



Sun-Earth Day

Celebrate the Connection!

Public Outreach - Make and Take Activities

What You'll Need

- copies of the Sun and Earth handout sheet (see next page)
- measuring tape
- a large room or a long hallway where you will be able to walk 65 feet in a straight line without many obstacles
- (optional) scissors
- (optional) 65 feet length of string

Note: Copies of our readymade cardstock version of this Sun-Earth scale model are available for free by request. If you need copies for a specific event or education program, email us at outreach@cse.ssl.berkeley.edu

Both English and Spanish versions available.

Scale Model of Sun and Earth

About this Activity

This activity explores the relative size of Sun and Earth as well as the distance between them.

Below right: Looking toward the model Sun from the model Earth. A pre-measured piece of string was used to mark the appropriate distance for the scale model.

Preparation

Measure 65 feet (the distance between Sun and Earth in the scale of our model) from where you will be doing this activity and mark the distance for later reference. If you do not have a fixed location, we find it helpful to have a piece of string cut to exactly 65 feet in length for you to use as a reference during the activity.

If you want your participants to guess the size of the Earth, you might want to keep the image of Earth out of sight by cutting off the top of the hand-out page along the dash line.

To Do and Notice

1) Show participants the image of the Sun. (This is a good opportunity to notice what the Sun's surface look like and to point out that the Sun is not as featureless and uniformly bright as it might look to our eyes.) Ask participants to guess how big the Earth would be if the Sun is the size of this image.

2) Reveal the answer by showing the image of Earth. (Optional: you might want to let the participants cut out the Earth and the disc of the Sun instead of using the 2 sections of the handout sheet.) Ask participants to guess how far the model Earth should be from the model Sun. We suggest allowing participants to walk to where they think the distance should be. We find it helpful to tape the model Sun to a spot around eye-level at the starting point and have the facilitator walk with the participants. The model Earth should be 65 feet away from the model Sun. Use the marker you placed earlier (or the cut piece of string) to guide you.

3) (Optional) At 65 feet away, look back towards the model Sun. Notice how big it looks to you at this distance. At this scale, the model Sun should be about the same size as the actual Sun would appear to us here on Earth. (It is always a good idea to remind participants not to look directly at the Sun.) Since this part requires a basic understanding of ratio and scale model, it might not be appropriate for all participants.

Activity Notes

"Why does the Sun I see in the sky look different from this picture?" is a common question. The Sun image here was taken by a telescope that is mounted on a satellite in space (the TRACE mission to be exact). Besides being able to see farther than we can and without the clouds and Earth's atmosphere in the way, this telescope also looks at a different kind of light. The Sun gives off different kinds of energy, only part of that is in the form of visible light which we can see. The telescope that took this picture looks at the extreme ultraviolet (EUV) light coming from the Sun.



Related Websites

TRACE Education Resources: the Sun, its structure, and the satellite mission.
<http://trace.lmsal.com/Public/eduprodu.htm>

Stanford Solar Center: About the Sun
<http://solar-center.stanford.edu/about/>



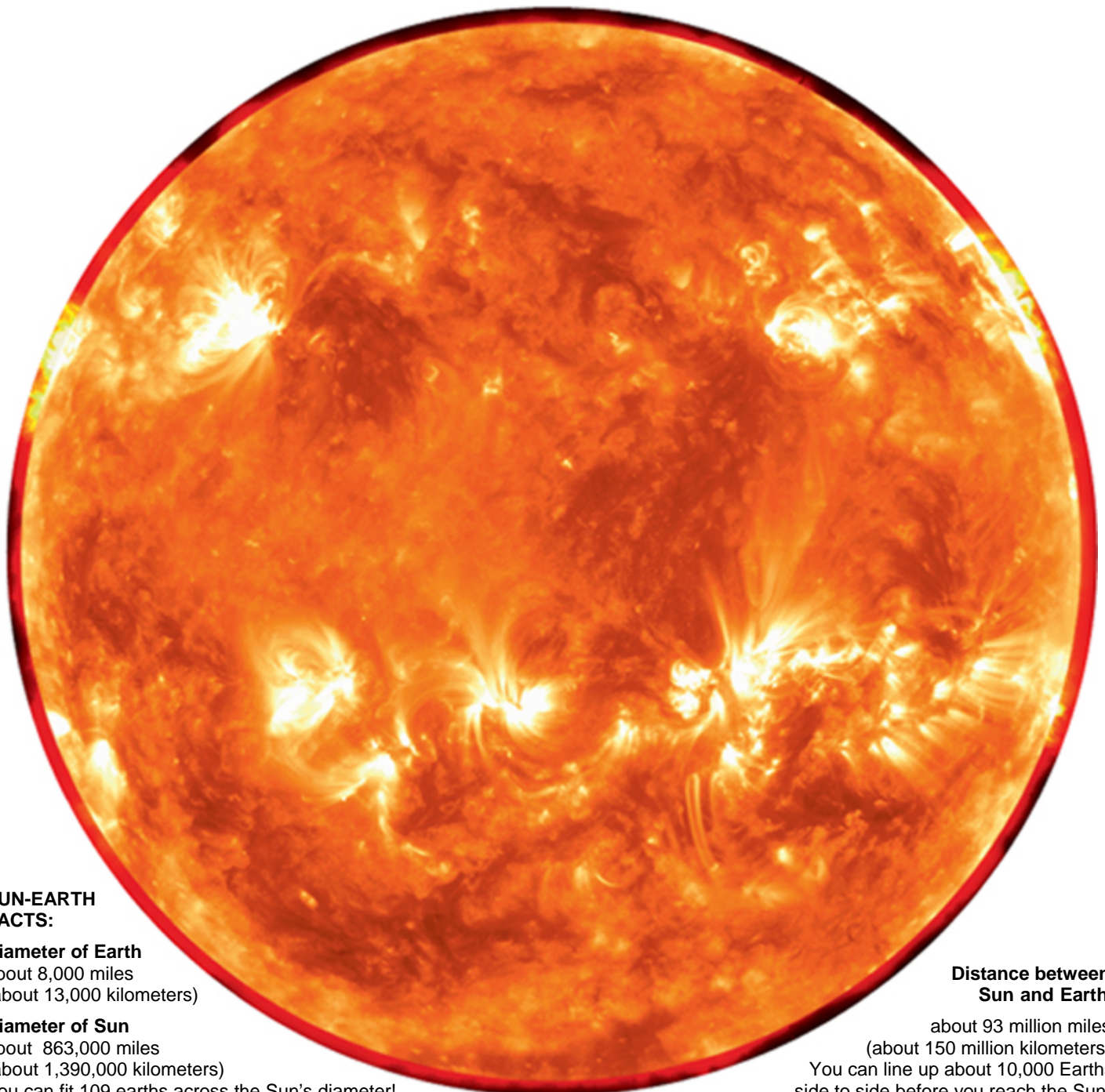
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1. Cut out the images of the Sun and the Earth.
2. To demonstrate the distance between Sun and Earth at this scale, separate the images 65 feet (about 20 meters) apart. This distance represents approximately 93 million miles (150 million kilometers).

This image of Earth is scaled to the proper size in relation to the image of the Sun below.

Earth 



SUN-EARTH FACTS:

Diameter of Earth

about 8,000 miles
(about 13,000 kilometers)

Diameter of Sun

about 863,000 miles
(about 1,390,000 kilometers)

You can fit 109 earths across the Sun's diameter!

Distance between Sun and Earth:

about 93 million miles
(about 150 million kilometers)

You can line up about 10,000 Earths
side to side before you reach the Sun.