

Solar Eruptions - Aditya-L1 & Proba-3 satellites

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Why in news?

Recently, scientists have analysed scientific observations of solar eruptions and studied the coronal mass ejections (CMEs) using data derived from India's Aditya-L1 mission and Europe's Proba-3.

- **Aditya-L1** - India's first dedicated solar mission- was launched by PSLV-C57 on September 2 2023.
- **Proba-3** - A mission of the European Space Agency (ESA)- was launched by PSLV-XL from Sriharikota on December 5, 2024.
- Two spacecraft are about 150 metres apart, and one casts a shadow on the other.



About the Observation

- **Purpose** - It measured the eruptions' mass, density and energy, providing new constraints on the physical processes that shape them in the Sun's inner corona.
- **Observations from** - Visible Emission Line Coronagraph (VELC) aboard Aditya-L1 & "ASPIICS coronagraph" aboard Proba-3 to study two coronal mass ejections (CMEs).

CMEs are large eruptions in which the Sun ejects vast quantities of magnetised plasma into space. When directed towards Earth, they can disturb its space environment and affect satellites and other space-based systems.

- **Aditya-L1's VELC** - Uses spectroscopy to study the solar corona, including the temperature and density of its gas.
- **Proba-3's ASPIICS** - Captures images of the corona using visible light and a green emission line.
- **Major Findings** - The researchers analysed two CMEs observed on September 14 and 16, 2025.
 - The September 14 CME was relatively fast, travelling at about 645 km/s.
 - The September 16 CME was slower, moving at about 145 km/s.
- The slower CME showed stronger early expansion as its density decreased more rapidly with height.

- The study also revealed differences in how energy was distributed among thermal, kinetic, and magnetic components in the two eruptions.

To know about **Aditya-L1**, click [here](#)

Reference

[TOI | Aditya-L1, Proba-3 team up to decode early evolution of Solar eruptions](#)

