

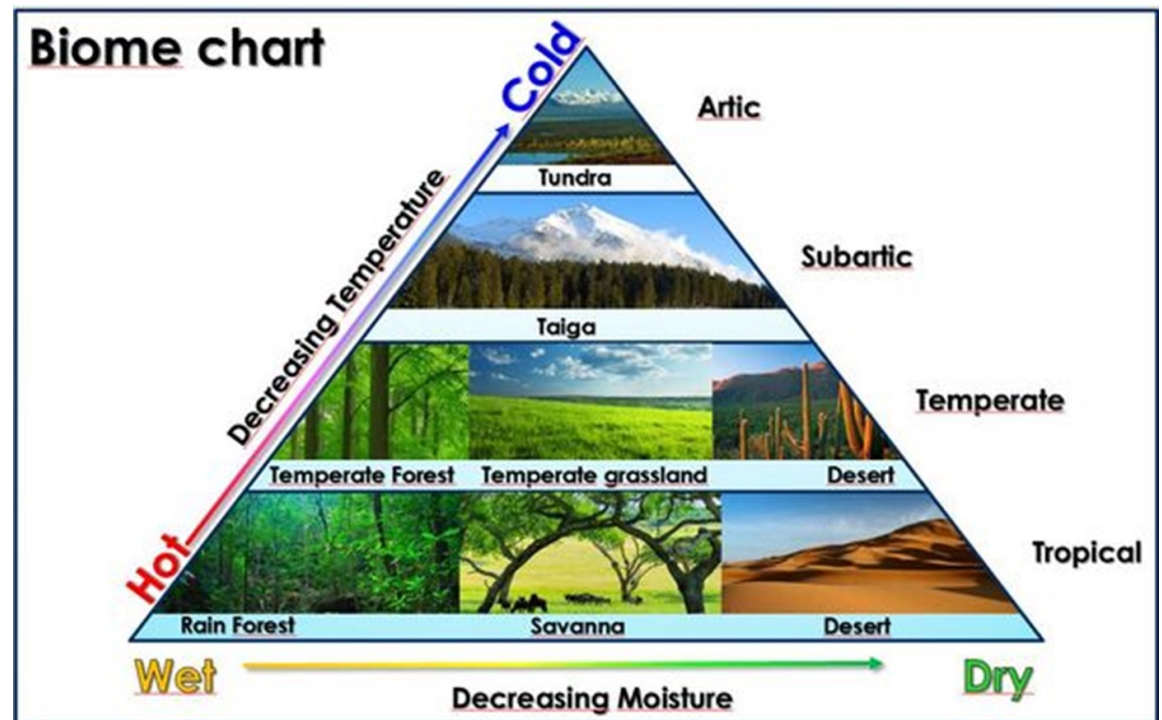
# Ecosystems

Key words	Definition
Biome	A large naturally occurring community of flora (plants) and fauna (animals) occupying a major habitat e.g Rainforest or Desert
Ecosystem	An <b>ecosystem</b> is a natural system made up of <b>living</b> (biotic) and <b>non-living</b> (abiotic) components.
Biotic	<b>Biotic</b> are living features such as plants and fish.
Abiotic	<b>Abiotic</b> are non-living features such as sunlight and rocks.
Biodiversity	Wide variety of plants and animals
<b>Nutrient cycle</b>	The movement and exchange of nutrients from living things, to the earth, and then back again.
<b>Biomass</b>	The total quantity or weight of organisms in an area.
<b>Litter</b>	Dead plants or animals that fall to the floor. They start to decompose here.
<b>Vegetation</b>	The different plants of an area or a region.
<b>Store</b>	Nutrients are cycled between three stores; litter (dead organisms such as leaves), biomass (living organisms), and soil.
<b>Transfer</b>	Nutrient transfer is the transfer of nutrients between the stores.
Interdependence	How animals and plants within an ecosystem are reliant on each other

# Factors that affect Biome characteristics

How latitude affects climate	The angle that the sun's rays hit the Earth. E.g. the equator always receives the same amount of sunlight (sun overhead) which means there is no seasons and it is hot all year.
How Atmospheric pressure belts affect climate	How heat is distributed from the equator. Where air is rising, areas of low pressure lead to rainfall and vegetation such as near to the equator.
How altitude affects climate	At higher altitudes, the climate becomes colder and soil types change, leading to reduced vegetation. The air is less dense so it becomes cooler and this makes it hard for plants to grow

# How climate impacts biodiversity



# Characteristics of Biomes

Biome	Global location	Two characteristics
Temperate deciduous forest	North America, western Europe and the UK.	1.Has four seasons. 2.Deciduous trees are common here.
Savannah grassland	Central Africa and Australia	1.Distinct wet and dry season. 2.Mainly low grasses with isolated
Hot desert	Northern Africa, Australia, central South America	1.Little rainfall occurs here. 2.It can get to below freezing at
Tundra	Alaska, northern Scandinavia and northern Canada	1.Summers do not last very long. 2.The vege-
Tropical rainforests	South America, central Africa, southern Asia and Australia	1.Consistently humid and wet all year. 2.Rainforests have
Polar	Antarctica, the North Pole	1.Cold and dry. 2.It is dark for several

# Layers of Rainforest



## The Emergent Layer

Giant trees that stick out above the canopy. They are much taller than average canopy trees. Many birds and insects live here.

## The Canopy

The upper level of the trees (leaves & upper limbs) that form the cover over the lower layers. Full of life, this layer is home to many insects, birds, reptiles and mammals.

## The Understory

The cool, dark environment that is between the canopy & the ground.

## The Forest Floor

The ground layer of the rainforest, teeming with insect life and host to the biggest animals of the rainforest.

# Adaptions of animals

Gorilla	Fur to protect against insects and temperature Gather water from the vegetation they eat
Plants	<b>Epiphytes</b> grown on branches high in the canopy Drip tips allow rain to fall quickly Buttress roots are wide to gather nutrients
Opaki	Stripes on hides camouflage, red brown colour blends with the forest. Small hooves to climb steep slopes

# Threats

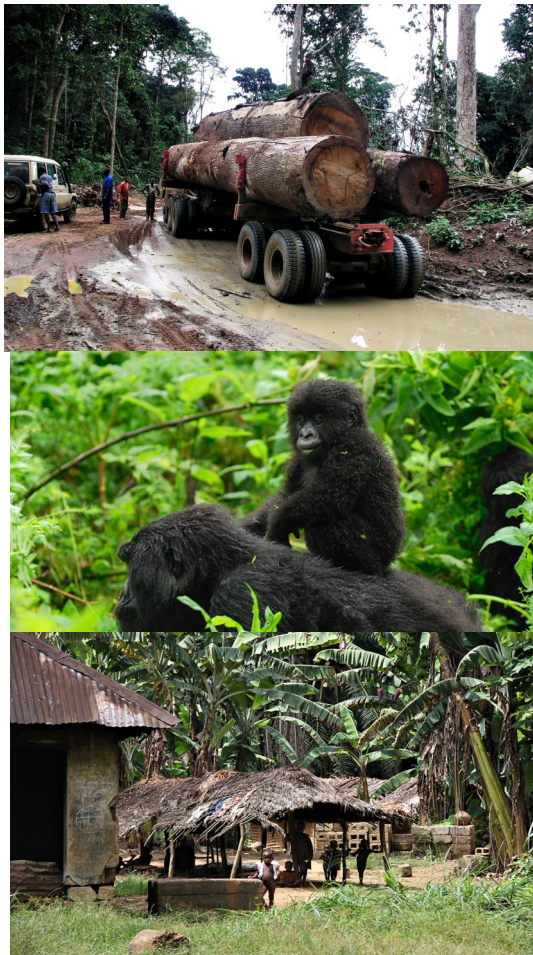
Threats to the rainforest
Illegal logging/deforestation
Mining
Urbanisation, road building and infrastructure

# Congo River Basin



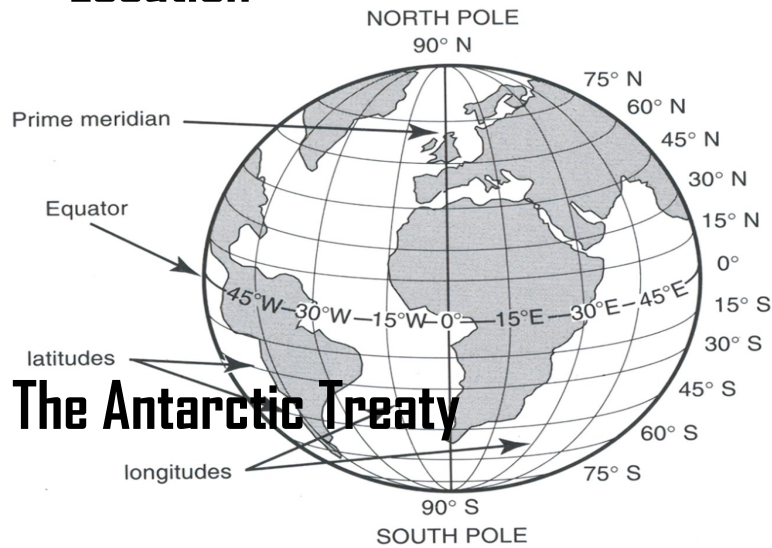
# Solutions and Indigenous people

Indigenous People	The Congolese people of the Rainforest include the Aka, Mbuti or Twa. The exact number of indigenous people in the DRC is unknown. Depending on sources, estimates of their population vary from 700,000 (approximately 1% of the national population) to 2,000,000.
Cooperatives	People working together for a common goal
Concessions	‘Concessions in tropical forestry’ are when local people pledge to protect the rainforest but are given land rights to use the timber and non timber products.
Sustainable	Meeting the needs of todays generations without jeopardising the needs of the

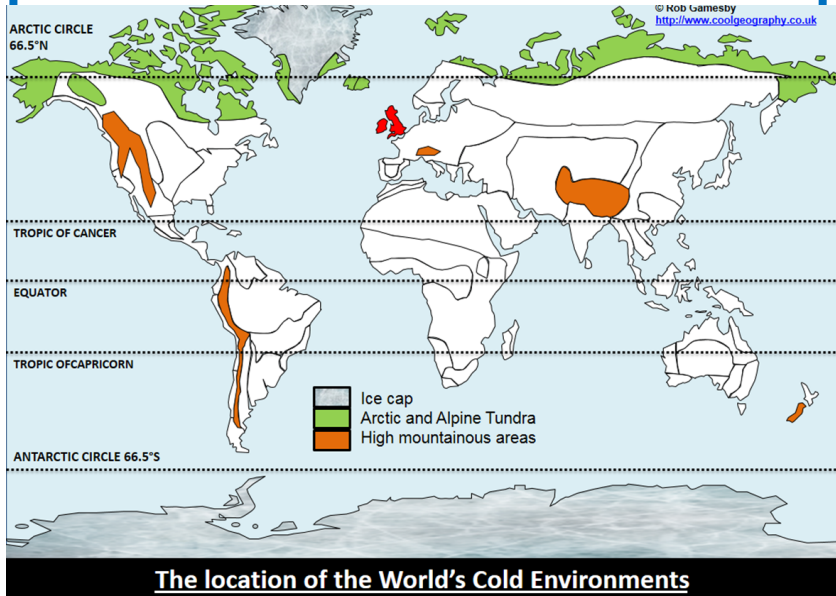




# Location

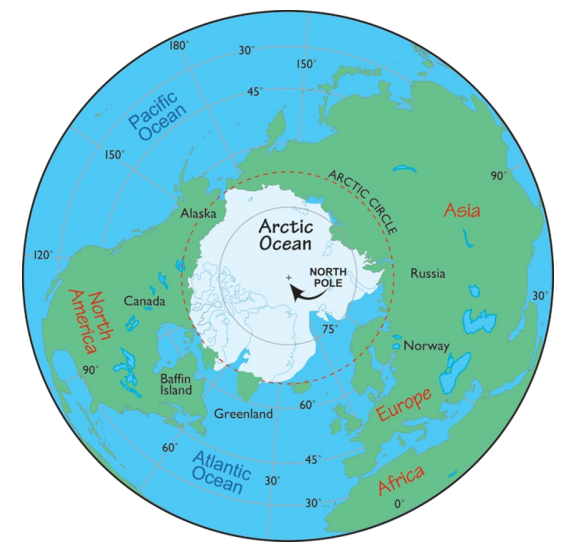
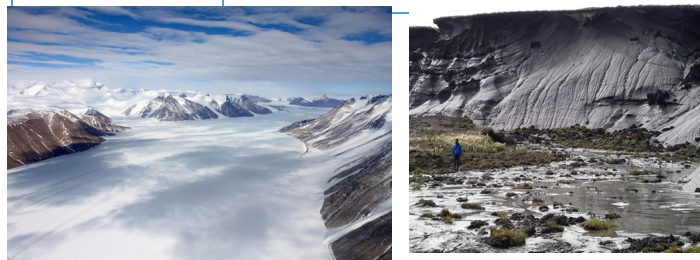


The latitude of the North Pole is **90 degrees N**, and the latitude of the South Pole is 90 degrees S. All longitude lines meet at the poles; therefore, **they have no defined longitude.**

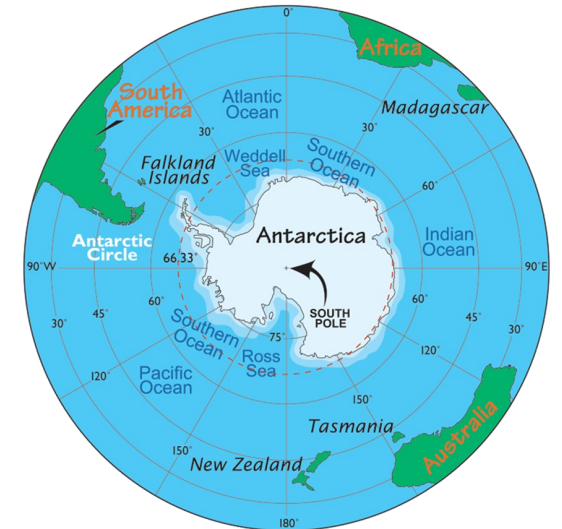


# The Poles

<b>Key words</b>	Definition
<b>Biodiversity</b>	Biodiversity is <b>all the different kinds of life you'll find in one area—the variety of animals, plants</b>
<b>Barren landscapes</b>	one third of the area has vegetation or other cover.
<b>Huge ice sheets</b>	An ice sheet is a mass of glacial ice more than 50,000 square kilometers (19,000 square miles)
<b>Glaciers</b>	a slowly moving mass or river of ice formed by the accumulation and compaction of snow on mountains or near the poles.
<b>Tundra</b>	vast, flat, treeless Arctic region of Europe, Asia, and North America in which the subsoil is permanently frozen
<b>Lichen</b>	a simple slow-growing plant that typically forms a low crusty, leaflike, or branching growth on rocks, walls, and trees.
<b>Adaptions</b>	behavioral or physical characteristics of an animal that help it to survive in its



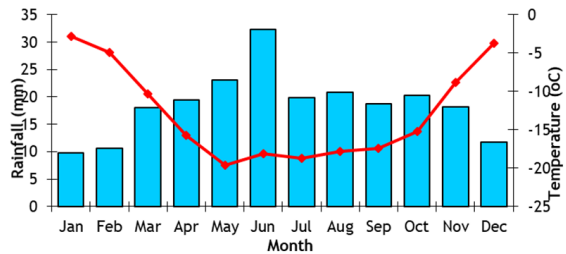
The North Pole is located in the middle of the Arctic Ocean amid waters that are almost permanently covered



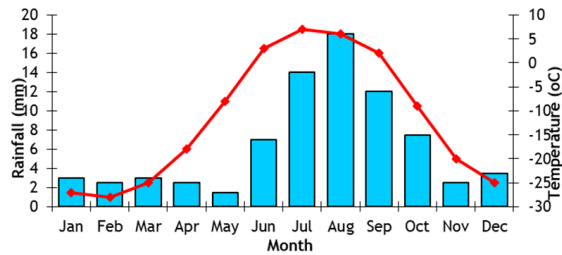
Whilst the South Pole lies on a continental land mass called

# Climate

Climate graph for Casey Station, Antarctica



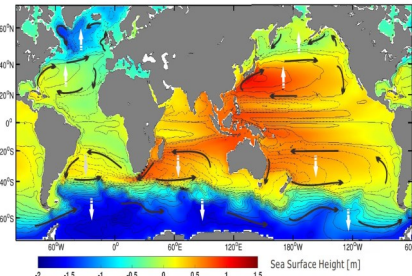
Climate graph for Prudhoe Bay, Alaska



These are the **world's coldest places** and are found within 66.5°N (the Arctic Circle) and the North Pole, and 66.5°S (the Antarctic Circle) and the South pole.

They are characterised by **barren landscapes, glaciers and huge ice sheets**.

The **average monthly temperature** is always below 0°C which allows snow and ice to accumulate despite **low precipitation levels**.

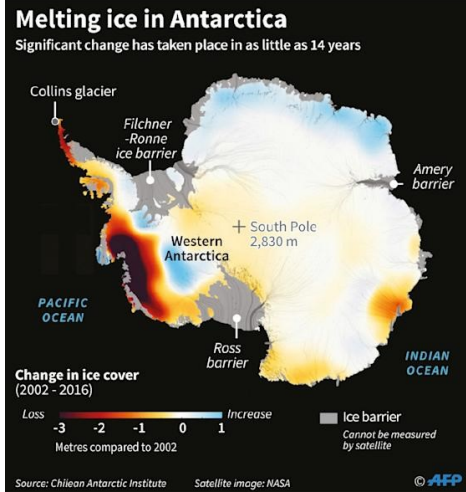


**Warm Ocean currents** Antarctica is located in the middle of the Southern Ocean, which boasts harsh weather conditions: the coldest winds of the planet walk over it, some areas freeze in the winter months. As for the Arctic, it is washed by the Atlantic Ocean, whose average temperature is 10-15 degrees due to the North Atlantic Drift

**Altitude** Antarctica is located at an altitude of about 2 km due to the thick layer of ice and hills. At the same time, the height of the Arctic above sea level is only a few meters. The Arctic is warmer than the Antarctic because these lands are 2 km lower



# Threats

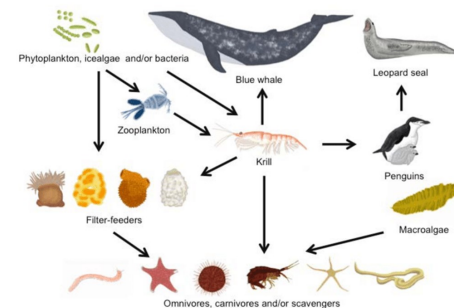
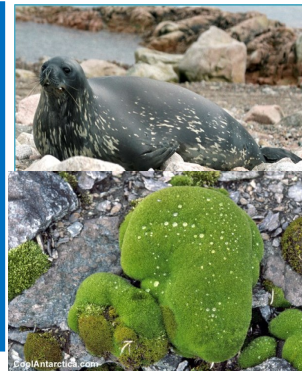


**Climate change** is affecting Antarctica. Parts of the continent are experiencing the greatest increases in temperature on the planet, leading to the melting of ice and loss of habitat for species like penguins. Some estimates suggest that sea levels have risen by around 3 mm per year since the 1990s.

**Tourists** may be destroying the very environment they have come to see. Landing areas become honeypots and visitors may cause environmental damage. Visitors have disturbed the seals and this can affect breeding. Oil spills are a huge potential problem. If a ship were to sink, the

# Animal and plant adaptations

Fore and hind limbs developed into flippers for swimming . A substantial blubber layer lies under the skin acting as insulation allowing the seals to swim indefinitely in cold Antarctic waters. endure lengthy high-stress periods in dormancy and almost instantly become photosynthetic when conditions improve.



Animals and plants are interdependent in ecosystems. Here the Krill is eaten by Killer whales and



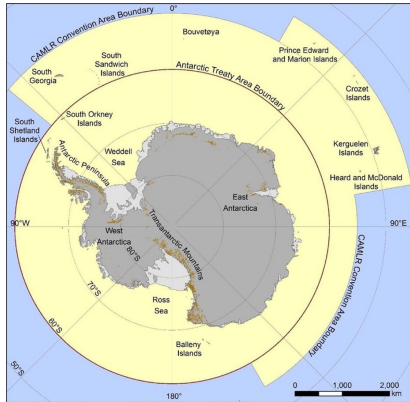


# Mitigating Threats

Antarctica does not belong to any one nation, but parts of Antarctica are claimed by seven different countries.

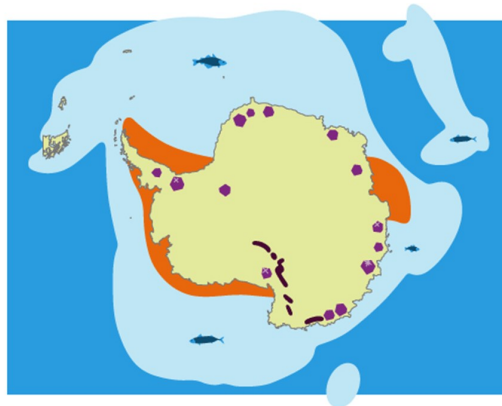
In June 1961 12 countries signed a Treaty. The Antarctic

## The Antarctic Treaty



The Treaty has 12 Articles that help to protect Antarctic from mining, nuclear testing and disputes over land. It Encourage co-operation between

## Natural Resources



Antarctica is attractive to many countries due to its Sea life and mineral resources Coal, Oil and Gas.



### Article 1

The area is to be used for peaceful purposes only; military activity, such as weapons testing, is prohibited, but military personnel and equipment may be used for scientific research or any other peaceful purpose.

### Article 2

Freedom of scientific investigation and cooperation shall continue.

### Article 3

Free exchange of information and personnel in cooperation with the United Nations and other international agencies.

### Article 4

Does not recognize, dispute, or establish territorial sovereignty claims and no new claims shall be asserted while the treaty is in force.

### Article 5

Prohibits nuclear explosions or disposal of radioactive wastes.

### Article 6

Includes under the treaty all land and ice shelves south of 60 degrees 00 minutes south.

### Article 7

Treaty-state observers have free access, including aerial observation, to any area and may inspect all stations, installations, and equipment; advance notice of all activities and of the introduction of military personnel must be given.

### Article 8

Allows for jurisdiction over observers and scientists by their own states.

### Article 9

Frequent consultative meetings take place among member nations.

### Article 10

Treaty states will discourage activities by any country in Antarctica that are contrary to the treaty.

### Article 11

Disputes to be settled peacefully by the parties concerned or, ultimately, by the International Court of Justice.

### Articles 12, 13, 14

Deal with upholding, interpreting, and amending the treaty among involved nations.

## Early Claims of ownership

Early Southern Ocean explorers, sealers and whalers claimed for their countries the islands closest to

Antarctica as they discovered them in the late 1700s

