



## Sun Images Captured by Aditya-L1

[Source: TH](#)

Recently, the [Indian Space Research Organisation \(ISRO\)](#) released images captured by its [Aditya-L1 solar mission](#) during a significant [solar \(geomagnetic\) storm](#) that occurred in May 2024.

- The remote sensing payloads **Solar UltraViolet Imaging Telescope (SUIT)** and the **Visible Emission Line Coronagraph (VELC)**, along with other payloads captured these images from the [Lagrange point](#) in space.
- These images will help in studying [solar flares](#), **energy distribution, sun spot**, understanding and predicting **space weather, monitoring solar activity and UV radiation** over a wide wavelength range, and also aid in the study of **long-term solar variations** and its **impact on the Earth's** environment.

### [Aditya L1:](#)

- It is India's **first dedicated solar mission**, developed by the **ISRO**, in collaboration with international partners.
- It will **study the Sun and its corona and provide valuable data** and insights into the Sun's behaviour, which is crucial for **understanding the impact of solar activity** on the Earth's climate and space weather.

# ADITYA-L1 MISSION



## ABOUT

- India's 1<sup>st</sup> scientific expedition to study the Sun
- To be placed at halo orbit around **L1 Lagrange point**
- Launch date - 02 Sept, 2023
- Time to reach - **4 months**; Mission Life - **5 years**

## FIELDS OF STUDY:

- **Sun's corona** (Visible and Near-infrared rays), **photosphere** (soft and hard X-ray) and **chromosphere** (UV)
- Solar emissions, solar winds and flares and **Coronal Mass Ejections** (CMEs)
- Carry out round-the-clock imaging of Sun

## SIGNIFICANCE

- Solar weather/environment affects the weather of entire solar system
- Solar events help **understand space weather**
- **Tracking Earth-directed storms** can help predict their impact

## LAUNCH VEHICLE

- PSLV-C57

## PAYLOADS:

- Visible Line Emission Coronagraph (VLEC) (**primary payload**)
- Solar Ultraviolet Imaging Telescope (SUIT)
- Solar Low Energy X-ray Spectrometer (SoLEXS)
- Aditya Solar wind Particle Experiment (ASPEX)
- High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)
- Plasma Analyser Package for Aditya (PAPA)
- Advanced Tri-axial High Resolution Digital Magnetometers

## What are Lagrange Points?

- Named after Italian-French mathematician Joseph-Louis Lagrange
- Positions in space where gravitational forces of a two-body system (e.g. Sun & Earth) produce enhanced regions of attraction and repulsion
- Spacecrafts placed at L points consume lower fuel to remain in position
- L1 will provide ISRO continuous view of Sun without any occultation/ eclipses

## ANATOMY OF THE SUN

### Sunspots

Darker, cooler areas on the photosphere with concentrations of magnetic field

### Prominence

Large structure, often many thousands of kilometres in extent

### Granulation

Small, short-lived grainy features that cover the Sun, caused by thermal currents rising from below

### Chromosphere

Layer above the photosphere, where the density of plasma drops dramatically

### Photosphere

The visible 'surface' of the Sun

### Transition region

Thin, irregular layer that separates the relatively cool chromosphere from the much hotter corona

### Flare

Sudden release of energy in the form of radiation

### Convective zone

Rapid heating of plasma creates currents of heated and cooled gas

### Radiative zone

Energy created in the core diffuses slowly through the plasma

### Core

Where the Sun generates its energy via thermonuclear reactions

### Corona

The Sun's outer atmosphere, which extends millions of kilometres into outer space

### Coronal mass ejection

Vast eruption of billions of tonnes of plasma and accompanying magnetic fields from the Sun's corona

### Solar wind

A continuous stream of charged particles released from the corona

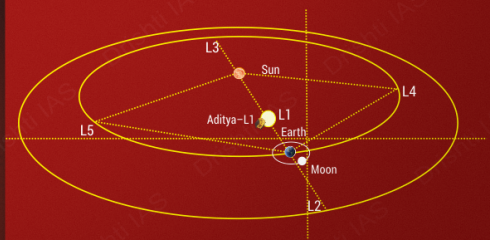


Illustration of all five Lagrange points of Sun-Earth System. Aditya-L1 will be placed around Lagrange point 1



Read more: [Solar Storms](#), [Indian Space Research Organisation \(ISRO\)](#)

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