

GISAT-1A (EOS-05) Mission

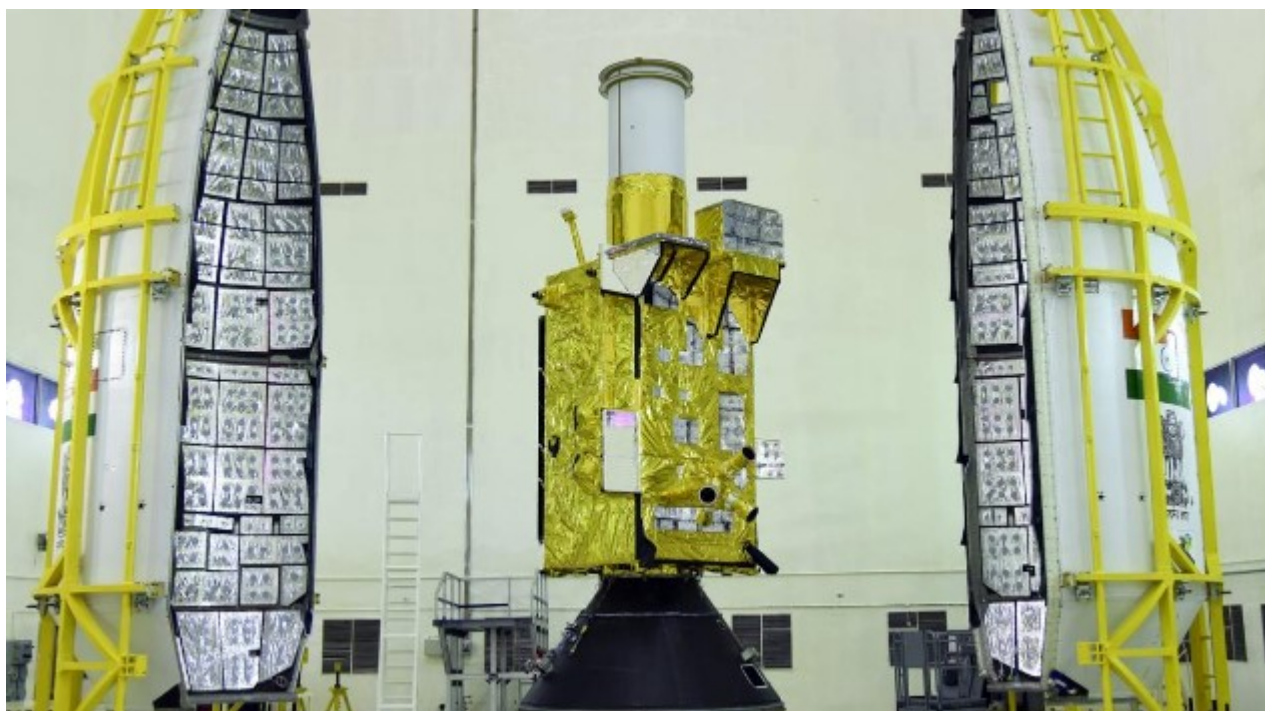
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Why in News?

ISRO is planning to launch GISAT-1A in September 2026.

- The mission is significant as it follows the failure of the earlier GISAT-1/EOS-03 mission in 2021 and comes after recent PSLV failures.

GISAT-1A



- **Developed by** – Indian Space Research Organisation (ISRO)
- **Features**
- **GISAT** – Geo-Imaging Satellite designed for wide-area and near-continuous observation of the Indian subcontinent.
- It is intended to observe the Indian landmass for large parts of the day.
- Applications include –
 - Flood monitoring
 - Cyclone tracking
 - Agriculture
 - Forestry

- Monitoring rapid changes on the Earth's surface.
- The replacement mission is designated F17.

GISAT-1 Mission Failure

- GISAT-1/EOS-03 was launched in August, 2021 using GSLV Mk-II.
- It was supposed to first enter a Geosynchronous Transfer Orbit (GTO) and then move to a geostationary orbit.
- The mission failed when the cryogenic upper stage did not start.
- The failure was linked to a valve leak, which reduced pressure in the liquid hydrogen tank.
- The cryogenic stage uses liquid hydrogen as fuel and liquid oxygen as oxidiser.

Orbit Concepts

- **Geosynchronous Transfer Orbit (GTO)** -
 - Highly elliptical orbit (170 km - 36,000 km).
 - Used as an intermediate orbit before reaching geostationary orbit.
- **Geostationary Orbit** -
 - A satellite in this orbit appears fixed relative to a point on Earth.
 - It is particularly useful for continuous observation and communication.

Different types of launch vehicles

Feature	PSLV	GSLV Mk-II	LVM-3
Stages	4	3	3
Cryogenic stage	No	Yes	Yes
Cryogenic engine	—	CE7.5	CE20
GTO capacity	—	Up to 2.5 tonnes	Up to 4 tonnes

- PSLV and GSLV Mk-II share some design elements, including the S139 first-stage solid motor lineage.
- They also share aspects of avionics, guidance, tracking and separation systems.

Recent ISRO Launch Issues

- PSLV-C61 carrying EOS-09 failed in May 2025.
- PSLV-C62 carrying N1 satellite failed in January 2026.
- Both failures involved anomalies during the third stage.
- ISRO subsequently paused launches while failure causes were investigated.
- GSLV-F15/NVS-02 was intended to strengthen India's NavIC constellation.

***NavIC** provides Positioning, Navigation and Timing (PNT) services over the Indian subcontinent.*

- Following the NVS-02 problem, the constellation had only 3 satellites, whereas at least 4 are required for PNT services.

- NVS-03 is expected to be launched subsequently.

Human Spaceflight Connection

- LVM-3 is planned to be upgraded into a human-rated LVM-3.
- It is intended to launch Indian astronauts under the Gaganyaan programme.

Reference

[The Hindu| GISAT-1A \(EOS-05\) mission](#)

