

First 'extreme' solar storm in 20 years brings spectacular auroras

May 10 2024, by Issam AHMED



This handout photo taken and released by Jacob Anderson shows the northern lights, or aurora borealis, during a solar storm over the National Monument of Scotland in Edinburgh.

Earth was set to be struck by more powerful solar storms on Saturday, a day after the most extreme events in two decades triggered spectacular celestial light shows from Tasmania to Britain and threatened possible disruptions to satellites and power grids.

The first of several coronal mass ejections (CMEs)—expulsions of plasma and magnetic fields from the sun—came just after 1600 GMT Friday, according to the US-based National Oceanic and Atmospheric Administration (NOAA)'s Space Weather Prediction Center.

It was later upgraded to an "extreme" geomagnetic storm—the first since the "Halloween Storms" of October 2003 caused blackouts in Sweden and damaged power infrastructure in South Africa.

Social media lit up with people posting pictures of auroras from northern Europe and Australasia.

"We've just woken the kids to go watch the Northern Lights in the back garden! Clearly visible with the naked eye," Iain Mansfield in Hertford, England, told AFP.

That sense of wonder was shared in Australia's island state of Tasmania.

"Absolutely biblical skies in Tasmania at 4am this morning. I'm leaving today and knew I could not pass up this opportunity," photographer Sean O'Riordan posted alongside a photo on social media platform X, formerly Twitter.

The excitement spread across Europe and North America, from Mont Saint-Michel on the French coast to Payette, Idaho, where the sky shimmered with green light above the western US states.



Northern Lights, or aurora borealis, illuminate the night sky near London, Ontario, during the most powerful solar storm in more than two decades.

The NOAA, in a Saturday update, said "storming of varying intensity" will persist through at least Sunday.

"The threat of additional strong flares and CMEs will remain until the large and magnetically complex sunspot cluster rotates out of view over the next several days," it said.

"There have been reports of power grid irregularities and degradation to high-frequency communications and GPS," it added.

'Go outside tonight and look'

Authorities notified satellite operators, airlines and the power grid to take precautionary steps for potential disruptions caused by changes to Earth's magnetic field.

Elon Musk, whose Starlink satellite internet operator has some 5,000 satellites in low Earth orbit, described the solar storm as the "biggest in a long time."

"Starlink satellites are under a lot of pressure, but holding up so far," Musk posted on his X platform.



An aurora is seen over Ohio in the United States during a geomagnetic storm on May 10, 2024.

China's National Center for Space Weather issued a "red alert" Saturday morning warning the storm is expected to continue throughout the weekend and will impact communications and navigation in most areas of the country, state news agency Xinhua reported.

Unlike solar flares, which travel at the speed of light and reach Earth in around eight minutes, CMEs travel at a more sedate pace, with officials putting the current average at 800 kilometers (500 miles) per second.

The CMEs emanated from a massive sunspot cluster that is 17 times wider than our planet.

The sun is approaching the peak of an 11-year cycle that brings heightened activity.

Mathew Owens, a professor of space physics at the University of Reading, told AFP that how far the effects would be felt over the planet's northern and southern latitudes would depend on the storm's final strength.

"Go outside tonight and look would be my advice because if you see the aurora, it's quite a spectacular thing," he said.



A solar storm could bring auroras -- such as that seen here in Norway on May 10, 2024 -- to night skies where such phenomenon aren't normally visible.

People with eclipse glasses can also look for the sunspot cluster during the day.

NOAA's Brent Gordon encouraged the public to try to capture the night sky with phone cameras even if they couldn't see auroras with their naked eyes.

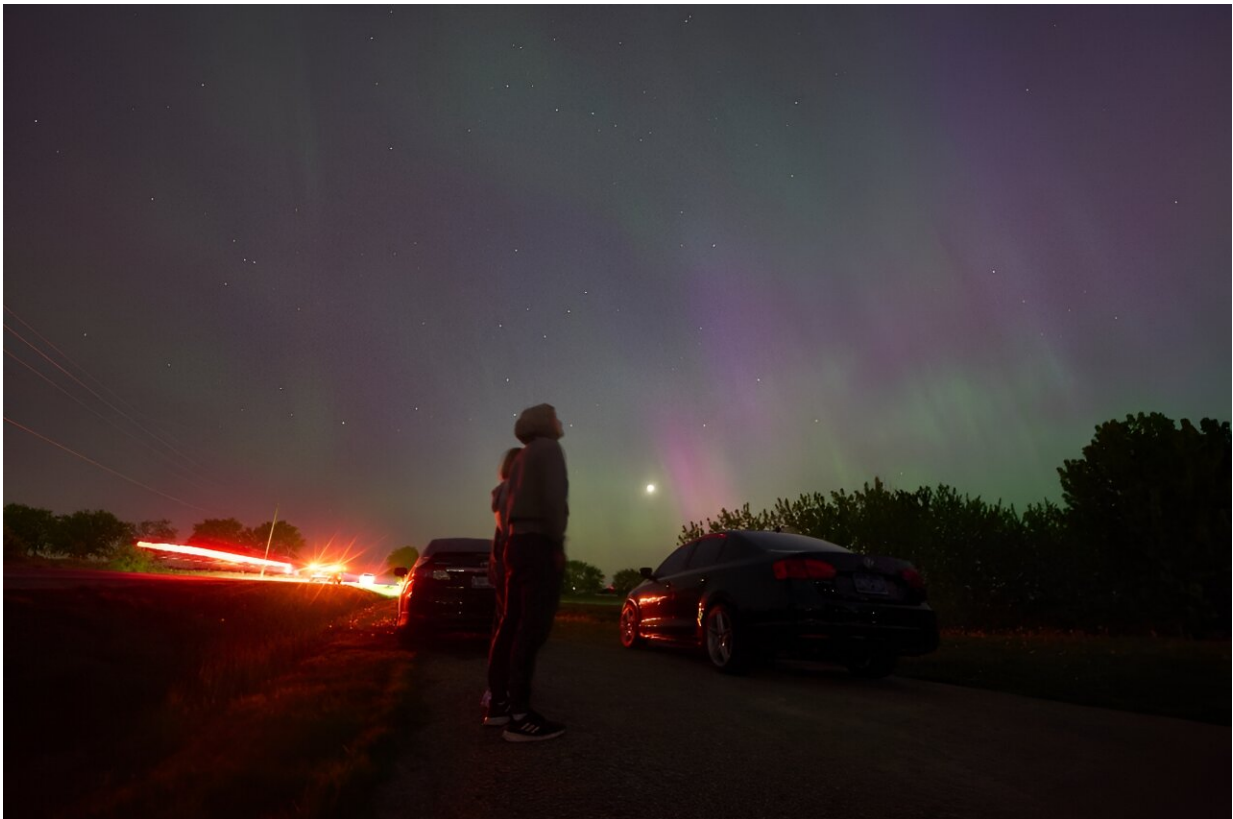
"Just go out your back door and take a picture with the newer cell phones and you'd be amazed at what you see in that picture versus what you see with your eyes."

Spacecraft and pigeons

Fluctuating magnetic fields associated with geomagnetic storms induce currents in long wires, including power lines, which can potentially lead to blackouts. Long pipelines can also become electrified, leading to engineering problems.

Spacecraft are also at risk from high doses of radiation, although the atmosphere prevents this from reaching Earth.

NASA has a dedicated team looking into astronaut safety and can ask astronauts on the International Space Station to move to places within the outpost that are better shielded.



People stop along a country road near London, Ontario, to watch the Northern lights, or aurora borealis, during a geomagnetic storm.

Following one particularly strong flare peak, the US Space Weather Prediction Center said users of high-frequency radio signals "may experience temporary degradation or complete loss of signal on much of the sunlit side of Earth."

Even pigeons and other species that have internal biological compasses could be affected. Pigeon handlers have noted a reduction in birds coming home during geomagnetic storms, according to NASA's Jet Propulsion Laboratory.

The most powerful geomagnetic storm in recorded history, known as the Carrington Event after British astronomer Richard Carrington, occurred in September 1859.

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