

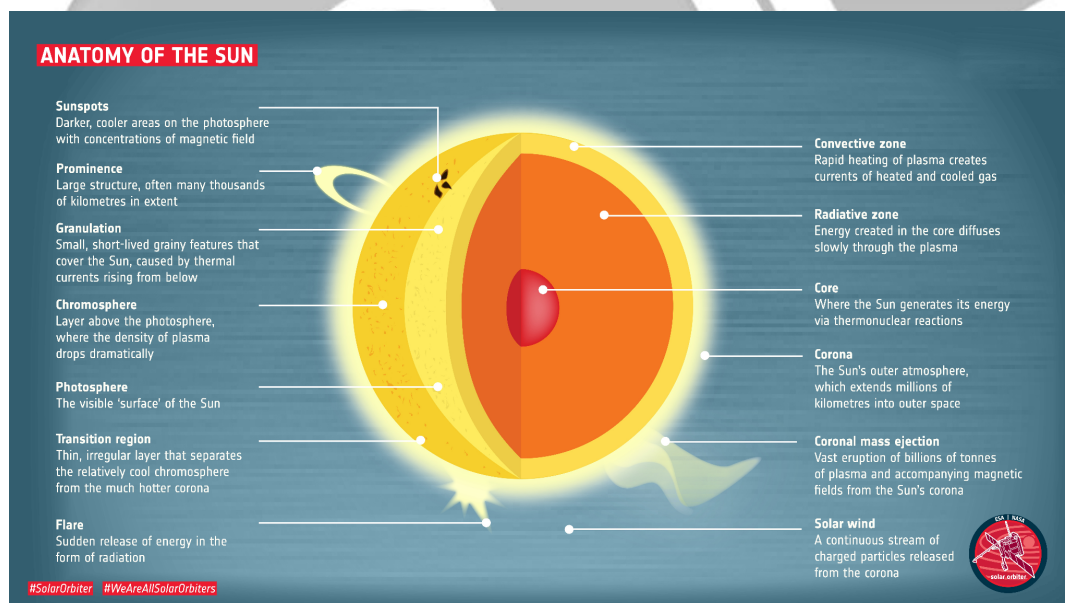


Miniature Coronal Loops

Source: [PIB](#)

Astronomers from the **Indian Institute of Astrophysics (IIA)** have unveiled **tiny, short-lived plasma loops** in the **Sun's lower atmosphere** that could hold the key to understanding how the Sun stores and releases magnetic energy.

- These **miniature coronal loops**, only **3,000-4,000 km long and <100 km wide**, were previously undetectable due to their size and brief lifespan (lasting just a few minutes).
 - They offer insights into **magnetic reconnection** (a process that releases sudden bursts of energy in the solar atmosphere), and are linked to plasma jets erupting from their tips, mirroring **larger solar coronal events** (like [solar flares](#) and [coronal mass ejections](#)).
 - **Differential Emission Measure** (indicates the amount of emission from plasmas at a specific temperature) analysis showed that the plasma temperatures in **miniature coronal loops reach several million degrees**, which is unusually high for the [chromosphere](#), where plasma densities are significantly higher than in the corona.
 - This challenges existing solar heating models, which struggle to explain such extreme temperatures in the Sun's lower atmospheric layers.
- Future telescopes like **India's National Large Solar Telescope (NLST)** in Ladakh may help explore these features further.
 - NLST is a proposed ground based **optical and near infra-red (IR) observational facility** in the country. It is designed to address an array of key scientific issues related to **origin and dynamics of solar magnetic fields**.



Read more: [Coronal Mass Ejections](#)

