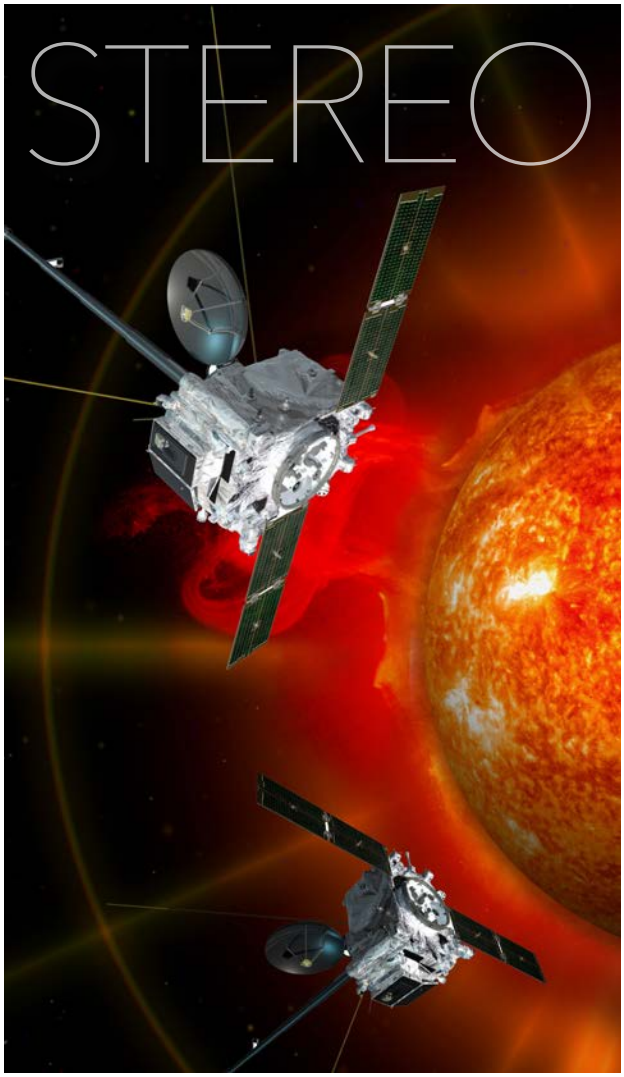
SOLAR TERRESTRIAL RELATIONS OBSERVATORY



STEREO During the Eclipse

On Aug. 21, 2017, during the total eclipse, NASA's Solar Terrestrial Relations Observatory, or STEREO, mission will have an unblocked view of the sun—the far side. Since it launched in 2006, the STEREO spacecraft have slowly moved to the opposite side of the sun from Earth, where the mission can provide us with observations of the far side of the sun that we can't see from our vantage point.

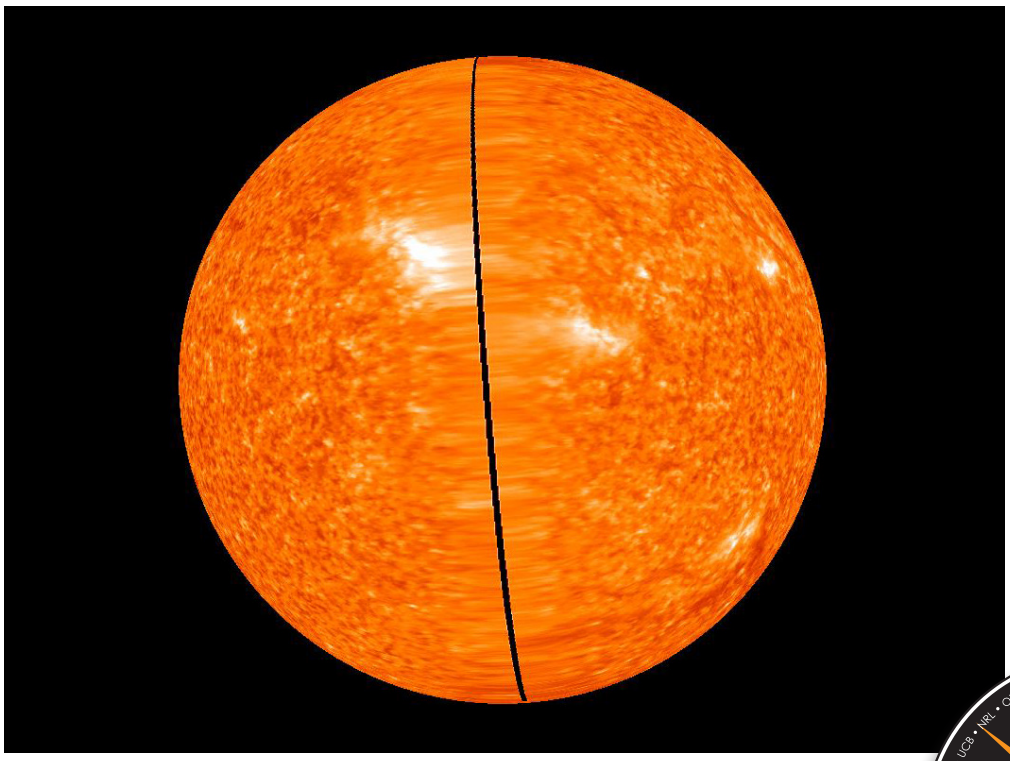
Even though the moon will not be in the way, one of the STEREO instruments, the coronagraph, creates an artificial eclipse to block the bright light of the sun. With our star obscured, its dim atmosphere, the corona, can be seen. Scientists make use of these coronagraph images and other STEREO data to better understand what drives giant eruptions on the sun called coronal mass ejections. These eruptions can send solar material and energy toward Earth, which can—when intense—affect our satellites and interfere with radio communications. STEREO's constant artificial eclipse helps us keep an eye on such eruptions, and provides situational awareness we need on Earth to mitigate such effects.

The observations STEREO gathers during the eclipse can also be used to round out observations of the solar atmosphere taken from the ground and thus create a robust, more three-dimensional picture of the sun's dynamic corona.

Watching the Sun in Stereovision

The STEREO mission employs two nearly identical space-based observatories—to provide the first-ever stereoscopic measurements to study the sun. With this pair of viewpoints, scientists have been able to see the 3-dimensional structure and evolution of solar storms as they blast from the sun and travel out through space. STEREO's instruments provide a unique combination of observations to help understand the causes and mechanisms of coronal mass ejections and to characterize how they propagate through the solar system. STEREO also helps determine what powers the acceleration of energetic particles from the sun and provides information on the structure of the solar wind.

On Oct. 1, 2014, NASA mission operations lost communication with STEREO-B. Efforts to regain contact are ongoing. STEREO-A continues to operate normally and provide views of the far side of the sun, otherwise unseeable from Earth's perspective.



Four years after launch, the orbits of NASA's two STEREO spacecraft carried the observatories to opposite sides of the sun, 180 degrees apart. From that perspective, the two observatories together could provide observations of the entire sun simultaneously. Credit: NASA/STEREO

ADDITIONAL RESOURCES:

Mission Project Home Page: *https://stereo.gsfc.nasa.gov/*

STEREO News: *nasa.gov/stereo*

STEREO Data: *https://stereo-ssc.nascom.nasa.gov/*