

Site Manual

Kobbefjord Research Station



Version: May, 2022



Grønlands Naturinstitut
Pinngortitaleriffik
Greenland Institute of Natural

Site Manual – Kobbefjord Research Station

Introduction

This manual provides information related to conducting fieldwork at the Kobbefjord Site with the Kobbefjord Research Station as a base. The Kobbefjord Research Station is located in Kobbefjord/ Kangerluarssunguaq (64°07' N, 51°21' W) ca. 20km south-east of Nuuk in low Arctic West Greenland.

The Kobbefjord Research Station aims to facilitate ecosystem research in a low Arctic setting. This is done by providing facilities and logistics for accommodation, transport to and from the site as well as providing access to a range of biological and physical data from the long-term monitoring program NuukBasic. The long-term monitoring program NuukBasic was initiated in 2005 and fully implemented by 2008. Information on NuukBasic is available at <https://g-e-m.dk/gem-localities/nuuk-basic/>.



Financing

Kobbefjord Research Station and the related infrastructure in Kobbefjord has been funded by The Aage V. Jensen Foundation. The running of the station is funded by The Danish Environmental Protection Agency, The Danish Energy Agency as well as Greenland Institute of Natural Resources (GINR).



Danish Ministry of Climate,
Energy and Utilities



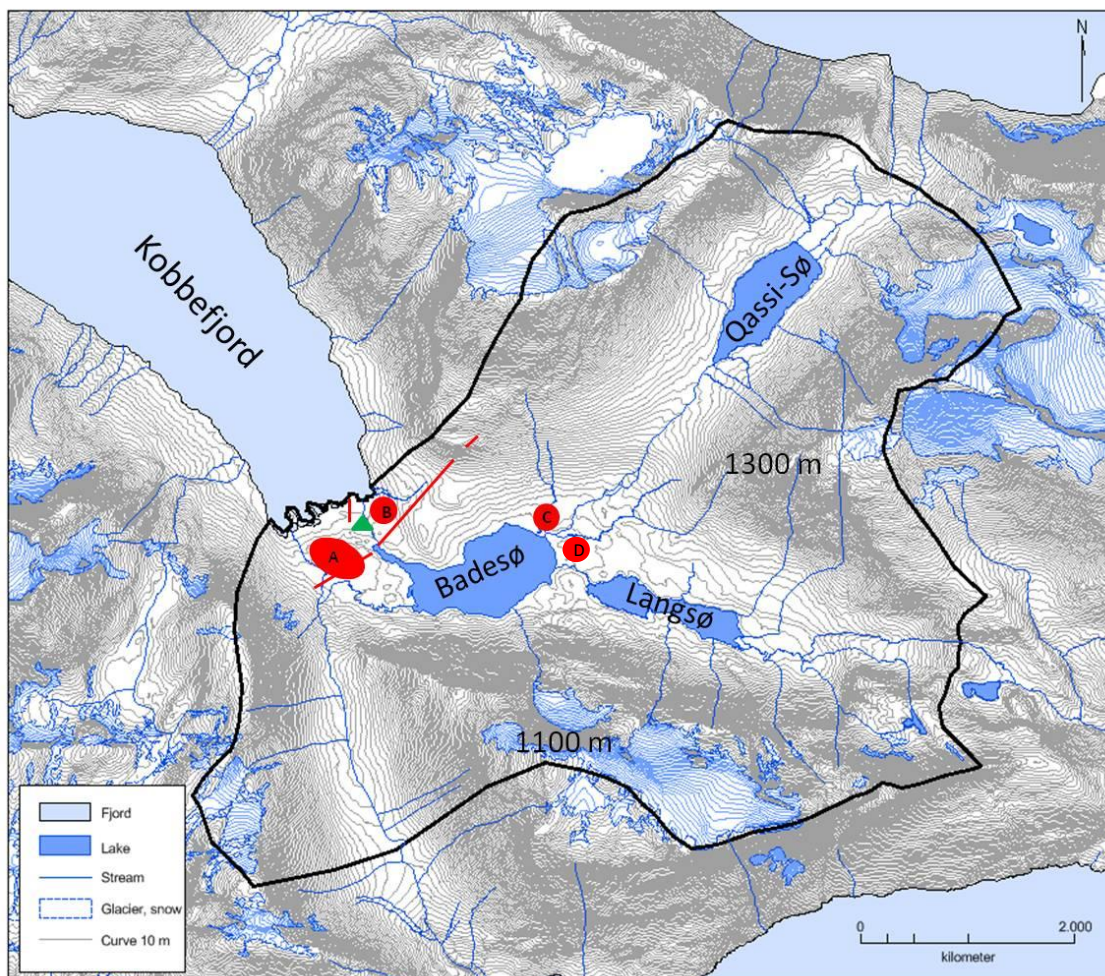
Danish Ministry of the Environment
Environmental Protection Agency



The monitoring area

The Kobbefjord monitoring area (corresponding to the area allotment for NuukBasic) is approx. 32 km² located at the bottom of Kobbefjord / Kangerluarssunguaq (64°07' N, 51°21' W) approx. 20 km south-east of Nuuk. The area is characterised by three major valleys surrounded by steep hills reaching approx. 1300 m.

The area is often used as a recreational site by locals during weekends and holidays. In order to minimise human impact and prevent disturbances to the study area, researchers visiting the area must give the utmost consideration to the natural environment and to the interests of others working in the area. Hence, disturbance of soil and plants must be kept to a minimum. Researchers are also strongly encouraged to use walking tracks whenever possible.



The red dots and lines on the map mark areas where access is limited and regulated. A: the fen site, B: the C-flux site, C: the heath site, D: the climate station. Please avoid walking in/under and around the climate station as some sensors also point towards the ground. The red lines: the NERO line (vegetation transect). The green triangle marks the location of the Kobbefjord Research Station.

Please note that placement of permanent equipment and location of your plots etc. must be approved by the Greenland Institute of Natural Resources and Asiaq.

It remains the responsibility of the individual leaders of research projects to remove scientific equipment from the field site(s) and from the monitoring area once the studies or experiments are terminated.

Use of the monitoring area

All researchers / research projects must fill in the **Kobbefjord Access Application Form** before entering the monitoring area. Visiting scientists are not allowed to bring private guests to the Kobbefjord Field site.

The monitoring area houses several plots where continuous monitoring takes place. These areas are **NOT** to be changed, manipulated, or damaged by visiting researchers. When walking in the area please make use of the tracks already there. The vegetation is very fragile, and tracks are easily created.

Waste – including food waste – must always be brought back to the research station.

Restricted research sites

Access to the sites listed below is restricted! Any deviations to the rules stipulated below **must be agreed upon by GINR's or Asiaq's personnel**.

C-flux site

You are not allowed to walk to the installations. When crossing the area please keep your distance.

Fen site

You are not allowed to walk outside the board walks. If you need to cross the area you must walk outside and around the area. When walking left of the area, please, do not cross the line marked with poles (red topped) in the ground.

Heath site

You are not allowed to walk to the installation. Keep your distance when walking around the area and – if allowed – follow the small stream to the installations.

NERO line

If possible, please **do not walk along the line marked by poles** in the ground. **No research is allowed along the line unless permission has been granted by GINR.**

Getting there

The field site in Kobbefjord is accessed by boat. GINR has two boats (Aage V. Jensen II and Avataq) that are used for regular transportation to and from the area. Information on how to book the boats can be found at <https://natur.gl/facilities/baade/?lang=en>. Accommodation before and after your stay in Kobbefjord is available at the Greenland Institute of Natural Resources. Information about rooms and apartments can be found at <https://natur.gl/facilities/bookinger/annekset/?lang=en>. Booking forms for boats and/or accommodation is to be sent to booking@natur.gl.

Important phone numbers

| | |
|---|------------------|
| Police, Nuuk | (00299) 70 14 48 |
| Ambulance, Nuuk | (00299) 34 41 12 |
| Dronning Ingrid's Hospital (Sana) | (00299) 34 40 00 |
| Fire Department, Nuuk | (00299) 32 10 56 |
| Air Greenland | (00299) 34 34 34 |
| Greenland Institute of Natural Resources (GINR) | (00299) 36 12 00 |
| GINR, Logistics: Katrine Raundrup | (00299) 36 12 28 |
| GINR, Boat driver: Flemming Heinrich | (00299) 55 18 64 |
| Asiaq | (00299) 34 88 00 |

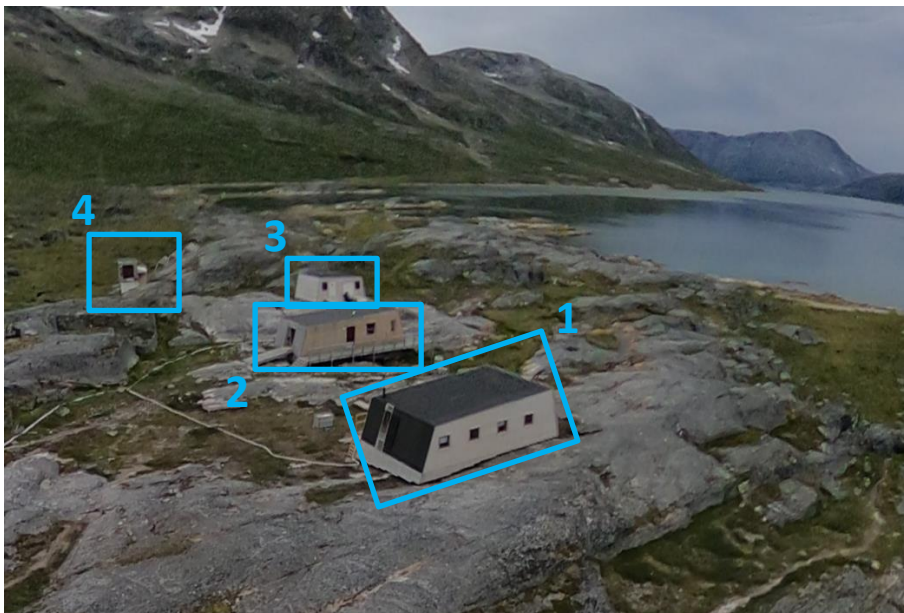
The research station

The research station has four buildings (see floor plan including placement of safety equipment on the next page):

1. An accommodation building with 4 rooms each with 2 beds (bunk bed), a toilet and a sink with warm/cold water, as well as a maintenance room.
2. A building with kitchen, toilet/shower, and basic laboratory. The kitchen has a gas stove and oven, pots and pans, refrigerator, warm/cold water, sink, and utensils for 8 people.
3. A storage building with two rooms including room for indoor storage of the snowmobile.
4. A generator hut including battery bank for power.

The storage facilities in the lab room as well as under the kitchen building are used by the researchers working on the NuukBasic monitoring programmes. Temporary storage for visiting scientists can be arranged depending on the volume of equipment.

You must bring your own sleeping bag and bed sheet as well as towel when staying at the station.



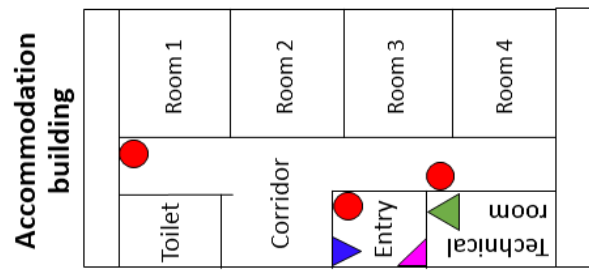
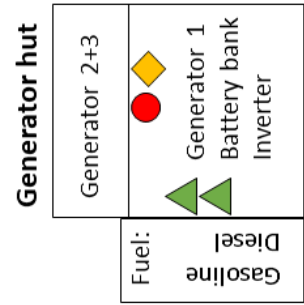
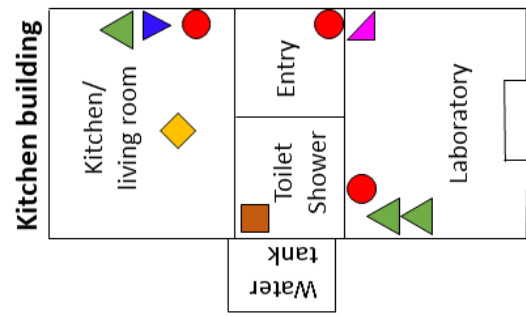
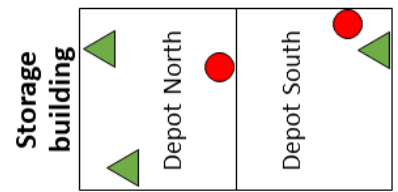
Overview of the research station. The buildings marked in blue are:







1. Accommodation building
2. Kitchen building
3. Storage building
4. Generator hut

Keys

The station is locked during winter and when none of the permanent staff are present in the area. It is possible to borrow a key from the permanent staff if necessary.

Kobbefjord Research Station



-  Powder extinguisher
-  Fire blanket
-  First aid/Eye rinsing
-  Rifle
-  Flare gun
-  Bottled gas for the stove (under the cabin)

Generators

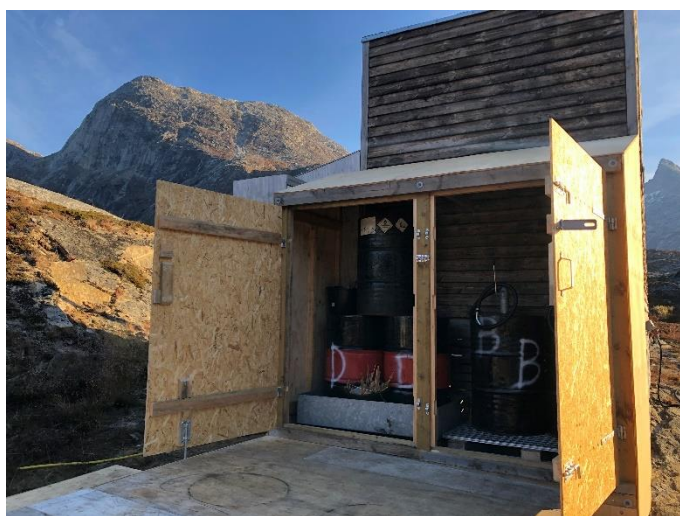
There are two types of generators at the station. There are various gasoline generators and one diesel generator.

Remember to only use **gasoline** for the small generators! **Gasoline is stored in the red cans** in the generator hut. When a red can is empty fill it up from the gasoline barrel(s) behind the generator hut. If the barrels are empty bring the empty red can to the boat and inform the boat driver. Instructions for starting the generator can be found in the generator hut and in the respective manuals found in the kitchen.



Cans similar to these are used for storage of gasoline (red cans) and diesel (yellow cans).

Diesel is stored in yellow cans. Diesel is only used for the diesel generator, the heating oven in the kitchen building, and the oil-fired boiler in the accommodation building. The diesel generator is only to be operated by the permanent staff at the station.



The back of the generator hut has an extension that holds barrels with diesel (marked with red band and "D"), and gasoline (marked with "B" for benzin = gasoline in Danish).



Electricity

The power outlets (standard Type K) in the buildings are 230V, 50 Hz. Power at the station is provided either from a gasoline/diesel generator or the battery bank powered from solar panels. Please notice that the generators and battery bank only provide a certain amount of power. Therefore, you should always check what is plugged in before adding new equipment (e.g., computers) to the system.



Standard Type K power outlet. Solar panels at the station.



Heating oven

There is heating oven (in Danish: skibsovn) in the kitchen. Remember only to use **diesel** for the heating oven! Diesel is stored in the yellow can by the tank in the entrance room. When the yellow can is empty fill it up from the diesel barrel behind the generator hut. If the diesel barrel is empty, bring the yellow can to the boat and inform the boat driver. Instructions for using the heating oven are found in the kitchen building.

Oil-fired boiler

There is an oil-fired boiler in the technical room to heat the rooms and toilet in the accommodation building. The boiler needs electric power for running, so it needs either a generator running or sufficient power in the battery bank. Instructions for using the boiler are found in the technical room.

Indoor footwear

It is recommended to bring indoor footwear because outdoor boots or shoes are not allowed inside both the accommodation and kitchen buildings.

Laboratory

The laboratory in the cabin is not equipped; hence you will have to bring everything you need. Further, if you plan on using any types of chemicals, it is your responsibility to bring any leftovers back to Nuuk. Once in Nuuk the chemicals must be disposed of correctly.

Toilets

The toilets are separation toilets that diverts the urine away and collects the solids in a bucket with a plastic bag. Extra toilet paper can be found below the fridge in the kitchen or in the storage building.

The toilets are emptied the following way:

1. Remove the toilet bag and close with steel wire.
 - a. Wires are found in both toilets (see image next page).
 - b. The device used to close the wire is hanging on the rack next to the toilet (see image next page). Do not fasten the wire to tight as it may crack or break the bag.
2. Replace the used bag with a new bag.
 - a. Bags for the toilets are on the shelf in the toilets.
3. Add disinfection fluid/sanitation fluid:
 - a. Dilute the liquid 1:50 with water:
 - i. Fill the liquid into the empty container to the marking on the side.
 - ii. Fill the bottle with water and pour the entire content into the bag in the toilet.



Wires to close the toilet bag (green ones to the left) and the device to close the wire (the hook with the black handle).

Instructions for emptying the toilets are also found in both toilet rooms. The filled bags must be brought back to Nuuk and thrown in the container at the harbour.

It is not allowed to use the monitoring area as a toilet!

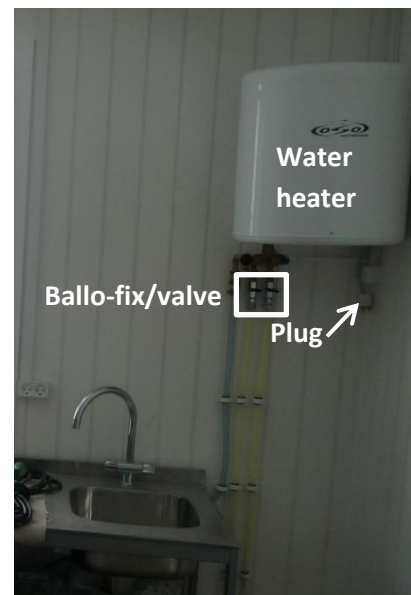
Water

All freshwater streams, rivers, and lakes in the monitoring area are suitable for drinking. There is no need for bringing filters or water cleaning tablets.

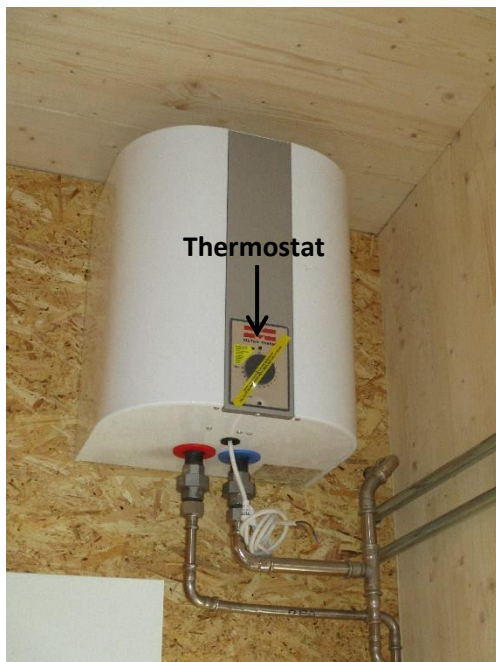
Water for both the accommodation and kitchen buildings is drawn from the nearby river draining from Badesø. The water is pumped into a 300-litre water tank (accommodation building) and a 1000-litre water tank on the west side of the kitchen building. Hence, the water supply is limited so please be aware when you use water for washing and cleaning. **Do not** let the water run from the tap! The tank is filled by GINR personnel when needed.

The accommodation and kitchen buildings have running water, but the water pump need power to run. Please read the paragraph on “Electricity” and “Generators” earlier in this chapter. If you need warm water in the kitchen building, the water heater (located in the laboratory room next to the door to the bathroom) has to be turned on as well (see image on the next page). Normally the water heater is turned on by default during the summer season. If it is not do the following:

- Make sure the ballo-fix/valve is open
- Put the plug in the outlet.
- Allow for at least 30 minutes for the water to warm up.



If you need hot water in the accommodation building, the water heater in the toilet has to be turned on (see figure below). Often the water heater is turned off as the toilet only has a sink for washing hands.



The water heater is mounted on the left wall when entering the toilet. Before turning on the water heater make sure there is water on the system. During summer, this is normally the case. Then turn the thermostat (grey circle) from left to right to heat the water. Allow for at least 30 minutes for the water to warm up.

Tools and equipment

Equipment in the laboratory and tools in the generator hut are primarily for GINR and Asiaq use. Visiting scientists are not allowed to use the equipment or tools unless approved by GINR and/or Asiaq. Tools in the technical room in the accommodation building **must not** be removed!

REMEMBER TO CLEAN UP BEFORE LEAVING

This includes:

Sweeping floors

Cleaning and clearing surfaces

Emptying toilets and bins (bring closed bags back to Nuuk)

Returning any borrowed equipment

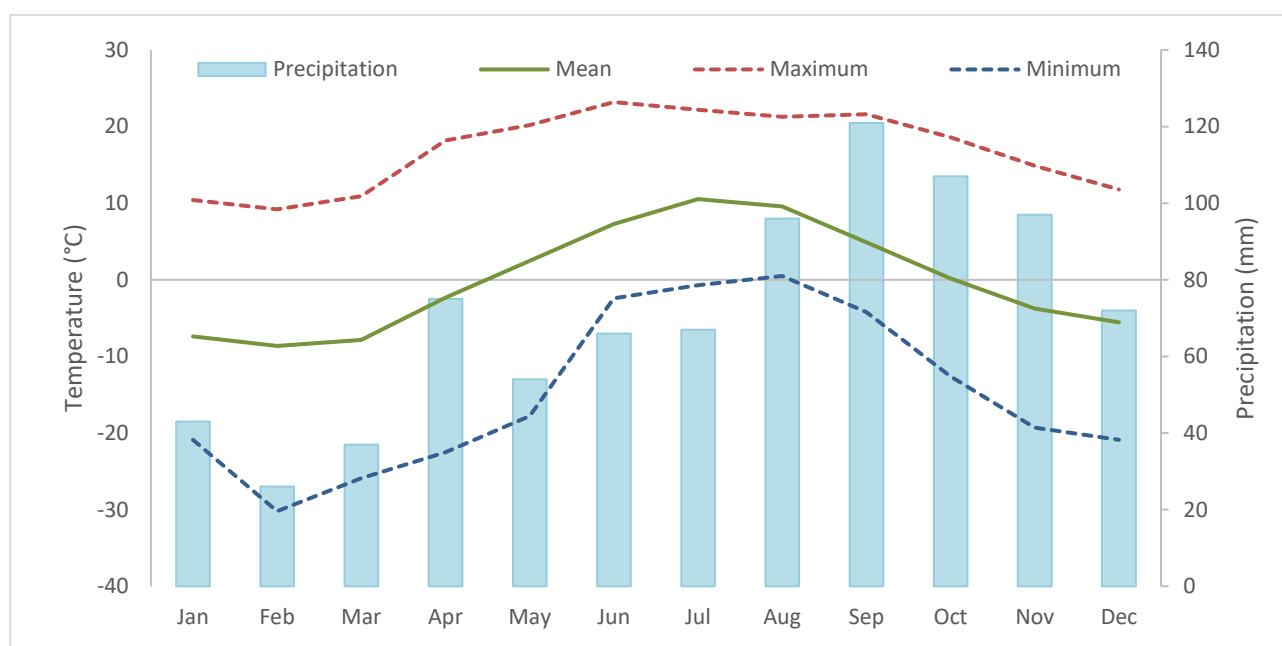
A-Z information about the research station and the monitoring area

Accommodation

The station has an accommodation building with four rooms each with 2 beds (bunk beds). When staying overnight at the station you must bring your own sleeping bag, bed sheet and towel. Remember to bring indoor footwear as the kitchen and accommodation building are boot-free areas.

Climate

At the Kobbefjord Site the mean annual temperature is -0.0°C . The warmest month is July (10.5°C) while the average temperature in February is -8.6°C . The mean annual precipitation in Kobbefjord is around 860 mm and maximum snow depths vary strongly (between 0.3 and 1.3 m at the climate station).



Average, maximum and minimum air temperature as well as precipitation (2008-2021) in Kobbefjord at the main climate station.

Computer and internet

You must bring your own computer / laptop to meet your needs in the field and laboratory. There is **NO** internet connection at the site.

Dinghies

NuukBasic (the BioBasis programme) has two dinghies (one at Badesø and one at Qassi-sø). There is an outboard motor for each of the dinghies. Visiting scientists are allowed to use the dinghies only when approved by GINR and/or Asiaq. If you use the dinghies, you must wear your own survival suit or a life jacket (there are two life jackets in the entrance room in the cabin). The dinghies can only carry 2 persons. Do not attempt to carry more and do not go alone!

Fire fighting

See floorplan and **placement of safety equipment on page 6**.

There are **smoke detectors** in all the 4 buildings. The smoke detectors run on 9V batteries and do thus not rely on external power to function.

There is a **carbon monoxide (CO) alarm** in the kitchen. It is installed 40 cm above the floor under one of the windows facing the fjord. CO can be produced when using the gas stove or oven, but more likely produced

as a byproduct when the heating oven is on. Make sure to have ample air circulation (open a window or the door regularly when either is in use.

There is a **gas alarm** in the kitchen. It is installed 30 cm above the floor on the wall towards the toilet. When turning on electricity in the kitchen cabin after a power cut, the gas alarm may signal for a short period of time.

There are two **fire blankets** at the station. One is mounted on a kitchen cabinet in the kitchen, and one is mounted on a wall in the generator hut.

There are 9 **powder extinguishers** in total at the station. They are located in all four buildings – please refer to page 6 for the specific placement in the individual buildings. If there is a fire, and a powder extinguisher is to be used, do as follows:

- Pull out the safety pin.
- Squeeze the lever to start discharging the extinguisher.
- Depending on the material burning aim the extinguisher at:
 - Solid materials: aim the nozzle at the base of the flames, moving across the area of fire.
 - Spilled materials: aim the nozzle at the near edge of the fire and with rapid sweeping motion, drive the fire towards the far edge, until the flames have been extinguished.
 - Flowing liquid: direct the nozzle at the base of the flames and sweep upwards until all the flames have been extinguished.
 - Burning gas: switch off the gas supply (see page 6 for placement of gas flask for the stove) as soon as possible! Aim the powder at the flare to extinguish.
 - Electrical equipment: switch off the power (if safe to do) and direct the nozzle straight at the fire.
- Once the fire is extinguished, carefully scan for re-ignition, as this is possible when a powder fire extinguisher has been used.



Fire extinguishers similar to this one are located in all 4 buildings.

First aid and medicine

See floorplan and **placement of safety equipment on page 6**.

There is a standard first aid kit in the kitchen building. It is a **green box** located on the upper right-hand side shelf in the main room. There is an eye-wash station mounted on the wall to the left of the sink in the laboratory. You must bring your own personal medication, if needed.

There is a first aid kit (a green box) in the technical room in the accommodation building.

There is a first aid kit (a green box) as well as an eye-wash station in the north room in the storage building.

There is an eye-wash station in the generator hut.



All fieldwork at the Kobbefjord Field Site is done at your own risk. We encourage you to tell your colleagues and fellow fieldworkers if you have any known diseases that require medication (e.g., diabetes and heart problems) and if you have any known allergies. **GINR or Asiaq will take no responsibility or liability for any problems relating to your personal health.**

The GINR and Asiaq researchers working on the monitoring programme have all had first aid training. It is recommended that visiting scientists and students have at least some training before coming to Nuuk. If needed, transportation to the local hospital can be arranged via boat transfer or helicopter. Please note that any evacuation will be carried out at your own cost. Therefore, make sure you are properly insured beforehand.

Food and preparing meals

You will have to bring your own food. The kitchen is equipped with a four-plate gas stove with gas oven and a 230-litre refrigerator. There is a cooker hood above the stove – please use it when preparing your meals. Furthermore, you may want to open a window partly while cooking. There is one exception to using the cooker hood while cooking - if the heating oven is on at the same time, the cooker hood must not be turned on beyond the second mark. If the cooker hood is turned on full speed the smoke from the heating oven will be drawn into the room instead of out the chimney.

If freeze-dried food is a necessity, you should bring your own. Freeze-dried food can normally be bought in Nuuk, but occasionally the stores run out during summer.

Mosquitoes and flies

During summer mosquitoes and biting flies are often a source of constant irritation. Remember to bring mosquito nets and repellents both of which may be bought in Nuuk. Please, do not apply repellent inside the cabin.

Permits

A general application for doing fieldwork at the Kobbefjord site must be submitted. The application form will be provided by sending a mail to kara@natur.gl or kobbefjord@natur.gl. It must be submitted to kara@natur.gl

If your work includes collection of biological samples, you need a permit. The permit is authorized by the Greenland Government and can be found here:

<https://www.businessingreenland.gl/en/Erhverv/Genetiske-ressourcer/Ansoegningsskemaer>. It must be submitted to SIIN@nanoq.gl in due time before fieldwork as the permit process may take up to three months.

If your work includes collection of rocks and sediments, you need a permit. The permit is authorized by the Mineral Resources Authority at the Government of Greenland. The application form can be found here: <https://govmin.gl/scientific-surveys/applications/scientific-permit/>. It must be submitted to mlsa@nanoq.gl in due time before fieldwork.

Personal equipment

Even though the weather in the Kobbefjord area tends to be relatively pleasant during summer you should always bring warm, wind- and waterproof clothes, gloves, and a hat. There is always a risk of below-zero temperatures. A pair of sunglasses is essential for all seasons.

Rubber boots may come in handy during snowmelt and after heavy rain. Snowshoes or skis are recommended during winter.

Remember to bring towels for personal use as well as all necessary personal toiletries.

Polar bears and foxes

Polar bears are extremely rare in the monitoring area. During the past years, a few bears have been seen and shot close to Nuuk. It is therefore recommended that you bring a flare gun with flares. Further, you should consider learning to use a rifle. There are two bolt rifles, calibre 30-06. One rifle is stored behind the door from the laboratory room to the entrance room in the kitchen building. The other is stored in the entrance room in the accommodation building. There are two flare guns, calibre 4, in the kitchen (in box on shelf) and one flare gun, calibre 4 in the accommodation building.

Several arctic foxes live in the monitoring area. They are generally not very keen on getting close to people. If a fox shows unusual behaviour (i.e., approaches or is aggressive towards people), it should be treated as being infected with rabies. In that case, keep away from the fox and try to scare it away (e.g., using a signal pen with small flares or a flare gun). If the fox bites you, it is essential that you go to the hospital and start a treatment against rabies. It is important that you do not tempt the foxes by leaving food and waste in the monitoring area. If you leave instruments outside make sure that foxes are unable to bite in wires, plastic etc.

Safety

If your fieldwork requires you to work from the dinghy you must wear a survival suit or a life jacket (see section on “Dinghies”). When working for longer periods of time or if the work you are doing includes e.g., standing in the dinghy or lifting/pulling equipment from the dinghy you **must** wear a survival suit.

If you need to work in the tidal zone, you must wear a survival suit.

Only trained personnel are allowed to operate the snowmobile during winter.

Telecommunication

The monitoring area is outside cell phone coverage. Thus, the only way of getting in contact with people outside the area is by satellite phone or VHF-radios. The VHF-radios are mainly used for communication locally between researchers in the area (use **channel 72**). Due to the high mountains surrounding the valleys, not all parts of the area are covered by the VHF. If needed, you will have to climb to a higher level and preferably have visual contact to the person you try to reach.

- There is a satellite phone (number: 0088 16 41 48 23 75) permanently located in the kitchen building.
- Asiaq uses different satellite phones so check up with the personnel if you need the number.
- Unless otherwise arranged you must bring your own VHF-radios. If you need to bring a satellite phone with you on fieldwork due to e.g., remoteness of the area you are working in you must also bring your own satellite phone from home.

Waste

Waste water from the buildings runs in a 225 meter long black groove pipe into a one cubic metre fascine filled with stones close to the shore at the coast. Thus, use only detergents, shampoo, soap etc. that are biologically degradable.

Plastic bags for the smaller bins are on the shelf above the noticeboard. Here you can also find larger, black waste bags for collecting several of the smaller plastic bin-bags if needed.

Kitchen waste, the toilet bags, and other types of waste **must** be brought back to Nuuk. The waste bags can be thrown into the containers at the harbour in Nuuk.

Used batteries and other mechanical items are collected in special containers at the Greenland Institute of Natural Resources, Asiaq, or the incinerator plant in Nuuk.

Weapons

See floorplan and **placement of safety equipment on page 6**.

In the kitchen building there is a bolt rifle, calibre 30-06, including ammunition behind the door from the laboratory room to the entrance room. There is no rifle or flare gun training provided at site. It is thus recommended that you are well prepared and familiar with using and handling a rifle and/or a flare gun before arriving at site.

In the accommodation building there is a bolt rifle, calibre 30-06, including ammunition and a flare gun, calibre 4, with ammunition in the entrance room.

Check list for visitors

Remember to bring

- Computer / laptop to meet your needs in the field and laboratory, see Computer and internet
- Sleeping bag and bed sheet, see The research station
- Indoor footwear
- VHF-radio
- Satellite phone: If you need to bring a satellite phone while away from the cabin, you must bring your own
- Special equipment / tools
- Food
- Personal toiletries

Own notes

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