

# Dumont d'Urville

Institut Polaire Francais Paul Emile Victor

66°39'77.0"S 140°0'08.0"E

Type: Station

Operational period: Year-round

## Location

Dumont d'Urville station is located on the coastal area of Terre Adélie, in the Pointe Géologie Archipelago, on Petrel Island, a short distance from the Antarctic continent. The Glacier l'Astrolabe, close to the station, produces large icebergs which have a strong impact on the bottom of the sea floor and its biodiversity. All the islands of the archipelago except for Ile des Pétrils constitutes the Antarctic Specially Protected Area (ASPA) 120 which includes also the Emperor penguin breeding colony on sea ice in winter.

## Biodiversity and natural environment

Located on a small island at 5 km from the continent, the Dumont d'Urville station is entirely surrounded by sea ice in winter whereas the sea is usually open from December to March. A huge colony of breeding Emperor penguins is present close to the station in winter, and several sea bird species, including numerous Adélie penguins and seals breed in the area. Local conditions are characterized by temperatures varying from 0°C to -35°C, blizzard, long polar nights and winds sometimes exceeding 300 km/h.

## History and facilities

After the fire which destroyed the first French Antarctic Station (Port-Martin) in Terre Adélie in January 1952, a team of six expeditioners decided to stay during winter on Ile des Pétrils, in a small hut called "Base Marret" (HSM 47). In 1956, Dumont d'Urville station was built on this island, as a temporary station for the International Geophysical Year (1957-58). The station has been continually occupied since that time. The facility includes living quarters: sleeping accommodation, refectory, kitchen, library and hospital; laboratories – biology, geophysics, meteorology; technical areas: power generating plant, workshops and garages.

CLIMATE	
Climate zone	Coastal Antarctica
Permafrost	None
Mean annual wind speed (km/h)	33.2
Max wind speed (km/h)	324
Dominant wind direction	SE
Sea Ice Break Up	January, February, March, December
Snow free period	None
Total annual precipitation (mm)	
Precipitation type	Snow
Mean annual temperature (°C)	-10.7
Mean temperature in February (°C)	-4
Mean temperature in July (°C)	-16.7
ENVIRONMENT	
Region	Continental Antarctica
Antarctic Environmental Domain: L – Continental coastal-zone ice sheet	
Antarctic Conservation Biogeographic Region: 13 Adélie Land	
Altitude of facility (m)	42
Type of surface facility built on	Ice-free ground
Long term monitoring	Yes
Waste management	Yes
Hazard(ous) management	Yes
Fuel spill response capability	Yes



## General research and databases

The research projects implemented at Dumont d'Urville station cover a large range of scientific domains: bird and mammal ecology and physiology, marine biology, glaciology, atmosphere chemistry, stratospheric ozone, meteorology as well as long term Earth science observatories in seismology and magnetism.

## Features in the facility area

Bird colonies, Coast, Crevasse, Fauna, Ice cap or glacier, Ice tongue, Seal colonies.

## Main science disciplines

Atmospheric chemistry and physics, Environmental sciences, Geology, Geophysics, Glaciology, Marine biology.



Photo: Camille Freser



Photo: Françoise Amelineau



Photo: Erwann Amice

FACILITIES INFRASTRUCTURE	
Area under roof (m <sup>2</sup> )	4815
Area scientific laboratories (m <sup>2</sup> )	872
Type of scientific laboratories: Biology, Geophysics, Scientific diving	
Conference room (capacity)	
Logistic area (m <sup>2</sup> )	3440
Number of beds	90
Showers	Yes
Laundry facilities	Yes
Power supply type	Fossil fuel, Renewable
Power supply (V)	230
Power supply (hours per day)	24
Hydroponics facilities	No
Number of staff on station (peak/summer season)	44
Number of scientists on station (peak/summer season)	46
Number of staff on station (off peak/winter season)	14
Number of scientists on station (off peak/winter season)	10
Max number of personnel at a time (staff, scientists and others)	90
Specific device/Scientific equipment: Basic equipments (precision scales, microscopes, stove, distilled water etc.), surgery room, diving facilities	
Scientific services possible:	
Long-term monitoring/observations: Earth magnetism (INTERMAGNET Network), Seismology (GEOSCOPE Network), Sea level (GLOSS Network), Stratospheric ozone, Glacier mass balance, Atmospheric sulfur cycle, Nucleon component of the cosmic radiation, Birds and mammal population dynamics	
<b>MEDICAL FACILITIES</b>	Yes
Area of medical facility (m <sup>2</sup> )	110
Staff with basic medical training or doctor (Summer)	1
Staff with basic medical training or doctor (Winter)	1
Capability: Basic, Dental, Surgery	
Equipment: Anaesthesia, Biochemistry, Blood transfusion medicine, Diagnostic ultrasound, Diagnostic X-ray, Haematology, Telemedicine, Echography	
Distance to hospital (km)	2700
Closest emergency facility in Antarctica (km)	1500
Closest emergency facility external (km)	2700
Medical research capabilities	No
Medical screening requirements	Yes
<b>VEHICLES AT FACILITY</b>	
Sea transportation: One barge 13 m 280 HP, one pontoon 50 T, two dinghys 80 HP, two dinghys 10 HP	
Land transportation: Four 4WD vehicles, one tracked tractor, two tracked carrier trucks, one tracked dumper, two bulldozers, one excavator, two wheeled loaders, one wheeled telehandler	
<b>WORKSHOP FACILITIES</b>	
ICTS, Mechanical, Metal workshop, Wood workshop	
<b>COMMUNICATIONS</b>	
E-mail, Fax, Internet, Satellite phone, Telephone, VHF	
<b>TRANSPORT AND FREIGHT</b>	
Access	Air, Sea
Transport to facility: Airplane, Ship	
Number of airstrips	1
Length (m) of longest runway	1300
Width (m) of longest runway	50
Number of flight visits per year	15
Period of flight visits per year: January, February, October, November, December	
Helipad	Yes
Number of ship visits per year	5
Period of ship visits per year: January, February, November, December	
Ship landing facilities: Floating dock/Pontoon, Pier/Jetty	



# Concordia

Institut Polaire Francais Paul Emile Victor /  
Programma Nazionale Di Ricerche in Antartide

75°06'06"S 123°19'95"E

Type: Station

Operational period: Year-round

## Location

Concordia station is located at Dôme C, on the high East Antarctic plateau. The site is one of the coldest and among the most remote places on Earth. Among the year-round stations in Antarctica, only 3 are located inland the continent (Amundsen-Scott, Vostok and Concordia). The closest stations are Dumont d'Urville and Mario Zucchelli.

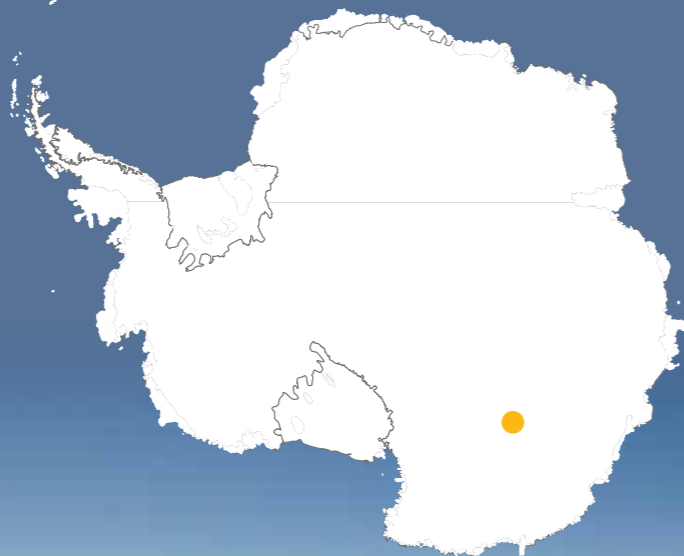
## Biodiversity and natural environment

Dome C is 1100 km from the coast at a height of 3233m a.s.l., surrounded by thousands of kilometers of solid ice. Temperatures hardly rise above -25°C in summer and can fall below -80°C in winter with record of -84.6°C reached in 2010. As a consequence, there is no fauna and no flora.

## History and facilities

The idea of constructing a European permanent research station in the heart of Antarctica, with an environment particularly hostile for humans, sprang up when the site at Dome C was revealed to be especially favourable for deep ice coring and astronomy. This scientific challenge is accompanied by another, parallel adventure: the design and construction of a modern station, capable of yielding new scientific knowledge concerning not only Antarctica, but also concerning the whole our planet and beyond, the Universe. The Institut Polaire Francais Paul Emile Victor (IPEV) and the Programma Nazionale di Ricerche in Antartide (PNRA) have therefore pooled their skills and know-how, resources and combined operations to develop this new station between 1999 and 2005. Concordia has been continuously occupied since that time.

CLIMATE	
Climate zone	Inland Antarctica
Permafrost	None
Mean annual wind speed (km/h)	10.8
Max wind speed (km/h)	114.8
Dominant wind direction	S
Sea Ice Break Up	None
Snow free period	None
Total annual precipitation (mm)	
Precipitation type	Snow
Mean annual temperature (°C)	-52.1
Mean temperature in February (°C)	-43.7
Mean temperature in July (°C)	-64.2
ENVIRONMENT	
Region	Continental Antarctica
Antarctic Environmental Domain: Q – East Antarctic high interior ice sheet	
Antarctic Conservation Biogeographic Region:	
Altitude of facility (m)	3233
Type of surface facility built on	Ice-sheet
Long term monitoring	Yes
Waste management	Yes
Hazard(ous) management	Yes
Fuel spill response capability	Yes



## General research and databases

The research projects implemented at Concordia are linked to many subjects involving societal concerns, such as climate change, the role of greenhouse gases or aerosols in past and present trends or the hole in the ozone layer. Beside the European Project for Ice Coring in Antarctica (EPICA), which was completed in December 2004 and extended the record of climate variability to around 800,000 years BP, Concordia remains an active site for glaciology. Dome C also offers an exceptional environment for astronomical observations and provides good conditions for calibration and validation of sensors embarked on polar orbit satellites. Observatories in seismology, geomagnetism, or Earth-Sun interactions are present. Concordia station itself is also considered as an excellent Earth-based analogue for orbital space stations or Mars-bound vessels and projects in collaboration with the European Space Agency (ESA) are implemented.

## Features in the facility area

Clear air zone, Ice cap or glacier, Low artificial light pollution, Low humidity, Plateau, Sustrugui.

## Main science disciplines

Astonomy, Astrophysics, Atmospheric chemistry and physics, Engineering, Environmental sciences, Geophysics, Glaciology, Human biology, Medicine, Microbiology, Paleoclimatology, Planetary Science.



FACILITIES INFRASTRUCTURE	
Area under roof (m <sup>2</sup> )	3605
Area scientific laboratories (m <sup>2</sup> )	748
Type of scientific laboratories: Astronomy, Chemistry, Geophysics	
Conference room (capacity)	
Logistic area (m <sup>2</sup> )	2856
Number of beds	80
Showers	Yes
Laundry facilities	Yes
Power supply type	Fossil fuel
Power supply (V)	230
Power supply (hours per day)	24
Hydroponics facilities	No
Number of staff on station (peak/summer season)	35
Number of scientists on station (peak/summer season)	35
Number of staff on station (off peak/winter season)	8
Number of scientists on station (off peak/winter season)	5
Max number of personnel at a time (staff, scientists and others)	80
Specific device/Scientific equipment: No basic scientific equipment. Each project should bring its own necessary scientific equipment. Scientific services possible: A scientific engineer (electrician) is appointed in winter for monitoring and maintenance of automated programs.	
Long-term monitoring/observations: Earth magnetism (INTERMAGNET Network), Seismology (GEOSCOPE Network), Stratospheric ozone, SuperDARN (Super Dual Auroral Radar Network), Glacier mass balance, Baseline Surface Radiation Network (BSRN), meteorology (incl. Radio-sounding).	
MEDICAL FACILITIES	
Area of medical facility (m <sup>2</sup> )	120
Staff with basic medical training or doctor (Summer)	2
Staff with basic medical training or doctor (Winter)	2
Capability: Basic, Dental, Surgery	
Equipment: Altitude medicine, Anaesthesia, Biochemistry, Diagnostic ultrasound, Diagnostic X-ray, Haematology, Laboratory diagnostics, Telemedicine, Echography	
Distance to hospital (km)	5000
Closest emergency facility in Antarctica (km)	1100
Closest emergency facility external (km)	5000
Medical research capabilities	Yes
Medical screening requirements	Yes
VEHICLES AT FACILITY	
Sea transportation:	
Land transportation: One 4WD, two snow groomers, five skidoos, one tracked loader, one telehandler, one tractor during summer, bicycles	
WORKSHOP FACILITIES	
ICTS, Mechanical, Metal workshop, Wood workshop	
COMMUNICATIONS	
Computer, E-mail, Internet, Satellite phone, Telephone, VHF	
TRANSPORT AND FREIGHT	
Access	Air, Land
Transport to facility: Airplane, Traverses from Cap Prud'homme	
Number of airstrips	1
Length (m) of longest runway	2000
Width (m) of longest runway	50
Number of flight visits per year	20
Period of flight visits per year: January, February, November, December	
Helipad	No
Number of ship visits per year	
Period of ship visits per year:	
Ship landing facilities:	