Biggest solar storm in years races toward Earth (Update 2)

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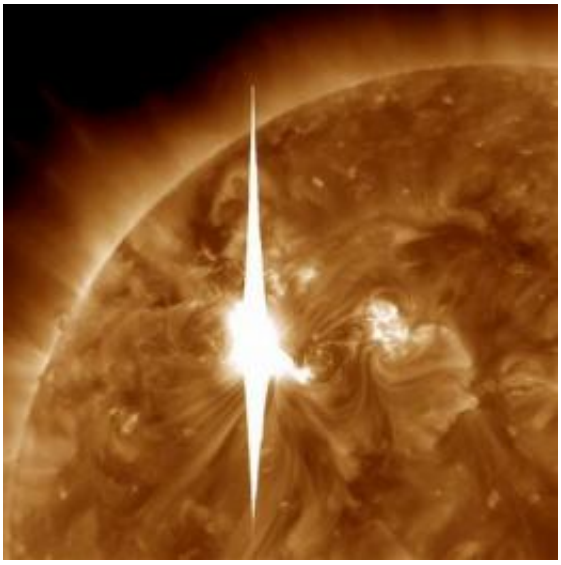

This handout image provided by NASA shows a solar flare heading toward Earth. An impressive solar flare is heading toward Earth and could disrupt power grids, GPS and airplane flights. An impressive solar flare is heading toward Earth and could disrupt power grids, GPS and airplane flights. Forecasters 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)

The largest solar storm in five years was due to arrive on Earth early Thursday, promising to shake the globe's magnetic field while expanding the Northern Lights.

The storm started with a massive solar flare earlier in the week and grew as it raced outward from the sun, expanding like a giant soap bubble, scientists said. When it strikes, the particles will be moving at 4 million mph.

"It's hitting us right in the nose," said Joe Kunches, a scientist for the National Oceanic and Atmospheric Administration in Boulder, Colo.

The massive cloud of charged particles could disrupt utility grids, airline flights, satellite networks and GPS services, especially in northern areas. But the same blast could also paint colorful auroras farther from the poles than normal.

Astronomers say the sun has been relatively quiet for some time. And this storm, while strong, 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 peak storminess next year. Solar storms don't harm people, but they do disrupt technology. And during the last peak around 2002, experts learned that GPS was vulnerable to solar outbursts.

Because new technology has flourished since then, scientists could discover that some new systems are also at risk, said Jeffrey Hughes, director of the Center for Integrated Space Weather Modeling at Boston University.

A decade ago, this type of solar storm happened a couple of times a year, Hughes said.

"This is a good-size event, but not the extreme type," said Bill Murtagh, program coordinator for the federal government's Space Weather Prediction Center.

The sun erupted Tuesday evening, and the most noticeable effects should arrive here between 1 a.m. and 5 a.m. EST Thursday, according to forecasters at the space weather center. The effects could linger through Friday morning.

Center forecaster Rob Steenburgh said that as of 2:30 a.m. EST Thursday, there were no noticeable effects on Earth. But he said there were some indications from a satellite, which registered a slight rise in low energy particles.

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

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

Storms like this start with sun spots, Hathaway said.

Then comes an initial solar flare of subatomic particles that resemble a filament coming out of the sun. That part already hit Earth only minutes after the initial burst, bringing radio and radiation disturbances.

After that comes the coronal mass ejection, which looks like a growing bubble and takes a couple days to reach Earth. It's that ejection that could cause magnetic disruptions Thursday.

"It could give us a bit of a jolt," NASA solar physicist Alex Young said.

The storm follows an earlier, weaker solar eruption that happened Sunday, Kunches said.

For North America, the good part of a solar storm - the one that creates more noticeable auroras or Northern Lights - will peak Thursday evening. Auroras could dip as far south as the Great Lakes states or lower, Kunches said, but a full moon will make them harder to see.

Auroras are "probably the treat we get when the sun erupts," Kunches said.

Still, the potential for problems is widespread. Solar storms have three ways they can disrupt technology on Earth: with magnetic, radio and radiation emissions. This is an unusual situation, when all three types of solar storm disruptions are likely to be strong, Kunches said. That makes it the strongest overall since December 2006.

That means "a whole host of things" could follow, he said.

North American utilities are monitoring for abnormalities on their grids and have contingency plans, said Kimberly Mielcarek, spokeswoman for the North American Electric Reliability Corporation, a consortium of electricity grid operators.

In 1989, a strong solar storm knocked out the power grid in Quebec, causing 6 million people to lose power.

Solar storms can also make global positioning systems less accurate and cause GPS outages.

The storm could trigger communication problems and additional radiation around the north and south poles - a risk that will probably force airlines to reroute flights. Some already have done so, Kunches said.

Satellites could be affected, too. NASA spokesman Rob Navias said the

space agency isn't taking any extra precautions to protect astronauts on the International Space Station from added radiation.

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

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