POLE POSITIONS

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Four corresponding poles may be distinguished in the Arctic and in the Antarctic. The geographic pair are fixed and conjugate by definition (minor perturbations in position are known as the Chandler Wobble); those of inaccessibility are also defined by geography and very stable; the geomagnetic poles are mutually antipodean and wander slightly, depending on solar influences (the Geomagnetic Polar Axis is offset by approximately 9° from the Geographic Polar Axis); while the magnetic poles are in comparatively rapid movement and may migrate through many kilometres during a brief period.

ARCTIC

NORTH GEOGRAPHIC POLE 90°N

A fixed location on the surface of the Arctic Ocean (690 km from the nearest land) which is the northern axis of rotation of the Earth. First seen by Roald Amundsen's expedition on 12 May 1926 from the airship *Norge*, first landing in 1948.

NORTH MAGNETIC POLE 86·4°N, 156·8°W (January 2020)

A wandering location on the Earth's surface where conventional lines of magnetic force exit. The direction of the magnetic field is vertical, its strength is very variable. The north-seeking end of a compass needle, or any other magnet, is attracted towards this pole. It was first reached and determined by Captain James Ross on 1 June 1831 when it was at 70·1°N, 96·8°W much farther south on the Boothia Peninsula, a region with Eskimo inhabitants. Subsequently it has migrated north, currently it is on the central Arctic Ocean to the north-west of Prince Patrick Island and moving about 60 km annually on a course of 300° towards Siberia. During events such as magnetic storms its diurnal motion may exceed 80 km.

NORTH GEOMAGNETIC POLE 80·7°N, 72·7°W (2022)

The north end of the axis of the resultant geomagnetic field which surrounds the Earth and extends into space forming the magnetosphere. This is where the electron flux from the Sun is concentrated and thus the focus for an auroral arc, a stratospheric torus where the Aurora Borealis is concentrated in the stratosphere approximately 23° around this pole. It was determined in 1956 during the International Geophysical Year; it is off north-west Greenland, a region with Eskimo inhabitants. There are minor secular variations of its position.

NORTHERN POLE OF INACCESSIBILITY 85·80°N, 176·15°E

The location on the surface of the Arctic Ocean, which is most distant from land; the most difficult location to attain, about 1008 km from any coast. Drift stations and aircraft have come close to this pole from the 1950s but exact attainment is unrecorded.

ANTARCTIC

SOUTH GEOGRAPHIC POLE 90°S

A fixed location on the surface of the Antarctic ice sheet (elevation 2835 m, and 1270 km from the nearest coast) which is the southern axis of rotation of the Earth. First attained on 14 December 1911 by Roald Amundsen's expedition from Norway. Occupied by 'Amundsen-Scott', a United States scientific station, from 1956.

SOUTH MAGNETIC POLE 64·1°S, 136·9°E (January 2020)

A wandering location on the Earth's surface where conventional lines of magnetic force enter. The direction of the magnetic field is vertical its strength is very variable. The south-seeking end of a compass needle, or any other magnet, is attracted towards this pole. First attained during Ernest Shackleton's British Antarctic Expedition on 16 January 1909 when it was at 72·4°S, 155·3°E, well inland beyond the Transantarctic Mountains. Subsequently it has migrated north, currently it is in the Southern Ocean, off Terre Adélie, and is moving about 14 km annually on a course of 310°. During events such as magnetic storms its diurnal motion may exceed 30 km.

SOUTH GEOMAGNETIC POLE 80·7°S, 107·3°E (2020)

The south end of the axis of the resultant geomagnetic field, which surrounds the Earth and extends into space forming the magnetosphere. This is where the electron flux from the Sun is concentrated and thus the focus for an auroral arc, a stratospheric torus where the Aurora Australis is concentrated in the stratosphere approximately 23° around this pole. First attained by a Soviet Antarctic expedition, led by Vyacheslav Averyanov, on 16 January 1957 when 'Vostok', a scientific station, was established on the ice sheet (3488 m elevation). There are minor secular variations of its position.

SOUTHERN POLE OF INACCESSIBILITY 83·90°S, 64·88°E

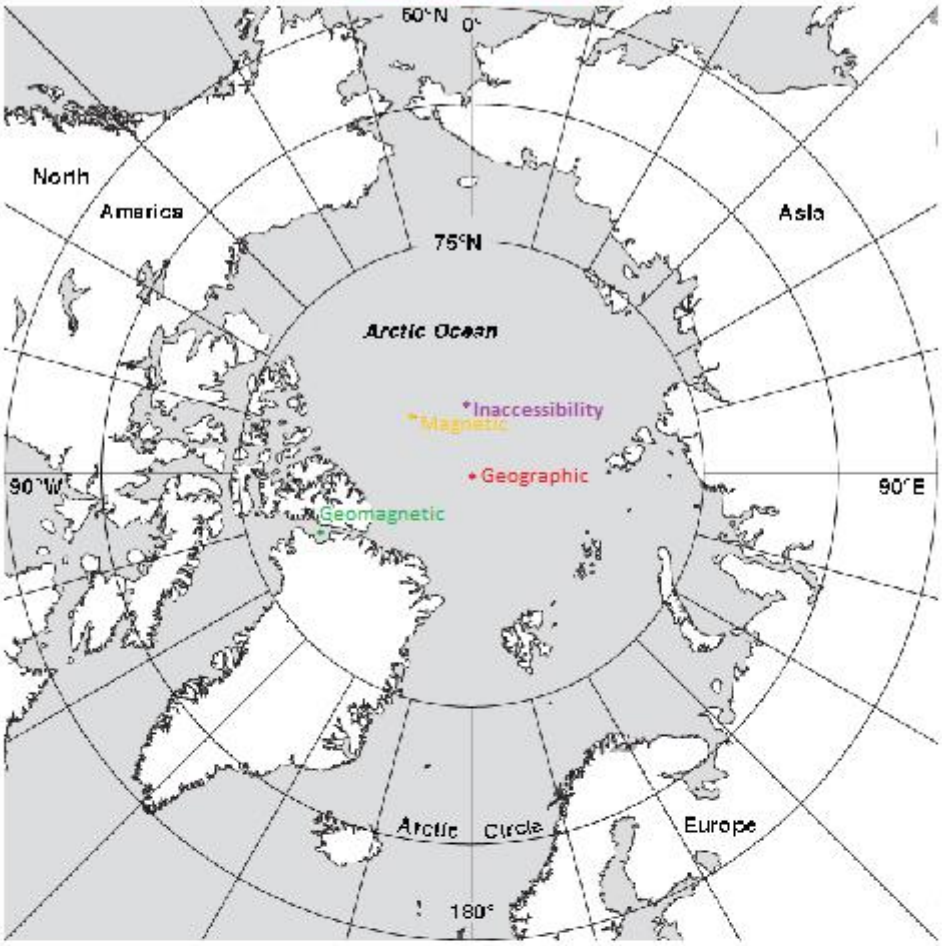
The location on the surface of the Antarctic ice sheet (3800 m elevation) which is most distant from the ocean; the most difficult location to attain, about 1300 km from any coast. First attained, 13 December 1958, by a Soviet Antarctic Expedition, led by Yevgeniy Tolstikov, which established a temporary scientific station in the vicinity, occupied during the 1958-59 austral summer. Its position may change about 1 km annually owing to calving of some of the great ice-sheets.

MUTUAL DISTANCES ON THE EARTH'S SURFACE

		Geographic	Magnetic	Geomagnetic	Inaccessibility
Arctic Poles	Geographic	-	400 km	1033 km	467 km
	Magnetic	400 km	-	1168 km	213 km
	Geomagnetic	1033 km	1168 km	-	1278 km
	Inaccessibility	467 km	213 km	1278 km	-
Antarctic Poles	Geographic	-	2878 km	1033 km	678 km
	Magnetic	2878 km	-	2040 km	2267 km
	Geomagnetic	1033 km	2040 km	-	701 km
	Inaccessibility	678 km	2267 km	701 km	-

North to South distances: Geographic and Geomagnetic 20 165 km, Magnetic 16 975 km, Inaccessibility 19 333 km

ARCTIC POLES



ANTARCTIC POLES