

How To Look *Indirectly* at the Sun

Find out more: <https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/>

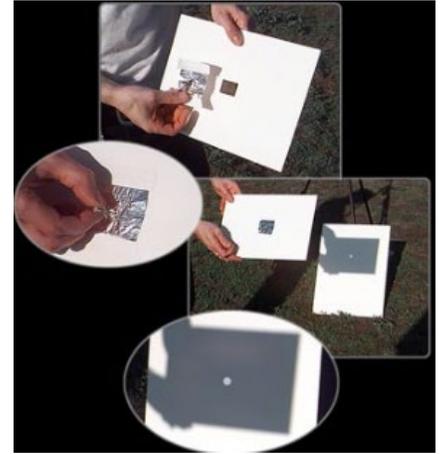
Project an image of the Sun

If you don't have eclipse glasses or a handheld solar viewer, you can still observe the Sun by using a method which does not involve looking directly at the Sun.

One way is to use a pinhole projector, which has a small opening that behaves like a lens to focus and project an image of the Sun onto a nearby surface. With the Sun at your back, you can then safely view the projected image. **Do NOT look at the Sun through the pinhole!**

Make a pinhole projector

You can use simple items you have around the house to create your own pin-hole projector. Use a pin or any other hole-punching device to create a small hole (or many holes) in a piece of cardstock. Smaller holes will make a sharper image. Larger holes will make a brighter, but softer, images. To make a *very* small hole, cover a larger hole with aluminum foil. Then use a pin to punch a hole in the aluminum foil. You can make patterns of pinholes that can project words, dates, or drawings.



Use your pinhole projector

Stand with your back to the Sun and hold the perforated cardstock up so the Sun shines directly into the hole(s). Then, use another piece of cardstock as a "screen" in front of you. Little images of the Sun will be projected through the pinhole(s) onto the screen. The images are safe to observe and photograph. **Do NOT look at the Sun through the pinholes!**

Natural pinhole projectors



Any object that casts a shadow can project an image of the Sun if it has small enough holes. Your crossed hands can be held to form small images of the Sun. Anything with small holes can become a pinhole projector. This includes straw hats, buttons, even Ritz crackers.

Or just look closely at the shadow of a leafy tree; you'll see the ground dappled with sun-shapes projected by the tiny spaces between the leaves.



Reflecting the Sun with a covered mirror

To project a larger image than a pinhole projector provides, take a small mirror and cover it up with tape - except for a small bit the size of a dime. Angle the mirror to reflect the light of the Sun onto a light wall or poster paper some distance away. **Do NOT look at the Sun in the mirror!** Look only at the projected image of the Sun.

Experiment

Try different sizes and shapes of holes (or mirrors) to see how these changes affect the projected image of the Sun. You can use this techniques to observe the Sun anytime it is in the sky.

