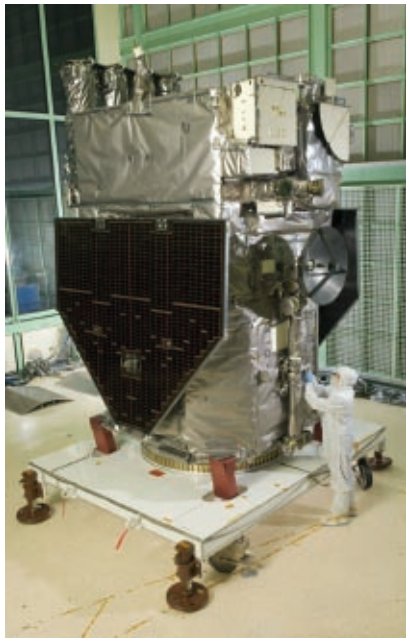
The SDO Spacecraft

SDO is one of the largest solar observing spacecraft ever put into orbit. Its solar panels are 6.5 meters (21.3 ft.) wide. They provide all the power SDO needs.

The spacecraft was launched on Feb. 11, 2010 and will operate for at least five years.



SDO nearing completion in 2009

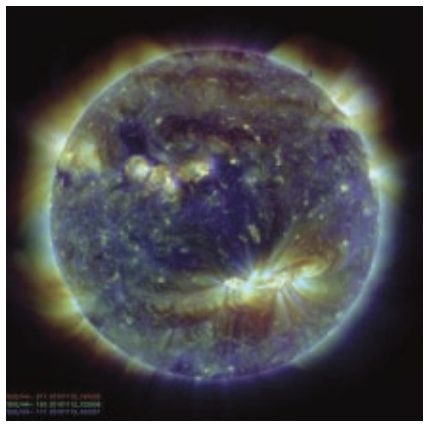
Data for Everyone

• Do you want to show your students an image of the Sun as it looked just 15 minutes ago?

• Do you want to watch images of the Sun as it reaches solar maximum?

• Do you want to see movies of the last 48-hours of solar activity?

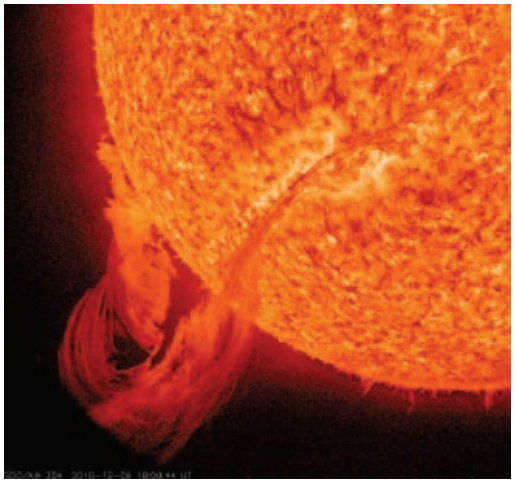
You can browse SDO's images of the Sun at: http://sdo.gsfc.nasa.gov



Credit: SDO/NASA

The Sun in three wavelengths of extreme ultraviolet light

SDO is part of the Living With a Star Program within NASA's Heliophysics Division



Credit: SDO/NASA

A piece of the Sun erupts into space

Visit us on the Web at:
http://sdo.gsfc.nasa.gov

For information on Heliophysics programs and missions, see:
http://science.nasa.gov/heliophysics

NP-2009-10-103-GSFC Rev. 1

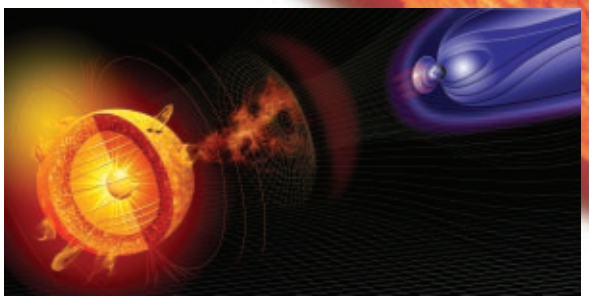
National Aeronautics and Space Administration

solar dynamics observatory

www.nasa.gov

SDO: Our Eye on the Sun

SDO Science

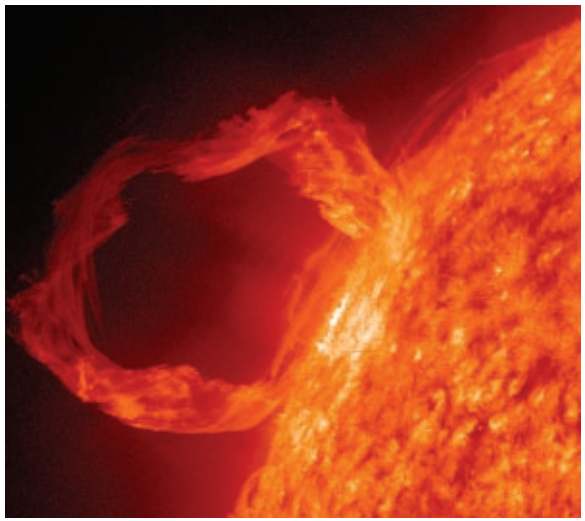


Solar storm impacting Earth and its magnetic shield [artist's rendering]

Solar activity affects our modern society. Solar flares and coronal mass ejections can disable satellites, cause power grid failures, and disrupt GPS communications.

The Solar Dynamics Observatory (SDO) is keeping track of solar activity in new ways. Six cameras on SDO take photos of the Sun every three-quarters of a second. These images are 10 times sharper than what you see on high-definition TV. They reveal every nuance of solar activity.

SDO also looks into the Sun, at the "solar dynamo," seeking clues to the mystery of the solar cycle. This will help scientists predict future solar activity.



Credit: SDO/NASA

Huge solar prominence rising above the Sun

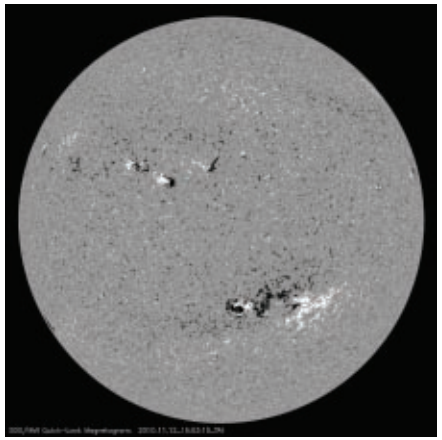
SDO Instruments

Magnetic activity on the surface of the Sun

The Solar Dynamics Observatory has three science instruments:

Extreme Ultraviolet Variability Experiment (EVE)
Extreme ultraviolet radiation from the Sun has a direct and powerful effect on Earth's upper atmosphere: It heats it, puffs it up, and breaks apart atoms and molecules. EVE measures fluctuations in the Sun's ultraviolet output.

Helioseismic and Magnetic Imager (HMI)
HMI maps solar surface magnetic fields and peers beneath the Sun's surface using helioseismology. A key goal is to understand how the Sun creates magnetic fields.



Credit: SDO/NASA

Magnetic map of the Sun's surface

Atmospheric Imaging Assembly (AIA)
The four telescopes of AIA photograph the Sun's surface and atmosphere. AIA filters cover 10 different wavelength bands to reveal key aspects of solar activity.

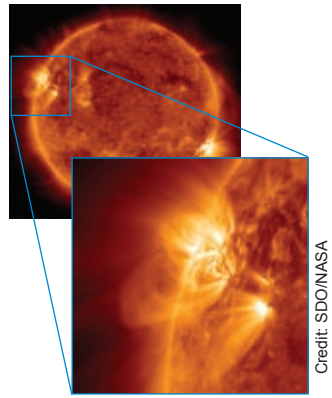
An Avalanche of Data

SDO's orbit will allow continuous observations of the Sun

The amount of data and number of images that SDO beams back each day is equivalent to downloading half-a-million songs each day.

The image quality lets researchers zoom in to see details never available before.

To handle the load, NASA has set up a pair of dedicated radio antennas near Las Cruces, New Mexico.



Credit: SDO/NASA

SDO images are super HD

SDO's dedicated ground station in Las Cruces, NM