

SOLAR IMPACTS

How Does the Sun Affect Oceans?



The Sun emits light and warmth—crucial to the development of ocean worlds in the inner Solar System. But it takes more than just being the right distance from a star to develop and maintain a planet's water.

A steady stream of charged particles emanating from the Sun's surface forms a diffuse wind that fills our Solar System. This solar wind, along with more dramatic solar eruptions such as coronal mass ejections and solar flares, impacts planetary atmospheres. The Sun's warmth, combined with its effects on the atmosphere, helped turn Earth into an ocean world.

However, the solar wind can also strip away lighter molecules over time. Ultraviolet radiation from the Sun can break water molecules in the atmosphere apart into ions, which can follow the Sun's magnetic field and escape into space.

Over billions of years, the Sun, which provided the initial warmth to create ocean worlds, can destroy them.

Earth has a strong global magnetic field that largely protects us from these effects. But for Venus and Mars, the lack of such a field may have spelled doom for their oceans.

