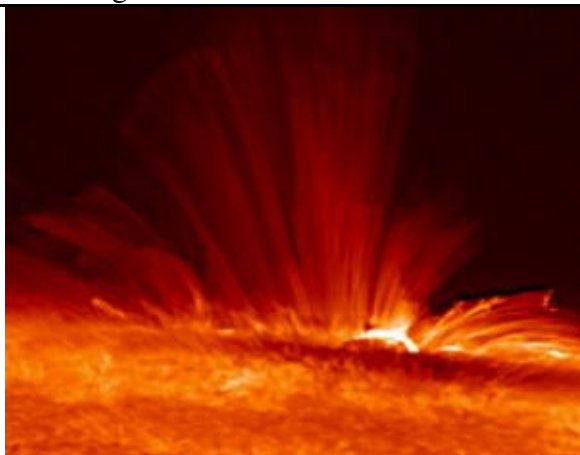


## Lesson 3

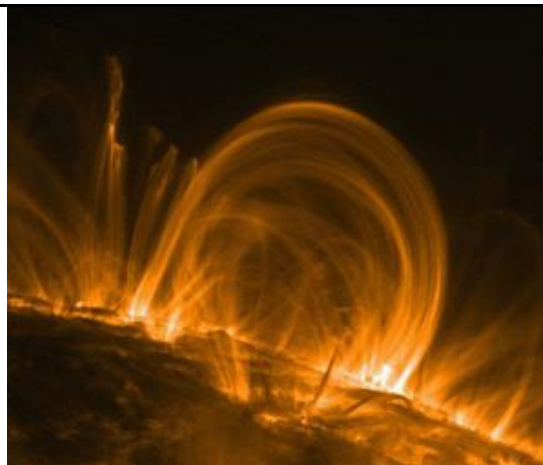
### **Vocabulary Words:**

<b>Pessimistic</b>	1. A tendency to stress the negative or unfavorable or to take the gloomiest possible view 2. The doctrine or belief that this is the worst of all possible worlds and that all things ultimately tend toward evil.
<b>Accumulated</b>	1. to gather into a heap, mass, cover, etc.; form a steadily increasing quantity 2. to mount up; increase
<b>Decline</b>	To cause to decrease or diminish; go down
<b>Indicate</b>	to be a sign of; betoken; evidence; show
<b>Correlation</b>	mutual relation of two or more things, parts, etc.
<b>Detrimental</b>	causing detriment; damaging; harmful.
<b>Analysis</b>	this process as a method of studying the nature of something or of determining its essential features and their relations
<b>Verification</b>	evidence that establishes or confirms the accuracy or truth of something
<b>Theory</b>	In science, an explanation or model that covers a substantial group of occurrences in nature and has been confirmed by a substantial number of experiments and observations. A theory is more general and better verified than a hypothesis.
<b>Corrupted</b>	containing errors or alterations
<b>Connotation</b>	an idea that is implied or suggested

## Sun's Magnetic Fields



This image reveals the structure of the solar magnetic field rising vertically from a sunspot



This solar corona reveals heated magnetic loops

The Sun's Magnetic Fields: Just like the earth, the sun has magnetic fields. While the earth has one magnetic north, and one magnetic south pole, the sun has many. These magnetic fields on the sun can be twice as strong as the magnetic fields on the earth and extend far out into space. Gas rising from the sun's corona interacts with the magnetic field which releases energy and may power solar storms which can affect the earth.

**Cosmic Radiation/Cosmic Rays:** particle energies that bombard the earth from outside its atmosphere are considered cosmic Rays they are made up of mostly protons (90%), helium (9%), and electrons (1%). Solar cosmic rays come from the sun and have similar energies as the sun itself.

**Supernova:** A stellar explosion that causes a burst of radiation that can be seen for several weeks or months. It occurs at the end of a star's life when the nuclear fuel is exhausted and the star collapses in on itself. Often the amount of radiation put off by a super nova is more than the sun will give off in its lifetime. One of the most widely observed supernova produced the Crab Nebula.

**Solar Flares:** Intense short bursts of energy lasting minutes to hours. The primary source of solar Flares appears to be caused by tearing and reconnection of the sun's magnetic field.

**Solar winds:** Streams of charged particles escape the sun's gravity. It can cause geomagnetic storms, aurora borealis, and plasma tails on comets. These storms have the ability to knock out power grids on earth.