



# EXPERIENCE THE 2017 ECLIPSE ACROSS AMERICA

THROUGH THE EYES OF NASA  
<http://eclipse2017.nasa.gov>

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Credit: Rick Fienberg, TravelQuest International and Wilderness Travel



Credit: S. Habbal, M. Drueckmüller and P. Aniol

## 3-D RADIATIVE TRANSFER CLOSURE



NASA's EPIC instrument aboard NOAA's DSCOVR satellite gathers constant images of Earth.

### Overview

During totality, the Moon completely blocks direct solar radiation, dramatically decreasing the total amount of radiation that reaches the surface, as well as the radiation Earth's atmosphere, clouds, and oceans reflect back into space. These changes are represented by Earth's ever-fluctuating radiation budget, the absolute irradiance the planet's Sunlit side experiences. Calculating this budget is a fundamental technique for accurately estimating atmospheric and surface temperatures during such fluctuations.

### Eclipse Science

In Casper, Wyoming, the scientists will deploy two ground-based instruments: a spectrometer, which provides information on how much of any given wavelength of light is present and a pyranometer, which measures total solar irradiance coming down toward the surface. Meanwhile, in space, the instruments EPIC and NISTAR aboard NOAA's DSCOVR will monitor Earth's outgoing radiation. Additionally, NASA's Terra satellite will provide observations of atmospheric and surface conditions. The scientists plan to use this collection of data to build better radiation transfer models.

**ADDITIONAL RESOURCES:** EPIC Instrument Home Page: <https://epic.gsfc.nasa.gov>  
 DSCOVR Space Weather Data: <https://www.ngdc.noaa.gov/dscovr/portal/index.html#/>