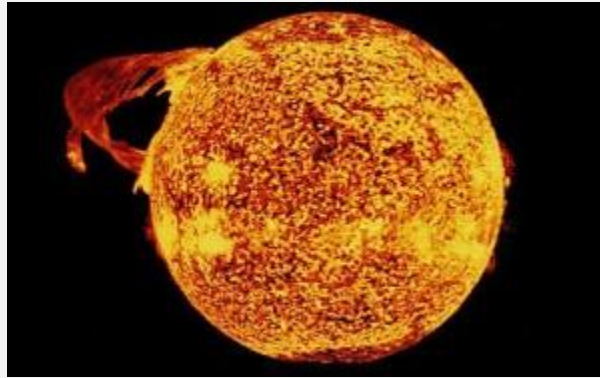


SUNNY WEATHER AHEAD, OR IS IT?



Solar Flare by NASA (click on image for source)

Worldwide panic is not a new phenomenon. Most recent cases include the Y2K fears that erupted near the turn of the century and conspiracy theories that developed as the year 2012 began to draw closer. The latest frightening topic is of a natural disaster that could devastate the entire planet: coronal mass eruptions and massive solar flares.

These solar events result from massive solar flares that occur during the sun's cycles of activity. Solar flares are classified according to how powerful they are, as A, B, C, M or X, with X being the most powerful (Emspak, 2011). The most dangerous type of solar flares are Coronal Mass Ejections, or CMEs, that occur during the most active stage of the 11-year solar cycle (Asymmetric Threats Contingency Alliance, 2010). A CME occurs when gas erupts from the solar corona, or the sun's outer atmosphere, that carries a large amount of radioactive material. This radiation eventually reaches the Earth in less than five days (Asymmetric Threats Contingency Alliance, 2010). The next CME stage is estimated to take place in 2012. X-class flares and CMEs are the most powerful of all solar events that can trigger communication blackouts and long-term radiation storms (Steenhuysen, 2011). Yes, we are talking about technological destruction from our primary energy source, the sun.

It's possible that the Earth will be attacked by CMEs and X-class solar flares and the entire world's energy grids will go black. Can we survive it? We modern humans are so reliant on computer technology and complex energy systems for power and to function on a daily basis. In the worst possible event, the odds may be in our favour, but at what cost?

A historical look at solar flare events

In the past, the most famous CME event is the Carrington event, when the most powerful solar storm in recorded history hit Earth in 1859 (Asymmetric Threats Contingency Alliance, 2010). Worldwide, the only communication systems, telegraphs, went berserk. Another notable event occurred in 1989 when northeast US and eastern Canada experienced a geomagnetic storm as a result of a large solar flare (Asymmetric Threats Contingency Alliance, 2010). This disrupted power in all of Quebec and 6 million people were without power for 9 hours and wild power surges melted a transformer in New Jersey. Because the sun's activity follows a cycle, history will certainly repeat itself.

Here's what's going on. The Earth's magnetic field protects the planet from space weather (Steenhuysen, 2011). But each CME carries its own magnetic field as well, which can penetrate our much weaker magnetic field (Emspak, 2011). These eruptions can potentially become Electro-Magnetic Pulses, or EMPs, which can create sudden, massive fluctuation in the Earth's electromagnetic field. The effects are similar to detonating High-altitude Electro-Magnetic Pulse nuclear devices (Asymmetric Threats Contingency Alliance, 2010).

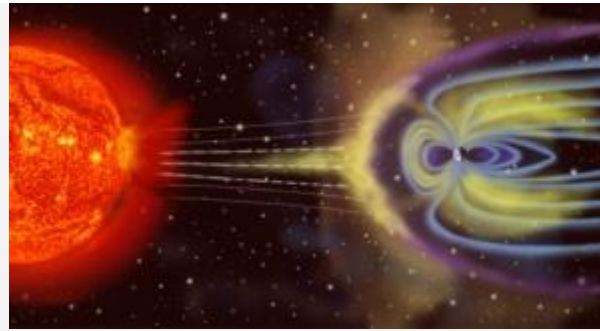
The resulting electric and magnetic fields of the flares, coupled with electrical grid systems, could produce damaging current and voltage surges. These types of solar flares can also damage satellites and x-rays, disrupting radio and other wireless communications (Asymmetric Threats Contingency Alliance, 2010). Small microprocessors and chips that power vehicles, Global Positioning Systems, internet, satellites, and mobile phones can all be rendered useless or malfunction (Asymmetric Threats Contingency Alliance, 2010).

What this could mean for us today

If a threatening CME hits our planet, it could potentially destroy the world's electricity distribution for years, if not decades, before the world's electrical system could be repaired (Asymmetric Threats Contingency Alliance, 2010). Equipment and energy facilities will need to be scrapped completely and rebuilt. Moreover, it takes a large amount of power to bring a power plant back online. If all power plants were knocked off line, it would be impossible to restore them all to full capacity. It might be a decade for human civilization to return modern day norms (Asymmetric Threats Contingency Alliance, 2010).

What would happen today if another solar flare the size of the 1859 Carrington event were to hit Earth? According to a report by the National Academy of Science, it could induce electrical currents that would knock out at least 300 main transformers cutting off power to 130 million people within 90 seconds (Asymmetric Threats Contingency Alliance, 2010). Many dry wooded parts would be engulfed in flames, and other various

cascading catastrophic occurrences could happen simultaneously. Without electricity, clean water, fresh food, lighting, comfortable shelter, communication, safety, and security would no longer be available or accessible. We would revert back to technology and living conditions of 5000 BCE within a matter of weeks. Due to our dependence on modern technologies, humans no longer have the skills to fend for ourselves completely (Asymmetric Threats Contingency Alliance, 2010). In short, mass chaos could ensue.



Solar Flare Activity by NASA (click on image for source)

What can be done?

Many researchers encourage implementing measures to protect our electrical power grids from a catastrophic EMP events lest civilization be left defenceless. Tens of millions of dollars in protective measures implemented would result in savings of trillions of dollars saved following an EMP event. It would be impossible to EMP-proof all modern electronics, unfortunately (Asymmetric Threats Contingency Alliance, 2010).

As society and its energy systems become more interconnected and efficient, space weather impacts on electric power grids, satellites, and GPS are going to affect almost every area of our lives. The challenge for society is understanding our vulnerability today and in the future, and planning for potential risks. With all this mounting worry for our future, maybe it's time we start implementing simpler technologies to compliment our expanding complex energy systems.

The danger may be looming as we are reaching the next peak of the solar cycle. Electronic devices around the world may be rendered inoperable and cause mass mayhem, an event any comic book villain would die to successfully execute as an evil scheme. Is this another fear mongering plot by conspiring government organizations or a legitimate threat? If the fear is real, then we should start planning now or pray for the best, but either way, it's time to take a reality check and reflect on our technology-powered lives.

Source : <http://www.sassweb.ca/3bb3/solar/sunny-weather-ahead-or-is-it>