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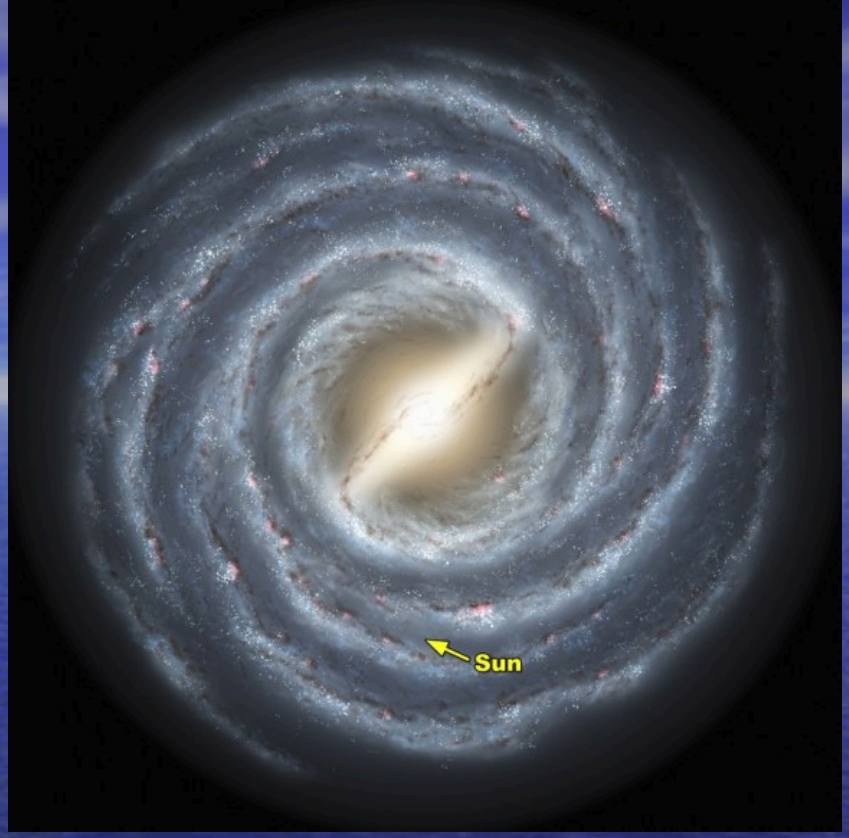
The Sun FACTS

- The sun is a star
- It is yellow and is "middle aged".
- It is 5 billion years old
- It is 93 million miles away from the Earth.
- The sun will die in about 5 billion years.

- 1,300,000 Earth's can fit in the sun (that's 1.3 million!)
- Rotation: 25 days
- Revolution: 230 million years to orbit the galaxy (galactic year)

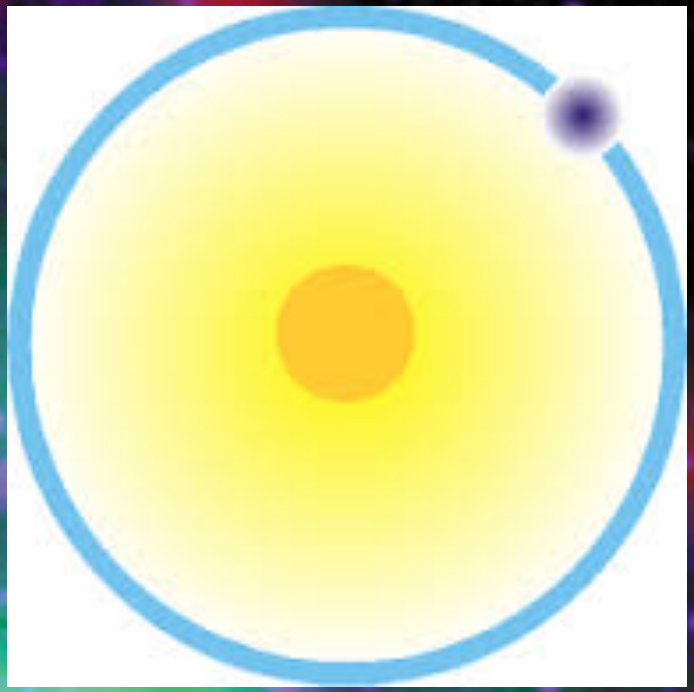


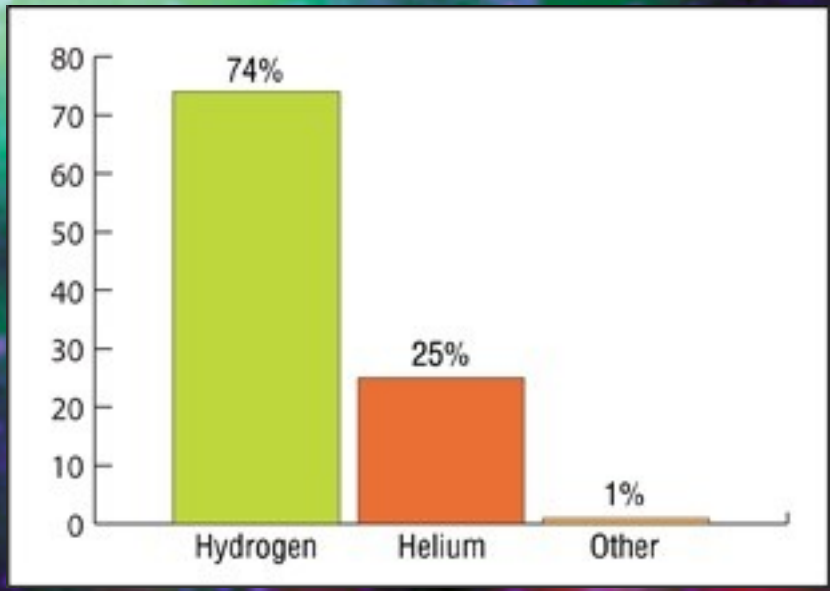
So, a little math… the solar system is 4.5 billion years old. 4,500,000,000 divided by 230,000,000 is: 19.5

So, the sun has gone around the milky way galaxy 19.5 times

Hydrogen

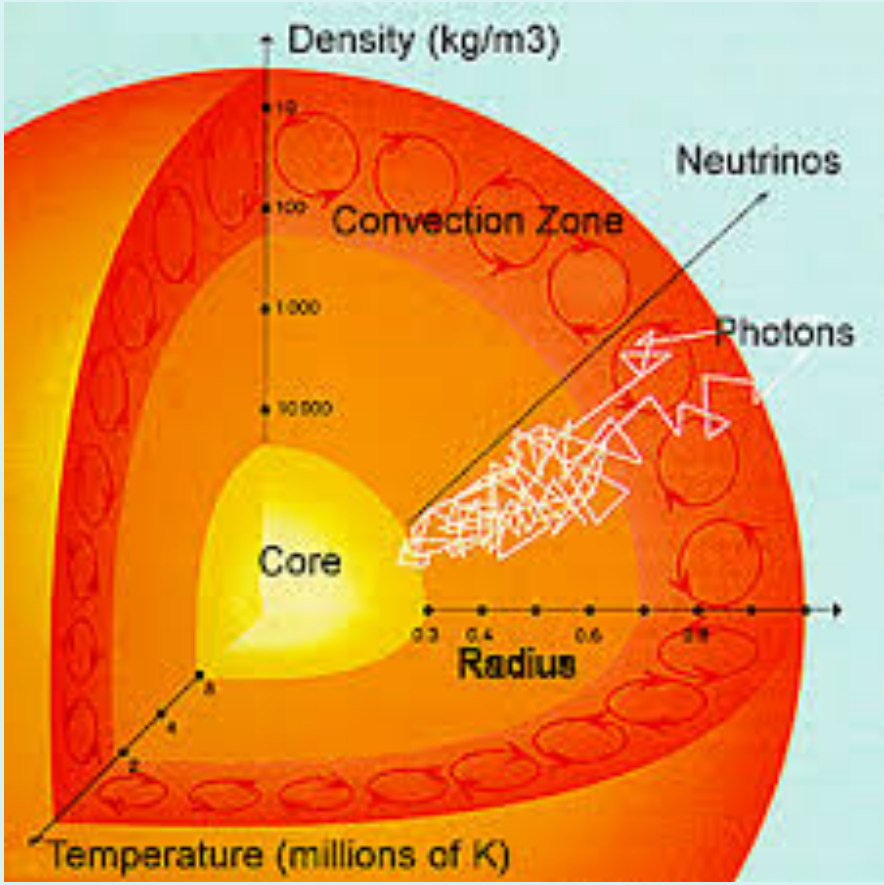
- Hydrogen is the most abundant element in the universe.
- Hydrogen is in a plasma state
- 74% hydrogen, 25% helium
- Hydrogen fusion (nuclei combined)





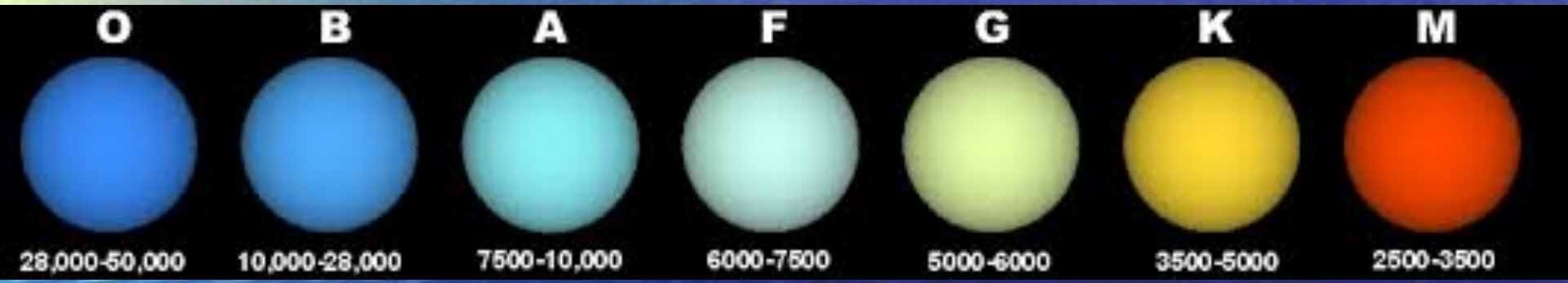
Light and the Sun

- A photon is a massless particle (It is light)
- It travels 186,282 miles per second.
- It takes 500 seconds for a photon to travel from the sun to your eye.
- When you look at the sun, you are seeing it as it was 500 seconds ago. (500 seconds old).



So, a little math. The sun is 93 million miles away. Light (photons) travel 186, 282 miles per second.
93,000,000 divided by 186,282 is exactly 500 seconds – so 8.333 minutes

The color of a star is determined by its temperature



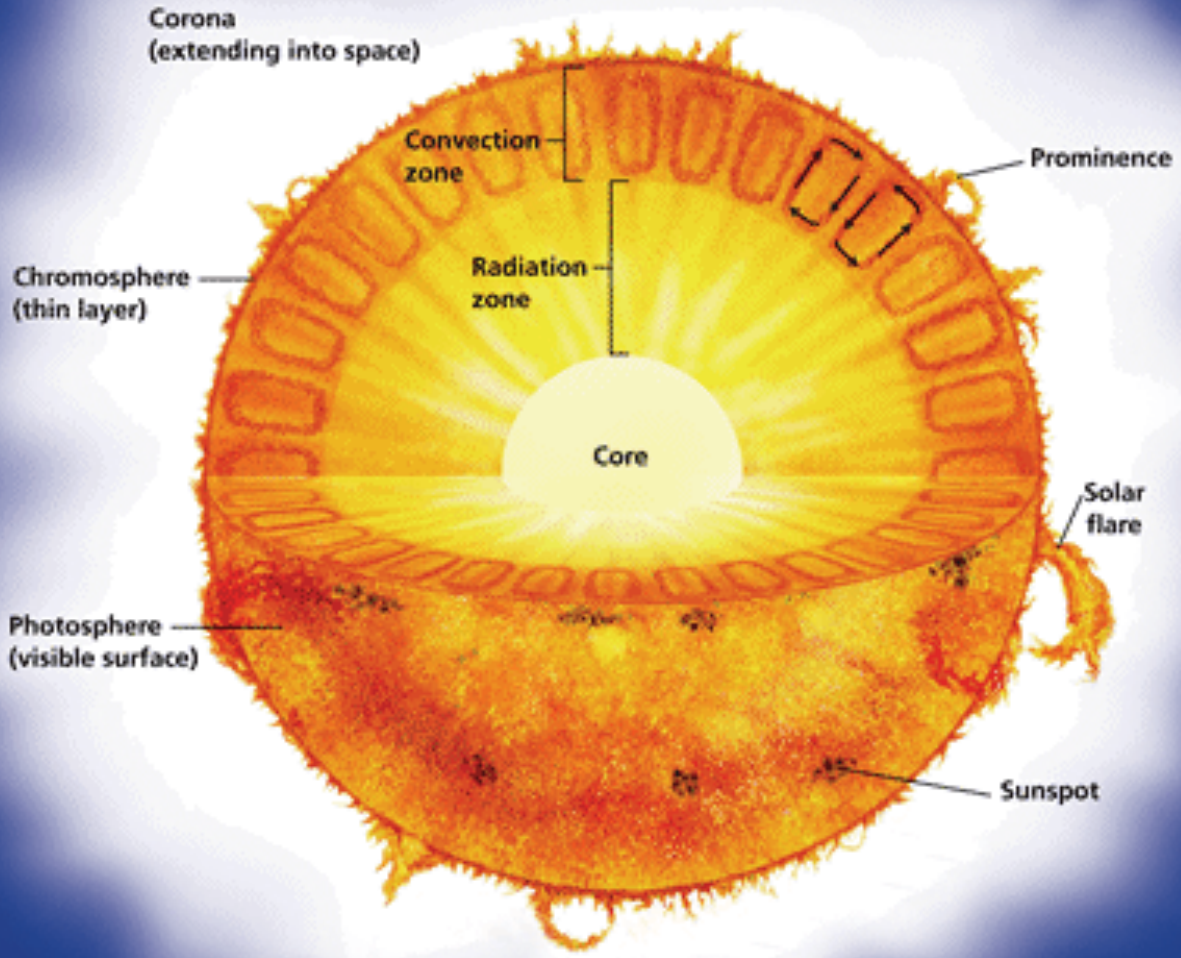

Approx. size of Earth

The Regions of the Sun

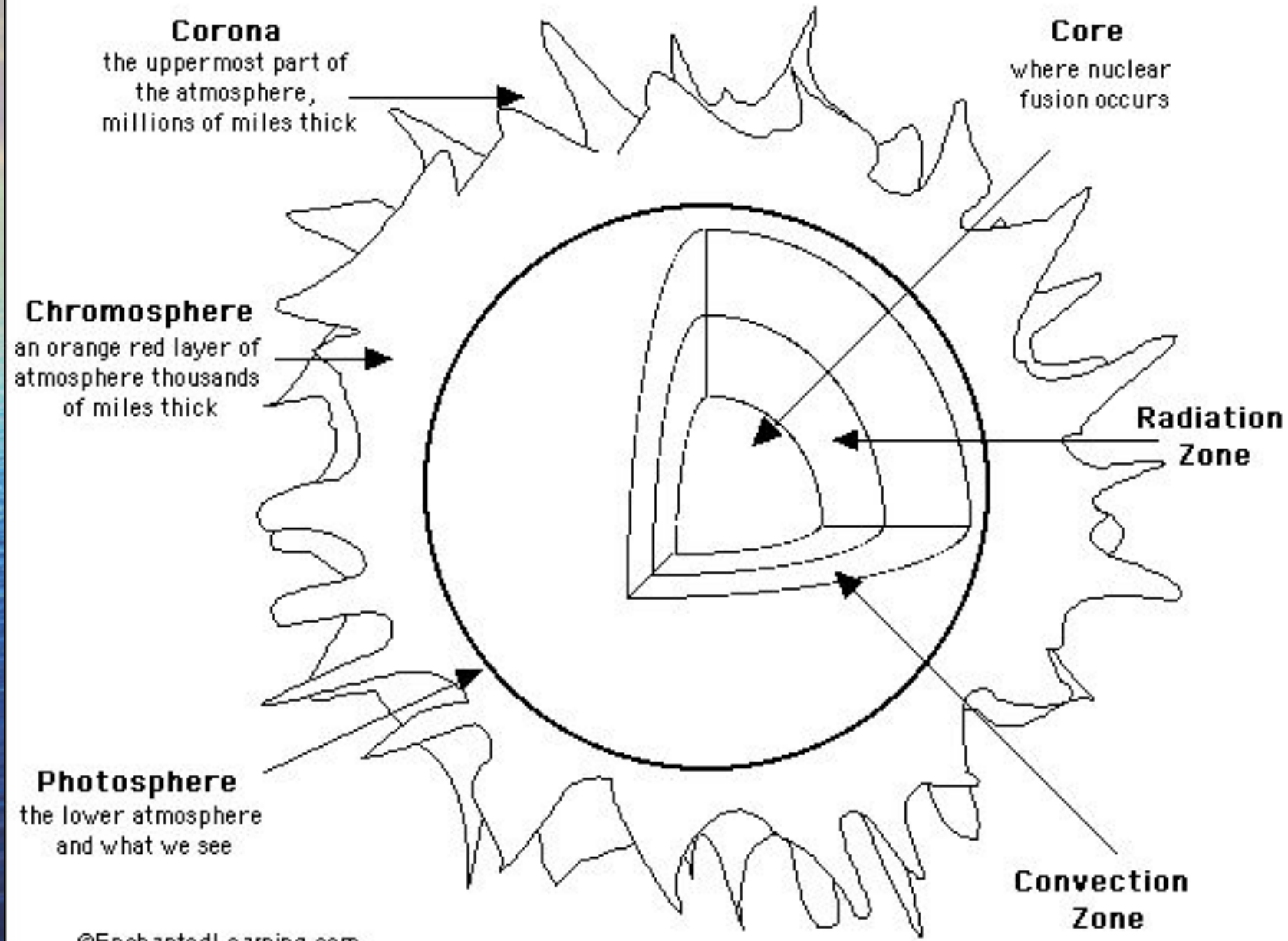
- The Photosphere
- The Chromosphere
- The Corona
- The Solar Wind
- The Core
- The Radiative Zone
- The Convection Zone

Regions of atmosphere

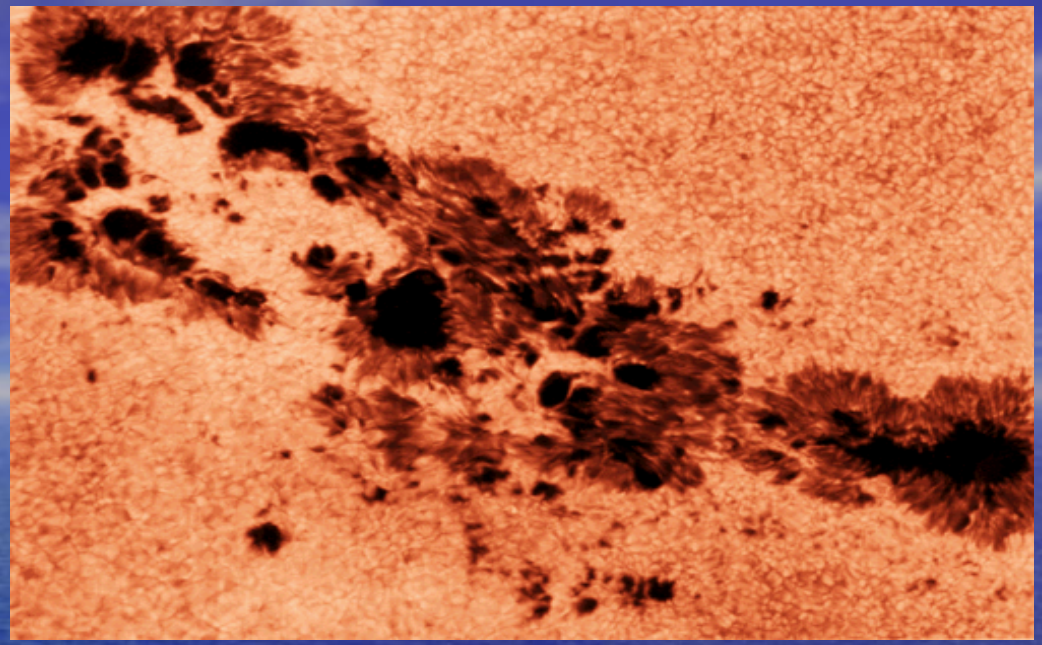
Solar interior


Corona
(extending into space)
Convection
zone
Prominence
Chromosphere
(thin layer)
Radiation
zone
Core
Solar
flare
Photosphere
(visible surface)
Sunspot

Structure of the Sun

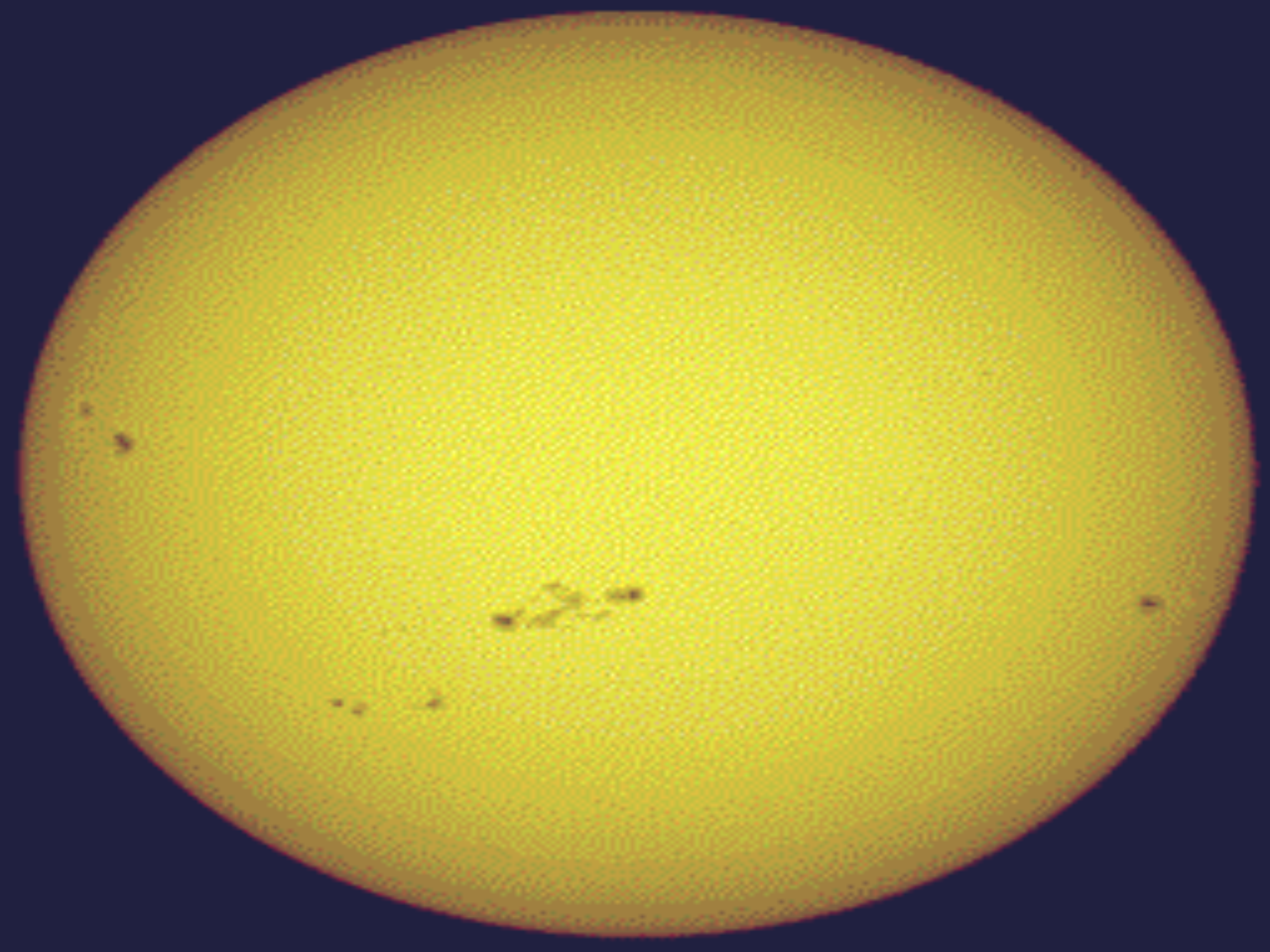


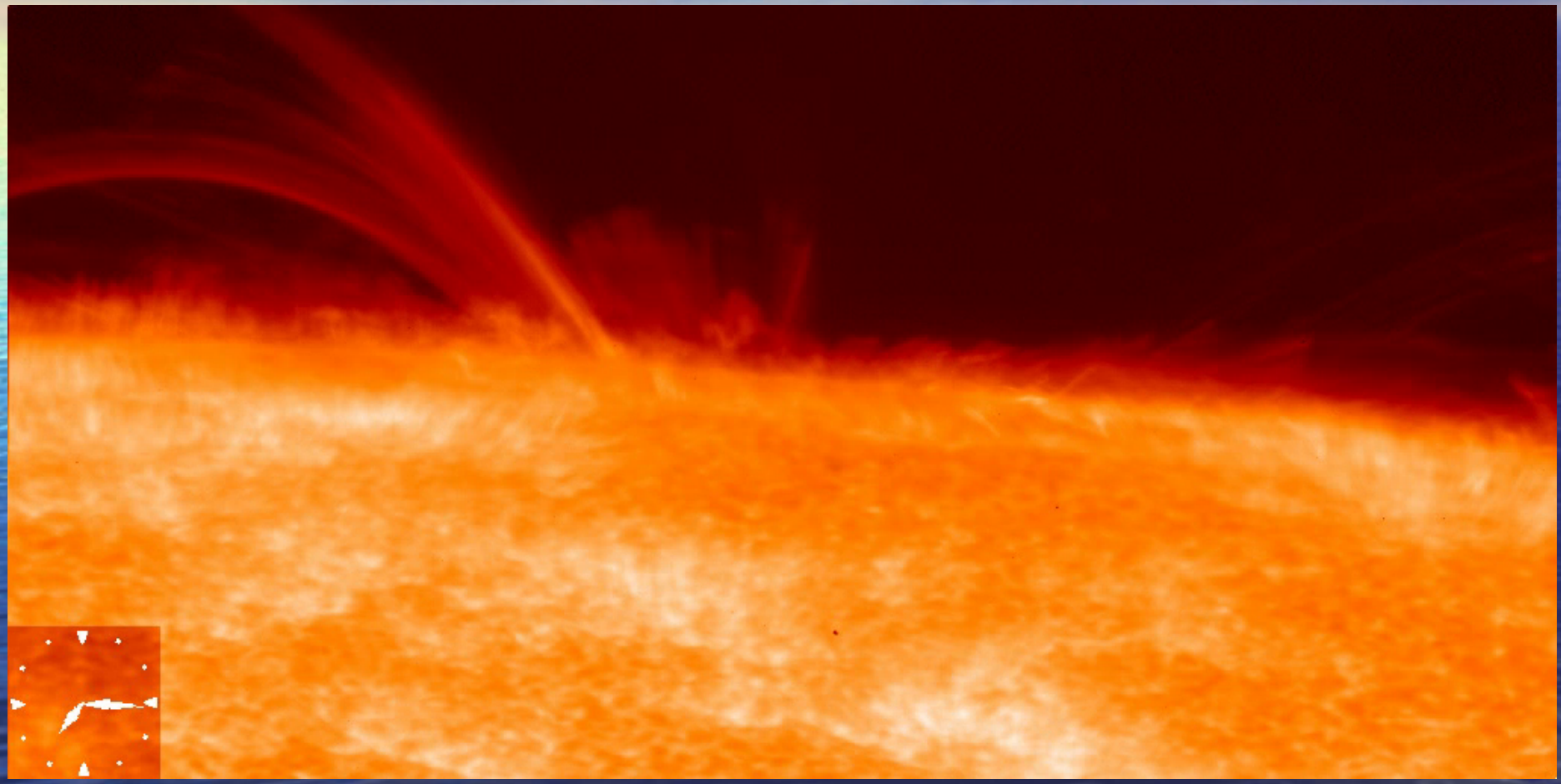
Sun Spots

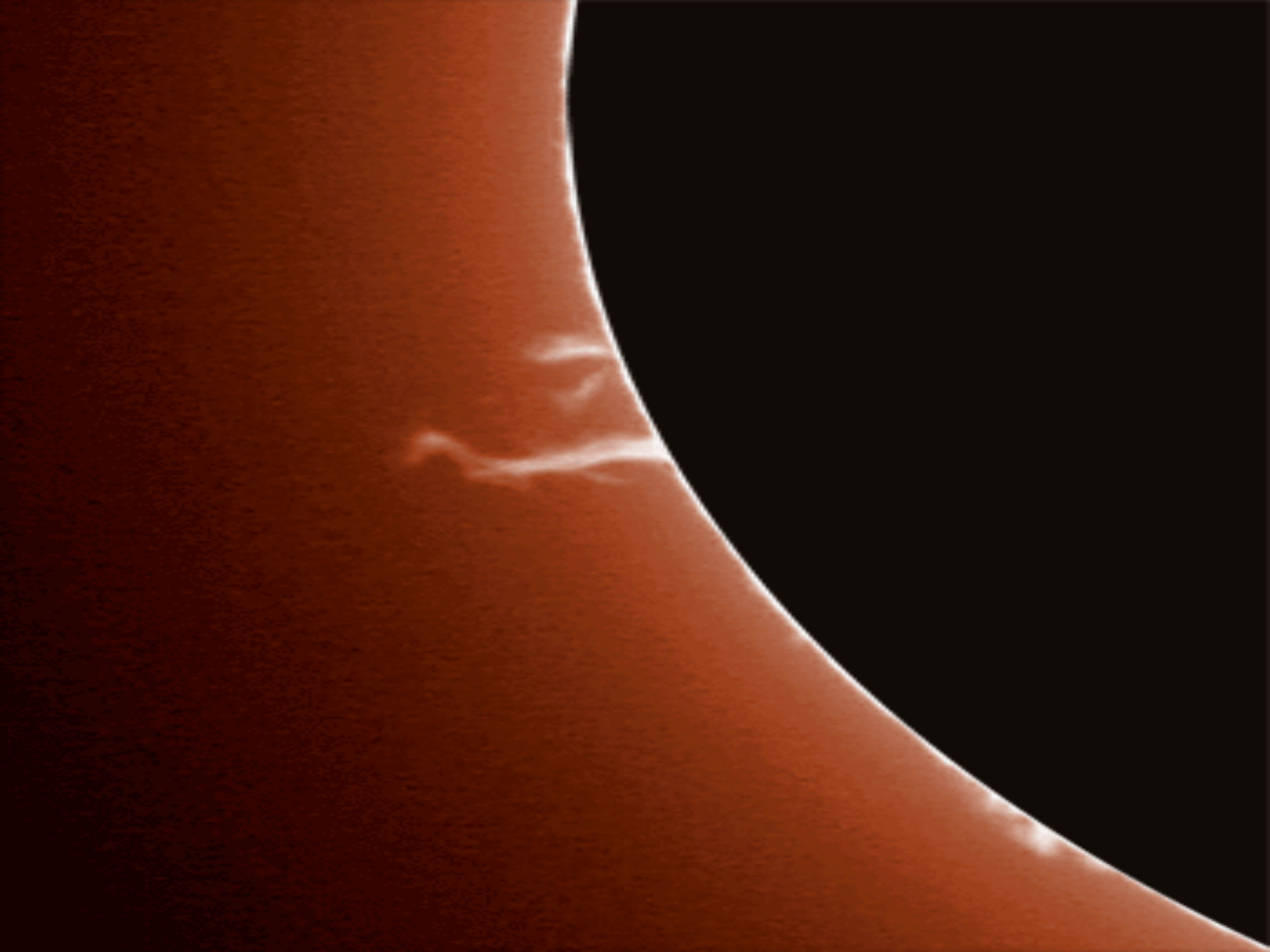


- are darker, cooler areas.
- Sunspots are caused by an overlapping of the Sun's magnetic field
- Usually larger than the Earth.
- They have discovered that these sunspots

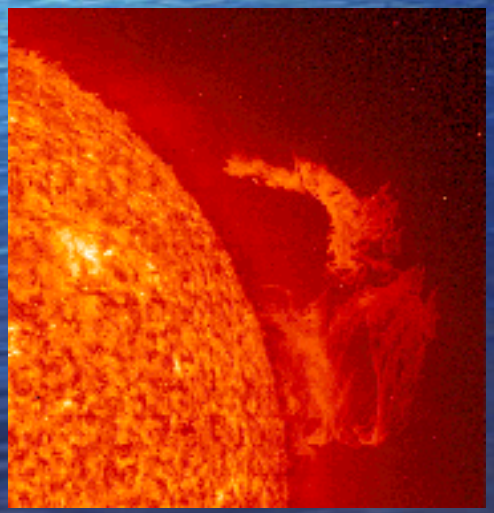

Notice the dark cooler sun spot

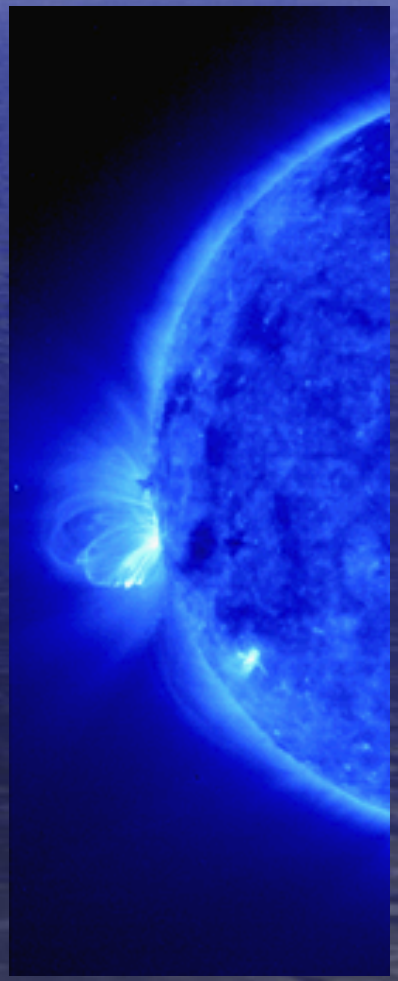




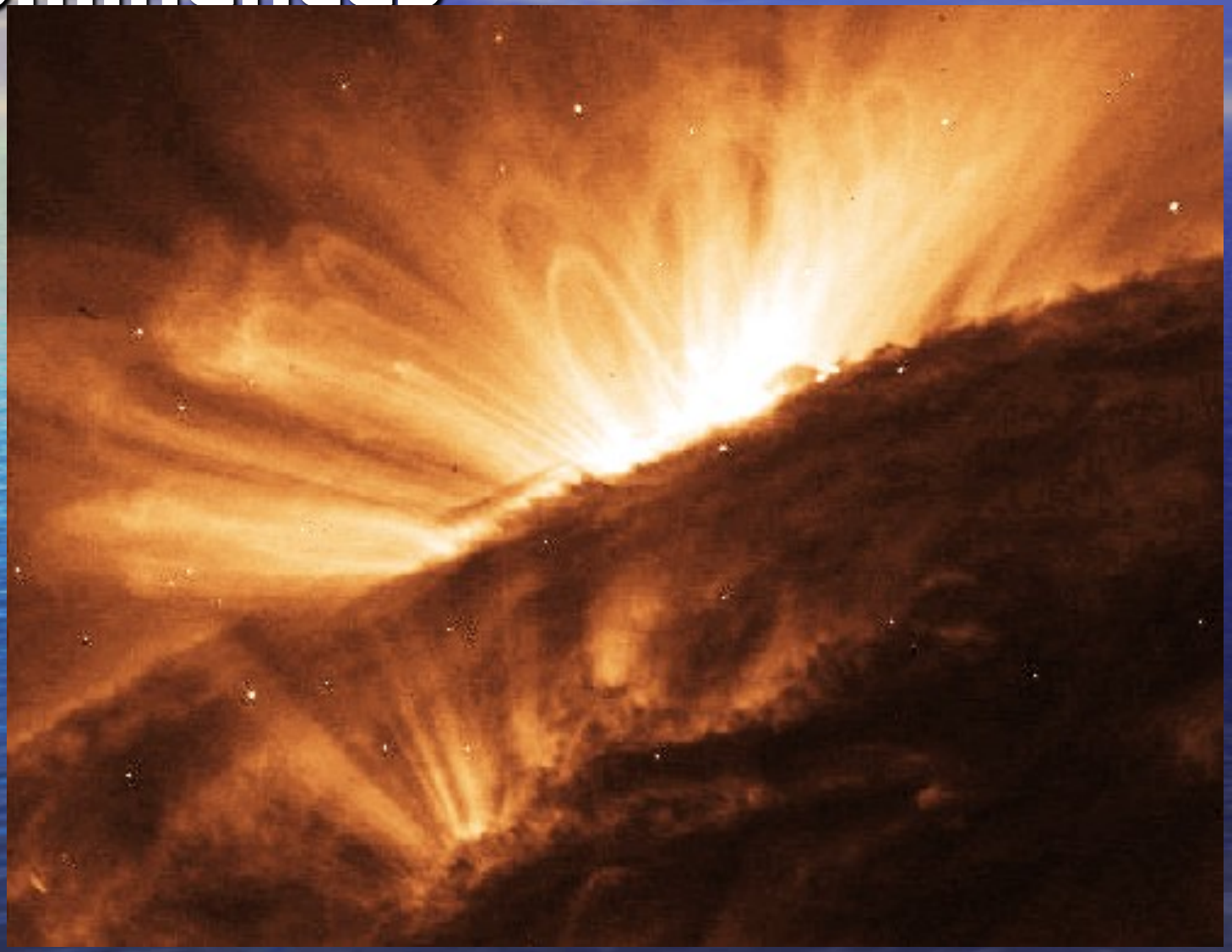


Prominences: arcs of gas extending millions of miles into the Corona…… they are not flames… the Sun is not burning !!!!



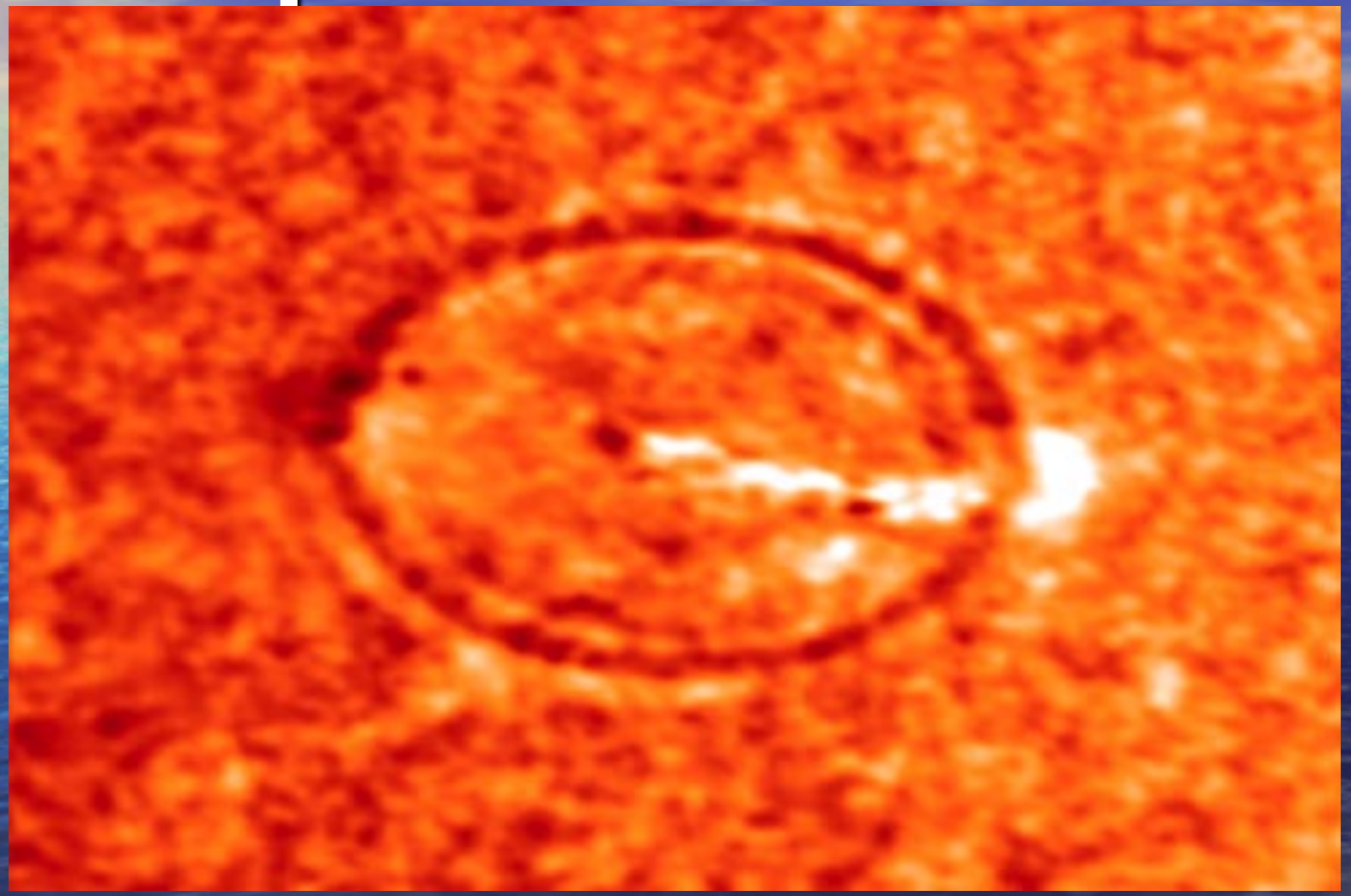


Extreme UV shows “Loop” prominences



Prominence photographed by the TRACE satellite.

An 11th Magnitude "Sunquake"

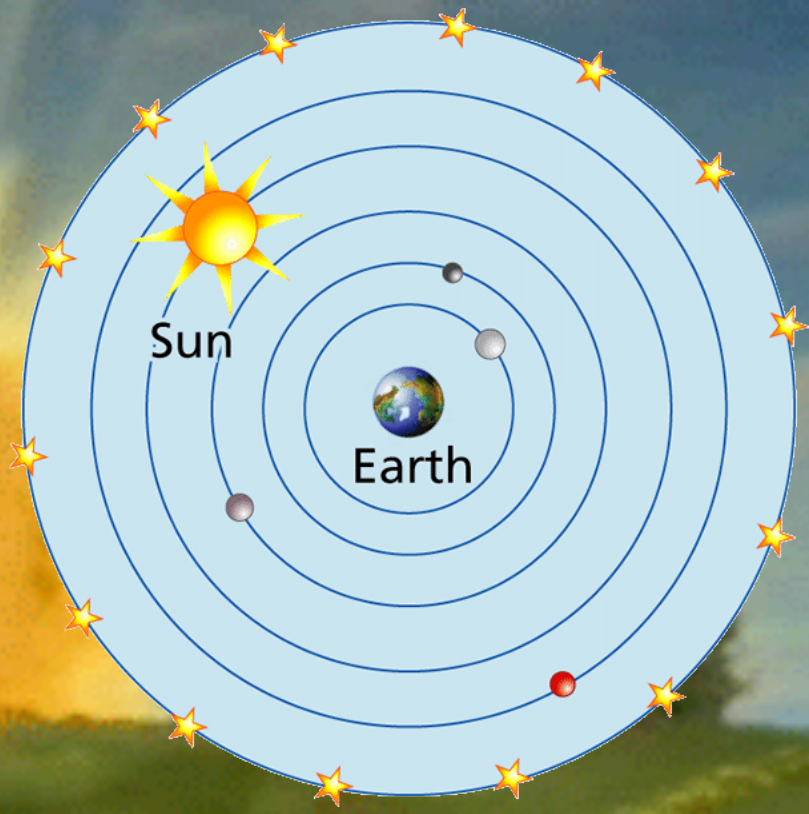


Corona

- Extends million of miles
- Temperature: 3 million K (Not Hot)
- Visible during a Total Solar Eclipse

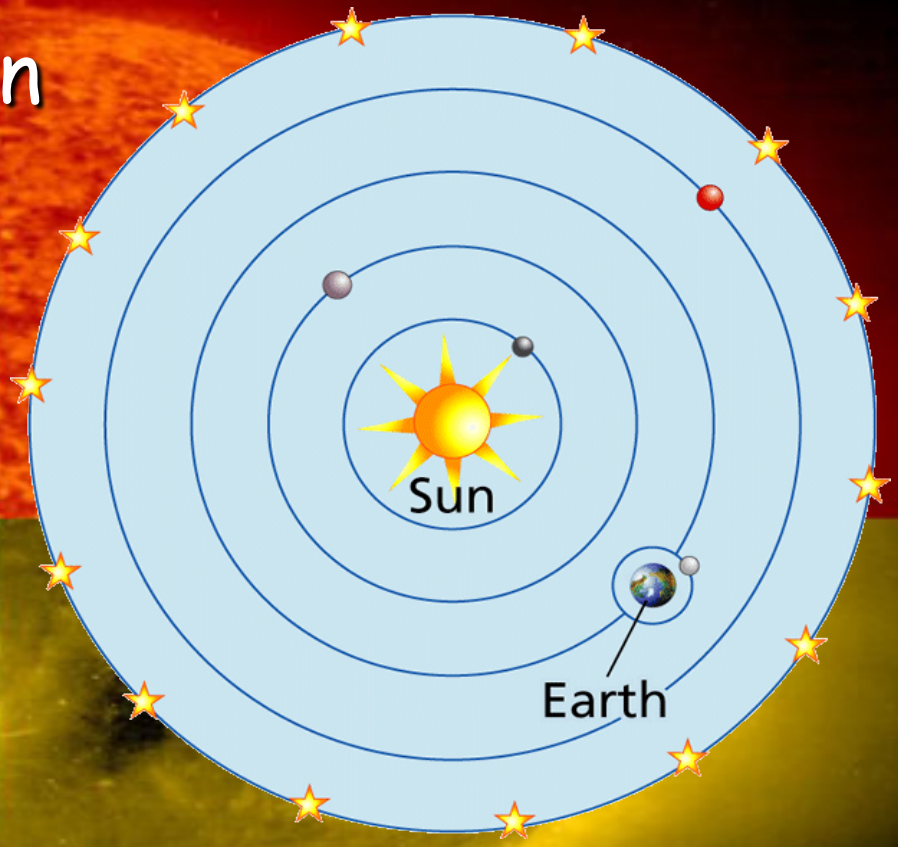
Earlier views of the sun

- 150 A.D. Ptolemy created the belief that the Earth was the center of the Universe. The Earth was the center of the heavens and the church loved this idea. GEOCENTRIC



New view of the sun

- Nicolas Copernicus in 1543 (not too long ago) created the belief that the sun was the center of the universe, and that Earth was not the center, but it revolved around the sun. HELIOCENTRIC



Today's views

- Galileo Galilee proved that the sun was the center of the universe, by predicting certain events with the stars and the sun and the moon in the 1600's.
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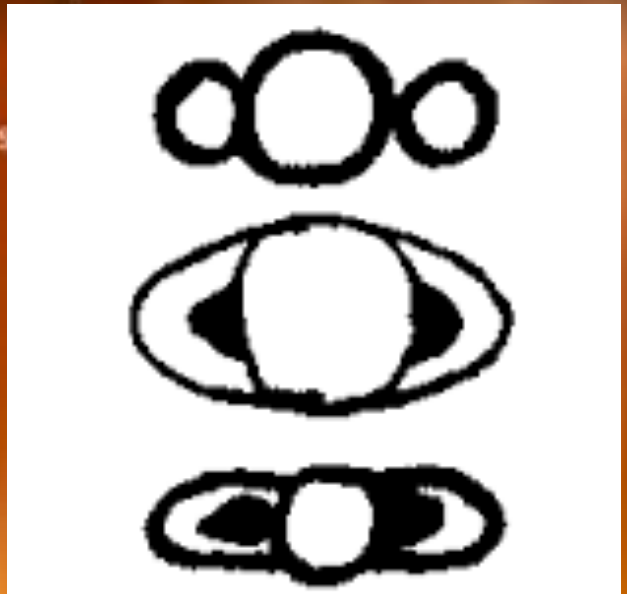
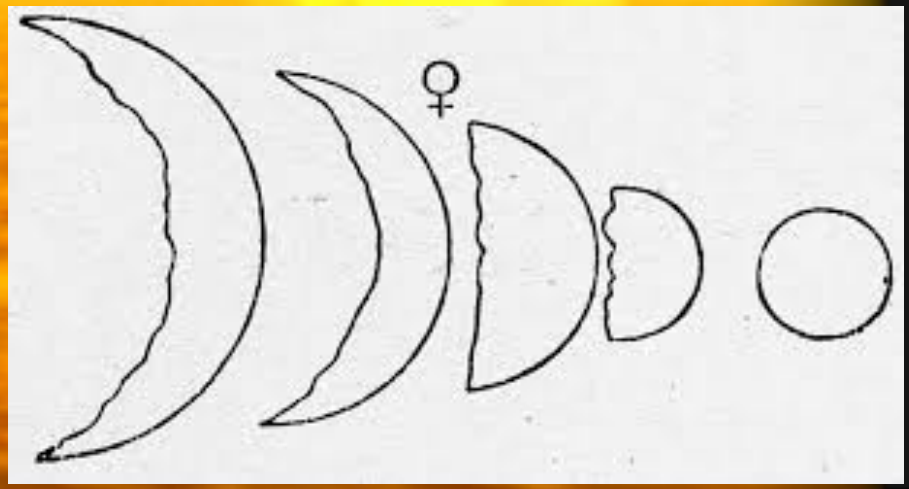
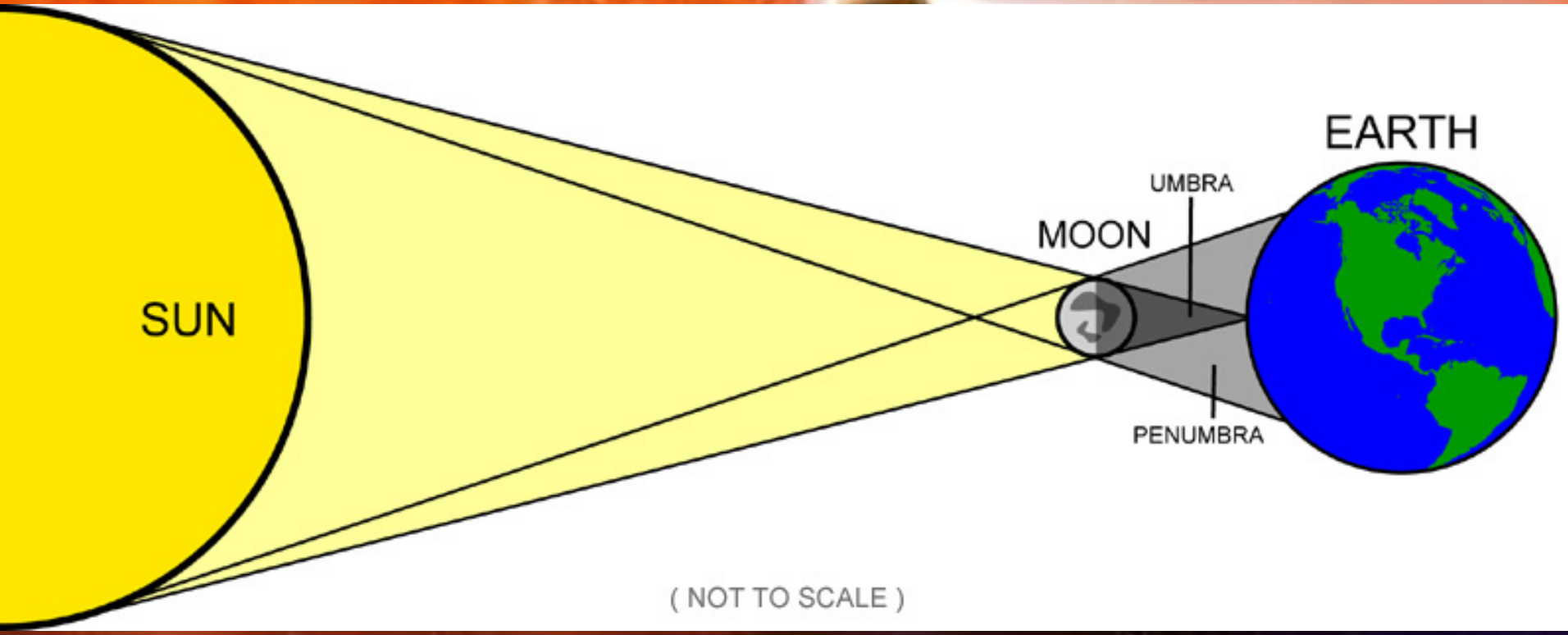


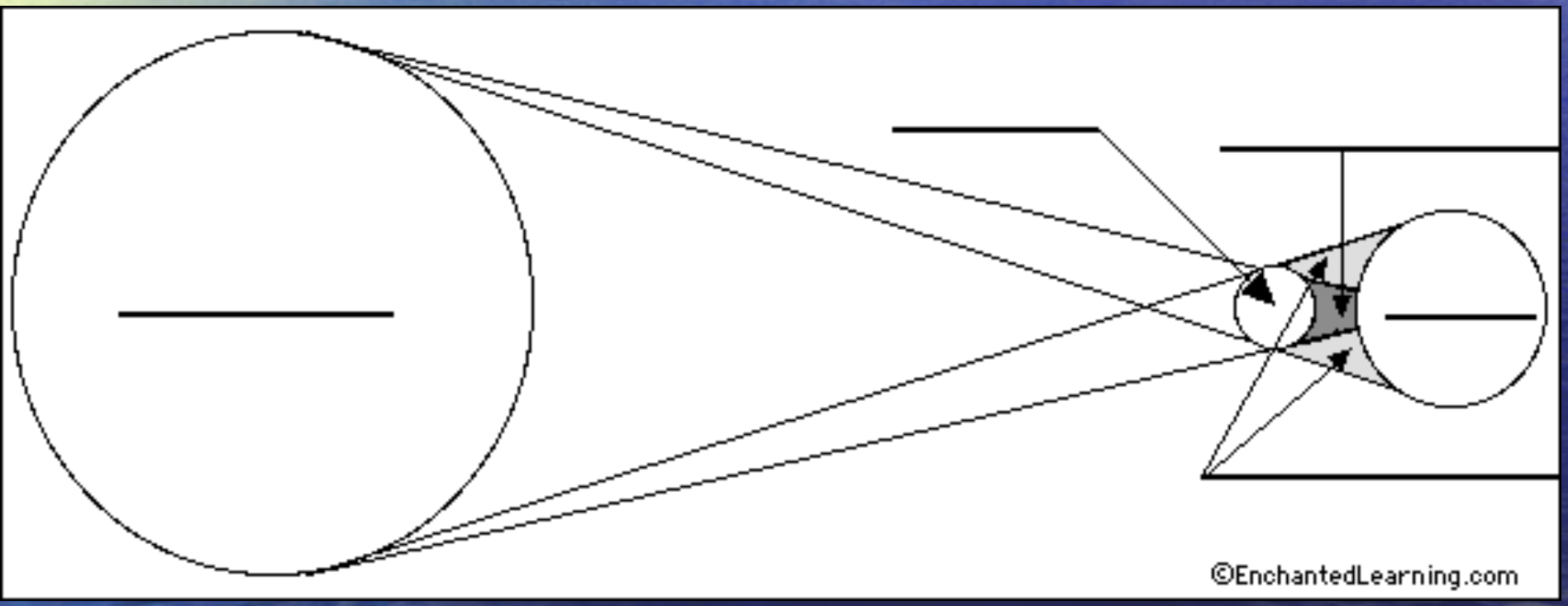
These are sketches of three drawings Galileo made of Saturn through his primitive telescope. ("New Worlds," Couper & Henbest, p.86.)



Solar Eclipse

- A solar eclipse is <u>when the NEW moon is blocking the light on Earth.</u>
- In order: sun, NEW moon, and Earth.

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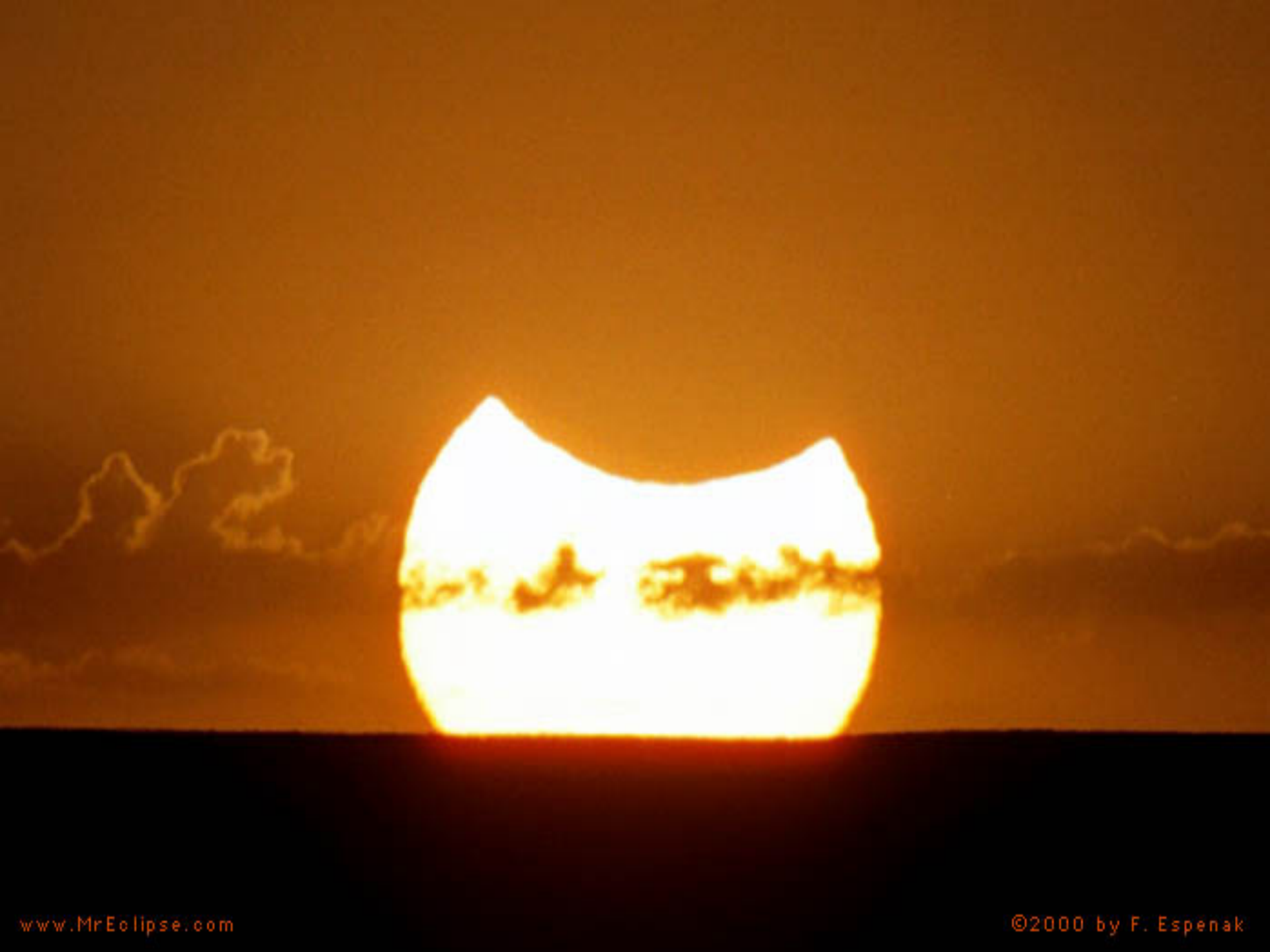
www.MrEclipse.com
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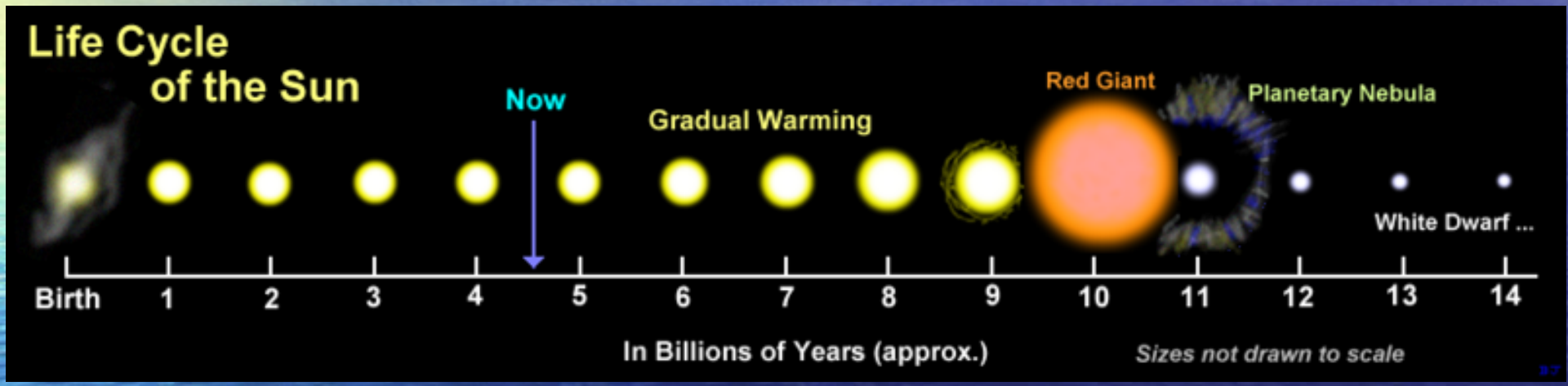
Will the sun die?

- The fuel for the sun is hydrogen, and eventually it will run out of fuel.
- It has enough fuel to last for about another 5 billion years.
- When it runs out of fuel, it will stop shining as a bright yellow star.
- The sun will become a red giant and grow so big that it will devour all the planets in our solar system.
- It will eventually become a white dwarf.

The Fate of the Sun

The fate of a star is determine by its mass

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