Solar storm shakes Earth magnetic field

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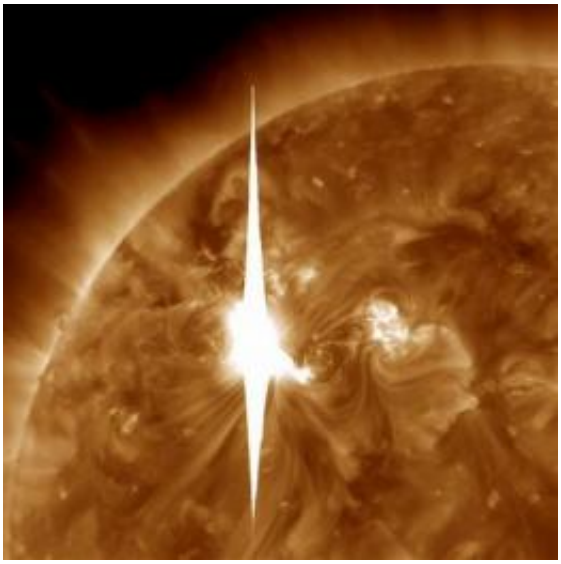

This handout image provided by NASA shows a solar flare errupting at 7 p.m. EDT on Tuesday, March 6, 2012, and that is heading toward Earth. An impressive solar flare is heading toward Earth and could disrupt power grids, GPS and airplane flights. Forecasters at the National Oceanic and Atmospheric Administration's (NOAA) Space Weather Prediction Center said the sun erupted Tuesday evening and the effects should start smacking Earth late Wednesday night, close to midnight EST. They say it is the biggest in five years and growing. (AP Photo/NASA)

(AP) -- A solar storm shook the Earth's magnetic field early Friday, but scientists said they had no reports of any problems with electrical systems.

After reports Thursday of the storm fizzling out, a surge of activity prompted space weather forecasters to issue alerts about changes in the magnetic field.

"We really haven't had any reports from power system operators yet," Rob Steenburgh, a space weather forecaster at the National Oceanic and Atmospheric Administration's Space Weather Prediction Center in Boulder, Colo., said early Friday. "But sometimes they don't come in until after the storm."

He said the storm reached a moderate level late Thursday, before going to a strong level early Friday. For most of Thursday, it was rated as minor.

Scientists say such storms don't pose a threat to people, just technology.

The space weather center's website says a storm rated as strong could force corrections to voltage systems and trigger false alarms on some protection devices, as well as increase drag on satellites and affect their orientation.

The forecasters weren't aware of any significant impact to electrical or technological systems, but said there was a two-hour blackout of high frequency radio communications - affecting mainly ham radio operations - stretching from eastern Africa to eastern Australia.

Steenburgh also said that there was another solar flare late Thursday, similar to the one a few days ago that set off the current storm.

"Right now we're still analyzing when it will arrive" and how strong it could be, he said.

The space weather center had reports of Northern Lights across Canada

and dipping into the northern tier of U.S. states, Steenburgh said.

While some experts thought the threat from the solar storm passed by earlier Thursday, the space weather center maintained the storm's effects could continue through Friday morning.

The current storm, which started with a solar flare Tuesday evening, caused a stir Wednesday because forecasts were for a strong storm with the potential to knock electrical grids offline, mess with GPS and harm satellites. It even forced airlines to reroute a few flights on Thursday.

It was never seen as a threat to people, just technology, and teased skywatchers with the prospect of colorful Northern Lights dipping further south.

But when the storm finally arrived around 6 a.m. EST Thursday, after traveling at 2.7 million mph, it was more a magnetic breeze than a gale. The power stayed on. So did GPS and satellites. And the promise of auroras seemed to be more of a mirage.

Scientists initially figured the storm would be the worst since 2006, but now seems only as bad as ones a few months ago, said Joe Kunches, a scientist at the NOAA center. The strongest storm in recorded history was probably in 1859, he said.

"It's not a terribly strong event. It's a very interesting event," Kunches said.

Forecasters can predict the speed a solar storm travels and its strength, but the north-south orientation is the wild card. This time it was a northern orientation, which is "pretty benign," Kunches said. Southern would have caused the most damaging technological disruption and biggest auroras.

On Thursday, North American utilities didn't report any problems, said Kimberly Mielcarek, spokeswoman for the North American Electric Reliability Corporation, a consortium of electricity grid operators. Her office didn't respond to a phone call early Friday.

Astronomers say the sun has been relatively quiet for some time. And this storm, forecast to be strong and ending up minor, still may seem fiercer because Earth has been lulled by several years of weak solar activity.

The storm is part of the sun's normal 11-year cycle, which is supposed to reach a peak next year. Storms as large as the latest one will probably happen several more times as the cycle ramps up to that peak, scientists said.

The region of the sun that erupted can still send more blasts our way, Kunches said. Another set of active sunspots is ready to aim at Earth.

"This is a big sun spot group, particularly nasty," NASA's Hathaway said. "Things are really twisted up and mixed up. It keeps flaring."

Storms like this start with sun spots. First, there's an initial solar flare of subatomic particles that resembles a filament coming out of the sun. That part usually reaches Earth only minutes after the initial burst, bringing radio and radiation disturbances. Next is the coronal mass ejection, which looks like a growing bubble and takes a couple days to reach Earth.

Solar storms have three ways they can disrupt technology on Earth: with magnetic, radio and radiation emissions. In 1989, a strong solar storm knocked out the power grid in Quebec, causing 6 million people to lose power.

For North America, the good part of a solar storm - the one that creates more noticeable auroras or Northern Lights - was likely to peak Thursday evening. Auroras were likely to dip only as far south as the northern edges of the United States, Kunches said, but a full moon would make them harder to see.

Solar storms can bring additional radiation around the north and south poles - a risk that sometimes forces airlines to reroute flights. On Thursday, Delta Air Lines and United Airlines sent 11 flights to Asia on a more southern route rather than their more common path over the Arctic. Three American Airlines flights flew lower than normal over the northernmost parts of their routes to Japan and China.

More information: NOAA Space Weather Prediction Center: http://www.swpc.noaa.gov

NASA on solar flare: http://www.nasa.gov/mission-pages/sunearth/news/News030712-X1.5.html

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