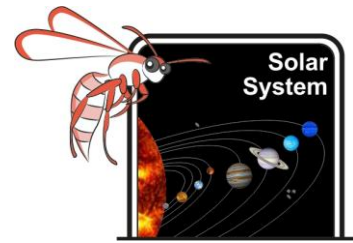


Sun & Energy- Teacher Demonstration



Our sun, Sol, is the only star in our solar system. Even enormous planets such as Neptune depend on the Sun for light and heat. Stars make their own energy in a process similar to that occurring in a thermo nuclear reactor. The Sun's massive size creates an enormous gravitational pull, which smashes atoms of hydrogen together to make helium with a little energy left over. It sends the excess energy out into space as heat, light and other forms of electromagnetic radiation.

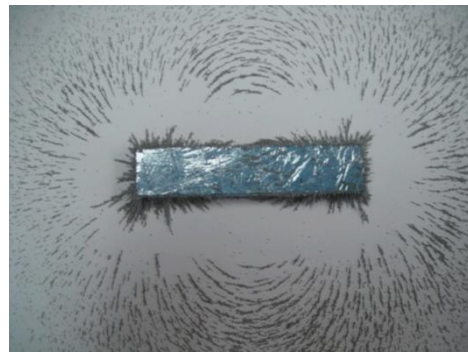


Lucky for us, the most of the dangerous forms of radiation are deflected by the magnetosphere, a magnetic shield round this planet generated by the Earth's magnetic core, and also by the ozone layer in the atmosphere. The magnetosphere extends from the ionosphere tens of thousands of kilometres out into space. It is generated by the magnetic core of our planet. Magnetism is a force that can act at a distance.

Teacher Demonstration - Magnetosphere

Materials

- A bar magnet
- Iron filings (hardware shop)
- Kitchen wrap
- White paper



Method

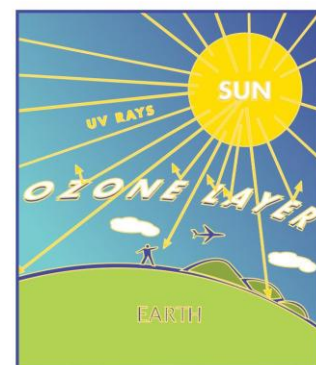
You can demonstrate how the magnetosphere extends well beyond Earth using a simple magnet, a piece of kitchen film wrapping, a sheet of white paper, and some iron filings. Wrapping the magnet in film means if any filings get attracted to it they will be more easily removed. Lay the wrapped magnet on the paper. Sprinkle the iron filings onto the paper. The magnetic effect extends well beyond the bar.

Observation

The iron filings define the lines of magnetic force acting outside the magnet.

OZONE LAYER

The ozone layer deflects carcinogenic ultraviolet radiation back out into space. The slow atmospheric build up of oxygen created by photosynthesis created this planetary "sun screen" and stopped life from being bathed by mutagenic rays. Increased use of CFCs (chloro-fluoro-carbons) as refrigeration gas and aerosol propellants reduced its thickness and effectiveness. The natural "holes" in the ozone layer which occur over the magnetic north and south poles have increased in size.



Light and heat penetrate down to the surface of our planet to support Life. 98% of the Sun's energy reaching Earth's surface is reflected back out into space. Luckily enough heat is retained to enable Life to exist. For this to occur we must have some carbon dioxide in our atmosphere to reflect heat leaving the surface back down again.

Although both carbon dioxide and ozone can be toxic, small amounts of both are necessary for Life.