

ANNULAR SOLAR ECLIPSE

SATURDAY, OCTOBER 14, 2023



US ANNULAR AND TOTAL SOLAR ECLIPSE PATHS

An annular solar eclipse on Saturday, October 14, 2023, and a total solar eclipse on Monday, April 8, 2024, cross the nation.



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

EXPLORE ECLIPSES



Updated resources for safety, NASA science, and history

solarsystem.nasa.gov/eclipses

HELIOPHYSICS BIG YEAR

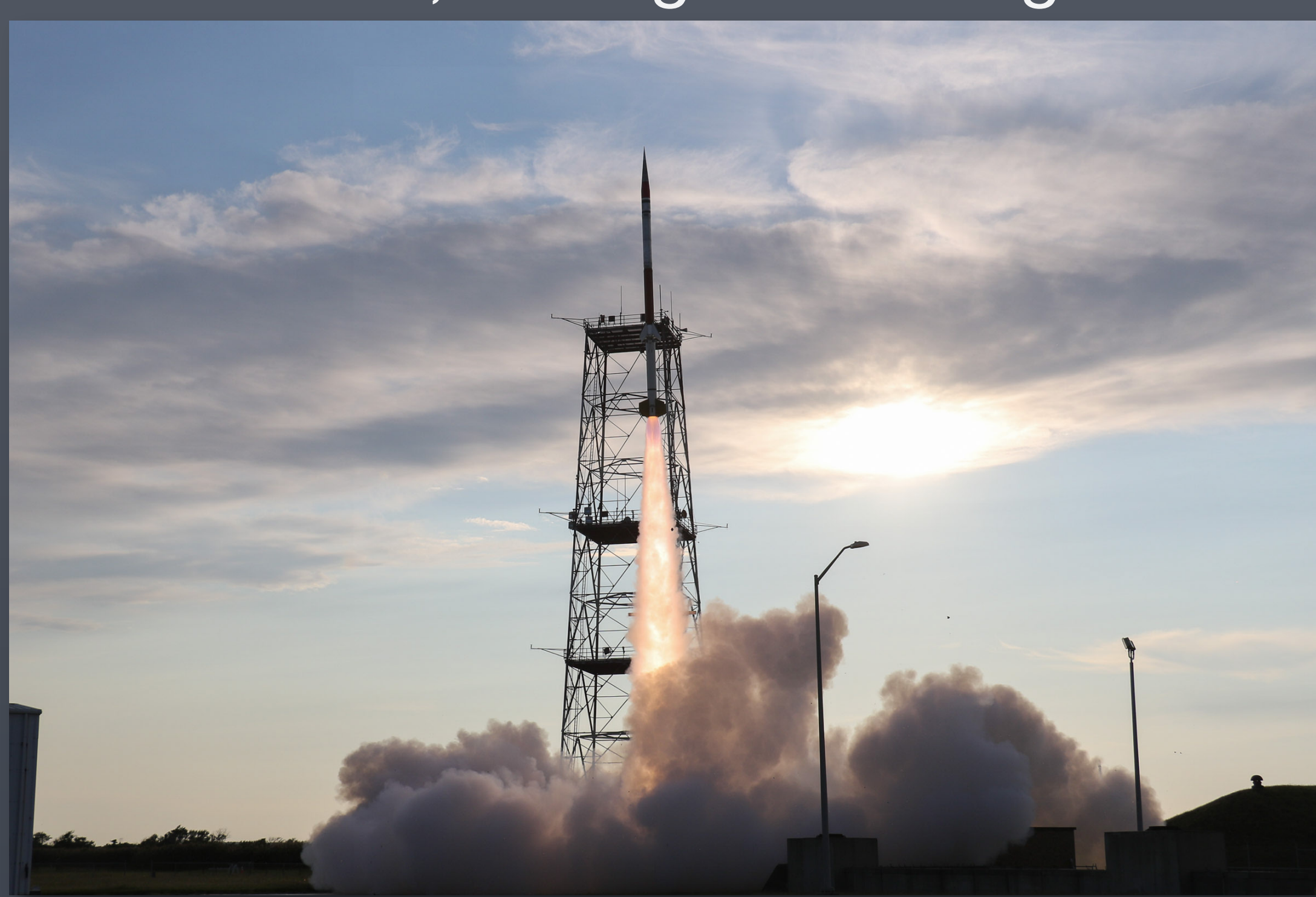
October 2023 - December 2024
A global celebration of heliophysics science



go.nasa.gov/HelioBigYear

WHY DOES NASA STUDY ECLIPSES?

Eclipses aren't just beautiful – they're great for science. In addition to inspiring artists and musicians, eclipses have driven numerous scientific discoveries. 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.



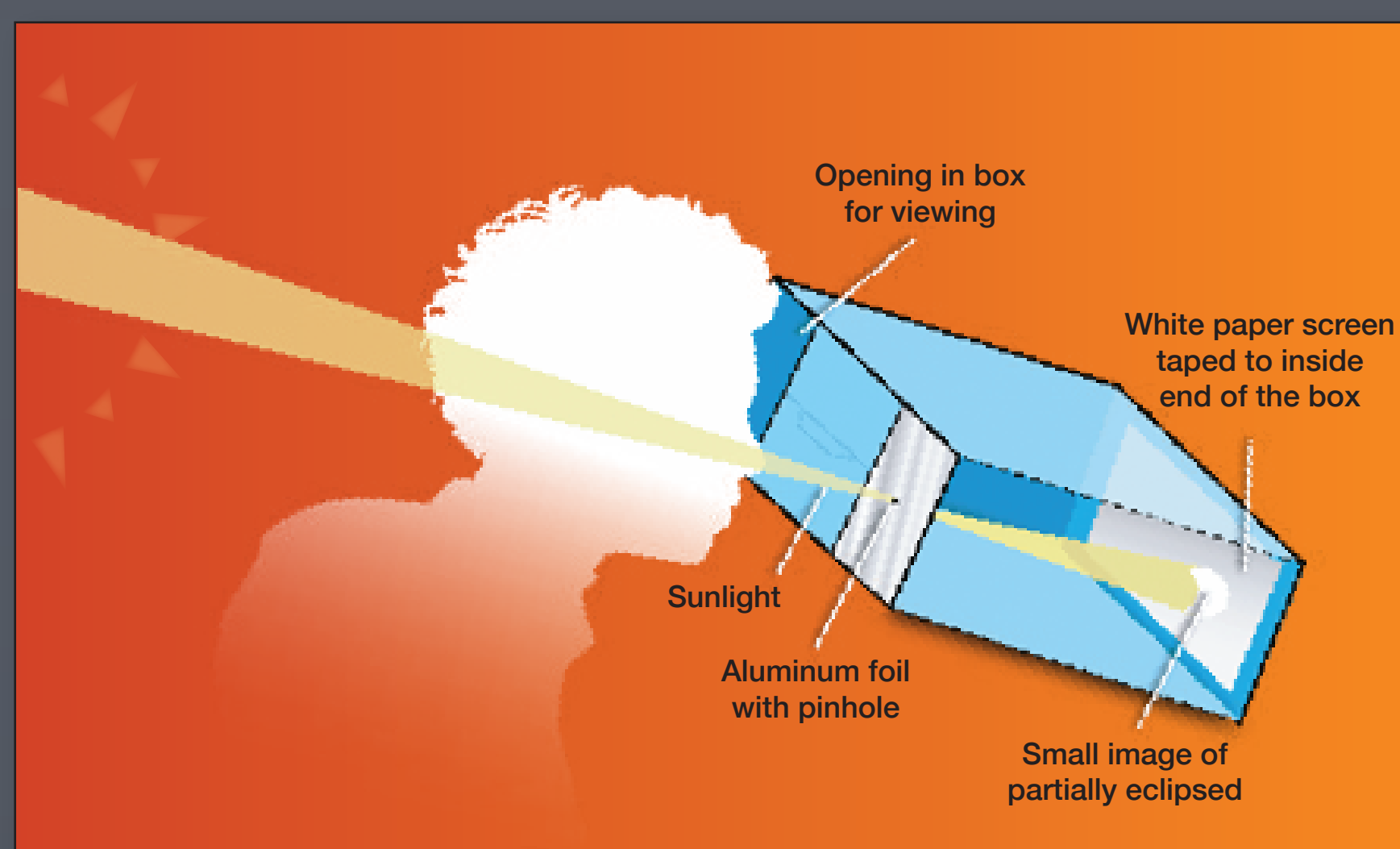
Credit: NASA/Wallops Flight Facility

Suborbital sounding rockets and high-altitude scientific balloons are just a few ways NASA studies eclipses. They carry instruments to study a variety of phenomena including the Sun's impact on Earth's upper atmosphere. Both will be launched during upcoming eclipses.



Credit: NASA

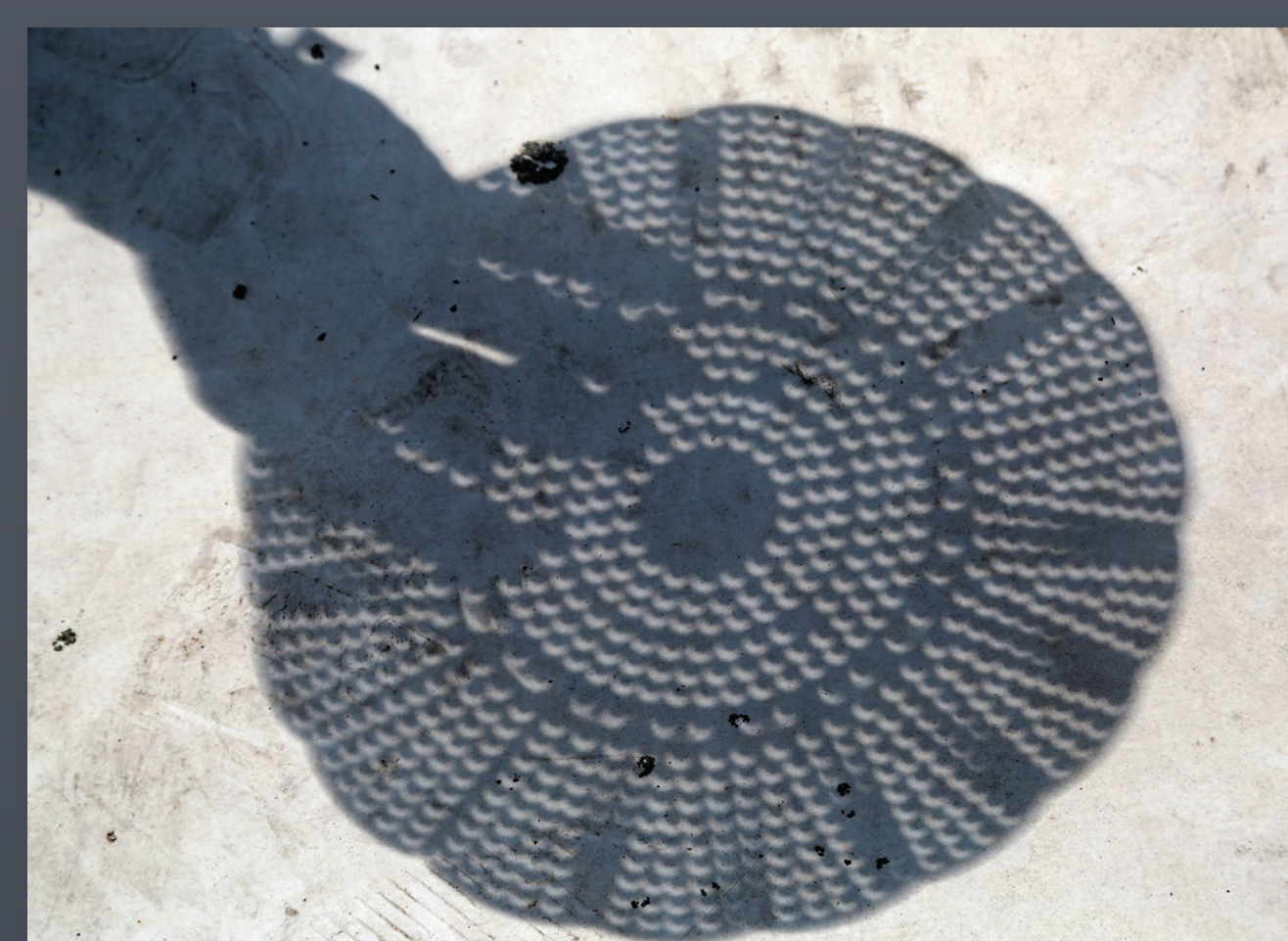
SAFE ECLIPSE VIEWING



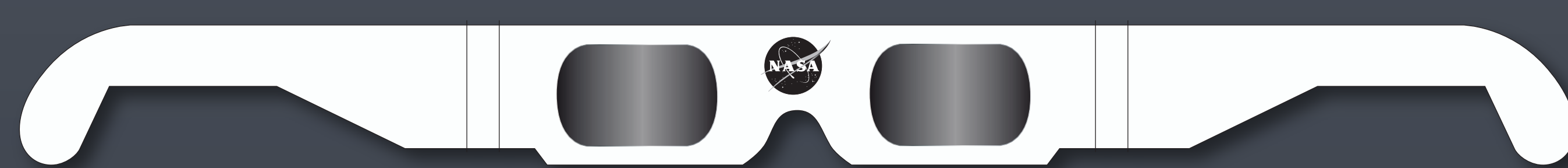
Credit: NASA

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 annular 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.



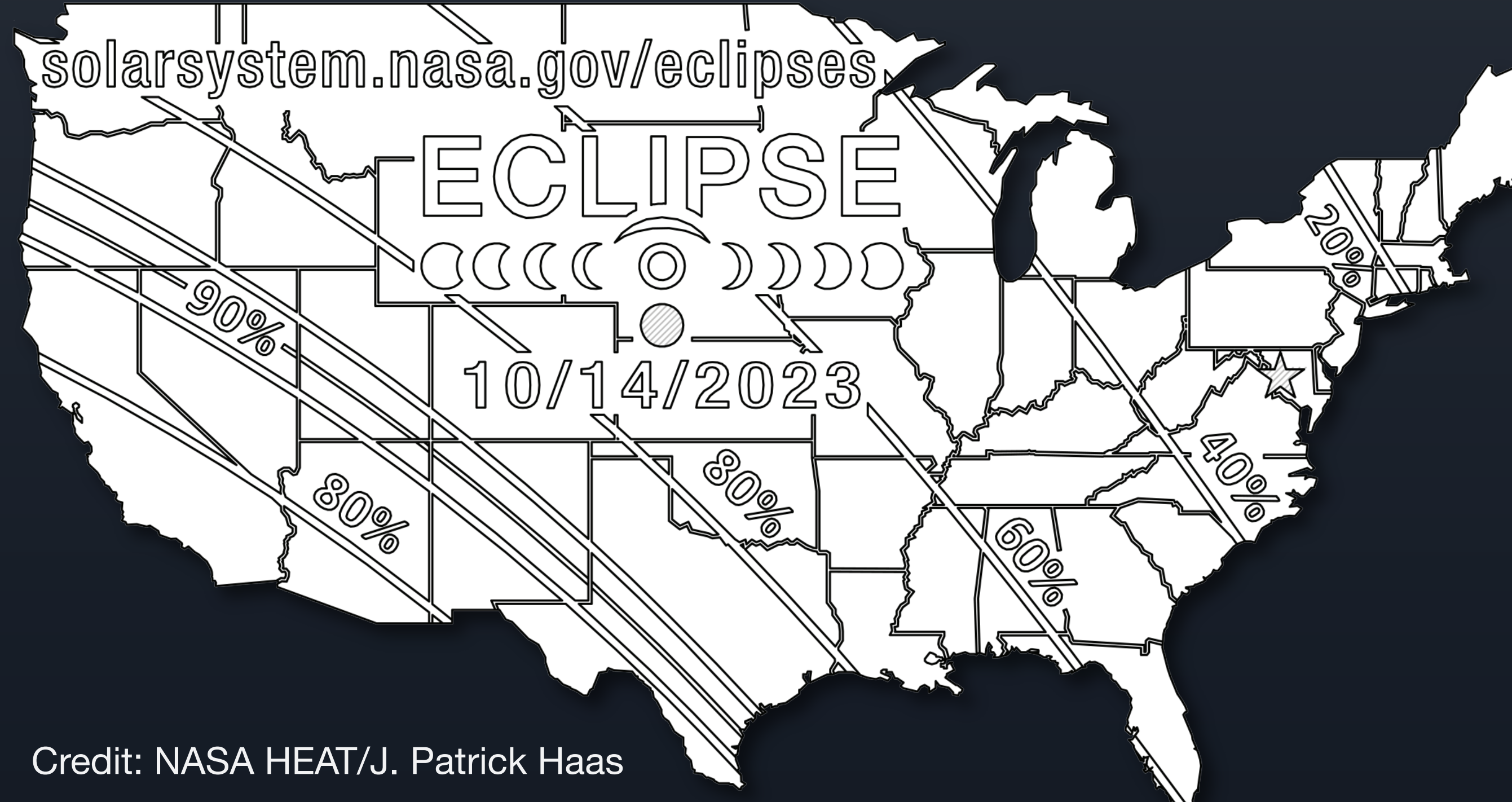
Credit: NASA/Shannon Reed

Decorate your eclipse glasses any way you want to safely view the eclipse! This tiara add-on was created using heavy cardstock, scissors, markers, tape, and ribbon.



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 annular eclipse pinhole projectors and activity. These are a great method for safe solar viewing.



Download Files/Activity
nasa3d.arc.nasa.gov/detail/usa-eclipse-2023

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

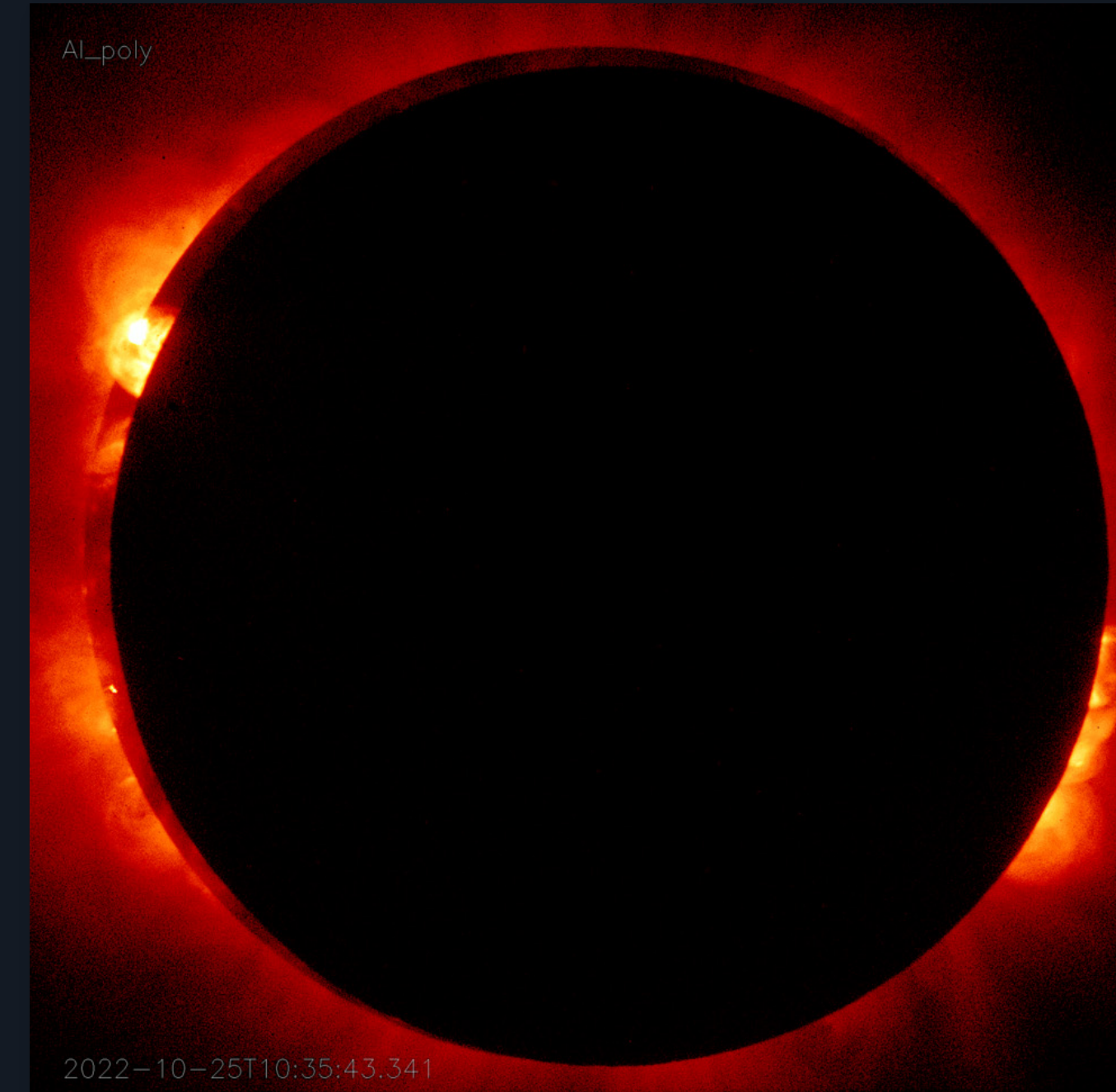


A partial solar eclipse captured over the US Capitol.
Credit: NASA/Bill Ingalls

ECLIPSE



2023 THROUGH THE EYES OF NASA



The Hinode spacecraft saw an annular eclipse from orbit in 2022.
Credit: JAXA/NASA/SAO