

# Solar storms could cause more auroras on Tuesday night

July 30 2024, by Daniel Lawler

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In May, the most powerful geomagnetic storm to strike Earth in more than two decades lit up night skies in many parts of the world.

Massive explosions on the sun have triggered warnings of geomagnetic storms that could create dazzling auroras in the northern United States,

Europe and southern Australia on Tuesday night.

In May, the most powerful geomagnetic storm to strike Earth in more than two decades lit up night skies with colorful light displays in Hawaii, Spain, South Africa and other places far from the extreme latitudes where they are normally seen.

These storms are caused by coronal mass ejections (CMEs)—expulsions of plasma and magnetic fields from the sun which take days to reach Earth.

At least four CMEs that erupted in recent days are headed towards Earth, the US-based National Oceanic and Atmospheric Administration (NOAA) said late Monday.

They will arrive from Tuesday to Thursday, with "geomagnetic storm watches" declared by the NOAA on those days.

But "the brunt of the activity is most likely" to come on Tuesday, when there is a "strong" geomagnetic storm warning of G3, the NOAA said.

May's record storms were classified as the most extreme level of G5. This means any potential auroras this week are unlikely to stray as far, or as be as powerful, as those seen earlier this year.

But if the current forecast is correct, during the late evening hours in the US on Tuesday, an "aurora could become visible as far south as the northeast US through the upper Midwest and across the rest of the northern states to include northern Oregon", the NOAA said.

The aurora borealis—also known as the northern lights—may become visible in Scotland over the next three nights, but could be "impeded by limited hours of darkness", the UK's Met Office said on Tuesday.

"With a bit of luck," auroras could also be spotted in northern Germany, the Netherlands and Belgium, according to the website SpaceWeatherLive.

Aurora australis—the southern lights—could be visible in the south of the Australian state of Tasmania and similar latitudes, the Met Office said.

## **'Cannibal CME'**

When CMEs erupt, they shoot around a billion tons of plasma—with an accompanying magnetic field—from the sun towards our home planet.

One of the CMEs coming towards Earth this week merged with another, forming what is called a "Cannibal CME", according to spaceweather.com.

The NOAA warned that more CMEs are continuing to erupt, so more could be coming our way.

When the CMEs slam into Earth's magnetosphere, they can create geomagnetic storms.

These storms can mess with satellites orbiting Earth and affect things like radio signals and GPS positioning systems.

They can also knock out electricity grids—the "Halloween Storms" of October 2003 sparked blackouts in Sweden and damaged power infrastructure in South Africa.

Astronauts on the International Space Station often shelter during extreme solar activity to avoid being exposed to radiation.

Numerous strong solar flares—huge explosions on the sun's surface which can cause CMEs—have also been emitted in recent days.

Most CMEs and flares come from sunspots, which are massive, darker areas of intense activity on the solar surface. The sunspot cluster that caused May's storms was 17 times the size of Earth.

As of Tuesday, there are 11 sunspots on the disk of the sun, according to the Met Office.

More geomagnetic storms could be yet to come, because solar activity is only just approaching the peak of its roughly 11-year cycle.

The peak—called "solar maximum"—is expected between late 2024 and early 2026.

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Citation: Solar storms could cause more auroras on Tuesday night (2024, July 30) retrieved 30 July 2024 from <https://phys.org/news/2024-07-solar-storms-auroras-tuesday-night.html>

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