

# Wealth of the world of science – Antarctica

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**A**ntarctica is Earth's southernmost continent. It is on average, the coldest, highest, driest and windiest continent. It contains the geographic South Pole, is surrounded by the Southern Ocean and is considered a polar desert. Its record low temperature is  $-94^{\circ}\text{C}$ . It sure doesn't sound like any place worth visiting, yet it intrigues nations so much that seven countries have laid claim to parts of Antarctica in the past: Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom. The United States of America and the Russian Federation have reserved their rights to claim any or all of Antarctica in the future. To manage these claims and international relations in Antarctica, the Antarctic Treaty was developed.



The Antarctic Treaty and related agreements is called the Antarctic Treaty System. The main treaty was opened for signature on 1 December 1959 and officially entered into force on 23 June 1961 after being signed by the 12 countries active in Antarctica during the International Geophysical Year (IGY) of 1957–58. These countries included Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United Kingdom and the United States of America.

The Antarctic Treaty set Antarctica aside "forever to be used exclusively for peaceful purposes and in the interest of all humanity". It declares Antarctica as a scientific preserve, establishes freedom of scientific investigation, bans military activity and mining on the continent as well as the disposal of radioactive waste and nuclear explosions. For the purposes of the treaty system, Antarctica is defined as all of the land and ice shelves south of  $60^{\circ}\text{S}$  latitude – an area that constitutes 10% of Earth.

The Antarctic continent is a land area of 14 million  $\text{km}^2$  of which only 2% or 280 000  $\text{km}^2$  is ice free; the remaining 98% or 13.72 million  $\text{km}^2$  is covered in ice. The nearest countries to Antarctica are South Africa, Australia, New Zealand, Chile and Argentina.

There are no towns or cities in Antarctica and the only places where people live are research bases and stations which are staffed seasonally or year-round by nations who conduct research on the continent and in its surrounding oceans. There are about 111 government operated bases south of  $60^{\circ}\text{S}$ .

The Antarctic Treaty is one of the world's most successful international agreements. Antarctica is one of the few places in the world where there has never been war, where the environment is fully protected and where scientific research has priority.



There has been consistent occupation of a South African base since 1959 when South Africa took over a base from Norway during the first South African National Antarctic Expedition (SANAE).

The current South African base, SANAE IV, is staffed and maintained year-round by a team of scientists and support personnel. Located in the Queen Maud Land region of Eastern or Greater Antarctica, SANAE IV is on top of a distinctive flat-topped nunatak, Vesleskarvet, on the fringe of the Ahlmann Range of mountains. A nunatak (from the Inuit word nunataq) is the summit or ridge of a mountain that protrudes from an ice field or glacier that otherwise covers most of the mountain or ridge. They are also called glacial islands. The base is approximately 80 kilometres from the edge of the continent and 160 kilometres from the edge of the ice shelf. Vesleskarvet is completely surrounded by the glacial ice sheet.

Each overwintering team arrives during the summer expedition and take-over period aboard the research and logistics vessel S. A. Agulhas II. The overwintering team remains at the base alone and isolated between the months of March and December.

The summer expedition and re-supply team (excluding ship's crew) consists of 80–100 persons, and includes administrative staff, heavy vehicle operators, helicopter crew, maintenance staff, the new overwintering team and a large scientific contingent. During the brief summer (typically December/January to February/March) the base must be resupplied with food, equipment and fuel, all waste products must be removed for transport back to South Africa, the new overwintering team must receive on-site training, and scientific investigations which cannot be undertaken in the winter months (such as extended field-work) must be completed.

The Antarctic and Southern Ocean Strategy (ASOS) outlines South Africa's interest in the coordination and implementation of the Antarctic Treaties Act relating to research, conservation, sustainable resource use and environmental management to ensure that Antarctica and the Southern Ocean are understood, valued and protected in the interest of South Africa, Africa and the world.

The S. A. Agulhas II arrived on 4 January 2021 at Penguin Bukta, Antarctica, and the return of the summer expedition and re-supply team to Cape Town is expected early March 2021.

