

## How the Upcoming Solar Storm Will Affect the U.S.

By  
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*Friday 13 is considered a very unlucky day by superstitious people, and sometimes they seem to be right.*

For example, The Knights Templar felt the burn of a Friday 13, as they were all arrested on the same day: Friday, October 13, 1307, a day that spelled doom for their esoteric order. Getting back to more “modern times”, are you familiar with what happened in 1977, on Friday 13 of all days, in New York City? On July 13, 41 years ago, New York City was confronted with a dramatic blackout[1], which turned the city’s residents completely bonkers.

The blackout was caused by a malfunction of sorts at a nuclear plant in the vicinity, and it lasted for 48 hours give or take, causing incredible chaos, as some business owners set their own shops on fire to collect insurance money, not to mention nefarious characters engaging in looting and rioting all over the city. Can you imagine what a global-scale blackout would look like in 2018? Also, are you familiar with what is called in pedant circles “a Carrington event”[2]?

Allow me to elaborate: on September 1st, 1859, a massive solar storm hit Earth. What’s a solar storm, you asked?

To put it simply, the Sun projected a stream of white light, composed of plasma and electrons ( also known as a coronal mass ejection) in our general direction, a huge mass of energy, which by the way made for a mere sliver of the Sun’s total power. This coronal mass ejection, also known as a solar storm or a solar flare, was so powerful, that it overwhelmed our planet’s magnetic fields, which usually protect us from such unfortunate events. As a consequence of Earth’s magnetic fields failing to do their job, the electrons penetrated our “defenses”

and hit telegraph wires, causing power surges and setting fire to papers in telegraph offices.

Also, any type of machinery that used electricity was rendered useless by the same phenomena (the power-surge thing). Fortunately, the biggest solar storm in known history did not occur in the electrical age, missing it with approximately 20 years. The thing is, back in 1859, there was no global electrical infrastructure to speak of, except telegraph lines. And the one that was in place was by no means complicated, hence that epic solar storm, also known as a Carrington event, did not seriously disrupt “life on Earth”. Except beautifully colored auroras lighting-up the night skies, so as people could read newspapers as easily as in daylight, the Carrington event was nothing more than a freak natural occurrence.

Significant coronal mass ejections or solar flares hitting Earth also caused problems on August 4, 1972 [3] and March 13, 1989[4], creating geomagnetic storms that knocked out telephone communication lines and/or melted power transformers in Quebec, Canada, and New Jersey, plunging millions of people into darkness for hours. Again, this happened due to power surges caused by solar flares (aurora-induced). In more recent times, the GPS (global positioning system) navigation signals were disrupted in December 2005[5], by another solar storm for approximately ten long minutes.

As an engineer for Bell Labs put it at the time:

I would not have wanted to be on a commercial airplane being guided in for a landing by GPS or on a ship being docked by GPS during that 10 minutes.

Keep in mind that these recent solar flares or whatchamacallit hitting the Earth was by no means comparable to the Carrington event in terms of sheer power. Truth be told, they were pretty much insignificant compared to the “mother of all coronal mass ejections” from 1859.

The next Carrington Event (or worse if you're a pessimist) will most probably have catastrophic consequences, as much of our high-tech society is fully dependent on electricity. We depend on electricity for basically everything in our modern-lives, ranging from transportation (yes, modern cars and planes have miles of electric cables running through their innards, which would be fried by the EMP surge caused by the Sun) to public utilities (gas, water). No more internet, no more telecommunications, nothing would work anymore, at least in the areas affected by the solar flare.

Electrical transformers and power grids would be "gone in sixty seconds", i.e. they would get fried instantly if a major solar storm would hit the Earth directly. Just to give you an idea about how close we are to such an "extinction-level event" (and I am not kidding), two massive solar flares missed the Earth by a whisker in 2012[6] and 2013. These types of events happened numerous times in the past, and it's a mathematical certainty that it will happen again, sooner or later. Basically, it's not a question of if, but when.

Optimistic estimates [7] put the damage caused by a Carrington-like event at 2.6 trillion dollars and theorize that it would take us a decade or more to recover.

The question is, what would exactly happen to the US when (not if) the next massive solar storm hits? Because, after all, that's the question that drives today's article, right? Considering the fact that the United States is one of the most technologically advanced societies in the world, the kingpin of the first world so to speak, to make a long story short, the next Carrington event would be technological Armageddon. And I am being very serious.

Depending on how powerful it is, a coronal mass ejection hitting Earth may be a minor inconvenience (GPS system down, a 9-hour blackout) or a civilization-ending event. In the worst-case scenario, an SHTF solar-flare would fry America's power grid, which means no heat/no air conditioning, no internet, no computers, no smartphones, no TV, no credit cards, no bank records.

Moreover, society would cease to function, as there would be no more emergency services, no hospitals, no fire-departments, you won't be able to pump gas, supermarkets would close due to lack of power (no refrigeration/air conditioning). According to estimates, almost 70 percent of the US population would die of starvation, societal chaos, and disease within the first year[8] in the aftermath of an EMP attack. A massive solar flare hitting us directly would have the exact same effects as an EMP attack from North Korea/China/Russia or whatever "axis of the evil" by the way. Or worse. Or much worse.

The total U.S. population at risk of extended power outage from a Carrington-level storm is between 20-40 million, with durations of 16 days to 1-2 years. The duration of outages will depend largely on the availability of spare replacement transformers. If new transformers need to be ordered, the lead-time is likely to be a minimum of five months. The total economic cost for such a scenario is estimated at \$0.6-2.6 trillion USD.

What happens to a city of 10 million+ without electrical power we've already seen in New York and other places, as I've told you in the preamble of the article. The thin veneer of civilization would disappear quicker than tears in the rain, with society descending into chaos very rapidly. Rioting and looting would occur immediately, and as desperation would set in with people realizing that electricity might be gone forever, the entire system will delve into ... well, I don't know exactly what, as we've never been there so far, but it would be Road Warrior levels, The Road and all that:

With satellites in orbit fried first by the solar-flare, global telecom-infrastructure would be obliterated instantly, so people wouldn't even know what happened, i.e. if it was a nuclear attack, an EMP hit or a natural event. Within thirty days, with food supplies gone in high-density urban centers, a massive die-off would ensue, and violence turning to violent extremes as desperate people fight for food and water.

Here's from National Academy of Science's 2008 Severe Space Weather Workshop[10]:

Electric power grids ... continue to become more vulnerable to disruption from geomagnetic storms. For example, the evolution of open access on the transmission system has fostered the transport of large amounts of energy across the power system in order to maximize the economic benefit of delivering the lowest-cost energy to areas of demand. The magnitude of power transfers has grown, and the risk is that the increased level of transfers, coupled with multiple equipment failures, could worsen the impacts of a storm event.

As you've already suspected by now, the next Carrington event would plunge us into pitch black first, and I mean that literally, with the power grid getting fried and all that, and then our society would be basically wiped out. And this is not science fiction, but science fact. According to a space physicist's estimate, published in Space Weather Journal (FEB-2012)[11], there's a 1-in-8 chance a major coronal mass ejection could hit us within 10 years.

I don't mean to be fear-mongering and all that, just to point out to the fact this is not a wild conspiracy theory, but a scientific probability. And NASA/the US government are taking it seriously, or at least that's what I would do. Since it's going to happen again, and we can't stop it, we should become more prepared to deal with the aftermath of the next Carrington event.

On a personal level, one should prepare for a life (or a long period of time) without electricity, i.e. get out from densely populated urban areas (or have a remote bug-out location, preferably in a prepper community), stockpile food and water, ammo, you know the drill. Concentrate on self reliance/self sufficiency and prepare for violence. And pray you are on the dark side of the earth when SHTF...and also pray that the "feral gummint" and power companies alike are taking proactive measures to protect the power grid/the infrastructure before the storm strikes.

## Resources

- [1] <http://time.com/3949986/1977-blackout-new-york-history/>
- [2] [https://en.wikipedia.org/wiki/Solar\\_storm\\_of\\_1859](https://en.wikipedia.org/wiki/Solar_storm_of_1859)
- [3] <https://www.space.com/12584-worst-solar-storms-sun-flares-history.html>
- [4] [https://en.wikipedia.org/wiki/March\\_1989\\_geomagnetic\\_storm](https://en.wikipedia.org/wiki/March_1989_geomagnetic_storm)
- [5] [https://science.nasa.gov/science-news/science-at-nasa/2008/06may\\_carringtonflare/](https://science.nasa.gov/science-news/science-at-nasa/2008/06may_carringtonflare/)
- [6] <http://www.reuters.com/article/2014/03/20/us-space-solarblasts-idUSBREA2I1SV20140320>
- [7] <http://www.lloyds.com/the-market/tools-and-resources/research/exposure-management/emerging-risks/emerging-risk-reports/business/solar-storm>
- [8] <http://www.washingtontimes.com/news/2012/dec/19/north-korea-emp-attack-could-destroy-us-now/?page=all>
- [9] <https://bit.ly/2XFozBZ>
- [10] <https://bit.ly/31rDjtk>
- [11] <http://www.agu.org/pubs/crossref/2012/2011SW000734.shtml>

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