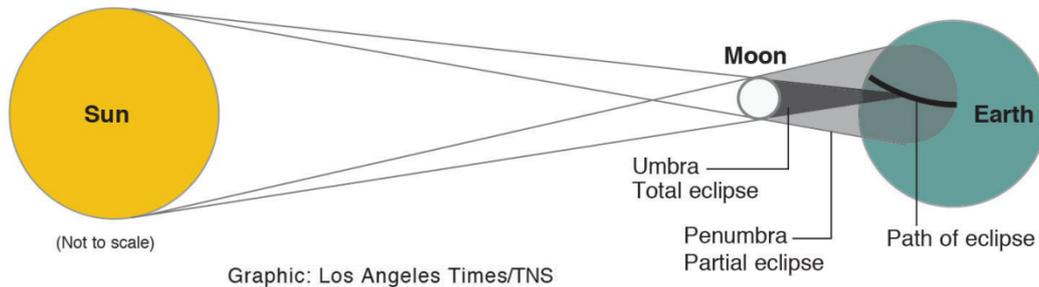


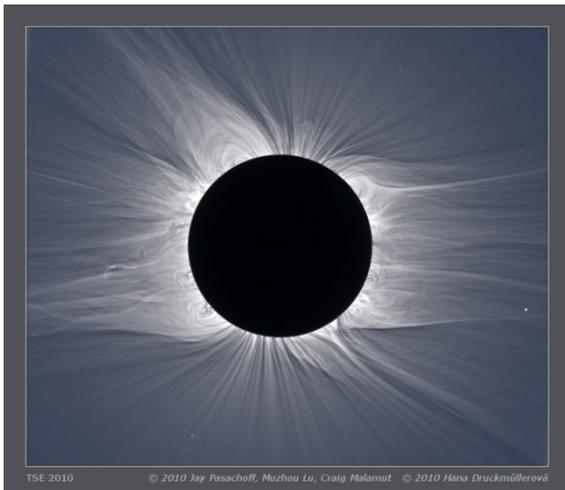
# Eclipse Science: Exploring Our Sun

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A solar eclipse occurs when the Moon covers part of or all of the Sun. A partial solar eclipse will be viewable from the **NC Triangle** region on Monday, August 21, from about 2 pm to 3:30 pm with maximum at about 2:45 pm. More than 90% of the sun will be obscured at maximum eclipse, but it must be viewed through a solar filter at all times. Other areas of the country, along a 70-mile wide swath from Oregon to South Carolina, will experience a total solar eclipse.

Astronomers across the North American continent will be pointing telescopes at the Sun on August 21. A solar eclipse is the best time to view the outermost part of the Sun (called the corona) and background objects that appear close to the sun from our perspective on Earth.



## The Ultra-Hot Solar Corona

When you move away from a hot object, such as a campfire, you cool down. Accordingly, the temperature at the center of the sun is 27 million degrees Fahrenheit and steadily falls as you move outward, dropping to 10,000 degrees at the solar photosphere, the surface that emits sunlight into space. But then the trend turns around. The solar corona, a region of tenuous gas just above the photosphere, climbs back up to 20,000 degrees and abruptly leaps to millions of degrees!

Scientists still debate the details of how this occurs. Somehow, the dynamics of the Sun's magnetic field must be responsible for the bizarrely high temperature of the corona. Two possible explanations for coronal heating will be investigated during this

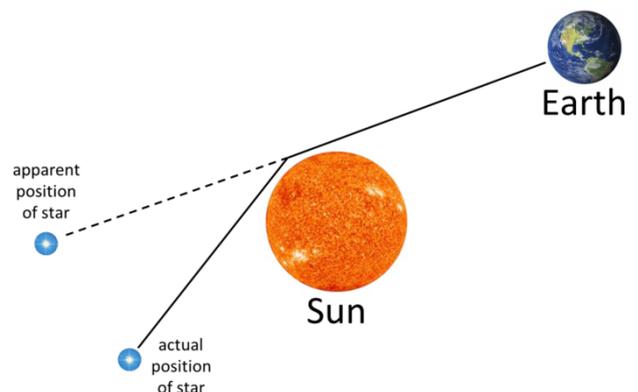
solar eclipse: (1) Nanoflares, millions of small explosions occurring every second at places in the corona where the magnetic field undergoes an abrupt change in its configuration. (2) Oscillations in the small loops in the magnetic field that shake coronal gas, thereby heating it.

## Bending Light

When light passes by a large object, such as the Sun, its path is bent. This "gravitational lensing" was predicted by Einstein's general theory of relativity and famously confirmed by Arthur Eddington at an eclipse in 1919. Scientists will repeat Eddington's observation during the 2017 eclipse using modern equipment.

## A Coast-to-Coast Movie

In a first-of-its-kind citizen science project, thousands of images taken along the eclipse path will be stitched together, creating a film of the eclipse's progress across the US. To participate in this project, visit <https://eclipsemega.movie>.



For more information, please visit: [www.tunl.duke.edu/~ticesty/eclipse\\_2017](http://www.tunl.duke.edu/~ticesty/eclipse_2017)