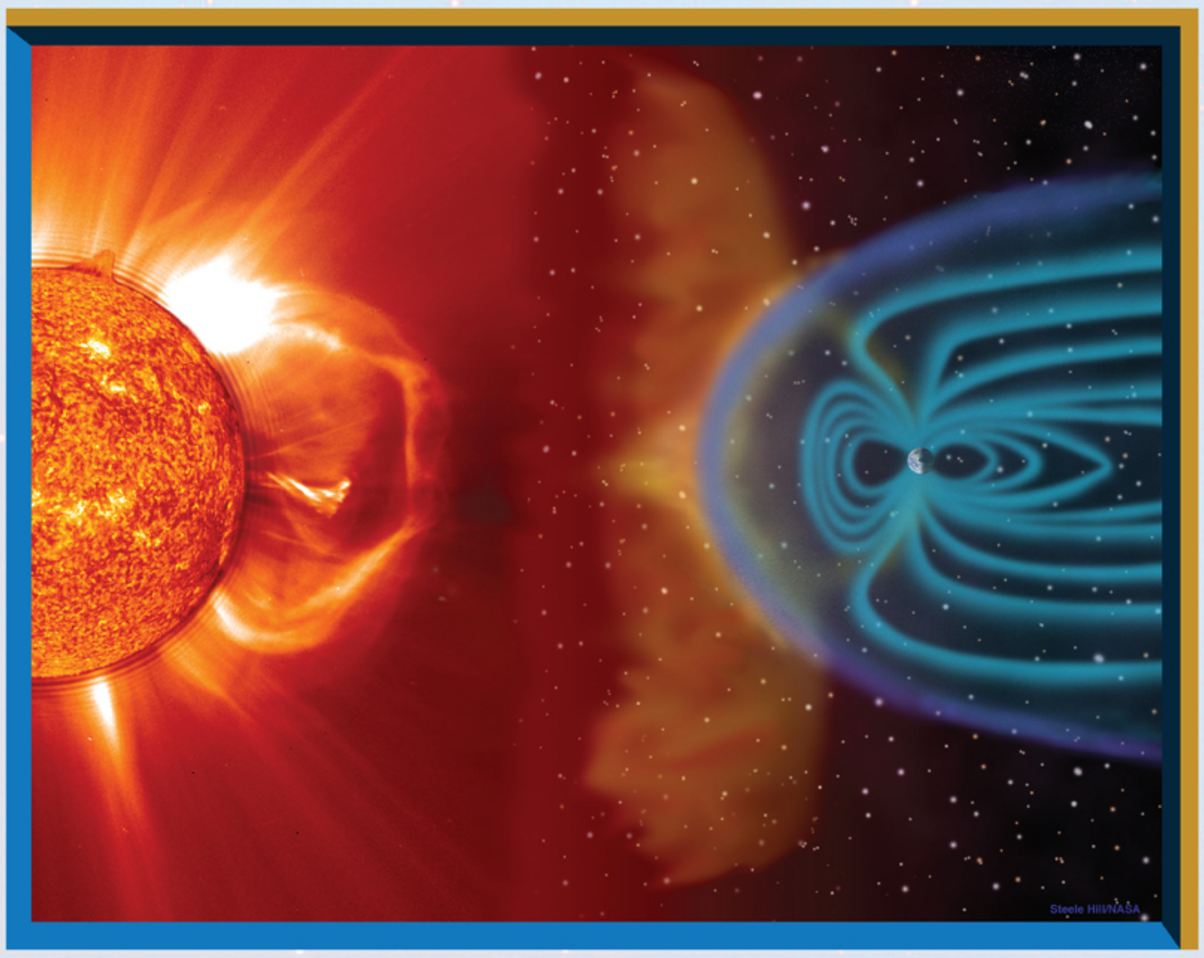
Storm Alert!

Our Sun creates the cosmic equivalent of wind, clouds, storms, and hurricanes, which we call **space weather.** It's one of the consequences of living with a star. The Solar Wind and solar storms like Coronal Mass Ejections (CMEs) can impact Earth's magnetic field region causing geomagnetic storms, the aurora, ionospheric disturbances, and electrical power failures.



Credit: NASA

Earth's Protective Shield

The Solar Wind pushes and stretches Earth's magnetic field into a vast, comet-shaped region called the magnetosphere. The magnetosphere and Earth's atmosphere protect us from the Solar Wind and other kinds of solar and cosmic radiation.

Credit: Joshua Strang

The Aurora Borealis, or Northern Lights, shines above Bear Lake, Eielson Air Force Base, Alaska.

Cosmic Light Show

We can detect the magnetosphere's presence when charged particles from the Sun become trapped inside it and travel along its field lines. These high latitude regions can light up like a neon sign to create the mysterious and beautiful aurora. In the northern hemisphere, we also call them "Northern Lights."

Usually, you only see auroras if you live in the Arctic – they show up over the poles because of the shape of Earth's magnetic field. Occasionally people have seen the northern lights as far south as Texas and Florida during a large magnetic storm. Few people have ever seen the southern lights (aurora australis) – they usually appear only over Antarctica.

Space weather can pose a radiation hazard for astronauts

Space storms disturb the inner magnetosphere, which becomes filled with "killer electrons" that can pierce the skin of a satellite and the cells of an astronaut. Astronauts on their way to Mars will have to take shelter during severe space weather events.

Credit: NASA

In August 1972, a massive space weather event occurred between the flights of Apollo 16 and 17. If it happened when either flight was on its way to the Moon, the astronauts might have received a deadly amount of radiation.