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EARTH: Here Comes the Solar Maximum

Alexandria, VA – In 1859, the largest recorded coronal mass ejection (CME) from the sun, known as the Carrington Event, disrupted what little electrical technology was used at the time. Back then, that meant the temporary disruption of the telegraph system. Today, without an effective warning mechanism in place, a solar storm of that magnitude could wreak havoc on our technology-dependent world. And with the solar maximum predicted to occur later this year, scientists and policymakers are scrambling to prepare us for when the next big solar storm hits.

CMEs occur when the sun's magnetic field becomes so entangled that it "snaps," releasing an enormous amount of energy. In order to detect these events, a variety of satellites and ground-based observatories stare at the sun 24 hours a day, monitoring for solar activity. While science's tools to observe and study this behavior are improving, we still don't know when CMEs will occur until they already have.

The Advanced Composition Explorer, or ACE satellite, is the current early-warning system for a CME. Floating approximately 1.5 million kilometers above the planet at the Earth-sun gravitational equilibrium, the ACE satellite can provide up to 60 minutes of warning before a CME impact. Solar flares, on the other hand, are currently impossible to forewarn – when you see a solar flare, it is already here. But a team of scientists out of Purdue University is working on a way to predict solar activity half a day before happens not by monitoring the sun, but by observing something here on Earth: the rate at which radioactive elements decay. Could this controversial method protect us from future solar activity? Read the story online and find out at http://bit.ly/UvrPf3.

Read this story and more in the January issue of EARTH Magazine, available online now! Also learn how policymakers picked the Prime Meridian; read how long-lost letters shed new light on the 19th century Bone Wars; and go on a trip with a Martian meteorite all in this month's issue of EARTH!

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