# What's Going On?

**Checking In**

**Minds on** 5 Years of Sol

**Action!** The Layers of the Sun

**Consolidation** Fill it In, Fill it In

**Learning Goal - I will be able to identify the key features of the Sun, and explain how the Sun affects the Earth.**

Checking In

# Housekeeping

## Minds on

# Five Years of Sol

Nasa's Solar Dynamics Observatory (SDO) has been capturing images of the Sun more than once every second for the past 5 years.

On February 11, 2015 NASA released a video showcasing highlights from the last 5 years of sun watching.

## Minds on

# Five Years of Sol

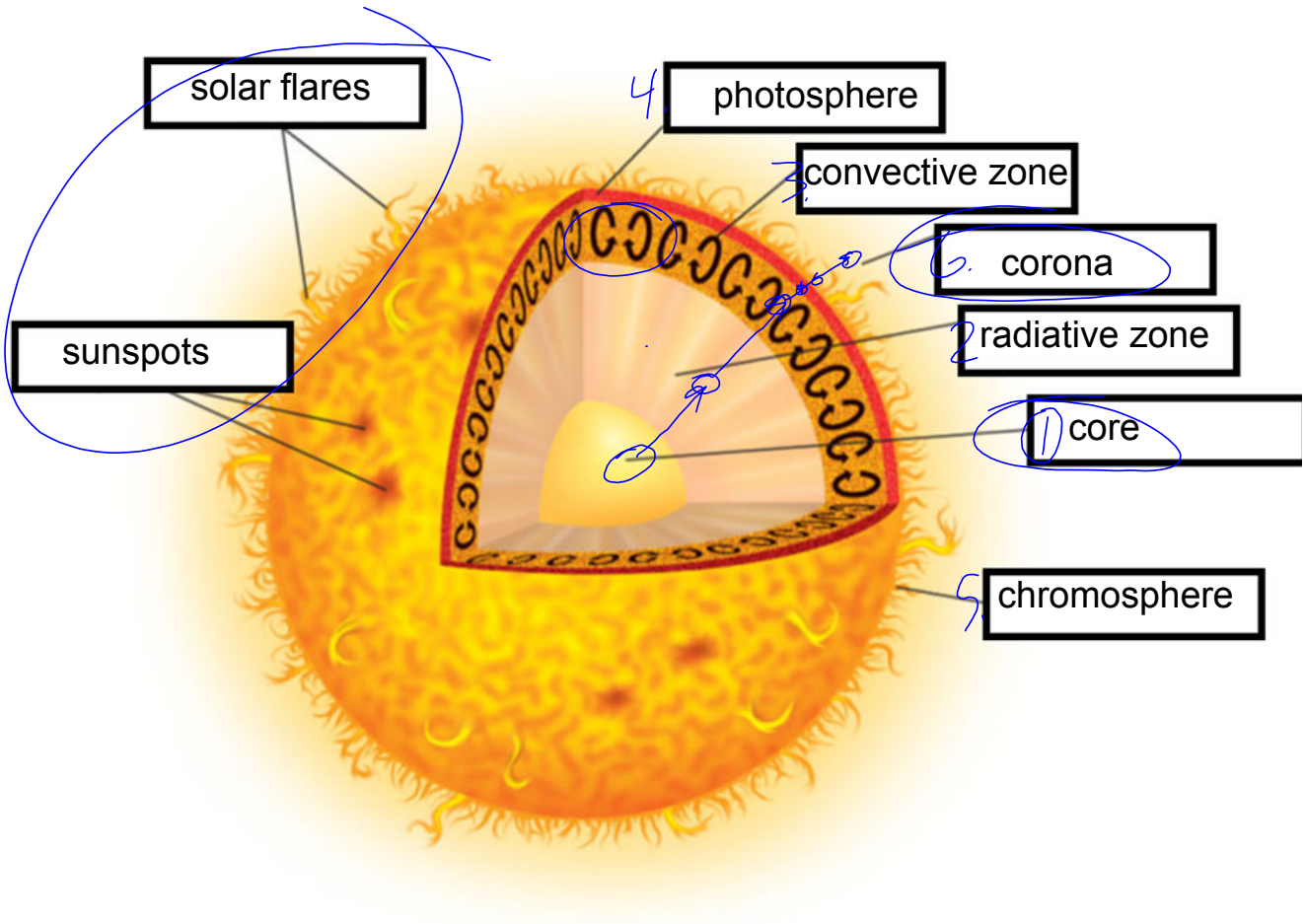
Can you name any of the things you saw in the video?

Sun

Mercury

Solar Flares

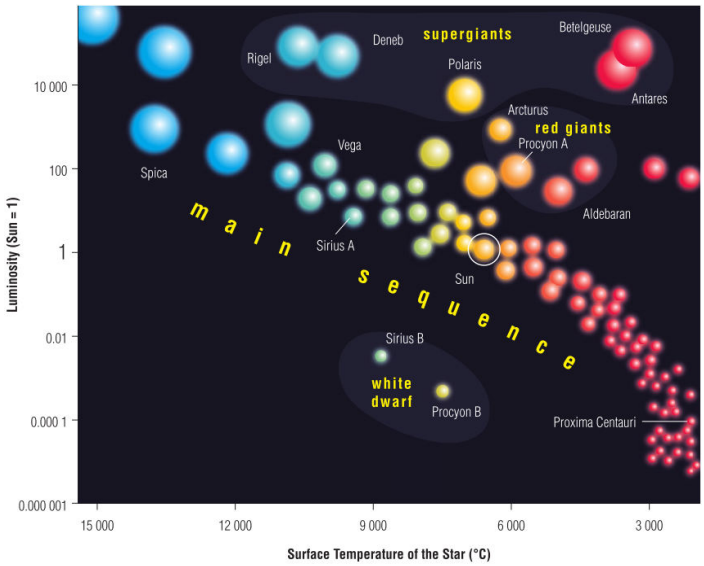
Sunspots


solar flares
sunspots
photosphere
convective zone
corona
radiative zone
core
chromosphere

## Minds on

# Our Sun

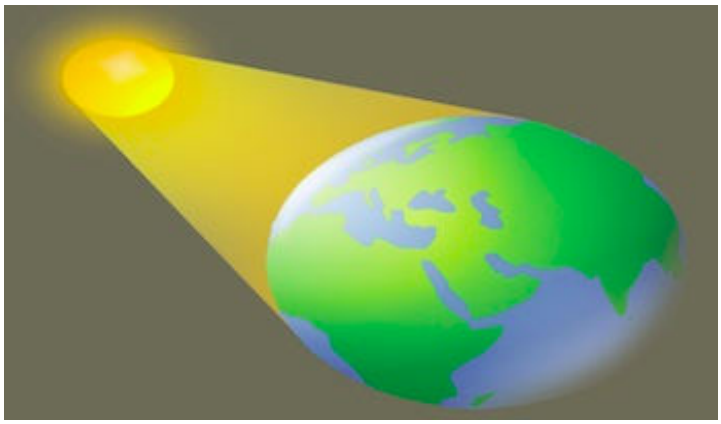
Our sun is a medium-sized star, and is the centre of the solar system. It formed inside a nebula and began shining approximately 5 billion years ago. Our Sun may continue to shine for another 5 billion years.



## Minds on

# Our Sun

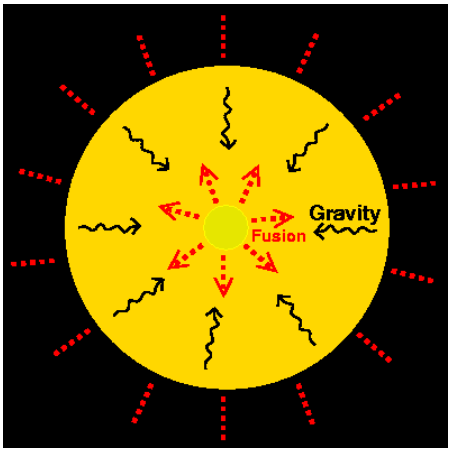
The sun emits energy in the form of heat, light and other types of radiation including ultraviolet radiation.



## Minds on

# Our Sun

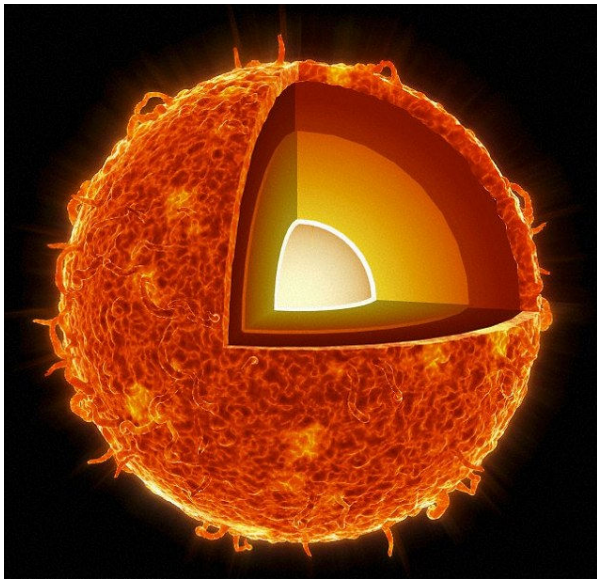
The Sun is composed mainly of hydrogen and helium, and produces energy through the process of nuclear fusion at its core.



## Minds on

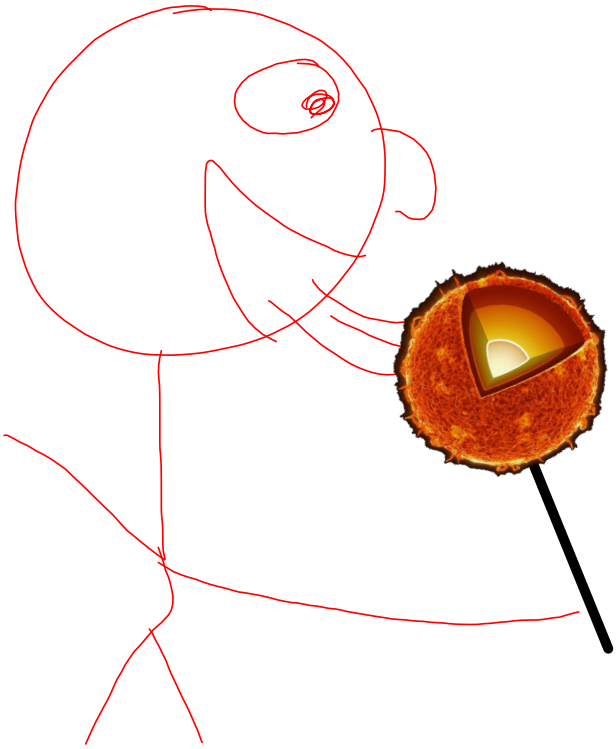
# Our Sun

The Sun has 6 layers. Starting from the centre and moving outwards, the layers are: the core, the radiative zone, the convective zone, the photosphere, the chromosphere and the corona.



## Action!

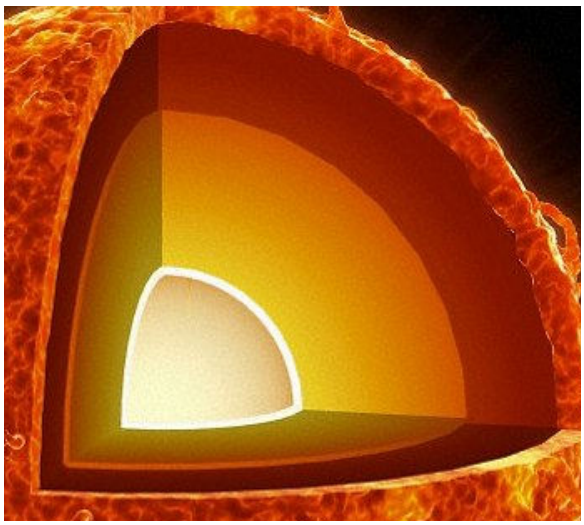
# The Layers of the Sun



## Action!

# The Core

The innermost layer of the Sun and the site of nuclear fusion. The core is an area of very high pressure where temperatures can reach 15 million °C.

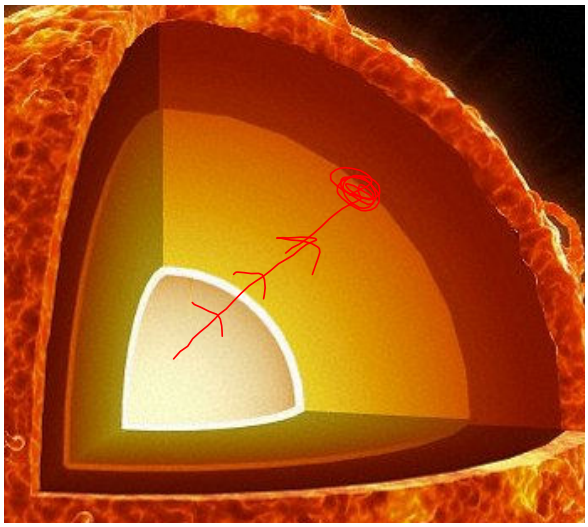


## Action!

# The Radiative Zone

Surrounds the core and extends three quarters of the way to the surface.

Heat and light emitted from the core move through this layer. Light takes at least 100,000 years to travel from the core through the radiative zone.



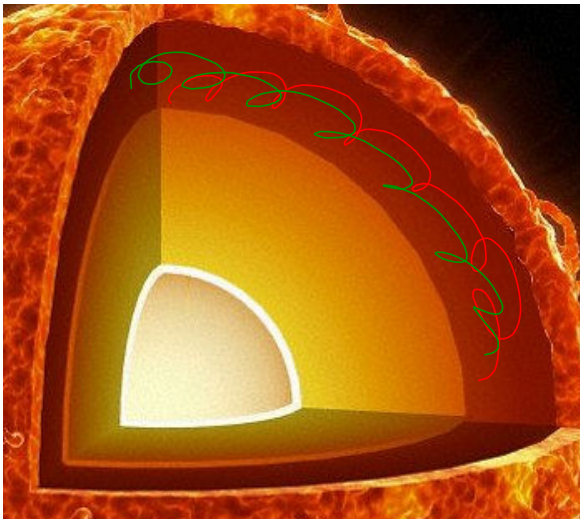
## Action!

# The Convective Zone

Outside the radiative zone. plasma

circulates here and bubbles towards the surface, carrying

energy.



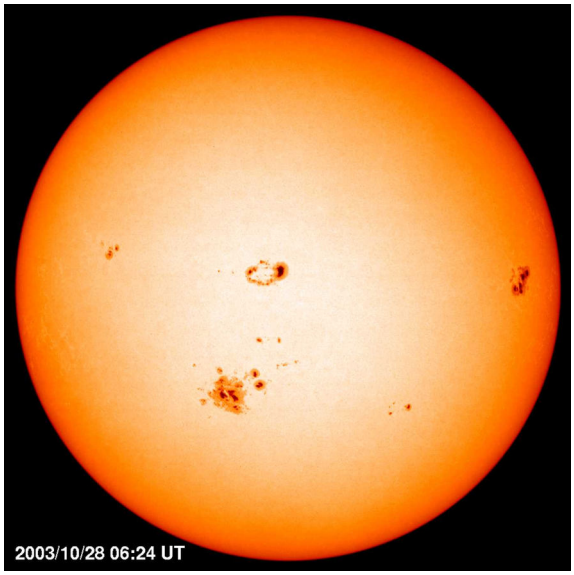
## Action!

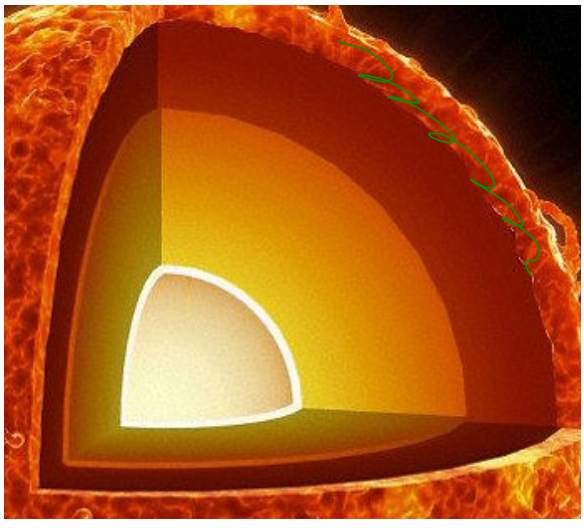
# The Photosphere

Considered the boundary between the inside and outside of the Sun.

This is the part that we see from Earth and gives the sun its yellow colour.

The lowest temperatures at this layer are 2500 °C.



## Action!

# The Chromosphere

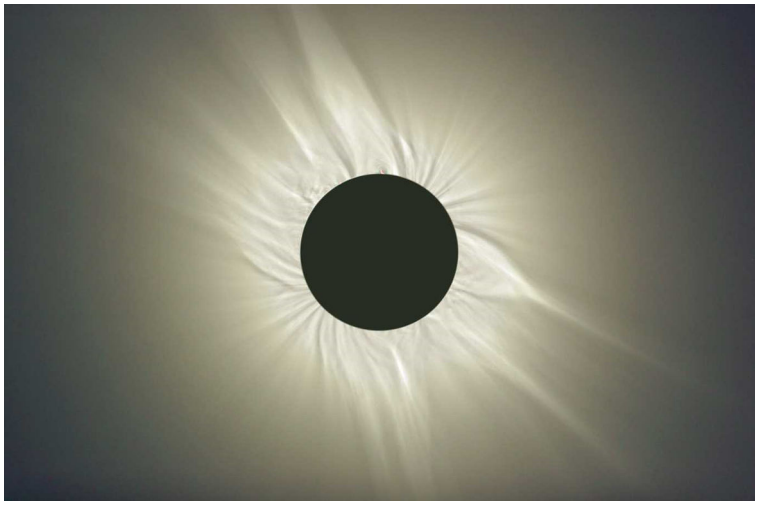
The thin layer above the photosphere.

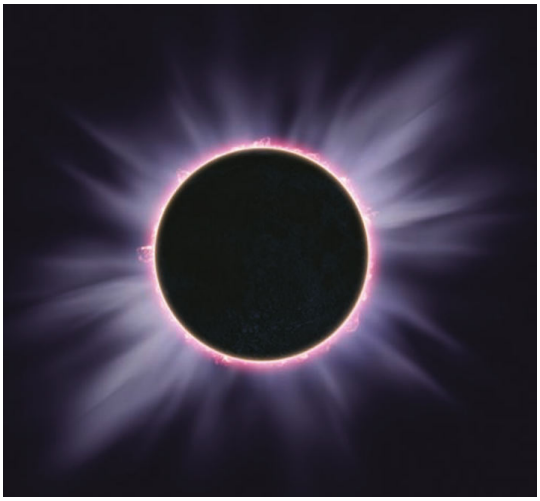
Red in colour but only seen during a solar eclipse.

## Action!

# The Corona

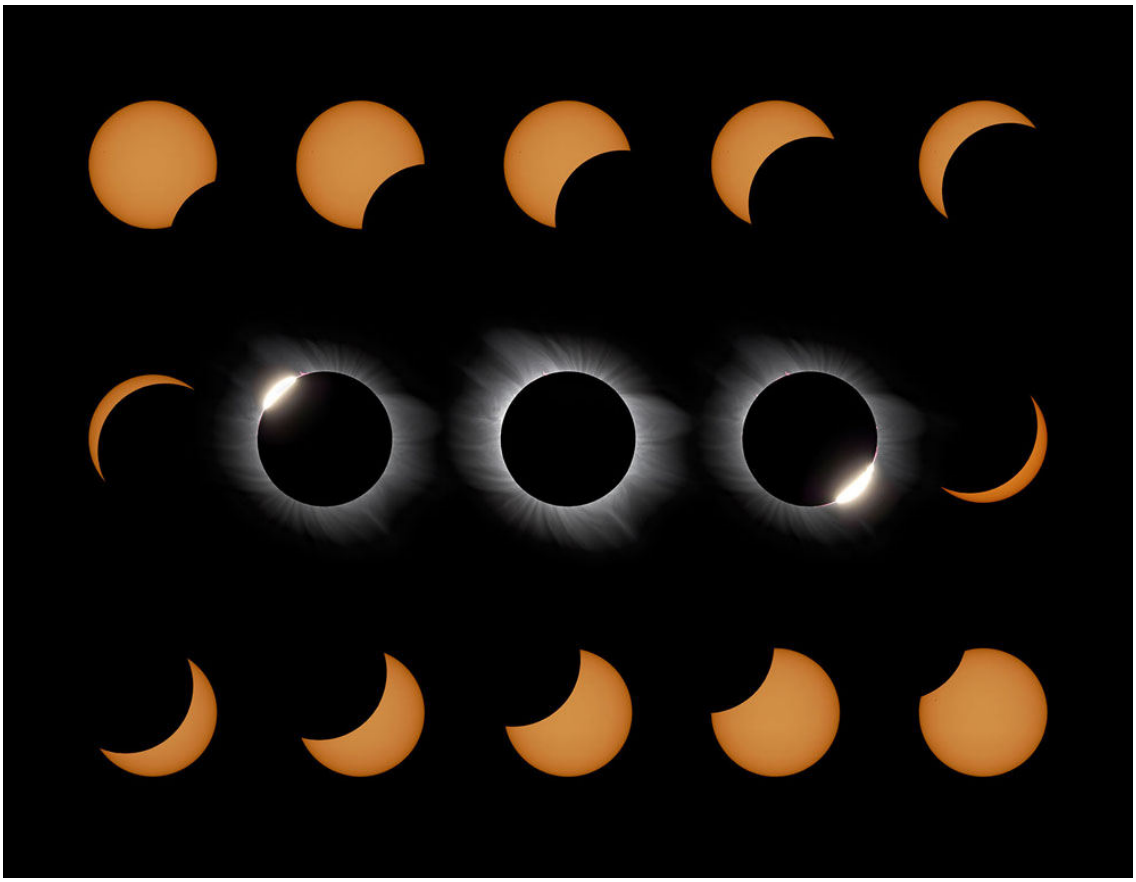
The outermost layer, extending millions of kilometers beyond the chromosphere.





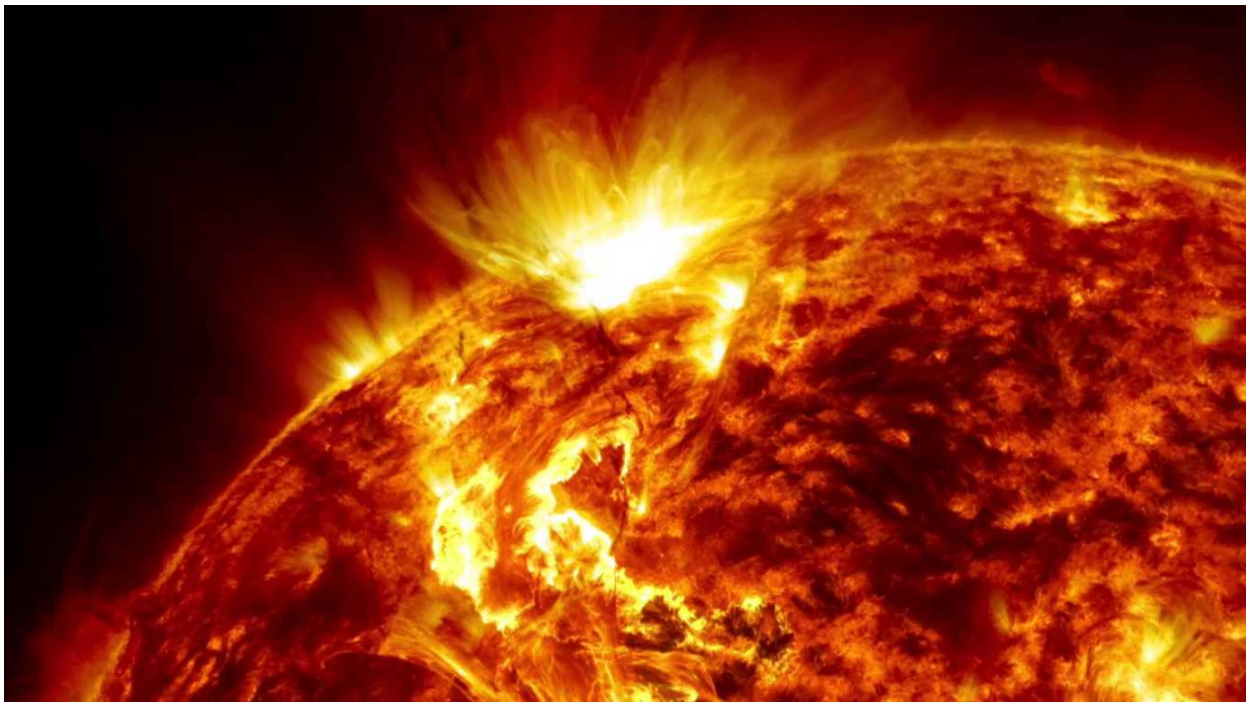
**Action!**

## Solar Eclipse



## Action!

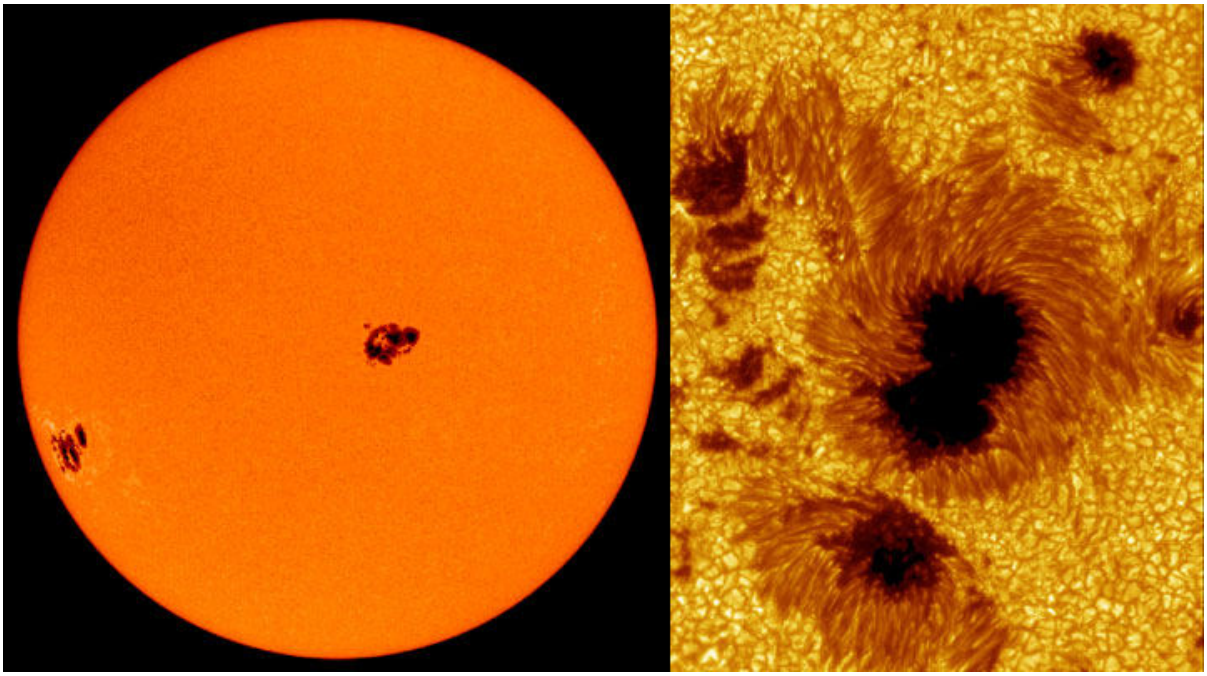
# Surface Features of the Sun



## Action!

# Sunspots

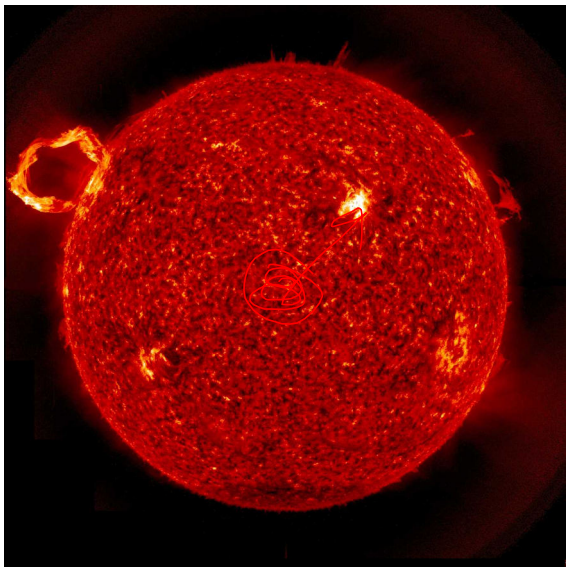
Appear as dark patches on the surface and are cooler than the surrounding areas.. They come and go and each is larger than Earth.

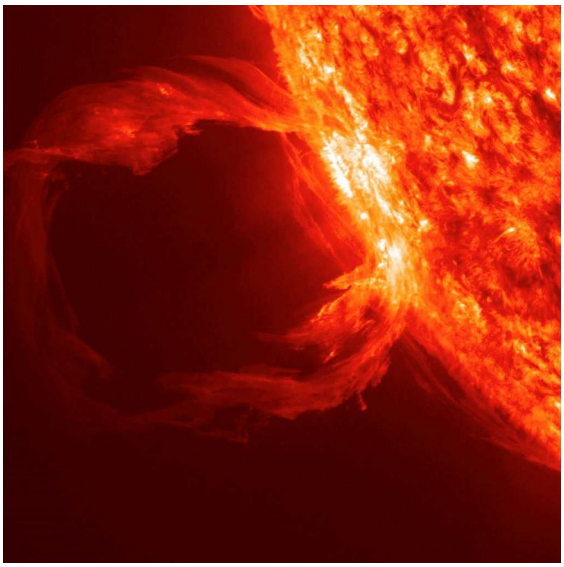


## Action!

# Prominences

Large, curved stream of particles extending outward from the photosphere into the corona. They may last for many hours.

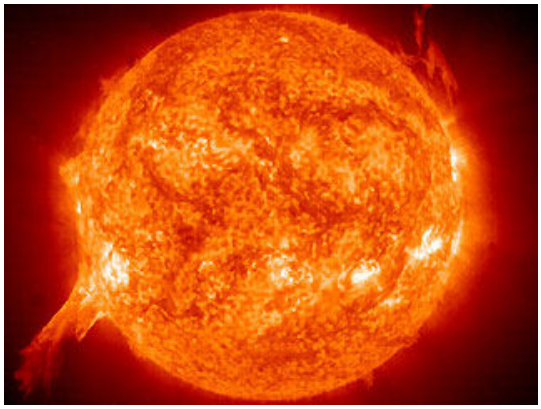


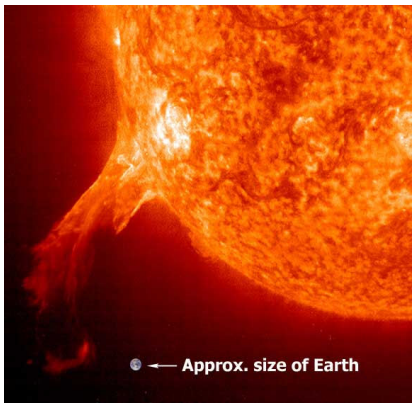


## Action!

# Solar Flares

Massive explosion of solar energy at Sun's surface. Solar flares fling hot plasma out into space and can damage orbiting satellites and electrical transmission lines on the ground.



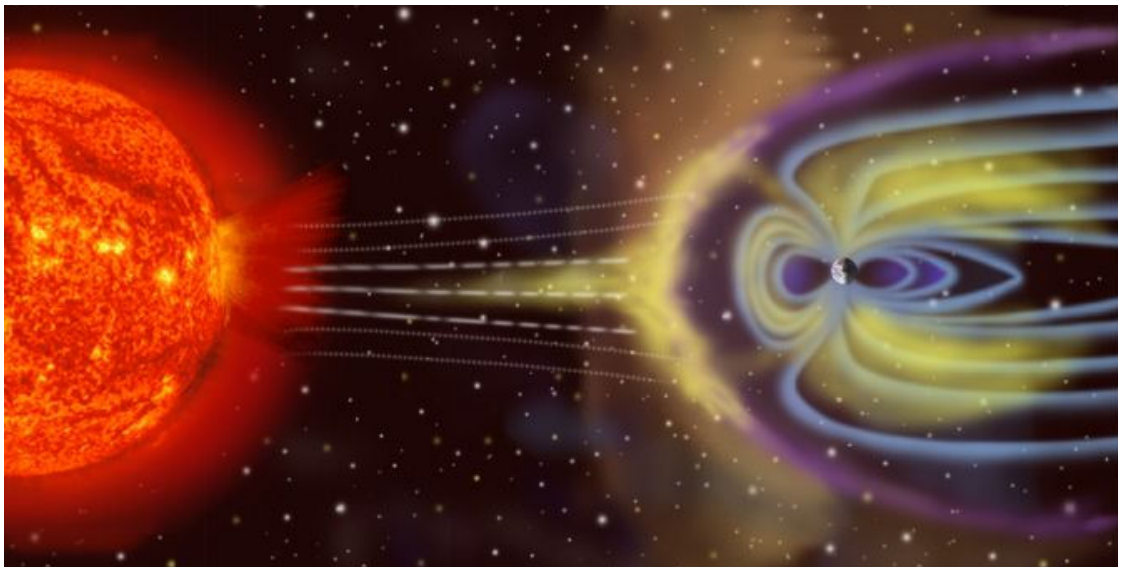


**Action!**

# Solar Flares

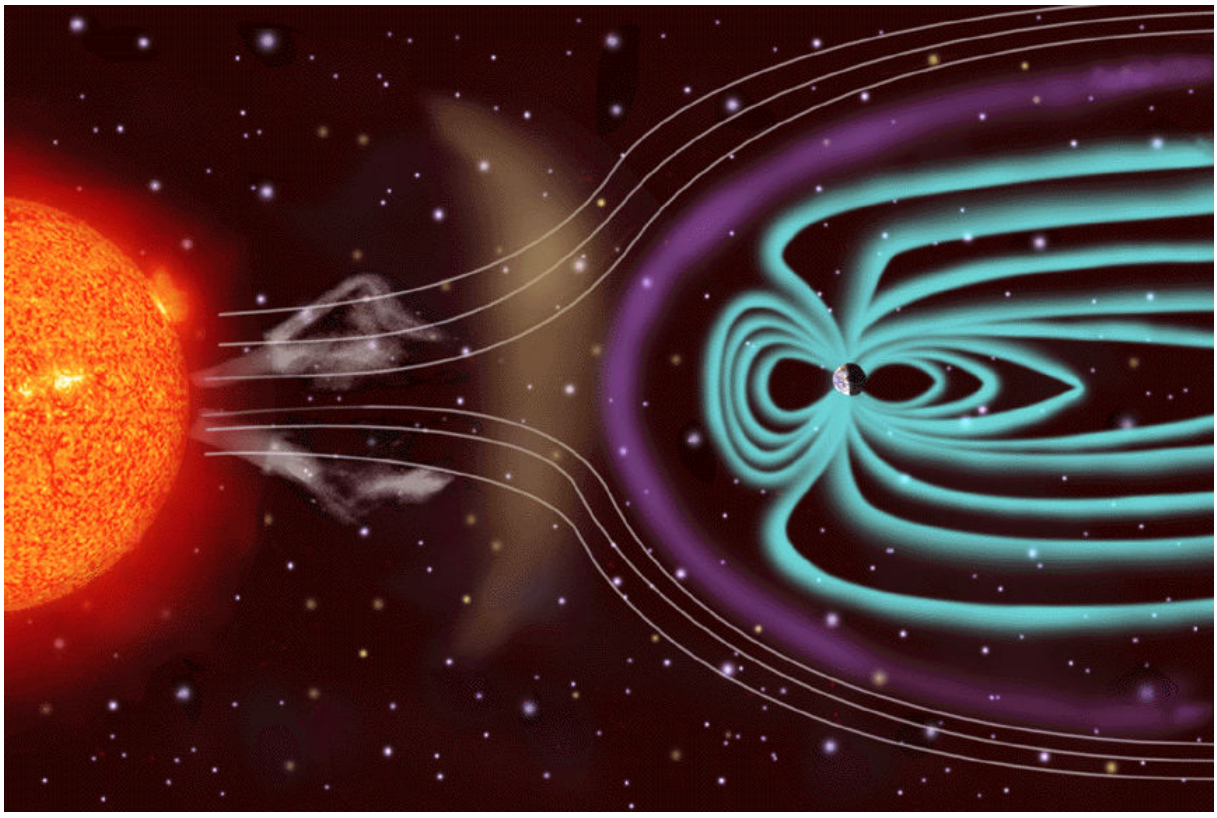
An extremely powerful solar flare is called a coronal mass ejection.

These flares can reach Earth over the course of about 3 days where it meets Earth's magnetic field. When the flare reaches the field, the energy is diverted away from the planet's surface resulting in vivid and active auroras.



## Action!

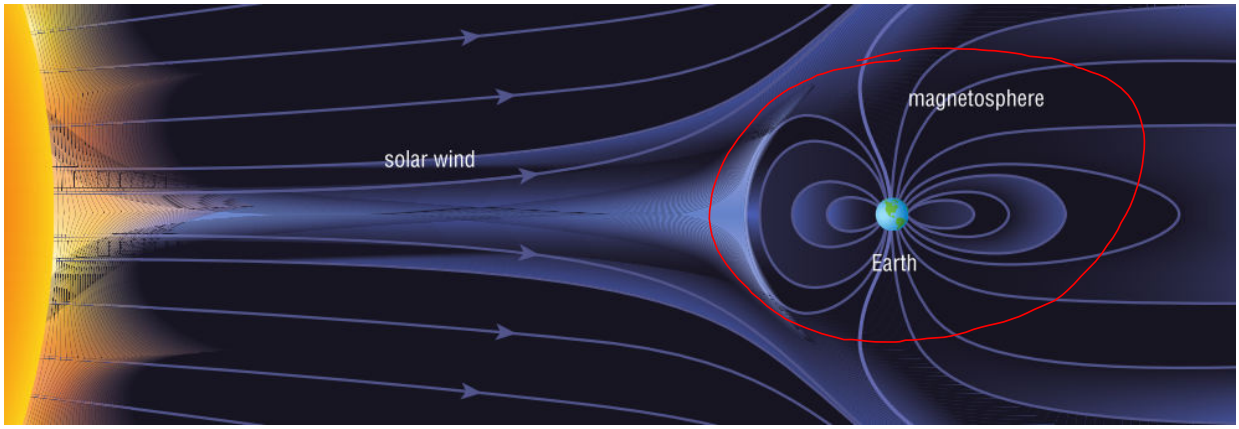
# The Sun's Effects on the Earth



## Action!

# Solar Wind

The incredible amounts of heat at the surface of the Sun produces a steady stream of subatomic particles that emanates out from the Sun in all directions.



## Action!

# Aurora Borealis

Commonly known as the northern lights, aurora borealis is created by the solar wind, and results in displays of green, yellow and red light.

## Action!

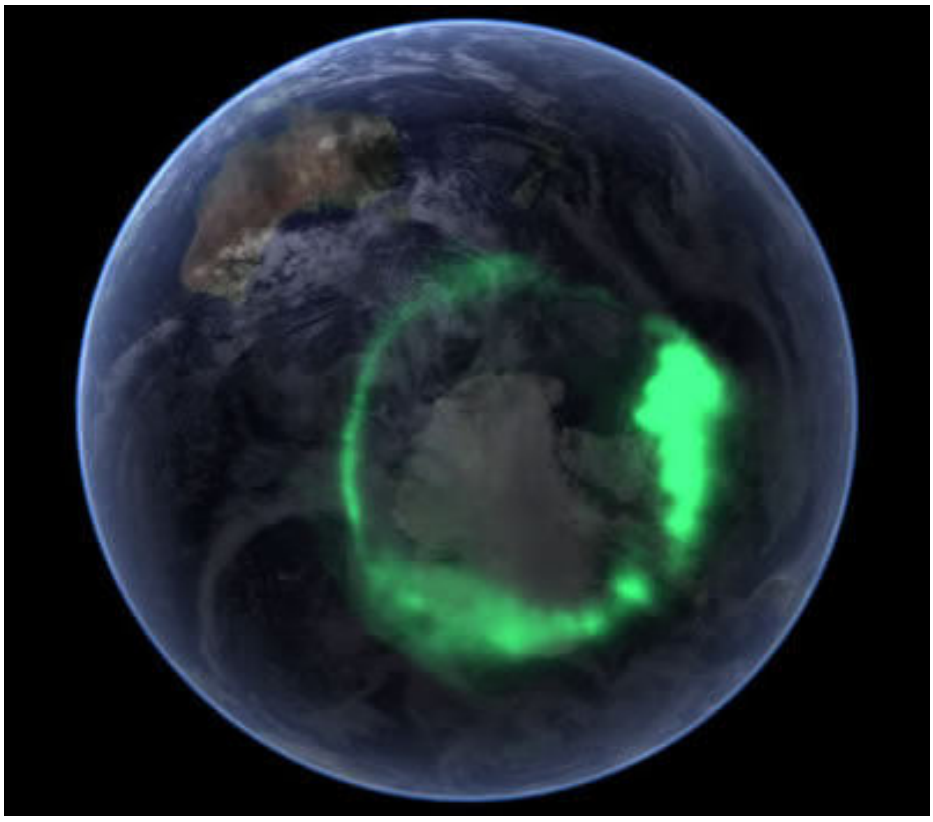
# Aurora Borealis

The aurora borealis is produced when the charged ___particles___ of the ___solar___ ___wind___ collide with Earth's ___atmosphere___. These particles are ___trapped___ by Earth's ___magnetic___ field and are swept toward the ___poles___.

**Action!**

# Aurora Borealis

## From Space!



**Action!**

# Aurora Borealis

## From Space!

**Action!**

# Aurora Borealis

## From Space!

## Consolidation

# Fill It In, Fill It In

Group up with 1 or 2 other people and try and fill in the Sun note.

# Homework!

**Fill in The Sun note**

**Pg. 321:** 1 - 6

**Add to your term table:**

core → radiative zone → convective zone

photosphere → chromosphere → corona

sunspot → prominence → solar flare

coronal mass ejection

Attachments

- 1 - Intro to Space - 1 - Contact Opening Scene.mp4
- Intro to Space - The Beginning of the Universe.mp4
- 1 - Intro to Space - 1 - Celestial Objects.mp4
- 1 - Intro to Space - 2 - How Many.mp4
- 1 - Intro to Space - 4 - What Makes a Planet.mp4
- 1 - Z - Intro to Space - How Many Universes.mp4
- A - Intro to Space - 1 - Contact Opening Scene.mp4
- B1 - Stars - Star Size Comparison.mp4
- B1 - (Stars) - Star Types.mp4
- B1 - (Stars) - Massive Stars in the Milky Way.mp4
- B1 - (Stars) - Tracking Stars Orbiting the Milky Way's Central Black Hole.mp4
- B2 (The Solar System) - 5 Years of the Sun.mp4
- B2 (The Sun) - 5 Years of the Sun.mp4
- B2 (The Sun) - Solar Flare.mp4
- B2 (The Sun) - Prominence.mp4
- B2 (The Sun) - Corona.mp4
- B2 (The Sun) - Solar Eclipse.mp4
- B2 (The Sun) - Aurora Borealis.mp4
- B2 (The Sun) - Aurora Borealis from Space.mp4