# Solar storm intensifies with widespread auroras and power grid risks



A significant solar storm that struck Earth over the weekend is intensifying, raising alarms about potential radio blackouts and pressures on power grids. On Monday, officials issued a Level 3 geomagnetic storm warning due to the heightened solar activity. This warning indicates that disruptions could affect GPS signals, radio communications, and electrical systems. Moreover, the storm has the potential to make stunning auroras visible much further south than usual, capturing the attention of both scientists and the public alike.

This geomagnetic storm is the result of charged particles released by the Sun's outer atmosphere, known as a coronal mass ejection. The phenomenon led to the sun emitting a substantial M8.2 solar flare on Sunday—a powerful release of energy akin to an explosion. Solar flares are categorised based on their intensity, with rankings ranging from A to X, where M represents a medium strength.

Auroras are predicted to be visible across 13 states in the US, including Washington, Idaho, and portions of the Midwest and Northeast. The best viewing times are expected to fall between 10 PM and 2 AM local time. In Europe, particularly in the northern UK, the Met Office noted that auroral activity would primarily be visible in Northern Ireland and Scotland.

Experts assert that while this storm is captivating, it poses real risks. The National Oceanic and Atmospheric Administration (NOAA) has warned of possible disruptions to power systems in states such as Minnesota and Wisconsin, where the stress could lead to false alarms or system shutdowns. Dr. Tamitha Skov, an independent space weather physicist, mentioned that while the initial storm speed is significant, its strength remains moderate. "Some risk for mainly controllable power fluctuations in the power grid is possible," she noted, cautioning that this could lead to temporary disruptions in GPS signals and high-frequency radio communications.

The current solar activity has garnered heightened attention due to past experiences with severe geomagnetic storms. For instance, a G4 storm observed in April 2023 resulted in auroras observable in locations such as Alabama and northern California while also causing similar disruptions to satellite navigation and power grids. Such events have prompted officials to push for improved preparedness regarding extreme space weather. Researchers conducted a "solar storm emergency drill," simulating various scenarios of geomagnetic storms, revealing vulnerabilities in critical infrastructures. One exercise indicated a potential "internet apocalypse," with power outages extending for weeks across large parts of the U.S.

In light of these lessons, scientists and officials are advocating for a comprehensive governmental strategy to strengthen resilience against cosmic disasters. This could involve enhancing real-time data collection for space weather monitoring, deploying additional satellites for observation, and improving forecasting models to provide earlier warnings to relevant stakeholders.

While this most recent solar storm brings awe-inspiring auroras, it also serves as a stark reminder of the risks posed by solar activity. Consequently, as the spectacle unfolds, experts urge those in impacted areas to remain alert and prepared for potential disruptions.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490), [[2]](https://www.noaa.gov/media-advisory/severe-geomagnetic-storm-hits-earth-aurora-may-be-visible-as-far-south-as-alabama)
* Paragraph 2 – [[1]](https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490), [[3]](https://www.earth.com/news/severe-solar-storm-will-generate-auroras-as-far-south-as-alabama/)
* Paragraph 3 – [[1]](https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490), [[4]](https://www.noaa.gov/media-advisory/noaa-forecasts-severe-solar-storm), [[5]](https://en.wikipedia.org/wiki/Geomagnetic_storm)
* Paragraph 4 – [[1]](https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490), [[6]](https://www.earth.com/news/severe-solar-storm-just-hit-earth-expect-auroras-in-southern-united-states/)
* Paragraph 5 – [[1]](https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490), [[3]](https://www.earth.com/news/severe-solar-storm-will-generate-auroras-as-far-south-as-alabama/), [[6]](https://www.earth.com/news/severe-solar-storm-just-hit-earth-expect-auroras-in-southern-united-states/)
* Paragraph 6 – [[7]](https://www.cbsnews.com/amp/news/severe-geomagnetic-storm-watch-issued-unusual-solar-event/)

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## Bibliography

1. <https://www.dailymail.co.uk/sciencetech/article-14772183/Massive-solar-storm-northern-lights-auroras.html?ns_mchannel=rss&ns_campaign=1490&ito=1490> - Please view link - unable to able to access data
2. <https://www.noaa.gov/media-advisory/severe-geomagnetic-storm-hits-earth-aurora-may-be-visible-as-far-south-as-alabama> - On April 23, 2023, NOAA observed a severe geomagnetic storm (G4) caused by a coronal mass ejection from the Sun. This event led to auroras visible as far south as Alabama and northern California. The storm also posed potential disruptions to satellite navigation systems, high-frequency radio communications, and power grids. NOAA's Space Weather Prediction Center monitored the situation and provided guidance to mitigate impacts. ([noaa.gov](https://www.noaa.gov/media-advisory/severe-geomagnetic-storm-hits-earth-aurora-may-be-visible-as-far-south-as-alabama?utm_source=openai))
3. <https://www.earth.com/news/severe-solar-storm-will-generate-auroras-as-far-south-as-alabama/> - A severe solar storm, classified as G4, was forecasted to impact Earth, potentially generating auroras visible as far south as Alabama. The storm was expected to cause disruptions in power systems, satellite operations, and GPS navigation. NOAA's Space Weather Prediction Center issued warnings and advised operators to take protective actions. ([earth.com](https://www.earth.com/news/severe-solar-storm-will-generate-auroras-as-far-south-as-alabama/?utm_source=openai))
4. <https://www.noaa.gov/media-advisory/noaa-forecasts-severe-solar-storm> - NOAA's Space Weather Prediction Center forecasted a severe solar storm, with potential impacts on communications, the electric power grid, navigation, radio, and satellite operations. The storm could also trigger auroras visible as far south as Alabama and Northern California. NOAA notified system operators to take protective actions. ([noaa.gov](https://www.noaa.gov/media-advisory/noaa-forecasts-severe-solar-storm?utm_source=openai))
5. <https://en.wikipedia.org/wiki/Geomagnetic_storm> - A geomagnetic storm is a temporary disturbance of Earth's magnetosphere caused by interactions with solar wind and magnetic fields from the Sun. These storms can disrupt satellite communications, GPS systems, and power grids. The severity of a storm is classified on the NOAA G-scale, ranging from G1 (minor) to G5 (extreme). ([en.wikipedia.org](https://en.wikipedia.org/wiki/Geomagnetic_storm?utm_source=openai))
6. <https://www.earth.com/news/severe-solar-storm-just-hit-earth-expect-auroras-in-southern-united-states/> - A severe solar storm, classified as G4, impacted Earth, potentially generating auroras visible as far south as Alabama and northern California. The storm posed risks to power systems, satellite operations, and GPS navigation. NOAA's Space Weather Prediction Center issued warnings and advised operators to take protective actions. ([earth.com](https://www.earth.com/news/severe-solar-storm-just-hit-earth-expect-auroras-in-southern-united-states/?utm_source=openai))
7. <https://www.cbsnews.com/amp/news/severe-geomagnetic-storm-watch-issued-unusual-solar-event/> - An 'extreme' G5 geomagnetic storm reached Earth, following days of solar activity that sent explosions of plasma and magnetic fields toward Earth. The storm caused auroras visible as far south as Alabama and Northern California. NOAA warned of potential disruptions to power grids, satellite navigation, and radio communications. ([cbsnews.com](https://www.cbsnews.com/amp/news/severe-geomagnetic-storm-watch-issued-unusual-solar-event/?utm_source=openai))