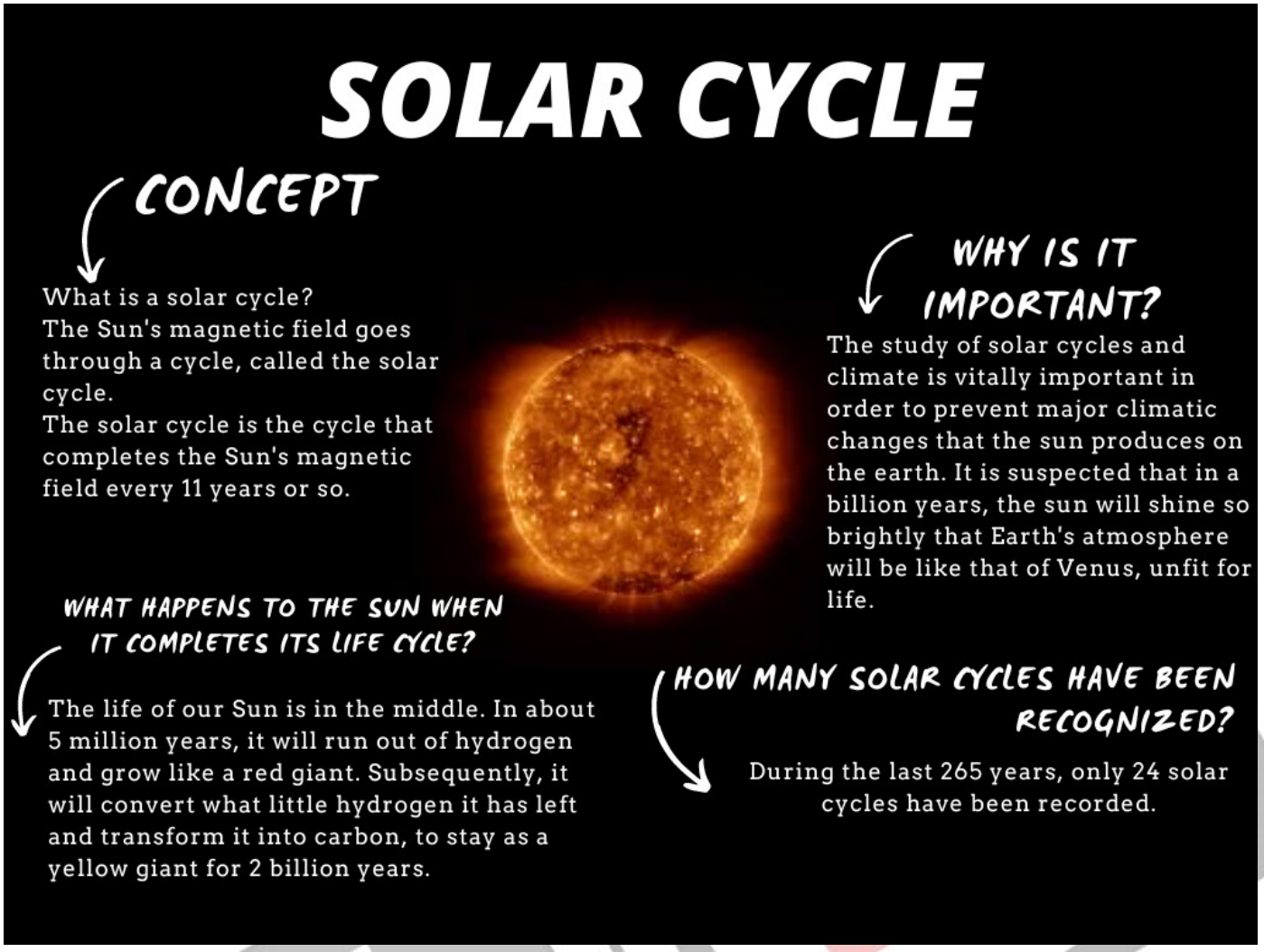
Solar Maximum Spurs Solar Missions

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**.



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**