The Solar Wind and Magnetic Storms

The corona gives off a constant stream of electrically charged particles called the solar wind. These particles—mostly protons and electrons—fly into space in all directions at a speed of about 450 kilometers per second, reaching Earth in a few days. There, they are deflected by the Earth's magnetic field, as shown below.

Some solar events produce huge gusts of solar wind. Large openings, called coronal holes, sometimes appear in the corona. Solar wind pours from coronal holes in a great torrent of particles.

Solar flares are another source of solar wind bursts. Solar flares are outbursts of light that rise up suddenly in areas of sunspot activity. Small solar flares last only minutes; large ones may last for hours. The number of solar flares increases as the number of sunspots increases.

Earth's magnetic field shields the planet's surface from the solar wind. Without the magnetic field, Earth's surface would be bombarded by particles that are very harmful to life.

As the solar wind blows past Earth, some particles interact with Earth's magnetic field and upper atmosphere, causing auroras, which are displays of color and light appearing in the upper atmosphere. Auroras, also called northern and southern lights, are common events in the regions near Earth's magnetic poles.

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