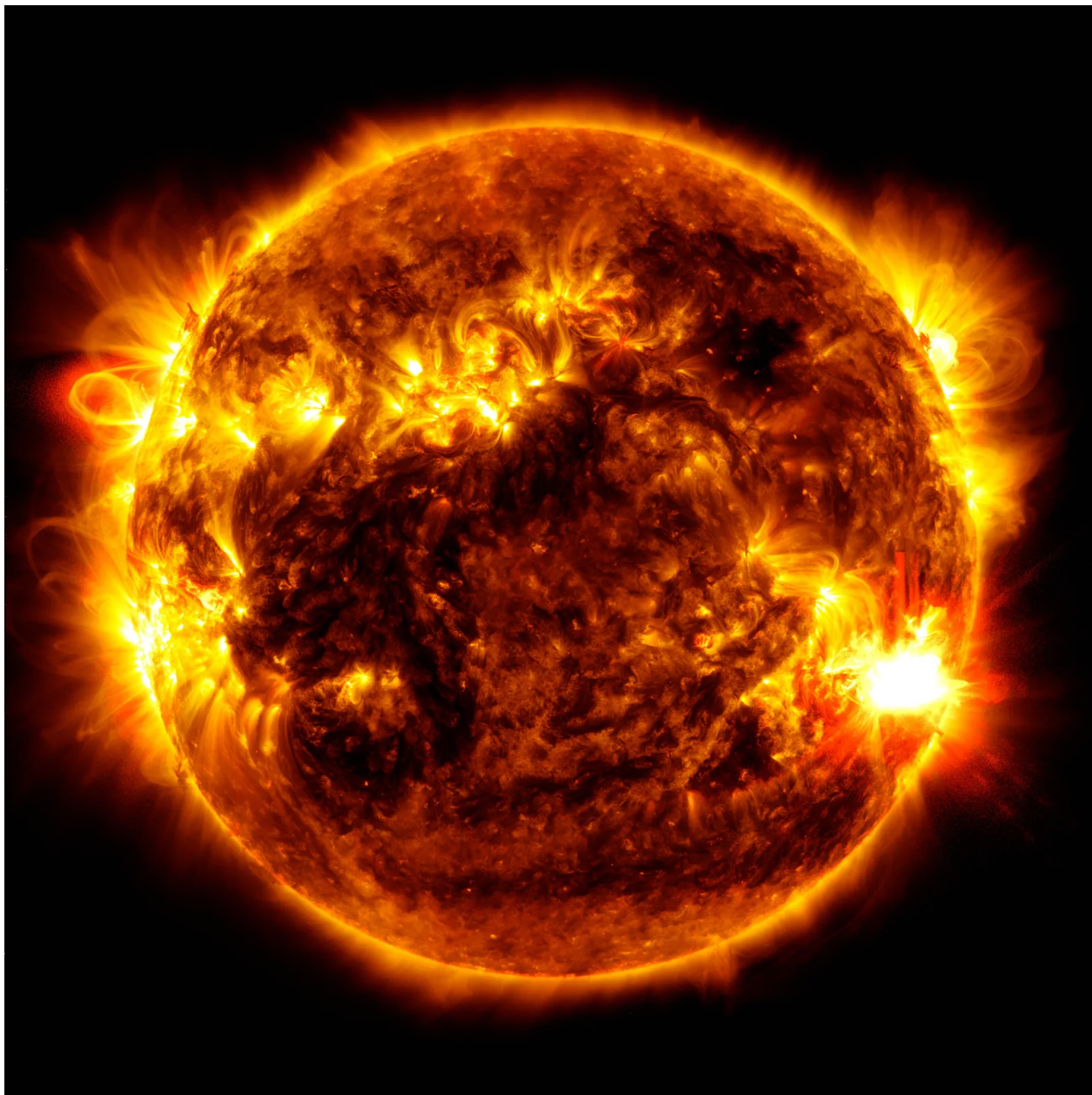


Solar variation

By Lennart Kiil



A strong solar flare on 11 May 2024, seen by the SDO satellite. On the same days the northern lights could be seen all over Denmark.

NASA Solar Dynamics Observatory, NASA Scientific Visualization Studio. Public domain. [Wikimedia Commons](#).

Changes in the amount of radiation from the Sun.

The Sun changes over time, and though some of these changes happen over billions of years, other occur within much shorter time scales. Some changes happen in regular cycles, while others seem more erratic.

The [Sun's radiation](#), or sunlight, varies in cycles. The main cycle is the 11 year solar cycle, also called the [sunspot](#) cycle. Through the recent cycles the intensity of visible sunlight has varied by about 0.1 percent.

The general [consensus](#) is that this slight variation in visible sunlight is not enough to be a significant part of recent global warming.

The variation in the Sun's emission of X-rays and ultraviolet (UV) radiation is far more pronounced during solar cycles. UV radiation plays an important role in formation of the [ozone layer](#).

The intensity of solar wind also varies, and stronger solar wind reduces the cosmic rays entering Earth's atmosphere.

The energy that the Earth receives from the Sun plays an essential part of the climate on Earth, and some scientists also believe that solar variation is responsible for most of the climate changes on Earth.

One [hypothesis](#) is that cosmic rays add to the formation of clouds, acting as a link between solar activity and the Earth's [albedo](#).

How to cite this entry

Lennart Kiil: "Solar variation". Climate Encyclopedia, climate-encyclopedia.com/solar-variation, retrieved 28 October 2026.

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