

Earth's magnetic field, also known as the geomagnetic field, is the magnetic field that extends from the Earth's interior out into space, where it interacts with the solar wind, a stream of charged particles emanating from the Sun. The magnetic field is generated by electric currents due to the motion of convection currents of molten iron in the Earth's outer core: these convection currents are caused by heat escaping from the core, a natural process called a geodynamo. The magnitude of the Earth's magnetic field at its surface ranges from 25 to 65 microteslas (0.25 to 0.65 gauss). As an approximation, it is represented by a field of a magnetic dipole currently tilted at an angle of about 11 degrees with respect to Earth's rotational axis, as if there were an enormous bar magnet placed at that angle through the center of the Earth. The North geomagnetic pole, which was in 2015 located on Ellesmere Island, Nunavut, Canada, in the northern hemisphere, is actually the south pole of the Earth's magnetic field, and conversely.

While the North and South magnetic poles are usually located near the geographic poles, they slowly and continuously move over geological time scales, but sufficiently slowly for ordinary compasses to remain useful for navigation. However, at irregular intervals averaging several hundred thousand years, the Earth's field reverses and the North and South Magnetic Poles respectively, abruptly switch places. These reversals of the geomagnetic poles leave a record in rocks that are of value to paleomagnetists in calculating geomagnetic fields in the past. Such information in turn is helpful in studying the motions of continents and ocean floors in the process of plate tectonics.

The magnetosphere is the region above the ionosphere that is defined by the extent of the Earth's magnetic field in space. It extends several tens of thousands of kilometers into space, protecting the Earth from the charged particles of the solar wind and cosmic rays that would otherwise strip away the upper atmosphere, including the ozone layer that protects the Earth from harmful ultraviolet radiation.

Analyse the text.