

Ground Truth: The Perfect Storm

Origin of the Threat

The Western Hemisphere experiences an unprecedented threat—a Carrington-level solar flare. An AI designed to compute data from the Sun and run predictive models detects that the Sun's magnetic field is under intense stress, which leads to the release of an immense burst of energy, otherwise known as a solar flare. These flares are classified as category X, the most powerful category of flare there is.

The solar flare is accompanied by another formidable phenomenon—coronal mass ejections (CMEs). These are colossal eruptions that send solar plasma and magnetic fields out into space. They carry with them a massive payload of charged particles.

The US-funded AI detection system classifies this as a Carrington-level event – when a powerful solar flare and associated CMEs converge. This tandem of energy release and charged particles hurtles toward an unprepared Earth.

Specifics of the Threat

The first ripples of the Carrington-level event cause the breakdown of communication systems across the whole of North America and much of South America. The influx of charged particles creates an ionospheric storm that disrupts high-frequency radio signals crucial for long-distance communications and navigation. Emergency services, aviation, maritime operations, and even military communications experience severe disruptions.

Orbiting satellites vital in weather monitoring technology, global positioning systems (GPS), and telecommunications, all shut down.

A flight from Dallas to Nashville that was in the air at the time of the impact must make a landing on a major highway when all of its onboard electrical systems frizzle out, and communications and GPS are lost. The crash kills everyone onboard as well as several people in their cars on the highway. Numerous emergency landings occur throughout the western hemisphere as major runways at airports become overcrowded, with no way of conducting any air traffic control.

As the cosmic storm intensifies, the Earth's magnetosphere and ionosphere experience an onslaught of charged particles, creating geomagnetic storms. These storms, in turn, generate immensely powerful electric currents that decimate the power grid across the entire continent. The influx of electric currents overwhelms transformers and other crucial components, causing a near-total power outage. Entire regions across North America find themselves plunged into both darkness and silence.

Whole industries across the United States, Canada, and Mexico ground to a halt. Financial markets experience unprecedented disruptions, transportation networks come to a standstill, and the manufacturing sector see all their electrical machinery go offline.

The economic consequences extend beyond these immediate losses, going on to affect whole businesses and causing a plunge in overall national productivity. The sudden interruption of critical services leads to financial instability and the expectation of a prolonged recovery period.

In a society with its financial and economic infrastructure dependent on the internet and electricity, banking systems become obsolete during this time. Those essential services such as supermarkets and drugstores become disorderly with no reliable way of enforcing and tracking forms of payment other than physical cash. Looters take advantage of the absence of any strict financial systems along with a shutdown in surveillance and unreachable law enforcement.

The societal impact of the Carrington-level event is profound. Hospitals, dependent on electronic medical records and diagnostic equipment, face challenges in providing adequate healthcare. Generators, designed to keep power running in a hospital disconnected from the power grid are also affected, their circuits destroyed and unrepairable. Operating theatres go dark, computers switch off and life support machines go silent. Upon impact, the tens of thousands of patients dependent on these machines to live, die.

Water treatment facilities, reliant on automated processes, struggle to maintain water quality and distribution, virtually halting the flow of running water.

The loss of all communication and broadcast systems stifles public awareness and hampers emergency response efforts. With limited access to information and communication, the public experience heightened anxiety and uncertainty, with social unrest building by the minute.

The shutdown of communication and surveillance satellites compromise US military operations and intelligence gathering. The loss of the power grid affects defense infrastructure, leaving military installations and facilities without essential services and cut off from their command structures.

The aftermath of a Carrington-level event demands a comprehensive, long-term recovery strategy. Rebuilding the power grid, reviving critical infrastructure, and mitigating the risks of future solar storms would require substantial investment, collaboration, and prompt action.