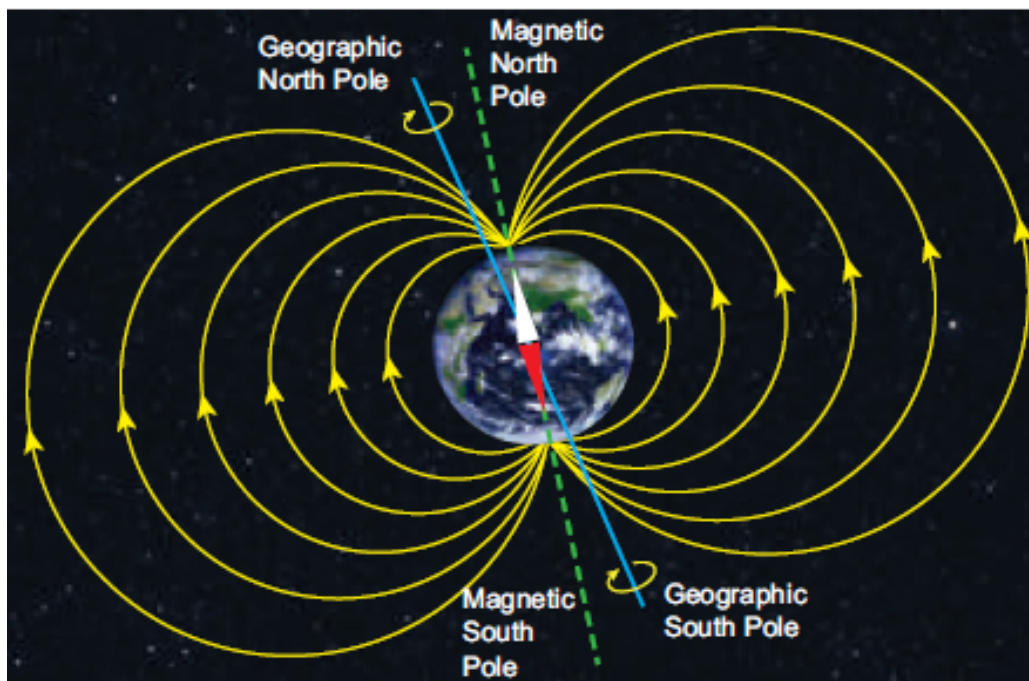


## Earth's magnetic field and magnetic elements

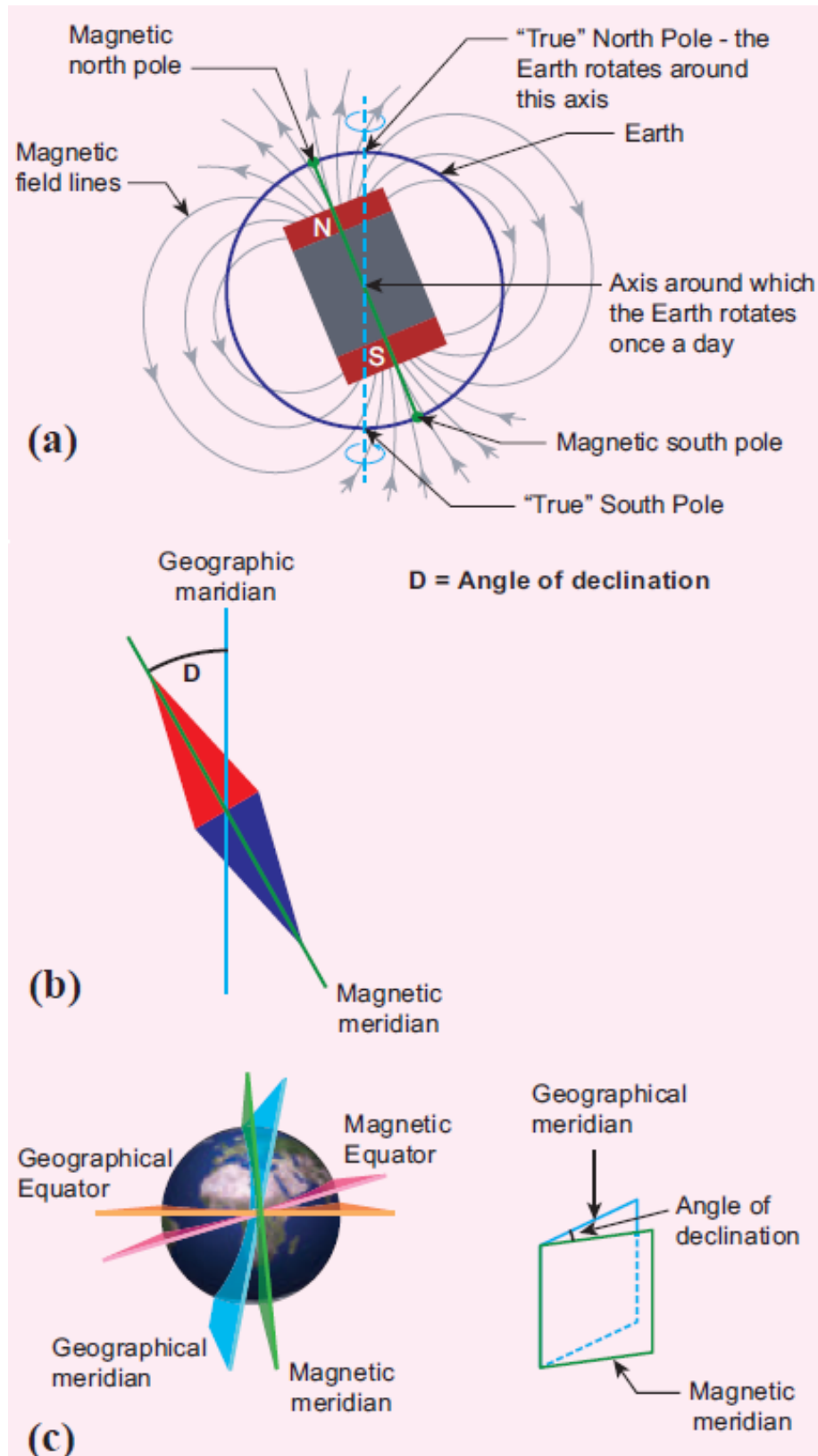
The north pole of magnetic compass needle is attracted towards the magnetic south pole of the Earth which is near the geographic North Pole shown in the following figure. Similarly, the south pole of magnetic compass needle is attracted towards the geographic north pole of the Earth which is near magnetic north-pole.



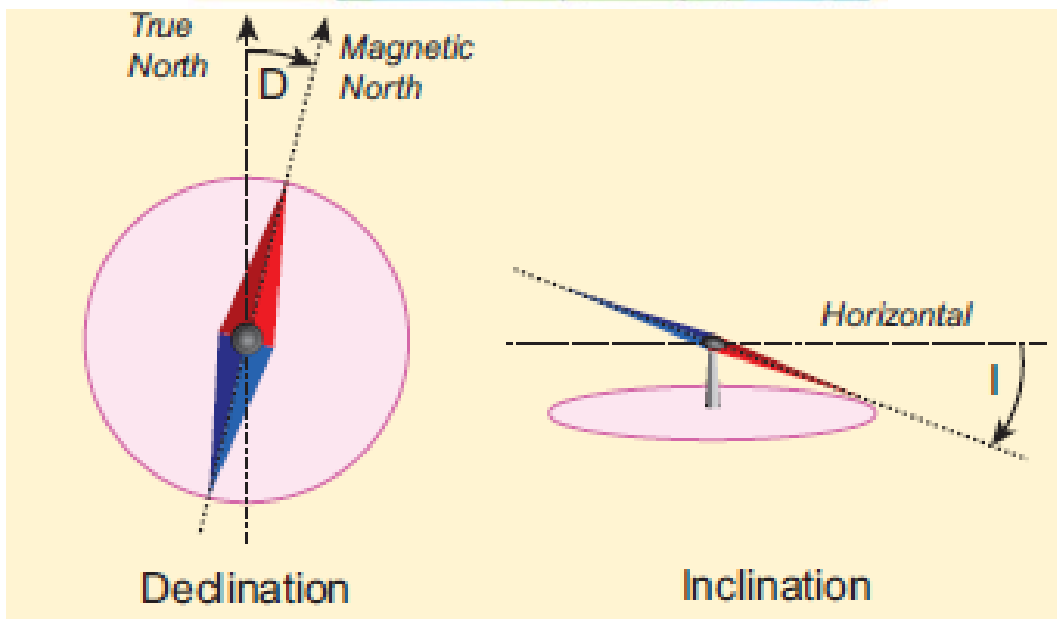
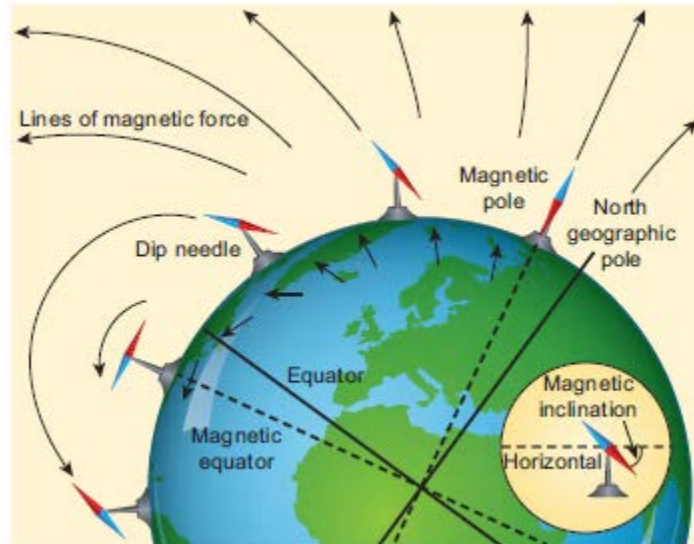
There are three quantities required to specify the magnetic field of the Earth on its surface, which are often called as the elements of the Earth's magnetic field. They are

- (a) Magnetic declination ( $D$ )
- (b) Magnetic dip or inclination ( $I$ )
- (c) The horizontal component of the Earth's magnetic field ( $B_H$ )

- The angle between magnetic meridian at a point and geographical meridian is called the declination or magnetic declination (D).



- The angle subtended by the Earth's total magnetic field  $\vec{B}$  with the horizontal direction in the magnetic meridian is called dip or magnetic inclination ( $I$ ) at that point.
- The component of Earth's magnetic field along the horizontal direction in the magnetic meridian is called horizontal component of Earth's magnetic field, denoted by  $B_H$ .



**NOTE:**

The branch of physics which deals with the Earth's magnetic field is called Geomagnetism or Terrestrial magnetism.