



Solar Maximum Spurs Solar Missions

[Source: IE](#)

[NASA's PUNCH mission](#), aimed at studying the Sun's corona, is the **third major solar mission since 2023**, reflecting a rise in solar missions linked to the [solar cycle](#), which is nearing its **solar maximum**.

Solar Cycle:

- The **solar cycle** is an **11-year period** during which the **Sun's magnetic field flips**, causing the **north and south poles to switch places**.
- During the **solar maximum** (when the Sun is most active), **solar activity**—such as **sunspots, solar flares, and coronal mass ejections**—increases, impacting **satellite communications** and **power grids**.
 - **Sunspots** are **small, dark, and cooler areas** where the magnetic field is particularly strong.
- The cycle ends with the **solar minimum** (when sunspot activity is at its lowest), leading to a decline in solar activity until the **next cycle begins**.
 - The **solar cycle is tracked** by counting **sunspots**.

SOLAR CYCLE

CONCEPT

What is a solar cycle?

The Sun's magnetic field goes through a cycle, called the solar cycle.

The solar cycle is the cycle that completes the Sun's magnetic field every 11 years or so.



WHY IS IT IMPORTANT?

The study of solar cycles and climate is vitally important in order to prevent major climatic changes that the sun produces on the earth. It is suspected that in a billion years, the sun will shine so brightly that Earth's atmosphere will be like that of Venus, unfit for life.

WHAT HAPPENS TO THE SUN WHEN IT COMPLETES ITS LIFE CYCLE?

The life of our Sun is in the middle. In about 5 million years, it will run out of hydrogen and grow like a red giant. Subsequently, it will convert what little hydrogen it has left and transform it into carbon, to stay as a yellow giant for 2 billion years.

HOW MANY SOLAR CYCLES HAVE BEEN RECOGNIZED?

During the last 265 years, only 24 solar cycles have been recorded.

Surge in Solar Missions:

- The increased number of **solar missions** is due to the **Sun approaching its solar maximum (2022-2024)**, providing the best opportunity to study its behavior.
 - The next peak in **solar activity** is expected **after 2035-2036**.

Earlier Solar Missions: [Aditya L1 \(India\)](#), [Proba-3 \(European Space Agency\)](#)

Read More: [NASA's Punch Mission - Drishti IAS](#)

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