

# Space weather: Storms from the Sun

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Solar cycle

## Solar storms can disrupt technologies on Earth

### NOAA issues Alerts, Watches and Warnings

Focus areas:

Satellites, Weather

Topics:

space weather, solar storms

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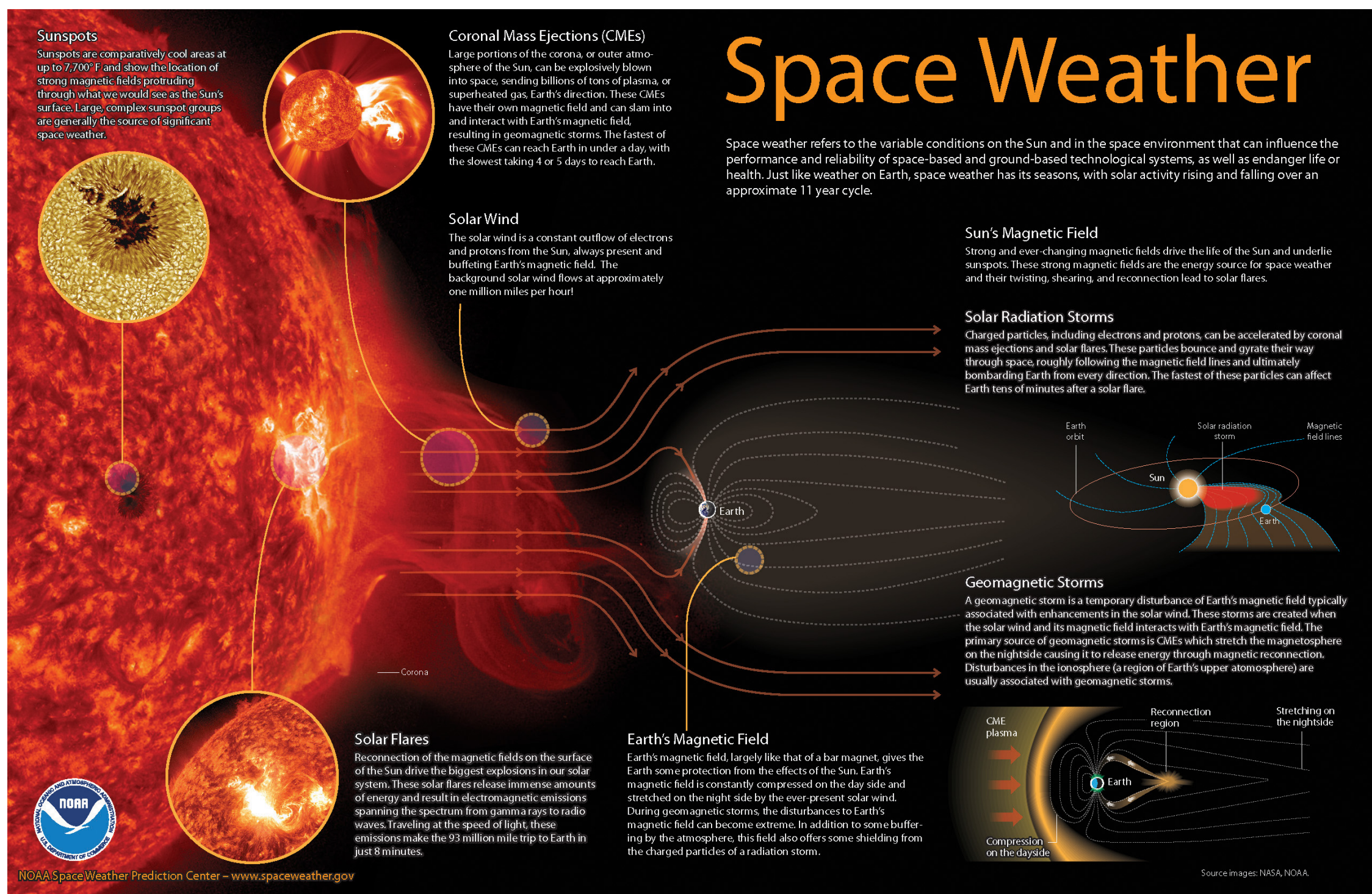






Eruptions from the Sun's surface can cause space weather storms that affect technology here on Earth.

The Sun is the center of the solar system and the most important energy source for life on Earth. From time to time, the Sun emits bursts of radiation, high-speed electrons and protons, and other highly energetic particles into space — phenomena known as space weather. If a large burst is directed at Earth, these particles and radiation can disrupt the technologies we depend upon. These storms have the potential to interfere with radio transmitters, satellite operations and communications, navigation and GPS, and the electric power grid.



NOAA space weather infographic. (NOAA)

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As conditions develop, forecasters at [NOAA's Space Weather Prediction Center](#) issue space weather alerts, watches, and warnings to inform its users — electric grid operators, satellite operators, airlines and more — about what to expect, so they can take action and protect infrastructure and the public.

Although rare, these strong [geomagnetic storms](#), can require voltage corrections by power grid operators and may trigger protection devices similar to a circuit breaker. Extreme geomagnetic storms can damage high-voltage power transformers, causing damage that could take days, weeks, or even longer to be repaired, depending on the size of the power grid.

FACT

1989

—The year a solar storm sent Quebec into darkness/knocked out power for 9 hours.



Northern lights streak the sky on a cold night in Alaska. (Christopher Morse)

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lights). These colorful beams of dancing lights, typically seen moving across the polar skies, are the result of electrons colliding with the upper reaches of the Earth's atmosphere. Here's the [current aurora forecast](#), issued by NOAA's Space Weather Prediction Center.

Part 1 of 4

Part 2

Impacts



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