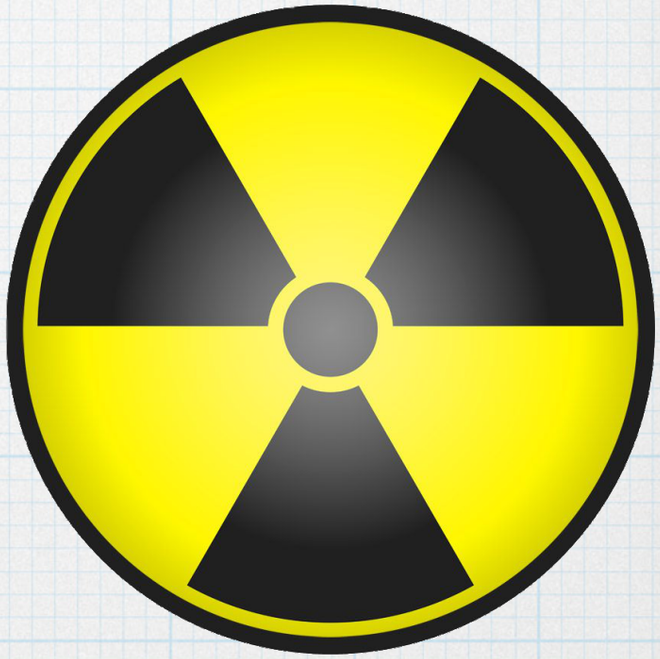
Radiation in Space

Simon and Sam

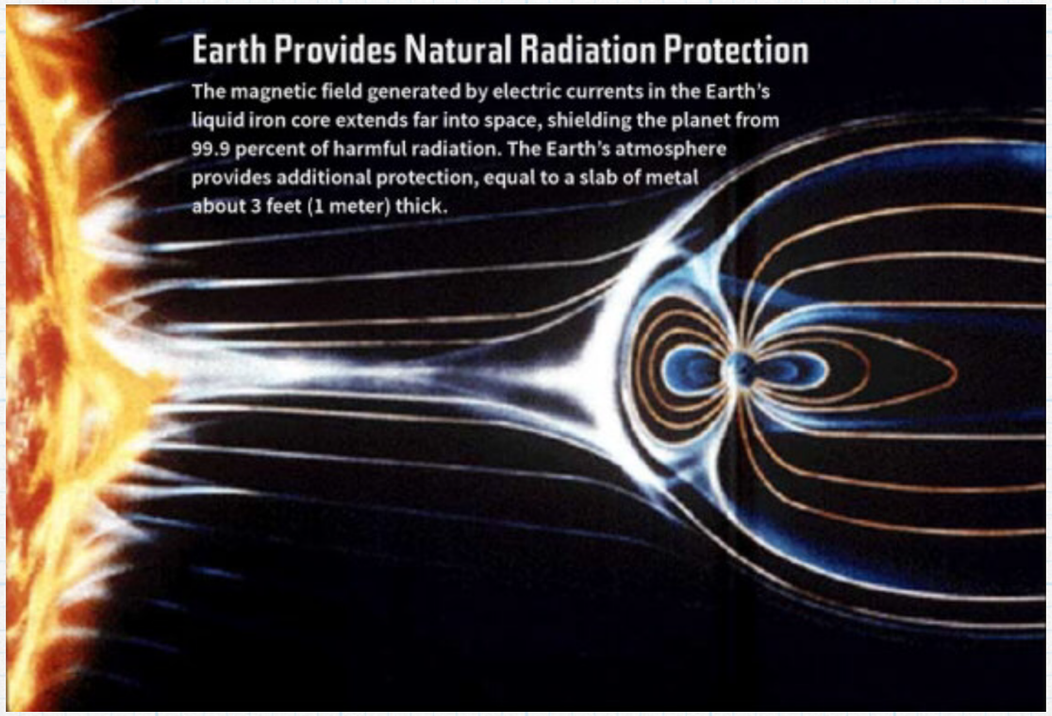
What is Radiation?

* Radiation is a form of energy that's emitted in the form of rays, electromagnetic waves, and particles

* Radiation can be seen (visible light) or felt (infrared radiation) in some cases, but in others you need special equipment to see it (x-rays and gamma rays)



How about Space Radiation?

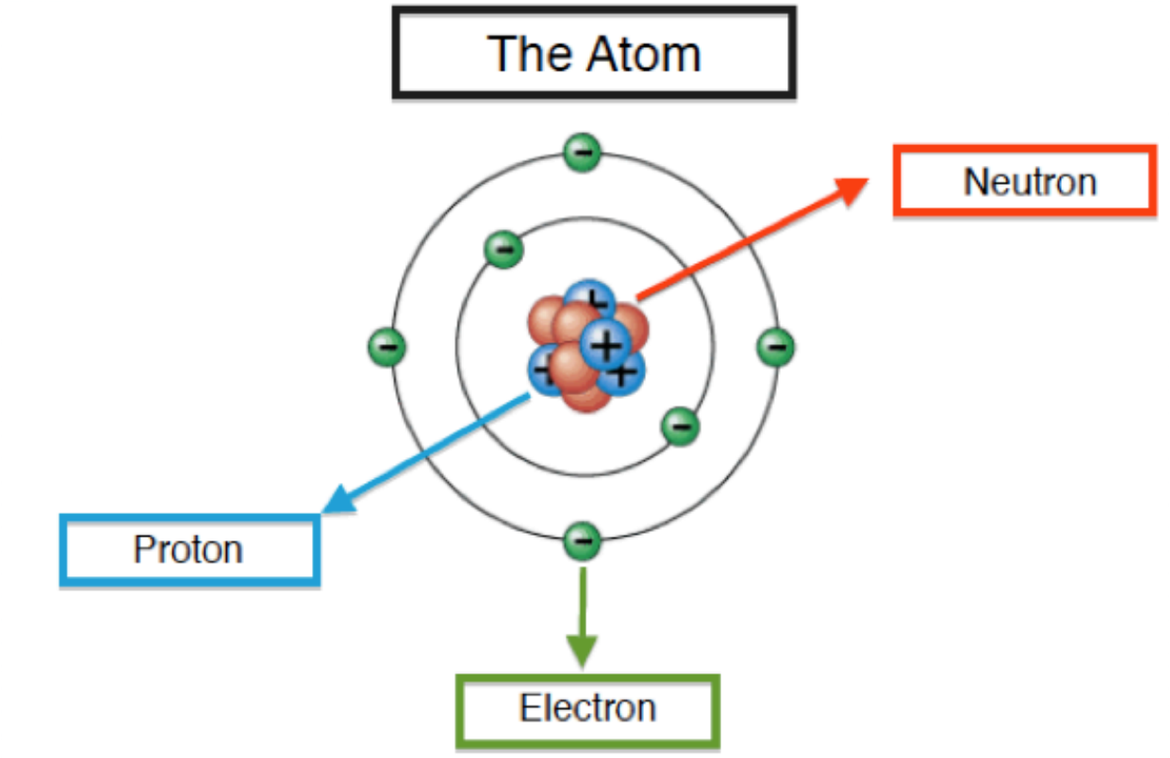


* Space radiation is made of atoms that have had their electrons stripped away from being accelerated in interstellar space
* There are three types of space radiation, particles in the Earth's atmosphere, the Earth's magnetic field, and galactic cosmic rays
* These kinds of space radiation represent ionizing radiation

Where does it come from?

* It can be created by humans through things like microwaves, cell phones and x-rays
* It can naturally be created by things like the sun, stars, and radiation trapped in the Earth's magnetic field
* There are three naturally occurring sources of space radiation: trapped radiation, galactic cosmic radiation (GCR), and solar particle events.

Is Radiation is Harmful To Us In Space?



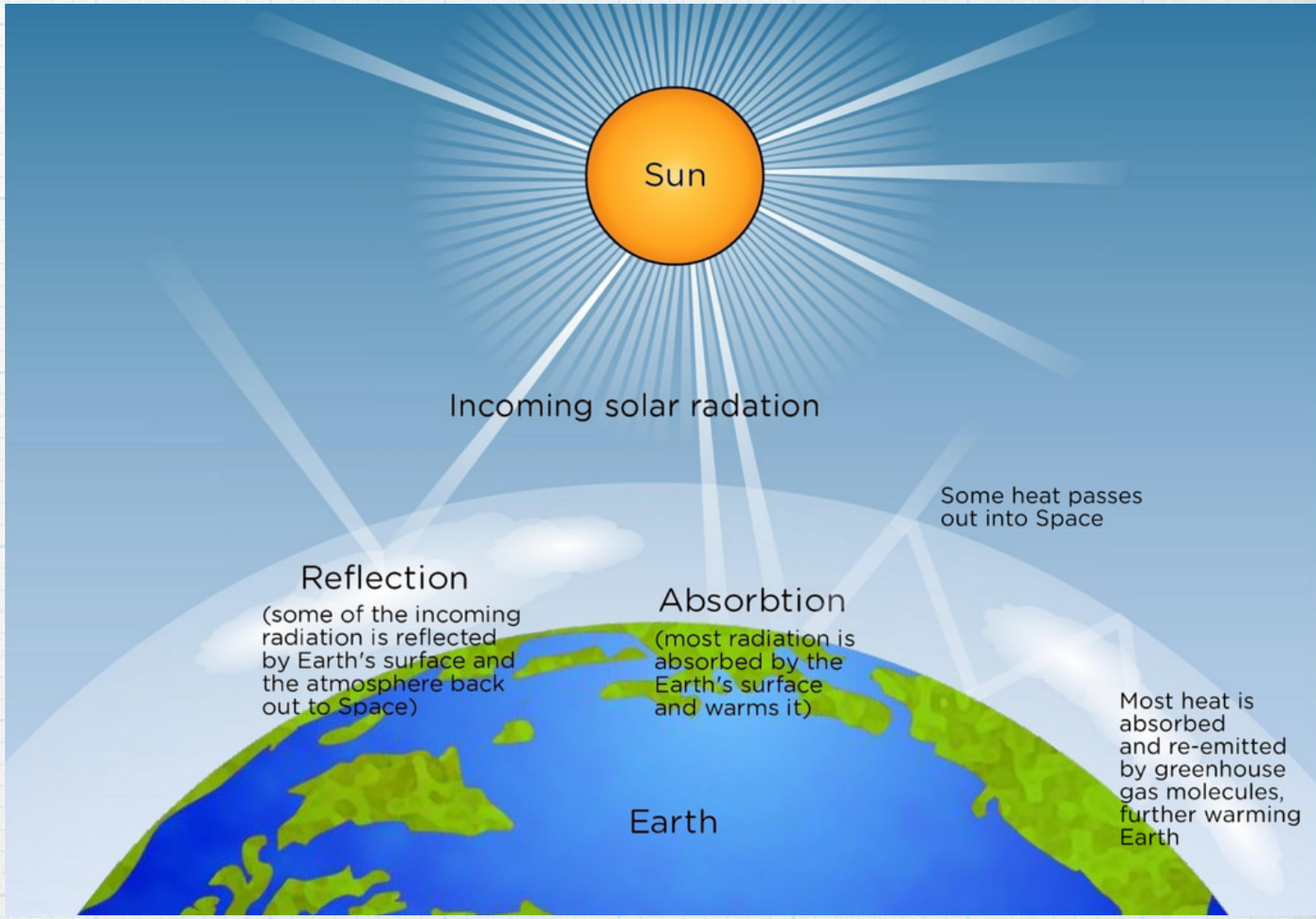
* Radiation in Space becomes subatomic particles from the sun

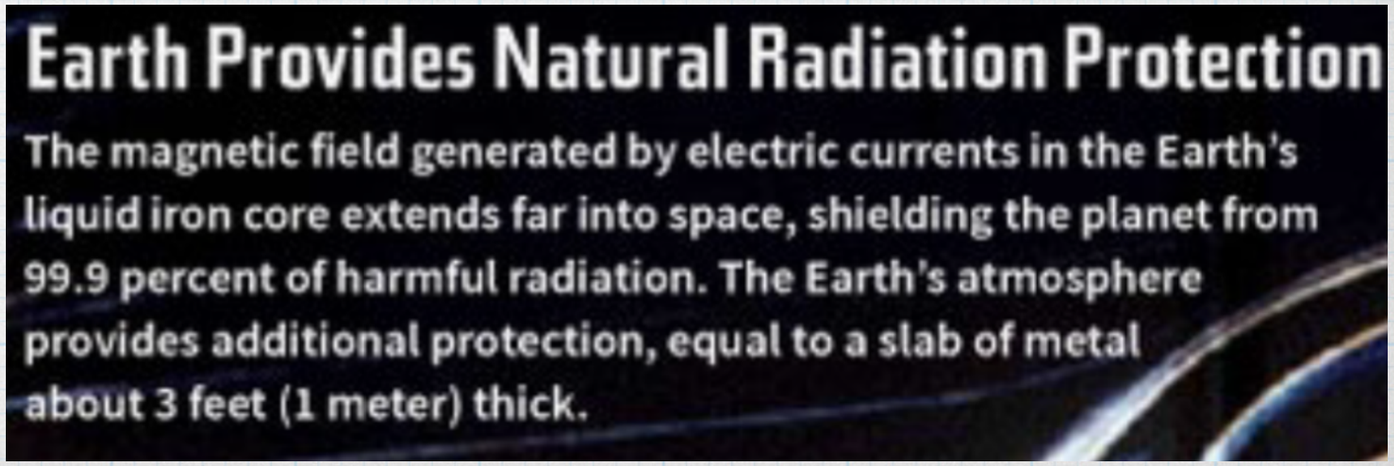
* These particles, travelling at high speeds, tear through DNA molecules, splitting or damaging them. The damage may range from no damage at all, or to death based upon the exposure to the radiation

* This damaged DNA can lead to cancers or other diseases

Is Earth Protected From Space Radiation?

* Yes
* But not entirely, it blocks out 99.9% of radiation, and life on earth is protected from space radiation by the magnetic fields that surround the earth
* The earth naturally reflects some radiation back out to space
* It also absorbs the radiation, warming the Earth





How Does Radiation Pose A Threat To Space Exploration?

* NASA is working hard to send astronauts to mars sometime in the 2030's
* But radiation protection is critical to this mission
* At every moment in space you're being hit by some type of radiation so astronauts need to be protected at all times, which is very difficult to do

Conclusion

* Space radiation is extremely dangerous and is a large threat to any space exploration
* It can be blocked, but the radiation levels increase drastically as soon as you leave Earth's atmosphere because Earth atmosphere has a natural barrier to 99% of the radiation from space