Indian Inventions

ADITYA-L1

The First Indian Solar Mission

Introduction

Have you ever looked at the Sun and wondered what secrets it holds? The Sun is not just a bright ball in the sky, it is a powerful star that controls life on Earth. From providing light and heat to influencing weather and communication systems, the Sun plays a crucial role in our daily lives.

To understand it better, India launched its first solar mission, **Aditya - L1,** marking a major step in space science and innovation.

This mission is not just about space exploration, it is about **understanding science, solving real - world problems, and inspiring students like you to innovate.**

What is Aditya - L1?

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It observes the Sun's outer layers such as:

- Photosphere (surface)
- Chromosphere
- Corona (outer atmosphere)

Why study the Sun?

The Sun affects:

- Satellite communication
- GPS systems
- Power grids
- Climate patterns

Solar storms can disrupt mobile networks and electricity, something very important for a digital country like India.

Where is it located?

Aditya - L1 is placed at the **L1 (Lagrange Point 1)**, a special position between the Earth and the Sun where gravitational forces balance.
This allows continuous observation of the Sun without interruption.

When was it launched?

Aditya - L1 was launched on **September 2, 2023**, using the PSLV rocket.

Who developed it?

The mission was developed by the **Indian Space Research Organisation (ISRO),** with contributions from Indian scientists and research institutes.

The Problem

Solar activities like:

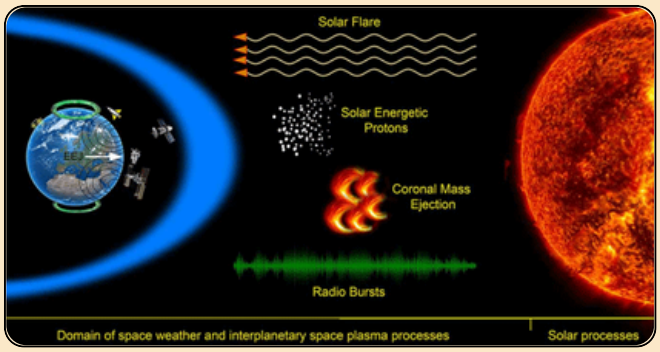
- Solar flares
- Coronal Mass Ejections (CMEs) can cause
- Communication failures
- Satellite damage
- Power outages

Why is this important for India?

India depends heavily on:

- Mobile networks
- Digital payments
- Satellite - based services

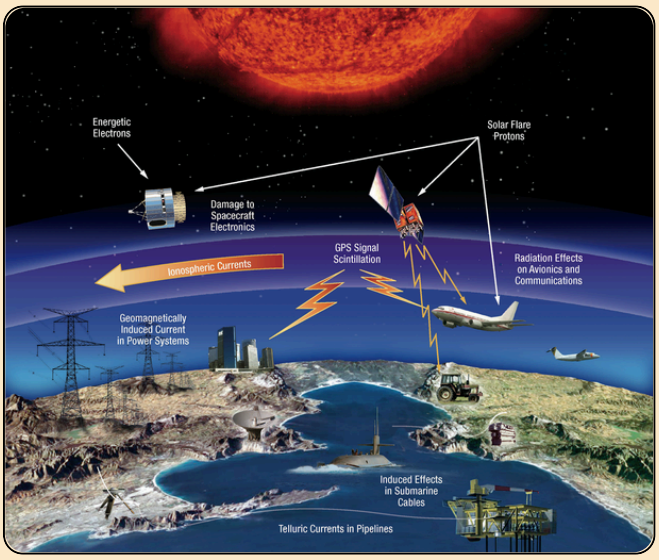
Understanding solar behaviour helps protect these systems.



Opportunity

- Develop early warning systems
- Improve satellite safety
- Boost space research in India

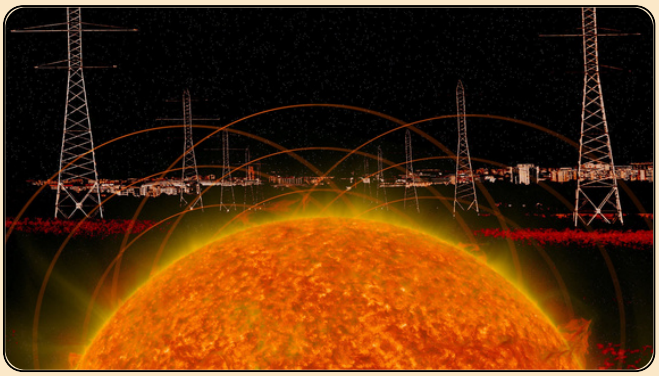
This creates opportunities for **young scientists and innovators.**



Definitions & Concepts

1. Solar Flare

A sudden burst of energy from the Sun.

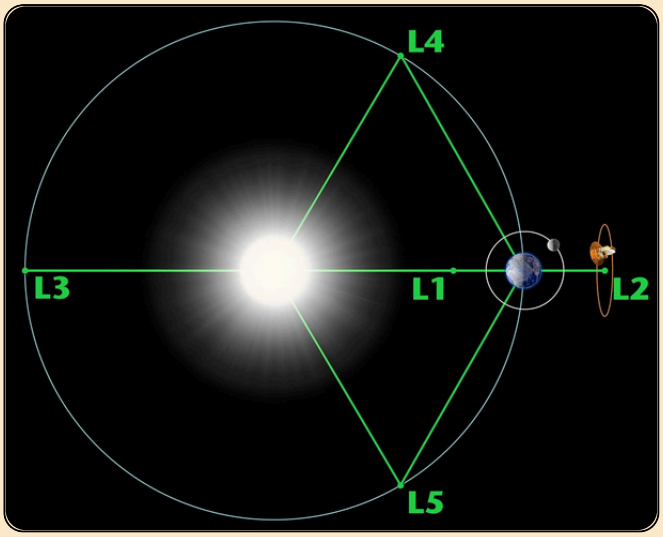


3. Space Weather

Conditions in space affected by the Sun.

4. Lagrange Point (L1)

A point where gravitational forces balance, allowing a satellite to stay in position.

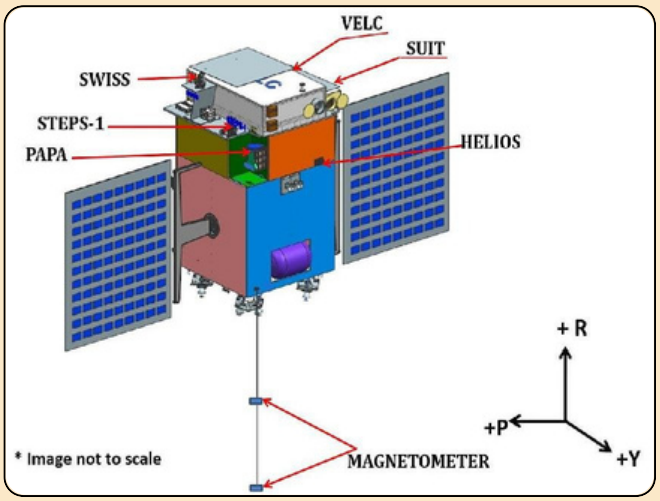


The Model & Instruments

Aditya-L1 carries **7 scientific instruments**, including:

- VELC (Visible Emission Line Coronagraph)
- SUIT (Solar Ultraviolet Imaging Telescope)
- SoLEXS (Solar Low Energy X-ray Spectrometer)

Each instrument studies different aspects of the Sun.



How It Works

Launch using PSLV rocket

1. Travel towards L1 point
2. Enter halo orbit around L1
3. Start observing the Sun
4. Send data back to Earth

How Data is Used

- Scientists analyze solar activity
- Predict solar storms
- Improve satellite design

Think of it like this:

Imagine placing a camera at a perfect spot where it can always see the Sun without interruption, that's what Aditya - L1 does!

Examples to understand daily life connection

- GPS in your phone depends on satellites
- Online classes depend on internet connectivity
- Digital payments rely on stable networks

All these can be affected by solar activity.

Aditya - L1 helps protect these systems.

Classroom Activity for Teachers

The teacher can engage students by asking them to imagine they are scientists planning the Aditya - L1 mission. Begin by asking: Why do we need to study the Sun? And what problems on Earth are caused by solar activity? Then guide them with questions like: Where should we place a satellite to observe the Sun continuously? and what might happen if solar storms are not predicted? Encourage students to think, respond, and discuss their ideas.

Success Stories

- India successfully reached Mars with **Mars Orbiter Mission**
- Chandrayaan missions explored the Moon

Aditya – L1 continues this success journey.

Future careers: Space scientist, Aerospace engineer & Data analyst

Student Innovation Ideas

- Build a solar observation model
- Create a space weather app
- Design satellite protection systems

Conclusion

Aditya – L1 is not just a mission, it is a symbol of India's scientific growth and curiosity.

It teaches us that:

- Science helps solve real problems
- Innovation begins with curiosity
- Even students can dream big

As young learners, you are the future of India's scientific journey.

One day, you might design the next space mission.

Word Search 2605 - Human Bones

R	S	C	U	A	C	E	T	A	M	A	H	U	H
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Humerus
Femur
Patella
Mandible
Malleus
Scaphoid
Scapula
Radius
Hamate
Ulna
Trapezium
Temporal
Stapes
Metatarsal
Fibula
Coccyx
Sternum
Tibia
Talus
Clavicle

(Answers on Back Cover Inside)