



# TOTAL SOLAR ECLIPSE

## MONDAY, APRIL 8, 2024



### US TOTAL SOLAR ECLIPSE PATH

On April 8, 2024, a total solar eclipse will cross North America creating a path of totality.



Credit: Michala Garrison and the Scientific Visualization Studio (SVS), in collaboration with the NASA Heliophysics Education Activation Team (NASA HEAT), part of NASA's Science Activation portfolio. Eclipse Calculations by Ernie Wright, NASA Goddard Space Flight Center.

### EXPLORE ECLIPSES!



[go.nasa.gov/Eclipses](https://go.nasa.gov/Eclipses)

Updated resources for safety, NASA science, and history

### HELIOPHYSICS BIG YEAR

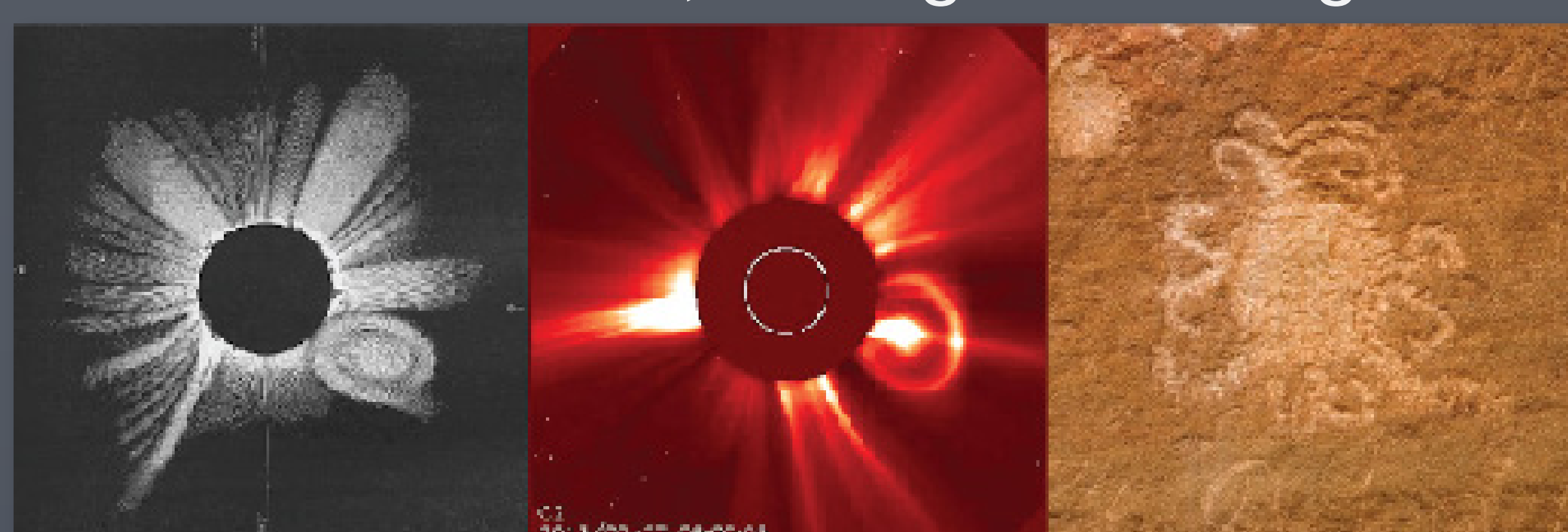
October 2023 - December 2024  
A global celebration of heliophysics science



[go.nasa.gov/HelioBigYear](https://go.nasa.gov/HelioBigYear)

### WHY DOES NASA STUDY ECLIPSES?

Eclipses aren't just beautiful – they're great for science. For over a century, solar eclipses helped scientists decipher the Sun's structure and explosive events, find evidence for the theory of general relativity, and discover the element helium, among other things.



Left: Drawing of the 1860 solar eclipse. Credit: G. Tempel.  
Center: A coronagraph simulates a solar eclipse, blocking the Sun to reveal its outer atmosphere. Credit: NASA/ESA SOHO  
Right: Ancient rock art in Chaco Canyon may depict a total solar eclipse in 1097. Credit: National Park Service

Total eclipses allow scientists to see the corona – which is key to understanding how heat and energy are transferred from the Sun out into the solar wind, the constant stream of particles that the Sun scatters into the solar system.



Credit: NASA's Johnson Space Center/Norah Moran

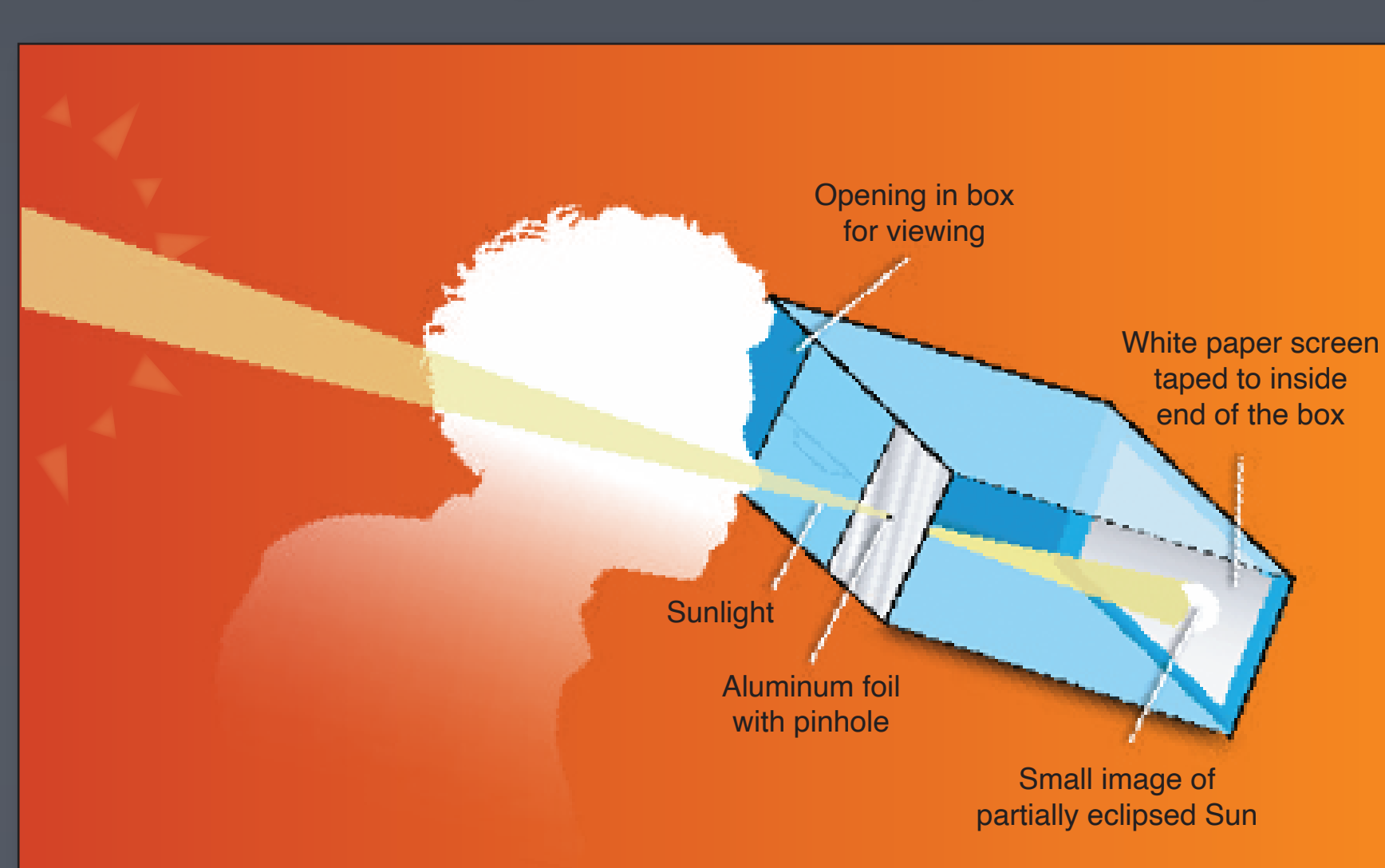
NASA's WB-57F jets take observations of eclipses with onboard telescopes to avoid looking through the majority of Earth's atmosphere, greatly improving image quality.



Credit: NASA/Wallops Flight Facility

Suborbital sounding rockets carry instruments to study a variety of phenomena including the Sun's impact on Earth's upper atmosphere.

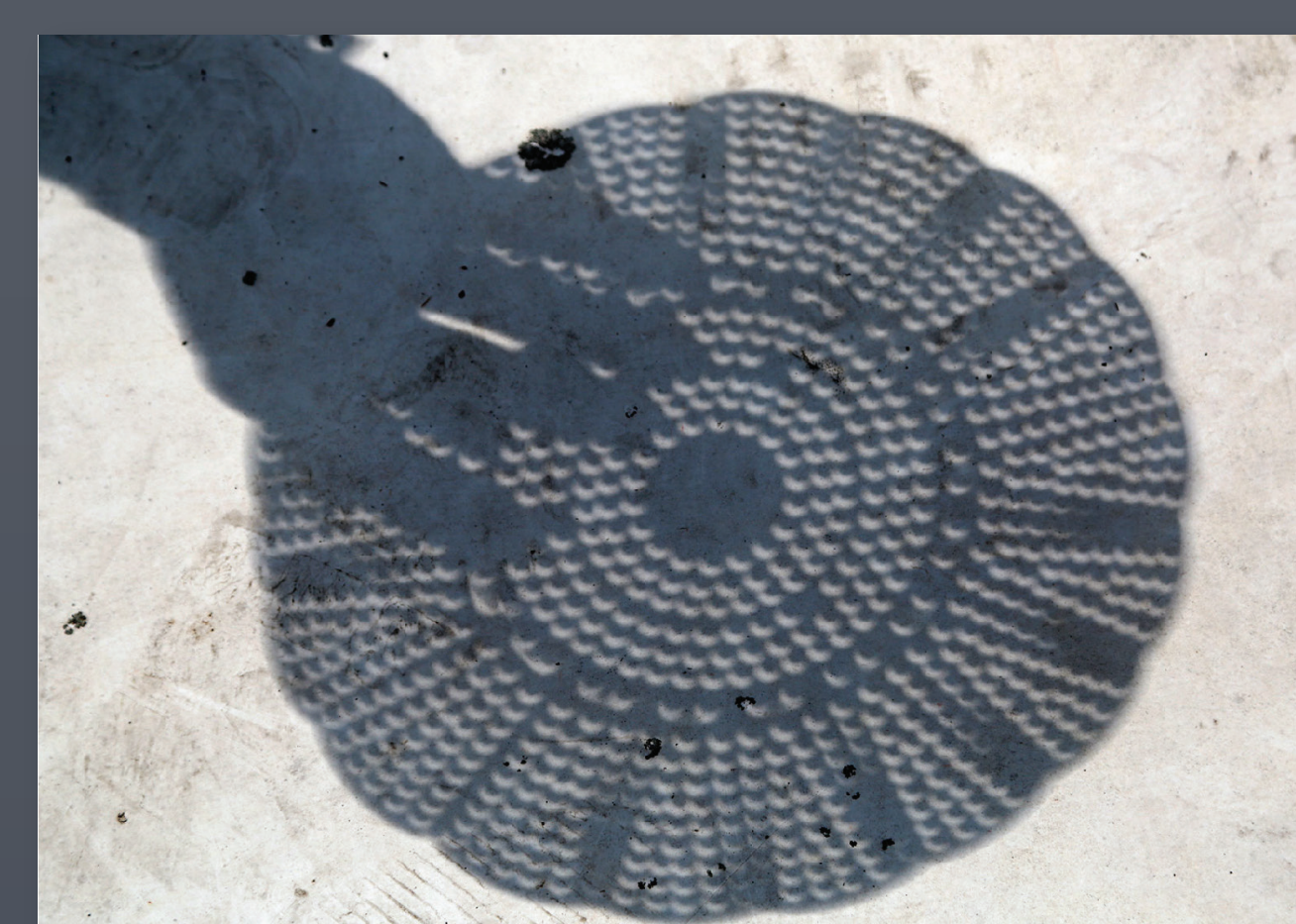
### SAFE ECLIPSE VIEWING



Credit: NASA

Make your own eclipse projector to see the projection of the Sun during a partial eclipse. Materials: a cardboard box, a white sheet of paper, tape, scissors, and aluminum foil.

Do you have a colander at home? The circular holes of a colander project crescent images of the Sun onto the ground during the partial phases of a solar eclipse. Be sure that when using, the Sun is always behind you!

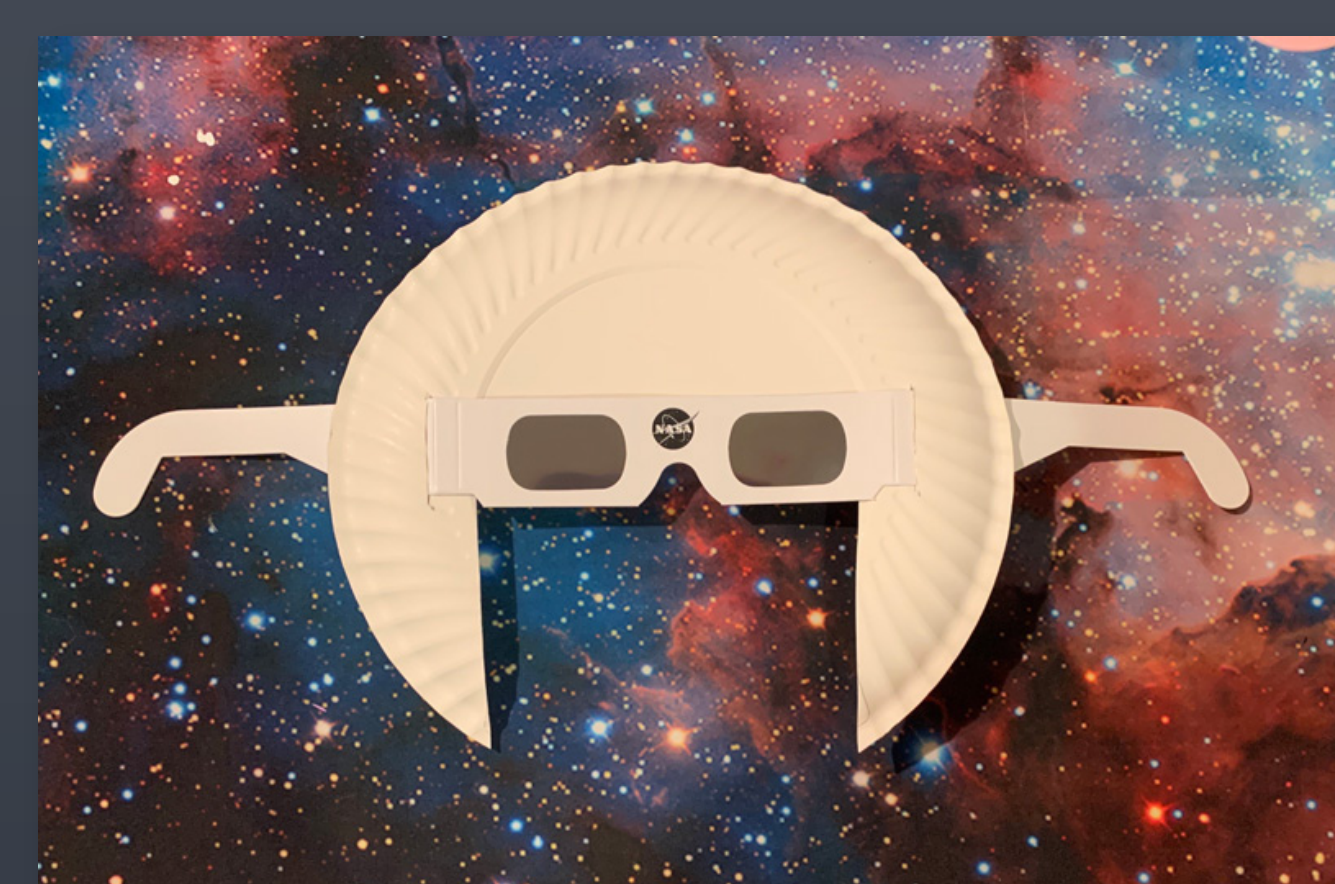


Credit: NASA/Joy Ng

When watching a partial or total solar eclipse directly with your eyes, you must look through safe solar viewing glasses ("eclipse glasses"), a safe handheld solar viewer, or other safe solar filters at all times. Safe solar filters must comply with the ISO 12312-2 international standard.



Credit: NASA/Shannon Reed

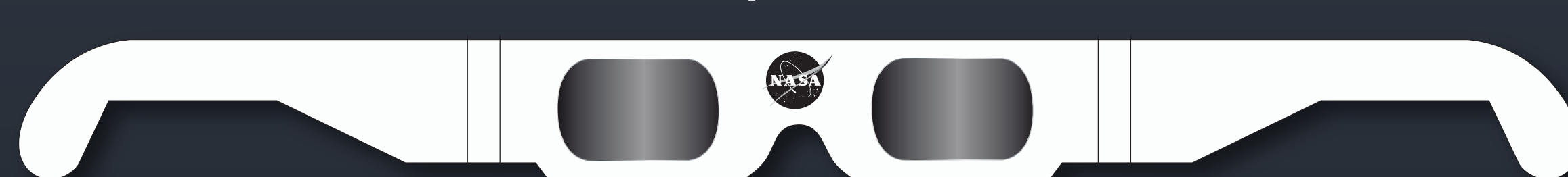


Credit: NASA/Lani Sasser

Learn how to decorate your eclipse glasses any way you want to safely view the eclipse! The examples above were created using paper plates, heavy cardstock, scissors, markers, tape, and ribbon.

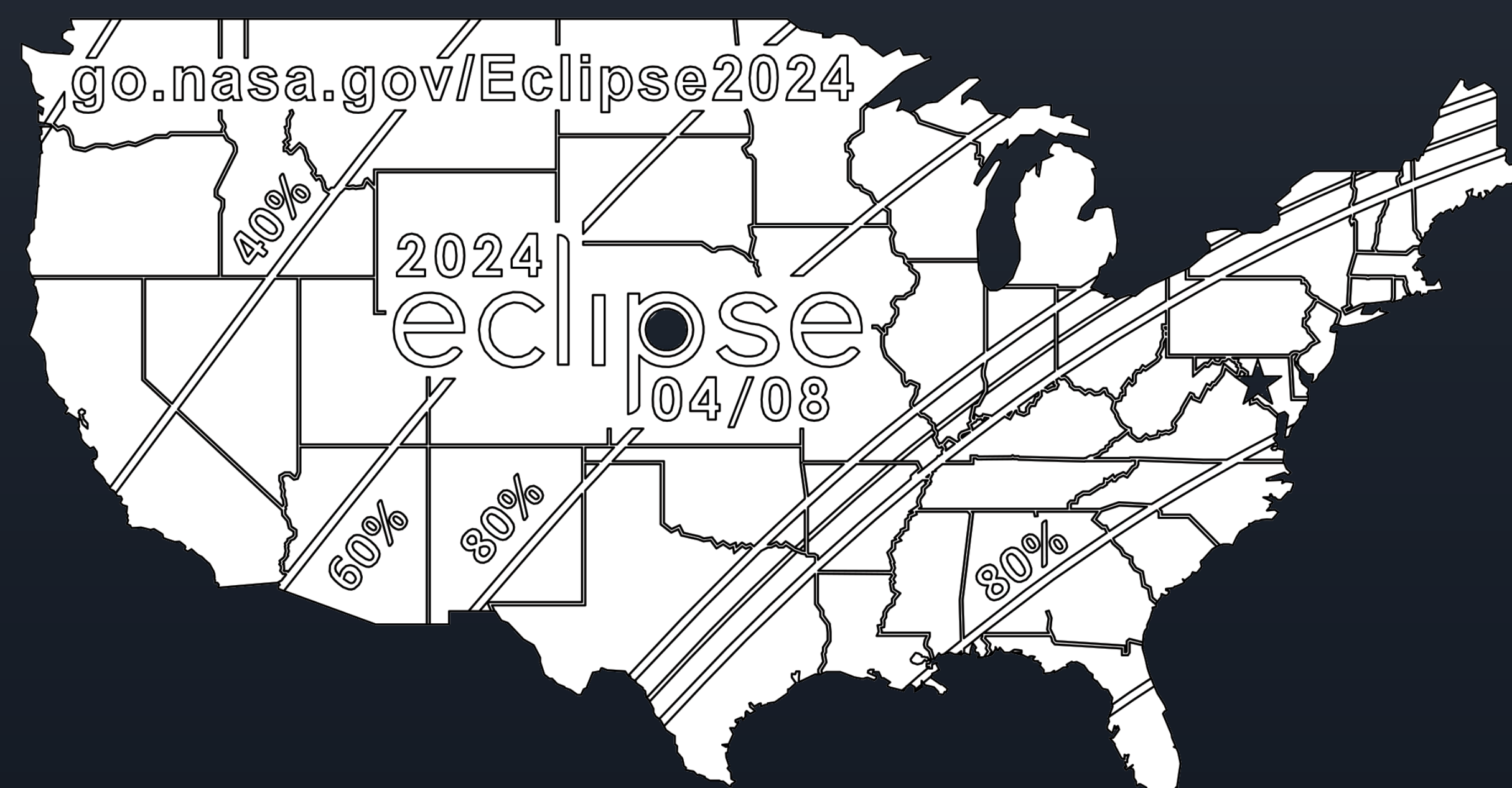


[science.nasa.gov/learn/heliophysics/eclipse-essentials-safe-and-stylish-solar-eclipse-glasses/](https://science.nasa.gov/learn/heliophysics/eclipse-essentials-safe-and-stylish-solar-eclipse-glasses/)



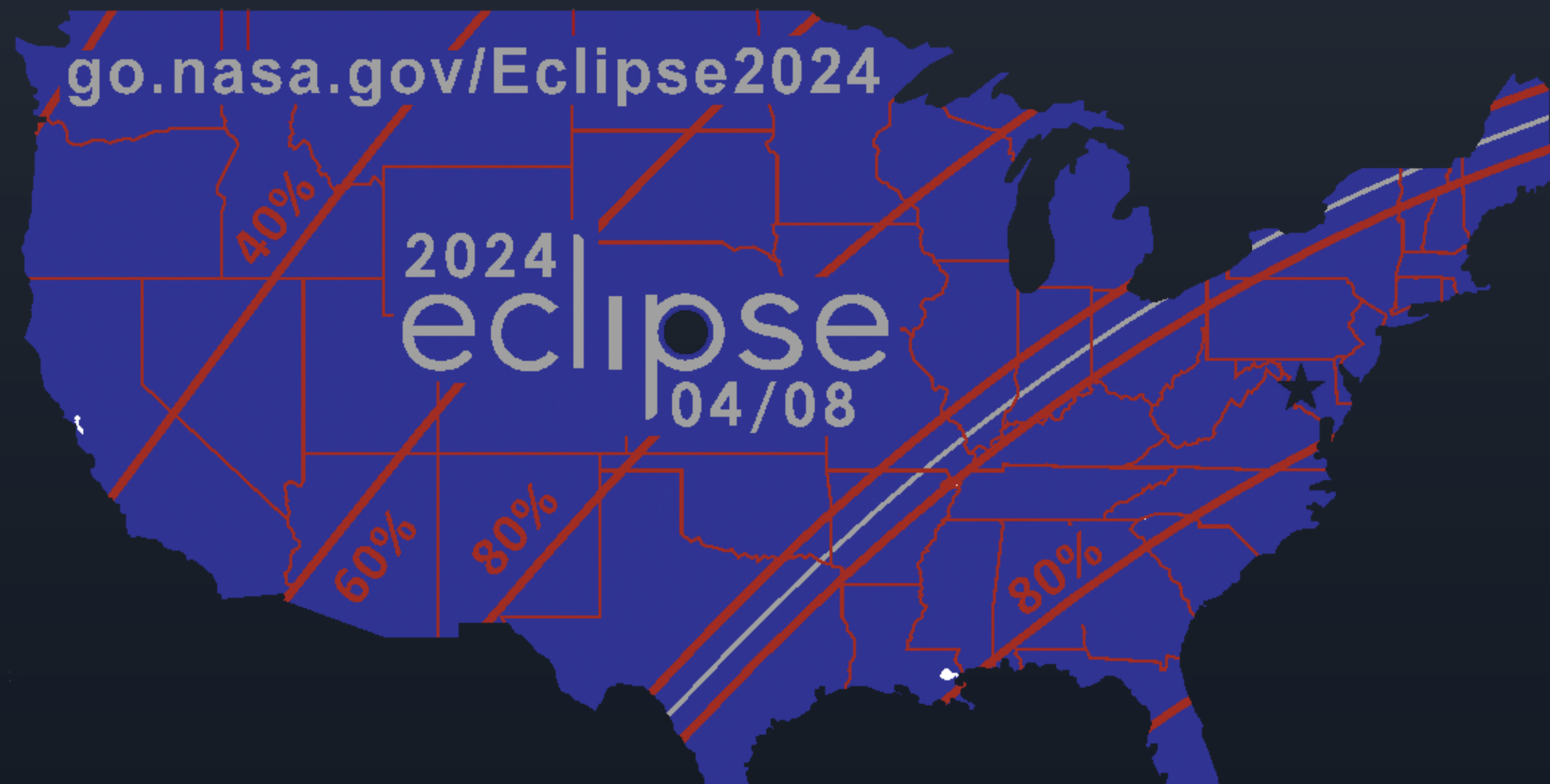
### NASA HEAT US MAP PINHOLE PROJECTOR ACTIVITY

#### 2D Paper Cut Pinhole Projector



Credit: NASA HEAT/J. Patrick Haas

#### 3D Printed Pinhole Projector



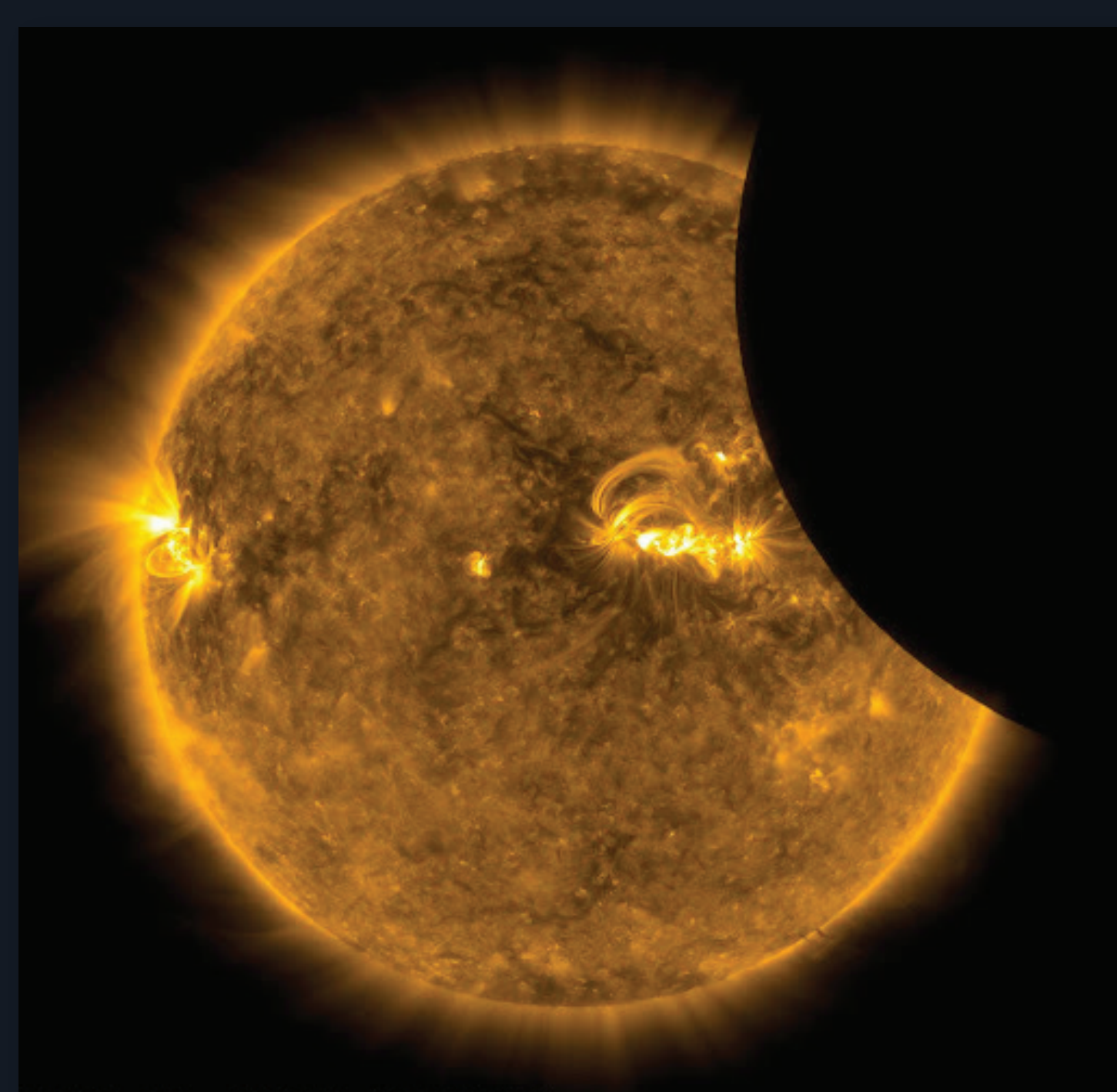
Credit: NASA HEAT/J. Patrick Haas

Pinhole projectors allowed early scientists to view the shapes of illuminated objects, like the Sun, by shining the light from the object through a very small hole, projecting the image of the object onto the ground, wall, or other flat surface. Explore the 2D paper cut and 3D printed versions of the total eclipse pinhole projectors and activity. These are a great method for safe solar viewing.

Be sure that when using, the Sun is always behind you!



Download Files/Activity  
[nasa3d.arc.nasa.gov/detail/usa-eclipse-2024](https://nasa3d.arc.nasa.gov/detail/usa-eclipse-2024)



2024 Total Solar  
eclipse  
THROUGH THE EYES OF NASA

