

# Aditya-L1 payload captures the first-ever image of a solar flare 'kernel'

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**Updated** - February 28, 2025 04:50 pm IST - Bengaluru

THE HINDU BUREAU



Aditya-L1 is the first space-based Indian observatory to study the Sun. | Photo Credit: ISRO

India's first dedicated space based solar mission, Aditya-L1, has made a ground-breaking observation as one of its scientific payloads has captured the first-ever image of a solar flare 'kernel' in the lower solar atmosphere.

The Solar Ultraviolet Imaging Telescope (SUIT) payload has captured the image kernel in the lower solar atmosphere, namely the photosphere and the chromosphere.

## Major step

ISRO said that this observation and associated scientific results mark a major step in understanding the Sun's explosive activity and its impact on Earth.

According to ISRO: "On February 22, 2025, the SUIIT payload onboard Aditya-L1 observed an X6.3-class solar flare, which is one of the most intense categories of solar eruptions. The unique feature of this observation was that SUIIT detected brightening in the Near Ultra Violet (NUV) wavelength range (200-400 nm) —a wavelength range never observed before in such greater detail".

The space agency added that these observations confirm that the energy released from the flare spread through different layers of the Sun's atmosphere.

This provides new insights into the complex physics responsible for these massive solar explosions, according to the space agency.

## Localised brightening

One of the most exciting revelations in this observation is that the localised brightening captured in the lower solar atmosphere corresponds directly with an increase in the temperature of plasma in the solar corona at the top of the solar atmosphere.

According to ISRO: "This confirms the linkage between flare energy deposition and associated temperature evolution. This finding also validates long-standing theories while offering new data that will help to reshape our understanding of physics of solar flare".

The Aditya-L1 mission was launched on September 2, 2023. On January 6, 2024, the spacecraft was successfully placed in a large halo orbit around first Earth-Sun Lagrange Point, known as Lagrange Point L1.

Published - February 28, 2025 04:29 pm IST