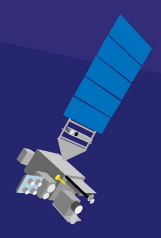
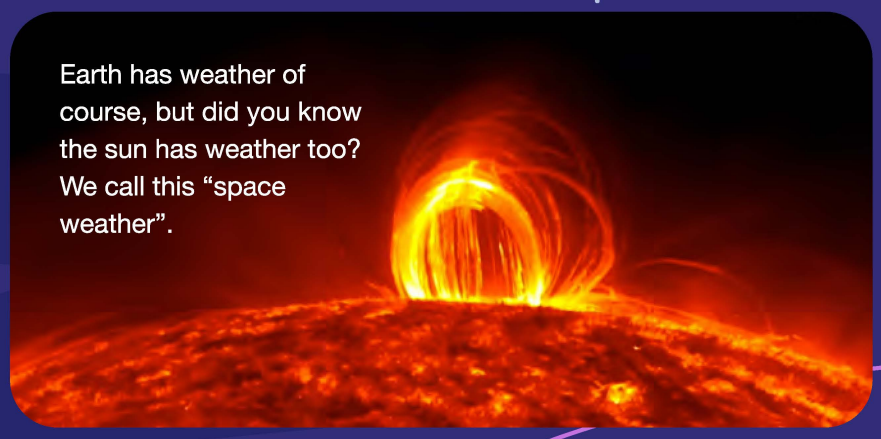
What is SPACE WEATHER?





Earth has weather of course, but did you know the sun has weather too? We call this “space weather”.

The sun is a bubbling, boiling ball of gas and energy. It constantly belches out great clouds of hot gas that is charged up with electricity. It travels through space really fast, some of it right toward Earth.

Sun

Solar Wind

Magnetic Field

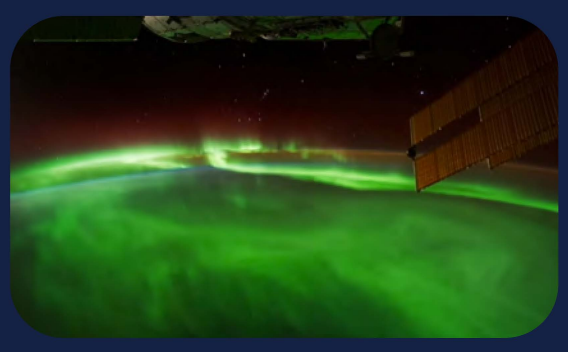
We’re mostly protected from this blast by Earth’s magnetic field and atmosphere.

Atmosphere

Magnetic Field

Solar wind flows outward from the sun. Charged particles in that solar wind interact with Earth’s magnetic field. That interaction can cause energy and particles to stream down to Earth’s poles.

When these charged particles hit oxygen and nitrogen atoms in Earth’s atmosphere, the energy from the collision can create beautiful shades of green and red.

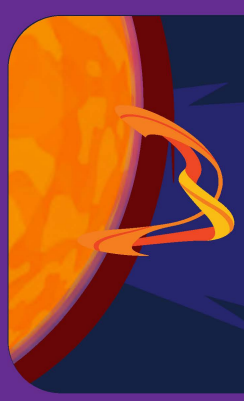


Aurora Borealis

Aurora Australis

We call these glowing colors the Northern Lights and Southern Lights, or the Aurora Borealis and Aurora Australis. They are beautiful curtains of light that move and sway in the night sky.

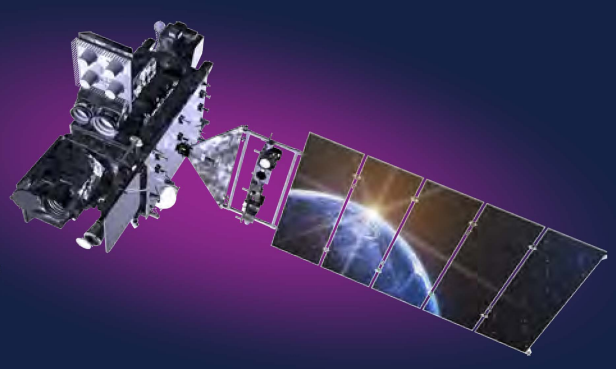
But sometimes the sun releases more energy than usual! These releases are called solar flares and coronal mass ejections.



They are huge explosions of high-energy X-rays, charged particles and magnetic field. When solar flares and coronal mass ejections reach Earth, they can cause trouble.

Bad space weather can interrupt radio signals. It can also damage satellites. Electrical systems that bring power to our homes and businesses can be knocked out by this bad space weather too.

We can’t see the sun’s harmful x-rays with our eyes, but special telescopes can. One such telescope is the Solar X-ray Imager on the Geostationary Operational Environmental Satellite (GOES) – R Series weather satelltes.



With early detection from satellites like the GOES-R series, power companies and satellite operators alike will have enough time to adapt to any troubling space weather headed our way.

Find out more about space weather at https://https://scijinks.gov/space-weather-and-us/

NOAA