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Aditya L1 Mission: ISRO'S First Sun Launching in 2019 (Download PDF)

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Indian Space Research Organisation's (ISRO) first solar mission Aditya-L1 in 2019 will be 'India's first dedicated scientific mission to study sun. Aditya L1 satellite will be launched by PSLV XL in early part of next solar cycle.

First Solar Mission Aditya-L1

Details of Mission

- Aditya L1 will put 1, 500-kg heavy class Aditya-L1 satellite into halo orbit around Lagrangian point L1, a point between Sun and Earth at a distance of about 1.5 million km from earth.

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- Mission is a joint venture between ISRO and physicists from various institutes including Indian Institute of Astrophysics (Bengaluru), Tata Institute of Fundamental Research (Mumbai) and Inter University Centre for Astronomy and Astrophysics (Pune).
- Satellite will orbit L1 point and image sun's magnetic field for very first time.
- Scientists hope to capture close-ups of sun uninterrupted by eclipses for years.

Objectives of Mission

- Study dynamic nature of sun's outer most layers, the corona and the chromosphere, and collect data about Coronal Mass Ejections (CME).
- Study on origin of solar storms and their path through the interplanetary space from the Sun to the Earth.
- The studies will also focus on collection of information for space weather prediction.

An International Race

Solar and Heliospheric Observatory (SOHO), a NASA-ESA collaboration involving America and Europe and NASA's Advanced Composition Explorer (ACE) to study the sun and space weather is the other satellite at this location.

Payloads of Aditya-L1

The Aditya-L1 will carry seven payloads:

- **Visible Emission Line Coronagraph (VELC)** : This is largest instrument of Aditya-L1 satellite to study diagnostic parameters of solar corona and dynamics and origin of Coronal Mass Ejections (CMEs). It has high sensitivity to measure magnetic field of solar corona down to tens of Gauss.
- **Solar Low Energy X-ray Spectrometer (SoLEXS)** : The instrument will monitor X-ray flares (1–30 keV) as a mechanism for heating solar corona.
- **High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)** : Study hard X-ray emission from 10 keV to 150 keV during impulsive phase of solar flares.
- **Solar Ultraviolet Image Telescope (SUIT)** : Capture spatially resolved Solar Photosphere and Chromosphere in near UV region measuring solar irradiance variations.
- **Plasma Analyser Package for Aditya (PAPA)** : Study composition of solar wind and its energy distribution throughout the lifetime of mission.
- **Aditya Solar Wind Particle Experiment (ASPEX)** : Study the variation of solar wind properties, its distribution, and spectral characteristics.
- **Magnetometer**: Measure magnitude and nature of interplanetary magnetic field.

What is Lagrange Point?