

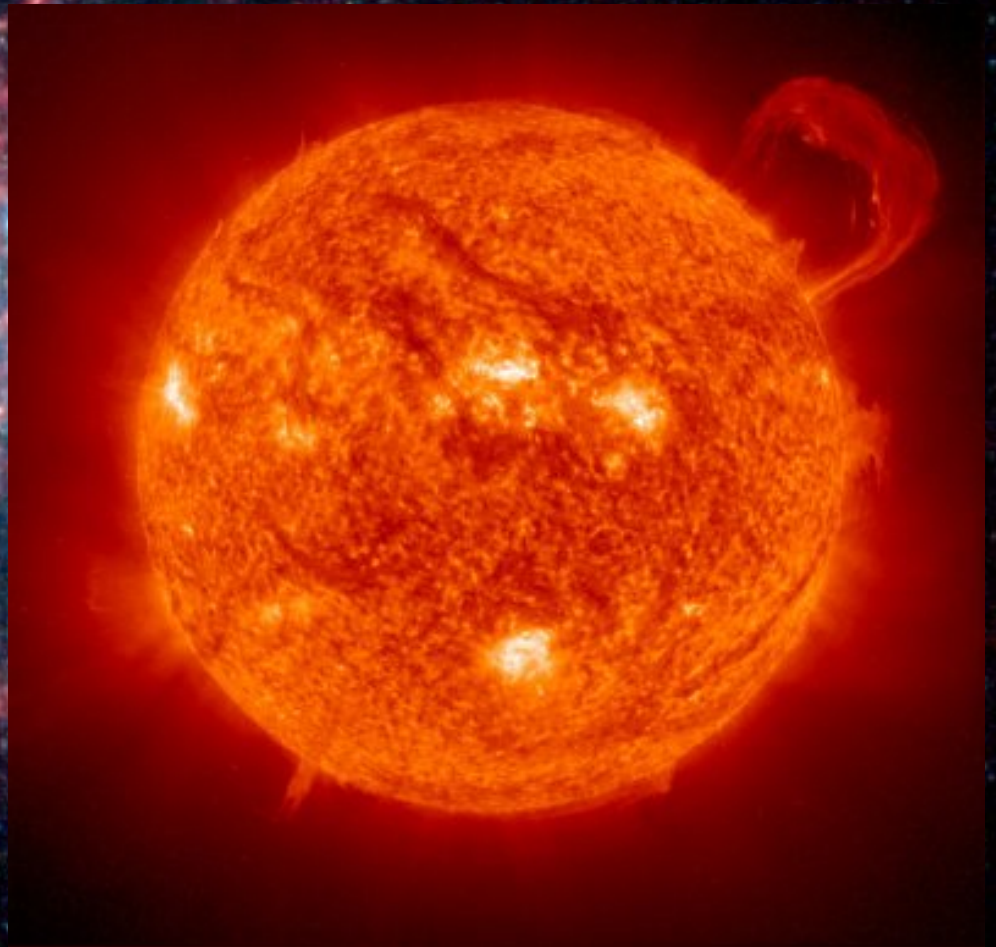


The Solar System and Universe

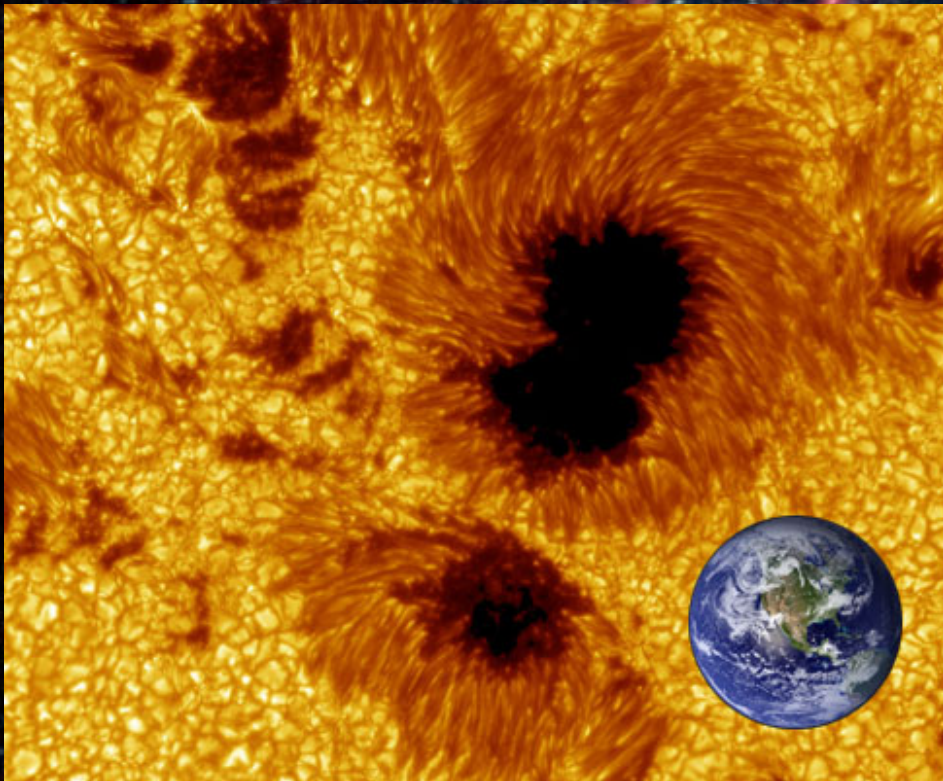
By Aldo Hernandez

Solar Activities

- **Sunspots**
- **Solar Flares**
- **Solar winds**
- **Nuclear Fusion**

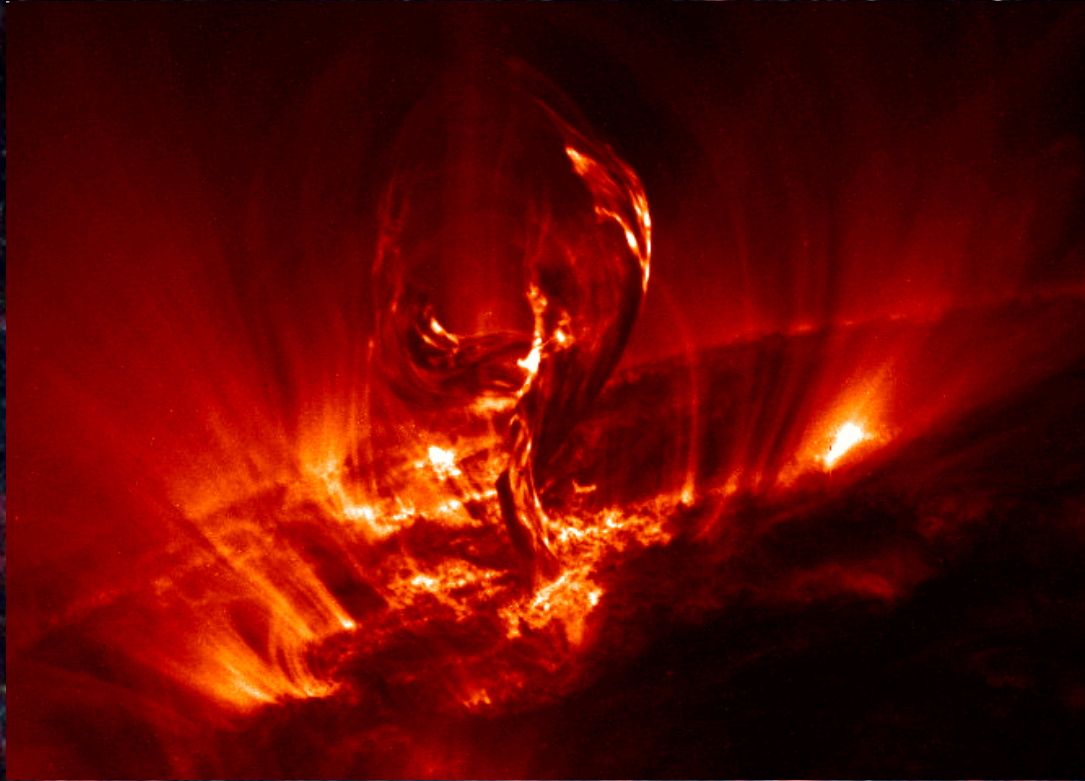


Sunspots



- dark blemishes found on the surface of the Sun
- They are areas of intense magnetic activity and lower temperature on the Sun's surface.
- Some grow larger than the Earth and last for a month or more
- The largest spots often occur in pairs and are surrounded by several smaller spots.
- the number of sunspots increases and decreases in a cyclical or periodic way, creating a cycle of about 11 years

Solar Flares and Solar Winds



- **Solar flares** are explosions within the Sun's corona and chromosphere
- appear as a sudden brightening above a sunspot or sunspot cluster
- usually only brief outbursts, but the energy they emit is enormous

- energy is carried in the **solar winds**, which stream from the Sun through the entire Solar System, carrying ultraviolet waves, X-rays, radio waves and fast-moving atomic particles
- Solar flares send rush of charged particles toward Earth.
- These tend to cluster around the magnetic poles, where they collide with molecules and atoms in the ionosphere, releasing energy that is observed as colored bands of light.
- At the North Pole, these lights are called the *aurora borealis*, or *Northern Lights*. At the South Pole, they are called *aurora australis*, or *Southern Lights*.



Nuclear Fusion



- All stars generate energy through nuclear fusion, or the fusion of atomic nuclei
- releases large amounts of energy
- Fusion in the Sun occurs principally through a nuclear reaction called the proton-proton chain where four hydrogen protons slam together to form the nucleus of a helium atom.
- Nuclear fusion within stars, and the subsequent formation of larger and larger nuclei, produced nearly all the naturally-occurring elements of the universe.

The Milky Way

- It is a spiral galaxy.
- Our solar system is located near the edge of it, on the Orion arm
- Our Sun is about 26,000 light years from the center of the Milky Way
- The Solar System revolves around the dense central hub of the Milky Way
- It takes our Solar System approximately 200 to 250 million years to make one revolution around the Milky Way





THE END