Aditya-L1 Support Cell

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In News: Aditya-L1 Support Cell provides all data on board India's first dedicated solar space mission.

Aditya-L1 Support Cell

- A community service centre has been set up to bring all data on board India's first dedicated solar space mission to a single web-based interface.The service centre is called Aditya-L1 Support Cell.
- It is a joint effort of Indian Space Research Organisation and Aryabhatta Research Institute of Observational Sciences.
- It will allow every interested individual to perform scientific analysis of the data.
- It is slated to develop specific tools to assist guest observers and researchers to prepare observing proposals for Aditya-L1 observations.
- It will also assist ISRO with the design and development of analysis software for handling scientific data.
- The centre will also provide co-aligned data from other observatories
- around the world that can complement the data obtained from Aditya-L1.
- This centre will expand the reach of Aditya-L1 not only within India, but also increase the visibility of the mission at the international level.

Aditya-L1 Mission

- **Launched Vehicle:** Aditya L1 will be launched with seven payloads (instruments) aboard the Polar Satellite Launch Vehicle (PSLV) XL.
- **Objective:** Aditya L1 will research the Sun's corona (Visible and Near infrared rays), photosphere (soft and hard X-ray), chromosphere (Ultra Violet rays), solar

emissions, solar winds and flares, and Coronal Mass Ejections (CMEs), as well as conduct round-the-clock imaging of the Sun.

- **Challenges**
    - The Sun’s distance from the Earth (approximately 15 crore kms on average, compared to the only 3.84 lakh kms to the Moon).This vast distance presents a significant science challenge.
    - Payloads on previous ISRO missions have largely remained stationary in space due to the risks involved; however, Aditya L1 may have some moving parts, increasing the possibility of collision.
    - Other problems include the solar atmosphere’s very high temperatures and radiation. Aditya L1 will, on the other hand, remain far further away, and the heat should not be a big issue for the instruments on board.

1st Lagrange Point

- Lagrange Points, named after the Italian-French mathematician Josephy-Louis Lagrange, are points in space where the gravitational forces of two bodies (such as the Sun and Earth) create enhanced regions of attraction and repulsion.
- The L1 point is 1.5 million kilometres from Earth, or 1/100th of the distance to the Sun.
- L1 stands for Lagrangian/Lagrange Point 1, one of the five points in the Earth-Sun system’s orbital plane.
- These can be used by spacecraft to minimise the amount of fuel they need to stay in place.
- A satellite in halo orbit around Lagrangian point 1 (L1) has the major advantage of being able to observe the Sun continuously without any occultation or eclipses.
- The Solar and Heliospheric Observatory Satellite (SOHO), a joint project of the National Aeronautics and Space Administration (NASA) and the European Space Agency, is

based at L1 (ESA).