My Drift

Title: Solar Storms and Flares
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Did you know that a major Solar Storm is hitting Earth right now as I write this article in mid to late November 2025?

Please watch the following video and you will have a good idea about what a Solar Storm and Flares are. (Video is a little longer than 16 minutes providing you skip the commercial ads when you can)

https://www.youtube.com/watch?v=hXMHxum92gs

On 11 November my sister in Utah sent me these pictures of the Northern Lights:

Logan, Utah

Pleasant Grove, Utah

Well, I lived in Utah for first 30 years of my life, and I never saw any Northern Lights. I did see them when I was TDY to Fairbanks, Alaska.

Then just the other night, I was listening to the radio program Coast-to-Coast AM, and they had someone on that was discussing all the bad things that can happen if the United States is hit directly by one of these large solar storms. These things prompted me to learn more about Solar Flares and Storms.

What are Solar Storms and Flares?

Solar flares are intense bursts of radiation from the sun, while solar storms are massive eruptions of plasma and magnetic fields, which can include solar flares and coronal mass ejections (CMEs). Flares are a flash of light that travels at the speed of light, while CMEs are a slower-moving cloud of charged particles. When a solar storm impacts Earth, it can disrupt satellites, GPS, power grids, and radio communications.

Solar flares

What they are: **A sudden burst of electromagnetic radiation from the sun, often near sunspots.**

How they happen: **Magnetic fields become stressed and "snap," releasing energy in the form of radiation.**

What they do: **They can last from minutes to hours and travel at the speed of light.**

Impact: **They can cause radio blackouts by interacting with Earth's atmosphere.**

Solar Flares

Solar storms

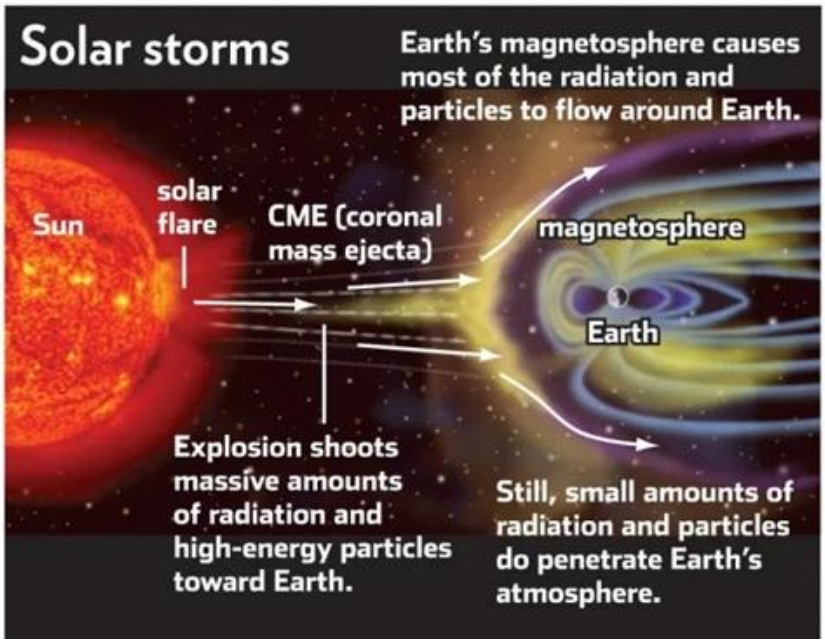
What they are: **Larger, more complex events that involve the ejection of a massive cloud of plasma and magnetic field from the sun's corona.**

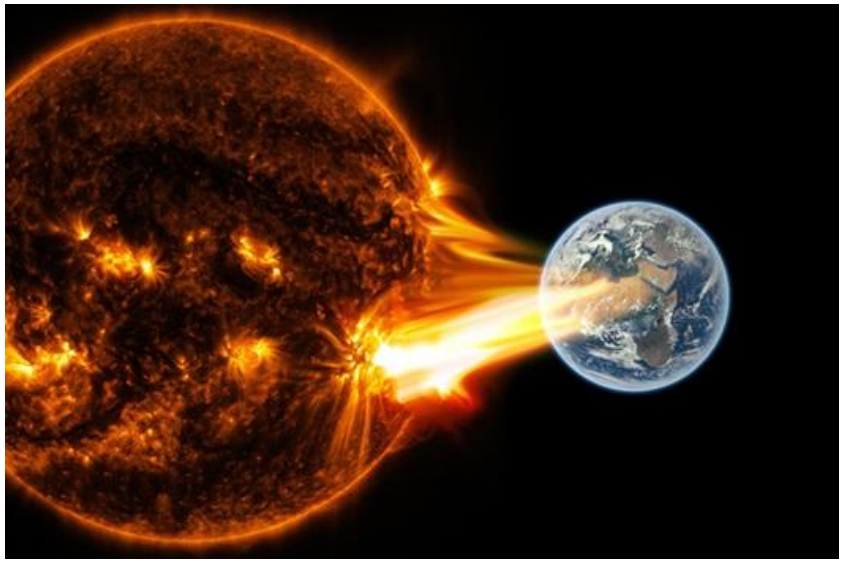
How they happen: **They can be launched by flares, CMEs, and solar winds, and are a result of magnetic field lines breaking and reconnecting.**

What they do: **They are a "storm" of multiple solar events, which can include solar flares, solar energetic particles, and CMEs.**

Impact: **When these storms reach Earth, the energetic particles can disrupt satellites and electronics, while the magnetic field disturbance can cause geomagnetic storms that lead to power outages and auroras.**

Auroras are natural light shows in the sky caused by charged particles from the Sun (solar wind) colliding with gases in Earth's atmosphere, which excite the gases and cause them to emit light. The aurora is called aurora borealis (or northern lights) in the Northern Hemisphere and aurora australis (or southern lights) in the Southern Hemisphere. The different colors are determined by the type of gas and the altitude at which the collision occurs.





Solar Storm

Potential Devastating Impact of a Solar Storm

The danger of a major solar storm is now (in 2025) at its highest in over a decade. As the Sun reaches the peak of its activity cycle, the odds of such a storm hitting Earth rise along with its associated risks, including blackouts, disabled satellites, and damaged cell phones and GPS networks. In the most extreme scenarios, some power grids could be knocked out for weeks or even months.

Experts have tried to imagine the impact. As the Earth's magnetic field changes in response to a solar storm, it can cause huge currents in power lines that blow out transformers and compromise electrical grids. Studies of the United States alone have predicted that a major solar storm would leave tens of millions of people without power, some for weeks, months, or even years. The economic damage would be in the range of trillions of dollars.

Is the US electrical grid in significant danger?

Yes, the US electrical grid is under significant danger due to a combination of factors, including aging infrastructure, increasing demand (especially from AI and data centers), extreme weather, and both physical and cyber threats from domestic and foreign sources. The Department of Energy warns that without major changes, regions could face unacceptable reliability risks within five years, with one report predicting a 100-fold increase in blackout risk by 2030 if reliable power sources are retired without sufficient firm capacity being added.

Key dangers

Aging infrastructure: **Much of the grid is old and struggles to meet current demands.**

Increased demand: **A surge in electricity usage from factors like AI data centers and increased manufacturing is straining capacity.**

Extreme weather: **Climate change is leading to more frequent and intense weather events that stress the grid.**

Cybersecurity threats: **The grid's reliance on automated systems makes it vulnerable to cyberattacks from state-backed actors and other malicious groups.**

Physical security threats: **The vast and interconnected nature of the grid makes it a target for physical attacks, vandalism, and sabotage.**

Interconnection and transition issues: Rapidly integrating renewable energy sources and the retirement of older, reliable power plants create challenges for grid stability.

What this means

Increased risk of blackouts: The convergence of these threats puts the nation at an elevated risk of significant and prolonged power outages.

National security risk: A major, cascading failure could have severe consequences for national and economic security.

A complex and urgent challenge: The grid's reliability is currently under significant pressure, though the U.S. grid is still generally reliable on a day-to-day basis. However, the situation requires urgent adaptation from policymakers, utilities, and investors to address these growing risks.

Other Major Problems

A huge solar storm would disable satellites, especially communications satellites in higher orbits. It would mess with GPS signals, which are used by everything from cell phone networks to power grids. Taken alongside wide-ranging blackouts, which would also knock out pumps essential to the water supply, a Carrington-like storm could simultaneously damage almost all major aspects of modern infrastructure: power, food, water, transportation, security, and communication. With that much impaired, it's easy to imagine problems in different sectors magnifying each other — and that's on a sunny day. What if the storm hit during winter, when people rely on the power grid to stave off potentially deadly cold?

What needs to be done

Experts estimate that a $10.5 billion initiative to strengthen the U.S. electric grid against threats like solar storms needs to be approved and installed immediately.

But like many other things that need to be done for the good of our country, our current government (mainly congress) can't agree on what needs to be done and/or how much it will cost and as a result, nothing gets done.

The Carrington Event

In September 1859, the Sun released the most powerful solar storm ever recorded — now known as the Carrington Event. Named after British astronomer Richard Carrington, who observed the massive solar flare, this

geomagnetic storm struck Earth within hours, creating spectacular auroras seen as far south as the Caribbean. The geomagnetic storm was most likely the result of a coronal mass ejection (CME) from the Sun colliding with Earth's magnetosphere.

The storm severely disrupted Earth's magnetic field, causing sparks and fires in telegraph offices across North America and Europe. Some telegraph systems even operated without batteries, powered only by the geomagnetic surge. A geomagnetic storm of this magnitude occurring today has the potential to cause widespread electrical disruptions, blackouts, and damage to the electrical power grid.

Can a solar storm wipe out Earth? No, but it can cause unprecedented damage

A solar storm isn’t a rare phenomenon. In fact, you’ve probably experienced one in your lifetime since one is happening right now in November 2025.

Solar storms refer to masses of energy thrown from the sun into space. Numerous solar activities fall under this umbrella term, including solar flares, sunspots, and coronal mass ejections (CMEs).

Much of this solar activity originates from sunspots during a solar maximum, when the sun has many sunspots. When the sunspots recede to their fewest numbers, it is known as the solar minimum. The solar maximum and minimum

are natural parts of the sun's cycle, in which its magnetic field flips. Solar flares alone can occur 100 times a week, and a solar maximum happens about every eleven years.

A solar storm will not decimate humans or the Earth, but it does cause potential problems. When solar activity occurs, the sun can spew its electrically charged particles into space, and some of them head directly toward Earth. The effects can be devastating because of today's reliance on technology.

Blackouts

The most prominent threat is a widespread blackout. One such event occurred in March of 1989, when Quebec faced a 12-hour blackout due to a solar storm.

What caused this? Strong flares send plasma clouds known as coronal mass ejections at the Earth. CMEs have the potential to disrupt Earth's magnetic field by inducing electrical currents, which can then cause permanent damage to electrical grids or temporary issues, as in Quebec.

One powerful enough could create a global blackout.

Electronics Malfunction

A strong geomagnetic storm could destroy electronics by causing satellites to plummet out of control. This is particularly nerve-racking, as today's society relies on the internet and electronics to function.

You might think a day without electronics doesn't sound so bad, but it wreaks havoc on an economical scale. A single day-long blackout in New York can cost $1 billion, and ruined power plants and transmission lines mean communication and transportation are affected until companies make repairs or install replacements.

Incorrect Compass Readings

In addition to blackouts and malfunctioning gadgets, solar activity also disrupts the Earth's magnetic field. As a result, compass readings are far from accurate.

False readings have the potential to affect airlines, ships and more.

Northern Lights

If you've ever wanted to see the Northern Lights, you may get your chance — without leaving your backyard.

The particles hitting Earth's atmosphere duplicate the aurorae seen in the South and North poles. People right now in November 2025 are enjoying spectacular lights in the sky as far south as Utah and Texas.

Preparations

Although typically not life-threatening, solar storms can have devastating impacts on today's electronic- and internet-centered world. And since more solar storms are coming our way, it's best to be prepared.

Have Alternate Energy

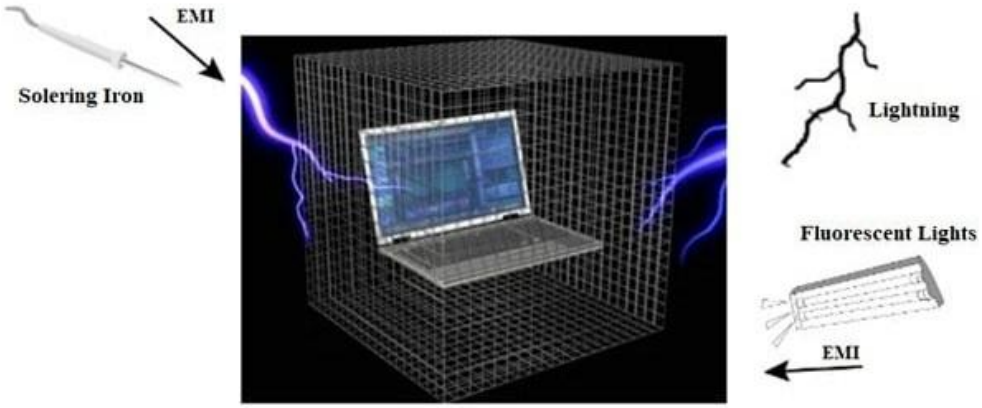
One of the smartest choices you can make is to find an alternative energy source. Backup generators can supply electricity but investing in solar or wind energy is an excellent idea. This will allow you to enjoy things we rely on daily such as:

- **Kitchen appliances**
- **Lights**
- **TVs and radios**
- **Washer and dryers**
- **Heaters and air conditioning**

Protect Your Electronics

When solar storms impact the electrical grid, it can cause power surges. These surges can destroy costly electronics. To protect your valuables, invest in surge protectors throughout the house. If you have an electronic that is particularly important, consider purchasing a Faraday cage to protect it.

Faraday cages are storage spaces lined with metal mesh which distributes electromagnetic radiation over the outside of the cage but protects the contents within it. Therefore, you could store objects you don't want to be sabotaged within the cage.



Faraday Cage

Faraday cages come in unique sizes and shapes, including bags. Utility companies even use this technology to protect vital pieces of equipment from solar flares.

Have Emergency Supplies

- **Have an emergency kit handy. Contemplate including the following inside:**
- **Portable battery radio**
- **Food and water**
- **Extra batteries**
- **Medications**
- **A first-aid kit**
- **Pet care supplies**
- **Matches**
- **Documents and cash**
- **Flashlights**

Are You Prepared?

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