# Scientists warn of dire consequences as major solar storm threatens critical infrastructure



Scientists have recently expressed urgent concerns regarding humanity's preparedness for extreme space weather, particularly as a significant solar storm is anticipated to hit Earth shortly. This warning follows a simulated "solar storm emergency drill" that revealed catastrophic potential scenarios, where power grids failed, communications collapsed, and widespread blackouts ensued across the United States. This simulation was part of a comprehensive assessment conducted by the Space Weather Operations, Research, and Mitigation (SWORM) task force, including agencies such as the National Oceanic and Atmospheric Administration (NOAA) and the Department of Homeland Security (DHS).

In the simulations, various geomagnetic storm scenarios were examined, with one notable instance involving a 'solar superstorm' so powerful it could lead to what some have termed an 'internet apocalypse.' Such an event could disrupt power infrastructure across the entire eastern seaboard of the US, causing electricity outages that could last for weeks. Alongside the anticipated chaos in power supply, critical systems such as railways and pipelines could also see significant disruptions, leading to economic fallout and increased fuel prices.

In May 2024, heightened solar activity, marked as the most intense in two decades, notably resulted in visible auroras that lit up the skies not only across the U.S. but even reached regions such as Mexico and parts of Latin America. These displays were part of a series of powerful solar flares associated with coronal mass ejections (CMEs), which are of particular concern as they can instigate geomagnetic storms capable of wreaking havoc on technological systems. NOAA had issued a 'Severe (G4) Geomagnetic Storm Watch,' marking a pivotal moment as such alerts had not been issued in 19 years.

The recent drill highlighted that the current forecasting capabilities leave much to be desired. For instance, coronal mass ejections can only be predicted approximately 30 minutes before they impact Earth, prompting a call for major advancements in monitoring technologies. The recommendation included deploying more satellites for real-time data collection and fostering enhanced collaboration among US agencies, international allies, and private industry to collectively bolster readiness.

As the sun undergoes its active phase, scientists note that the potential for further solar flares and geomagnetic storms could escalate. Following an X-class solar flare on May 14, which resulted in radio blackouts across various regions, NASA projected that additional disruptions could surface imminently. This trajectory of solar activity necessitates a reevaluation of how society prepares for such occurrences, drawing parallels to established emergency plans for natural disasters and cyberattacks.

The urgency of this preparedness is underscored by previous severe solar storms, such as the famous one in 1989 that caused significant power outages in Quebec, Canada. This history illustrates that the impacts of extreme solar events can extend far beyond mere inconvenience, posing real threats to national security and public safety.

As a preventive measure, the report advocates for increased investments in advanced space weather satellites, additional ground-based sensors, and a coordinated government approach to detailed contingency planning. This multifaceted strategy aims to mitigate the risks posed by solar storms, thereby securing the delicate balance of modern reliance on technology in the face of cosmic threats.

The ongoing vigilance is not merely precautionary but essential. As our world grows ever more dependent on sophisticated technology and interconnected systems, enhancing preparedness for extreme space weather events is imperative in safeguarding our infrastructure and maintaining the functionality of essential services.

### Reference Map

1. Summary from lead article.
2. Context about the May 2024 solar storm impacts and geomagnetic storm watches.
3. Insights on the widespread auroras during the May 2024 event.
4. Information on the significance of the May 2024 storm compared to historical solar activity.
5. Details on NASA's monitoring efforts related to the solar storms.
6. Background on the 1989 solar storm's impacts on Power grids.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.dailymail.co.uk/sciencetech/article-14735891/Scientists-issue-urgent-warning-solar-storm-poised-cause-global-blackouts-travel-chaos-not-prepared.html?ns_mchannel=rss&ns_campaign=1490&ito=1490> - Please view link - unable to able to access data
2. <https://www.axios.com/2024/05/10/severe-solar-storm-northern-lights> - In May 2024, the Sun emitted strong solar flares, leading to a 'Severe (G4) Geomagnetic Storm Watch' issued by NOAA—the first in 19 years. These solar flares, known as coronal mass ejections (CMEs), can cause geomagnetic storms when directed at Earth. The heightened solar activity, nearing the solar maximum of Solar Cycle 25, resulted in auroras visible across parts of the U.S. during the weekend of May 10–12, 2024.
3. <https://www.reuters.com/business/environment/auroras-dazzle-latin-america-solar-storm-causes-rare-displays-2024-05-11/> - The May 2024 solar storm, the largest in two decades, produced impressive auroral displays across parts of Latin America. In Mexicali, Mexico, and Punta Arenas, Chile, residents witnessed rare auroras, with colors illuminating the night sky. Geomagnetic storms occur when solar plasma and magnetic fields are directed at Earth, triggering such auroral phenomena. The storm was expected to continue through the weekend, offering more opportunities for aurora sightings.
4. <https://www.washingtonpost.com/weather/2024/05/25/northern-lights-auroras-best-500-years/> - The May 2024 solar storm was among the most impressive in decades, with auroras visible from the United States to South Africa. NASA reported that the magnetic activity from the storm was the strongest since 1989, and the auroral displays were among the most vibrant in 500 years. The event highlighted the Sun's increased activity as it approached the solar maximum of Solar Cycle 25, emphasizing the need for preparedness against potential impacts on technology and infrastructure.
5. <https://science.nasa.gov/science-research/heliophysics/aurorasaurus-roars-during-historic-solar-storm/> - During the May 2024 solar storm, NASA's Aurorasaurus project received an unprecedented number of reports from around the world. Between May 10 and 12, 2024, the project facilitated real-time alerts and mapping of auroral sightings, engaging citizen scientists in tracking the storm's effects. This collaboration underscored the global interest and impact of the event, as auroras were observed at unusually low latitudes, including parts of the U.S. and northern India.
6. <https://en.wikipedia.org/wiki/May_2024_solar_storms> - The May 2024 solar storms, also known as the Gannon storm, were a series of powerful solar flares and geomagnetic storms that occurred from May 10 to 13, 2024, during Solar Cycle 25. The geomagnetic storm was the most powerful to affect Earth since March 1989, producing auroras at far more equatorial latitudes than usual in both the Northern and Southern Hemispheres. The event highlighted the Sun's increased activity as it approached the solar maximum of Solar Cycle 25.
7. <https://science.nasa.gov/science-research/heliophysics/how-nasa-tracked-the-most-intense-solar-storm-in-decades/> - NASA tracked the May 2024 solar storm, the most intense in two decades, by monitoring multiple coronal mass ejections (CMEs) that reached Earth starting May 10. These CMEs merged to form a superstorm that reached Earth on May 10. The event created brilliant auroras seen around the globe, even at unusually low latitudes, including the southern U.S. and northern India. The storm's intensity underscored the need for preparedness against potential impacts on technology and infrastructure.