Ward Hunt Island Observatory Research Station

Photos : S. Bourget, W. F. Vincent

CENTRE D'ÉTUDES NORDIQUES

CEN RESEARCH STATION NETWORK

Photos : D. Sarrazin, C. Tremblay, R. Fortier, W. Vincent, G. Allard

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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Last updated: August 21, 2013

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Ward Hunt Research Station

83° 06' N, 74° 10 ' W

Field Station Management

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.

Station name :	CEN Ward Hunt Island Observatory research station
Coordinates :	83° 6 'N, 74° 10' W
Location :	Ward Hunt Island, Quttinirpaaq National Park, Nunavut, Canada
Owner :	Centre d'études nordiques (CEN: Centre for northern studies) and Parks Canada
Institution in charge :	CEN at Université Laval
Opening year :	1998
Operational period :	June-August
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)

Contact

Logistics

Parks Canada
Ross Glenfield, Park Manager
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Lead researcher

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Environment

Keywords :	Ice cap, permanent snowpatches, mountain, valley, shoreline, tundra, high arctic desert, epishelf lake, fjord, lakes, glacier, glacial features
Climate:	High Arctic
Temperature:	Mean annual temp. -17.3 °C ; Mean temp. in February -33 °C ; Mean temp. in July -1 °C
Winds:	Mean annual wind speed 3.3 m/s ; Max. wind speed 29 m/s ; Dominant wind direction - SSW
Precipitations:	Rain and snow ; total annual precipitation 150 mm
Ice break-up:	July or August
Permafrost :	Continuous
Altitude :	5 m at the station ; 0 m to 400 m in study area
Natural environment :	This High Arctic island is 6.5 km long (from east to west) and 3.3 km wide. The climate regime is typical of polar deserts, with dry and extremely cold temperatures (annual mean temperature of -17.3°C). The natural environment features lakes, ice shelves, fjords, epishelf lakes, ice caps and glaciers, sea ice, mountains, and valleys. The desert terrain has a low plant and animal diversity, but the region contains diverse microbial communities such as cyanobacterial mats that survive in these extreme environments.

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 or Aujuittuq (the place that never thaws) is a small Inuit hamlet in the Qikiqtaaluk Region in the territory of Nunavut, Canada. With a population of 141 residents (as of the Canada 2006 Census), it is the only Inuit community on Ellesmere Island. It is also one of the coldest inhabited places in the world, with an average yearly temperature of -16.5°C. Grise Fjord lies 1,160 km (720 mi) north of the Arctic Circle in the Arctic Cordillera mountain range which is the only major mountain system east of the Canadian Rockies. The Canadian military base Alert is 170 km to the East and slightly to the South of Ward Hunt Island.

Research

Disciplines :	Atmospheric chemistry, isotopic chemistry, climatology, climate change, environmental science, pollution, geology and sedimentology, glaciology, geocryology, geomorphology, soil science, gis mapping, hydrology, terrestrial biology, paleolimnology, paleoecology, limnology.
Current research :	The main research topics include the structure and functioning of lake and river ecosystems at high latitudes, dynamics of northern ice shelves, microbial ecology, geomorphology of polar desert landscapes, impacts of UV radiation, and climate change on aquatic ecosystems.
Past research :	An overview of past studies in this region is given in Vincent, W.F., et al. (2011) Ecoscience 18: 236-261.
Permits & licensing :	The site is located within Quttinirpaaq National Park. Hence, all persons going to the site must first contact Parks Canada. For information on access and permits, contact Quttinirpaaq Park Manager (http://www.pc.gc.ca/pn-np/nu/quttinirpaaq/plan.aspx) and the Polar Continental Shelf Program (PCSP; http://www.nrcan.gc.ca/earth-sciences/products-services/polar-shelf-services/11617) for appropriate application forms to access the site via chartered flights.
Climatic and environmental data :	CEN has collected extensive climate data since 1995 and still operates a climate station from the CEN SILA Network (www.cen.ulaval.ca/sila) in the area. For requests concerning ecological monitoring data, please contact the lead researcher, Warwick Vincent.

Measured Environmental Variables in the Ward Hunt Island area

Station Ward Hunt - Ellesmere (83.0022, -75.3898)

Type de données	Détails	Unités
Humidite_Air	Humidité de l'air	%
Humidite_Air_Max	Humidité de l'air - Maximum	%
Humidite_Air_Min	Humidité de l'air - Minimum	%
Neige_Distance	Distance de la sonde à neige	Inconnu
Neige_Epaisseur	Épaisseur de neige	cm
Neige_Qualite	Qualité de la lecture de hauteur de neige SR50	Inconnu
Rad_Incidente	Radiation incidente	Inconnu
Rad_Nette	Radiation nette	Inconnu
Rad_Nette_brute	Radiation nette brute	Inconnu
Rad_Nette_corrigee	Radiation nette corrigée avec le vent	Inconnu
Rad_Nette_Max	Radiation nette maximum	Inconnu
Rad_Nette_Min	Radiation nette minimum	Inconnu
Rad_Quantum_SOL	Radiation Quantum réfléchie PAR	Inconnu
Rad_Reflechie	Radiation réfléchie	Inconnu
Rad_UVB_Brute	Radiation UVB brute	Inconnu
Rad_UVB_Brute	Radiation UVB brute	Inconnu
Rad_UVB_Corrigee	Radiation UVB corrigée avec la température de l'air	Inconnu
Rad_UVB_Moy	Radiation UVB transformée dans une autre unité	Inconnu
Tair_Max	Température de l'air - Maximum	Degrés Celsius (°C)
Tair_Min	Température de l'air - Minimum	Degrés Celsius (°C)
Tair_Moy	Température de l'air - Moyenne	Degrés Celsius (°C)
Tair_Res	Température de l'air en Résistance	Degrés Celsius (°C)
Tsol_Max	Température du sol - Maximum	Degrés Celsius (°C)
Tsol_Min	Température du sol - Minimum	Degrés Celsius (°C)
Tsol_Moy	Température du sol - Moyenne	Degrés Celsius (°C)
Vents_Direction_de_Vents_Max	Direction des Vents lors de Vents Max.	Degrés (°)
Vents_Direction_Echantillon	Direction du vent - Échantillon	Degrés (°)
Vents_Direction_ResultanteMoy	Résultante moyenne de la somme des directions des vents	Degrés (°)
Vents_Direction_StandDeviat	Direction du vent - Écart-type	Degrés (°)
Vents_Vitesse_HorizontMoy	Vitesse du vent - Vitesse horizontale moyenne	m/s
Vents_Vitesse_Max	Vitesse du vent - Maximum	m/s
Vents_Vitesse_ResultanteMoy	Résultante moyenne de la somme des vitesses des vents	m/s

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 series is available for this area : CEN 2013. Environmental data from Northern Ellesmere Island in Nunavut, Canada, v. 1.0 (2002-2012). Nordicana D1, doi: 10.5885/44985SL-8F203FD3ACCD4138. Visit the Websitewww.cen.ulaval.ca/nordicanad/ to view the complete list of available data.

Infrastructure and Local Services

The first known sighting of the island was in 1876 by Pelham Aldrich, a lieutenant with the George Nares expedition. The Island was 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. Nowadays, Parks Canada has three Weatherhaven shelters onsite with oil burning furnaces. A laboratory made of insulated fiberglass and powered by solar panels was built in 2010, by CEN, thanks to a federal infrastructure grant.

Total area under roof :	The total available area is 50 m^2 including 25 m^2 for scientific laboratories and 25 m^2 for logistics.
Number of rooms (beds) :	A total of 3 rooms (8 beds) are available. Shelters include 1 living area, 1 kitchen, 1 laboratory.
Staff :	No staff member is present at the station.
Capacity :	8 to 9 visitors at the time.

Commodities :	There are no showers nor laundry facilities at the station. Power supply is solar with generator on site. Shelters are heated by oil and propane. Waste must be sorted and evacuated.
Communication :	Satellite phones and VHF are available for rent for CEN members.
Scientific equipment :	Some basic laboratory equipment is available (microscope/binocular, glassware). WHMIS training or equivalent is required to use the labs. Chemical storage is not authorized. All products must be brought back after use.
Vehicles :	Helicopter time and snowmobile can be obtained through PCSP. No ATV can be used on site. Motorboat and Zodiak are present on site. Arrangements for fuel can be made through PCSP.

How to Get There

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.
Charter services :	Helicopter time can be obtained through PCSP.
Landing facilities :	Gravel airstrip of 300 × 40 m (length × width). Lake landing available. Water landing is available. Helicopter lands on level ground. There are no ship docking facilities (landing wharf and pier).

Safety, Medical Services and Insurance

Safety equipment :	Safety equipment recommended to conduct field research on Ward Hunt Island are : pepper spray, scaring pistol, communication device, first aid kit, weapon (recommended). A high degree of self-sufficiency is expected.
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 coverage is not valid outside of the province of Quebec. Agreements exist with some provinces, however, no agreement exists with the Northwest Territories or Nunavut, even if these areas are located in Canada.
Medical services :	There are no medical facilities on the Island. Staff with basic medical training is found in Puvirnituq (45 min. airflight). Nearest medical facilities are in Iqaluit, Nunavut (2000 km airflight) and may take several hours. Transportation time depends on airborne services availability and weather conditions. The station is not equipped with compulsory safety equipment.

Reservation and Fees

The station is available to all researchers (university, college, governmental and private) working in the area.

Availability :	Early May to late August. Contact the Quttinirpaaq National Park manager in advance to confirm opening and closing dates.
Cost :	No fixed cost. Cost to use facility must be negotiated with contacts in advance.

Online Documentation

- INTERACT Station Catalogue (PDF, 15.9 Mo)
- Collection of maps of the area (PDF, 1.6 Mo)
- Useful Phone Numbers - in french (PDF, 157 Ko)
- Useful Information on Satellite Phones - in french (PDF, 340 Ko)
- Personal first aid kit - in french (PDF, 310 Ko)
- Personal items list - in french (PDF, 320 Ko)
- Polar Bear Safety Tips - in french (PDF, 260 Ko)
- Prevention and safety at CEN - in french (www.cen.ulaval.ca/securite)
- Quttinirpaaq National Park (www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq)
- Vincent, W.F., et al. 2011. Extreme ecosystems and geosystems in the Canadian High Arctic: Ward Hunt Island and vicinity, Ecoscience 18: 236-261

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