Listen: Listen [1]
Listen [2]

Antarctica is the coldest, driest, windiest and highest continent on Earth. It is about fifty times the size of New Zealand and is almost completely covered in ice.

Antarctica is the coldest, driest, windiest and highest place on Earth and it is almost completely covered in ice.

Of the seven continents [3], Antarctica is:

- the coldest (–91°C in 1997)
- the driest (less than the equivalent of 5cm of rain a year)
- the windiest (wind speed of 327 km per hour in 1972)
- the highest (average height above sea level of 2500m)

The Antarctic continent including all the islands and ice shelves [4] covers approximately 13,661,000 km2 in area. This is about fifty times the area of New Zealand.

Antarctica is almost entirely covered by ice, with exposed rock only making up about 0.4% of the continent. The ice sheet [5] has an average thickness of about 2450m, reaching 4776m at its maximum.

Antarctica is of great interest to scientists: Why do you think so much scientific work is done in Antarctica?

Why is Antarctica so cold?

The Russian base at Vostok, which is 3488m above sea level, is the coldest place on Earth with a mean annual temperature of around –55°C. The coldest recorded temperature at Vostok was –91°C in 1997. The average temperature at New Zealand's Scott Base is -20°C. Antarctica is cold because:

- the sun is always relatively low in the sky over Antarctica so sunlight is spread over a much larger area than on the equator
- the sun does not rise at all in regions south of the Antarctic Circle for part of the year
- the whiteness of the ice sheets and the sea ice [6] reflect much of the sun's energy
- temperature decreases by about 1°C for every 100m rise in height and Antarctica has an average height of 2500m
- the Antarctic Circumpolar Current [7] flows completely around Antarctica

largely preventing other warmer ocean currents [8] from exerting significant effects
- Antarctica is an isolated continent without any major neighbouring land masses which can have a warming effect on the climate [9]

Why is Antarctica so windy?

The strong winds are the result of katabatic winds [10] (from the Greek word katabasis, meaning - going down) which arise when cold, dense air lying less than a few hundred metres off the surface at the highest levels of the Antarctic ice sheets flows down towards the coast under gravity. Near the coast these winds can reach tremendous speeds.

How cold, wet and windy is it where you live? Compare this with Antarctica.

Of the seven continents [3]in the world, Antarctica is:

- the coldest
- the driest
- the windiest
- the highest

The Antarctic continent including all the islands and ice shelves [4] is about fifty times the area of New Zealand or twice the size of Australia.

Antarctica is almost totally covered by ice. Less than 1% of Antarctica is ice free rock.

The ice sheet [5] is between 2500m and 4700m thick.

Why is Antarctica so Cold?

Antarctica is cold because:

- the sun is always low in the sky over Antarctica - sunlight is spread over a large area
- there are 24 hours of darkness each day during the winter
- the whiteness of the ice reflects much of the Sun’s energy
- Antarctica is high - average height is 2500m (the height of Mt Taranaki)
- a cold ocean current [8] surrounds Antarctica

Antarctica is a long way from other continents so there is no land nearby to help keep it warm.

Why is Antarctica so Windy?

Moving air is called wind. In Antarctica it is very windy.

Gravity makes the cold air flow from high up on the sheets of ice down to the coast.

How cold, wet and windy is it where you live?

Audio Māori keywords:

- tio - ice [11]
- whakamātao - frozen [12]
- Te Tiri o Te Moana - Antarctica [13]
- hukarere - snow [14]
- whakatetonga - southern [15]

Samoan keywords:

aisa	ice
puaheiri	snow
aisā	frozen
-	Antarctica
-	southern
ma'alili	cold

Tongan keywords:

'aisi poloka	ice
sinou	snow
poloka	frozen
-	Antarctica
tonga	southern
momoko	cold

Cook Islands Maori keywords:

aiti	ice
snow	snow
toka ia	frozen
Antarctica	Antarctica
tonga	southern
anu / makariri	cold

“Great God! This is an awful place!” The words of the explorer, Captain Scott, when he and his men finally reached the South Pole on 17th January 1912. Find out more about Captain Scott’s expedition and the science that his team carried out while in Antarctica.

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Antarctica.

[16]

Antarctica is the coldest, driest, windiest and highest continent on Earth. Image: Public Domain.

[17]

Antarctica is a long way away from other continents. It takes over five hours to reach Ross Island in Antarctica from Christchurch, New Zealand. How many kilometres is it from Christchurch to Antarctica? Image: LEARNZ.

[18]

Antarctica is almost completely covered in ice and is the coldest place on Earth. This is Scott's Hut at Cape Evans. What is Captain Scott famous for? Image: LEARNZ.

[19]

To work safely in Antarctica everyone must complete Antarctic Field Training. Why do you think it would be important to know how to set up a camp in Antarctica? Image: LEARNZ.

Source URL: http://www.learnz.org.nz/scienceonice144/antarctica

Links
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