Umiujaq Research Station

Photos: R. Fortier
This manual was developed to facilitate the access and use of the stations throughout the CEN Network. We ask that all station users consult the document in order to be better prepared for their stay and to be aware of safety procedures, their surroundings, instructions for station use, and any details related to the infrastructures themselves. The manual is «a work in progress» and will change frequently according to upgrades undertaken at the stations and in response to your comments on the stations.

CEN invites you to send any comments or suggestions to the following email address: cen@cen.ulaval.ca.

Enjoy your stay!

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Field Station Management

The Umiujaq Research Station is owned and run by the Centre d’études nordiques (CEN: Centre for Northern Studies) whose secretariat is based at Université Laval, Québec, Canada. The warehouse is in shared ownership with the Umiujaq community and the Nunavik Research Centre (Makivik Corporation). The garage is run in partnership with the Nunavik Research Centre.

Station name :  CEN Umiujaq Research Station
Coordinates :  56° 33' 07" N, 76° 32' 57" W
Location :  The station is in the village of Umiujaq (400-500 inhabitants), situated on the eastern shores of the Hudson Bay in Nunavik, Québec, Canada. It is located next to a pier for easy maritime access.
Owner :  Centre d’études nordiques (CEN: Centre for Northern Studies)
Institution in charge :  Centre d’études nordiques (CEN: Centre for Northern Studies)
Adress :  255, 256, 257 Hudson Road
          PO Box 2243
          Umiujaq, Québec, Canada
          J0M 1Y0
          Tel. : 819-331-7227
Opening year :  Since the 1990’s, but house and vehicle garage were built in 2011.
Operational period :  Year-round
Station networks:  Canadian Network of Northern Research Operators (www.cnnro.ca).

INTERACT - International network for terrestrial research and monitoring in the arctic (www.eu-interact.org).
Environment

Keywords: Mountain, valley, shoreline, lakes, coastline, tundra, tree line, thermokarst lakes, cuestas, permafrost, isostatic uplift, raised beaches, glacial features, landlocked marine species, migrating treeline, deltaic environments.

Climate: Subarctic

Temperature: Mean annual temp. -3 °C ; Mean temp. in February -22.4 °C ; Mean temp. in July 12.2 °C.

Winds: Mean annual wind speed 5.9 m/s ; Max. wind speed 28 m/s ; Dominant wind direction - South.

Precipitations: Rain and snow ; total annual precipitation 500-600 mm.

Ice break-up: May or June (year dependent).

Permafrost: Discontinuous

Altitude: 5 m at the station; 0 m to 400 m in study area.

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. In front of the village are the Nastapoka Islands (cuestas) where many species of birds, such as common loons, eider ducks and peregrine falcons, find summer shelter and nest. The sheltered maritime environment features sporadic black spruce and larch, but the surrounding area is characterized by shrub tundra, discontinuous permafrost (mostly palsa bogs), and thermokarst lakes.
About 30 km north of Umiujaq is the Nastapoka River with its scenic 30 m high falls. The headwater lakes of the river contain a unique population of landlocked freshwater seals and many fish species. A salmon population that does not migrate can be found downstream of the river. The estuary waters are rich in brook trout, white fish, seal, and beluga.

**Human dimension:**

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.

Today, Umiujaq has a population of about 500 inhabitants, mainly Inuit. The people speak Inuktitut and English with some French.

**Research**

**Disciplines:** Atmospheric chemistry and physics, isotopic chemistry, climatology, climate change, environmental science, pollution, geology and sedimentology, geophysics, glaciology, soil science, mapping gis, oceanography and fisheries, microbiology, hydrology, terrestrial biology, ecology, paleoecology, paleolimnology, limnology.

**Current research:** Past and present research has focused on permafrost studies, coastal geology, and geomorphological characterization of the region. Some work on the social dimensions has been conducted over time. 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, plant community dynamics and response of northern plants to climate change.

Archeological studies and community based monitoring activities also take place including Avativut " Science in Nunavik, high school students learning in relation to their territory " ([www.cen.ulaval.ca/avativut](http://www.cen.ulaval.ca/avativut)).

**Scientific services:** Local guides and translators available for hire.

**Permits & licensing:** All research activities must be planned well in advance. Station manager and local authorities must be informed of research activities. Permits are not required to access the station or to conduct research in the area.
Climatic and environmental data: CEN has collected extensive climate data since 1997 and still operates four climate stations from the CEN SILA Network (www.cen.ulaval.ca/sila) in the area. Thermistor cables are also installed to monitor permafrost temperature.

Measured Environmental Variables in the Umiujaq area

Station Umiujaq – roc (56.5421, -76.5216)

<table>
<thead>
<tr>
<th>Data type</th>
<th>Details (french)</th>
<th>Units (french)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tair_Moy</td>
<td>Température de l'air - Moyenne</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Tsol_Moy</td>
<td>Température du sol - Moyenne</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Vents_Direction_Echantillon</td>
<td>Direction du vent - Échantillon</td>
<td>Degrés (°)</td>
</tr>
<tr>
<td>Vents_Direction_Moy</td>
<td>Direction du vent - Moyenne</td>
<td>Degrés (°)</td>
</tr>
<tr>
<td>Vents_Direction_StandDeviat</td>
<td>Direction du vent - Écart-type</td>
<td>Degrés (°)</td>
</tr>
<tr>
<td>Vents_Direction_VecteurUnitMoy</td>
<td>Direction du vent - Vecteur-</td>
<td>Unité-moyen</td>
</tr>
<tr>
<td>Vents_Vitesse_HorizontMoy</td>
<td>Vitesse du vent - Vitesse</td>
<td>horizontale moyenne</td>
</tr>
<tr>
<td>Vents_Vitesse_Max</td>
<td>Vitesse du vent - Maximum</td>
<td>m/s</td>
</tr>
<tr>
<td>Vents_Vitesse_Moy</td>
<td>Vitesse du vent - Moyenne</td>
<td>m/s</td>
</tr>
<tr>
<td>Humidite_Air</td>
<td>Humidité de l'air</td>
<td>%</td>
</tr>
<tr>
<td>Rad_Incidente</td>
<td>Radiation incidente</td>
<td>w/m²</td>
</tr>
<tr>
<td>Rad_Reflechie</td>
<td>Radiation réfléchie</td>
<td>w/m²</td>
</tr>
<tr>
<td>Tair_Max</td>
<td>Température de l'air - Maximum</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Tair_Min</td>
<td>Température de l'air - Minimum</td>
<td>Degrés Celsius (°C)</td>
</tr>
</tbody>
</table>

Station vallée des trois, lac Guillaume-Delisle (56.5492, -76.4689)

<table>
<thead>
<tr>
<th>Data type</th>
<th>Details (french)</th>
<th>Units (french)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidite_Air</td>
<td>Humidité de l'air</td>
<td>Inconnu</td>
</tr>
<tr>
<td>Rad_Nette</td>
<td>Radiation nette</td>
<td>Inconnu</td>
</tr>
<tr>
<td>Tair_Max</td>
<td>Température de l'air - Maximum</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Tair_Min</td>
<td>Température de l'air - Minimum</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Tair_Moy</td>
<td>Température de l'air - Moyenne</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Vents_Direction_Moy</td>
<td>Direction du vent - Moyenne</td>
<td>Degrés (°)</td>
</tr>
<tr>
<td>Vents_Vitesse_Moy</td>
<td>Vitesse du vent - Moyenne</td>
<td>Inconnu</td>
</tr>
<tr>
<td>Tsol_Moy</td>
<td>Température du sol - Moyenne</td>
<td>Degrés Celsius (°C)</td>
</tr>
</tbody>
</table>

Station rivière Sheldrake – au nord-est D’Umiujaq (56.6141, -76.0909)

<table>
<thead>
<tr>
<th>Data type</th>
<th>Details (french)</th>
<th>Units (french)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tair_Moy</td>
<td>Température de l'air - Moyenne</td>
<td>Degrés Celsius (°C)</td>
</tr>
<tr>
<td>Teau_Moy</td>
<td>Température de l'eau</td>
<td>Inconnu</td>
</tr>
<tr>
<td>Niveau_Eau</td>
<td>Hauteur de la colonne d'eau</td>
<td>Inconnu</td>
</tr>
</tbody>
</table>
Nordicana-D :  CEN's Nordicana-D series freely and openly give access to online climatic and environmental data reports archived at CEN, aiding the management of the wealth of environmental data sets produced by CEN's monitoring and research activities.

The following data serie is available for this area : CEN 2013. *Données environnementales de la région d'Umijuq au Nunavik, Québec, Canada. v. 1.0 (1997-2012).* Nordicana D9, doi: 10.5885/45120SL-067305A53E914AF0.

Visit the Website www.cen.ulaval.ca/nordicanad/ to view the complete list of available data.

### Infrastructure and Local Services

In previous years and still today, CEN researchers use a meat plant/warehouse that has shared ownership (CEN, Anniturvik Landholding Corporation, and Makivik Corporation). In 2010, CEN undertook major station upgrades and restored the warehouse (still shared with its partners), built a vehicle garage, and a three-bedroom house.

- **Total area under roof:** 100 m² for the scientific laboratory and 60 m² for the garage.
  - 255 Hudson road: Laboratory / Warehouse
  - 256 Hudson road: Garage
  - 257 Hudson road: House

- **Number of rooms (beds):** A total of 3 rooms (6 beds plus 1 pull out couch), 1 living room, 1 kitchen.

- **Staff:** No staff member is present at the station.

- **Capacity:** 7 to 8 visitors at the time.

- **Commodities:** The house is equipped with partial solar powered electricity, running water (shower and laundry), and oil heating. Garbage collection is frequent; containers are available for this purpose. Recyclables are not locally collected.
Communication

A telephone is available in the house (819-331-7227). A calling card must be used for all long distance calls. Rental of an internet modem is possible via www.tamaani.ca or at the municipal office for about $60/month. They require a $50 deposit. Once you have the modem, there is a router installed in the house so you can use internet throughout the station. Satellite phones and VHF are available for rent for members from the CEN.

Scientific equipment

WHMIS training or equivalent is required to use the lab. Chemical storage is not authorized. All products must be brought back after use.

Vehicles

Snowmobiles, quads and 4x4 trucks can be rented from CEN (read the safety guidelines). Fuel is available at the COOP. A 26 foot aluminum Silver Dolphin equipped with bottom mapping will soon be available. Contact the station manager for any other requirements.

Safety Guidelines for Vehicle Use

Only CEN members are authorized to use the vehicles on site. Please contact the CEN secretariat to make prior arrangements (cen@cen.ulaval.ca).

Maintenance and repairs

When, and if, a vehicle has mechanical problems, please have it repaired at the municipal garage (819-331-7083) and then proceed to send the bill to the cen office for reimbursement. Pease provide an explanation of the repairs.

Safety guidelines for vehicle use

All users of ATVs and snowmobiles must wear helmets. Helmets are available at the station. You are using the vehicles at your own risk. The vehicles are to be used for work purposes only and not for recreational use. Please always keep in mind that there may be other potential users and be respectful of their needs (respect the established schedule; do not leave with the keys when the vehicle is not being used, etc.). Take good care of the vehicles, for instance, do not drive in saltwater with the atv.
How to Get There

Access :
Umiujaq is only accessible by commercial airline (Air Inuit). Maritime transport is available twice a year. Access to the surrounding area is possible via chartered flights (floatplane and helicopter) which can be organized by CEN.

Charter services :
Nunavik Rotors, Héli-Inter and Whapchiwem offer helicopter services.

Landing facilities :
Gravel airstrip of 1174 × 30 m (length × width). Water landing is available. Heliport available. Ship docking facilities include port, landing wharf and pier.

Safety, Medical Services and Insurance

Safety equipment :
Safety equipment recommended for work outside the village: pepper spray, scaring pistol, communication device, first aid kit, and weapon.

Insurance :
It is the responsibility of the user of the station to ensure that he or she has the necessary insurance to complete his or her research. The CSST provides insurance coverage to employees or student employees only for accidents at work. In all other cases, personal insurance must cover victims for accidents and evacuation. It is therefore essential to have adequate coverage in terms of activity and destination. Quebec Health Insurance is valid in the area.

Medical services :
Medical facilities are well equipped (standard) but do not include a medical suite. Staff with basic medical training (2 employees) is found at the CLSC (community hospital). Nearest hospital is in Puvirnituq (45 min. by plane). The station is not equipped with compulsory safety equipment.

Airborne medical emergency :
Air medic offers individual, family, and temporary protection plan to obtain emergency medical or airborne services on 100% of the Quebec territory.
Reservation and Fees

The station and related services are available to all researchers (university, college, governmental and private) working in the area. The station can also accommodate small groups of students.

Availability: The station is available year-round. View the calendar of reservation [online at www.cen.ulaval.ca] for availability and contact CEN to make a reservation.

Cost: See the price list [online at www.cen.ulaval.ca] to know the rental costs and packages offered.

Rate Schedule

<table>
<thead>
<tr>
<th>CEN Umiujaq Research Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEN researcher (researchers &amp; students)</td>
</tr>
<tr>
<td>Per day</td>
</tr>
<tr>
<td>STAY</td>
</tr>
<tr>
<td>Per night</td>
</tr>
<tr>
<td>VEHICLE RENTAL[i]</td>
</tr>
<tr>
<td>4x4 Truck</td>
</tr>
<tr>
<td>Snowmobile (village)</td>
</tr>
<tr>
<td>STORAGE [ii]</td>
</tr>
<tr>
<td>Laboratory</td>
</tr>
<tr>
<td>Storage space:</td>
</tr>
<tr>
<td>Storage space:</td>
</tr>
<tr>
<td>Heated storage</td>
</tr>
</tbody>
</table>

* Government, private sector, non-canadians

[i] All repairs for damages incurred during a rental will be charged to the user.
[ii] No storage of chemicals, all chemicals must leave the station with the user.

CEN will charge occupancy as indicated at the time of booking. You must communicate all changes to your occupancy to the CEN secretariat within 3 weeks of your return from the station.

Updated June 5, 2013
Online Documentation

- **INTERACT Station Catalogue** (PDF, 15.9 Mo)
- **Measured Environmental Variables** - in french (Format PDF, 723 Ko)
- **Safety Guidelines for Vehicle Use** (PDF, 240 Ko)
- **Collection of maps of the area** (PDF, 1.6 Mo)
- **Useful Phone Numbers** - in french (PDF, 400 Ko)
- **Useful Information on Satellite Phones** - in french (PDF, 340 Ko)
- **Personal first aid kit** - in french (PDF, 310 Ko)
- **Prevention and safety at CEN** - in french (www.cen.ulaval.ca/securite)
- **Avativut, Science in Nunavik** (www.cen.ulaval.ca/avativut)
- **Anniturvik Landholding Corporation** (nlhca.strata360.com/nunavik-LHCs/Anniturvik)