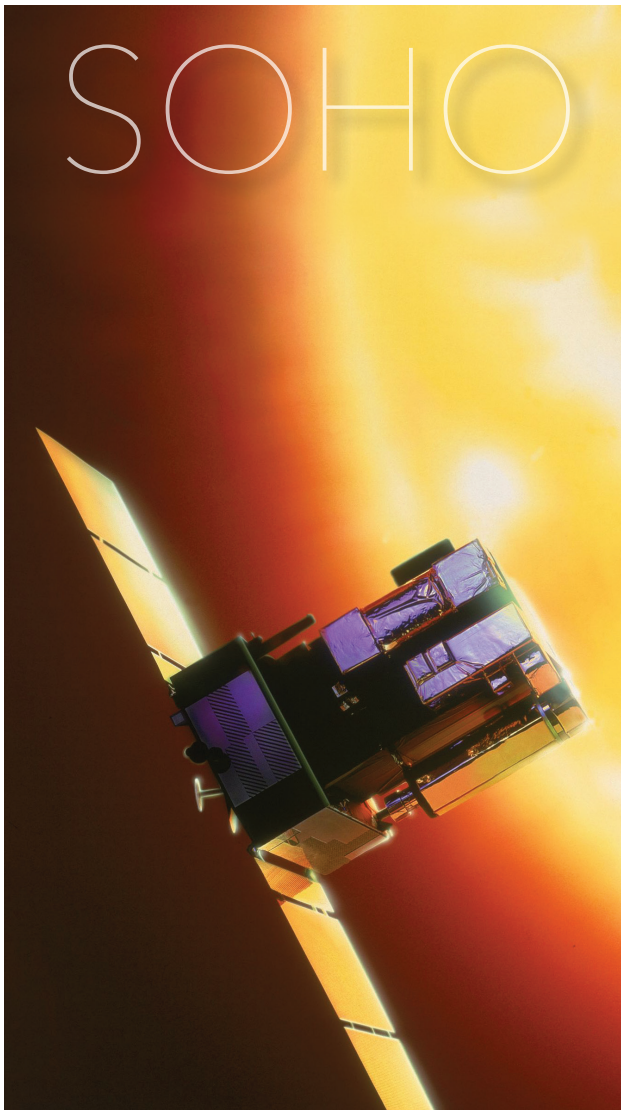
National Aeronautics and Space Administration

SOLAR AND HELIOSPHERIC OBSERVATORY



The Solar and Heliospheric Observatory During the Eclipse

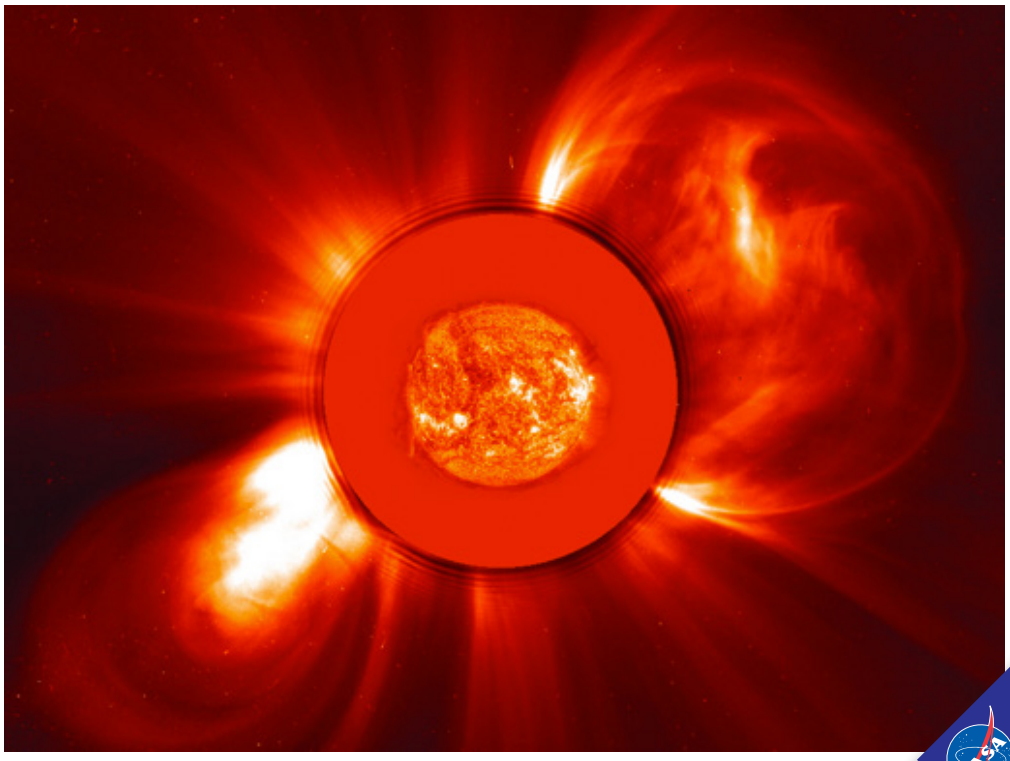
The Solar and Heliospheric Observatory, or SOHO, will not witness an eclipse from space in conjunction with the total solar eclipse seen on Aug. 21, 2017—because it orbits a point in space that is well past the Moon's orbit. SOHO orbits around the Sun in step with Earth, by slowly orbiting around the first Lagrangian point, known as L1, approximately 930 thousand miles (1.5 million km) away from Earth (about four times the distance of the Moon). This offers a continuous view of the Sun, which helps NASA's mission to better understand the star we live with.

One of SOHO's key instrument suites, its coronagraphs, essentially create artificial eclipses. Humans first observed the highly structured solar atmosphere, the corona, during a total eclipse when the Moon completely blocked the Sun's bright light. During a total eclipse, the much dimmer corona suddenly becomes visible, often showing clear lines of solar material streaming away from the Sun. In order to replicate that perspective, scientists built coronagraphs, which use a disk to mimic the Moon and obscure the Sun.

Even though it won't see the Moon pass in front of the Sun, SOHO's coronograph will be capturing observations on Aug. 21, which can be used with ground-based observations to provide deeper insight into the processes driving the Sun's atmosphere.

A Solar Workhorse

A joint ESA/NASA mission, SOHO studies the Sun from deep inside its core to the outer corona and solar wind. A workhorse of NASA's fleet of solar-watching spacecraft, SOHO has been capturing images of dynamic solar eruptions—such as solar flares and coronal mass ejections—since 1996. The mission has provided an unprecedented breadth and depth of information about the Sun, with a unique combination of instruments that study its interior through the hot and dynamic atmosphere to the solar wind and its interaction with the interstellar medium. Its coronagraphs—telescopes that observe the Sun's atmosphere by blocking out the bright Sun in the middle—remain a key component for forecasting the speed, direction and strength of coronal mass ejections as they erupt from the Sun. In addition to watching our star, SOHO has become the most prolific discoverer of comets in astronomical history: as of 2016, over 3,000 comets had been found by SOHO, over half by amateur astronomers accessing the images over the Internet.



This Nov. 8, 2000, image from ESA/NASA's Solar and Heliospheric Observatory shows two images in one. The outer image shows an image by the observatory's LASCO C2 coronograph, showing a giant cloud of solar material escaping the Sun—what's called a coronal mass ejection, or CME. The inner image of the Sun, is from SOHO's Extreme ultraviolet Imaging Telescope, taken on the same day.

ADDITIONAL RESOURCES:

Mission Project Home Page: *https://nasa.gov/soho*

The Sun-Earth Connection: *https://nasa.gov/sunearth*

FS-2017-7-065-GSFC