

The cover illustration highlights regimes of particular importance for understanding the Sun-Earth connection. The logarithmic distance scale shows the dynamic Sun, on the left, and its sphere of influence, the heliosphere, stretching out far beyond the planets. Formed by the solar wind, this magnetized cloud of plasma plows through the interstellar medium, generating a vast disturbance like the one shown in the lower inset. The Earth is embedded deep within this protective cocoon at 1 astronomical unit. Each planet handles the variable inflow of energy and matter carried out by the solar wind in a unique way. The box on the left shows Earth's magnetosphere responding to a buffeting storm of particles that came from material ejected days earlier from the Sun's corona. Geospace reacts to such impacts in many ways. One visible manifestation, the aurora, is caused by particles accelerated downward into the upper atmosphere at high latitude, as shown in the upper right inset. We need to understand how this system affects us here on our home planet.