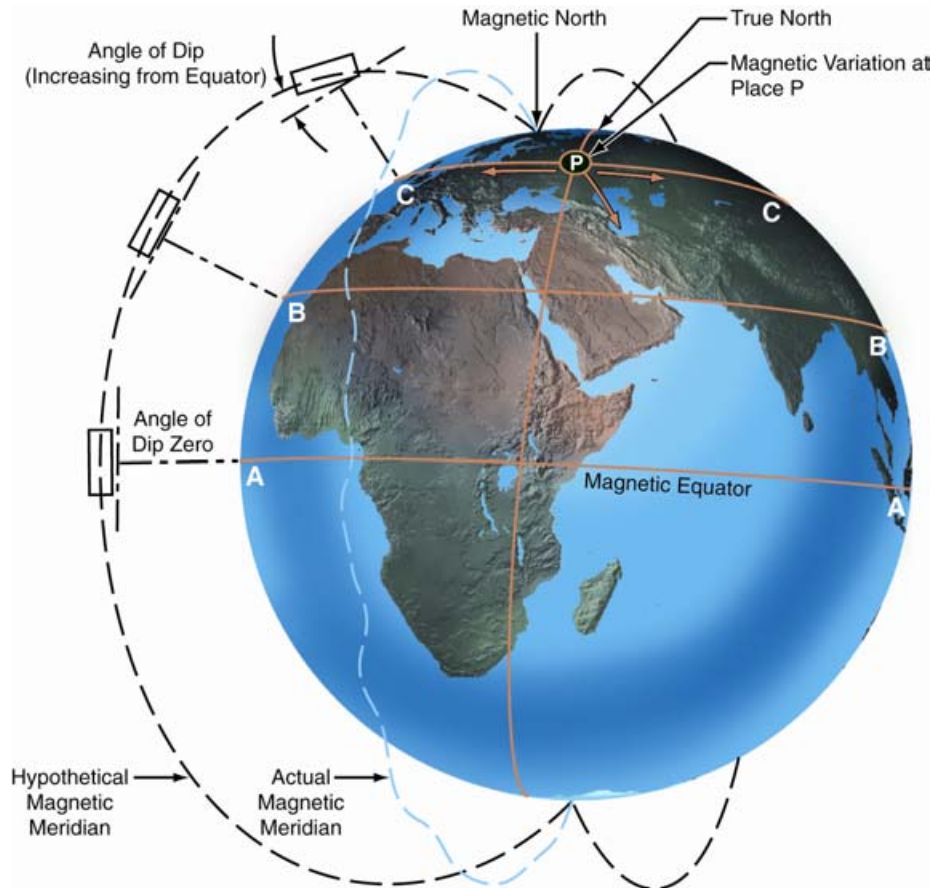


The Earth's magnetic field differs from that of an ordinary magnet in many respects because the magnetic poles themselves continually alter their position by a small amount. The magnetic field at any point on the Earth's surface is also not constant, because it is subject to both periodic and irregular changes.

MAGNETIC DIP

A freely suspended magnetic needle settles in a definite direction at any point on the Earth's surface, by aligning itself with the magnetic meridian at that point. It does not lie parallel to the Earth's surface at all points, because the Earth's lines of magnetic flux (force) are themselves not horizontal.



The lines of force initially emerge vertically from the South magnetic pole, and then bend over to become parallel with the Earth's surface, before descending vertically at the North magnetic pole. Thus if a magnetic needle is transported along a meridian from North to South, it initially has its red end pointing down towards the Earth. Near the magnetic equator, the needle is horizontal; and at the southern end of its travel the blue end points toward the Earth.

The angle that the lines of force make with the Earth's surface at any given place is called the **Angle of Dip** and varies from 0° at the magnetic equator, to virtually 90° at the magnetic poles. Lines drawn on the Earth's surface joining places of equal dip are known as **Isoclinals** (BB and CC), whilst a line joining places having zero dip are an **Aclinic** lines (AA). The Aclinic Line is also the magnetic equator, which is close to the geographical equator, but is not the same line.