

इसरो ISRO



# PSLV-C51 / Amazonia-1 Mission

Indian Space Research Organisation

## MISSION DESCRIPTION

- ▶ India's Polar Satellite Launch Vehicle-C51 (PSLV-C51), will launch Amazonia-1 as primary satellite and 18 co-passenger satellites from First Launch Pad of Satish Dhawan Space Centre, SHAR, Sriharikota.
- ▶ PSLV-C51 will use 'DL' variant of PSLV equipped with two solid strap-on boosters.
- ▶ PSLV-C51/Amazonia-1 mission is the first Dedicated PSLV commercial mission for NewSpace India Limited (NSIL), a Govt. of India company under Department of Space. NSIL is undertaking this mission under a commercial arrangement with Spaceflight Inc. USA.

## PSLV-C51 MISSION SPECIFICATIONS

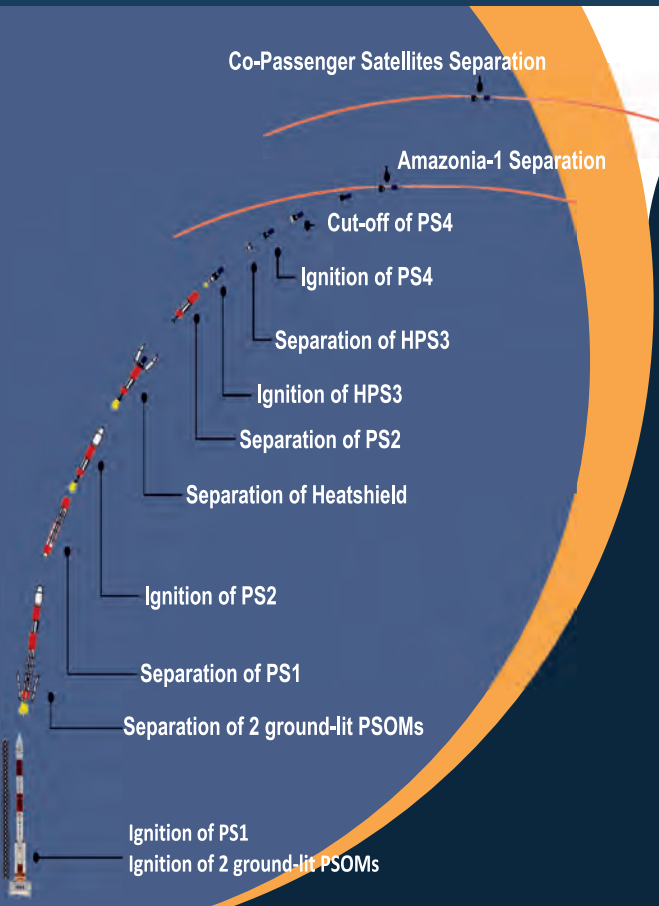
Primary Satellite	- Amazonia-1
Co-passenger	- 18 Satellites
Orbit	- Sun Synchronous Polar Orbit
Launch Pad	- First Launch Pad

## MILESTONES





## PSLV-C51 FLIGHT SEQUENCE



Flight Events	Time	Inertial Velocity (m/s)
PS1 Ignition	0	451.9
PSOM XL - GL Ignition	0.42 s	451.9
PSOM XL - GL Separation	1 min 10 s	1053.1
PS1 Separation	1 min 49 s	1824.1
PS2 Ignition	1 min 49 s	1823.1
Heat Shield Separation	2 min 42 s	2207.7
PS2 Separation	4 min 22 s	3828.9
PS3 Ignition	4 min 23 s	3825.2
PS3 Separation	8 min 15 s	5564.9
PS4 Ignition	8 min 25 s	5547.6
PS4 Engine Cut-off	16 min 36 s	7471.3
Amazonia-1 Separation	17 min 23 s	7476.7
PS4 Engine Restart-1	1 hr 1 min 10 s	7475.2
PS4 Engine Cut-off (Restart-1)	1 hr 1 min 19 s	7420.9
PS4 Engine Restart-2	1 hr 49 min 52 s	7671.4
PS4 Engine Cut-off (Restart-2)	1 hr 50 min	7612.6
First Co-Passenger satellite Separation	1 hr 51 min 32 s	7605.3
Last Co-Passenger satellite Separation	1 hr 55 min 7 s	7604.3

# PSLV-C51

**Amazonia-1**

**Co-passenger Satellites**

**Third Stage**

**HPS3**

Height: 3.6m

Diameter: 2m

Propellant: HTPB

Propellant Mass: 7.65t

**First Stage**

**PS1 + PSOM-XL**

**Payload Fairing**

**Fourth Stage**

**PS4**

Height: 2.5m

Diameter: 1.34m

Propellant: MMH &  $\text{MON}_3$

Propellant Mass: 2.5t

**Second Stage**

**PS2**

Height: 12.8m

Diameter: 2.8m

Propellant: UH25 &  $\text{N}_2\text{O}_4$

Propellant Mass: 41t

**PS1**

Height: 20m

Diameter: 2.8m

Propellant: HTPB

Propellant Mass: 139t

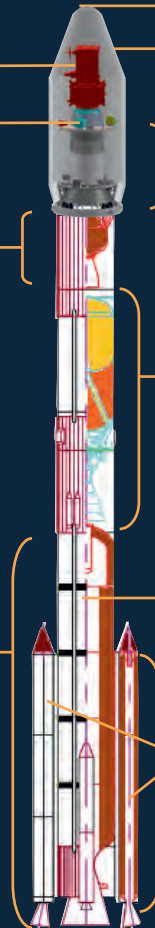
**2 Strap-ons (PSOM-XL)**

Height: 12m

Diameter: 1m

Propellant: HTPB

Propellant Mass: 12.2t



Height : 44.4 m



Amazonia-1 is the optical earth observation satellite of National Institute for Space Research (INPE), Brazil. This is the first satellite which is completely designed, integrated, tested, and operated by INPE.

Amazonia-1 mission would further strengthen the existing structure by providing remote sensing data to users for monitoring deforestation in the Amazon region and analysis of diversified agriculture across the Brazilian territory.



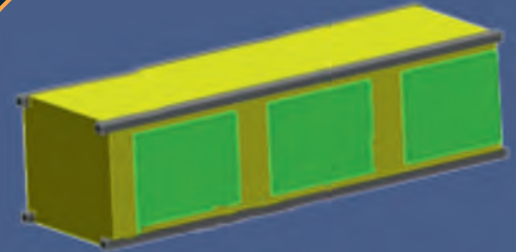
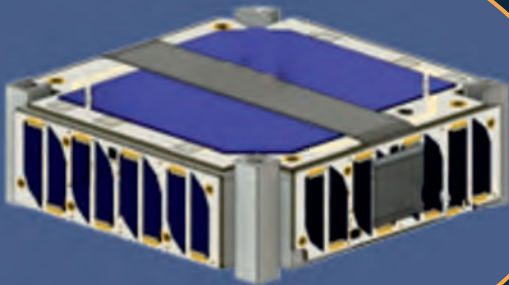
## SATELLITE CHARACTERISTICS

Amazonia-1 Mass	- 637 kg
Payload	- <b>Optical Earth Observation</b> [Wide field Imaging camera]
Imaging Swath & Resolution	- <b>850km swath &amp; 60m resolution</b>
Power	- Lithium Ion Batteries; <b>2 solar arrays</b> [3 panels on either side]
Propulsion	- <b>Hydrazine</b>
Mission life	- > 4 years

## INDIAN CO-PASSENGER SATELLITES

### Satish Dhawan SAT (SDSAT)

PSLV-C51 carries SDSAT built by Space Kidz India as a co-passenger payload. SDSAT is a Nano-satellite intended to study the Radiation Levels/Space Weather and demonstrate Long Range communication technologies.



### UNITYsat

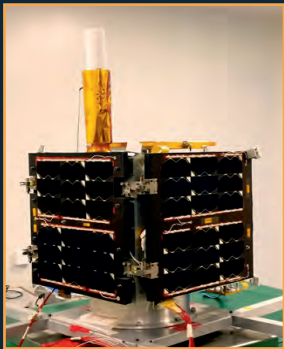
UNITYsat, the combination of '3 Satellites' is designed and built as a Joint Development by Jeppiaar Institute of Technology, Sriperumbudur (JITsat), G. H. Raison College of Engineering, Nagpur (GHRCEsat) and Sri Shakthi Institute of Engineering and Technology, Coimbatore (Sri Shakthi Sat). The satellite is intended for providing Radio relay services.





## COMMERCIAL CO-PASSENGER SATELLITES

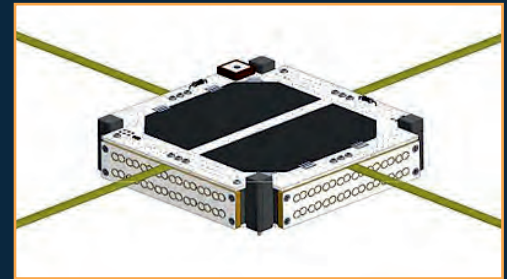
Satellite Name	Number of satellites	Country	Mission Objective of the satellite
SindhuNetra	1	India	Technology Demonstration
SAI-1 NanoConnect-2	1	USA	Technology Demonstration
SpaceBEEs	12	USA	2-way satellite communications and data relay



SindhuNetra

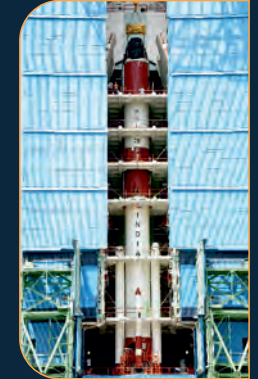


SAI-1 NanoConnect-2



SpaceBEEs




## GLIMPSES



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