Parts of the Sun

Objective:	To learn about the Sun, our closest star.

Grade Level: K-4
Subject(s): Science
Prep Time: < 10 minutes
Duration: One class period
Materials Category: Special

National Education Standards	
Science	
Mathematics	
Technology (ISTE)	
Technology (ITEA)	
Geography	

Materials:

- White, blue, yellow and red clay
- Paper plates
- Toothpicks
- Paper
- Scissors
- Student Sheets

Related Links:

SOHO Exploring the Sun
http://sohowww.nascom.nasa.gov/

Supporting NASAexplores Article(s):

Staring at the Sun
http://www.nasaexplores.com/show2_articlea.php?id=05-102

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Teacher Sheet(s)

Pre-lesson Instructions

- This lesson may take younger students longer to complete.
- Divide the clay into sections so that each child has enough to create a small model of the sun. You may wish to create your own before teaching this lesson so that students have a guide to use.

Background Information

SOHO, the Solar and Heliospheric Observatory, is a project of international cooperation between ESA and NASA to study the Sun, from its deep core to the outer corona, and the solar wind.

SOHO was designed to answer the following three fundamental scientific questions about the Sun:

- What are the structure and dynamics of the solar interior?
- Why does the solar corona exist and how is it heated to the extremely high temperature of about 1,000,000°C?
- Where is the solar wind produced and how is it accelerated?

Besides watching the Sun, SOHO has become the most prolific discoverer of comets in astronomical history: as of May 2003, more than 620 comets had been found by SOHO.

Our solar system is composed of the sun and all things which orbit around it: the Earth, the other eight planets, asteroids, and comets. The sun is 150 million kilometers (93 million miles) away from the Earth (this distance varies slightly throughout the year, because the Earth's orbit is an ellipse and not a perfect circle).

The sun is an average star, in that there are other stars which are much hotter or much cooler, and intrinsically much brighter or fainter. However, since it is by far the closest star to the Earth, it looks bigger and brighter in our sky than any other star. With a diameter of about 1.4 million kilometers (860,000 miles) it would take 110 Earths strung together to be as long as the diameter of the sun.

The sun can be divided into six layers. From the center out, the layers of the sun are as follows: the solar interior which is composed of the core, the radiative zone and the convective zone. The visible surface is made up of the photosphere and the chromosphere. The outermost layer is called the corona.

In this lesson, students will learn about the sun, our closest star.

Guidelines

1. Read the corresponding NASAexplores K-4 article orally.

2. Discuss SOHO's mission and the groups that are working together to complete the job.
3. Distribute the Student Sheets. Read over the descriptions of the sun's layers orally.
4. Distribute the clay. Show students how to mix the clay to get other colors. Direct students to start with a marble sized ball of white clay to which will represent the core. From there, they may mix their clays and use them to form the other layers of the sun.
5. After students have completed their models, carefully cut away a wedge so that the inner layers show. Do not cut through the cores; leave them intact.
6. Have students use the paper to make labels for each of the layers. Have them attach the strips to the toothpicks and place them in the correct layers.

Discussion / Wrap-up

- Discuss the parts of the sun and what each part does.

Extensions

- None

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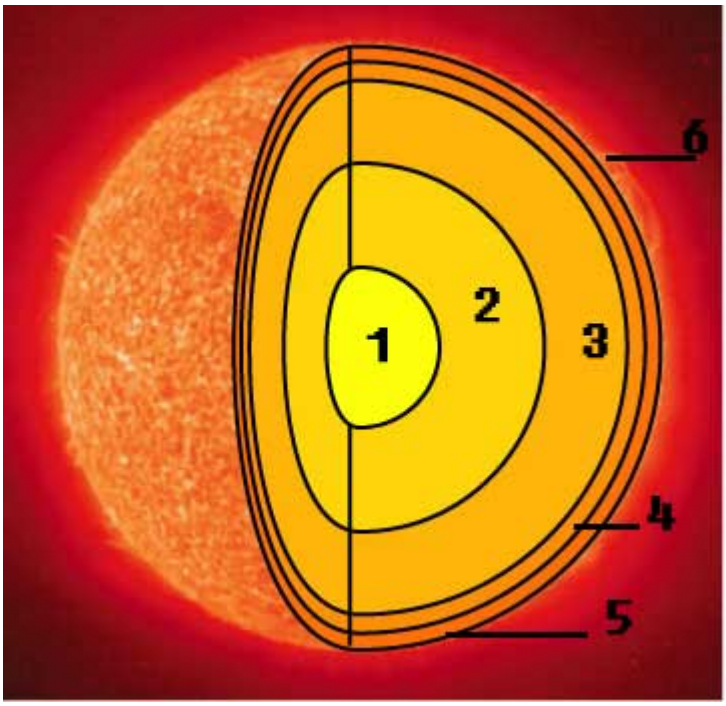
Student Sheet(s)



1. Core: This is the center layer of the sun. This is where all the sun's heat and light is made.

2. Radiative Zone: The heat and light move from the core into this layer.

3. Convection Zone: In this layer, the gases move like boiling water. This moves them from the inner parts of the Sun to the outer part of the sun that we see.

4. Photosphere: This is the part of the sun we see. This layer gives off the heat and light from the sun. The cooler parts of this layer make sunspots.

5. Chromosphere: This layer shoots out hot gases.

6. Corona: This layer can only be seen during an eclipse. It is the atmosphere around the sun.