

TEACHING DOSSIER 2 ENGLISH, GEOGRAPHY, SCIENCE, HISTORY

PEOPLE IN THE POLAR REGIONS

ANTARCTIC, ARCTIC, PEOPLES OF THE ARCTIC, EXPLORATION, ADVENTURERS, POLAR BASES, INTERNATIONAL POLAR YEAR, SCIENTIFIC RESEARCH, FISHING, INDUSTRY, TOURISM



THEORY SECTION

Living conditions in the Polar Regions are harsh: very low temperatures, violently strong winds, ground often frozen solid, alternation between long nights in winter and long days in summer and difficult access by any means of transportation. Yet despite everything, people manage to live either permanently or temporarily in these regions, which are unlike any other. Who are these people?

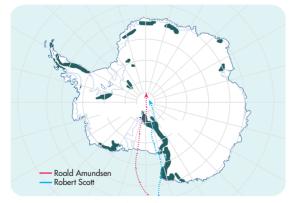
PEOPLE IN THE ANTARCTIC

Antarctica is a frozen continent surrounded by an immense ocean. The climate is so extreme that there is virtually no life at all on land; any life there is concentrated on the coast (seals, penguins, whales, etc.)¹. No human beings live in Antarctica on a permanent basis; however people have managed to endure short and extended stays on the continent during the past 200 years.

THE EXPLORERS: A BALANCE BETWEEN PHYSICAL ACHIEVEMENT AND SCIENCE

Because it was so difficult to reach, the Antarctic was the last region of the world to be explored. Until the 18th century, the frozen continent remained very much a figment of people's imaginations. Then in 1773, the English navigator and explorer James Cook became the first man to reach the southern polar circle (Antarctic Circle). Yet it was not until 1820 that the Russian navigator F.F. Bellingshausen and his men discovered that Antarctica was not just made entirely of sea ice, but a continent in its own right, because they saw a mountain there.

News about the presence of seals in Antarctica spread quickly, prompting many fishing boats to head south to hunt the seals for their fur. By 1821, fifty or more boats had already made the trip, and these hunters were the first persons to really discover the continent of Antarctica. One of them, James Weddell, reached the southernmost point reached until then in 1823 (400 km further south than Cook). Between 1840 and 1890, the lure of the South Pole lost its attraction for adventurers: the abundant herds of seals were thinning out and increasingly oil was replacing animal fat as fuel for lamps. In spite of this, two scientific research stations opened in the Antarctic as part of the first International Polar Year (1882-1883). The very first scientific expedition was led by Frederick Cook, Roald Amundsen and Adrien Victor Joseph de Gerlache in 1897-1899. Their ship, the Belgica, was the first vessel to overwinter in Antarctica.



→ Figure 1: The race to the South Pole

The subsequent years saw a race to reach the South Pole. The Pole itself was reached for the first time on 14th December 1911 by Norway's Roald Amundsen. Another expedition, led by the British explorer Robert Scott, repeated the feat one month later, on 17th January 1912. The two expeditions had set out at virtually the same time, but the Norwegians had equipment that was better suited to the terrain and they were also more experienced. Drained of all their physical strength, the entire team of British explorers perished on their way back from the Pole.

¹ See the teaching dossier dealing with "The Polar Regions" and related animations at www.educapoles.org

The International Geophysical Year (1957-58) ushered in a new era in Antarctic exploration. Numerous scientific bases were built, such as Russia's Vostok station, Belgium's King Baudouin station and the Amundsen-Scott base at the South Pole itself. It was during this period that Vivian Fuchs led a mechanised expedition that achieved the first complete crossing of the continent.

The end of the 20th century was a great period for adventurers. In 1989, for example, Jean-Louis Etienne and his team completed the longest crossing of Antarctica (6300 km) in seven months, using sledges pulled by dogs. Their aim was to focus attention on the importance of the Antarctic Treaty (see below). In 1994, the Norwegian Liv Anesen became the first woman to reach the South Pole solo on skis; in 1997-1998, the Belgian adventurers Alain Hubert and Dixie Dansercoer crossed the whole continent (3924 km), on skis, using traction kites to propel themselves.

THE SCIENTISTS: THE ERA OF THE ANTARCTIC TREATY

Many expeditions were organised during the International Geophysical Year (IGY) of 1957-1958 and more than forty permanent scientific bases were built in Antarctica. Given the tense political context of the Cold War, a need soon became apparent to create a regulatory framework to govern both the continent and the research being carried out on it. Signed on 1st December 1959 by 12 countries (Belgium, South Africa, Argentina, Australia, Chile, United States, France, Great Britain, Japan, New Zealand, Norway and Russia), the "Antarctic Treaty" extended the international scientific cooperation that had taken place during the IGY. The Treaty gave international and peaceful status to all bases located south of the 60th parallel in the southern hemisphere. Most importantly, it placed a blanket embargo on any military activities, as well as the storage of nuclear waste. Since then, 34 other countries have signed on to the Treaty.

In the wake of large-scale campaigns mounted by environmental movements, explorers and well-known personalities, the signatory countries further strengthened the Treaty by adding the Madrid Protocol in 1991, which in particular forbids any exploitation of the natural mineral and oil resources in Antarctica until 2041. The Madrid Protocol designates Antarctica as a "natural reserve dedicated to peace and science." This gives the Antarctic a truly unique status, and is the extraordinary result of an overall agreement to keep the whole continent free of territorial claims and commercial exploitation for the sole purpose of protecting and studying it.

Most of the scientists and technicians who go to Antarctica only stay there during the summer months, because the continent is totally isolated in the winter. Over the past 50 years, most of the scientific bases have had to be rebuilt or improved, with some of them sinking into the ice or becoming buried under the snow. Some new stations have been built, however, each one better adapted to the extreme conditions of Antarctica than the last. One of these newcomers is the Belgian Princess Elisabeth Station, which was built inland in 2008 as part of the fourth International Polar Year. As it is powered 100% by solar energy and wind power, the Princess Elisabeth Station is the first polar base not to emit any pollution and to have almost no impact at all on the environment (used water is recycled)².

→ Figure 2: (annex 1)

The research conducted by scientists in Antarctica looks at a wide range of areas: glaciology, meteorology, astronomy, biology, oceanography, geology, and many more. They study subjects as varied as atmospheric circulation, penguin populations, bacteria living in the ice, the Earth's magnetic field, sediment at the bottom of

² See the teaching dossier dealing with "Sustainable development in the polar regions: Princess Elisabeth Station, Antarctica" at www.educapoles.org; as well as the station website: www.antarcticstation.org

the oceans and some prototypes of devices to be used in space exploration. The ice in Antarctica has also locked away vital information about the Earth's climate history: drilling and extracting deep ice cores enables us to gain a better understanding of the climate change currently taking place³. The Antarctic continent is also being affected by climate change and scientists are keeping a close eye on the way various species are responding to changes in their environment (e.g. Antarctic krill).

Numerous studies are also being conducted from research ships sailing the polar oceans, by dozens of scientists from all countries working on board. Setting sail for weeks and even months at a time, these researchers work in shifts round the clock to study the polar regions from these floating laboratories⁴.

INDUSTRY AND TOURISM

Antarctic waters attract fishermen too, ranging from whaling fleets (from the beginning of the 19th century), right through to the current fishing for krill. Whaling used to kill as many as 45 000 whales a year in Antarctica (1937-38), but from 1930, whaling was gradually banned, until a worldwide moratorium came into effect in 1986. Since that time, only Japan, Iceland and Norway have continued to hunt whales.

The only other commercial activity in Antarctica is tourism, which has increased significantly since the 1990s. During the southern summer 2005-2006, more than 27 000 tourists set foot on the frozen continent! This trend is of some concern and was highlighted by the United Nations Environment Programme (UNEP) in 2007, because the polar ecosystems are fragile and tourism endangers them.

PEOPLE IN THE ARCTIC

The Arctic is a frozen ocean surrounded by continents. Unlike the Antarctic, which is a continent isolated by an ocean, the Arctic is much easier to get to and the temperatures there are less harsh, as warmth is carried by currents in the oceans and atmosphere from warmer regions of the Earth⁵. This explains why the Antarctic is an uninhabited continent, whereas people have lived in the Arctic for thousands of years.

THE PEOPLES OF THE ARCTIC

The first inhabitants of the Arctic came from Asia. According to archaeologists, some of these hunter-gatherers may well have benefited from a lower sea level during the last ice age approximately 20,000 years ago to reach Alaska from Siberia via the Bering Strait, which was completely dry at the time. These people then dispersed across the North American continent and spread out throughout the entire Arctic. There are many indigenous populations in the Arctic: Dolgan, Chukchi, Nenets, Sámi (or Lapp), Aleut, Inuit, etc.

Figure 3: (annex 2)

All of these peoples lived from the land and the sea. Most were nomadic or semi-nomadic. Some of them hunted and fished, like the Inuit or Aleut, while others bred herds of reindeer, with which they used to migrate, like the Sámi or Nenets. Previously the sole occupants of their land, they have gradually been invaded by other peoples and cultures. Today, they remain the majority of the population in some places (80% in Greenland), but are generally in the minority (under 10% in northern Scandinavia and northern Russia). Some have been

See the two teaching dossiers dealing with climate change, as well as the numerous animations available at www.educapoles.org

Experience an expedition aboard the polar scientific vessel Polarstern by going to www.educapoles.org and clicking there, select the news category for "Polarstern expedition / CAML" from the list on the right-hand side of the text. See the teaching dossier dealing with "The Polar Regions" and related animations available at www.educapoles.org s.org and clicking on the "news" tab. Once

able to continue leading a traditional life, but most have had to adapt and adopt other ways of life, even facing deportation and collectivisation of property in some cases. Many have settled down in one place, thereby losing their nomadic way of life, many of their traditions and thus much of their identity. In addition, industrialisation, the building of roads and pipelines, the melting of the sea ice and the introduction of new technologies have totally modified their habits, making their traditional way of life increasingly difficult to follow. Today, many of them depend financially on the "States" that have colonised them. This cultural and economic "shock" has often had dramatic social repercussions (alcoholism, suicides, crime, etc.).

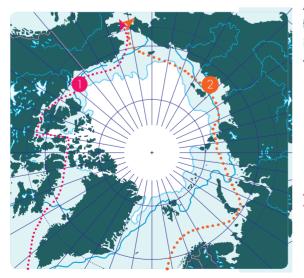
Most of these peoples would like to have their rights and independence restored. Taking this path would appear difficult, but there are several encouraging examples:

- Greenland, where approximately 80% of the population is of Inuit origin, was granted a significant level of political autonomy in 1978, although it is still linked to Denmark.
- In Canada, a new territory was created in 1999: Nunavut (which means "our land" in Inuit), where 85% of the population is of Inuit origin.
- In Norway, the "Sámi parliament of Norway" is an elected assembly created to represent the Sámi people (the Lapps) with the national Norwegian assembly, which recognised that the Sámi culture and languages should receive equal treatment to Norwegian culture.

THE EXPLORERS

In the 3rd century BC, the ancient Greeks had already hypothesised about the presence of the Arctic, and it is likely that the Greek explorer Pytheas was the first European to sail to the Arctic, in 330 BC. Then, in 982 AD, a group of Vikings led by Erik the Red, who had been banished from Iceland, discovered Greenland, establishing two colonies on the southwestern coast of the island. These colonies remained in existence until the 16th century, when they gradually died out as the result of the gradual and natural cooling of the climate, called the Little Ice Age.

From the end of the 16th century, the larger European nations sent their best navigators to explore the Arctic, looking for a hypothetical and almost mythological passage that would provide a northwest or northeast passage round the continents (see figure 4). Dutch seaman Willem Barents discovered Novaya Zemlya in 1594 and then Spitsbergen by chance in 1596. It was Vitus Bering who charted the coastal regions of north-eastern Siberia by exploring the northern Pacific. In 1728 he established the connection between the continents of Asia and North



America via the Bering Strait. Attracted by the lure of financial gain, many seal and whale hunters followed in the wake of these first expeditions, crisscrossing the waters of the Arctic.

- → Figure 4: the North-West and North-East Passages
- 1 "North-West Passage" through the canadian Archipelago
 2 "North-East Passage" off the coast of Siberia.

Setting out to conquer the North-West Passage in 1845, British Rear Admiral Sir John Franklin perished with the whole of his crew. Rescue expeditions arrived too late to save them, but their voyages made it possible to chart the whole of the Canadian Arctic. In 1878-1879, Swedish navigator Adolf Nordenskjold, aboard the Vega, became the first person to trail-blaze a passage through the north, sailing through the Northeast Passage and along the coast of Siberia.

One of the great Arctic explorers was Fridjof Nansen. After an initial crossing of Greenland in 1888, five years later he launched an even more ambitious project: allowing the ice drift to take him to the North Pole, drifting through the sea ice. To achieve this goal, he designed a boat, the Fram, capable of withstanding the high pressure exerted on the hull by sea ice. Once there, he came to realise that the rate of the ice drift was not sufficient to enable him to reach his goal, and so he decided to continue on skis with a companion, finally turning back 380 km from the North Pole. Between 1903 and 1906, the Norwegian explorer Roald Amundsen (who later was to be the first to conquer the South Pole), completed the first crossing of the Northwest Passage in one go from the Canadian Arctic to the Bering Strait.

On 6th April 1909, Americans Robert Peary and Matthew Henson, accompanied by 17 Inuit and 250 dogs, reached the North Pole after 36 days on the move and years of unsuccessful attempts. On his return, Peary was furious to learn that Frederic Cook was claiming to have accomplished the same feat one year earlier. After studying the logbooks and position records of the two explorers at length, the US Congress finally decided that it was Peary who had conquered the North Pole. However, even Peary's achievement is still disputed today. It is possible that neither of the two reached the North Pole.

The first half of the 20th century witnessed a period of systematic exploration of the unknown areas of the Arctic zones, in particular Greenland, with the first encounters recorded between ethnographers and the Inuit people. These explorers included Knud Rasmussen, Lauge Koch and the French Polar Expeditions led by Paul-Emile Victor. Since 1960, the pack-ice of the Arctic Ocean has become the location for many feats of endurance and daring by great adventurers. Here are just some of them:

- From 1968 to 1969, Wally Herbert and three companions became the first men to cross the Arctic basin from one side to the other on foot harnessed to sledges and finally reaching the North Pole after being forced by the conditions to spend the winter on the sea ice.
- In 1986, Frenchman Jean-Louis Etienne became the first person to reach the North Pole solo, on skis and pulling a pulka.
- In 1994, during their "North to the Pole" expedition, the Belgians Alain Hubert and Didier Goetghebeur reached the Pole unaided in 94 days, setting out from the Canadian Far North.
- In April 2002, Jean-Louis Etienne was dropped off at the North Pole in his "Polar Observer" survival module in which he followed the ice drift for almost three months. His mission was aimed at making the general public aware of climate change.
- In 2007, Alain Hubert and Dixie Dansercoer skied from Siberia to Greenland. In view of the speed at which the pack-ice is melting, this expedition will probably remain one of the last great crossings of the Arctic.

THE SCIENTISTS

Twelve polar bases were opened in the Arctic as early as the first International Polar Year (1882-1883). In addition to a number of noteworthy scientific advances (in meteorology, magnetism, atmospheric and ionospheric sciences), the second International Polar Year (1932-1933) saw 114 observation stations built on solid land in the Arctic. The first base to be built on ice was constructed by the Russians in 1937, close to the North Pole (which is an area where the ice does not melt in summer). The equipment was brought in by air and the aim was to study the Polar Regions from an oceanographic and meteorological point of view. This base moved with the ice drift. Four men, including two scientists, lived at the base for a year. Since then, the Russians have built 31 drifting scientific bases, all of which were abandoned when the drift carried them into an area where the ice was likely to melt. Teams of scientists sometimes worked side by side with the military. In fact during the Cold War, the Arctic was one of the most militarised zones on the globe because the region was of such strategic importance for the two American and Soviet superpowers.

A wide range of scientific research is conducted in the Arctic (as well as in the Antarctic), but if the Arctic is currently a scientific hotspot, it is because of the powerful impact that climate change is having in the region. The fourth International Polar Year (2007-2009), which involves over 60 countries, has made it possible to conduct over a hundred research projects in the Arctic, including a number of expeditions aboard research ships. The main aim of all this research is to gain a better understanding of the way our planet is evolving.

INDUSTRY AND TOURISM

Abandoned by the Russians in 1991, the idea of using drifting bases was resumed in 1997. Each year, a temporary base called "Barneo" is built close to the North Pole to provide logistical support for major expeditions heading for the Pole and also to act as a departure point for adventurers seeking to set foot at the very top of the world. Tourism in general is an important business in the Arctic (~1.5 million visitors a year). Some areas have actually become dependent on it, while most would like to develop the tourist industry as a means of raising revenue.

However, tourism is far from being the main threat facing the Arctic environment. Unlike the Antarctic, extracting the region's resources is permitted in many areas of the Arctic, with various industries already well developed there. These include, for example, North America's biggest oil field, gigantic gas fields in Siberia, immense lead, zinc and nickel mines, as well as a number of major diamond mines. Fishing is another very important industry.

Dealing with the social and environmental impact of these industries in the Arctic will be a major challenge in the years ahead – especially as the melting ice promises easier access to new mineral and oil resources in the future. There is a significant temptation to exploit these resources, even if they are located in areas declared as natural reserves as is the case in Alaska (Arctic National Wildlife Refuge), or in international zones such as the depths of the Arctic Ocean, where claims have recently been made by various countries. However, there are some promising cooperative initiatives being put in place, such as the establishment of the "Arctic Council," an intergovernmental forum founded by eight countries in 1996. The aim of the Arctic Council is to protect the environment and ensure there is sustainable development in the region. Although it has no real political power, the Arctic Council includes representatives from the indigenous peoples, providing hope that the Arctic's fragile ecosystem will be managed responsibly.

GLOSSARY:

Ice drift: The constant movement of the sea ice, driven mainly by the wind, but also by the dominant marine currents and the "Coriolis force" (generated by the Earth's rotation). Ice drift is studied principally in the Arctic, where three main "drift currents" have been identified: the Beaufort current, the transpolar current and the Greenland current.

International Geophysical Year: 1957-1958. An unprecedented international effort to study our planet: 61 nations took part in various programmes, involving dozens of ships and aircrafts and hundreds of people. In the aftermath of the Second World War, all of the countries involved worked closely with one another to exchange their scientific findings and data. A number of major discoveries were made during the IGY, including confirmation of the theory of continental drift, the first measurements of CO_2 levels, the launch of the first satellites, etc.

International Polar Year: An international cooperative programme to study the Polar Regions. During the first IPY (1882-1883), 12 countries worked together on 13 scientific expeditions to the Arctic and a further two to the Sub-Antarctic. Forty nations took part in the second IPY (1932-1933), which was initiated by the World Meteorological Organisation to study the (then) recently discovered jet-stream. The third IPY (1957-1958) was held as part of the International Geophysical Year. And for the fourth IPY (2007-2009), 60 countries are working together, focusing on understanding current climate change and its effects.

Little Ice Age: The period between 1400 and 1850 characterised by a marked cooling of the climate and the advance of glaciers in Europe and North America.

Sea ice: A layer of ice made up of frozen seawater, 1 to 4 metres thick. Unlike the ice from icecaps or icebergs, pack-ice is salty, although its salt concentration diminishes as time goes by.

Polar circle: An imaginary line situated at 66°33' N (Arctic Circle) or 66°33' S (Antarctic Circle) which marks the transition to those regions where the phenomena of the "polar night" and "midnight sun" are observed in winter and summer respectively, extending as far as the Poles themselves.

Pulka: A sledge used traditionally for polar expeditions. Originally made from wood, today's pulkas are made from reinforced fibreglass polyester or carbon kevlar to combine strength and lightness.

Resources:

View the numerous related animations we have produced ("Arctic exploration", "Antarctic exploration", "The human impact", etc.), as well as our teaching dossiers and many classroom activities. Or order the CD-ROM "Polar regions and climate change" from EDUCAPOLES, the educational website run by the International Polar Foundation (IPF): http://www.educapoles.org (NL, FR, EN)

Track the progress of polar expeditions underway (or read the archives from past expeditions) at the polar adventure website: www.explorapoles.org (EN, FR)

Other sources of information about human beings in the polar regions: http://www.uen.org/themepark/exploration/polar.shtml (EN) http://transpolair.free.fr/index.htm (FR) http://www.hetlaatstecontinent.be/geschiedenis/intro.html (NL) http://www.noorwegen.nl/history/expolorers/amundsen/amundsen.htm (NL)

Other sources of information about the peoples of the Arctic: http://www.institut-polaire.fr/ipev/les_regions_polaires/arctique/les_peuples_de_l_arctique (FR) http://www.allthingsarctic.com/people/index.aspx or http://arcticcircle.uconn.edu/HistoryCulture/ (EN) http://www.natuurinformatie.nl/ndb.mcp/natuurdatabase.nl/i000988.html (NL)



Met steun van de Vlaamse overheid



PRACTICAL SECTION

The aim of the activities outlined here in this teaching dossier is to introduce students to some of the tools used in the social sciences. Human beings have inhabited almost every area of the planet for the past few thousand years, having an impact on the natural environment. In view of this, we take two main approaches:

- Making the students aware of human needs, in particular their basic needs (food, clothing, shelter, land to live on) and the various impacts these needs have on the environment, as well as humanity's need for knowledge. By comparing different peoples living in different places at different times in history will help students understand how where they live and the era in which they live fits into the bigger picture;
- Making the students aware that there are certain tools and methodologies that can help them find the
 information they need not only through surveys, desktop research and data collection, but also through the
 study and interpretation of reference materials from credible sources in any kind of media.

ACTIVITIES FOR THIS DOSSIER

1. POSTER: "WHAT IS THE BEST WAY TO DRESS AT THE POLES?"

Target group:	<12 years	Time required	30 minutes		
Aim	To consider how well certain materials can insulate a person and to develop strategies to				
	stay warm				

Speak to the students about the climate in the Polar Regions and the effect it has on the human body (chilblains, skin becoming stuck to the ice, etc.). Experiment with the insulating capabilities of various materials (cotton, wool, fleece, leather, fur) against the cold, using things like an ice cube or water. Make references to the poster.

2. GROUP ACTIVITY: "READY TO GO ON AN ANTARCTIC EXPEDITION?"

Target group	12-15 years	Time required	45 minutes	
Aim	To learn how to work in a group, simulate a real expedition, develop organisational skills and the imagination			

Divide the students into groups for the activity. Compare the results of each group, then compare it to the equipment list of a real explorer (see reverse). Part 2 is optional (possible additional task: conduct research into the expeditions of Amundsen and Scott).

3. TEXT: "EXPEDITION LOGBOOK"

Target group	15-18 years	Time required	30 minutes (including essay writing)		
Aim	Teaching support, forming a basis for analysing writings, discussion or research.				

This text can be used for dealing with several subjects. A few suggestions:

- For what purpose did explorers keep logs? (to be able to find funding for their future expeditions / to prove their discoveries). Did they always accurately record what happened? (see the dispute regarding the first expedition to reach the North Pole)
- The two explorers have a totally different routine than the people at Amundsen-Scott base: can you explain why? (permanent daylight)
- What is the "Antarctic Treaty"?
- What types of research can be conducted in the Polar Regions? Why is there a specific interest in conducting scientific research on this deserted continent?

OTHER IDEAS FOR ACTIVITIES

- Set up an e-mail exchange with a school in Greenland or Nunavut, or with scientists or explorers via their websites.
- Do a survey of a wide range of different people who work outdoors in the cold (mountaineers, scientists, farmers, etc.) to see how they protect themselves from the cold. Note how methods are the same or different depending on where they are.

READY TO GO ON AN ANTARCTIC EXPEDITION? (ADDITIONAL)

List of equipment based on a list from the Belgian explorer, Alain Hubert, adapted for this exercise. This list is not exhaustive.

DEPARTURE TIME

The austral summer runs from December to February. Anyone heading for the South Pole departs at the end of November or beginning of December.

PERSONAL EQUIPMENT

- 1 pair bivouac foot-warmers
- 1 pair windproof over-mittens
- 2 pairs woollen or polar fleece mittens.
- 2 pairs thin gloves made from polar fleece.
- 1 windcheater jacket (anorak) with good hood to protect against the wind.
- 1 pair windcheater trousers. Trousers with shoulder straps and high waist recommended.
- 1 down jacket, preferably with a hood.
- 1 polar fleece jacket (200 g) to be worn both in camp and while on the move during the day
- 2 pairs synthetic long-johns (fleece or other).
- 2 pairs thin socks, to be worn under the VBL (vapour barrier liner). While they get wet each day, they dry very quickly inside the tent.
- vapour barrier socks (VBL): socks made from sturdy plastic.
- 2 pairs warm socks, to be worn over the VBL.
- 1 warm beanie hat and windcheater, if possible
- 1 light beanie or cagoule for colder days.
- 1 balaclava. Can also be worn as a scarf.
- 1 neoprene face mask for protection against headwinds.
- 1 pair sunglasses.
- 1 tube Sun Block and 1 Sun Block lip salve.
- 1 stiff brush for brushing clothes and removing snow and ice from inside clothes, etc.
- 1 sturdy spoon (non-plastic), 1 eating bowl and 1 mug, insulated if possible
- 1 thermos: capacity 1.5 to 2 litres. (For hot drinks, unbreakable)
- Personal hygiene items: toothbrush, etc.
- Small bags for personal gear and items for use during the day (must be easily accessible from the sledge).
- 1 penknife.
- Toilet paper
- 1 Nalgene night bottle (for urinating during the night).

EQUIPMENT FOR THE TEAM

- Tents, sleeping mats and sleeping bags
- Snap hooks, rope and ice-axes
- Ice pitons, 3 per tent.
- Snow shovels, one for every two tents
- Stove, fuel (Coleman white gas), lighter and cooking pots
- Thermometer and anemometer

- Map, GPS and compass
- Repair kit for sledges and other spare parts
- Basic medical supplies
- Satellite phone, walkman, camcorder, camera, notebook and pencil, books, etc.
- Universal distress beacon
- Solar panel for recharging batteries for cameras, etc.

FOOD AND WATER

There are no animals on the Antarctic ice cap, so all food must be brought in from the outside. With the much lighter freezedried meals available these days, we calculate ~900 g of food per person per day. In addition to freeze-dried meals, we eat enriched supplements (cereals, energy bars, chocolate, cheese, etc.) and hot drinks.

We don't carry water; we melt ice when needed.

APPROXIMATE WEIGHT OF A SLEDGE FOR 65 DAYS

- Food: 900 g / day = 58.5 kg
- Fuel ~16 litres
- Sleeping bag: 3 kg.
- Sleeping mat: 1.5 kg.
- Down jacket: 2 kg.
- Various clothes: 6 kg
- 1/2 tent: 2.5 kg.
- 1/2 cooking gear: 1 kg.
- Sledge: 6 kg.
- Part of shared equipment: 3 kg.
- Personal equipment: 2 kg.

Total: ~100 kilos!!! Which is why systems for providing fresh supplies of food and fuel are required. The sledges pulled by the members of an expedition led by a guide usually weight between 35 and 60 kg.

However, for some professional expeditions, sledges can weigh anything up to 180 kg or more at departure. This extra weight is due to the rations required for long periods, communication and reporting gear or additional scientific equipment.

WHAT IS THE BEST WAY TO DRESS AT THE POLES?







← Foot-warmers are worn over sheepskin (like down jackets for feet). This is the modern version of the boots made from two layers of animal skins worn by the Inuit.

➡ A ski mask or very good sunglasses combined with a cagoule or neoprene mask protect the face from the wind and snow, as well as from the sun and UV rays, which are very strong in the Antarctic.

Gore-Tex over-trousers and over-jackets keep out the harsh cold and wind. Gore-Tex is a waterproof yet breathable fabric.

 One or more layers of polar jackets / sweaters and trousers help maintain warmth. The fabric traps air, which creates good insulation. The advantage of multiple layers is that the number of layers can be adjusted to suit the temperature

 Underwear (singlet and underpants) made of hi-tech synthetic fabric, enabling the wearer to be warm without perspiring too much.







➡ To protect their eyes, the Inuit traditionally used goggles made from caribou antlers or walrus tusks.

➤ When it is extremely cold (minus 30°C and colder), the Inuit wore an outer overcoat over their usual coat (plus trousers if required) made from caribou hide, with the hair to the outside. This trapped an additional layer of air between the two skins, which increased the level of protection against the cold.

➡ Mittens were often made from sealskin or caribou hide. The technique used for making the mittens allows for manual tasks to be carried out while keeping the hands warm.. → The coats and trousers worn by the Inuit were often made from caribou hide, with the hairy side turned inwards in order to be soft on the skin. The dense, thick fur traps air and keeps out the cold.

→ The Inuit had several pairs of boots made from different types of skin. The choice of boots to wear depended on the weather and location (on ice, in wet or fresh snow, etc.). Some boots were also made from several layers of fur. These days, the Inuit dress in a way that is far closer to the way we dress. But when they go on long journeys in the cold (to go hunting, for example), some still wear traditional clothes.

READY TO GO ON AN ANTARCTIC EXPEDITION?



THE ANTARCTIC

- Frozen continent surrounded by the Southern Ocean
 South Pole: located more or less in the centre of
- Antarctica at an altitude of 2,850 metres
- Continent covered by a thick ice cap (ice up to 5 km thick)
 Area: 14 million km² (with an additional 10 million
- km² of pack-ice in winter)
- Permanent population: 0 (however, scientists, explorers and tourists stay there for short or extended stays)

1) PREPARING FOR AN EXPEDITION TO THE SOUTH POLE

You have decided to go on an expedition to the South Pole with other team members. You will travel on skis, dragging a sledge that will hold all of your equipment. You will be attempting the classic route leaving from Hercules Inlet (see map). You have been training for months, which is normal because no one goes on an expedition to the Polar Regions without lots of preparation!

You will have to make a list of the equipment to take, indicating the number of each item you will need. Below is a short summary to help you prepare for your expedition as best as possible:

- 1. Decide the month during which you are going to leave.
- 2. Measure the distance you need to travel and estimate the time you will need to reach the Pole (knowing that you will cover about 18 kilometres a day)
- 3. Make a list of personal equipment you need to take (clothes, skis, toothbrush, etc.) as well as equipment for the team (stove, cooking pots, etc.). Indicate the number of each item you need to take.
- 4. Estimate the total weight of the equipment.
- 5. List the food items you need to take with you, as well as the weight of each food item.
- 6. Estimate the amount of water you need to take with you.
- 7. Add up the weight of the equipment, food and water. Then estimate the weight that each person in your team will have to pull.
- 8. Try to imagine what type of problems might hold you up or prevent you from finishing the expedition.

2) TODAY AND YESTERDAY...

These days, expedition team members are taken by an aircraft to their point of departure. During the expedition they stay in radio contact with their base, which gives them regular meteorological updates and assists them if any problems arise. Most expeditions do not take all of their equipment with them; there are usually a number of re-supply points along the expedition route. Expeditions not attempting a complete traverse of the Antarctic are usually airlifted out at the South Pole.

Unfortunately for them, the first explorers who conquered the pole in 1912 had none of these commodities. Try and imagine how things must have been on those early expeditions!

Setting the scene: Back in the early days of polar exploration, explorers and their teams would set out from Europe and land in Antarctica after a sea voyage of seven months...

EXPEDITION LOGBOOK

The following is an adapted text taken from the book "In the Teeth of the Wind" by Alain Hubert and Dixie Dansercoer (with Michel Brent).

Background: In November 1997, two Belgian explorers, Alain Hubert and Dixie Dansercoer, embarked on an expedition to traverse Antarctica via the South Pole. They travelled 3924 km across the continent on skis, hauling all their provisions behind them in sledges. During their journey they tried something innovative to help speed up their journey: whenever possible, they used big kites to harness the power of the wind.

After 60 days of being alone on the ice and several incidents, the two explorers are nearing the South Pole, where the American Amundsen-Scott scientific base is located...

SATURDAY AND SUNDAY 3-4 JANUARY 1998 (DAYS 61 AND 62)

We get up early this morning. With the South Pole as our goal today, we're impatient to set off. The weather isn't too bad this morning – overcast with a light, hazy fog, and the wind was blowing at about 15 km/h, just enough to clear away from our harnesses the thin covering of fresh snow that fell during the night. As soon as we hoist the sails 15 metres above our heads, we ski in silence towards a black speck that looks like a pebble on the horizon.

About seven hours after striking camp, we see the guard of honour formed by the semi-circle of flags of the twelve founding nations of the Antarctic Treaty along with the famous post marking the South Pole with a little globe on top of it representing the earth. It's no longer a dream: here I am, standing before the South Pole. I count my steps - I even accelerate a little, overwhelmed. After a few more meters Dixie and I hug one another, overjoyed. We've made it!

At that moment, the Amundsen Scott station comes to life. Since the beginning of the expedition, Dixie and I had been operating on Greenwich Mean Time. But here we have just aged twelve hours in the space of a few seconds. As our day is just ending, it's just beginning for the people here at the station. Doors are opening, people are getting up and sticking their noses outside. Thanks to the Internet, they know who we are and come to shake our hands. A little later, the director of the base comes to welcome us in person. Without palaver, David Fisher invites us to follow him into the station so we can establish radio contact with HQ, telling them that we've arrived at our destination. What a change! After 2,000 km on the polar ice-cap, we find ourselves in a room crammed with communication devices of all kinds.

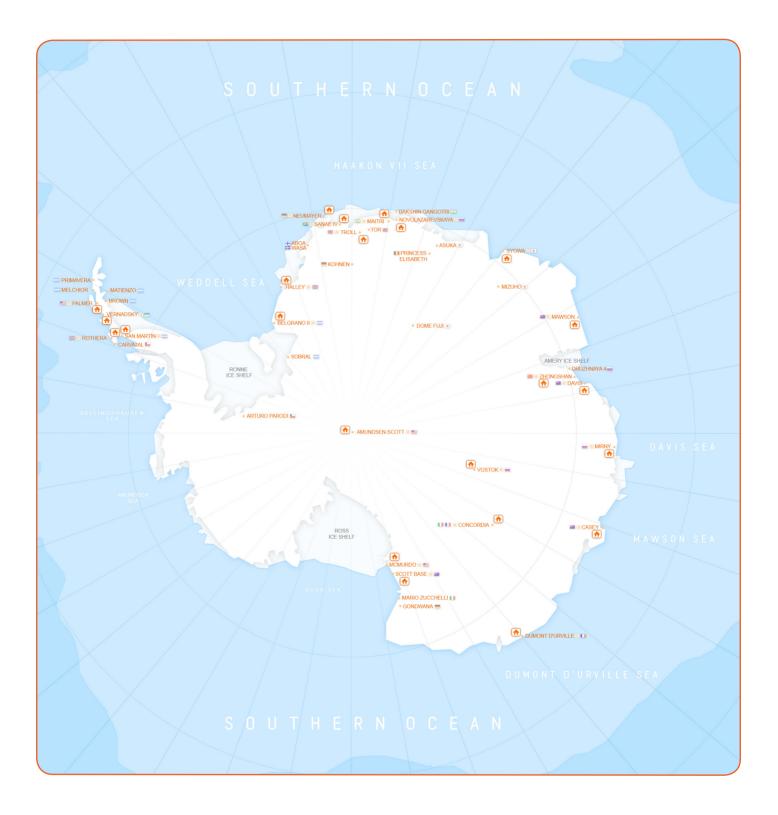
At last we're inside the huge metal dome of Amundsen Scott Station. To be honest, it's nothing more than a 2,000 square metre fridge that houses the different sections of the station (which look like containers), including work stations, offices, scientific laboratories, the radio room, the post office, the library, the kitchen, the cafeteria, dormitories and so on (the living quarters are outside). There's even a greenhouse with real soil and real vegetables! As the dome isn't heated, conserving provisions is no problem at all, nor is keeping the domestic waste from rotting and stinking. Some twenty or so carefully labelled crates are used to sort household and other waste. Teams regularly make the two-way South Pole-McMurdo trip to empty the crates. Since we have decided not to leave any waste behind along the way, we don't dispose of even the smallest amount of waste here; it will stay in Dixie's sledge as far as McMurdo.

We all pile into the cafeteria, which is the centre of action here. With people constantly coming and going, the smell of the kitchen and grease in the air, meals being prepared 24 hours a day (after all, we are in the States), and a suffocating heat - the place is fairly pleasant; yet for Dixie and me, considering where we are coming from, I have to say the surrealism of the situation is difficult to take. Normally I like the atmosphere of buildings like this in general; however here I feel a bit lost, as if the two months we've just spent on the ice cap have completely recalibrated something in me.

Having now crossed half of the continent, I suddenly realise how vast it is. As people have said many times, Antarctica is a continent for peace. I believe that I'm beginning to understand the meaning of this. Boring into the ice to a depth of some 2,000 to 3,000 metres – as some Europeans and others are currently doing – allows one to go back in time to study the evolution of the planet's climate. Analysing the carbon cycle in the food chain of the Southern Ocean helps mankind to know if, one day, this huge expanse of water will be able to absorb the tens of thousands of tons of carbon dioxide we humans pump into the atmosphere every year. I realise that this beautiful continent is a window into the secrets of the cosmos.

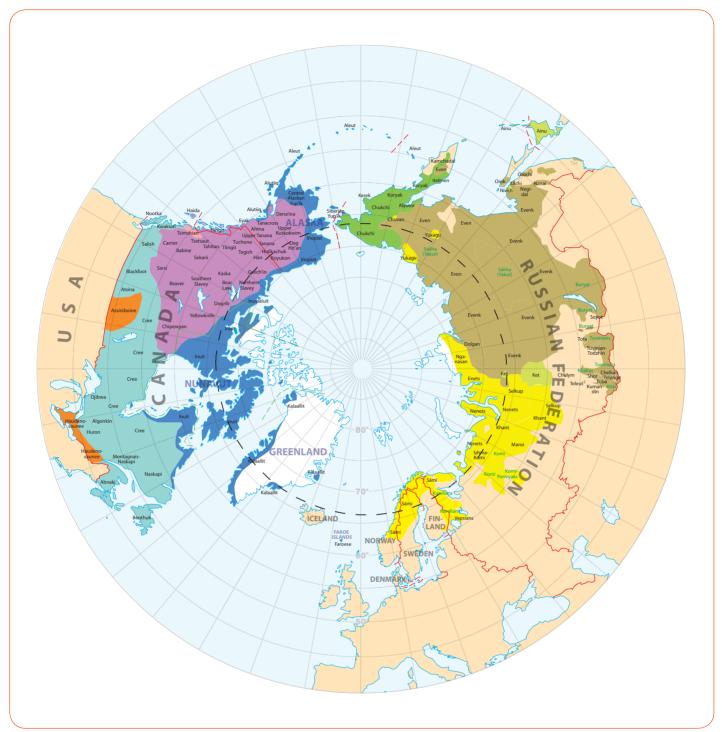
Dixie Dansercoer and Alain Hubert successfully completed their expedition when they arrived at the American McMurdo Station on the 10th of February 1999, ninety-nine days after starting their journey on the other side of Antarctica.





LOCATION OF THE POLAR RESEARCH STATIONS IN ANTARCTICA (2009)
Permanent station





Indigenous peoples of the Arctic countries

Subdivision according to language families





State boundaries of the 8 Arctic states
 Boundary of the autonomous Inuit territory of Nunavut

Notes:

For the USA, only peoples in the State of Alaska are shown. For the Russian Federation, only peoples of the North, Siberia and Far East are shown.

Areas show colours according to the original languages of the respective indigenous peoples, even if they do not speak these languages today.

Overlapping populations are not shown. The map does not claim to show exact boundaries between the individual groups.

In the Russian Federation, indigenous peoples have a special status only when numbering less than 50,000. Names of larger indigenous peoples are written in green.

Source: Based on W.K. Dallmann, Norwegian Polar Institute - Adapted by the International Polar Foundation