



Making Sun-Earth Connections: Our Star – Our Sun



**Presenter's Guide
Grades: 3-5**

Making Sun-Earth Connections: **Our Star – Our Sun**

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(Words appearing in bold face are defined in the glossary.)

Slide 1



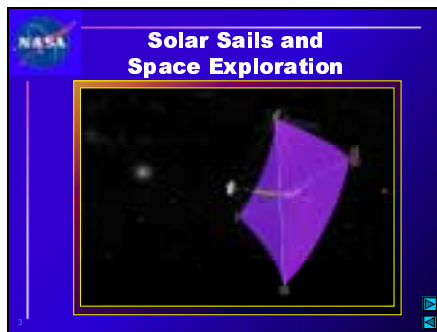
Introduction: Our Star – Our Sun

Slide 2



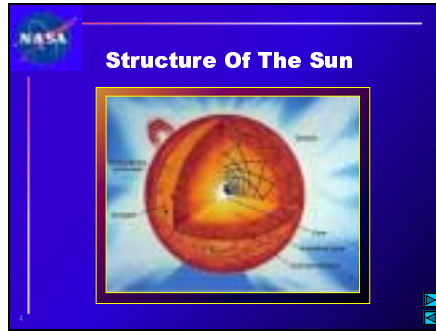
The Sun is too far away to study without the instruments on **Satellites**. The Sun is 93 million miles from Earth. It would take you 26 years to reach the Sun if you could fly by airplane.

Slide 3



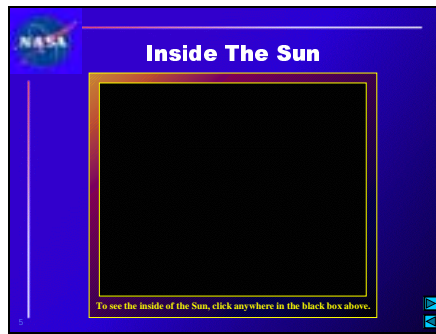
To study more about the universe scientists need to reach faraway places. They hope to make a space ship that uses a sail. The sail is pushed by light (**photons**).

Slide 4



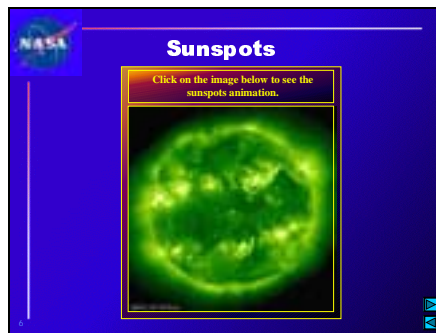
The Sun has different parts. Its center is the *core*; here energy is made. Surrounding the core is the part that acts like a pot of boiling water known as the *convection zone*. The surface is called the *photosphere*; it gives off light. The *corona* surrounds the Sun.

Slide 5



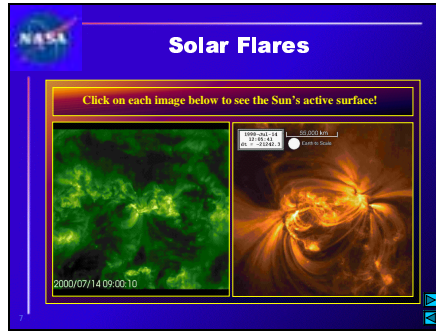
Our Sun is very hot. It makes its own energy and is made up of charged particles called *plasma*. The Sun gives us heat and light necessary for us to live. Without the Sun, the Earth would be a frozen ball of ice.

Slide 6



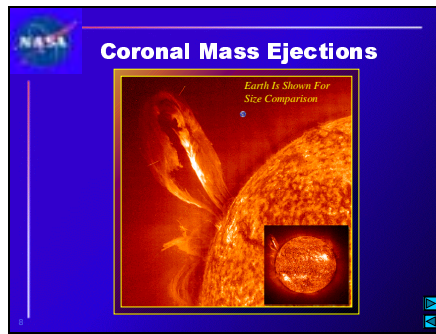
The Sun's surface has dark spots that are large storms called *sunspots*. The sunspots are as large as the Earth or bigger.

Slide 7



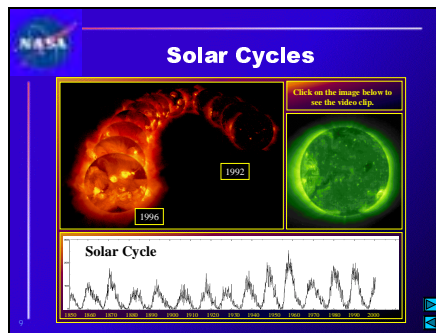
The *solar flares* are the outbursts of hot particles that blast materials from the storms into space. The explosions are equal to millions of volcanoes exploding.

Slide 8



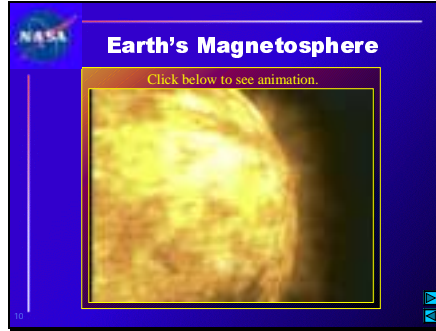
The large angry outbursts of plasma are the *CME's* (*coronal mass ejections*). There are more of them when the Sun is very active (solar maximum).

Slide 9



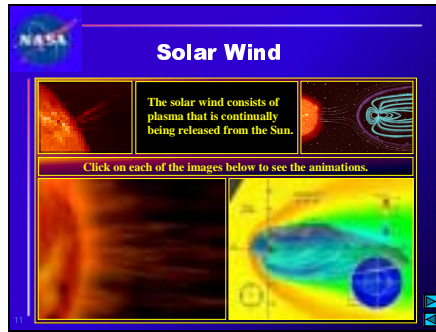
The Sun's changes follow a *cycle* just like our day follows our night. Approximately every eleven years, the Sun follows a pattern. When it is very active making energy, it is called *solar maximum*; when it is less active, it is called *solar minimum*

Slide 10



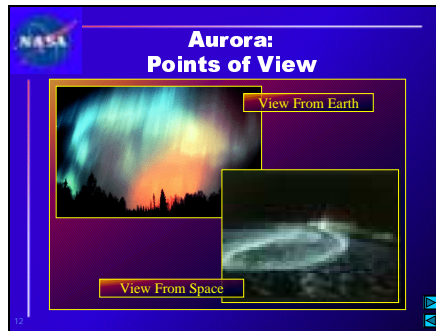
Our Earth is like a giant magnet; it has a magnetic field around it called the *magnetosphere*. The CME's hit the Earth's shield and some particles pass through to make changes in the Earth's surroundings.

Slide 11



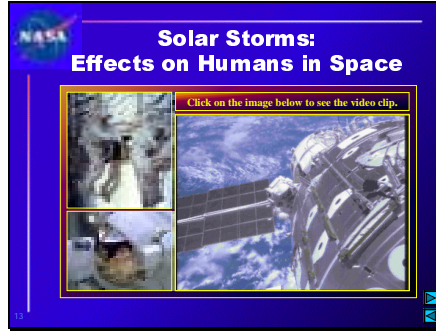
The matter blasted out of the Sun is somewhat like the wind blowing. This stream of tiny particles is called "solar wind". It takes 1 to 5 days for this wind to reach Earth.

Slide 12



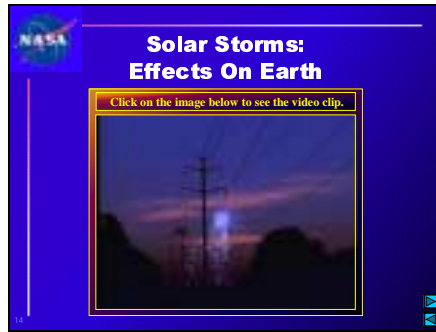
Sometimes the solar wind causes beautiful lights in the night sky, called **auroras**.

Slide 13



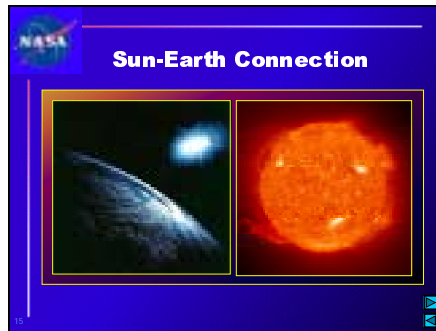
Astronauts need to wear suits to keep them safe especially during the Sun's busy time (*solar maximum*).

Slide 14



The space weather (*solar wind*) also makes it difficult for the radio to work right, pilots to find their way and may even cause power failures.

Slide 15



Why study the Sun? Our Sun is changing. During active times as well as less active times it makes energy that affects our Earth and its surroundings.

Glossary of terms: Grades 3-5

1. **Astronaut**-a person traveling in space.
2. **Aurora**-bright colorful lights formed by action of solar wind particles with the Earth's magnetosphere exciting gas molecules in the air.
3. **Corona**-the Sun's atmosphere.
4. **Coronal Mass Ejections**-the gigantic plasma eruptions from the Sun's corona.
5. **Convection Zone**-part of the Sun where plasma moves up and down like water in a boiling pot.
6. **Cycle**-a pattern
7. **Magnetosphere**-area around the Earth where magnetic field lines control the movement of charged particles.
8. **Photon**-packet of light energy
9. **Photosphere**-the visible part of the Sun.
10. **Plasma**-a fourth state of matter made up of positively charged particles and negatively charged electrons.
11. **Satellite**-a free-flying object that orbits the Earth.
12. **Solar Flare**-an explosive release of energy from the Sun.
13. **Solar Maximum**-time period of an increase in Sun activity (energy release).
14. **Solar Minimum**-time period of a decrease in Sun activity.
15. **Solar Wind**-a constant flow of plasma expanding from the corona into interplanetary space.

16.**Star**-a celestial object that produces energy from nuclear fusion reactions occurring in its core.

17.**Sunspot**-a region on the Sun's surface that is darker and cooler than the surrounding region. It has a very active magnetic field.