

# PSLV-C54/EOS-06 MISSION



## PSLV PROJECT

Vikram Sarabhai Space Centre  
Indian Space Research Organisation



## PSLV-C54/EOS-06 MISSION

ISRO's PSLV-C54 is to launch EOS-06 (Earth Observation Satellite - 06) and Eight Nano-satellites into two different SSPOs. The Primary satellite (EOS-06) will be separated in Orbit-1. Subsequently Orbit change is planned by using two Orbit Change Thrusters (OCTs) introduced in the Propulsion Bay Ring of the PSLV-C54 Vehicle. The Passenger Payloads (PPLs) will be separated in Orbit-2.

This is the 56<sup>th</sup> flight of Polar Satellite Launch Vehicle (PSLV) and 24<sup>th</sup> Flight of PSLV-XL version with 6 PSOM-XLs.

PSLV-C54 launch is planned from First Launch Pad (FLP), SDSC, SHAR.

56<sup>th</sup>  
flight of  
PSLV

24<sup>th</sup>  
flight of  
PSLV-XL

### PSLV-C54 VEHICLE CHARACTERISTICS

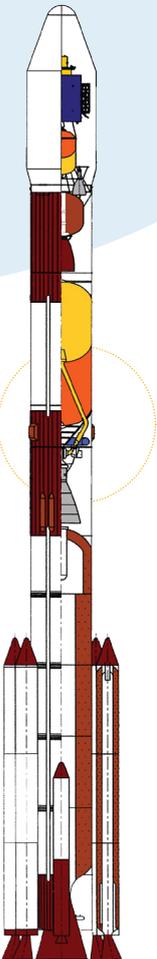
Vehicle Height	44.4 m
Lift off Mass	321 t
Propulsion Stages	
First Stage	6PSOM-XL+ S139
Second Stage	PL40
Third Stage	HPS3
Fourth Stage	L2.5 (A1)

### PSLV-C54 MISSION SPECIFICATIONS (OSCULATING ELEMENTS)

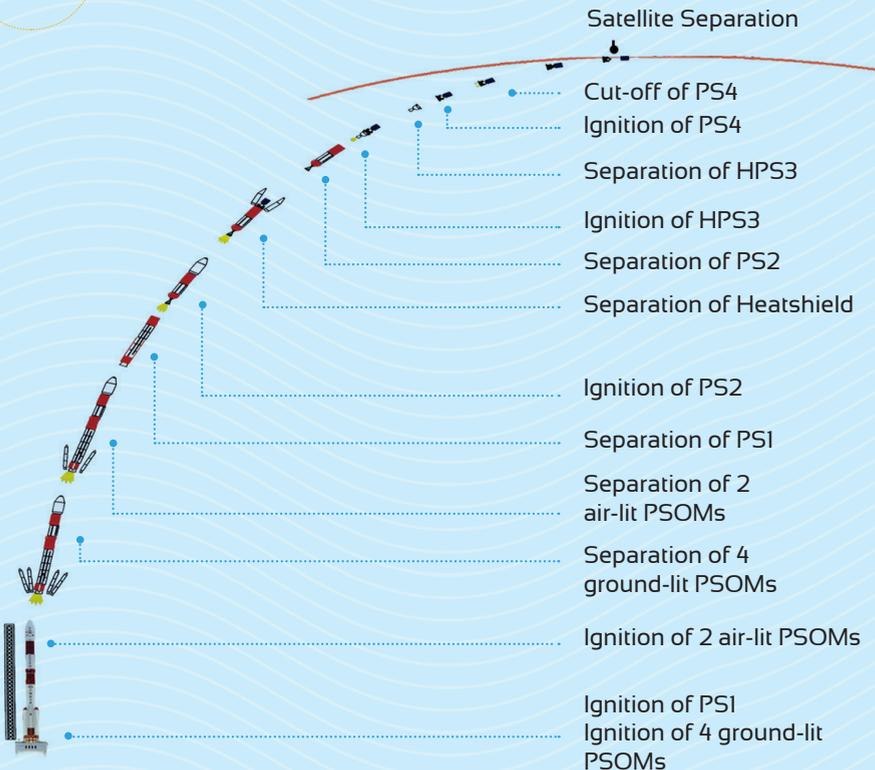
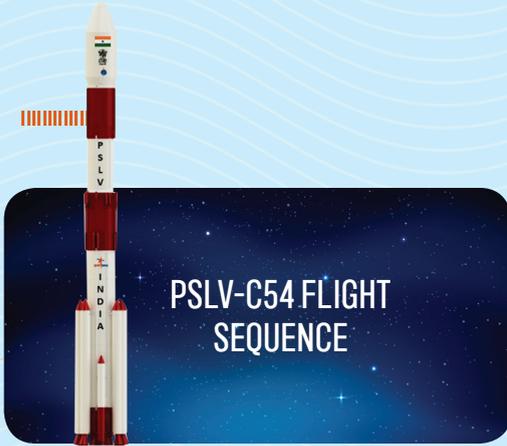
Parameter	Orbit-1 (EOS-06)	Orbit-2 (Passenger Payloads)
Semi-Major Axis (km)	7116.073	6889.339
Altitude (km) (wrt equatorial RE of 6378.137 km)	737.936	511.202
Inclination (deg)	98.341	97.450
Launch Pad		FLP
Launch Azimuth (deg)		140

### PSLV-C54 Stages at a Glance

	Stage 1		Stage 2 (PS2)	Stage 3 (HPS3)	Stage 4 (PS4)
	PS1	PSOM-XL			
Length (m)	20	12	12.8	3.6	3.0
Diameter (m)	2.8	1	2.8	2	1.34
Propellant	Solid (HTPB based)	Solid (HTPB based)	Liquid (UH25 + N <sub>2</sub> O <sub>4</sub> )	Solid (HTPB based)	Liquid (MMH+ MON3)
Propellant Mass (t)	139	12	41	7.65	2.5



# PSLV-C54/EOS-06 MISSION



Payload Accommodation in PSLV-C54



## PSLV-C54/EOS-06 MISSION

## PSLV-C54 TYPICAL FLIGHT PROFILE



Event	Time (s)	Local Altitude (km)	Inertial Velocity (m/s)
RCT Ignition	-3	0.024	451.9
PS1 Ignition	0	0.024	451.9
PSOM XL 1,2 (GL) Ignition	0.42	0.024	451.9
PSOM XL 3,4 (GL) Ignition	0.62	0.024	451.9
PSOM XL 5, 6 (AL) Ignition	25.0	2.737	568.9
PSOM XL 1,2 (GL) Separation	69.9	27.058	1312.4
PSOM XL 3,4 (GL) Separation	70.1	27.220	1316.9
PSOM XL 5,6 (AL) Separation	92.0	48.661	1893.9
PS1 Separation	108.44	68.786	2145.9
PS2 Ignition	108.64	69.030	2145.0
Heat Shield Separation	148.64	116.621	2375.4
CLG Initiation	153.64	122.471	2402.0
PS2 Separation	260.72	252.739	4057.9
PS3 Ignition	261.92	254.387	4054.2
PS3 Separation	488.22	537.508	5838.5
PS4 Ignition	498.62	548.111	5823.3
PS4 Cutoff	985.68	741.943	7479.4
EOS-06 separation	1032.68	742.793	7483.8
Orbit Change-1 Start	2483.52	755.865	7477.8
Orbit Change-1 Stop	3942.44	708.481	7459.0
Orbit Change-2 Start	5493.02	563.300	7622.6
Orbit Change-2 Stop	6771.36	514.936	7605.6
Thybolt Separation (First PPL separation)	6861.36	516.394	7604.9
INS-2B Separation (Last PPL separation)	7521.36	528.849	7599.7
MON Passivation Start	7631.36	530.143	7599.8
MMH Passivation Start	8271.36	530.471	7601.5



## SATELLITES IN PSLV-C54

Satellite	Agency, Country	Separating Mass (kg)
EOS-06	URSC, India	1117.0
INS-2B	URSC, India	18.28
Anand	Pixxel, India	16.51
Thybolt (2 Nos.)	Dhruvaspace, India	1.45
Astrocast (4 Nos.)	Spaceflight, USA	17.92

## PSLV-C54/EOS-06 MISSION

### EOS-06

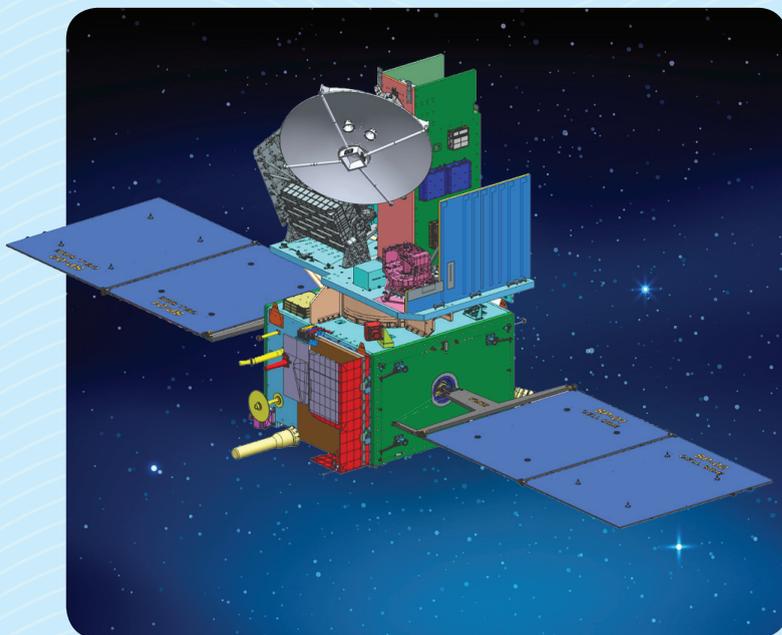
EOS-6 is the third-generation satellite in the Oceansat series. This is to provide continuity services of Oceansat-2 spacecraft with enhanced payload specifications as well as application areas.

#### Payloads

- Ocean Color Monitor (OCM-3)
- Sea Surface Temperature Monitor (SSTM)
- Ku-Band Scatterometer (SCAT-3)
- ARGOS

#### Mission Objectives

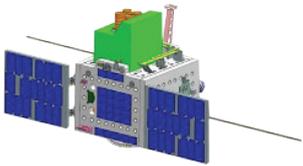
- To ensure the data continuity of Ocean colour and wind vector data to sustain the operational applications.
- To improve the applications, some additional datasets such as Sea Surface Temperature and more number of bands in Optical region for fluorescence and in Infrared region for atmospheric corrections are accommodated.
- To develop / improve related algorithms and data products to serve in well-established application areas and to enhance the mission utility.





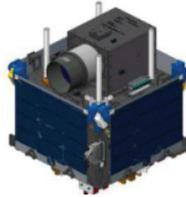
## PSLV-C54/EOS-06 MISSION

## SATELLITES IN PSLV-C54



### INDIA-BHUTAN SAT

ISRO Nano Satellite-2 for Bhutan (INS-2B) spacecraft is configured with INS-2 Bus. INS-2B will have two payloads namely NanoMx and APRS-Digipeater. NanoMx is a multispectral optical imaging payload developed by Space Applications Centre (SAC). APRS-Digipeater payload is jointly developed by DITT-Bhutan and URSC.



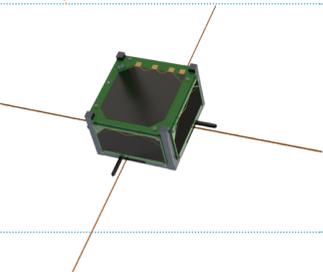
### ANAND

The Anand Nano satellite is technology demonstrator to demonstrate the capabilities and commercial applications of miniaturized earth-observation camera for earth observation using a microsatellite in Low Earth Orbit. This is a three-axis stabilized satellite consisting of a satbus, accommodating all subsystems like telemetry, tele-command, Electrical Power system, Attitude Determination and Control System (ADCS), on-board computers etc, and a payload unit.



### ASTROCAST (4 NOS.)

Astrocast, a 3U spacecraft is a technology demonstrator satellite for the Internet of Things (IoT) as the payload. There are 4 nos. of Astrocast Satellites in this mission. These spacecraft are housed within an ISISpace QuadPack dispenser. The dispenser protects the satellite from contamination.

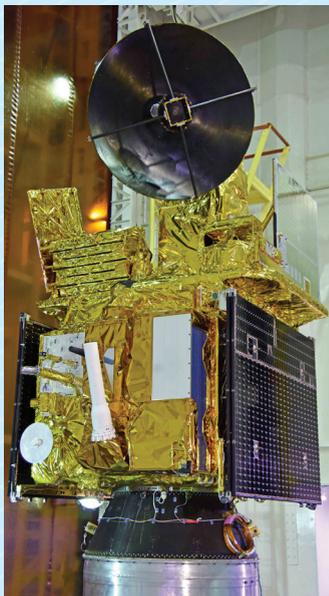


### THYBOLT (2 NOS.)

The Thybolt is a 0.5U spacecraft bus that includes a communication payload to enable rapid technology demonstration and constellation development for multiple users. It also demonstrates Store-and-Forward functionality for authorized users in the amateur frequency band. The satellites shall be deployed by using Dhruva Space Orbital Deployer to perform the specific mission operations for a minimum lifetime of 1 year.

GLIMPSES

PSLV-C54/EOS-06 MISSION





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