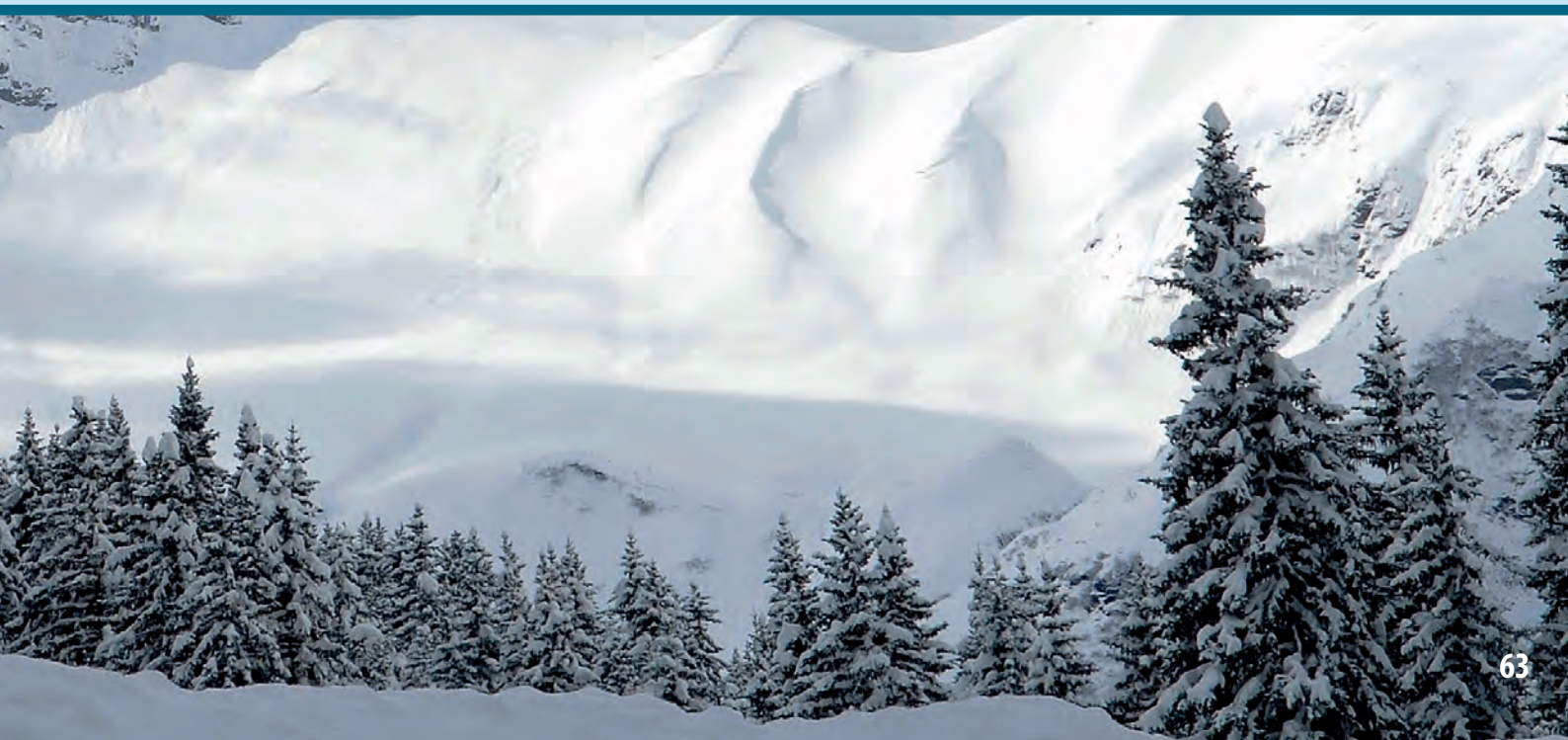
## ACCESS

Access to Sonnblick Observatory is possible throughout the year either by a non-public 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.

| Sonnblick Observatory | |
|---|---|
| Website | www.sonnblick.net |
| Country | Austria |
| Opening year | 1886 |
| Operational period | Year-round |
| Contact (access to station) | elke.ludewig@zamg.ac.at |
| Geographical coordinates | 47°03' N, 12°57' E |
| Altitude of station | 3106 m a.s.l. |
| Nearest town/settlement | Rauris (20 km) |
| Climate zone | Alpine |
| Mean temperature: Annual (Feb., Jul.) | -5.7 °C (-11.2 °C, 1.8 °C) |
| Total annual precipitation (type) | 2680 mm (snow, rain) |

ZAMG Zentralanstalt für Meteorologie und Geodynamik

SONNBLICK 3106 m est. 1886 OBSERVATORY




## STATION NAME AND OWNER

Krkonoše (CZ)/Karkonosze (PL) Mountains National Parks are state properties of the Czech Republic and Poland. The parks are a transboundary 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 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.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The tundra – above the *Picea abies* tree line – has the unique character of a relic island of the subarctic-alpine tundra. 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

The Polish Karkonosze Park Narodwy was established in January 1959 and the Czech Krkonoše National Park in 1963. However, scientific research in this area started already in 1786.

## 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.

# KRKONOŠE/ KARKONOSZE



## 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 Vrchlabi and another 30 min from Vrchlabi to the tundra zone. Access from Poland is via Karpacz.

| Krkonoše/Karkonosze Mountains National Parks | |
|---|---|
| Website | www.krnap.cz, www.kpnmab.pl |
| Country | Czech Republic, Poland |
| Opening year | 1963/1959 |
| Operational period | Year-round |
| Contact (access to station) | jandrle@krnap.cz, krysztof.krakowski.kpnmab.pl |
| Geographical coordinates | 50°44′ N, 15°44′ E |
| Altitude of station | 1400 m a.s.l. |
| Nearest town/settlement | Vrchlabí (10 km)/ Karpacz (8 km) |
| Climate zone | Alpine |
| Mean temperature: Annual (Feb., Jul.) | 0.8 °C (-4 °C, 13 °C) |
| Total annual precipitation (type) | 1177 mm (rain, snow, fog, hail) |


# M&M KŁAPA RESEARCH STATION

## STATION NAME AND OWNER

M&M Kłapa Research Station is run by the Institute of Geography and Spatial Organization, Polish Academy of Sciences, Department of Geoenvironmental Research.

## LOCATION

The station is located in the in Tatra National Park (Tatra Mountains), in the Hala Gąsienicowa area. The station is located 1520 m a.s.l. at the upper timberline and the lower limit of the periglacial zone. The highest summit in the area reaches 2301 m a.s.l.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is situated in a high-mountain environment with an alpine landscape. The mean annual temperature is 2.4 °C, and the mean annual precipitation is 1666 mm (varying from 1043 mm to 2626 mm). The vegetation varies from coniferous forest in the forest zone, trough *Pinus mugo* shrubs in the sub-alpine zone, alpine meadows in the alpine zone, and bare rocks in sub-nival zone.

## HISTORY

Research started in December 1913, when the first meteorological measurements were made. The more complex environmental research was initiated by the Association of Polish Geographers in 1948. In the beginning, the station mainly carried out basic climatic and nival measurements. In 1953, the station became part of the Institute of Geography and Spatial Organization, Polish Academy of Sciences. Since then, the focus of research has also been on geomorphology, climatology, and biogeography. The station is a wooden house.

## GENERAL RESEARCH AND DATABASES

The station constitutes a convenient base for geomorphological, climatic and geo-botanic investigations due to its highly favourable location. Geomorphological studies focus on landscape development. At present, the studies concentrate on monitoring of landscape change due to climate change. Climatic studies focus on micro-climatic and topo-climatic issues. Studies on vegetation deal with mapping at various scales and with dynamics of



changes in vegetation. Meteorological observations are carried out by the Institute of Meteorology and Water Management, and long-term data are available.

## HUMAN DIMENSION

The station is open to national and international scientists. It can accommodate 4-6 scientists at a time. The nearest inhabited place, i.e. the mountain resort Zakopane, is within 2-3 hours walking distance from the station. The nearest town, Zakopane, has a population of c. 30 000 inhabitants.

## ACCESS

The station is situated c. 100 km away from the Krakow-Balice Airport and c. 5 km away from the railway and bus stations in Zakopane. Access to the station is by foot. However, transport of heavy equipment is possible by car. Travel time from the Krakow–Balice airport is around half day.

| M&M Kłapa Research Station | |
|---|---|
| Website | https://www.igipz.pan.pl/hala-gasienicowa.html |
| Country | Poland |
| Opening year | 1948 |
| Operational period | Year-round |
| Contact (access to station) | raczk@zg.pan.krakow.pl |
| Geographical coordinates | 49°14′ N, 20°00′ E |
| Altitude of station | 1520 m a.s.l. |
| Nearest town/settlement | Zakopane (5 km) |
| Climate zone | Temperate zone/Montane |
| Mean temperature: Annual (Feb., Jul.) | 2.4 °C (-5.8 °C, 10.7 °C) |
| Total annual precipitation (type) | 1666 mm (rain, snow) |


# LAMMIN-SUO

## STATION NAME AND OWNER

Lammin-Suo Peatland Station is a part of main experimental cluster of State Hydrological Institute (SHI), Saint Petersburg, Russia.

## LOCATION

Lammin-Suo station is located near Ilichevo settlement in Vyborgskiy district, Leningrad region, 40 minutes from Saint Petersburg.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is situated within the Lammin-Suo Reserve, which is located in a hilly area with numerous sandy hills up to 150 m high, followed by deep pans. In the center there is a Lammin-Suo peatland, typical for the South Karelia. The most elevated part of the peatland is located in the western part and here grows a cotton grass, a pine 3-6 m high and peat moss. There are two deep (above 12 m) lakes, left from the swamped ancient lake. On the northern and western slopes of the peatland grows a knobcone pine with a height of 8-10 m. The eastern and southern slopes of the peatland have an uneven surface with peat banks and hollows. There are a lot of heather and cloudberries on the peat banks, while marsh scheuchzeria is a typical plant for hollows. Sphagnum mosses cover both hollows and peat banks. In the southern part of the bog there is an even strip of sedge-sphagnum vegetation.

## HISTORY

The Lammin-Suo station was established in 1950. Accommodation is available for up to 8 people, the station includes a small laboratory, kitchen, storage for instruments and field equipment, office workspace and shared bedrooms.

## GENERAL RESEARCH AND DATABASES

The research at the Lammin-Suo peatland station focuses on hydrology, meteorology, soil processes and the landscape evolution of the peatland. Projects include the research of water and energy exchanges, ecosystem studies, isotopic and hydrochemical studies. All the observation data of the station covering a period of 1950-1995 have been summarized in the form of a reference book. SHI collects and maintains up-to-date databases regarding hydrological and meteorological regime.



## HUMAN DIMENSION

The Ilichevo settlement (1000 inhabitants) is located 3 km from the station (5 minute drive). Also, the town of Zelenogorsk (15 000 inhabitants) is known for its resort facilities in 9 km distance (12 minute drive).

## ACCESS

Station is reached year-round by car or bus. It is located 40 minute drive from Saint Petersburg, with an international airport and the sea terminal. One can also get to the station from Finland by car (350 km and 5 hour drive from Helsinki, 140 km and 2 hours drive from Lappeenranta airport) or Allegro train (Helsinki – Saint Petersburg) that has stop at Vyborg (80 km from the station). There is a number of local trains connecting Vyborg and Zelenogorsk as well as regular (20-30 minutes interval) buses connecting Zelenogorsk and the Lammin-Suo station.

| Lammin-Suo Peatland Station | |
|---|---|
| Website | http://hydrology.ru/en |
| Country | Russia |
| Opening year | 1950 |
| Operational period | Year-round |
| Contact (access to station) | priem@ggi.nw.ru |
| Geographical coordinates | 60°14′ N, 29°48′ E |
| Altitude of station | 50 m a.s.l. |
| Nearest town/settlement | Zelenogorsk (9 km)/ Ilichevo settlement (3 km) |
| Climate zone | Humid continental climate |
| Mean temperature: Annual (Feb., Jul.) | 3.7 °C (-8.8 °C, 16.8 °C) |
| Total annual precipitation (type) | 875 mm (rain, snow) |


# 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). 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

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.

## GENERAL RESEARCH AND DATABASES

The Khibiny Educational and Scientific Station cooperates with the Centre of Avalanche Protection of JSC "Apatit" (a townplanning 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).

| Khibiny Educational and Scientific Station | |
|---|---|
| Website | www.eng.geogr.msu.ru/practics/stations/khibiny |
| Country | Russia |
| Opening year | 1948 |
| Operational period | Year-round |
| Contact (access to station) | khibiny_msu@mail.ru |
| Geographical coordinates | 67°38′ N, 33°43′ E |
| Altitude of station | 362 m a.s.l. |
| Nearest town/settlement | Kirovsk (3 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -0.2 °C (-11.5 °C, 12.6 °C) |
| Total annual precipitation (type) | 340 mm (rain, snow, hail) |


# THE ARCTIC RESEARCH STATION

## STATION NAME AND OWNER

The Arctic Research Station (former 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, Tyumen region, Russia. It belongs to the Yamal-Nenets Autonomous District. The nearest larger town is Salekhard (less than 20 km to the South-east). 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 biogeographical 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

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.

## 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).



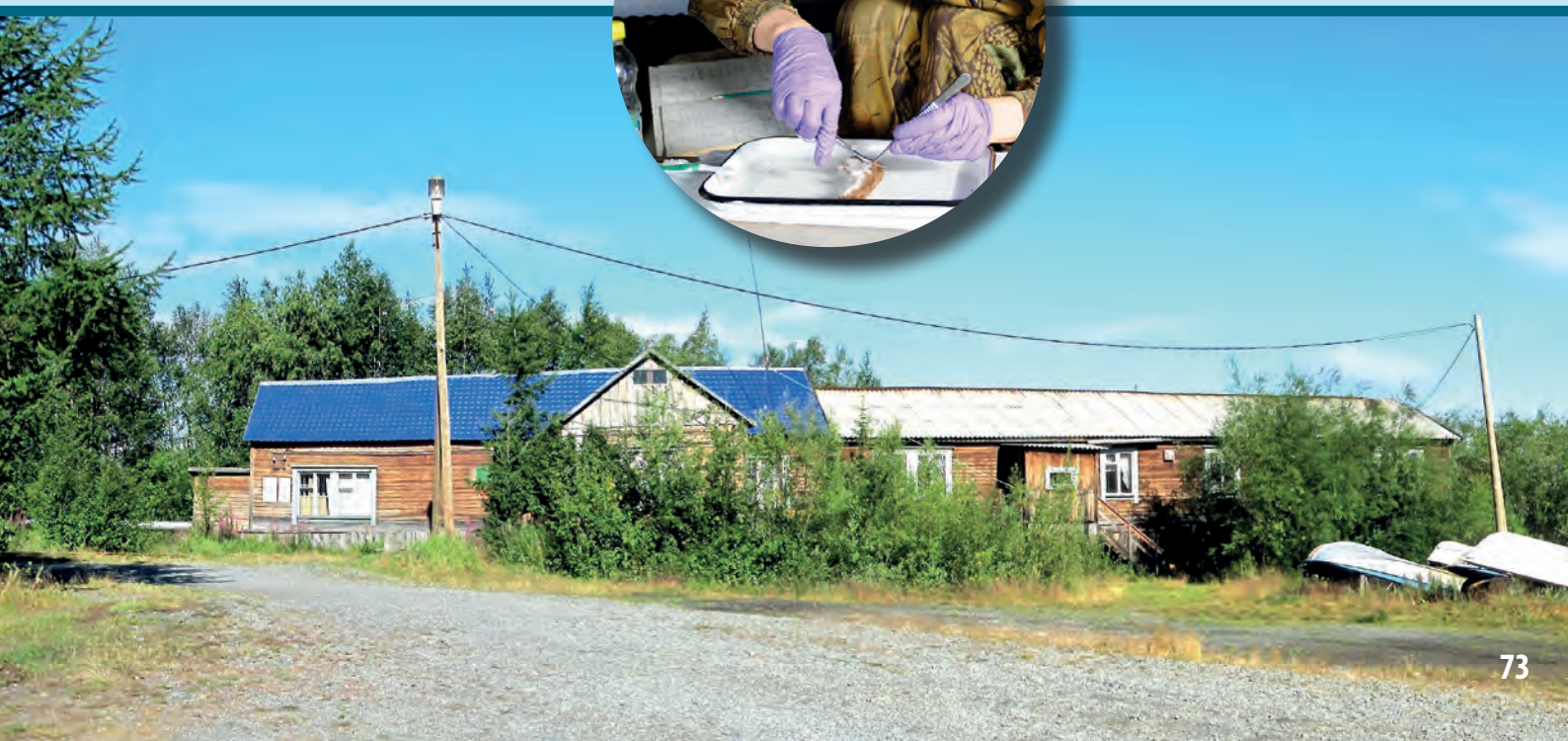
## HUMAN DIMENSION

The Yamal-Nenets Autonomous District is one of the largest regions in Russia. It occupies a vast territory of over 750 000 km$^2$, 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 Russia.

| The Arctic Research Station | |
|---|---|
| Website | – |
| Country | Russia |
| Opening year | 1954 |
| Operational period | Year-round |
| Contact (access to station) | sokhol@yandex.ru |
| Geographical coordinates | 66°39′ N, 66°24′ E |
| Altitude of station | 20 m a.s.l. |
| Nearest town/settlement | Labytnangi (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -6 °C (-22.4 °C, 14.4 °C) |
| Total annual precipitation (type) | 425 mm (snow, rain) |




# MUKHRINO

## STATION NAME AND OWNER

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

## LOCATION

The station is located at the East bank of the Irtysh River near the confluence with the Ob River in the central taiga zone of Western Siberia.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in the middle taiga (boreal) zone, with sporadic permafrost distribution. The peatlands cover about 60% of the land surface and can be regarded as important sources/sinks of greenhouse gases and aerosols. The research site is representative for the Western Siberian pristine carbon accumulating raised bog ecosystem. The upland vegetation represented by dark coniferous and mixed forest of *Pinus sibirica*, *Picea obovata*, *Abies sibirica*, and deciduous species *Betula pubescens*, *Populus tremula*.

## HISTORY

The Mukhrino Field Station was opened in 2009. The experimental field site is equipped with 1.5 km long board walks. Distributed across the field site are long-term monitoring plots for measuring climatic, hydrologic and ecosystem parameters. The Eddy covariance system for greenhouse flux measurements was installed in 2014.

## GENERAL RESEARCH AND DATABASES

The station was primarily established for studies of the biodiversity and hydrology of the peatland ecosystems, of the carbon storage in the peat layers, and for measurements of greenhouse gas fluxes. Monitoring efforts are undertaken by scientific staff and visiting researchers through INTERACT and collaboration with other institutions. The station maintains an open database on weather parameters, as well as other ecosystem parameters under permanent monitoring.



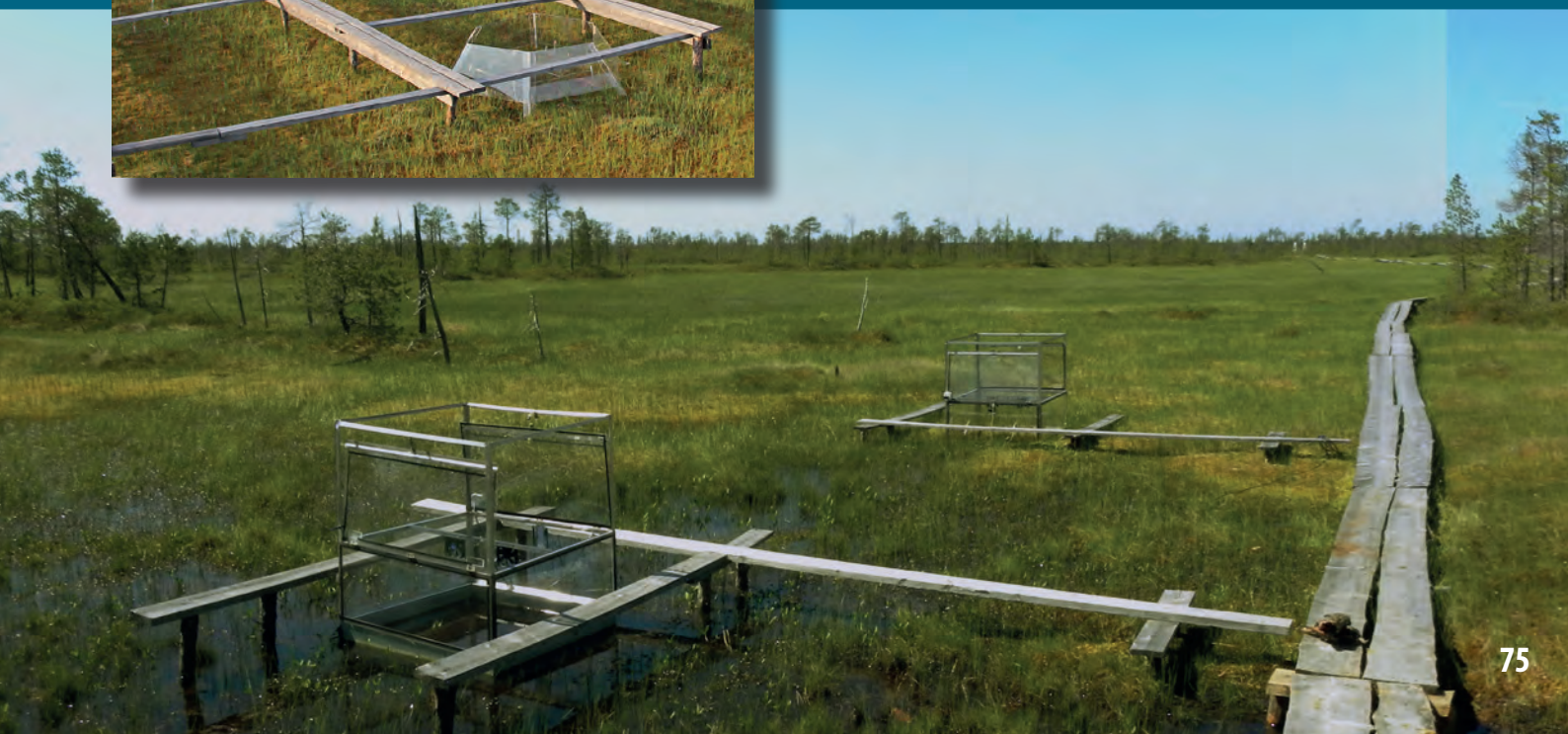
## HUMAN DIMENSION

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 nearest settlement is Khanty-Mansiysk (20 km, 80 000 inhabitants).

## ACCESS

Mukhrino is a remote station without road access. It is reached by off-road vehicles, boat or on foot depending on the season (8 km from nearest road). There is also an all-terrain vehicle (Argo) for field work in remote areas. Khanty-Mansiysk has an international airport with daily connections to Moscow.

| Mukhrino Field Station | |
|---|---|
| Website | https://mukhrinostation.com/ |
| Country | Russia |
| Opening year | 2009 |
| Operational period | Year-round |
| Contact (access to station) | e_lapshina@ugrasu.ru |
| Geographical coordinates | 60°53′N, 68°42′E |
| Altitude of station | 60 m a.s.l. |
| Nearest town/settlement | Khanty-Mansiysk (20 km) |
| Climate zone | Subarctic/Boreal |
| Mean temperature: Annual (Feb., Jul.) | -1.3 °C (18.0 °C, 17.1 °C) |
| Total annual precipitation (type) | 494 mm (rain, snow) |




# 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".

## HISTORY

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 nearby Numto Village.

| Numto Park Station | |
|---|---|
| Website | www.ugrasu.ru/UNESCO_Chair |
| Country | Russia |
| Opening year | 2012 |
| Operational period | Year-round |
| Contact (access to station) | e_lapshina@ugrasu.ru |
| Geographical coordinates | 63°38′ N, 70°63′ E |
| Altitude of station | – |
| Nearest town/settlement | Numto (4 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -5.6 °C (–, 15 °C) |
| Total annual precipitation (type) | 555 mm (rain, hail, snow) |


# KHANYMEY

## STATION NAME AND OWNER

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

## LOCATION

The Station is located south-east or Yamal-Nenets Autonomous District, at the northern taiga of western Siberia in Russia. Research sites are located in the flat hilly peatland (Palsas), having a little peat deposits 0,5-1,5 m (rarely up to 3 m), which is confined to discontinuous permafrost.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area is located in the northern taiga of West Siberia. Upland areas covered with pine and larch forests, occupy higher drained areas of the territory. In river valleys grow coniferous forests. Many lakes are "scattered" on the surface of the peat bogs. Lichens usually occupy 70-80% of the ground surface and the fauna is diverse. For the large mammals the following species should be noted: the brown bear, lynx, moose, reindeer, wolf, sable, fox, ermine, hare. Most of the avifauna is represented by migratory birds of aquatic and semi-aquatic habitats: swans, geese, goose, ducks, sandpipers, gulls. Pyakupur River refers to the waters of the highest category, and contains a large variety of fish including pike, roach, perch, ruffe, humpback whitefish and salmon.

## HISTORY

The Station is newly equipped and open for international visitors. The first international projects started in the region in 2014.

## GENERAL RESEARCH AND DATABASES

The research at Khanymey Station focuses on hydrology, meteorology, botany, zoology, and soil science (primary productivity and mineralization of organic matter). Research topics include; climate impact on the biotic cycle of carbon and accompanying elements in the Palsa peatlands; migration of water-soluble substances from the catchment ecosystems to the water bodies; hydrochemical, hydrobiological and microbiological characteristics of the surface waters; biogeochemical function of microorganisms; optimizing productivity; ornithology and fauna studies. Geoinformation analysis system is currently being developed for collection, analysis and storing information.



## HUMAN DIMENSION

Nenets represent 6.3% of the population of the Pur region, Yamal-Nenets Autonomous District. The main occupations of the indigenous inhabitants are herding, farming, fishing and harvesting of wild plants. Reindeer herding determines the life of the Nenets, and especially nomadism, closely connected with the biological habits of wild reindeer, which in summer move to the coast of the sea, and in the winter closer to the forest. The history of the village Khanymej began in the second half of the 20th century with the construction of the railway Surgut-Urengoy. The main population of the village is Russians.

## ACCESS

The nearest airport is in Noyabrsk and every day airport takes 1-2 flights from Moscow (journey time: 3 hours 25 minutes). The distance from Noyabrsk to Khanymey is 70 km by car.

| Khanymey Research Station | |
|---|---|
| Website | http://www.secnet.online/khanymei-eng.html |
| Country | Russia |
| Opening year | 1977 |
| Operational period | Year-round |
| Contact (access to station) | Sergey Kirpotin kirp@mail.tsu.ru |
| Geographical coordinates | 63°43′ N, 75°57′ E |
| Altitude of station | 70 m a.s.l. |
| Nearest town/settlement | Khanymej village (0 km) |
| Climate zone | Subarctic (Northern taiga) |
| Mean temperature: Annual (Feb., Jul.) | -3.6 °C (-25.1 °C, 15.8 °C) |
| Total annual precipitation (type) | 436 mm (rain, snow) |

SecNet


# BELIY ISLAND

## STATION NAME AND OWNER

Beliy Island Research Station is owned and managed by the Government of the Yamal-Nenets autonomous district, Russia.

## LOCATION

The Station is situated on the Beliy Island in the Yamal-Nenets autonomous district. Beliy Island is a relatively large island in the Kara Sea. It is separated from the Yamal Peninsula by the Malygina Strait, an 8 to 10 km wide sound which is frozen most of the year. The Island is c. 1900 km$^2$, all being situated below 12 m a.s.l.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is situated in the continuous permafrost zone. The surface of the Beliy Island is covered by tundra, but some dwarf shrubs also grow on the island. There are many lakes on the island. The north and east coasts are low and sandy, while the west and the south coasts feature coastal cliffs of up to 6 m in height. Grasses, mosses, and Arctic cotton are abundant in summer. Polar bears, Arctic foxes, moose, and seals are the main inhabitants of the island, but also wild reindeers and lemmings occur. Birds are also very numerous and various geese, ducks, waders, buntings, and others are breeding here.

## HISTORY

Beliy Island Research Station was established in July 2014, with the support of the Government of the Yamal-Nenets autonomous district.

## GENERAL RESEARCH AND DATABASE

Proposed activities of the station includes: Standard meteorological observations, regular air sampling, incl. analyses of $CO_2$ and $CH_4$ concentrations, snow sampling for identification of chemical composition of precipitation, monitoring of pollution, studies of climatic influence on arctic people's health, experimental work examining the interaction between geological substrate and atmosphere, hydrological studies, and ice studies.



## HUMAN DIMENSION

The Yamal-Nenets autonomous district is one of the largest constituents of Russia, a stable and dynamically developing region. The administrative centre is Salekhard. The Yamal-Nenets autonomous district is located in the Arctic zone of the West Siberian Plain, in the center of Russia's Far North. It has an area of 769 250 km$^2$. The population in the district is 537 000. 112 different ethnic groups and nationalities live in the district, and more than 15 000 people live a nomadic way of life.

## ACCESS

Beliy Island Research Station can be reached by helicopter from Salekhard via Sabetta (flight takes 5 hours). In winter, it is possible to get there by trucks and snowmobiles.

| Beliy Island Research Station | |
|---|---|
| Website | www.arctic-rf.ru (in Russian) |
| Country | Russia |
| Opening year | 2014 |
| Operational period | Year-round |
| Contact (access to station) | vp256@mail.ru |
| Geographical coordinates | 73°03′ N, 69°57′ E |
| Altitude of station | 4 m a.s.l. |
| Nearest town/settlement | Seyakha settlement (500 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -5 °C (-24 °C, 5 °C) |
| Total annual precipitation (type) | 220 mm (rain, snow) |


# WILLEM BARENTSZ

## STATION NAME AND OWNER

Willem Barentsz Biological Station is presently owned by the Administration of Taimyr Reserves, Norilsk, Russia (governmental organisation of the Russian Federation).

## LOCATION

Willem Barentsz Biological Station is located in the western part of the Taimyr Peninsula, northeast of Meduza Bay (the northern end of the mouth of the Yenisey River), 18 km south of Dikson and lies next to a protected area managed by the Administration of Taimyr Reserves.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area lies in the arctic tundra belt and is characterised by a rolling relief with rocky outcrops raising above the tundra surface. River banks and beaches are dominated by exposed gravel/sand deposits. The altitude of the area is 0-40 m a.s.l. The terrain is snow covered from September to June, small rivers run in depressions between the hills, but are usually dried up by the end of summer. Vegetation is dominated by arctic tundra lichens, mosses, sedges, grasses, dwarf willows, and birches. More than 10 shorebird species, six waterfowl species (including the red-breasted goose), and about 10 passerine species nest in the area. Avian and terrestrial predators are represented by the snowy owl, rough-legged buzzard, peregrine falcon, three species of skuas, and Arctic fox, lemmings being their basic prey. A few records of muskox and polar bear are known.

## HISTORY

The idea of the establishment of Willem Barentsz Biological Station for the memory of the famous Arctic explorer was suggested and initiated by Prof. Evgeny Syroechkovskiy during work of the Arctic Expedition of the Russian Academy of Sciences (RAS) in Taimyr. The building was erected in 1995 with financial support from the Dutch Ministry of Agriculture, Nature Management, and Fisheries. Monitoring and research work was initiated in1994.

## GENERAL RESEARCH AND DATABASES

The station provides unique opportunities for complex monitoring studies aimed at assessment of the long-term dynamics of local numbers of arctic breeding birds and their nesting success, studies of prey-predator interactions and many other aspects



of population biology. Since 1998, a standardised monitoring program for breeding bird, lemming, and predator abundance, as well as nesting success in water birds has been conducted. A number of biotic and abiotic factors, including arthropod abundance are also monitored and the vegetation of the areas mapped. Information can be found in the Arctic Bird Database maintained in the framework of the International Breeding Conditions Survey on Arctic Birds (www.arcticbirds.net).

## HUMAN DIMENSION

Dikson, an urban-type settlement in Taimyrskiy Dolgano-Nenetskiy District of Krasnoyarsk Kray is the nearest human settlement. There are no indigenous people in Dikson and human impact on environment is minimal.

## ACCESS

The station is accessible from Dikson year-around by vezdekhod (caterpillar vehicle), other all-terrain vehicles, or boat when ice melts in July. There are regular flights from Norilsk to Dikson (526 km) and from Norilsk to 15 Russian cities.

| Willem Barentsz Biological Station | |
|---|---|
| Website | http://zapovedsever.ru (owner institution's website in Russian) |
| Country | Russia |
| Opening year | 1995 |
| Operational period | May-August (winter operation possible but never tried) |
| Contact (access to station) | Dr. Mikhail Soloviev (coordination of monitoring programs): mikhail-soloviev@yandex.ru |
| Geographical coordinates | 73°21′N, 80°32′E |
| Altitude of station | 10 m a.s.l. |
| Nearest town/settlement | Dikson (18 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -11.1 °C (-25.4 °C, 4.9 °C) |
| Total annual precipitation (type) | 375 mm (rain, snow) |


# 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, 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).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Igarka is situated at the northwestern part of the Siberian platform, on the western edge of the Tunguska syneclise, 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. 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.

## HISTORY

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. Intensive 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. 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,



in 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

Until the early 1990's 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. Helicopter lease is available.

| Igarka Geocryology Laboratory | |
|---|---|
| Website | http://mpi.ysn.ru/index.php/news/39 |
| Country | Russia |
| Opening year | 1930 |
| Operational period | Year-round |
| Contact (access to station) | nikita.tananaev@gmail.com |
| Geographical coordinates | 67°27′ N, 86°32′ E |
| Altitude of station | 30 m a.s.l. |
| Nearest town/settlement | Igarka (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -8.3 °C (-24.8 °C, 15.4 °C) |
| Total annual precipitation (type) | 420 mm (rain, snow) |


# KAJBASOVO

## STATION NAME AND OWNER

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

## LOCATION

The station is located in Western Siberia, Russia, 60 km northwest from the city of Tomsk. The station is located in the floodland of the middle course of the Ob River, the longest river in Russia (5410 km). The station is located 60 km northwest from the city of Tomsk.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in the floodland of the Ob River, which is, on the one hand, a huge source of revenue in the global ocean minerals, carbon and methane and on the other hand – is a giant geochemical barrier, which regulates the flow of substances and elements from catchment basin in the Ob River. Favorable moisture, heat, mineral nutrition compared to non-inundated areas and, therefore, floodlands are the richest landscapes on the territory of Siberia in terms of productivity and biological diversity. The fauna is diverse. Some of the animals and birds are being hunted, others – peregrine falcon, white-tailed eagle, osprey – are included in the Red Book of Russia.

## HISTORY

The Station is newly opened. In 2015, the station was equipped with 3 wagons (apartment for 8 people, mobile laboratory and special conference-wagon).

## GENERAL RESEARCH AND DATABASES

The research at Kajbasovo Station focuses on hydrology, meteorology, ecology, botany, zoology, and soil science (primary productivity and mineralization of organic matter). Research areas include: biogeochemistry of the organic carbon, biotic cycle of carbon and accompanying elements in the floodplain; migration of water-soluble substances from the catchment ecosystems to the water bodies; hydrochemical, hydrobiological and ichtyological characteristics of the waters of the middle course of the Ob River; optimizing productivity; ornithology and fauna studies. There are long-term materials (1977-2001) of field investigations of soil and vegetation of the floodplain, physical and physical-chemical properties of the soils, hydrochemical properties of the



water bodies that are available for using. In the 30 minute vicinity (17 km) is located a former ichthyological and hydrobiological site "Monatki" in which a long time ichthyologic, hydrobiological and ornithological studies were carried out. However, the main wealth of the area in which the station is located is forests.

## HUMAN DIMENSION

In 5 BC. – 5AD in the forest zone, "kulayskaya culture" has developed in the depths of which the peoples inhabiting the territory of the region now were formed – Selkup, Khanty and Siberian Tatars. The face of the Tomsk land was considerably changed with the Russian (settlers) migrants appearance. Russians currently make up the majority of the population. The leading branch of economy in the region is agriculture.

## ACCESS

There are four direct 4-hours flights from Moscow to Tomsk. There is also a direct train Moscow-Tomsk, along the famous Trans-Siberian Railway (2.5 days). The station can be reached by car from the airport Tomsk, as well as by water.

| Kajbasovo Research Station | |
|---|---|
| Website | http://www.secnet.online/kajbasovo-eng.html |
| Country | Russia |
| Opening year | 1977 (completaly rebuilt in 2010) |
| Operational period | Year-round |
| Contact (access to station) | Sergey Kirpotin kirp@mail.tsu.ru |
| Geographical coordinates | 57°15′N, 84°11′E |
| Altitude of station | 65 m a.s.l. |
| Nearest town/settlement | Novo-Nikolskoye village (12 km) |
| Climate zone | Boreal forest |
| Mean temperature: Annual (Feb., Jul.) | -0.8 °C (-17.1 °C, 18.7 °C) |
| Total annual precipitation (type) | 482 mm (rain, snow) |


# 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.

## 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

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.

## 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 closest airport to Aktru station is Gorno-Altaisk airport, where there are direct daily flights from Moscow (the distance to the station is 350 km).

| Aktru Research Station | |
|---|---|
| Website | http://www.secnet.online/home-eng.html |
| Country | Russia |
| Opening year | 1956 |
| Operational period | May-October |
| Contact (access to station) | kirp@mail.tsu.ru |
| Geographical coordinates | 50°06′ N, 87°40′ E |
| Altitude of station | 2150 m a.s.l. |
| Nearest town/settlement | Kurai village (30 km) |
| Climate zone | Alpine |
| Mean temperature: Annual (Feb., Jul.) | -5.2 °C (-18.5 °C, 9.5 °C) |
| Total annual precipitation (type) | 542 mm (snow, rain) |


# EVENKIAN

## STATION NAME AND OWNER

The Evenkian Field Station is owned and run by V.N. Sukachev Institute of Forest, Krasnoyarsk, Russia.

## LOCATION

The Evenkian Field Station is located near Tura settlement at the bank of the Kochechum River (in the central part of the Central Siberian Plateau). The research area is located within the continuous permafrost zone.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area belongs to northern larch taiga. Tree species include *Larix gmelinii* (>95% of territory), *Picea obovata* (rare), *Pinus sibirica* (rare), and *Betula pubenscens*, while understory shrubs are *Duschekia fruticosa* (formerly *Alnus fruticosa*) and *Betula nana*. Spruce and Siberian pine occur on well-drained south-facing slopes and alluvial soils in stream valleys and on river banks. Birch appears after fires on hill tops. All tree stands are regenerating after ground fires that also influences composition, productivity and carbon stock of stands. Fire return interval is 20-200 years (c. 90 years mean). Ground vegetation: ericoid dwarf shrubs (mainly *Ledum palustre*, *Vaccinium vitis-idaea*, and *Vaccinium uliginosum*), mosses (*Pleurozium schreberi*, *Hylocomium splendens*, and *Aulocomnium palustre* with patches of lichens (*Cladina* spp. and *Cetraria* spp.). Larch forests with domination of *Sphagnum fuscum* in moss layer occurs in landscape depressions. Reindeers and bears are the major large animals. There are numerous migrating birds.

## HISTORY

The field station has operated since 1989. The station provides accommodation mainly during frost-free season (May-October) but may accept visitors during all other seasons.

## GENERAL RESEARCH AND DATABASES

The Evenkian Field Station has a number of experimental plots established in the forest in different landscape units. There are three automatic weather stations in the Tura area along with forested plots equipped with air and soil temperature and moisture



sensors. The Evenkian Field Station hosts programmes exploring forest dynamics and productivity, hydrology, hydrochemistry, biosphere-atmosphere GHG exchange, and satellite calibration validation studies. A tower is equipped with an eddy covariance system on a 17 m tall tower in a 110 year old larch forest. Databases include stand inventories, meteorological observations, observations hydro-chemical compositions of streams/rivers retrospective satellite imagery of different resolution, etc.

## HUMAN DIMENSION

The nearest village, Tura, is only 0.2 km from the field station. Tura has c. 5000 inhabitants.

## ACCESS

The station can be reached year-round. There are eight regular flights each week from Krasnoyarsk to Tura. Transport from/to airport is by car.

| Evenkian Field Station | |
|---|---|
| Website | http://forest.akadem.ru/State/EVE.html |
| Country | Russia |
| Opening year | 1989 |
| Operational period | Year-round |
| Contact (access to station) | prokushkin@ksc.krasn.ru |
| Geographical coordinates | 64°17′N, 100°11′E |
| Altitude of station | 145 m a.s.l |
| Nearest town/settlement | Tura (0 km) |
| Climate zone | Boreal (northern deciduos conifer forests) |
| Mean temperature: Annual (Feb., Jul.) | -8.9 °C (-31.5 °C, 16.6 °C) |
| Total annual precipitation (type) | 370 mm (rain, snow) |


# "ISTOMINO"

## STATION NAME AND OWNER

International Ecological Educational Center "Istomino" (IEEC) is owned and run by Baikal Institute of Nature Management of the Siberian Branch of the Russian Academy of Sciences, Republic of Buryatia, Ulan-Ude, Russia.

## LOCATION

IEEC "Istomino" is located in the southwestern part of the delta of the Selenga River in the village Istomino. The nearest towns are Kabansk (30 km) and Ulan-Ude (150 km).

## BIODIVERSITY AND NATURAL ENVIRONMENT

The center is situated close to Lake Baikal and a unique freshwater delta, included in the list of the Ramsar Convention of wetland ecosystems. Selenga River Delta is the habitat of the Baikal fish fauna (sturgeon, cisco, whitefish, grayling, and carp) and many migratory bird species from North Eurasia.

## HISTORY

IEEC "Istomino" was founded in 2001 in the village Istomino on the shore of Lake Baikal in the Selenga River Delta, and officially opened on 30 April.

## GENERAL RESEARCH AND DATABASES

IEEC "Istomino" combines Russian and foreign scientists efforts for conducting research on the unique ecological system of Lake Baikal and its watershed. Further, the station carries out education in ecology to the population of the Baikal region. The main activities at the station are: scientific and logistical support to research focusing on the ecosystem of Lake Baikal and the Selenga River Delta, organisation of scientific meetings, specialized training of students and summer schools for children on ecology, economics, chemistry, physics, and mathematics, and development of ecological/sustainable tourism.

## HUMAN DIMENSION

The station is located close to several small villages, where the population is engaged in fishing. The ethnic origin of the general population is Russian and Buryats.




## ACCESS

IEEC "Istomino" is accessible from Ulan-Ude (150 km) and Irkutsk (350 km) by car/bus. International airports are located in Ulan- Ude and Irkutsk.

| International Ecological Educational Center "Istomino" | |
|---|---|
| Website | www.binm.ru, http://binm.ru/istomino/index.php |
| Country | Russia |
| Opening year | 2001 |
| Operational period | Year-round |
| Contact (access to station) | aaayurzhanaev@yandex.ru |
| Geographical coordinates | 52°08′ N, 106°17′ E |
| Altitude of station | 468 m a.s.l. |
| Nearest town/settlement | Kabansk (30 km)/ Istomino (0 km) |
| Climate zone | Subarctic, Dwc (Koeppen) |
| Mean temperature: Annual (Feb., Jul.) | -0.3 °C (-18.3 °C, 17.1 °C) |
| Total annual precipitation (type) | 441 mm (rain, snow) |


# SAMOYLOV

## STATION NAME AND OWNER

The Research Station Samoylov Island is owned and run by the Trofimuk Institute of Petroleum Geology and Geophysics, Siberian Branch of the Russian Academy of Sciences. Access of international research teams to the station has been coordinated by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (Germany).

## LOCATION

The Research Station Samoylov Island 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. 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.

## BIODIVERSITY AND NATURAL ENVIRONMENT

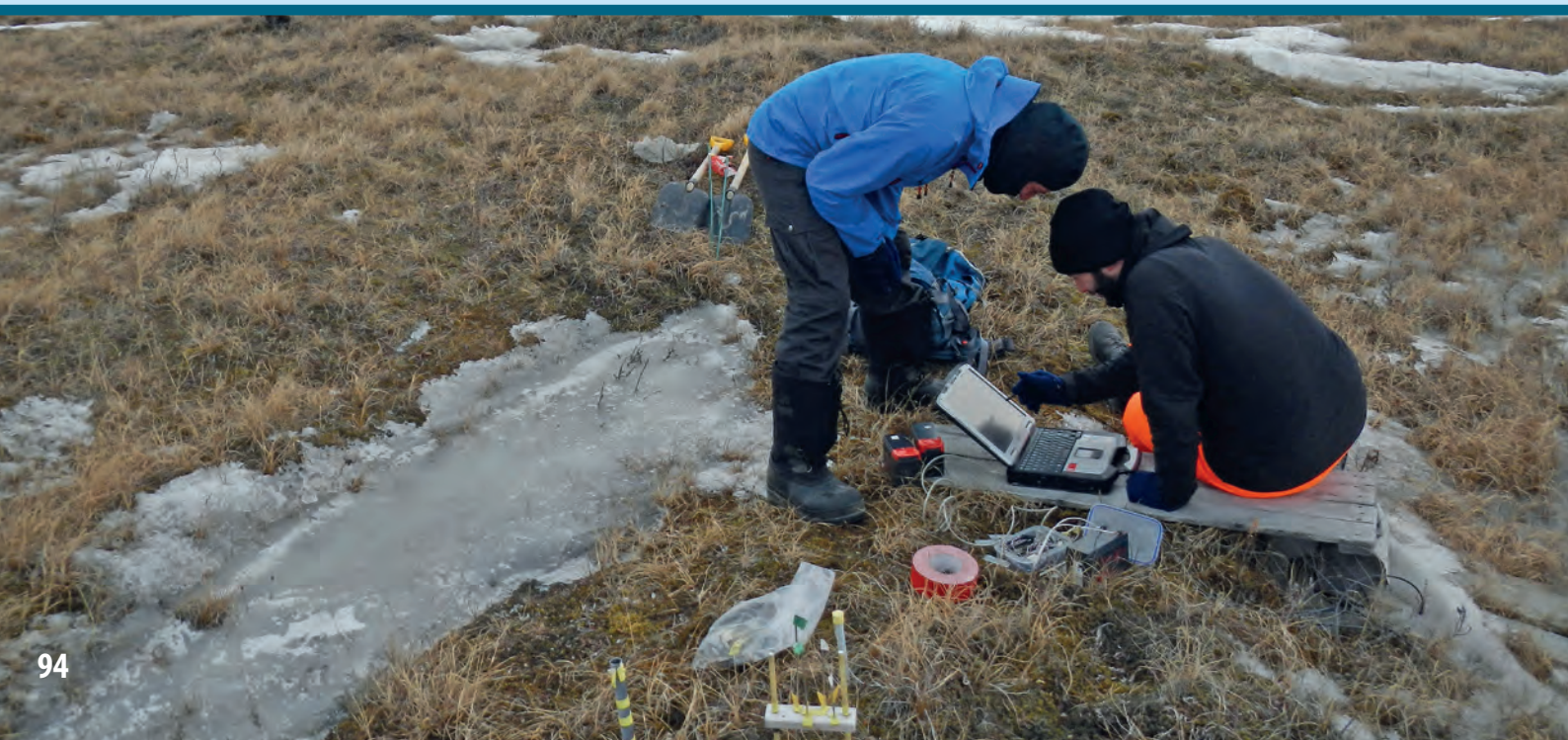
Samoylov Island is situated in the youngest part of the Lena Delta in the zone of continuous permafrost. It covers an area of about 5 km$^2$ and is dominated by wet polygonal tundra, characterized by low-centered ice-wedge polygons. The regional arctic continental climate allows maximum thaw depths of about 0.5 m. Hydrophytic sedges such as *Carex aquatilis*, *Carex chordorrhiza*, and *Carex rariflora*, as well as mosses 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

The old wooden 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), owned and run by the Lena Delta Reserve (Russia) and the Alfred Wegener Institute. In 2013, a new large modern Russian station, owned and run by the Trofimuk Institute of Petroleum, was officially opened.

## 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 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. For more information see Hubberten, H.-W. et al. 2003 (published 2006): Polarforschung 73, 111-116, and Boike, J. et al. 2013: Biogeosciences 10, 2105-2128. Data and results from Samoylov, see www.pangaea.de.

## HUMAN DIMENSION

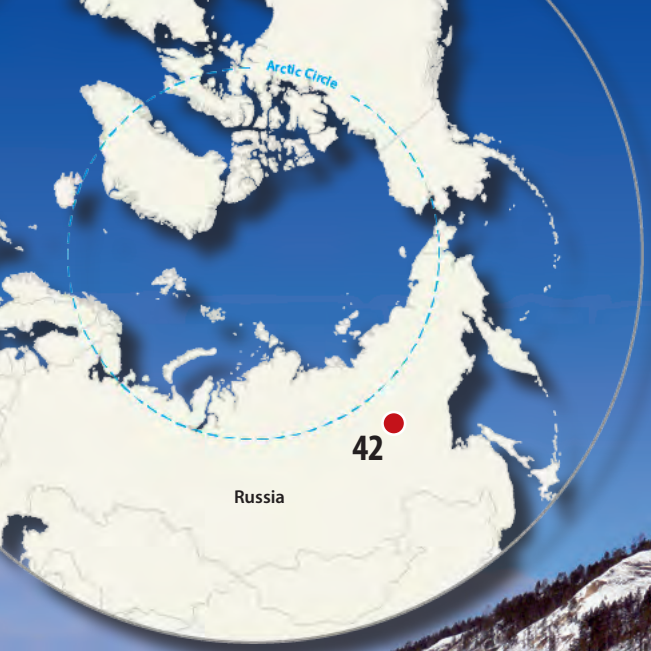
The human influence on the Lena Delta is minimal due to its status as a nature reserve with three rangers living in the reserve throughout most of the year. However, there is some subsistence fishing in the summer, and occasionally river cruise ships pass by.

## ACCESS

The Research Station Samoylov Island 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.

| Research Station Samoylov Island | |
|---|---|
| Website | https://www.awi.de/en/expedition/stations/island-samoylov.html |
| Country | Russia |
| Opening year | 1998/2013 (new station) |
| Operational period | Year-round |
| Contact (access to station) | Anne.Morgenstern@awi.de<br>TsibizovLV@ipgg.sbras.ru |
| Geographical coordinates | 72°22′ N, 126°29′ E |
| Altitude of station | 12 m a.s.l. |
| Nearest town/settlement | Tiksi (120 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -13.6 °C (-33.2 °C, 9.3 °C) |
| Total annual precipitation (type) | 319 mm (rain, snow) |

# 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 (elevation approx. 220 m a.s.l.; study area 4.43 km$^2$) 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), Russia, 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

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.



## GENERAL RESEARCH AND DATABASES

Interdisciplinary 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 websites of GEWEX-GAME-Siberia, JST CREST, PINMATRA, 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).

| Spasskaya Pad Scientific Forest Station | |
|---|---|
| Website | – |
| Country | Russia |
| Opening year | 1952 |
| Operational period | May-October (November-April) |
| Contact (access to station) | t.c.maximov@ibpc.ysn.ru<br>tcmax@mail.ru |
| Geographical coordinates | 62°14′ N, 129°37′ E |
| Altitude of station | 220 m a.s.l. |
| Nearest town/settlement | Tulagino (18 km) |
| Climate zone | Subarctic/Boreal |
| Mean temperature: Annual (Feb., Jul.) | -9.3 °C (-40 °C (January), 19 °C) |
| Total annual precipitation (type) | 238 mm (rain, snow) |

# ELGEEII


## STATION NAME AND OWNER

Elgeeii Scientific Forest Station is owned by the Institute for Biological Problems of Cryolithozone, Siberian branch of Russian Academy of Sciences, Russia.

## LOCATION

The Elgeeii Scientific Forest Station (elevation c. 202 m a.s.l.; study area 1.5 ha) is located on an ancient terrace on the central part of the Aldan River's left bank in the southeastern region (Ust-Mayskiy Ulus) of the Republic of Sakha (Yakutia), Russia. It is in the continuous permafrost region (thickness over 120 m), approximately 65 km south of the Ust-Maya settlement and 730 km south of the Arctic Circle.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The main ecosystem near the station is boreal light taiga, with pine and birch forests together with permafrost lakes, meadows, and mixed forests. The main forest types are red-bilberry larch forests, crowberry pine forests, and herby birch forests. The main larger animals are red fox, wolf, brown bear, moose, red deer, and reindeer.

## HISTORY

The Elgeeii Scientific Forest Station was founded in 2009 by the Institute for Biological Problems of Cryolithozone (Siberian Branch of Russian Academy of Sciences) together with RIHN, a Japanese scientific project. The station has two buildings accommodating c. 20 people.



## GENERAL RESEARCH AND DATABASES

The main aim of the station is to increase the understanding of interaction between the atmosphere, the biosphere, the hydrosphere, and the cryolithosphere with a main focus on global environmental change.

## HUMAN DIMENSION

The nearest settlements are Petropavlovsk and Ust-Maya (c. 60-65 km to the North) with various shops and facilities. There is a well-equipped hospital. The main livelihoods are hunting and lumbering.

## ACCESS

Elgeeii Scientific Forest Station is reached by a combination of airplane to Ust-Maya airport (c. 1 hour flight from Yakutsk city), then motor boat (c. 1.5 hours), and finally car (15 min drive) or foot (1 hour walk).

| Elgeeii Scientific Forest Station | |
|---|---|
| Website | http://ibpc.ysn.ru/?page_id=231 |
| Country | Russia |
| Opening year | 2009 |
| Operational period | April-October (November-March – only automatic micro-meteorolical system) |
| Contact (access to station) | tcmax@mail.ru<br>lanteco@mail.ru |
| Geographical coordinates | 60°01′N, 133°49′E |
| Altitude of station | 202 m a.s.l. |
| Nearest town/settlement | Ust-Maya (60 km) |
| Climate zone | Boreal |
| Mean temperature: Annual (Feb., Jul.) | -8.9 °C (-33.9 °C, 18.5 °C) |
| Total annual precipitation (type) | 303 mm (rain, snow) |


# 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 (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), Russia, 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 back swamps consist of meadows with low grass (*Arctophila fulva*) and sedges (*Carex arctisi- berica*, *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 sp. At several sites the Sphagnum vegetation overlies a very thin active layer of loose moss peat (<20 cm thickness).

## HISTORY

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).

## GENERAL RESEARCH AND DATABASES

The interdisciplinary research at the Chokurdakh Scientific Tundra station mainly focuses on studies of the environmental 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. Data is available at the web-sites of PIN-MA-TRA and TCOSSiberia projects.

## HUMAN DIMENSION

The Chokurdakh Scientific Station is situated in the Kytalyk Wildlife Reerve 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.

## 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).

| Chokurdakh Scientific Tundra Station | |
|---|---|
| Website | - |
| Country | Russia |
| Opening year | 2002 |
| Operational period | May-September (March-April, October-November) |
| Contact (access to station) | t.c.maximov@ibpc.ysn.ru<br>tcmax@mail.ru |
| Geographical coordinates | 70°49′ N, 147°29′ E |
| Altitude of station | 8 m a.s.l. |
| Nearest town/settlement | Chokurdakh (28 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -10.5 °C (-34.6 °C (January), 9.5 °C) |
| Total annual precipitation (type) | 221 mm (rain, snow ) |




# OROTUK

## STATION NAME AND OWNER

Orotuk Field Station is run by the Institute of Biological Problems of the North, Far Eastern Branch of Russian Academy of Sciences.

## LOCATION

The station is in the Upper Kolyma district, western part of the Magadan Region, Russia (62°03′ N, 148°38′ E). The station is situated 10 km southwest of the Orotuk settlement.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Kolyma River floodplain terraces form the typical landscape in the territory. The floodplain is covered by willow, poplar, and Chosenia forests. Numerous lakes, meadows, and swamps can be found on the terraces along the river. Relic steppe communities occur on southwest facing slopes and Pinus pumila thickets and sparse larch forests are the main plant communities of the region. The southern part of the Czersky Mountain range is situated 10 km northwest of the station. The mountain tundra is dominated by various herbs, while dwarf shrubs and lichens cover slopes and depressions. The flora and fauna are typical for the northern part of the boreal zone. The vegetation belongs to the northern taiga and sparse Larix forest zone. The continental part of Northeast Asia belongs to the region of extra continental climate with very severe winters (down to -55-60 °C) and hot summer (up to 30-33 °C). The entire territory is in the continuous permafrost zone.

## HISTORY

The station was established in 1992 and first served as a field station for the North-East Permafrost Laboratory, later for the Laboratory of Botany (since 1995). The station has a building in the settlement of Orotuk, suitable for winter accommodation.



## GENERAL RESEARCH AND DATABASES

Meteorological observations have been recorded since 1992. The seasonal development of 33 species of trees, shrubs, and grasses are also studied. Phenological data is used for monitoring of climate change effects. Non-forest plant resources are studied in permanent sample plots. The flowering phenology and dynamics of yield are monitored for edible berries and mushrooms.

## HUMAN DIMENSION

In the middle of 19th century Sakha people drove from the plains of Jakutia to the far northeast and settled near Kolyma River. Now, they live in small villages. Hunting, fishing, and picking wild berries and mushrooms are very important activities.

## ACCESS

Orotuk is located 280 km northwest of the town Ust-Omchug (administrative centre of Tenkinsky District, Magadan region). In winter, the station can be reached by car, and in May-September only by boat. The average time by boat from the Duskanya Bay to Orotuk is about 2 hours.

| Orotuk Field Station | |
|---|---|
| Website | http://www.ibpn.ru/en/about-institute/field-stations |
| Country | Russia |
| Opening year | 1992 |
| Operational period | Year-round |
| Contact (access to station) | meks_mag@mail.ru |
| Geographical coordinates | 62°03′ N, 148°39′ E |
| Altitude of station | 550 m a.s.l. |
| Nearest town/settlement | Ust-Omchug (280 km)/ Orotuk (10 km) |
| Climate zone | Subarctic/Boreal |
| Mean temperature: Annual (Feb., Jul.) | -10.9 °C (-35.0 °C, 15.9 °C) |
| Total annual precipitation (type) | 291 mm (rain, snow ) |


# AVACHINSKY VOLCANO

## STATION NAME AND OWNER

Avachinsky Volcano Field Station belongs to "Volcanoes of Kamchatka Nature Park" (UNESCO World Heritage site #765).

## LOCATION

Avachinsky Volcano Field Station is located in the Russian Far East, on the southern part of the Kamchatka peninsula, near the main cities of the region, Petropavlovsk-Kamchatskiy and Yelizovo. The field station is situated at an altitude of about 950 m a.s.l. on a saddle between Koryaksky and Avachinsky volcanoes. The station is located in the Nalychevo Nature Park.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The surroundings of the field station are characterised by a large variety in landscape, flora, and fauna. The station itself is located in a shrub tundra zone, and the surroundings include altitudinal zonation from forest to glaciers. Both volcanoes near the station are occasionally active – Avachinsky's last eruption occurred in 2001, and now the crater is covered by a lava neck with a heavy fumarole activity underneath. Koryaksky volcano is dormant, but in 1956 and 2008 it erupted with ash plumes and a pyroclastic flow. The area features pyroclastic slopes, where outcrops carved by rivers expose stratified lapilli tuffs, deep gullies, and a few small fumaroles. The fauna and vegetation within the surroundings of the station is typical for the Kamchatka peninsula, and one of the main species around the station is the Arctic ground squirrel. Occasionally, bears, sable, and lynx visit the area. Different kinds of salmonid fish spawn in the rivers of the Nalychevo valley.

## HISTORY

Nalychevo Nature Park is part of the biggest protected area of the Kamchatka peninsula – the nature park "Volcanoes of Kamchatka". The nature park was established in 1995 and became part of the UNESCO World Heritage List in 1996.

## GENERAL RESEARCH AND DATABASES

The research at Avachinsky Volcano Field Station focuses on the botany, the ecology, and the zoology of the volcanic tundra zone. Recently, investigations of hydrology, hydrogeology, glaciology, meteorology, geomorphology, and soil science were initiated. Since no long-term hydrological data are available for the rivers

# FIELD STATION



draining the volcanoes, the main purpose of the recently initiated studies is field-based assessments of water and sediment discharges within the study river. The station maintains databases containing records on plants, biota, and vegetation cover ecology. Databases on hydrology and climate are being developed.

## HUMAN DIMENSION

Avachinsky Volcano Research Station is the gate to the Nalychevo river valley, which is a protected area with different points of interest for all kinds of tourism. The status of the area as a national park protect it from industrial development and uncontrolled visits, but the abundance of fish in the rivers and proximity to the region's capital also attract poachers.

## ACCESS

The research station can be reached by four-wheel drive vehicles from the nearby cities Petropavlovsk-Kamchatskiy and Elizovo (60 and 30 km away, respectively). In summer off-road buses service the station 2-3 times a week. The nearest airport with daily flights to Moscow and other international airports is Yelizovo (PKC), 29 km from the station.

| Avachinsky Volcano Field Station | |
|---|---|
| Website | http://vulcanikamchatki.ru/territoriya/klaster_nalychevskij |
| Country | Russia |
| Opening year | 1995 |
| Operational period | Year-round, although in winter period only occasional |
| Contact (access to station) | park@mail.kamchatka.ru |
| Geographical coordinates | 53°15′ N, 158°44′ E |
| Altitude of station | 950 m a.s.l. |
| Nearest town/settlement | Yelizovo (20 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -3 °C (-16 °C (January), 12 °C) |
| Total annual precipitation (type) | 1200 mm (snow, rain) |


# NORTH-EAST SCIENCE STATION

## STATION NAME AND OWNER

North-East Science Station (NESS) is owned and run by Sergey Zimov and Nikita Zimov.

## LOCATION

NESS is situated in the Kolyma River lowland. It is in the forest tundra zone and 5 km from the town of Cherskii. The research station is affiliated with the Pleistocene Park (PLP) located on privately owned land.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is located in the continuous permafrost zone with vast territories underlain by yedoma (ice complex). Natural wild life includes bears, moose, and reindeer. In addition, muskoxen, Yakutian horses, and bison occur in the Pleistocene Park.

## HISTORY

NESS was established in 1980 and has been privately owned since 1990. Some facilities allow accommodation and scientific research during winter. This includes transportation from the airport, accommodation, meals, drinks, and local transportation within reasonable proximity from the station. A variety of shops are available in Cherskii town.

## GENERAL RESEARCH AND DATABASES

Research: Climate change, permafrost science, atmospheric composition, biodiversity, and hydrology. Data bases: Eddy



covariance year round measurements on 3 sites starting 2001. Year round methane gradient measurements are recorded with a 40 m tall tower in the Pleistocene Park starting in 2007. Research conducted on the station since late 1980 was published in numerous international peer reviewed journals, including Science and Nature.

## HUMAN DIMENSION

The town of Cherskii is located 5 km from the station (10 minute drive). The town population is 3000 people, with half of them being Russians, and the rest being Chukchies, Yukagires, and Yakutians. The town is the administrative center of the district and has a sea port. Some percentage of the population is involved in fishing, hunting, and mammoth tusk collections.

## ACCESS

NESS is located 10 minute drive from the Cherskii airport, which is serviced by 2-4 flights a week to the international airport of Yakutsk. The main route for international visitors is Moscow – Yakutsk (6.5 hour flight) with connection flight Yakutsk-Cherskii (4 hour flight).

| North-East Science Station | |
|---|---|
| Website | www.pleistocenepark.ru |
| Country | Russia |
| Opening year | 1980 |
| Operational period | Year-round |
| Contact (access to station) | Nikita Zimov: nzimov@mail.ru |
| Geographical coordinates | NESS: 68°73′ N, 161°38′ E; Pleistocene Park (PLP): 68°5′ N, 161°5′ E |
| Altitude of station | 20 m a.s.l. |
| Nearest town/settlement | Cherskii (5 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -10.7 °C (-30.7 °C, 13.1 °C) |
| Total annual precipitation (type) | 221 mm (snow, rain) |



# MEINYPIL'GYNO

## STATION NAME AND OWNER

Meinypil'gyno Community Based Biological Station is owned and run by the Russian bird conservation NGO – "BirdsRussia", with support from the Government of the Chukotka Autonomous Region.

## LOCATION

Meinypil'gyno Biological Station is located at Meinypil'gyno settlement, South Chukotka, 250 km south of Anadyr City at the Bering Sea coast. It is located on a 40 km long lagoon spit next to moraine hills (up to 100 m a.s.l.) and Koryak Mountains (up to c. 1000 m a.s.l.) surrounded by brackish water channels connecting salty Lake Pekulney and freshwater Lake Vaamochka to the sea.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area has a very high diversity of ecosystems within reachable distance from the station. Coastal areas are occupied by high variety of different types of lowland tundra, including typical Chukotka tussocks, rather high arctic looking moss-sedge-lichen tundra on moraine hills, and dry crowberry tundra on spits. Inland areas have a variety of alpine vegetation types as well as hypo-arctic landscapes including willow and alder bushes. Further inland Beringian type pine bush forest-tundra dominates. Wetlands include different types of lakes, bogs, fresh-water deltas, and brackish lagoons. The biggest Koryak Mountains Glacier, now shrinking in size, is located in 40 km west of the station. There are numerous geological features in the area. The area supports a high diversity of bird species, and nearby lakes are important red salmon spawning areas attracting high numbers of brown bears. Wolfs, Wolverine, and Mountain Sheep are not uncommon. Coastal waters support populations of gray whales, seals, and occasionally beluga whales. A walrus haul-out site is located 40 km away.

## HISTORY

The station is hiring living and office space from local villagers for the field work period and only owns permanent storage space for equipment and supplies.

## GENERAL RESEARCH AND DATABASES

Biological observations mainly focusing on birds were started in 2001 led by Birds Russia in cooperation with Moscow State University and various Research Institutions. The station engages in community-based monitoring work and collection of traditional

# BIOLOGICAL STATION



knowledge in the village. Weather records are made by automatic station installed in 2011. Long-term salmon fish resource monitoring is run by team of biologists from ChukotTINRO based in Anadyr. Meinypil'gyno is the only remaining breeding area of the Spoon-billed Sandpiper.

## HUMAN DIMENSION

The Meinypil'gyno settlement has a mixed Chukchi-Russian population of about 500 inhabitants. It was established 90 years ago in the area formerly used as summer camps by Chukchi reindeer herders. In earlier times, the coastal area was populated by the Kerek ethnic group and an unexplored archaeological site (Kerek city) is located just 20 km from the station.

## ACCESS

Station is accessible by regular helicopter flights twice a month and in summer nearly every week; 1.5 hour flight by Mi-8 from Anadyr. Irregular cargo ships arrive from Beringovsky from July and supplies of goods arrive by bigger ocean ships in autumn. In winter, the station may be accessible by road, depending on weather conditions.

| Meinypil'gyno Community Based Biological Station | |
|---|---|
| Website | www.birdsrussia.ru |
| Country | Russia |
| Opening year | 2001 |
| Operational period | May-October (winter operation is possible but never tried) |
| Contact (access to station) | athene-noctua@yandex.ru<br>ees_jr@yahoo.co.uk |
| Geographical coordinates | 62°32' N, 177°03' E |
| Altitude of station | 11 m a.s.l. |
| Nearest town/settlement | Anadyr (250 km)/<br>Meinypil'gyno (0 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -7.4 °C (-20.5 °C, 10.3 °C) |
| Total annual precipitation (type) | 500 mm (rain, snow) |


# ADYGINE

## STATION NAME AND OWNER

Adygine Research Station belongs to Institute of Water Problem and Hydropower, Kyrgyz National Academy of Science in Kyrgyz Republic.

## LOCATION

Adygine Research Station is situated in Northern Tchein-Shan on the northern slope of the Kyrgyz mountain range and in the National Nature Park Ala-Aracha. The study area is a glacier moraine complex lying at an altitude of 3400 – 4200 m a.s.l.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The climate near the station area is polar to sub-polar. The area consists of tundra with mosses, lichens, and unique flowers, even red listed species. The fauna consists of e.g. wild goats, yaks, and snow leopard (irbis). unit and solar panels.

## HISTORY

The station was built in 2008. The building of the station has been designed as the letter 'A'. The station can accommodate six-eight persons. All energy for running the station is mostly generated by a wind turbine unit and solar panels.

## GENERAL RESEARCH AND DATABASES

Monitoring of lakes: Changes in lake size, shape, and water level are monitored. All changes in morphology of moraine dams are also monitored. Meteorological observations: Two weather stations are installed in the study area. One is situated near



the building at lake level and the other above the glacier at an elevation of 3830 m a.s.l. Glaciological studies: Monitoring of glacier retreat and changes in its volume. Hydrological studies: Hydrological research is an integral part of the monitoring of the development of lakes and their inflows and outflows. Other investigations: In addition to studies carried out by station staff, the station is also open to Kyrgyz and foreign scientists as a platform for different types of research.

## HUMAN DIMENSION

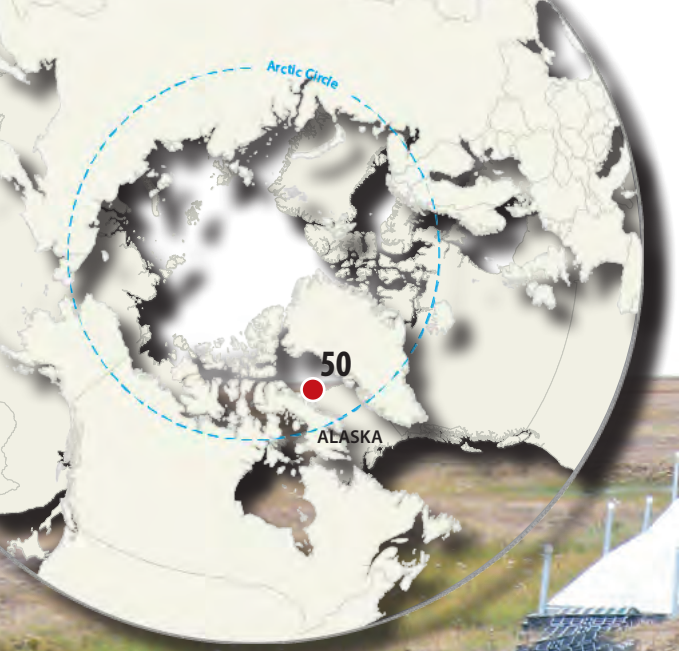
The station is located only 40 km from the capital of Kyrgyzstan, Bishkek city.

## ACCESS

Bishkek airport can be reached by air in 40 minutes. From Bishkek, the research station can be reached by car through the main Ala-Archa valley (40 km). The last nine km to the station is by trail either on foot or on horseback.

| Adygine Research Station | |
|---|---|
| Website | www.adygine.com |
| Country | Kyrgyz Republic |
| Opening year | 2008 |
| Operational period | Year-round |
| Contact (access to station) | zagivit@mail.ru<br>erochin@list.ru |
| Geographical coordinates | 42°30′ N, 74°35′ E |
| Altitude of station | 3600 m a.s.l. |
| Nearest town/settlement | Bishkek city (40 km)/<br>Kashka-Suu (8 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -1 °C (-15 °C, 9 °C) |
| Total annual precipitation (type) | 600 mm (rain, snow) |

# BARROW




## STATION NAME AND OWNER

The Barrow Arctic Research Center and Barrow Environmental Observatory are managed by UIC Science, a business unit of the Ukpeaġvik Inupiat 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$^2$ 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. 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 found in 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 and during the spring, bowhead whales migrate close to shore, and gray and beluga whales are often sighted.

## HISTORY

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.

## GENERAL RESEARCH AND DATABASES

Approximately 50 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 Inupiaq culture is still practiced today including subsistence hunting and whaling activities. English is the predominant language but many residents speak Inupiaq.

## 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.

| Barrow Arctic Research Center/ Barrow Environmental Observatory | |
|---|---|
| Website | www.barrowbulletin.com |
| Country | USA |
| Opening year | 1992 |
| Operational period | Year-round |
| Contact (access to station) | Nagruk.harcharek@uicscience.com |
| Geographical coordinates | 71°18′N, 156°35′W |
| Altitude of station | 5 m a.s.l. |
| Nearest town/settlement | Barrow (5 km) |
| Climate zone | High Arctic (coastal plain, maritime, desert) |
| Mean temperature: Annual (Feb., Jul.) | -12.6 °C (-27.7 °C, 4.1 °C) |
| Total annual precipitation (type) | 115 mm (snow, rain) |


# TOOLIK


## STATION NAME AND OWNER

The Toolik Field Station (TFS) is operated and managed by the Institute of Arctic Biology at the University of Alaska Fairbanks (UAF) with cooperative agreement support from the Division of Polar Programs, Directorate for Geosciences at the US National Science Foundation (NSF).

## 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, muskoxen, and grizzly bears are encountered occasionally.

## HISTORY

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.

## 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 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, and research data collected by the LTER program are 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.

| Toolik Field Station | |
|---|---|
| Website | http://toolik.alaska.edu |
| Country | USA |
| Opening year | 1975 |
| Operational period | Year-round |
| Contact (access to station) | msbretharte@alaska.edu> |
| Geographical coordinates | 68°37′N, 149°35′W |
| Altitude of station | 720 m a.s.l. |
| Nearest town/settlement | Deadhorse (210 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -8.7 °C (-20.7 °C, 10.8 °C) |
| Total annual precipitation (type) | 318 mm (snow, rain) |


# KLUANE LAKE

## STATION NAME AND OWNER

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

## 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

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.

## 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. The Arctic Institute of North America also maintains a major data base called ASTIS and publishes the quarterly journal "Arctic"

## HUMAN DIMENSION

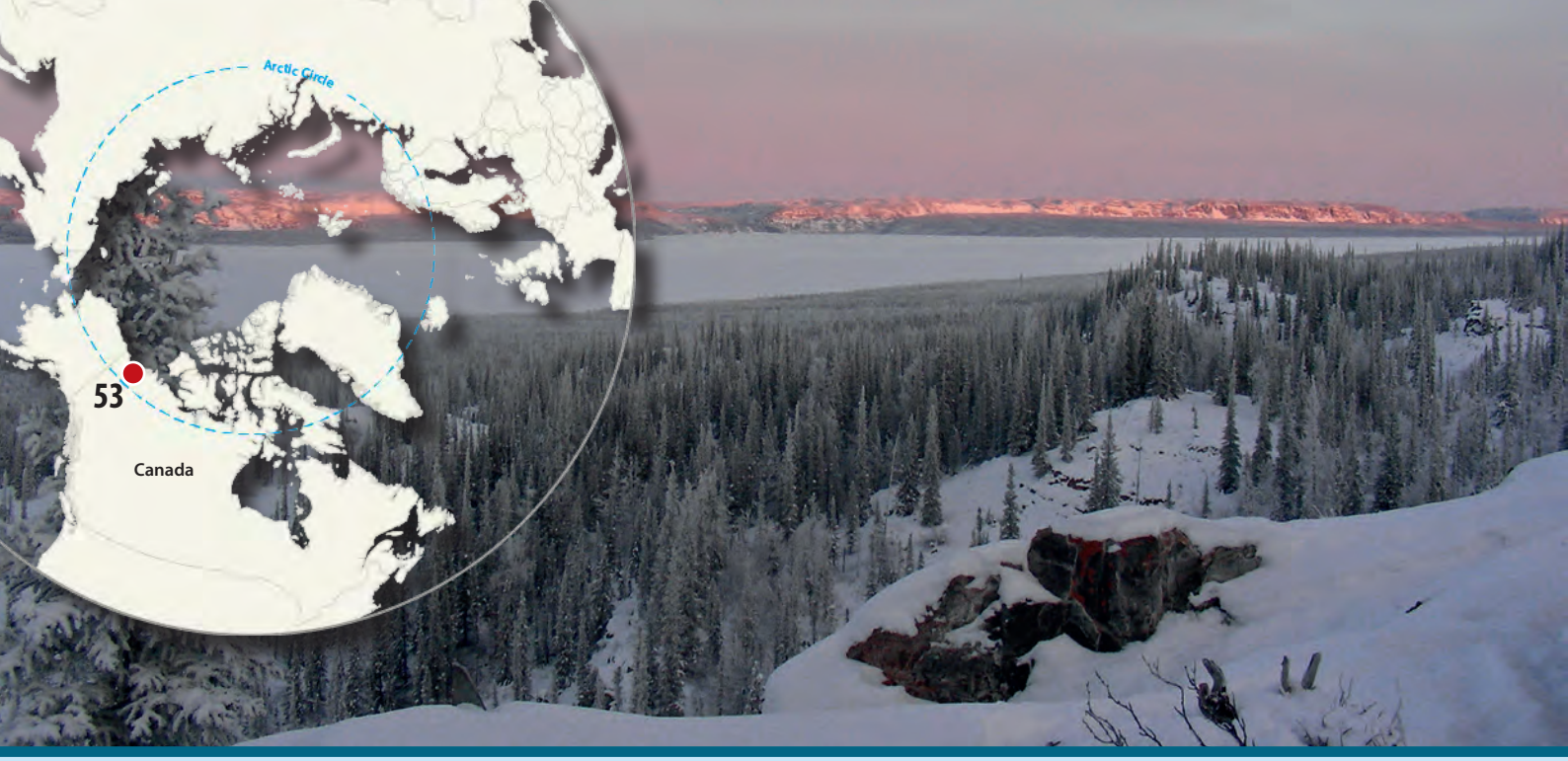
The study area at Kluane is within the traditional territory of Champagn Aishihik (CAFN), Kluane (KFN), or White River First Nations (WRFN).



## 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.

| Kluane Lake Research Station | |
|---|---|
| Website | https://klrs.ca/ |
| Country | Canada |
| Opening year | 1961 |
| Operational period | Year-Round |
| Contact (access to station) | klrs@ucalgary.ca |
| Geographical coordinates | 61°01′N, 138°24′W |
| Altitude of station | 793 m a.s.l. |
| Nearest town/settlement | Whitehorse (210 km)/ Haines Jct. (65 km) |
| Climate zone | Subarctic, Alpine (Boreal Forest) |
| Mean temperature: Annual (Feb., Jul.) | -3.8 °C (-18 °C, 13 °C) |
| Total annual precipitation (type) | 280 mm (snow, rain) |




## STATION NAME AND OWNER

The Western Arctic Research Centre (WARC) is operated by the Aurora Research Institute and Aurora College. The station is owned by the Government of the Northwest Territories (NWT).

## LOCATION

WARC is located in the town of Inuvik, Northwest Territories, in the western Canadian Arctic. WARC provides logistical support for research projects taking place throughout the northern NWT (including the archipelago) and along the northern Yukon coast. There are many protected areas in the vicinity of WARC, including bird sanctuaries, national parks, and territorial parks.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Inuvik is located two degrees above the Arctic Circle, but just south of the tree line, in a region underlain by continuous permafrost. The town sits approximately 100 km south of the Beaufort Sea coastline on the eastern edge of the Mackenzie River Delta (13 000 km$^2$ in area). The delta contains over 45 000 lakes, and experiences some degree of flooding during the ice breakup period each spring. The surrounding landscape includes a wide variety of ecoregions, including tundra, mountains (the Richardson Mountains on the west side of the Mackenzie Delta), coastal zones, and peat plateaus. Characteristic regional fauna include bears, reindeer, caribou, water fowl and shore birds, beluga whales, moose, and a variety of fresh- and salt-water fish.

## HISTORY

A research centre first opened in Inuvik in 1964; the original facility was torn down in 2010 and replaced with the Western Arctic Research Centre, which opened in 2011.

## GENERAL RESEARCH AND DATABASES

Research undertaken and supported at WARC is wide ranging and includes archaeology, permafrost, limnology, oceanography, geology, spatial information sciences, botany, renewable energy (solar and wind), atmospheric sciences, wildlife, fisheries, and marine mammal health. Social sciences, health sciences, and traditional knowledge studies are also frequently supported.

# WARC



Each year, we support more than 50 separate research projects. The Aurora Research Institute (ARI) maintains the NWT Research Database, which is a searchable database of all research licenses issued by ARI since 1974.

## HUMAN DIMENSION

WARC is located in the town of Inuvik, which is a regional centre for government and industry. The region surrounding Inuvik is the homeland of the Inuvialuit and Gwich'in indigenous peoples, while the town itself is home to both groups as well as people from many different cultures.

## ACCESS

Inuvik is accessible via the Dempster Highway for most of the year, except for periods in the spring and fall when both the local ice roads and ferries are not in operation. Air service runs year-round and includes daily jet service from Edmonton, Yellowknife, and Whitehorse. The Inuvik Regional Airport is a 15 minute drive from the town. Depending on destination and season, field transportation can include car/truck, snowmobile, boat, charter plane, or helicopter.

| Western Arctic Research Centre | |
|---|---|
| Website | http://nwtresearch.com |
| Country | Canada |
| Opening year | 1964 |
| Operational period | Year-round |
| Contact (access to station) | logistics@nwtresearch.com |
| Geographical coordinates | 68°21'N, 133°43'W |
| Altitude of station | 15 m a.s.l. |
| Nearest town/settlement | Inuvik (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -8.2 °C (-25.5 °C, 14.1 °C) |
| Total annual precipitation (type) | 241 mm (snow, rain) |


# CHARS

## STATION NAME AND OWNER

The Canadian High Arctic Research Station (CHARS) is owned and managed by the Government of Canada.

## LOCATION

The Canadian High Arctic Research Station is located in Cambridge Bay, Nunavut. The Kitikmeot hamlet's central northern location provides good access to all parts of the Canadian Arctic. The main campus for CHARS is located on the Plateau site in Cambridge Bay, on a slope overlooking the community and the bay.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The climate in the Cambridge Bay area is characterised by a high degree of continentality, demonstrated by a large mean annual temperature range and some of the lowest annual precipitation amounts encountered in the Canadian Arctic Islands. Permafrost is nearly continuous, with active layers during summer being <1 m. The region is characterised by a moist tundra with low shrubs, forbs, grasses, and cryptogams. The vascular flora consists of c. 150 plant species. The arthropod fauna around Cambridge Bay is relatively diverse and consists of hundreds of insect and spider species. Cambridge Bay is an important fishing area for Arctic char and lake trout, and Southern Victoria Island is an important staging and nesting area for many migratory birds. It also has sizeable populations of caribou, muskox, Arctic hare, Arctic fox, and Arctic wolf.

## HISTORY

CHARS was first announced in 2007. Construction of the infrastructure began in 2014. It is a world-class hub for science and technology in Canada's North that connects a network of regional facilities. The Station will provide a suite of services for Science and Technology (S&T) and Indigenous knowledge in Canada's North, including a knowledge sharing center, and advanced laboratories. Polar Knowledge Canada (POLAR) operates the CHARS campus.

## GENERAL RESEARCH AND DATABASES

The first 5-year Science and Technology Plan will be phased-in beginning in 2014-2015. This Plan outlines the following short-term priorities: (i) information preparedness for development; (ii) alternative and renewable energy; (iii) underwater situational



awareness; (iv) predicting the impacts of changing ice, permafrost, and snow on shipping, infrastructure, and communities, and (v) infrastructure for development.

## HUMAN DIMENSION

Cambridge Bay (Iqaluktuttiaq in Inuinnaqtun, meaning "good fishing place") is a hamlet located on Victoria Island in the Kitikmeot Region of Nunavut, Canada. The hamlet has a population of c. 1600 people of which about 80% are Inuit. The area was a traditional hunting and fishing location and archaeological sites are often found.

## ACCESS

The only passenger services are through the Cambridge Bay Airport with daily air service to Yellowknife, and to the other Kitikmeot Region communities. Although Cambridge Bay lies on the Northwest Passage there are no passenger ships other than tourist cruises and annual sealift to the community. Charter and MEDIVAC (air ambulance) services are available.

| Canadian High Arctic Research Station | |
|---|---|
| Website | https://www.canada.ca/en/polar-knowledge.html |
| Country | Canada |
| Opening year | 2017 |
| Operational period | Year-round |
| Contact (access to station) | info@polar.gc.ca |
| Geographical coordinates | 69°07′N, 105°03′W |
| Altitude of station | 15 m a.s.l. |
| Nearest town/settlement | Cambridge Bay, Nunavut (0 km) |
| Climate zone | Low Arctic – CAVM Subzone D |
| Mean temperature: Annual (Feb., Jul.) | -13.9 °C (-32.5 °C, 8.4 °C) |
| Total annual precipitation (type) | 142 mm (rain, snow) |

Polar Knowledge Canada | Savoir polaire Canada


# M'CLINTOCK CHANNEL

## STATION NAME AND OWNER

M'Clintock Channel Polar Research Cabins is a collaboration between Gjoa Haven Hunters and Trappers Organization and Queen's University in Canada.

## LOCATION

The M'Clintock Polar Research Cabins are situated along the coast of M'Clintock Channel, Nunavut in Canada. The nearest community is Uqsuqtuuq (Gjoa Haven) in the Kitikmeot region of Nunavut.

## BIODIVERSITY AND NATURAL ENVIRONMENT

In biological science, M'Clintock Channel is possibly most famous for its polar bears. The M'Clintock Channel sub-population estimate is 284 polar bears, based on mark-recapture work completed in 2000. There is low harvest on the polar bears, and the population is thought to be increasing from reduced numbers. The area has the classic flora and fauna of this part of Nunavut, incl. ringed seals, geese, gulls, turns, waders (shorebirds), etc.

The M'Clintock Channel is 274 km long, and between 105 to 209 km wide, making it one of the largest channels in the Canadian Arctic Archipelago.

## HISTORY

The cabins are maintained by Gjoa Haven Hunters and Trappers Association, and the research is run in collaboration with Queen's University, Kingston, Ontario, Canada.

The community of Gjoa Haven has made significant steps in compiling local Inuit knowledge regarding polar bears. A critical part of this work has been the use of the Hunter and Trapper Organization cabins on the coast of M'Clintock Channel. These cabins are critical staging



points for the extensive sea-ice work involved in the polar bear surveys and the collection of Traditional Ecological Knowledge on polar bears.

## GENERAL RESEARCH AND DATABASES

Polar bear research made by scientists supplemented with traditional Inuit knowledge has been the focus of the research at the M'Clintock Channel Research Cabins. For more information, please contact the Gjoa Haven Trappers and Hunters Association.

## HUMAN DIMENSION

The nearest community is Uqsuqtuuq (Gjoa Haven), a hamlet with a primarily Inuit population of over 1100 people. Gjoa Haven has two grocery stores, a hotel, a police station, a fire department, and a health care facility, as well as local administration offices.

## ACCESS

Gjoa Haven has a small airport and an annual sealift. Flight connections are to Yellowknife, Northwest Territories, and destinations in Nunavut, such as Cambridge Bay.

| M'Clintock Channel Polar Research Cabins | |
|---|---|
| Website | – |
| Country | Canada |
| Opening year | Cabins refurbished and upgraded 2009 |
| Operational period | Year-round |
| Contact (access to station) | degroot@queensu.ca<br>htogjoa@qiniq.com |
| Geographical coordinates | 68°37′ N, 95°52′ W |
| Altitude of station | 0 m a.s.l. |
| Nearest town/settlement | Uqsuqtuuq (Gjoa Haven) (0 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -5.7 °C (-15.6 °C, 0.9 °C) |
| Total annual precipitation (type) | 191 mm (snow, rain) |

# CHURCHILL


## STATION NAME AND OWNER

Churchill Northern Studies Centre is owned and operated by Churchill Research Centre Inc. – a community-based organisation in the Churchill Wildlife Management Area.

## LOCATION

The CNSC is an accessible northern field research station, open year-round, in Canada. It is located in a transition zone where the northern extent of the boreal forest meets the southern edge of the arctic tundra; it is also near the Churchill River, where freshwater enters the marine ecosystem of Hudson Bay. This convergence of ecosystems (forest, tundra, taiga, freshwater, estuary and marine) provides an incredibly wide array of representative environments for study.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Churchill is located on the west shore of Hudson Bay, 110 kilometres from the Manitoba-Nunavut. It is most famous for the many polar bears that move toward the shore from inland in the autumn, leading to the nickname "Polar Bear Capital of the World". The landscape around Churchill is influenced by shallow soils caused by a combination of subsurface permafrost and bedrock formations. Churchill has a subarctic climate with long very cold winters, and short, cool to mild summers.

## HISTORY

Established in 1976, the mission of the CNSC is "to understand and sustain the north." This vision is implemented through the promotion of northern research, developing and supporting educational opportunities, and serving as a vehicle for dialogue about northern issues.

## GENERAL RESEARCH AND DATABASES

Major research conducted through the CNSC include auroral research, climate change, climatology, greenhouse gas emissions, inland water quality, marine ecosystems, northern ecology, peatland and treeline dynamics, snow pack dynamics, and wildlife management. The centre facilitates the work of between 100 and 175 researchers annually. In addition, the centre host citizen science research programs funded by Earthwatch Institute under the "Climate Change at the Arctic's Edge" programme.



## HUMAN DIMENSION

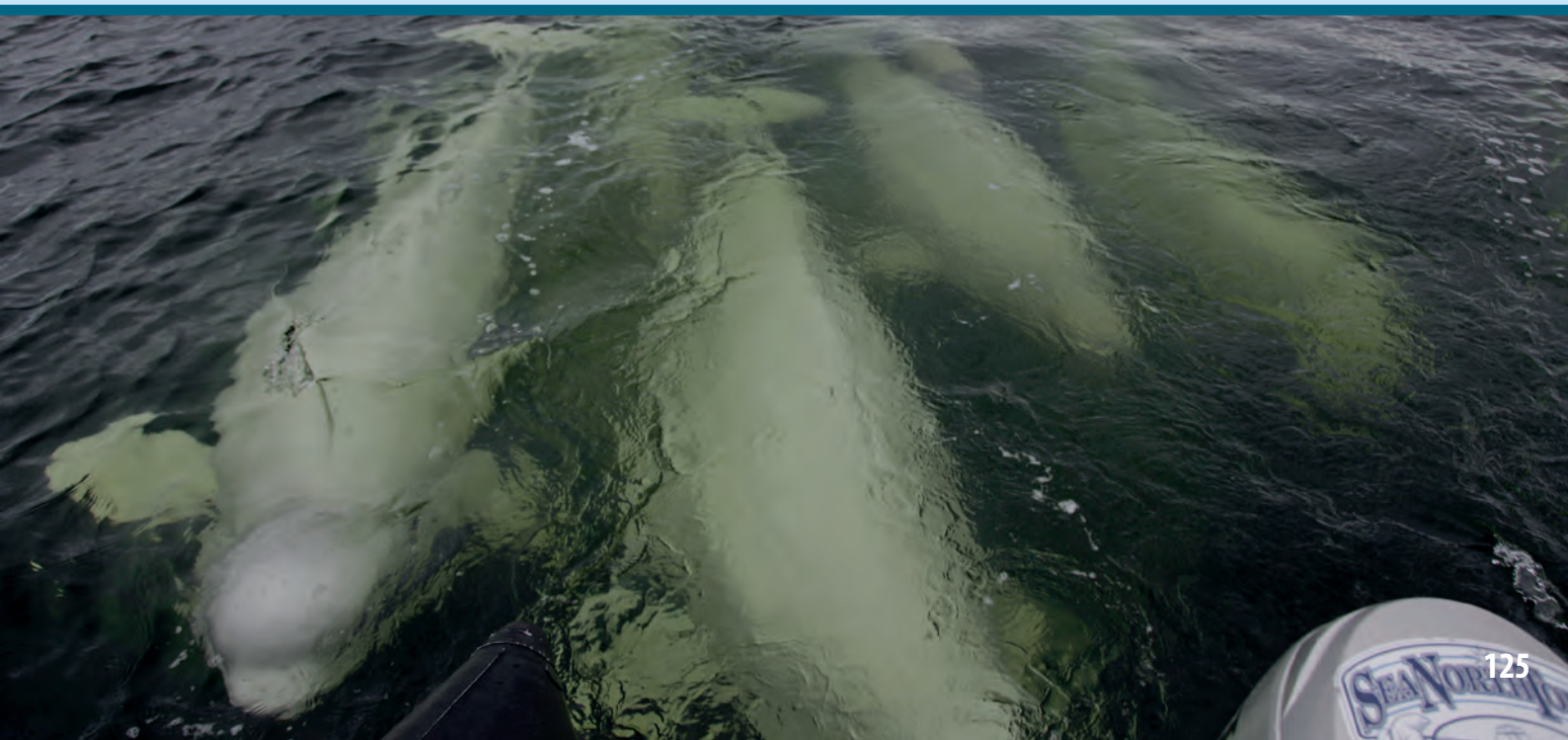
The nearest community is the Town of Churchill. The community possesses a rich cultural history with the intersection of three aboriginal peoples (the Caribou Inuit, the Sayisi-Dene and the Maskêkô-winniwak or Swampy Cree) and, following the establishment of a Hudson Bay trading post, become home to a significant Métis population.

## ACCESS

Access to the station is by rail (using VIA Rail Canada from Winnipeg or Thompson, Manitoba) or by air (using Calm Air from Winnipeg or Thompson, Manitoba). Rail travel from Winnipeg is 36 hours whereas a flight is 2 hours. Freight can be shipped to Churchill using Gardewine North and arrives once per week via freight train or can be brought in by air transport. Camping and long-distance hiking is not recommended due to the presence of polar bears in the region.

| Churchill Northern Studies Centre | |
|---|---|
| Website | www.churchillscience.ca |
| Country | Canada |
| Opening year | 1976 |
| Operational period | Year-round |
| Contact (access to station) | research@churchillscience.ca |
| Geographical coordinates | 58°44′ N, 93°49′ W |
| Altitude of station | 18 m a.s.l. |
| Nearest town/settlement | Churchill, Manitoba (23 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -6.5 °C (-24.5 °C, 12.7 °C) |
| Total annual precipitation (type) | 452 mm (snow, rain) |

churchillnorthernstudiescentre




## STATION NAME AND OWNER

Flashline Mars Arctic Research Station is one of two simulated Mars habitats owned and operated by The Mars Society, Inc. – a U.S. non-profit organisation.

## LOCATION

The station is located on Devon Island, a Mars analog environment and polar desert, approximately 165 km northeast of the hamlet of Resolute in Nunavut, Canada. The station is situated on Haynes Ridge, overlooking the Haughton impact crater, a 23 km diameter crater formed approximately 39 million years ago (late Eocene).

## BIODIVERSITY AND NATURAL ENVIRONMENT

Because of its relatively high elevation and its extreme northern latitude, Devon Island supports only a meagre population of small birds and mammals, including muskoxen. Animal life is concentrated in the Truelove Lowland area of the island, which has a favorable microclimate and supports relatively lush arctic vegetation. Temperatures during the brief growing season seldom exceed 10 °C and in winter can plunge to as low as -50 °C. Cape Liddon is an Important Bird Area (IBA) notable for its black guillemot and northern fulmar populations. Cape Vera, another IBA site, is also noted for its northern fulmar population.

## HISTORY

The Flashline Station was built by The Mars Society in 2001. Since then it has been used to conduct planetology studies: geological, biological, and climatology studies under conditions similar to those found on Mars, and to develop field tactics based on those explorations, to test habitat design features, tools, and technologies, and to assess crew selection protocols essential to future human spaceflight.

## GENERAL RESEARCH AND DATABASES

Experiments at Flashline primarily focus on biodiversity surveys of the arctic desert and geological/geophysical study of the Haughton Crater area. Other experiments included a geophysi-

# MARS



cal analysis of Haughton Crater which answered key questions on the physical characteristics of the 20-million year old meteor crater and examined microfossils in crater soil deposits.

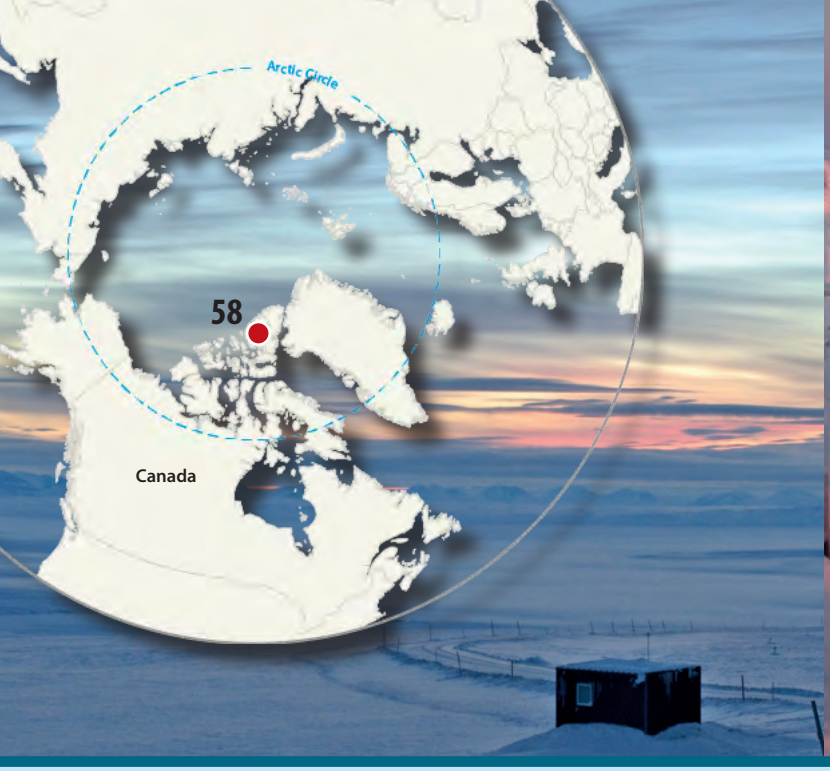
## HUMAN DIMENSION

The Mars Society invites researchers to live and work at the station, typically for one month during the arctic summer. Expeditions typically consist of a crew of between six and seven individuals. The station's primary mission is to help develop key knowledge needed to prepare for human Mars exploration.

## ACCESS

Due to the harsh and dangerous environment of the Arctic, crew members must file an application for consideration and complete orientation and training prior to visiting the station. Crew members must travel by commercial airline to Resolute Bay, Canada. They then board a Twin Otter aircraft for the final leg of the journey to Devon Island. The primary means of crew transportation while on the island is by ATVs.

| Flashline Mars Arctic Research Station | |
|---|---|
| Website | www.fmars.marssociety.org |
| Country | Canada |
| Opening year | 2001 |
| Operational period | Arctic summer; proposed year-round |
| Contact (access to station) | susanm@marssociety.org |
| Geographical coordinates | 75°25′ N, 89°49′ W |
| Altitude of station | 60 m a.s.l. (approx.) |
| Nearest town/settlement | Resolute Bay (145 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -16 °C (–, 2 to 8 °C) |
| Total annual precipitation (type) | <200 mm (primarily snow) |




# PEARL

## STATION NAME AND OWNER

Polar Environment Atmospheric Research Laboratory (PEARL) is operated by the Canadian Network for the Detection of Atmospheric Change (CANDAC) – an informal university and government consortium. The PEARL Ridge Laboratory building is owned and maintained by Environment Canada and the 0PAL and SAFIRE buildings are owned and maintained by the University of Toronto. Research equipment in the buildings is owned by various university and government organisations.

## LOCATION

PEARL is located adjacent to the Environment Canada Weather Station at Eureka, Nunavut, Canada. PEARL operates three facilities: (i) The PEARL Ridge Laboratory (80°03′ N, 86°24′ W, 610 m a.s.l.), (ii) the Zero-Altitude PEARL Auxiliary Laboratory (0PAL) (79°59′ N, 85°56′ W, 10 m a.s.l.), and (iii) the Surface and Atmospheric Flux, Irradiance, Radiation Extension Site (SAFIRE) (79°59′ N, 85°48′ W, 73 m a.s.l.). The area is a land reserve of the Federal government under Environment Canada. The station is situated on the shores of Slidre Fjord.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The area around PEARL is an arctic desert. The whole area is underlain by permafrost which is exposed in places. The microclimate is exceptionally mild for this latitude (maximum temperature: 20 °C, minimum temperature: -55 °C). Wildlife includes wolves, muskox, Arctic fox, and some caribou as well as migratory birds.

## HISTORY

The Weather Station at the site has operated for over 60 years. The first research building was constructed in the early 1990s, and PEARL itself was inaugurated in 2006. The laboratories provide housing, facilities for atmospheric (and other) research, instruments, and workshops for maintenance and repair the instruments.

## GENERAL RESEARCH AND DATABASES

The major emphasis at PEARL is on atmospheric research. The original purpose of the installation was to monitor stratospheric ozone, and although that work is still ongoing, the research has now broadened in scope to encompass the entire atmosphere



and beyond. Current measurements include ozone and associated chemicals in the stratosphere as well as the troposphere, aerosols and particulates, radiation and fluxes and upper atmosphere temperatures, winds, and waves. Other research groups including biologists, astronomers, and geologists regularly make use of the nearby Eureka Weather Station as a base. Measurements are regularly submitted to the NDACC, TCCON, and AeroNet databases.

## HUMAN DIMENSION

There is no local community. The nearest permanent facilities are the military base at Alert on the north side of Ellesmere Island and the community of Grise Fjord in southern Ellesmere Island. Both of these are about 450 km from PEARL.

## ACCESS

Access to the station is by chartered aircraft only, but the site can be accessed at any time of the year. Charter flights can be organised from Iqaluit, Resolute Bay, and Yellowknife. There is an annual sea-lift for bringing in larger equipment and goods. Transport around the site is by 4×4 truck.

| Polar Environment Atmospheric Research Laboratory | |
|---|---|
| Website | www.candac.ca |
| Country | Canada |
| Opening year | 2005 |
| Operational period | Year-round |
| Contact (access to station) | James.drummond@dal.ca<br>pierre.fogal@utoronto.ca |
| Geographical coordinates | PEARL RidgeLab: 80°03′N, 86°24′W;<br>0PAL: 79°59′N, 85°56′W;<br>SAFIRE: 79°59′N, 85°48′W |
| Altitude of station | PEARL RidgeLab: 610 m a.s.l.;<br>0PAL: 10 m a.s.l.;<br>SAFIRE: 73 m a.s.l. |
| Nearest town/settlement | Grise Fjord (500 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -18.8 °C (-37.4 °C, 6.1 °C) |
| Total annual precipitation (type) | 183 mm (snow, rain) |


# WARD HUNT ISLAND

## STATION NAME AND OWNER

The CEN Ward Hunt Island Research Station is owned and run by the Centre d'etudes Nordiques (CEN: Centre for Northern Studies) in collaboration with Parks Canada (www.pc.gc.ca/index.aspx).

## LOCATION

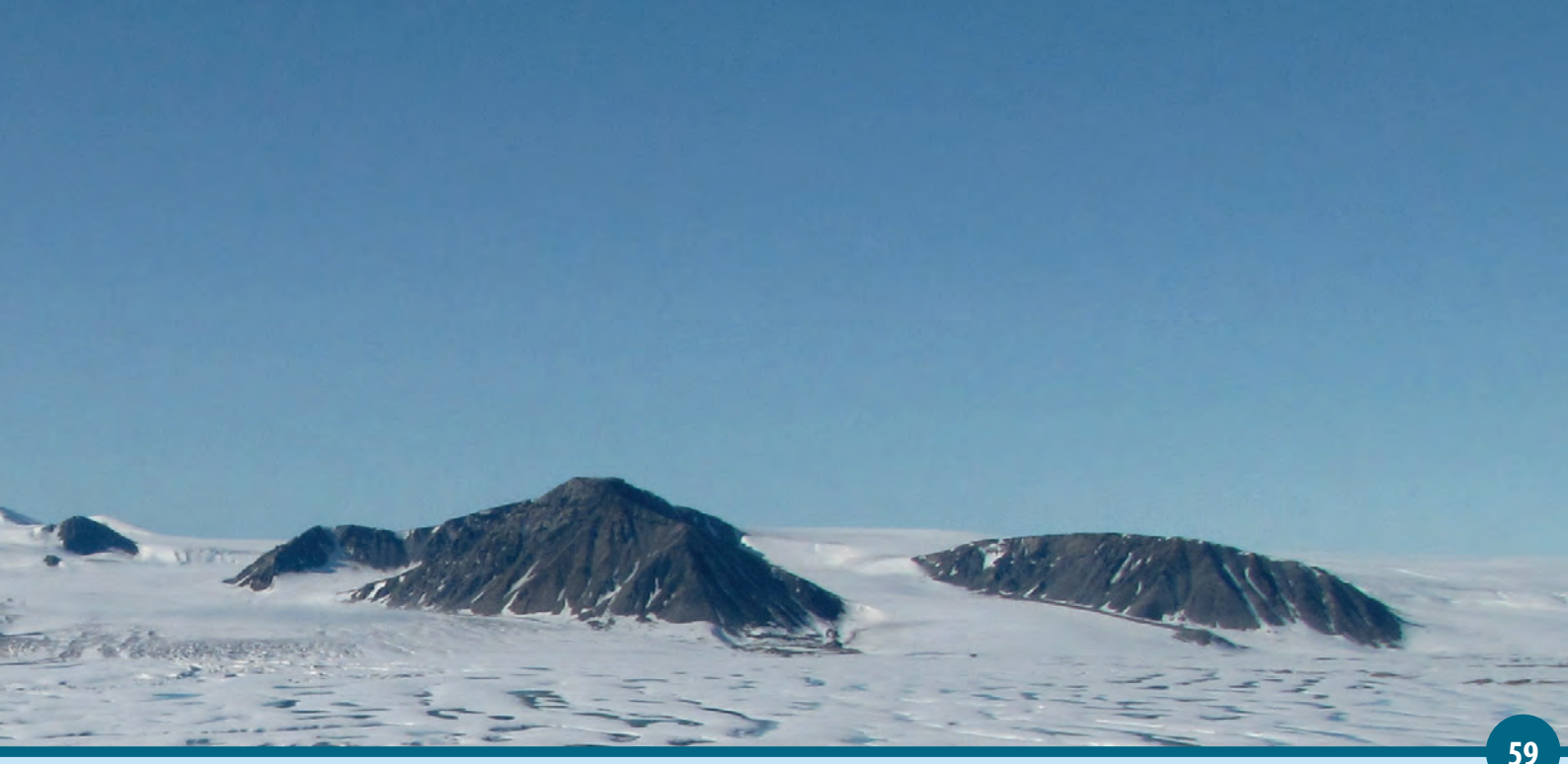
Ward Hunt Island is located at the northernmost tip of Canada, off the coast of northern Ellesmere Island and is part of Quttinirpaaq National Park, Nunavut, Canada. Quttinirpaaq means "top of the world" in Inuktitut and reflects this station's location, situated about 750 km from the North Pole.

## 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. 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

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.

## 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, with a population of 141 residents (as of the Canada 2006 Census), it is the only Inuit community on Ellesmere Island. 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.

## 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).

| CEN Ward Hunt Island Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=326&nm=wardhunt |
| Country | Canada |
| Opening year | 1998 |
| Operational period | May-August |
| Contact (access to station) | warwick.vincent@cen.ulaval.ca<br>cen@cen.ulaval.ca |
| Geographical coordinates | 83°06′ N, 74°10′ W |
| Altitude of station | 5 m a.s.l. |
| Nearest town/settlement | Grise Fjord (800 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -17.3 °C (-33 °C, -1 °C) |
| Total annual precipitation (type) | 150 mm (snow, rain, hail) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies


# BYLOT ISLAND

## STATION NAME AND OWNER

The CEN Bylot Island Field Station is owned and run by the Centre d'etudes Nordiques (CEN: Centre for Northern Studies) and in collaboration with Parks Canada (www.pc.gc.ca/index.aspx).

## 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$^2$), but the research station is located in a large glacial valley at the southwest end of the island.

## 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 wetlands are characterised by the presence of sedges, grasses, and many brown moss species. The better drained, dryer soils 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%. Benefiting from this "polar oasis" are more than 360 species of plants, 10 mammal species, and 74 bird species. Bylot Island was declared a Migratory Bird Sanctuary in 1965. 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. 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.

| CEN Bylot Island Field Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=322&nm=bylot |
| Country | Canada |
| Opening year | 1989 |
| Operational period | May-August |
| Contact (access to station) | gilles.gauthier@bio.ulaval.ca |
| Geographical coordinates | 73°09′N, 79°58′W |
| Altitude of station | 20 m a.s.l. |
| Nearest town/settlement | Pond Inlet (Mittimatalik 85 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -15 °C (-35 °C, 6.1 °C) |
| Total annual precipitation (type) | 220 mm (snow, rain) |

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CEN Centre for Northern Studies


# 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) is located in the hamlet of Igloolik, Nunavut, Canada. 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′ N, 77°57′ 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. 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

The facility was established by the federal government of Canada in the early 1970s to strengthen research in the Eastern Canadian Arctic.

## 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 Qaujimajatuqangit, to co-management partners in order to make responsible wildlife management and land use decisions. Existing databases 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



| Igloolik Research Center | |
|---|---|
| Website | http://env.gov.nu.ca/wildlife/resources |
| Country | Nunavut/Canada |
| Opening year | 1975 |
| Operational period | Year-round |
| Contact (access to station) | wildlife_research@gov.nu.ca<br>nlecomte@gov.nu.ca |
| Geographical coordinates | 69°22′ N, 81°48′ W |
| Altitude of station | 23 m a.s.l. |
| Nearest town/settlement | Igloolik (0 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -13.6 °C (-31.2 °C, 7 °C) |
| Total annual precipitation (type) | 286 mm (snow, rain) |

a large area of c. 2 millions km$^2$. The Igloolik 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 caribous, 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 4×4 truck, ATVs, and boats.

# SALLUIT


## STATION NAME AND OWNER

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

## LOCATION

The station is situated in the Inuit community of Salluit, Nunavik, Quebec, Canada.

## 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.

## HISTORY

Various groups have conducted research in the region in both natural and human sciences since the early 1960's. 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.

## 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. Data available through Nordicana D: www.cen.ulaval.ca/nordicanad/.

## 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 Montreal and Quebec 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. Contact CEN (cen@cen.ulaval.ca) for more information.

| CEN Salluit Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=324&nm=salluit |
| Country | Canada |
| Opening year | 2011 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 62°12′ N, 75°38′ W |
| Altitude of station | 35 m a.s.l. |
| Nearest town/settlement | Salluit village (0 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -8.5 °C (-25.2 °C, 7.1 °C) |
| Total annual precipitation (type) | 300 mm (snow, rain, hail) |

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CEN Centre for Northern Studies


# BONIFACE RIVER

## STATION NAME AND OWNER

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

## LOCATION

The CEN Boniface River Field Station is situated within the forest tundra less than 10 km from the tree limit and some 50 km inland from Hudson Bay.

## 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

The CEN Boniface River Field Station was constructed in 1990 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.

## 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 available through Nordicana D: www.cen.ulaval.ca/nordicanad/. Topics which are studied at the station include the following, but are not exclusive to these: Vegetation dynamics and the interaction between climate and forest fires, genetic homogeneity in the ecological heterogeneity of Quebec subarctic 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, and the influence of permafrost on riverine ecosystem dynamics etc.

## HUMAN DIMENSION

No communities live at or near Boniface River Field Station. The nearest community is Inukjuak more than 140 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-Kuujjuarapik.

| CEN Boniface River Field Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=327&nm=boniface |
| Country | Canada |
| Opening year | 1988 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 57°45′ N, 76°10′ W |
| Altitude of station | 115 m a.s.l. |
| Nearest town/settlement | Inukjuak (140 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -4 °C (-24 °C, 12.5 °C) |
| Total annual precipitation (type) | 500 mm (snow, rain, hail) |

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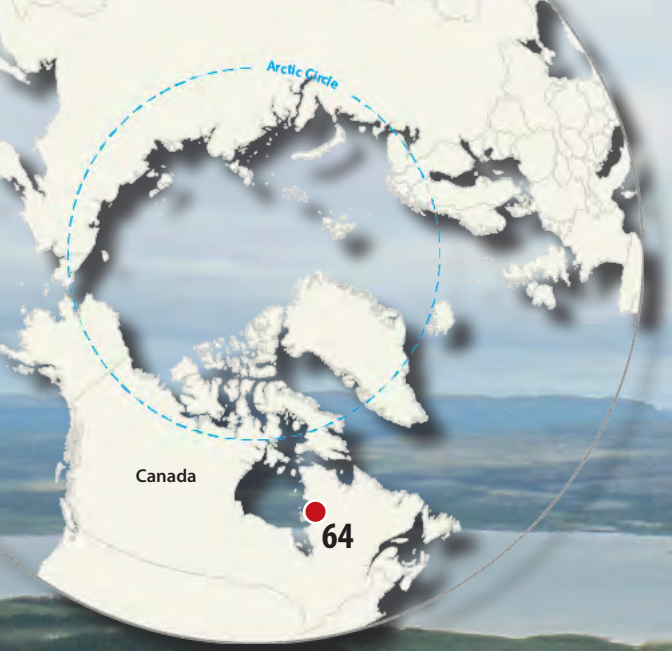
# UMIUJAQ




## STATION NAME AND OWNER

The CEN Umiujaq Research Station is owned and run by the Centre d'etudes Nordiques (CEN: Centre for Northern Studies) whose secretariat is based at Universite Laval, Quebec, 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, Quebec, Canada.

## 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.

## HISTORY

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 2010, CEN undertook major station upgrade.

## 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. CEN has extensive climate data since 1997 which are available through Nordicana D: www.cen.ulaval.ca/nordicanad/.

## 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-Kuujjuarapik Research Station. Contact CEN (cen@cen.ulaval.ca) for more information.

| CEN Umiujaq Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=325&nm=umiujaq |
| Country | Canada |
| Opening year | 2011 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 56°33′N, 76°32′W |
| Altitude of station | 5 m a.s.l. |
| Nearest town/settlement | Umiujaq village (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -3 °C (-22.4 °C, 12.2 °C) |
| Total annual precipitation (type) | 500-600 mm (snow, rain, hail) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies


## STATION NAME AND OWNER

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

## LOCATION

The CEN Whapmagoostui-Kuujjuarapik Research Station 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 Kuujjuarapik (Inuit).

## BIODIVERSITY AND NATURAL ENVIRONMENT

The climate at Whapmagoostui-Kuujjuarapik 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-Kuujjuarapik is located at the terrestrial boundary between taiga and tundra. The vegetation type is coastal forest tundra, with some 400 recorded species.

## HISTORY

The first signs of human occupation in the Whapmagoostui-Kuujjuarapik region have been dated at 3800 BP. 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 Community Science Centre.

## 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: Ecosci-

# WHAPMAGOOSTUI-KUUJJUARAPIK



ence 18: 182-203. CEN has extensive climate data recorded since 1957 which are available through Nordicana D: www.cen.ulaval.ca/nordicanad/.

## 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.

## ACCESS

Whapmagoostui-Kuujjuarapik 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 ATVs can be organized by the station manager.

| CEN Whapmagoostui-Kuujjuarapik Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=321&nm=wk |
| Country | Canada |
| Opening year | 1971 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 55°16′N, 77°45′W |
| Altitude of station | 50 m a.s.l. |
| Nearest town/settlement | Whapmagoostui (0 km) |
| Climate zone | Subarctic/Boreal |
| Mean temperature: Annual (Feb., Jul.) | -4 °C (-22.4 °C, 12.7 °C) |
| Total annual precipitation (type) | 648 mm (snow, rain, hail) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies

# RADISSON


## STATION NAME AND OWNER

CEN Radisson Ecological Research Station (Station de recherche ecologique 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'etudes Nordiques (CEN: Centre for Northern Studies): Universite Laval, Universite du Quebec a Rimouski and Centre Eau, Terre et Environnement of the Institut national de la recherche scientifique.

## LOCATION

The station is in the centre of the village of Radisson, 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.

## HISTORY

Researchers from the CEN have been working in this region since 1994, but the station was established in 1999 and was upgraded in 2010.

## 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. Extensive climate datasets, collected since 1996, are available at www.cen.ulaval.ca/nordicanad/.



## HUMAN DIMENSION

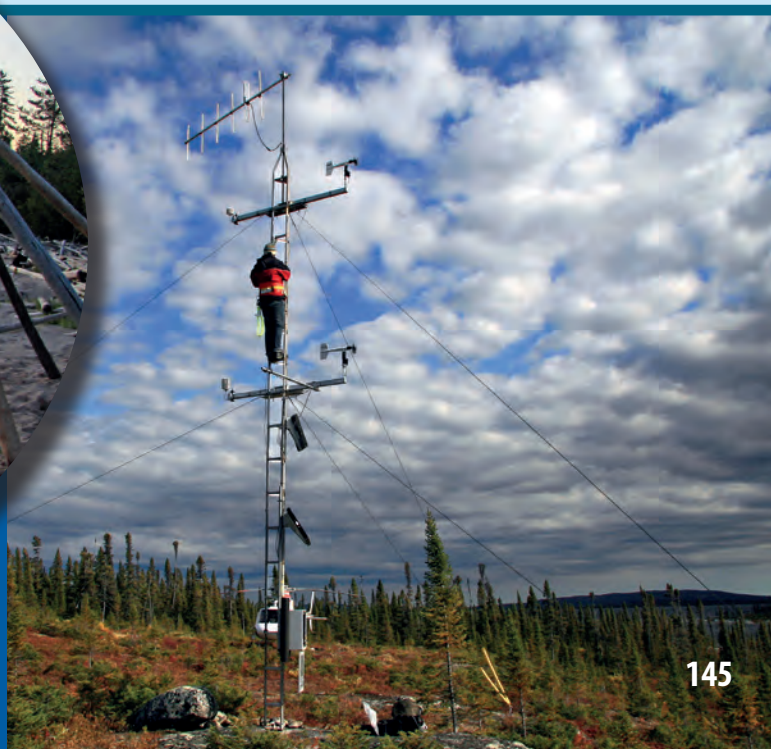
The town of Radisson is located on the south shore of the La Grande River, which drains the water from the LaGrande hydroelectric complex. It is the only non-aboriginal community north of 53°N. Despite its remoteness, Radisson offers a wide array of services: i.e. gas station, hardware and grocery store,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

| CEN Radisson Ecological Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=320&nm=radisson |
| Country | Canada |
| Opening year | 1999 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 53°47′ N, 77°36′ W |
| Altitude of station | 135 m a.s.l. |
| Nearest town/settlement | Radisson (0 km) |
| Climate zone | Subarctic/Boreal |
| Mean temperature: Annual (Feb., Jul.) | -3 °C (-21.6 °C, 13.7 °C) |
| Total annual precipitation (type) | 684 mm (snow, rain, hail) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies




# 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'etudes Nordiques (CEN: Centre for Northern Studies). 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 Quebec (Tursujuq National Park).

## LOCATION

Situated in Nunavik on the shores of Clearwater Lake, 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 Quebec (2243 km$^2$). The lake features two adjacent, circular basins that were created by a meteoritic impact (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

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.

## 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 water levels, hydrology, 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. CEN has




extensive climate data since 1986 which are available through Nordicana D: www.cen.ulaval.ca/nordicanad/.

## HUMAN DIMENSION

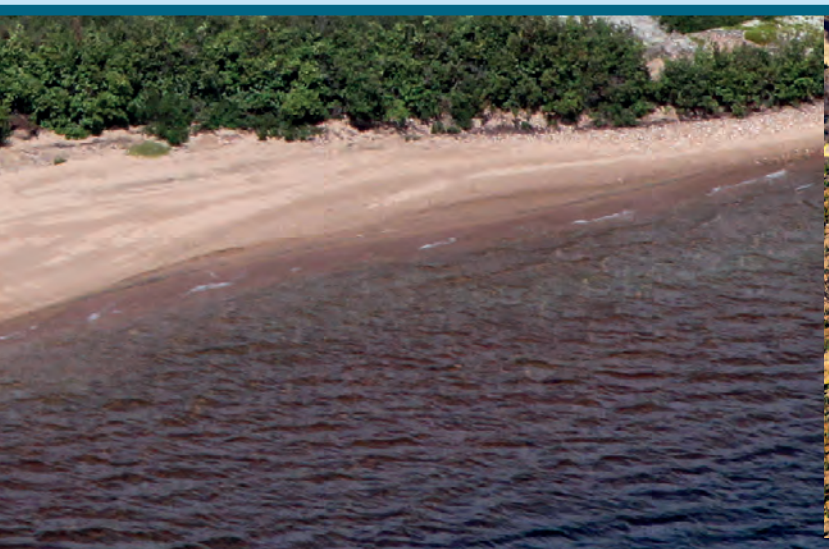
Clearwater Lake is situated within the boundaries of a provincial park and on aboriginal land. First Nations people, the Cree, still use the land extensively for hunting and fishing, especially during spring and autumn. There are no permanent settlements around the station. Access to the station is organized by CEN from the Whapmagoostui-Kuujjuarapik Research Station.

## ACCESS

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

| CEN Clearwater Lake Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=323&nm=lec |
| Country | Canada |
| Opening year | 2005 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 56°20′ N, 74°27′ W |
| Altitude of station | 224 m a.s.l. |
| Nearest town/settlement | Umiujaq (135 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -3 °C (-22.4 °C, 11.8 °C) |
| Total annual precipitation (type) | 500-600 mm (snow, rain, hail) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies




# NUNAVUT RESEARCH INSTITUTE

## STATION NAME AND OWNER

Nunavut Research Institute is located in Iqaluit, Nunavut, Canada, and is operated by Nunavut Arctic College.

## LOCATION

The institute is located in the City of Iqaluit which lies on Kooje-see Inlet at the end of Frobisher Bay on the southeastern coast of Baffin Island. The institute further maintains accommodation facilities in Arviat and Igloolik, and laboratory facilities in Rankin Inlet and Cambridge Bay.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Nunavut Research Institute is situated in the arctic zone with vegetation consisting of mosses, lichens, small shrubs, grasses, and low flowering plants. Caribou, polar bear, fox, wolves, and hares can be found near the town. Ring, harp, and bearded seal are found in Frobisher Bay, and beluga whales and walrus are common in the region as well. Eider ducks and Canada geese appear during the warmer months, and wheatears, snow buntings, and rock ptarmigan are present in spring and summer. Arctic char are abundant in the rivers and coastal lakes. Landlocked cod can be found in some lakes off Frobisher Bay.

## HISTORY

The Iqaluit Research Centre was opened by the Department of Indian and Northern Affairs in 1978 to support the Eastern Arctic Marine Sciences Project. Operations were transferred to the Science Institute of the Northwest Territories (SINT) in 1988.

## GENERAL RESEARCH AND DATABASE

Nunavut Research Institute accommodates more than 100 research projects each year within the fields of natural, social, and health sciences. Descriptions of research




projects licensed by the institute are available on the website. Nunavut Research Institute shares a research library with several other organisations that carry out research in Nunavut: www.nwmb-lib.com.

## HUMAN DIMENSION

The Nunavut Research Institute is situated in the city of Iqaluit. The city is the largest community and capital in Nunavut. The city has a population of approximately 8000 people. Approximately 60% of the population is Inuit.

## ACCESS

Iqaluit is located 2084 km north of Ottawa and 2200 km east of Yellowknife. The Iqaluit Airport is a hub for aircrafts to several small communities throughout Nunavut as well as Ottawa and Montreal. Two airlines from Ottawa serve Iqaluit daily while scheduled flights arrive and depart for Yellowknife and Edmonton 3 days of the week. Weekly flights between Nuuk, Greenland and Iqaluit may occur during the summer months.

| Nunavut Research Institute | |
|---|---|
| Website | https://www.nri.nu.ca/nunavut-research-institute-nri |
| Country | Canada |
| Opening year | 1997 |
| Operational period | Year-round |
| Contact (access to station) | www.nri.ca |
| Geographical coordinates | 63°45′N, 68°31′W |
| Altitude of station | 50 m a.s.l. |
| Nearest town/settlement | Iqaluit (0 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -9.5 °C (-28 °C, 3.6 °C) |
| Total annual precipitation (type) | 404 mm (rain, snow) |


## STATION NAME AND OWNER

CEN Kangiqsualujjuaq Sukuijarvik Research Station is owned and run by the Centre d' Etudes nordiques (CEN: Centre for Northern Studies) at Université Laval. The station is part of the CEN Network of research stations. The station is run in close collaboration with the community of Kangiqsualujjuaq and the Qiniqtiq Land Holding Corporation.

## LOCATION

The station is situated in the community of Kangiqsualujjuaq, on the shores of George River which flows into Ungava Bay, Nunavik, Quebec, Canada. This region is characterised by deep valleys shaped by glacier retreat and steep cliffs. Several remains from the last glaciation can be found here: trough valleys, cirques, morainic ridges, suspended valleys, etc.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The cold climate and topographic heterogeneity create a diverse landscape with tundra, forest tundra and boreal forest vegetation. The valley bottoms are ecologically rich, characterised by a rise of the boreal forest (with the presence of spruce, larch, birch, etc.). A special feature of this area is the presence of the George River caribou herd and the Torngat Mountains herd. Wolf, black bear, snowy owl and willow ptarmigan also inhabit this area. Atlantic salmon and Arctic char are numerous in the region's rivers. As for Ungava Bay and the rivers that flow into it, it represents an estuary rich in salmon, Arctic char, brook trout, beluga whales, and several seal species.

## HISTORY

The station officially opened in the summer of 2018. It is open year-round.

## GENERAL RESEARCH AND DATABASES

Past and current research focuses on permafrost, coastal geology and geomorphological characterization of the region. Other research areas cover caribou population dynamics, impacts of permafrost thawing in the context of climate warming, slope dynamics, wetland paleoecology, snow and ice dynamics, water quality and contamination, and plant community dynamics and northern plant response to climate change. Archeological studies and community follow-up activities also take place in

# KANGIQSUALUJJUAQ SUKUIJARVIK



the area, such as Imalirijiit, a community-based environmental monitoring program.

## HUMAN DIMENSION

The station is located directly within the limits of the village of Kangiqsualujjuaq. As for the history, archaeological sites associated with Thule, Dorset and pre-Dorset populations have been identified in the Kangiqsualujjuaq area. The first traces of occupation are dated around 2350 BP. In 1838, the first trading post was established at the present site of the village by the Hudson's Bay Company. In 1959, the first Inuit co-op, the Féderation des coopératives du Nouveau-Quebec (FCNQ) was founded in Kangiqsualujjuaq.

## ACCESS

Daily access by commercial airline (Air Inuit) from Kuujjuaq. Kuujjuaq is accessible by commercial airline (Air Inuit, First Air) through Montreal, Ottawa and Quebec. The airport is only a few kilometres from the station. Every summer, two cargo ships allow shipping of heavy equipment and materials (May-June to August-September), though this requires advance planning.

| CEN Kangiqsualujjuaq Sukuijarvik Research Station | |
|---|---|
| Website | http://www.cen.ulaval.ca/en/station.php?id=505176&nm=kangiq |
| Country | Canada |
| Opening year | 2018 |
| Operational period | Year-round |
| Contact (access to station) | cen@cen.ulaval.ca |
| Geographical coordinates | 58°41′N, 65°56′W |
| Altitude of station | 28 m a.s.l. |
| Nearest town/settlement | Kangiqsualujjuaq (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | -5.7°C (-20.3°C, 10.6°C) |
| Total annual precipitation (type) | 500-600 mm (snow, rain) |

CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies


# UAPISHKA

## STATION NAME AND OWNER

Uapishka Research Station is owned and jointly managed by the Pessamit Innu Council and the UNESCO Biosphere Reserve of Manicouagan-Uapishka.

## LOCATION

The Station is located in Québec region on the shore of one of the largest lake-reservoir of Québec and at the foot of the Uapishka mountain range (thirty peaks over 1000 m a.s.l). The range is the sixth largest for its altitude and the third largest alpine area in Quebec.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The station is built right on the shore of the Manicouagan lake, formed about 214 million years ago by the impact of a major meteorite. With a diameter of about 100 kilometers, the Manicouagan Astrobleme is the fourth largest crater in the world. The station is located in the heart of the boreal forest zone with large trackts of homogeneous black spruce forests, where caribous, black bears, wolves and other typical animals from the boreal zone can be encountered. The station is located in the largest protected natural area of this type in Quebec, within the traditional ancestral territory (Nitassinan) of the Pessamit Innus and a UNESCO Biosphere Reserve.

## HISTORY

Established in 2016, the station has a capacity of 42 persons accommodated in individual rooms, double rooms, dorms and chalet. It has a commercial kitchen and offers full year accommodation and restauration services.

## GENERAL RESEARCH AND DATABASES

Natural sciences and traditional knowledge provides the foundation for generating information on climate change



## HUMAN DIMENSION

The nearest communities are Baie-Comeau (336 km south – 23 000 inhabitants) and Fermont (230 km north – 2500 inhabitants). The reserve is a protected area managed jointly by a resident Innu community (390 km from the station) and the Ministry of Sustainable Development, Environment and the Fight Against Climate Change (MSDEFACC). Uapishka Station wishes to make a structural contribution to the regional development of the North Shore and the implementation of the Uapishka Biodiversity Reserve Management Plan, through the acquisition and transfer of scientific and traditional knowledge.

## ACCESS

The Uapishka Station is accessible in all seasons from Baie-Comeau by Route 389 (336 km – 4.5 hrs drive), followed by a two-kilometer managed forest road. There is an airport in Baie-Comeau, connecting to Montréal and from here to anywhere in the world.

| Uapishka Research Station | |
|---|---|
| Website | http://stationuapishka.com/ |
| Country | Canada |
| Opening year | 2016 |
| Operational period | Year-round |
| Contact (access to station) | info@uapishka.com |
| Geographical coordinates | 51°28′N, 68°14′W |
| Altitude of station | 365 m a.s.l. |
| Nearest town/settlement | Baie-Comeau (336 km)/ Fermont (230 km) |
| Climate zone | Boreal (Spruce-moss forest) |
| Mean temperature: Annual (Feb., Jul.) | -2.9 °C (–,–) |
| Total annual precipitation (type) | 890 mm (rain, snow) |

STATION UAPISHKA


# LIRS

## STATION STATION NAME AND OWNER

The Labrador Institute Research Station (LIRS) is located in North West River (NWR), Newfoundland and Labrador. It is operated by the Labrador Institute of Memorial University. The building is owned by the Newfoundland and Labrador (NL) Provincial Government's Department of Transportation and Works.

## LOCATION

LIRS's main offices are located in Happy Valley-Goose Bay, NL, with a satellite office located in Labrador City, NL. NWR is centrally located and its population is made up of Inuit, Euro-Canadian, Innu and Metis people. LIRS is located in the Taiga/Boreal Forest Region.

## BIODIVERSITY AND NATURAL ENVIRONMENT

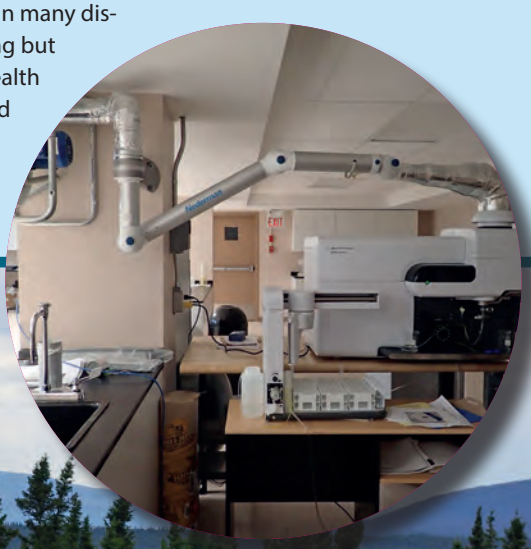
North West River experiences generally mild summers with cold winters. The area of North West River is located on a sandy plain surrounded by mountains. NWR falls within the Lake Melville Ecoregion, which is a unique ecosystem within Labrador. Immediately adjacent to the community are important waterfowl staging areas, seabird breeding colonies, and important breeding habitats for a variety of marine mammals. The nearby Mealy and Red Wine Mountains have endangered herds of woodland caribou. The eastern end of Lake Melville has been designated as an internationally Important Bird Area due to the high concentrations of moulting scoters in late summer. Numerous archaeological discoveries have been made in the area.

## HISTORY

The facility is new but is seeing an increasing amount of use. The station is co-located with the College of the North Atlantic and the NWR Community Library.

## GENERAL RESEARCH AND DATABASES

Labrador Institute (LI) has a long history of research in many disciplines, including but not limited to health research, arts and culture, social programs, climate





change, archaeology, education, mining and resource development history, migratory birds, and land mammals. Currently, the LIRS is supporting and/or taking part in climate change research, land use studies, interior archaeology, archaeological mitigation, addictions awareness, aquatic ecology, soil amendment research, and mine tailings remediation.

## HUMAN DIMENSION

The research station is located in North West River, Central Labrador. Central Labrador has been inhabited by the Innu and Inuit for over 6000 years. The NunatuKavut community council land claim is also nearby, though this claim has not been settled, and the proposed Mealy Mountain National Park is also just across Lake Melville from LIRS.

## ACCESS

NWR is accessible by road all year round. Goose Bay Airport is a 30 minute drive from the station. Chartered boats are available in summer; snowmobiles may be rented in winter; rental cars are available year-round in Happy Valley-Goose Bay.

| Labrador Institute Research Station | |
|---|---|
| Website | www.mun.ca/labradorinstitute |
| Country | Canada |
| Opening year | 1978 |
| Operational period | Year-round |
| Contact (access to station) | krista.oxford@mun.ca |
| Geographical coordinates | 53°31′N, 60°08′W |
| Altitude of station | 21 m a.s.l. |
| Nearest town/settlement | North West River (0 km) |
| Climate zone | Taiga/Boreal Forest |
| Mean temperature: Annual (Feb., Jul.) | 0 °C (-15.7 °C, 15.1 °C) |
| Total annual precipitation (type) | 940 mm (rain, snow) |

MEMORIAL UNIVERSITY Labrador Institute


## STATION NAME AND OWNER

The DMI Geophysical Observatory – Qaanaaq is owned and managed by the Danish Meteorological Institute, Copenhagen, Denmark.

## LOCATION

The DMI Geophysical Observatory – Qaanaaq is located at the outer perimeter of the city of Qaanaaq in North West Greenland. The station connects different monitoring infrastructures in the region. Qaanaaq is located some distance away from the National Park in North East Greenland and the nature reserve area in the Melville Bay to the south. A number of glaciers terminate into the fjord and the prominent North Water Polynya reach to the mouth of the fjord.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Qaanaaq has a cold, dry, tundra climate with running water only during four months a year. The peninsula is covered by a small local ice cap, the Qaanaaq ice cap. In summer, Inglefield Fjord is a key habitat for narwhal and activities in the region includes extensive winter fishing for halibut and hunting of walrus. Musk-ox and reindeer populate nearby areas and the surrounding waters (including the productive North Water Polynya) support whales, seals, ploar bears and numerous birdspecies including guillemots and large populations of little auks.

## HISTORY

The DMI Geophysical Observatory – Qaanaaq was established in the 1950's and has a local full time manager year round. The station meets local standards and stays open year round, though some upgrades are planned during the coming years.

## GENERAL RESEARCH AND DATABASES

In addition to classical meteorological measurements, it has served as a multidisciplinary geophysical observatory. Ongoing monitoring today includes infrasound and geomagnetism. In the

# DMI GEOPHYSICAL OBSERVATORY



latter years DMI has developed a participatory ocean and cryosphere monitoring program with offset in the station in collaboration with local hunters and with focus on the winter season. Monitoring data are presently only available from DMI databases.

## HUMAN DIMENSION

Qaanaaq is a modern Greenlandic town where subsistence hunting and fishing is an important part of the local economy. Qaanaaq is the gateway to a number of smaller settlements both north and south of the town. Inhabitants has vast knowledge of local ecosystems and climate change, and work extensively with scientists to document changes in climate and local hunting/fishing traditions.

## ACCESS

Qaanaaq has weekly connecting flights from Ilulissat (Air Greenland), in summer twice a week. Qaanaaq may also be reached by Helicopter from the nearby US airbase in Thule though this will require special permits. In summer, the city is resupplied by ship from Nuuk (Royal Arctic Line). There is no public transport.

| DMI Geophysical Observatory – Qaanaaq | |
|---|---|
| Website | www.dmi.dk |
| Country | Greenland/Denmark |
| Opening year | 1950 |
| Operational period | Year round |
| Contact (access to station) | smo@dmi.dk (preliminary) |
| Geographical coordinates | 77°28′N, 69°13′W |
| Altitude of station | 16 m a.s.l. |
| Nearest town/settlement | Qaanaaq (0 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -13 °C (-26 °C, 4 °C) |
| Total annual precipitation (type) | 119 mm (rain, snow) |


# 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. 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 is 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. 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 vegetation is unique to low arctic Greenland – within walking distance from the station 212 of the 513 Greenlandic flower species is found.

## HISTORY

The botanist Morten Petersen Porsild founded the Arctic Station ("Den Danske Arktiske Station") in 1906. 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.

## 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 (buh@ign. ku.dk).

## HUMAN DIMENSION

Arctic Station is located only 1 km east of the town Qeqertarsuaq (Godhavn). 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 Lyngmarksfjeld where efforts are rewarded by a fantastic view of Disko Bay and the gigantic icebergs at Ilulissat Icefjord almost 100 kilometres away.

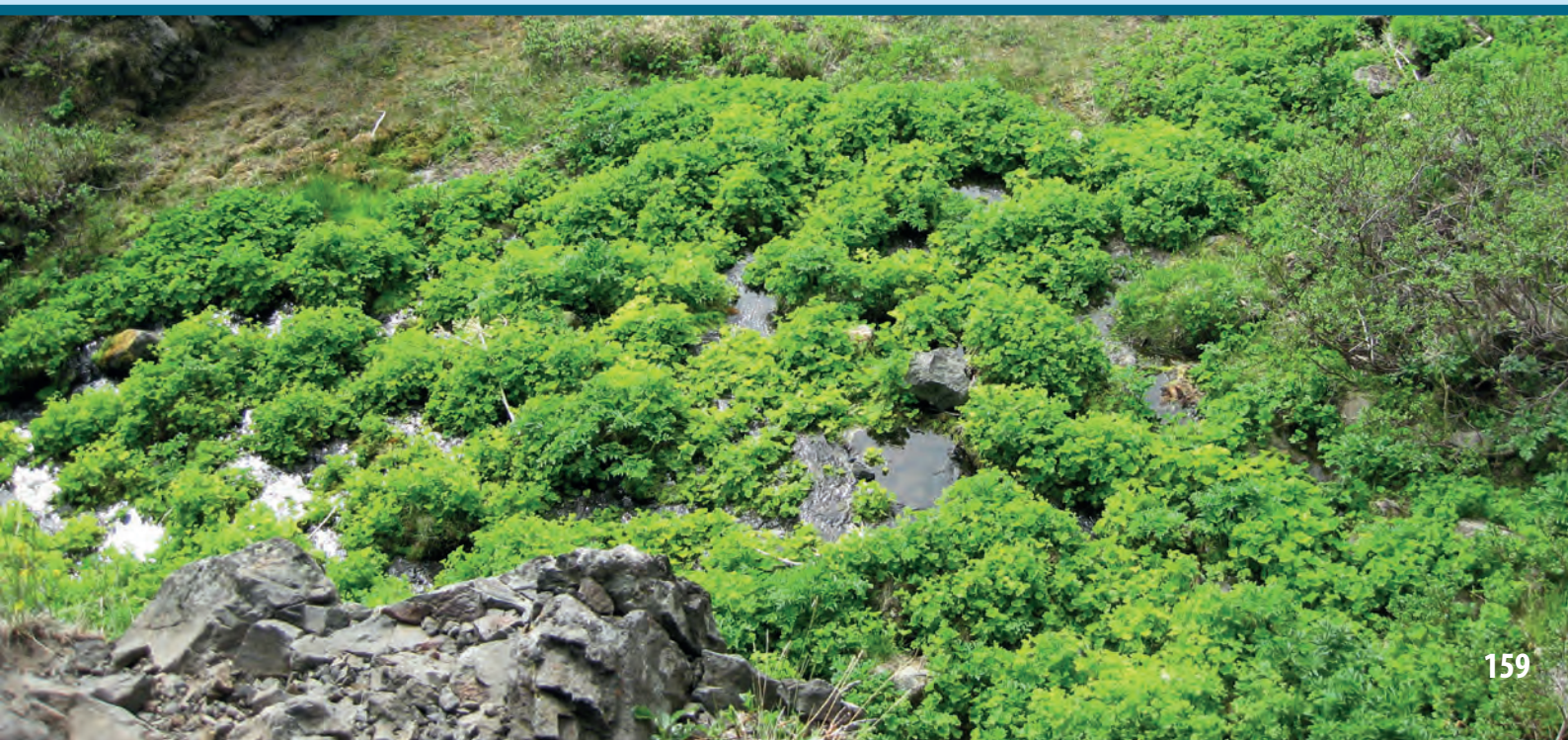
## ACCESS

The Arctic Station can be visited without problems throughout the year. Air Greenland operates winter-only air services from Qeqertarsuaq Heliport to Ilulissat, Qasigiannguit, and Aasiaat. 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 Qasigiannguit.

| Arctic Station | |
|---|---|
| Website | http://arktiskstation.ku.dk/english |
| Country | Greenland/Denmark |
| Opening year | 1906 |
| Operational period | Year-round |
| Contact (access to station) | ak@ign.ku.dk |
| Geographical coordinates | 69°15′N, 53°34′W |
| Altitude of station | 20 m a.s.l. |
| Nearest town/settlement | Qeqertarsuaq (1 km) |
| Climate zone | Low/High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -3.2 °C (-11.6 °C (January), 7.6 °C) |
| Total annual precipitation (type) | 436 mm (rain, snow) |

ARKTISK STATION

UNIVERSITY OF COPENHAGEN




# ARCTIC DTU, ARTEK RESEARCH STATION

## STATION NAME AND OWNER

Arctic DTU operates and run the Arctic DTU, ARTEK Research Station. The station is part of a cooperation between the Technical University of Denmark (DTU) and the Government of Greenland on Arctic educations, research and innovation. Buildings are owned by the Government of Greenland and provided by KTI – Tech College Greenland, the technical vocational school of Greenland.

## LOCATION

The station is situated in Sisimiut. The town is located 75 km north of the Arctic Circle on the central-western coast of Greenland along the east shore of Davis Strait.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Sisimiut is surrounded by sea, mountains, tundra and ice. Peninsulas and archipelagos forms the coastal landscape south of Sisimiut, while mountains, lakes and arctic tundra dominates northeastern areas and stretches all the way to Kangerlussuaq (130 km) and a further 40 km to the Greenlandic Icecap. Wildlife in the area includes reindeer, foxes, musk ox, seals and whales. Birds breed along the coastline and the inland includes important areas for the greater white fronted goose. Occasionally polar bears are spotted north of town.

## HISTORY

The station itself started in 2000, providing a platform for fieldwork and research conducted in the area. Around 75 international arctic students visit the place over the year. Today, the station also is a base for international multidisciplinary research and fieldwork conducted in the surroundings and backcountry of Sisimiut.

## GENERAL RESEARCH AND DATABASES

The research station is ideal for multidisciplinary research and long-term monitoring of geophysical changes related to climate change, including terrestrial and aquatic ecosystems and Earth Observation (EO). Moreover, there is access to a number of bivouac shelters in the back country and a small hut in Kangerlussuaq, mainly for monitoring of permafrost, northern light and glacial earthquakes. Further, research related to arctic settlements, infrastructure and environmental impact is performed



at the station. Research in arctic heritage has been conducted in connection with the area being added to the UNESCO World Heritage list.

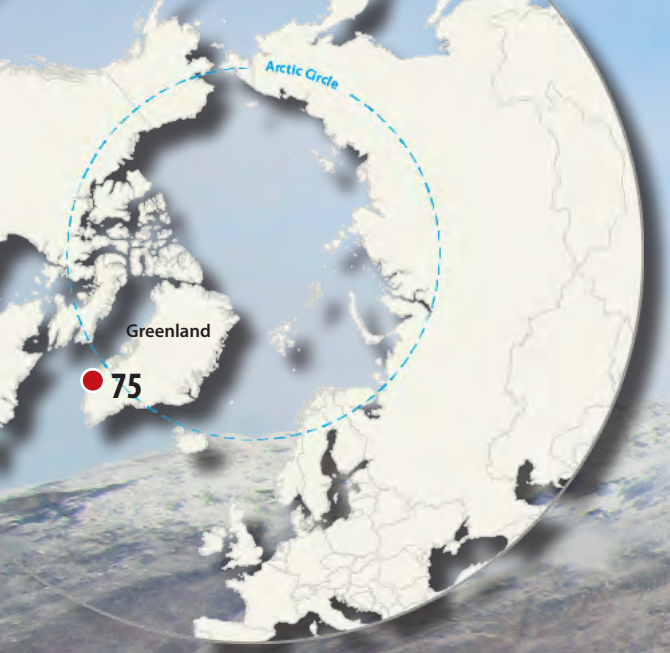
## HUMAN DIMENSION

Remnants of inuit cultures dates back some 4200 years and the areas contain a complete suite of ruin sites, representing different cultural epochs and their principal seasonal hunting and fishing activities. This led to inclusion of the 'Inuit hunting grounds Aasivissuit – Nipisat in West Greenland' on the UNESCO World Heritage List in 2018. Today Sisimiut is the second largest town of Greenland with c. 5500 inhabitants and main occupations are fishing industry, trade, public services, tourism and education/research.

## ACCESS

The research station is accessible all year for both researchers and university students. Sisimiut is reached either by plane with daily connections (Air Greenland) or boat (Arctic Umiaq Line). The Arctic Trail, a 160 km hike trail, connects Sisimiut with Kangerlussuaq and its international airport.

| Arctic DTU, ARTEK Research Station | |
|---|---|
| Website | www.arctic.dtu.dk |
| Country | Greenland |
| Opening year | 2000 |
| Operational period | Year-round |
| Contact (access to station) | arctic@dtu.dk |
| Geographical coordinates | 66°55' N, 53°40' W |
| Altitude of station | 35 m a.s.l. |
| Nearest town/settlement | 0 km (Sisimiut) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -3.6 °C (-13.9 °C, 7.1 °C) |
| Total annual precipitation (type) | 377 mm (rain, snow) |




# GREENLAND INSTITUTE OF NATURAL RESOURCES

## STATION NAME AND OWNER

Greenland Institute of Natural Resources (GINR) is owned by the Government of Greenland.

## LOCATION

The Greenland Institute of Natural Resources with its main buildings, laboratories, and living quarters is located in Nuuk, Greenland. A field station is situated in Kobbefjord (KB), c. 20 km southeast of Nuuk.

## BIODIVERSITY AND NATURAL ENVIRONMENT

GINR and the Kobbefjord field station provide access to a low arctic ecosystem in West Greenland with different biotopes such as dwarf-shrub heaths, fens, grasslands, and lakes. 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 at GINR for several years.

## HISTORY

GINR was founded in 1995 (preceded by Greenland Fisheries Research; established in 1946), and the main building was inaugurated in 1998. In addition to buildings in Nuuk, GINR owns two field stations, one in Kobbefjord, near Nuuk, and another in Niaqornat, in the Uummannaq area, Northwest Greenland. These field stations function as bases for small research teams and accommodates four to eight people.

## 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. GINR takes part in the Greenland Ecosystem Monitoring programme (www.g-e-m.dk), where data is provided free of charge at: https://data.g-e-m.dk/.



## HUMAN DIMENSION

GINR is located in Nuuk, the capital of Greenland, with c. 16 000 inhabitants. 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 practiced professionally and for recreational purposes.

## ACCESS

Nuuk can be reached by air either via Kangerlussuaq, West Greenland (www.airgreenland.com) or via Reykjavik, Iceland (www.airiceland.is). Transportation to the field station in Kobbefjord is by one of GINR's own smaller boats carrying up to 11 persons.

| Greenland Institute of Natural Resources with a field station in Kobbefjord | |
|---|---|
| Website | www.natur.gl, www.g-e-m.dk |
| Country | Greenland |
| Opening year | GINR 1998 (KB 2008) |
| Operational period | Year-round (KB: May-October) |
| Contact (access to station) | kara@natur.gl, booking@natur.gl |
| Geographical coordinates | 64°11'N, 51°41'W (KB: 64°08'N, 51°23'W) |
| Altitude of station | 50 m a.s.l. (KB: 13 m a.s.l.) |
| Nearest town/settlement | Nuuk (0 km ; KB: 20 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -0.9 °C (-7.8 °C, 6.9 °C) |
| Total annual precipitation (type) | 782 mm (rain, snow) |


# SERMILIK

## STATION NAME AND OWNER

The Sermilik Research Station is owned by the Department of Geosciences and Natural Resource Management, University of Copenhagen.

## LOCATION

The station is located in southeast Greenland, about 20 km north of the small town Tasiilaq (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

During an expedition in 1933, led by the famous polar researcher Knud Rasmussen, the first surveys of glaciers and geomorphology 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. Three automatic meteorological stations have been established since 1993.

## 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. Glacier mass-balance measurements and glacier surveys has been carried out since




the mid 1980's and delta surveys since 1989. Data, maps, digital 3D terrain models, satellite data, and aerial photographs 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.

## 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. It is also possible to reach the station after a 15-20 km hike.

| Sermilik Research Station | |
|---|---|
| Website | www.geo.ku.dk |
| Country | Greenland/Denmark |
| Opening year | 1970 |
| Operational period | Mid June – Mid September |
| Contact (access to station) | ak@ign.ku.dk |
| Geographical coordinates | 65°40′ N, 38°10′ W |
| Altitude of station | 15 m a.s.l. |
| Nearest town/settlement | Tasiilaq (20 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | -1.7 °C (-7.5°C (January), 6.4 °C) |
| Total annual precipitation (type) | 984 mm (snow, rain) |

UNIVERSITY OF COPENHAGEN


# SUMMIT STATION

## STATION NAME AND OWNER

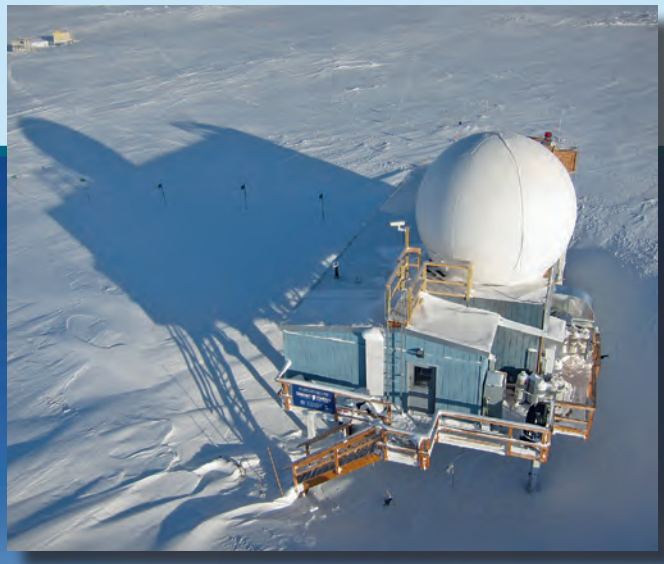
Summit Station is funded by the US National Science Foundation (NSF) with guidance from the Science Coordination Office (SCO).

## LOCATION

Summit Station is a research platform located near the summit of the Greenland ice sheet at an altitude of 3210 m a.s.l. It is located within Greenland's North-East National Park which protects the inland ice and glaciers issuing therefrom as well as adjoining coastal land areas.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Summit Station's location features ease of access to a high elevation, high latitude and low water vapor location that allows researchers to measure components of the earth system that would otherwise not be accessible. The facility is currently the highest elevation research station located north of the Arctic Circle.



## HISTORY

Summit Station began as the base camp for the drilling of the GISP2 ice core in 1989. Since then, the station has hosted both summer campaign science and, since 1997, year-round monitoring observations of cryospheric processes, both chemical and physical. After the initial "experimental" winter seasons in 1997-98 and 2000-2002, the station has been continuously occupied since 2003.

## GENERAL RESEARCH AND DATABASES

A wide variety of research projects have been conducted at Summit since 1989. Since that time Summit Station has become an Arctic 'flagship' station as part of the Arctic Observing Network (AON) and the International Arctic Systems for Observing the Atmosphere (IASOA) network. The Greenland Environmental Observatory at Summit (GEOSummit) was established in response to a demand for a facility capable of providing year-round resources and support for research on the summit of the Greenland Ice Sheet. Project summaries, a list of publications and contacts by which to access Summit-derived datasets can be found at www.geosummit.org.



## HUMAN DIMENSION

The nearest local community of Ilulissat is 593 km west of Summit with approximately 4500 inhabitants of Greenlandic descent.

## ACCESS

Access is provided via Kangerlussuaq, Greenland, on Hercules LC-130 aircraft operated by the New York Air National Guard 109th Airlift Wing (NYANG-109) and/or skiequipped Twin Otter flights operated by Norland Air. The station can also be accessed overland but not typically used as means of general transportation.

| Summit Station | |
|---|---|
| Website | www.geosummit.org, www.summitcamp.org |
| Country | Greenland |
| Opening year | 1989 (open seasonally) |
| Operational period | Year-round |
| Contact (access to station) | sam@polarfield.com |
| Geographical coordinates | 72°35′N, 38°25′W |
| Altitude of station | 3210 m a.s.l. |
| Nearest town/settlement | Ilulissat (593 km)/ Kangerlussuaq (700 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -31 °C (-40 °C, -12 °C) |
| Total annual precipitation (type) | 650 mm (snow) |

# EGRIP


## STATION NAME AND OWNER

EGRIP (East Greenland Ice Core Project) Field Station owned by Centre for Ice and Climate, Niels Bohr Institute, University of Copenhagen, Denmark.

## LOCATION

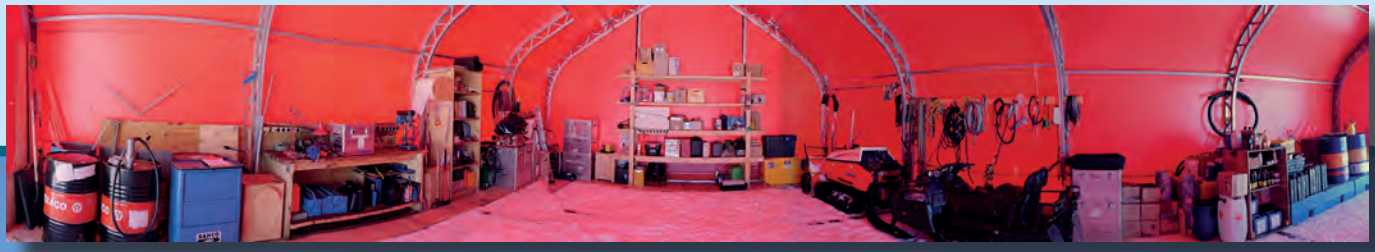
The station is located on the North East Greenland Ice Sheet within the North East Greenland National Park. The scientific reference area is a 50 by 50 km square with the station in the centre. The station is on the centre axis of the North East Greenland Ice Stream (NEGIS), 480 km from Danmarkshavn, 690 km from Ittoqqortoormiit and 350 km NNE of Summit Station. Due to its location in the ice stream, the station moves 50 m NNE per year.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Landscape is flat and white with only slight variations in altitude near the station. The annual average temperature is around -28 °C and annual snowfall is around 100 mm water equivalent. Temperatures above 0 °C are extremely rare. Birds (geese, seagulls and finches) are the only observed life forms migrating across the Ice Cap.

## HISTORY

The station was established in 2015 when the former NEEM ice core drilling station was towed by tractor 465 km to EGRIP. The station has a capacity for 25 (peak 40) residents and there is a doctor, a cook and mechanics on site. Vehicles at the station include tracked vehicles, snowmobiles and snow throwers. There is also an underground drilling and science area with snow caves and connecting tunnels. Access to underground areas is by elevators and stairs.





## GENERAL RESEARCH AND DATABASES

Main research fields are deep ice coring and ice core analysis. Studies of processes at the base of the ice stream and of surface snow composition are also conducted at the station together with weather observations and studies using airborne radar, GPS network, seismic sensors and other geophysical methods. Data and detailed information will be made available on www.iceandclimate.dk.

## HUMAN DIMENSION

Nearest human habitation is Danmarkshavn (weather station – 480 km away). Nearest settlement is Ittoqqortoormiit (690 km away).

## ACCESS

The station is accessible by ski equipped aeroplanes only. The station features a 60 m wide and 3.6 km long marked skiway with a 3.6 km marked lead in each end. Flight time from Kangerlussuaq 2.5 hr by LC-130, 5.5 hr by Twin Otter or 4.5 hr by Basler.

| EGRIP Field Station | |
|---|---|
| Website | www.iceandclimate.nbi.ku.dk |
| Country | Greenland |
| Opening year | 2015 |
| Operational period | May-August |
| Contact (access to station) | jps@nbi.ku.dk, lbl@nbi.ku.dk |
| Geographical coordinates | 75°38′ N, 36°00′ W |
| Altitude of station | 2708 m a.s.l. |
| Nearest town/settlement | Ittoqqortoormiit (690 km) |
| Climate zone | Greenland ice sheet |
| Mean temperature: Annual (Feb., Jul.) | -29 °C, (-50 °C, -10 °C) |
| Total annual precipitation (type) | 100 mm (snow) |


# ZACKENBERG

## 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 East Greenland. The nearest settlement is the military outpost Daneborg where Zackenberg Research Station also host a marine research facility 25 km southeast of the main 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 Zackenberg elven. A great variety of biotopes like ponds, fens, heaths, fell field plateaus and grasslands occur within the core study area. Arctic shore birds, muskoxen, lemming, Arctic fox, and Arctic hare are among the common animals seen in the area, while polar bear and Arctic wolf are occasional visitors.

## HISTORY

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.

## GENERAL RESEARCH AND DATABASES

Zackenberg Research Station provides facilities for specific but comprehensive research projects, and for an extensive long-term research and monitoring programme; 'Greenland Ecosystem Monitoring' (GEM) (www.g-e-m.dk).

GEM 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). All data are provided free-of-charge at https://data.g-e-m.dk/.

## HUMAN DIMENSION

The nearest town is Ittoqqortoormiit, 450 km to the south. The population in Ittoqqortoormiit is approximately 450 people.

## 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. It is mandatory to submit an application to the Zackenberg Secretariat prior to the visit of the station.

| Zackenberg Research Station | |
|---|---|
| Website | www.zackenberg.dk, www.g-e-m.dk |
| Country | Greenland/Denmark |
| Opening year | 1995 |
| Operational period | (March-April), May-October |
| Contact (access to station) | zackenberg@au.dk |
| Geographical coordinates | 74°28′N, 20°34′W (substation Daneborg: 74°18′N, 20°13′W) |
| Altitude of station | 38 m a.s.l. |
| Nearest town/settlement | Ittoqqortoormiit (450 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -9.2 °C (-19.4 °C, 6.1 °C) |
| Total annual precipitation (type) | 200 mm (snow, rain) |

ZACKENBERG


# VILLUM

## STATION NAME AND OWNER

Villum Research Station (VRS) is owned by the Government of Greenland and operated by Aarhus University, Denmark.

## LOCATION

VRS is located on Princess Ingeborgs Peninsula (c. 20 ×15 km lowland plain) at the military facility, Station Nord, in North Greenland (81°36′ N, 16°39 W). The station is situated within the National Park of North and Northeast Greenland, the largest national park in the World. The station acts as a gateway to the northern part of the National Park of North and Northeast Greenland.

## BIODIVERSITY AND NATURAL ENVIRONMENT

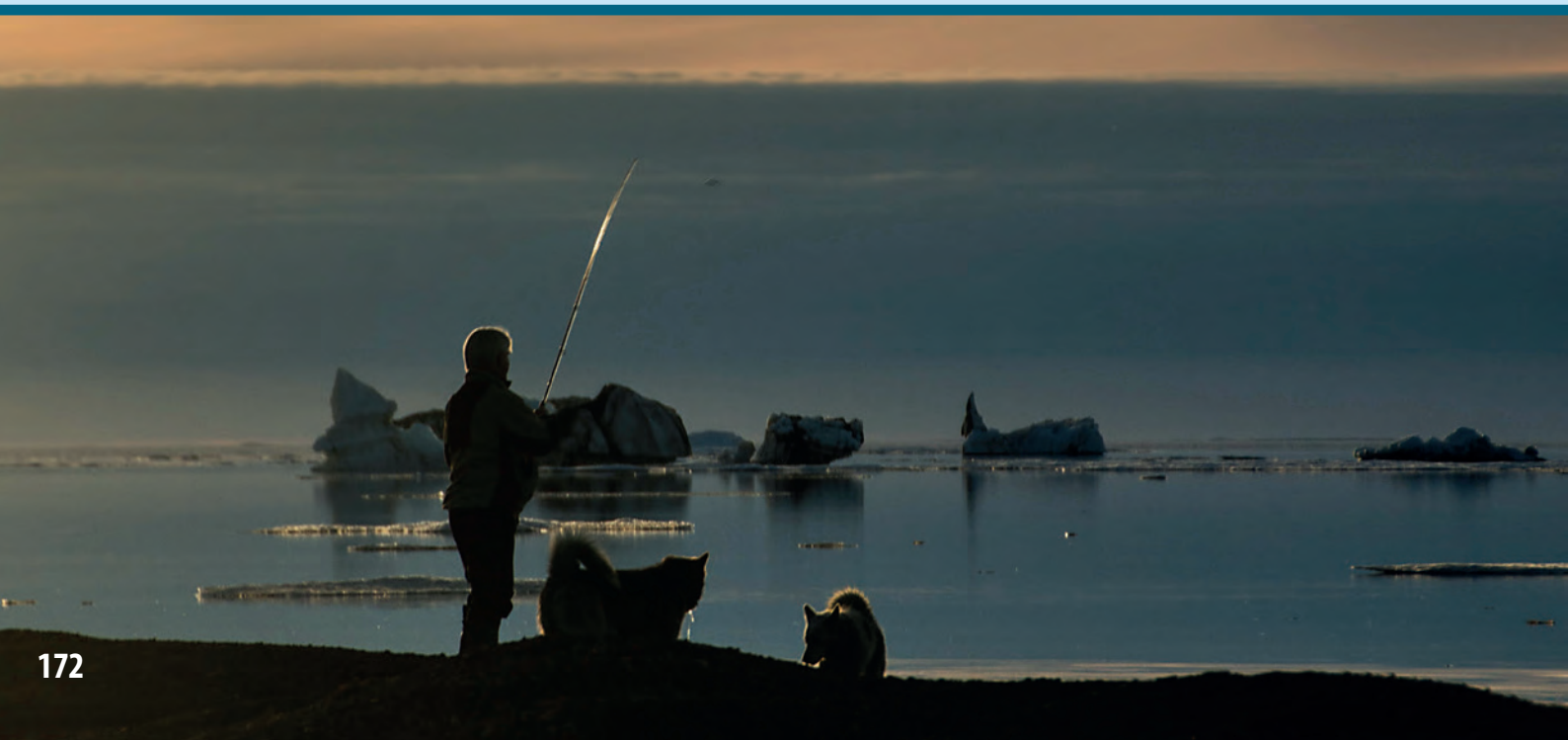
The station is situated in the High Arctic, and the surroundings are mainly Polar Desert. The area has continuous permafrost, and a continuous snow cover characterise the area for almost ten months per year. The Princess Ingeborgs Peninsula plain consists of Quaternary raised marine silt, beach shingle, and glacial deposits. The Quaternary deposits are underlain by rocks of Permian age. Station Nord is situated very close to the Polar Sea, and the sea-ice conditions in the area are generally severe with heavy sea-ice throughout the year. Consequently, ships cannot service Station Nord.

## HISTORY

Station Nord was opened in 1952 as a Danish weather station and emergency runway, and it remained open until 1972, when it was closed and left unused, until the Danish military acquired it in 1975. The research activities at Station Nord have been ongoing since the 1970's with measurement activities being intensified since 1990. The research facilities were established by the Danish National Environmental Research Institute (NERI), which is now merged with Aarhus University. In 2014, the research facilities at Station Nord were substantially upgraded based on a major grant from the Danish private fund, Villum Foundation.

## GENERAL RESEARCH AND DATABASES

Villum Research Station is open year round for visiting scientists. It has an open source policy. This means that users of the station is obliged to share data after about two years of completing a field campaign at the Station. Sharing of data is a done in a





cooperative way, so that it will lead to joint articles between the scientists and the Head of the station will serve as facilitator in this process. Atmospheric data are stored in a central database at Aarhus University. Furthermore, data are reported to EMEP (European Monitoring and Evaluation Program) and, AMAP (Arctic Monitoring and Assessment Program, and WMO-GAW (World Meteorological Organization – Global Atmosphere Watch). A list of the parameters currently measured at Station Nord can be found on http://envs.au.dk/en/research/facilities/villumresearch-station/.

## HUMAN DIMENSION

Station Nord is operated by the Danish military and is manned year round by five soldiers. The nearest Inuit community is situated more than 11 00 km away.

## ACCESS

Transport to Station Nord of PAX is mainly from Svalbard. Aarhus University arranges weekly flights between Longyearbyen, Svalbard, and Station Nord. Furthermore Air Force Hercules C-130 aircrafts are sometimes available on space-available conditions.

| Villum Research Station | |
|---|---|
| Website | http://villumresearchstation.dk/ |
| Country | Greenland (Denmark) |
| Opening year | 1990 |
| Operational period | Year-round |
| Contact (access to station) | secretariat@villumresearch-station.au.dk |
| Geographical coordinates | 81°36′N, 16°39′W |
| Altitude of station | 30 m a.s.l. |
| Nearest town/settlement | Longyearbyen (715 km)/ Qaanaaq (1110 km) |
| Climate zone | High Arctic |
| Mean temperature: Annual (Feb., Jul.) | -16.9 °C (-30.9 °C, 3.4 °C) |
| Total annual precipitation (type) | 188 mm (snow) |


# SUDURNES

## STATION NAME AND OWNER

Sudurnes Science and Learning Center is a non-profit organisation, partly financed and accredited by the Ministry of Education, Science, and Culture in Iceland.

## LOCATION

The Center is located by the Sandgerdi harbour on the western coast of the Reykjanes Peninsula, about 50 km west of the capital, Reykjavik. It is in close proximity to coastal areas of high natural value, listed in the Icelandic Nature Conservation Registry, and Important Bird Areas identified by BirdLife International.

## BIODIVERSITY AND NATURAL ENVIRONMENT

Reykjanes Peninsula is situated in the maritime subarctic climate zone, on the rift between the Eurasian and the North American tectonic plates, where the mid-Atlantic Ridge rises above the ocean's surface. Geologically, the peninsula is young and characterized by volcanism and vast lava fields covered with moss heath vegetation, dominated by montane moss (*Racomitrium lanuginosum*). The coastal areas are wildlife-rich with rocky shores, sandy beaches, muddy flats, and sea cliffs as well as some dry grasslands and small freshwater lakes by the coast. A total of 196 bird species have been recorded in the area.

## HISTORY

In 1992, an abandoned fish factory was turned into a research laboratory for the international, collaborative project Benthic Invertebrates of Icelandic Waters (BIOICE). Sudurnes Science and Learning Center was established in 2012. The Southwest Iceland Nature Research Centre (established 2000) and The University of Iceland's Research Centre in Sudurnes (established 2004) are part of the Center.

## GENERAL RESEARCH AND DATABASES

Sudurnes Science and Learning Center focuses on bird studies, marine invertebrates, and seashore ecology. The Center cooperates with the Icelandic Marine Research Institute utilizing automated analyses of zooplankton (ZooImage) for taxonomic purposes. Other studies are mainly on aquaculture animals such as the European lobster, Arctic char, and cod, where the Center carries out its own projects and/or participates in service programmes using the facilities at the Center. Climatic data are



available for the area at The Icelandic Meteorological Office since 1953.

## HUMAN DIMENSION

Sudurnes Science and Learning Center is located in Sandgerdi, a small fishing village with 1600 inhabitants. Fishing, service industries, and tourism are the primary occupations in the area.

## ACCESS

Sudurnes Science and Learning Center is easily accessible by car or bus throughout the year. It is located only 7 km from the international airport in Keflavik.

| Sudurnes Science and Learning Center | |
|---|---|
| Website | www.thekkingarsetur.is |
| Country | Iceland |
| Opening year | 2012 |
| Operational period | Year-round |
| Contact (access to station) | thekkingarsetur@thekkingarsetur.is |
| Geographical coordinates | 64°02′ N, 22°42′ W |
| Altitude of station | 3 m a.s.l. |
| Nearest town/settlement | Reykjanesbaer (7 km)/ Sandgerdi (0 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | 4.7 °C (0.7 °C, 10.6 °C) |
| Total annual precipitation (type) | 1092 mm (rain, snow) |


# 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, about 38 km from the shoreline 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, great northern divers, and redwings in summer; snow bunting in winter and raven and ptarmigan year around. Three species of mammals occur at the site: Arctic fox, American mink, and wood mouse. Two species of fish occur in the lake: three-spined stickleback and brown trout.

## HISTORY

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 and 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 $km^2$ with an elevation of 60-230 m a.s.l. Accommodation and laboratory space are available at the campus of the Agricultural University of Iceland.

## 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 until 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. Automated weather and



hydrological stations were set up at the site in 2000. Existing databases 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 landuse. 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.

| Litla-Skard | |
|---|---|
| Website | www.ust.is/litla_skard |
| Country | Iceland |
| Opening year | 1996 |
| Operational period | Year-round |
| Contact (access to station) | hlynur@lbhi.is |
| Geographical coordinates | 64°43′N, 21°37′W |
| Altitude of station | 115 m a.s.l. |
| Nearest town/settlement | Borgarnes (25 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | 3.1 °C (-1.8 °C, 10.8 °C) |
| Total annual precipitation (type) | 740 mm (snow, rain) |

# CIAO


## STATION NAME AND OWNER

China-Iceland Arctic Observatory (CIAO). Land and buildings owned by Aurora Observatory, AO, an Icelandic nonprofit foundation. Operated under a long term lease agreement with AO by the Polar Research Institute of China – PRIC.

## LOCATION

The CIAO Observatory is located at Kárhóll, approx. 60 km east of Akureyri in Northern Iceland. The land of the Observatory is 156 hectares.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The Observatory land extends 2 km from the small salmon river Reykjadalsá at about 50 m altitude to the top of the soft hill of Mýraöxl at 301 m. The land is all vegetated. The middle part is forested (larix, pines, spruces, willows) and managed under a contract with the Forestry Service, gradually changing to moor and then tundra on top.

## HISTORY

The Observatory was formally opened in October 2018. It was previously a privately owned farm, designated partially as agricultural land and partially as forestry area under a contract with the Forest Service.

## GENERAL RESEARCH AND DATABASES

CIAO is a state of the art facility with latest research equipment related to aurora and upper atmosphere research already in place in carefully specially designed facilities currently including six allsky camera towers and a lazer/lidar. More equipment and for further research fields is to be installed. The Observatory is also intented as a work hub for research conducted in its greater area.

## HUMAN DIMENSION

The Observatory is located in the rural municipality of Þingeyjarsveit. Main livelihood is from farming, community service and increasingly tourism. The nearest community is Laugar, 1.5 km to the north, with a population of about 150 people, mostly employed in service.



| China-Iceland Arctic Observatory | |
|---|---|
| Website | www.ciao.is |
| Country | Iceland |
| Opening year | 2018 |
| Operational period | Year-round |
| Contact (access to station) | Halldor Johannsson: halldor@arcticportal.org |
| Geographical coordinates | 65°42′N, 17°22′W |
| Altitude of station | 106 m a.s.l. |
| Nearest town/settlement | Laugar (1.5 km) |
| Climate zone | |
| Mean temperature: Annual (Feb., Jul.) | 6.3 °C (-4.1 °C, 9.9 °C) |
| Total annual precipitation (type) | 450 mm (–) |

## ACCESS

The CIAO Observatory is on the main nr. 1 ring road so driving connection to and from is very good, all year. The airport has multiple daily connections to Reykjavik as well as direct flights to Keflavik international airport. Public buses run daily by the Observatory. Car rentals are widely available in the area.

ARCTIC OBSERVATORY CIAO


# RIF

## STATION NAME AND OWNER

The Rif Field Station is a non-profit organisation named after the peninsula of Rif, in the northernmost part of Iceland.

## LOCATION

The station is located in a small village on the northeast coast of the Melrakkaslétta peninsula in Northeast Iceland. The northern part of the peninsula is an important area for conservation, especially as a habitat for many bird species. The area has no protection status according to the Nature Conservation Act, but is listed as an internationally Important Bird Area (IBA) by BirdLife International.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The northern coast of Melrakkaslétta is highly exposed to cold northerly winds. Fog is frequent along the coast. The coast is characterised by algae rich gentle sloping gravel banks with numerous open and land-locked bays, inlets, salt marshes, and brackish lagoons. At least 53 species of birds have been found breeding in the area, and seabirds, waterfowl, and waders occur frequently in the area. Rock ptarmigan and purple sandpiper are found breeding in high densities. The shores of Melrakkaslétta are used by locally breeding birds as well as up to 20 000 arctic waders on their way to the breeding grounds in Greenland and arctic Canada.

## HISTORY

Rif Field Station was established in 2014. The station is currently housed in a three-floor building, partly run as a guesthouse. The station has unlimited access to the land of Rif, the northernmost part of Iceland, for scientific purposes.

## GENERAL RESEARCH AND DATABASES

The Rif Field Station is in its development stage. Research will include basic monitoring projects on weather/climate change, vegetation, and birds. Long-term research will be conducted on arctic species like rock ptarmigan, gyrfalcon, Arctic



tern, and purple sandpiper as well as on high arctic migratory birds. Data on climate dates back to 1920. Arrival dates for different bird species has been registered since 2001.

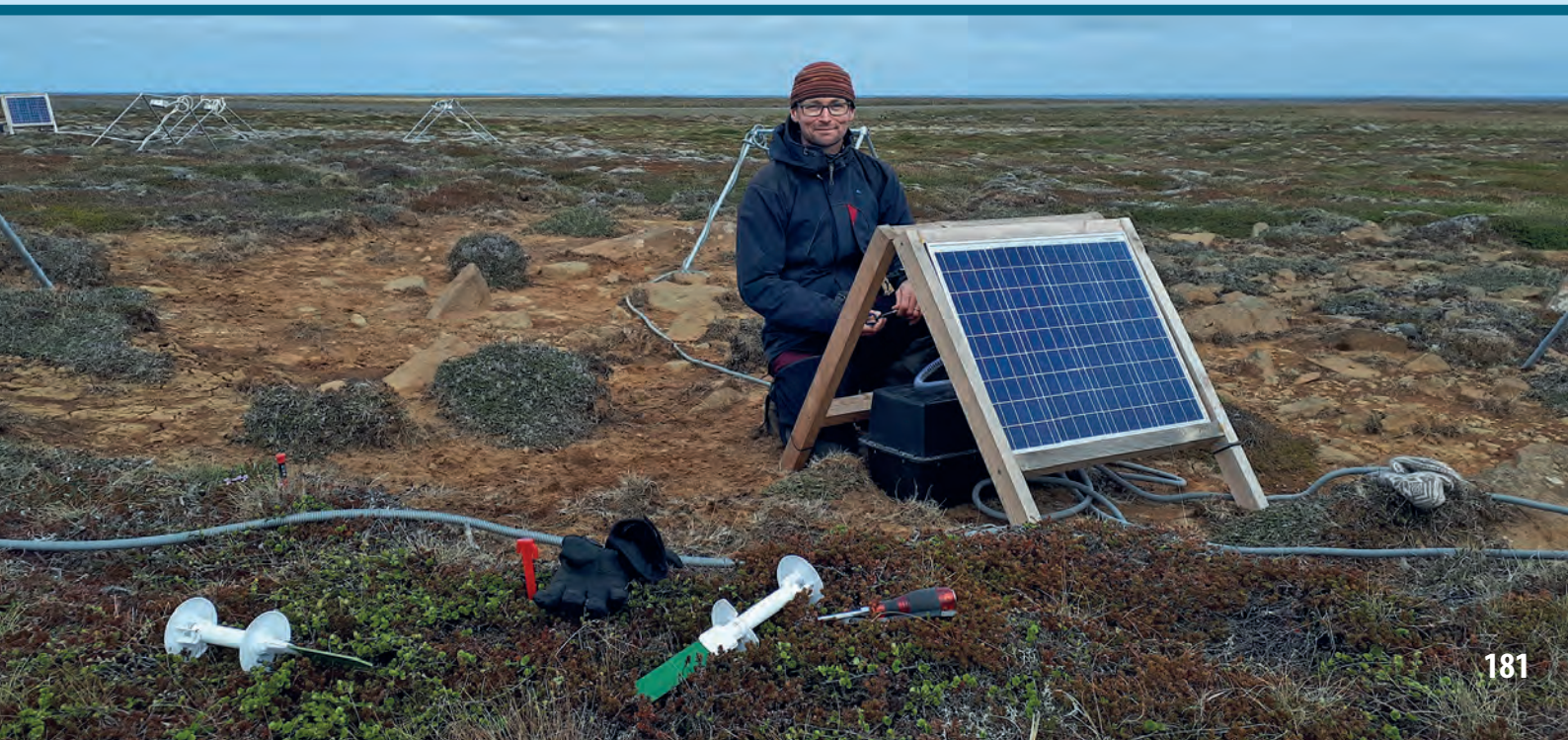
## HUMAN DIMENSION

For centuries sheep farming was practiced, supplemented with some small scale fishing by farmers, both at sea and in freshwater lakes. Today most of these farms have been abandoned, although some are still used as summer houses. The village of Raufarhöfn (180 inhabitants), with its great natural harbour, was established for fishery, and eider down is still collected in large eider colonies.

## ACCESS

Raufarhöfn is easily accessible by car, on paved road all the way from Reykjavík. The nearest domestic airports are at Þórshöfn (67 km), Húsavík (130 km), and Akureyri (222 km). A limited scheduled bus service is available between Akureyri, Húsavík, and Raufarhöfn.

| Rif Field Station | |
|---|---|
| Website | www.rifresearch.is |
| Country | Iceland |
| Opening year | 2014 |
| Operational period | Year-round |
| Contact (access to station) | rif@rifresearch.is |
| Geographical coordinates | Raufarhöfn: 66°27′ N, 15°57′W,<br>Rif farm: 66°31′ N, 16°11′W |
| Altitude of station | Raufarhöfn: 6 m a.s.l,<br>Rif farm: 1 m a.s.l. |
| Nearest town/settlement | Húsavík (130 km)/<br>Rif farm (15 km)/<br>Raufarhöfn (0 km) |
| Climate zone | Low Arctic |
| Mean temperature: Annual (Feb., Jul.) | 3.4 °C (-0.7 °C, 9.1 °C) |
| Total annual precipitation (type) | 650 mm (rain, snow, hail) |




# SKÁLANES

## STATION NAME AND OWNER

Skálanes Nature and Heritage Center is an independent research station which works with multiple different universities for research and education.

## LOCATION

Skálanes is located on the east coast of Iceland at the bay of the fjord, Seyðisfjörður. Here, Skálanes sits within a 1250 hectare (3089 acre) independent nature reserve containing habitats and ecosystems representative of the East fjords region, including the common species of flora and fauna and especially known as a habitat for a wide variety of bird species.

## BIODIVERSITY AND NATURAL ENVIRONMENT

The nature reserve surrounding Skálanes includes pastures, shoreline, fresh water rivers, inter tidal, hills, mountains, wetlands and a 640 m coastal cliff. The area is a habitat of a rich wildlife including reindeer, the Arctic fox and 47 different bird species such as a large Arctic tern colony, puffins and an eider colony. Plants of arctic origin are characteristic to the area and a large collection of archaeological sites are found within the nature reserve.

## HISTORY

Skálanes was established in 2005 as an experimental nature and heritage research center by Olafur Orn Petursson and Rannveig Torhallsdottir. The intention of Skálanes to be a place of learning – a place where the Icelandic environment and cultural history can be researched and interpreted. The remote and restored farmhouse at the mouth of Seyðisfjörður provides an ideal location for exploring the arctic wildlife and native plants, the mountains, waterfalls, sea cliffs, meadows and beaches.

## GENERAL RESEARCH AND DATABASES

There is ongoing work on developing a monitoring program and a new database at Skálanes. The databases are currently not all publishable, but can act as a reference for further studies. Time series and baseline data on geology, plants, insects, birds are available.

## HUMAN DIMENSION

The nearest town, Seyðisfjörður, consists of 650 inhabitants. It is historically a fishing community based around primary industries. During the past 20 years it has gone through a transforma-



tion process with more emphasis on arts and culture to countermand the decline of its historic industry base. This has increased its attraction for tourists and also for individuals focusing on arts and creativity.

## ACCESS

Egilsstadir Domestic Airport is located 25 km from Seyðisfjörður. Visitors at Skálanes will have to take the local bus or drive with the Skálanes staff to and from the airport driving over a mountain pass at 650 m stretching along a 10 km plateau. All travel to and from town should be planned according to the weather forecast. For winter stays and work, one should plan for extended stays lasting 3-7 days in a row between vehicles coming out to Skálanes.

| Skálanes Nature and Heritage Center | |
|---|---|
| Website | www.skalanes.com |
| Country | Iceland |
| Opening year | 2005 |
| Operational period | Year-round |
| Contact (access to station) | skalanes@skalanes.com |
| Geographical coordinates | 65°15′N, 13°42′W |
| Altitude of station | 15 m a.s.l. |
| Nearest town/settlement | Reykjavik (700 km)/ Egilsstadir (44 km)/ Seyðisfjörður (17 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | 5.3°C (2016) (2.3 °C, 9.8 °C (2017)) |
| Total annual precipitation (type) | 1649 mm (rain, snow, hail) (2016) |


# 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$^2$ 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 subarctic climate and are characterised by a high relief. 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

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.



## 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.

## ACCESS

You can arrive to the Faroe Islands all year by ship or by plane. 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.

| Faroe Islands Nature Investigation | |
|---|---|
| Website | www.jf.fo |
| Country | Faroe Islands |
| Opening year | 1999 |
| Operational period | Year-round |
| Contact (access to station) | lm@jf.fo |
| Geographical coordinates | 62°04′N, 06°58′W |
| Altitude of station | 725 m a.s.l. |
| Nearest town/settlement | Tórshavn (15 km) |
| Climate zone | Subarctic |
| Mean temperature: Annual (Feb., Jul.) | 6.5 °C (3.6 °C, 10.3 °C) |
| Total annual precipitation (type) | 1284 mm (rain, snow, hail) |

JARÐFEINGI
FAROESE EARTH AND ENERGY DIRECTORATE


# CAIRNGORMS

## STATION NAME AND OWNER

The ECN Cairngorms 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 for more information).

## LOCATION

The ECN Cairngorms site is a north facing granite catchment overlain with peat situated in the Cairngorms Mountains of Scotland. The catchment area is 10 km$^2$. 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. The site has virtually no natural tree line due to past overgrazing but is now being extensively re-colonised by *Pinus sylvestris*.

## HISTORY

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.

## 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), examining tem-



perature effects on vegetation across Alpine Europe. Intensive hydrological and snow related research took place in the early 1990s. The Cairngorms area has been the focus of many land use change and tourism impact studies since c. the 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. In 2013 the national park became the first Long-Term Social-Ecological Research (LTSER) platform in the UK.

## 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.

| ECN Cairngorms | |
|---|---|
| Website | www.ecn.ac.uk |
| Country | Scotland, UK |
| Opening year | 1998 |
| Operational period | Year-round |
| Contact (access to station) | jand@ceh.ac.uk |
| Geographical coordinates | 57°07′ N, 03°49′ W |
| Altitude of station | 700 m a.s.l. |
| Nearest town/settlement | Aviemore (10 km) |
| Climate zone | Alpine (temperate forest and heath) |
| Mean temperature: Annual (Feb., Jul.) | 5.1 °C (0 °C, 10.5 °C) |
| Total annual precipitation (type) | 835 mm (snow, rain, hail) |

Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

Scottish Natural Heritage
Dualchas Nàdair na h-Alba

UK Environmental Change Network

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| 51 | Toolik Field Station | Sydonia Bret-Harte |
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| 64 | CEN Umiujaq Research Station | Richard Fortier |
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## 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**

**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**

**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**

**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**

**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**

**The Association of Polar Early Career Scientists (APECS)** is an international and interdisciplinary organisation for undergraduate and graduate students, postdoctoral researchers, early faculty members, educators and others with interests in the Polar and Alpine regions as well as the wider cryosphere.
**www.apecs.is**

## 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 publications related to station management and administration, fieldwork preparation and safety, as well as recommendation regarding climate change and ecosystem research and monitoring. See them all on https://eu-interact.org/publication/.

Managers exchange and share information through annual 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 share new developments and achievements in the INTERACT Newsletter.

**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 descriptions of all the INTERACT stations that can be used for selecting research infrastructures that suit your specific scientific needs. An online version of the INTERACT Station Catalogue let you explore more details and facts about the stations and surrounding environments – www.interact-gis.org. 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 bases in the INTERACT network.

**Let's INTERACT !**

www.eu-interact.org

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