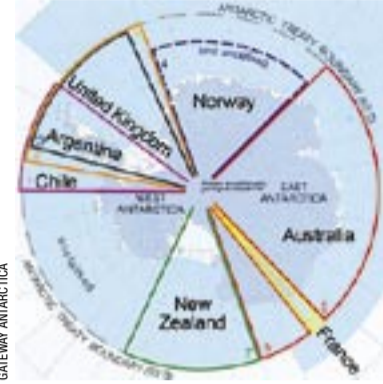




ERNESTO E. MARTINO/UNEP/TOPIAM PICTUREPOINT



GATEWAY ANTARCTICA



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ABOVE Research station.
 FAR LEFT Penguin.
 LEFT Map of territorial claims.
 BELOW Map of Antarctica with 60°S boundary & Convergence.

Poles apart: the uniqueness of Antarctica

The Antarctic, like the Arctic, provides opportunities and challenges for our modern world. Opportunities are framed in the context of science, where the next big discovery might lead to the cure for cancer or to answers from climate change messages. Challenges are those of environmental protection, the continuance of the largest nuclear free zone in the world, and the recognition of the importance of both polar regions to the health of the global environment. **BY MICHELLE FINNEMORE**

Like the Arctic, the Antarctic region has gripped the human imagination for centuries. Early Antarctic explorers did not even see the great southern land mass until the 19th century, and even when they did, the sightings provided little clue as to what was hidden beneath the masses of ice. Today scientists are the great explorers of the Antarctic and results from their research are helping us to develop a truly global picture of the Earth's environment.

While the geographic north is water surrounded by land, the south polar region is a large landmass surrounded completely by water. This circum-polar ocean, the Southern Ocean, was the barrier to continental exploration and even today acts as the guardian of the Antarctic continent.

Legally, the Antarctic is defined as the area south of 60 degrees south latitude. However, the region's biological boundary can be found at the Antarctic Convergence. The Convergence is a constantly shifting boundary that marks the division between cold Antarctic water, and warmer sub-Antarctic water. A distinct temperature change can be recorded as this boundary is crossed and the Convergence represents a sort of "fence line" which distinguishes the Antarctic ecosystem and its related species from those to the north.

Putting Antarctica in international fora

The treaty that defines Antarctica's boundaries is known simply as The Antarctic Treaty. It is the core of the Antarctic Treaty System (ATS), the bundle of international laws which govern the Antarctic region. The ATS has become a powerful set of legal instruments. With regular yearly meetings and consensus voting as the only way to develop recommendations and rules on Antarctic governance, the Treaty meetings bring together representatives from forty-five nations and various NGOs to discuss common concerns and protection mechanisms for Antarctica. The Treaty has been hailed as a legal success story, in that it has lasted, without amendment, for more than 40 years. This is no simple feat, as the Treaty

is responsible for governance of an area that occupies 1/10th of the entire earth's surface. When the Antarctic Treaty was negotiated and signed in 1959, there were only twelve original signatory states. These twelve in themselves are a diverse group of states: Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States of America, and the Russian Federation. Because the Antarctic has no permanent or indigenous human population, these twelve nations established the Antarctic

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Treaty to govern the Antarctic in the interest of all mankind.

Of the twelve original signatory nations, seven make claims to territory in Antarctica. Although these claims are disputed, the Antarctic Treaty froze the operation of these claims thereby stopping any arguments amongst claimants, or between claimants and non-claimants, over the legitimacy of the claims. All seven territorial claims therefore remain as they were as at 1 December 1959, and to date, no military action of any kind has taken place on the Antarctic continent. The area remains devoted to peace and science.

Being part of small science communities

The International Polar Year of 1957, which is now known as the International Geophysical Year, saw dedicated science teams lead year-round research expeditions in Antarctica. After this year, the twelve nations that had participated in Antarctic research negotiated and signed the Antarctic Treaty in Washington, DC. Science remains the currency in Antarctica with over forty-five nations now conducting small and large-scale scientific operations there, some year round. With no indigenous or permanent human population, these scientific research stations are the only areas on the continent to support human populations. In the austral summer over 2,500

people live on the continent, with up to 14,000 ship-based visitors also arriving for short (maximum two weeks) visits, primarily in the Peninsula region. In the winter, as darkness closes in, many of the scientists depart and the continent is left with only about 250 human inhabitants.

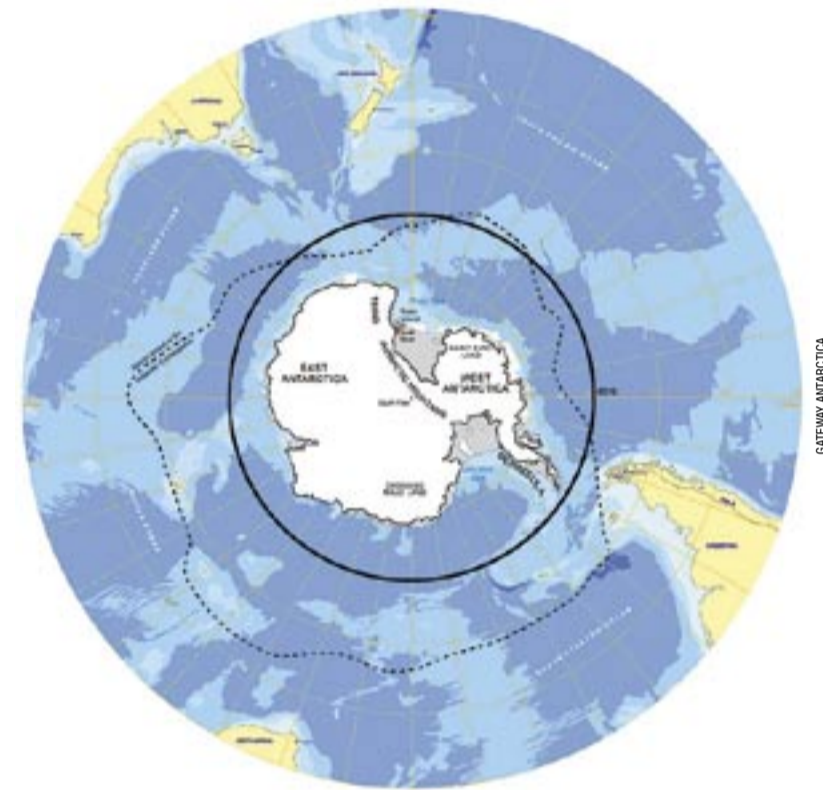
Extreme similarities

The polar regions share common concerns primarily due to their special resource characteristics that are not found anywhere else in the world. The

ecosystems are so fragile that substantial resource exploitation of either living or mineral resources could cause devastating environmental impacts. Both polar regions are dominated by extreme temperatures. At the South Pole, winter temperatures have been measured as low as -89.6°C (-129.9°F). Added to this is the high average wind speed which makes the Antarctic colder than

to contrast with the north polar region, where the largest land animal is the polar bear, the largest land creature in Antarctica is the flightless midge, an invertebrate that measures less than 12 mm in length

the Arctic. Of course, as with the Arctic, daylight hours in winter are extremely short with the sun staying below the horizon for many months during the height of the Antarctic winter. These conditions blanket the Antarctic continent in ice and also surround the continent in sea-ice which more than doubles the area of Antarctic ice in the winter (20 million km^2 in winter, receding to 4 million km^2 in summer). Antarctica contains 90 percent of the world's fresh water, locked up as ice which covers 98 percent of the continent. The Antarctic receives little to no precipitation each year making it a polar desert. On average only 2–5 cm of snow accumulate at the South Pole each year. Lack of free water, limited sunlight and the extreme temperatures have resulted in few plants on the continent itself with



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no vascular plants or trees except those found on the Sub Antarctic Islands.

Rise in temperatures and the ozone layer

The ice, ice shelves especially, are being carefully studied by scientists as they are known to be sensitive indicators of global climate change. Subtle rises in global temperatures may be the cause of the sudden collapse of some large ice shelves in the Antarctic Peninsula region.

Although the ecosystems of both polar regions are complex, the Antarctic eco-

Hidden resources

In the early 1980s, the oil crisis and the possibility that Antarctica contained some of the world's greatest mineral resources led the Antarctic Treaty nations to discuss the possibility of mining and minerals activities. A comprehensive mining Convention was negotiated that would have allowed mining activities to operate in and around the Antarctic continent. Opposition to that Convention, primarily from environmental groups, was fierce and the Convention was ultimately shelved. Now there is a new Convention in place the Environmental Protocol which bans all mining in Antarctica for at least 50 years. The Protocol also lays down rules to comprehensively protect the fragile Antarctic environment.

To protect the Antarctic and to respond to these challenges we must educate ourselves so that we are aware of our place in the world and the importance of harmonizing human action with that of the global ecosystem, of which we are an intricate part. We must develop and maintain strong political relationships which will lead to international legal instruments which recognise that even though we are poles apart we still share the common ecosystem of one Earth.

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Additional Information on Antarctica is available at www.gateway.canterbury.ac.nz and in UNEP GEO-3. GRID-Christchurch can be found at www.gridc.canterbury.ac.nz.