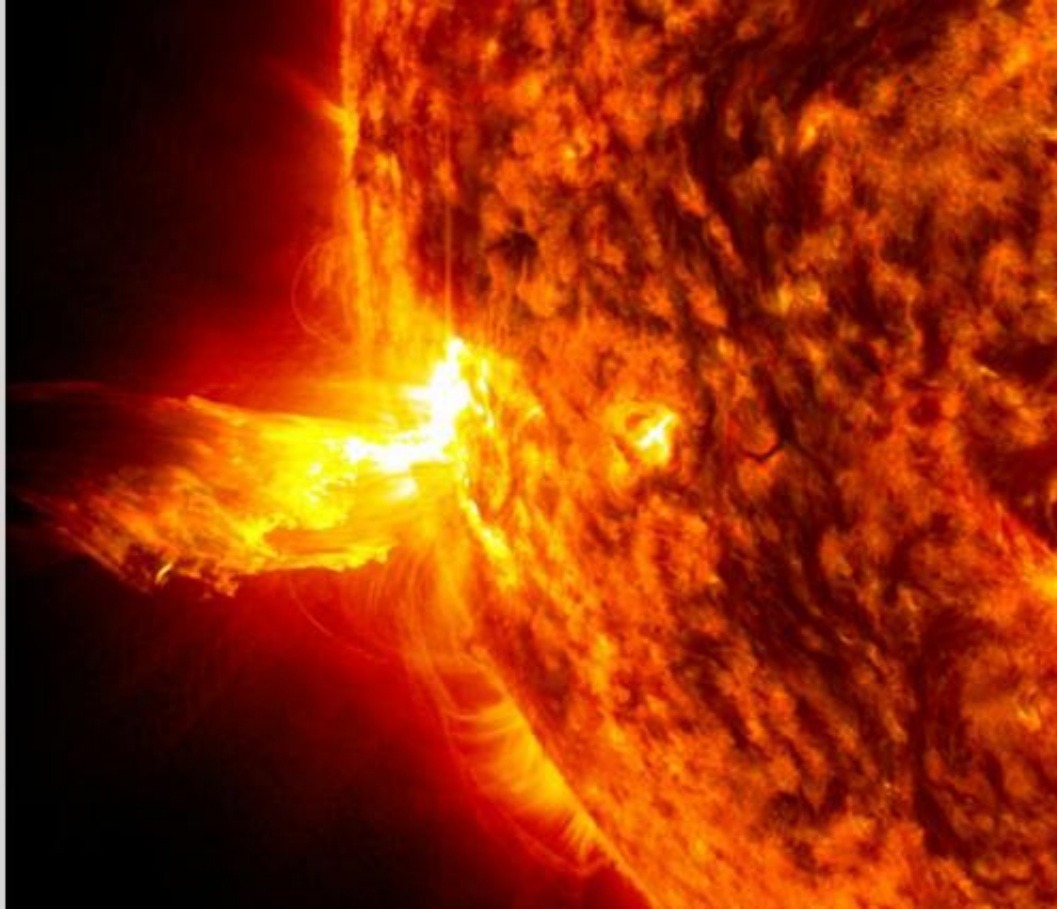


Sun emits a solstice CME

June 21 2013



This image from June 20, 2013, at 11:15 p.m. EDT shows the bright light of a solar flare on the left side of the sun and an eruption of solar material shooting through the sun's atmosphere, called a prominence eruption. Shortly thereafter, this same region of the sun sent a coronal mass ejection out into space. Credit: NASA/SDO

On June 20, 2013, at 11:24 p.m., the sun erupted with an Earth-directed coronal mass ejection or CME, a solar phenomenon that can send billions of tons of particles into space that can reach Earth one to three days later. These particles cannot travel through the atmosphere to harm humans on Earth, but they can affect electronic systems in satellites and on the ground.

Experimental NASA research models, based on observations from NASA's [Solar Terrestrial Relations Observatory](#) and ESA/NASA's Solar and Heliospheric Observatory show that the CME left the sun at speeds of around 1350 miles per second, which is a fast speed for CMEs.

Earth-directed CMEs can cause a space [weather phenomenon](#) called a [geomagnetic storm](#), which occurs when they funnel energy into Earth's magnetic envelope, the magnetosphere, for an extended period of time. The CME's magnetic fields peel back the outermost layers of Earth's fields changing their very shape. [Magnetic storms](#) can degrade communication signals and cause unexpected electrical surges in power grids. They also can cause aurora. Storms are rare during solar minimum, but as the sun's activity ramps up every 11 years toward solar maximum – currently expected in late 2013—large storms occur several times per year.

In the past, geomagnetic storms caused by CMEs of this strength and direction have usually been mild. In addition, the CME may pass by additional spacecraft: Messenger, STEREO B, Spitzer, and their mission operators have been notified. If warranted, operators can put spacecraft into safe mode to protect the instruments from the solar material.

Provided by NASA's Goddard Space Flight Center

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