



## Simultaneous Eruption of Solar Flares

[Source: IE](#)

Recently, the [National Aeronautics and Space Administration \(NASA\)](#) solar dynamics observatory captured a rare celestial event that occurred with **four solar flares erupting simultaneously**.

- It originated from **three sunspots and a large magnetic filament**, demonstrating complex magnetic interactions.
- When the sun reaches the peak of its 11-year solar cycle known as solar maximum, it exhibits heightened activity.
  - It is known as a **sympathetic solar flare**, where multiple eruptions occur across the Sun's magnetic field, linked by massive magnetic field loops.
- **Sympathetic flares** are caused by **one eruption triggering others**, leading to **Coronal Mass Ejections (CMEs)** and massive bursts of plasma.
- It is considered **rare** because most reported sympathetic flares involve only two linked flares, while this one involved **four flares** erupting in unison making it a super-sympathetic event.
- These types of events have the **potential to disrupt power grids, telecommunication networks on Earth**, and orbiting satellites, and expose astronauts to dangerous radiation levels.
- This event offers scientists an opportunity to understand the **Sun's complex life cycle** and magnetic interactions better.
- The **sun's magnetic field goes through a cycle**, called the solar cycle, every 11 years the Sun's magnetic field completely flips which means the **sun's north and south poles switch places**.

//

# Solar Cycles

What is a solar cycle? Well, the solar cycle is the cycle that the Sun's magnetic field goes through approximately every 11 years, but what does that mean?

Our sun is a massive "ball" with electrically-charged hot gas. This electrically-charged hot gas moves and generates a powerful magnetic field which, is called a "solar cycle".

At the beginning of every solar cycle there is not as much activity on the Sun's surface as it is in the middle of a cycle. Therefore you call the beginning of a solar cycle a 'solar minimum' and the middle of a cycle a 'solar maximum'.

The solar cycles occur because the Sun's magnetic field flips upside down. This means that the north and south poles switch positions. This happens every 11 years at the beginning of a new cycle.

But how does this affect the Earth?  
The activity of Sun's "magnetic field" is the main cause that determines how big a solar storm that hits the Earth is going to be, or in other words, how big the CMEs are going to be.

**Read more:** [Solar Radiation Management](#)

PDF Refernece URL: <https://www.drishtias.com/printpdf/simultaneous-eruption-of-solar-flares>

