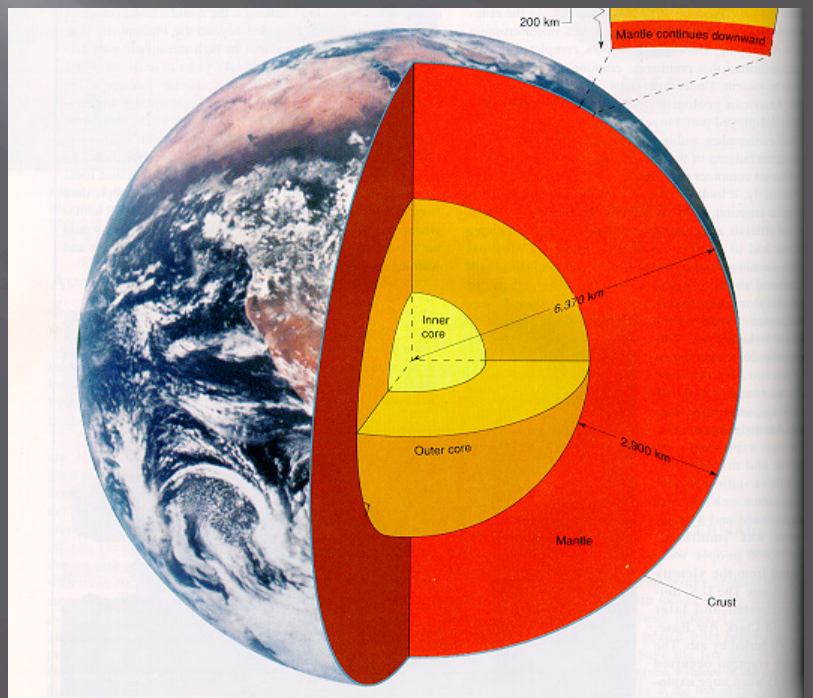
EARTH'S MAGNETIC FIELD

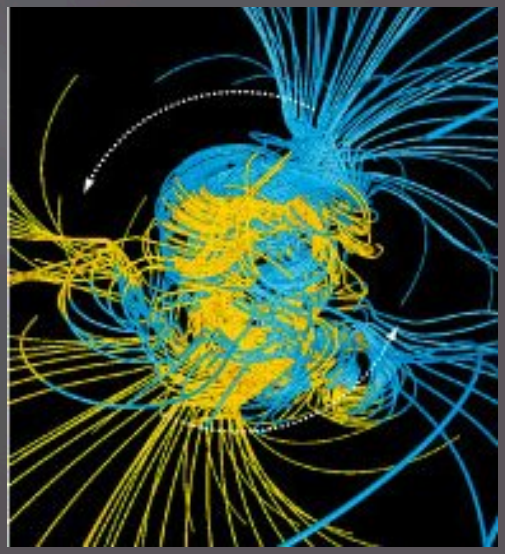
Geodynamo Theory

- The movement of molten iron in the outer core (caused by Earth rotation), combined with convection currents (caused by the heat of the inner core), create a magnetic field in the molten iron



Are There Changes

- Some evidence suggests that Earth/s north and south magnetic poles have swapped in intervals of 300,000 years
- Evidence has shown that Earth's magnetic field has weakened by 10% over the last 200 years



Magnetic Properties of Matter

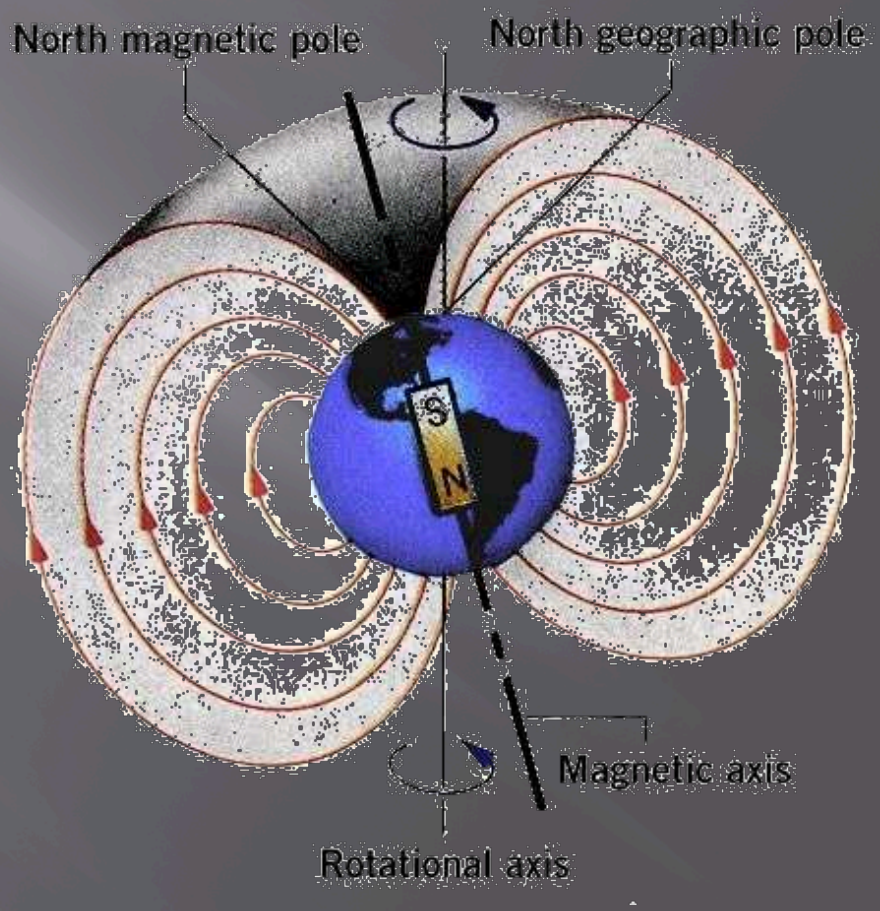
In other words….materials which produce magnetic fields with no apparent circulation of charge.

All substances - solid, gas, and liquid - react to the presence of a magnetic field on some level. Remember why?

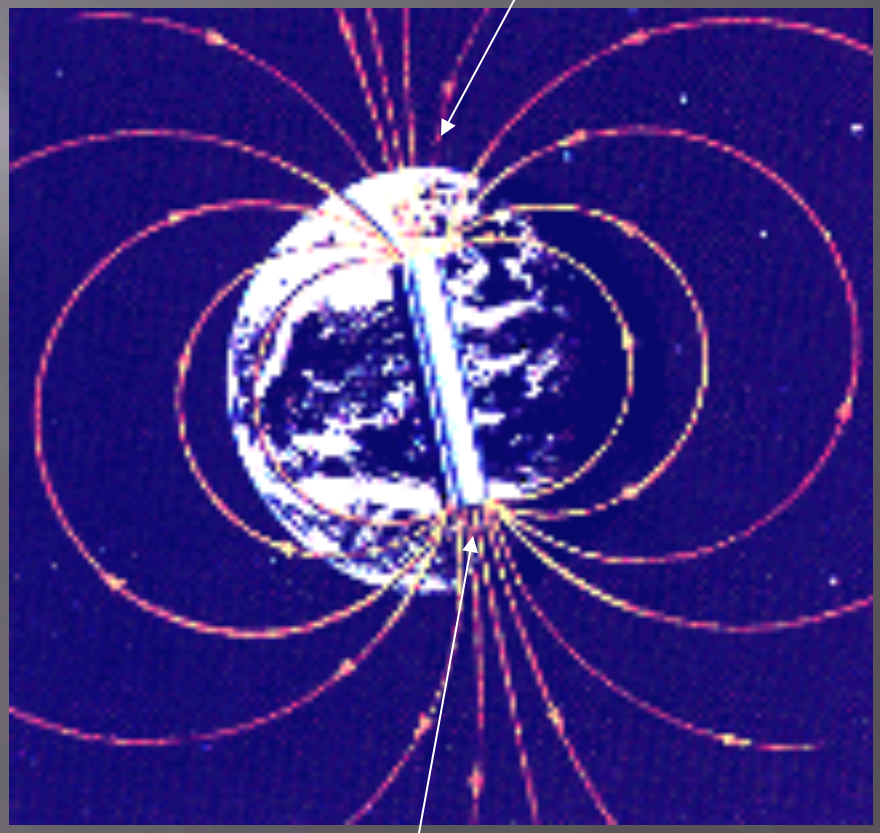
How much they react causes them to be put into several material "types".

The Earth is a magnet:

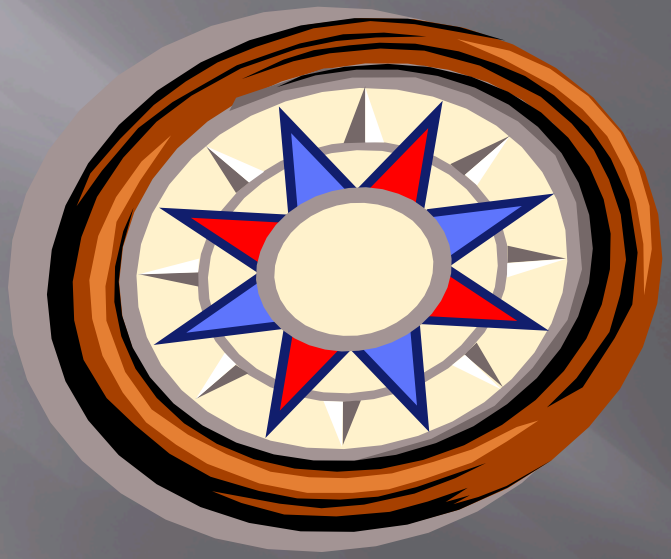
It exerts magnetic forces and is surrounded by a magnetic field that is strongest near the North and South magnetic poles



Sometimes, the Earth's magnetic poles flip. This happens every half-million years or so.



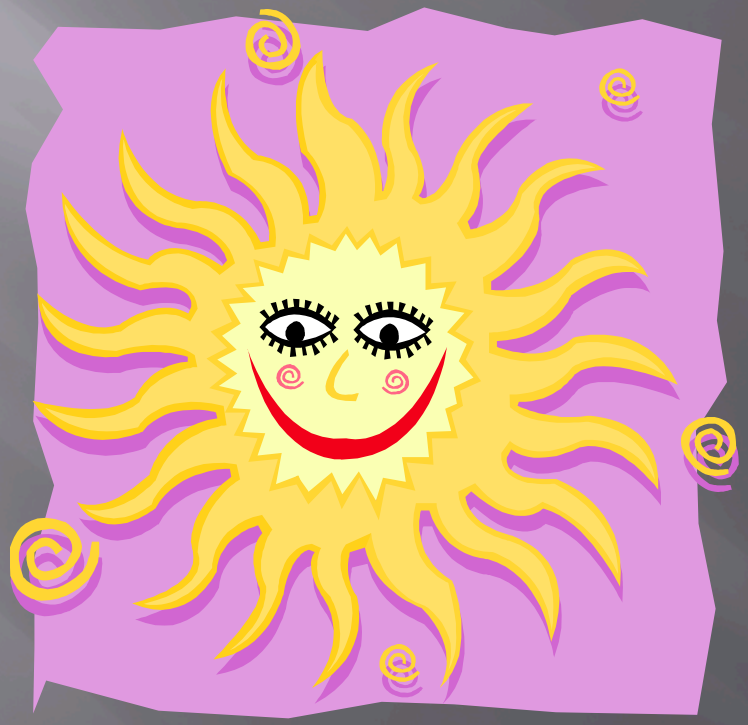
We use the Earth's magnetic field to find direction.



The needle of a compass always points toward the magnetic south pole.

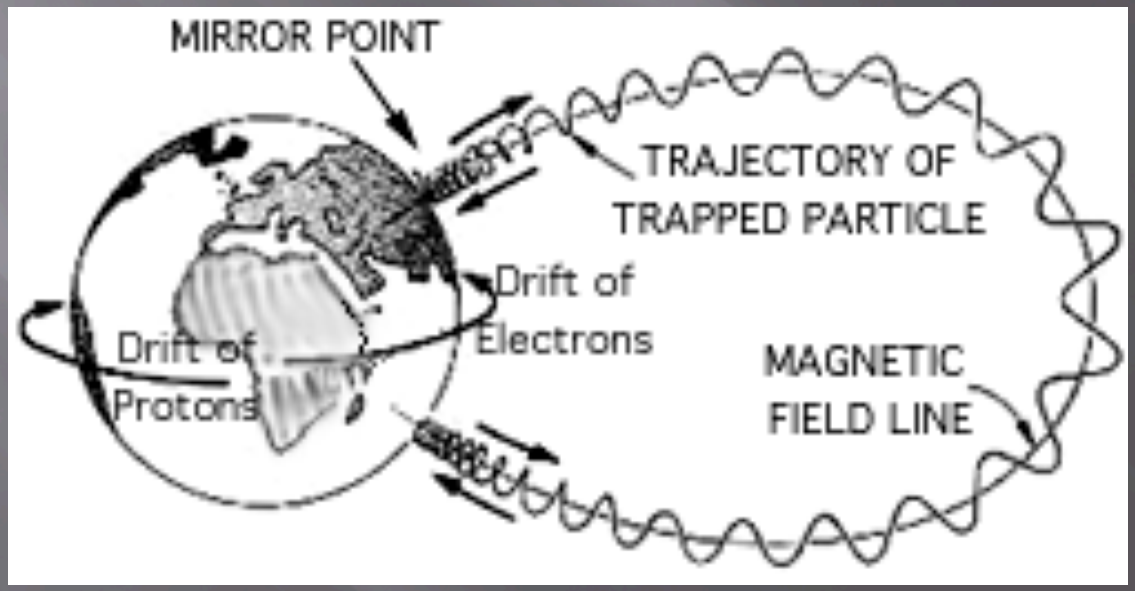
We call this direction "North" (remember, opposites attract)

The sun has a magnetic field, too. It extends far above the sun's surface.

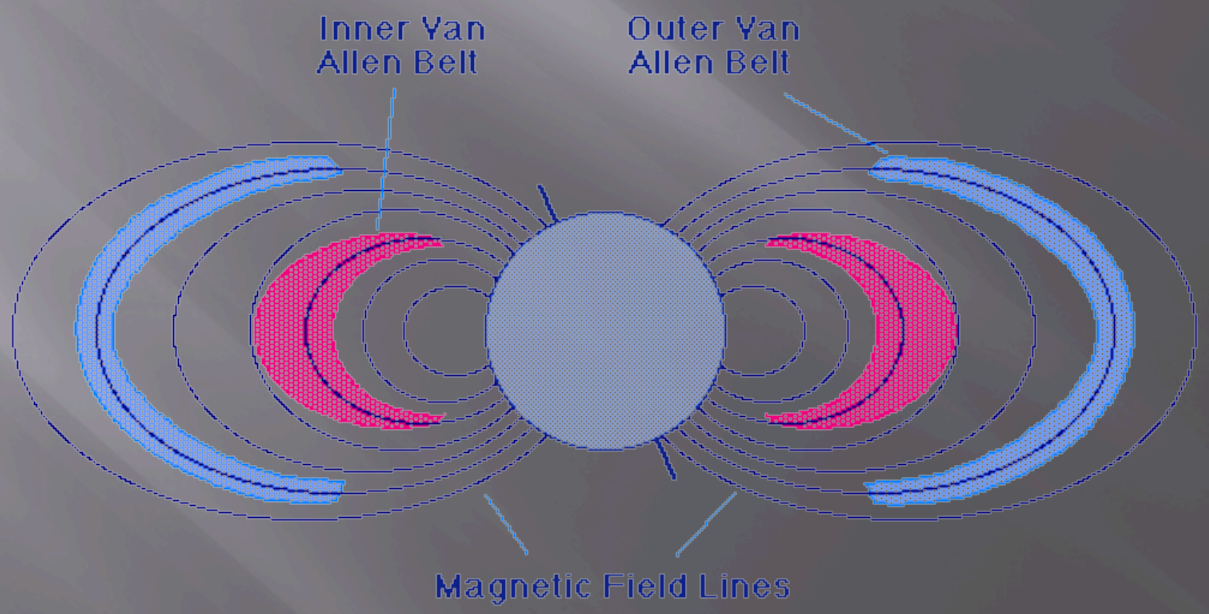


Other planets in the solar system also have these magnetic

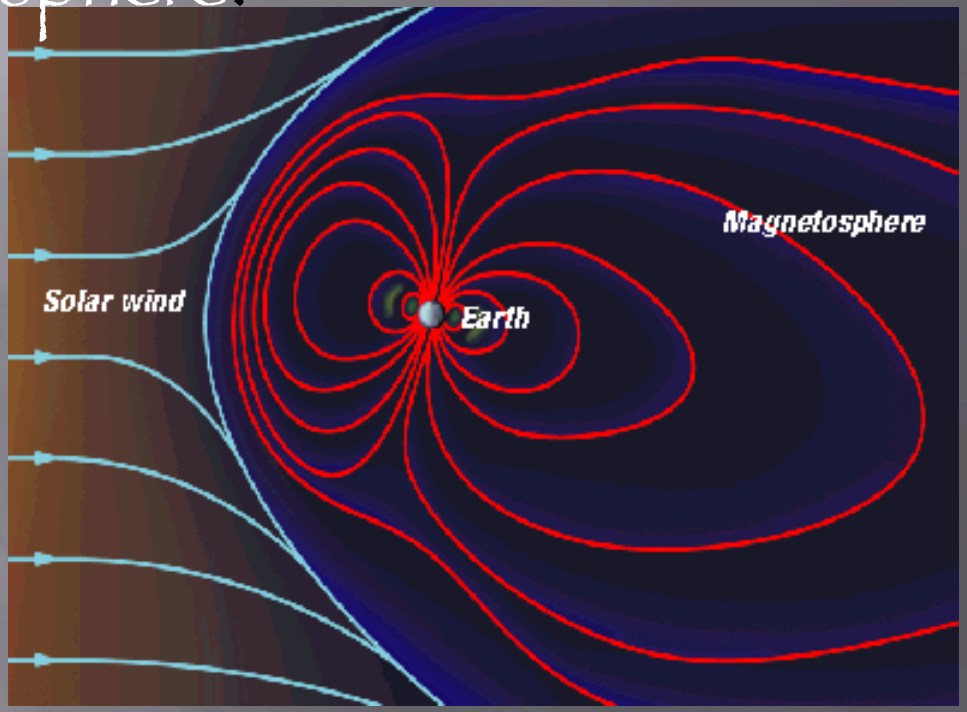
When a charged particle enters a magnetic field, an electric force is exerted on it. If a charged particle moves at an angle to a magnetic field, the magnetic force acting on it will cause it to move in a spiral around the magnetic field lines.



The solar wind is constantly bombarding the Earth's magnetic field. Sometimes these charged particles penetrate that field. These particles are found in two large regions known as the Van Allen Belts.



The Earth's magnetic field extends far into space. It is called the "magnetosphere."



When the magnetic particles from the sun, called "solar wind", strike this magnetosphere, we see a phenomenon called…

The Aurora Borealis in the Northern Hemisphere

And the Aurora Australis in the Southern Hemisphere

- Northern Nights

"Mr. Green may I be excused? My brain is full."