

ANTARCTICA: A GLOBAL COMMON



(Source: <https://upload.wikimedia.org/wikipedia/commons/thumb/c/c0/Antarctica.svg/800px-Antarctica.svg.png>)

Antarctic Geography

Antarctica is the most **southern continent** in the world, containing the **South Pole** and stretching an area of **14 million km²**. The majority of Antarctica is covered in **ice**, making it the largest ice sheet in the world - it holds **90% of all of the Earth's surface freshwater**.

Climate and Environment

- The Antarctic's climate is entirely unique, and is one of the most **extreme** environments on the planet.
- Antarctica is the **coldest** place on Earth, with temperatures averaging the **-40°Cs** (-49°C average at the South Pole, although coastal areas are warmer).
- Antarctica is also one of the **driest** places on Earth. Coastal areas of Antarctica receive the most precipitation, averaging at around **400 mm - 600 mm+ a year**.
- Inland however, there is barely **any precipitation**, and some places average under 50 mm of precipitation a **year**. To put this into perspective, the UK's average annual rainfall is **5 times larger than Antarctica's**, yet Antarctica is **58 times bigger than the UK**.

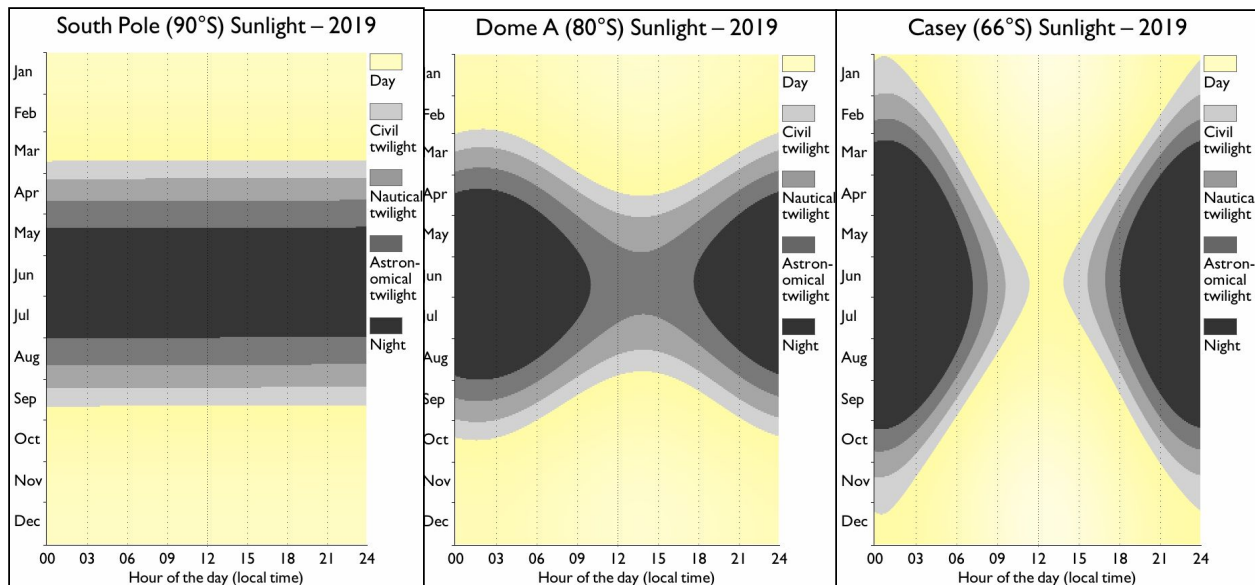
Antarctica is so dry that it can be considered a **desert**, making it **scientifically speaking** the largest desert in the world. The **McMurdo Dry Valleys** in Antarctica are thought to have not seen rain in nearly **2 million years!** These areas of Antarctica are entirely snow-free.

The **winds** of Antarctica are very **strong**, known as **katabatics**, or katabatic winds. These winds are strongest in the steepest areas of Antarctica. Gales of **60-70 mph** are known to occur around 40 days in the year. The highest wind speed ever recorded in Antarctica was **199 mph** (327 km/h).



McMurdo Dry Valleys. Credit: Mark White





(Source: <http://www.antarctica.gov.au/about-antarctica/environment/weather/sunlight-hours/>)

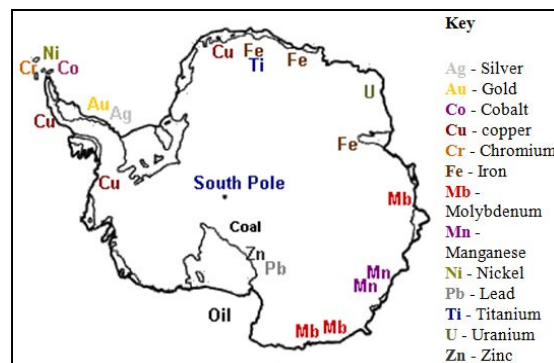
As Antarctica is in the Southern Hemisphere, its winter occurs during our summers (March to October). As Antarctica is also at the **bottom** of the Earth, 6 months of the year is **dark**, 6 months of the year is constant **sunlight** (at the South Pole).

Due to the cold, harsh conditions, the ecosystem is not very **biodiverse**. Only hardy plants such as **mosses** and **lichen** can grow, and there are hardly **any** land animals (only insects). **The Southern Ocean**, though, is diverse in marine life, with lots of fish, krill, penguins, seals and whales.

Natural Resources

Including the **marine life**, Antarctica is rich in natural resources like **fossil fuels** and **minerals**. Large reserves of **oil** are located in the Southern Ocean, and **iron ore** deposits are rich in the Transantarctic Mountains.

(Source: <https://antarcticakn.weebly.com/minerals.html>)



Vulnerability as a Global Common

Due to the environment and the resources in Antarctica, the idea of this hub of resources being a 'common' for all makes it **vulnerable**. This is especially true due to the **demand** in resources such as fossil fuels, minerals, and fish.

The **climate** of Antarctica is also incredibly **fragile**; it is highly adapted to the extreme environment, meaning a change in something like temperature could have many devastating knock-on effects to the ecosystem. Therefore, Antarctica is even **more vulnerable** to climate change, meaning the **shared responsibility** of Antarctica must consider the world's emissions and contributions to global warming.



The major threats to Antarctica are:

Climate Change



Fishing and Whaling



Mineral/Resource Exploitation



Tourism and Scientific Research



CLIMATE CHANGE

Due to the Antarctic being a fragile cold environment, a change to the temperature will obviously have devastating effects.

- **Warmer sea and atmospheric temperatures** melt ice sheets, causing **huge icebergs** to **calve** into the sea. Melting ice sheets also cause **sea levels to rise**, which causes global flooding.
- **Animals and plants** are affected by changes in temperatures as they are highly adapted to the cold environment. **Invasive species** that are adapted to higher temperatures could grow and colonise the environment. **Migration patterns** of certain animals have also been disrupted by the higher temperatures, and some species (like the Adélie penguin) have even **declined** due to warmer temperatures. This also affects the Antarctic **food chain**.
- **CO₂** is released into the atmosphere that is **stored** in ice sheets, which causes global temperatures to rise **more**, enhancing global warming on the Antarctic.
- The **Albedo Effect** (the process of **white surfaces** - in this case **ice** - **reflecting solar radiation** back into the **atmosphere**) is **lessened** due to less ice sheets, meaning more **heat is absorbed into oceans**. This has caused a rise in ocean temperatures, enhancing the devastating effects.

FISHING AND WHALING

Antarctica is under threat from **unsustainable fishing**, which disrupts the **food chain** of the fragile environment. **Overfishing** removes vital animals in the already small food chain, such as overfishing of **krill** which removes other marine animal food sources. Krill is the most fished marine animal, with **150–200,000 tonnes** fished annually, and the majority of this being Antarctic Krill. Despite regulations, there are still reports of **illegal, unreported, and unregulated (IUU) fishing**. This fishing is unsustainable and causes **wide scale marine habitat damage**.

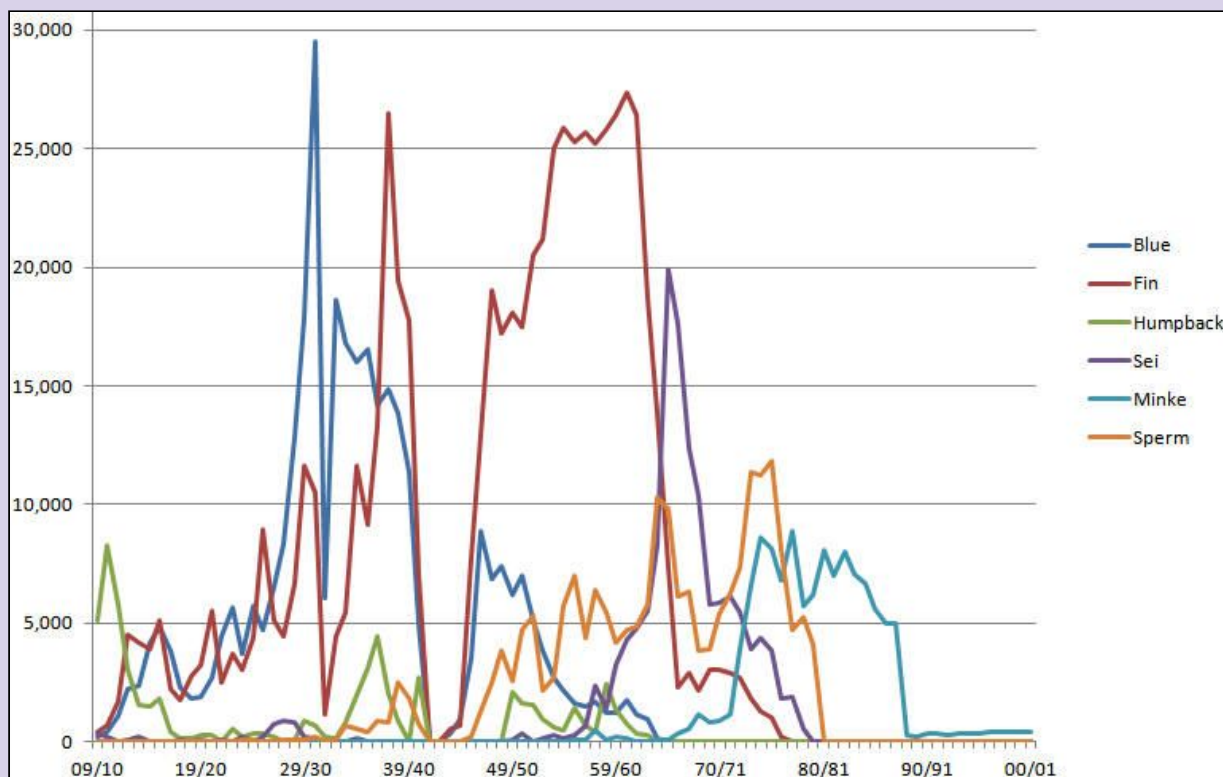


Boxes of freshly caught Antarctic Krill, source: www.antarctica.gov.au/environment/human-impacts-in-antarctica)



Whaling and sealing are also huge threats to the Antarctic ecosystem, and even **past events** are still having detrimental consequences to this day.

Whaling began as far back as the **18th century**, and although there are currently bans on **almost** all whaling, whale populations still stay at **reduced and endangered levels** from the damage previously done in the past. Whales are **slow breeders**, meaning the ecosystem has been damaged for the **long-term**.



“Whale catches by year from the 1909-1910 Antarctic whaling season to 2000-2001 by species. Humpback Whales were targeted initially until the technology was developed to target faster swimming Blue Whales, as the Blues declined, the next biggest species[...]’ was targeted, and so on. (Large dip corresponds to WWII.)

(Source: <https://www.coolantarctica.com/Antarctica%20fact%20file/wildlife/whales/whaling1.htm>)

MINERAL AND RESOURCE EXPLOITATION

All mining is **banned** in Antarctica, and any mineral/fossil fuel exploitation would be extremely difficult due to Antarctica’s **location** and **thick ice**. However, with a **fossil fuel crisis** looming within the century, the demand for more resources may lead to **exploitation** being possible. The exploitation of minerals and resources poses **major** threats to the habitat.

- **Oil exploitation** disrupts the habitat through the infrastructure that comes with it, e.g. drilling and pipelines.
- **Oil spills** also cause catastrophic damage to Antarctica, as the fragile ecosystem cannot remove the oil quickly, causing long term damage.
- **Metal and mineral exploitation** damages the environment through mining and quarrying, scaring away wildlife and causing damage beyond repair. Currently, Antarctica is protected from this exploitation, but this is not to say it will be in the future.
- The use of fossil fuels also contributes to **global warming**, further affecting Antarctica’s ecosystem.



TOURISM AND SCIENTIFIC RESEARCH

Tourism in Antarctica is growing industry due to the demand for **'extreme tourism'**. Over 37,000 visited Antarctica in the seasons of 2009-2010, the majority of these on cruises. Tourists are more frequently **travelling to Antarctica by air and sea**, which threatens Antarctica directly through the effects of ships, and through **fossil fuel emissions**. **Sea ice destruction** and **cruise ship crashes** are major contributors to environmental destruction as tourist numbers increase. For example, the **MS Explorer crash in 2007** left a mile long diesel spill, which disrupted penguin breeding grounds.

Tourists in Antarctica may disrupt the ecosystem by trampling plants and **scaring wildlife away**. Any litter dropped will **stay in the nutrient cycle for a long time**, as decomposition is slow. Any foreign objects brought in by tourists may also enter and disrupt the food chain, bringing a risk of invasive species with it.

Scientific research in the Antarctic is very important, as a lot of **environmental data** is collected here. With scientific research, though, brings scientific equipment and facilities. **Research bases** have been constructed around the Antarctic, which have changed the natural environment and, if not handled properly, may threaten to disrupt it. For example, **dogs such as Huskies** used to be an integral part of assisting with scientific research, e.g. companionship, transportation etc. These dogs were sometimes fed **seals and penguins** when there was no food available, and also brought the **threat of infecting seals**. Dogs have now been permanently removed from the continent, but this is just one example of how scientific research must be sustainably managed, or it threatens the Antarctic.

The Governance of Antarctica

Antarctica is **threatened** by a range of issues, and its status as a global common may **enhance its vulnerability**. Therefore, Antarctica is governed by **global institutions** that ensure it is **sustainably managed as a global common**.



The UN has the potential to lead an important role in protecting the Antarctic, as it has the **ability** to set **global laws and regulations** in order to protect the Antarctic. However, for decades the UN has noticeably had **little to do with the protection of the Antarctic**.

The main UN organisation associated with Antarctic protection is the **UN Environment Programme (UNEP)**. However, this organisation has had little influence on the Antarctic specifically. The **UNEP has attended ATS meetings** and contributed to some **reports**, but its legislation and goals do not cover the Antarctic.

Although the UNEP does not work to protect the Antarctic **directly**, their work **indirectly** contributes to the governance of Antarctica. The UNEP's legislation and research into **global environmental problems**, such as **ozone depletion** and **global warming**, work to protect Antarctica from the effects of these issues.





The International Whaling Commission (IWC) was set up under the **International Convention for the Regulation of Whaling** in 1946. The IWC enforces regulations on its **89 member states**; all regulations have influence over whaling in the Southern Ocean (Antarctica). Roles of the IWC include:

- Setting '**catch limits**' and other rules such as hunting restrictions to regulate how many whales can be caught etc.
- Working with the **Scientific Committee** in order to research and study whaling.
- Co-ordinating **conservation work** through yearly meetings and other means.
- Providing **funds** for research and conservation.

Some examples of the work the IWC has done:

- Introduced a **Whaling Moratorium in 1982**, banning all **commercial whaling** on all species and all populations until further notice. **Norway and Iceland** still commercially whale which has been agreed by the IWC, and the Russian Federation objected to the moratorium, but have not exercised the objection.
- The IWC's Scientific Committee created a system called the **Revised Management Procedure** (<https://iwc.int/rmp>) which estimates sustainable catch limits using past and present research, and complex algorithms.
- **In 1994, a Southern Ocean Whale Sanctuary** was set up, banning **all** commercial whaling in the area. Sanctuaries focus on the protection of calves and females.
- Enforcement of the **International Observer Scheme**, which allows countries to observe other countries' land-based whaling stations to make sure they are **complying with IWC regulations**.

There are several **criticisms** of the IWC, as well as **incidences** in which the IWC's potential lack of authority has been shown:

- Member states choose **freely** to be in the IWC, and they can also opt out. The IWC can **enforce no penalties** for members leaving, such as when Japan made the decision to leave in 2018.
- Countries can **object/ not abide by the IWC's regulations**, such as Norway and Iceland who still take whales commercially (although the IWC somewhat regulates this by **receiving information on all catches and any scientific data collected**)
- Countries can exploit **loopholes** in regulations, which has led the IWC to be criticised regarding how constructive its regulations are. For example, until recently Japan exploited a loophole that allowed the country to **commercially whale in Antarctic waters** for 'scientific research' purposes, although this was widely doubted as research. Japan has now left the IWC, meaning whaling in the Southern Ocean would be in direct defiance of **international conservation law**.



The Antarctic Treaty System



The Antarctic Treaty System (ATS) is a **collection of agreements** that work to protect the Antarctic through global governance. The Antarctic Treaty originally operated without any institution, but in 2004 the **Secretariat of the Antarctic Treaty was established**. Here are two of the main agreements summarised, including the original treaty:

The Antarctic Treaty (1959)

- 53 parties (countries) to the treaty
- Treaty states Antarctica should only be used for **peaceful means**
- Antarctica can be used for **scientific research**, but **all** research has a right to be shared and cooperated on
- All stations and operations can be **inspected** at any time
- Antarctica is not any country's **territory**, it is a global common
- Nuclear activity is **banned**

Issues and Criticisms

- The Treaty is not **mandatory**, meaning countries can choose not to sign it.
- **Inspections** do not occur often
- All decisions must be **unanimous**. If any country does not ratify a modification/amendment to the treaty within two years, it cannot go forward.

The Protocol on Environmental Protection to the Antarctic Treaty (1991)

- **Bans** all activities relating to **mineral resources**, aside from for scientific purposes. This means there can be no mining or fuel extraction on the continent.
- Established the **Committee for Environmental Protection**, an advisory body that provides advice and recommendations to members.
- Created and added to regulations that were set out in the original treaty, including additions to **waste management** and **marine pollution**.





CCAMLR

The **Convention on the Conservation of Antarctic Marine Living Resources** is a treaty created in **1980** to protect marine life populations, especially **krill**.

- Within the convention, the **Commission** on the Conservation of Antarctic Marine Living Resources was established, who meet annually to discuss the **management of fisheries and other issues**.
- Within the Commission is the **Scientific Committee**, who provide advice and scientific information.
- CCAMLR are responsible for researching, monitoring, and conservation of the Southern Ocean
- They have created an **Ecosystem Monitoring Program**, which detects and records changes in the ecosystem, and analyses the effects of commercial fishing.

The Influence of NGOs on Antarctic Governance



ASOC was formed in **1978** after concerns over **secret negotiations** between parties of the **Antarctic Treaty**. Some parties were secretly negotiating a framework for **mineral and gas prospecting** in Antarctica, which would obviously have **detrimental environmental effects on the continent**.

Originally, ASOC's purpose was to **convince governments to prevent this mineral exploitation**, as well as **allowing NGOs to participate** in the governance of Antarctica. ASOC did this by bringing these secret negotiations into the public eye.

ASOC was **granted observer status in 1991**, meaning the organisation can go to annual meetings for the Antarctic Treaty System. ASOC presents a strong **voice** for the NGOs, as well as conducts **campaigns and projects** to ensure Antarctica is protected.

ASOC's main focuses are:

- Overall environmental protection in Antarctica
- Monitoring and extending marine protected areas
- Wildlife conservation
- Krill conservation
- Climate change and the Antarctic
- Antarctic governance

GREENPEACE

Charities



Charities such as **Greenpeace and WWF** work to enhance the protection of Antarctica by:

- Collecting data and information **independent of governments**, to monitor the reliability and accuracy of other data.
- **Reporting** on issues, and releasing findings to the public and governments. This can **spread awareness** on issues in Antarctica and **boost donations**.
- Creating **petitions, lobbying, and campaigning** for change. These petitions must be discussed by governments once they have reached a certain number of signatures.

