

Space weather describes the environmental conditions of the space occupied by the Sun and planets, and studies this region's flux of charged particles, magnetic fields and electromagnetic radiation. These originate mainly from the Sun, but also from high-energy phenomena in our Galaxy and in external galaxies.

Solar flares

These are explosions on the surface of the Sun, which are sometimes unpredictable. They release in space electromagnetic radiation, plasma, magnetic energy, and charged particles, and can affect the Earth's atmosphere.

Coronal mass ejection

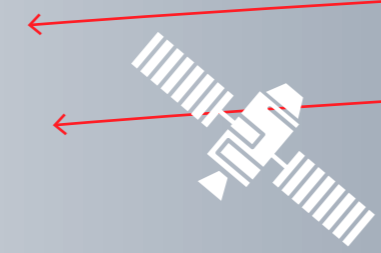
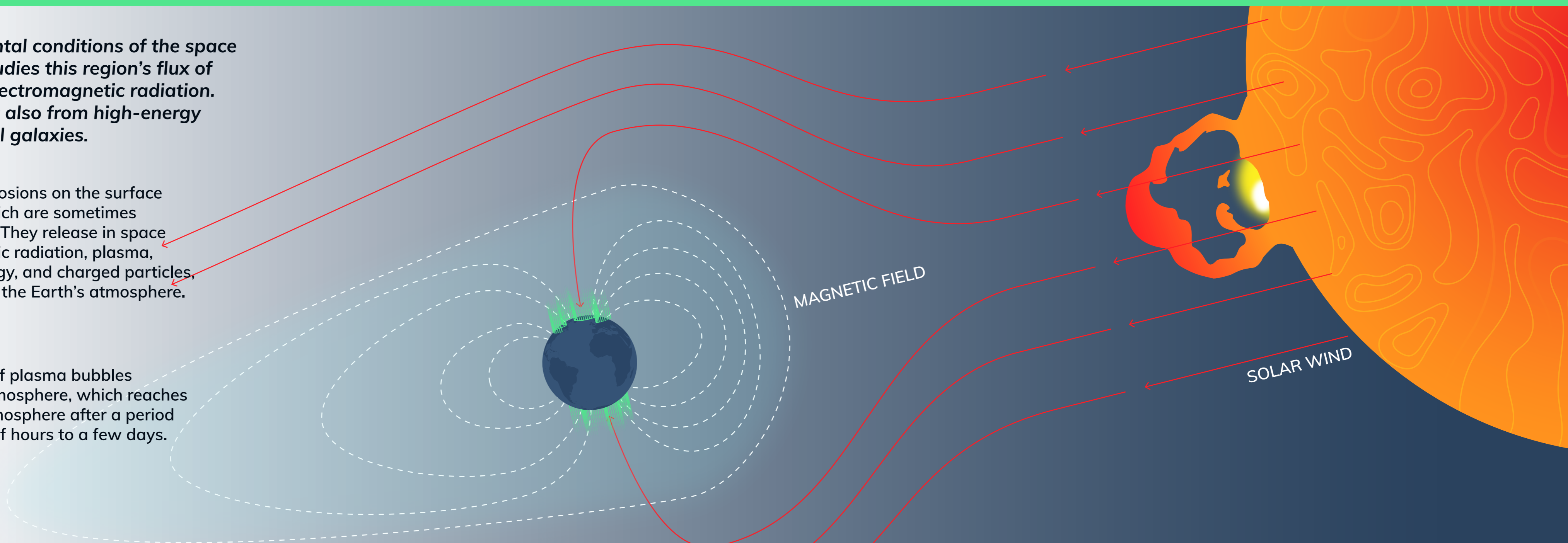
An explosion of plasma bubbles in the solar atmosphere, which reaches the Earth's atmosphere after a period of a few tens of hours to a few days.

Solar wind

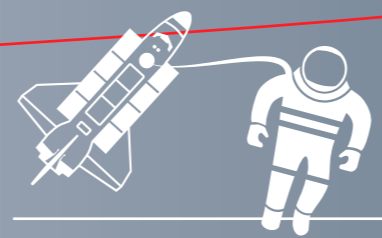
A flux of gas, particles and magnetic fields radiating from the Sun in all directions.

Terrestrial magnetic field

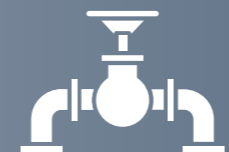
The Earth's magnetic field protects our Planet from the solar wind, like a shield. Its effect is weaker at the poles, which is why auroras occur in these regions.



Artificial satellites can suffer temporary or – in the worst case – permanent malfunctions caused by solar storms.



Astronauts, and travellers to the high layers of the atmosphere, can be exposed to high levels of radiation and high-energy particles originating from the Sun and from space.



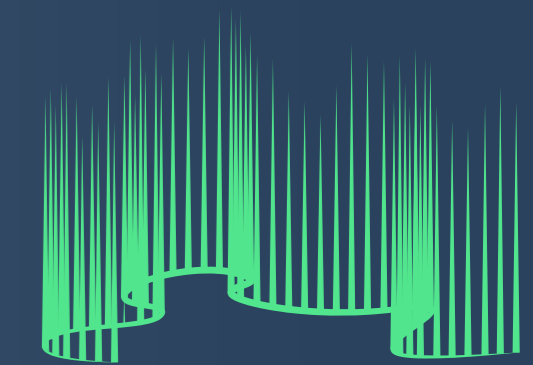
Above-ground oil and gas pipelines can conduct spurious currents induced by solar events, which accelerate their natural corrosion.



Geomagnetic storms originating from the Sun can induce currents in the ionosphere, overloading the networks and causing black-outs.



Airplanes on transpolar routes can experience problems with their on-board instruments during solar storms.



Auroras are the most spectacular effect of the solar wind, which impacts on the atmosphere, interacting with its atoms, and lights up beautiful, colourful curtains in the skies of the polar regions.