



IRNSS-1I

# PSLV-C41/IRNSS-1I

Indian Space Research Organisation



# THE MISSION

43<sup>rd</sup> flight of Polar Satellite Launch Vehicle (PSLV)

20<sup>th</sup> flight of PSLV-XL version

32<sup>nd</sup> Launch of PSLV from the First Launch Pad (FLP) at Satish Dhawan Space Centre SHAR, Sriharikota

## Targeted Sub-Geosynchronous Transfer Orbit (Sub-GTO) of PSLV-C41

Perigee : 284 km  
Apogee : 20,650 km  
Inclination : 19.2 deg  
Azimuth : 104 deg



Orbit Raising Manoeuvres  
using the satellite's  
onboard propulsion system  
 $\Delta V$ : 1890 metre/sec



## Targeted Orbit of IRNSS-1I

Type : Geosynchronous Orbit  
Height : 36,000 km  
Inclination : 29 deg  
Longitude : 55 deg East



# THE VEHICLE

## PSLV-C41 at a Glance

Parameters	Stages			
	First Stage	Second Stage	Third Stage	Fourth Stage
	Core Stage (PS1) + 6 Strap-on Motors (PSOMs)	PS2	PS3	PS4
Propellant	Composite Solid	Earth Storable Liquid	Composite Solid	Earth Storable Liquid
Propellant Mass (T)	138.2 (Core), 6 x 12.2 (Strap-on)	42.0	7.6	2.5
Diameter (m)	2.8 (Core), 1 (Strap-on)	2.8	2.0	1.34
Length (m)	20 (Core), 12 (Strap-on)	12.8	3.6	3.0
Max. Vacuum Thrust (kN)	4846.9 (Core), 6 x 703.5(Strap-on)	803.78	239.6	2 x 7.33



Satellite

Fourth Stage

Third Stage

Second Stage

First Stage

Height:  
44.4 m

Weight:  
321 Tonnes



# THE SATELLITE



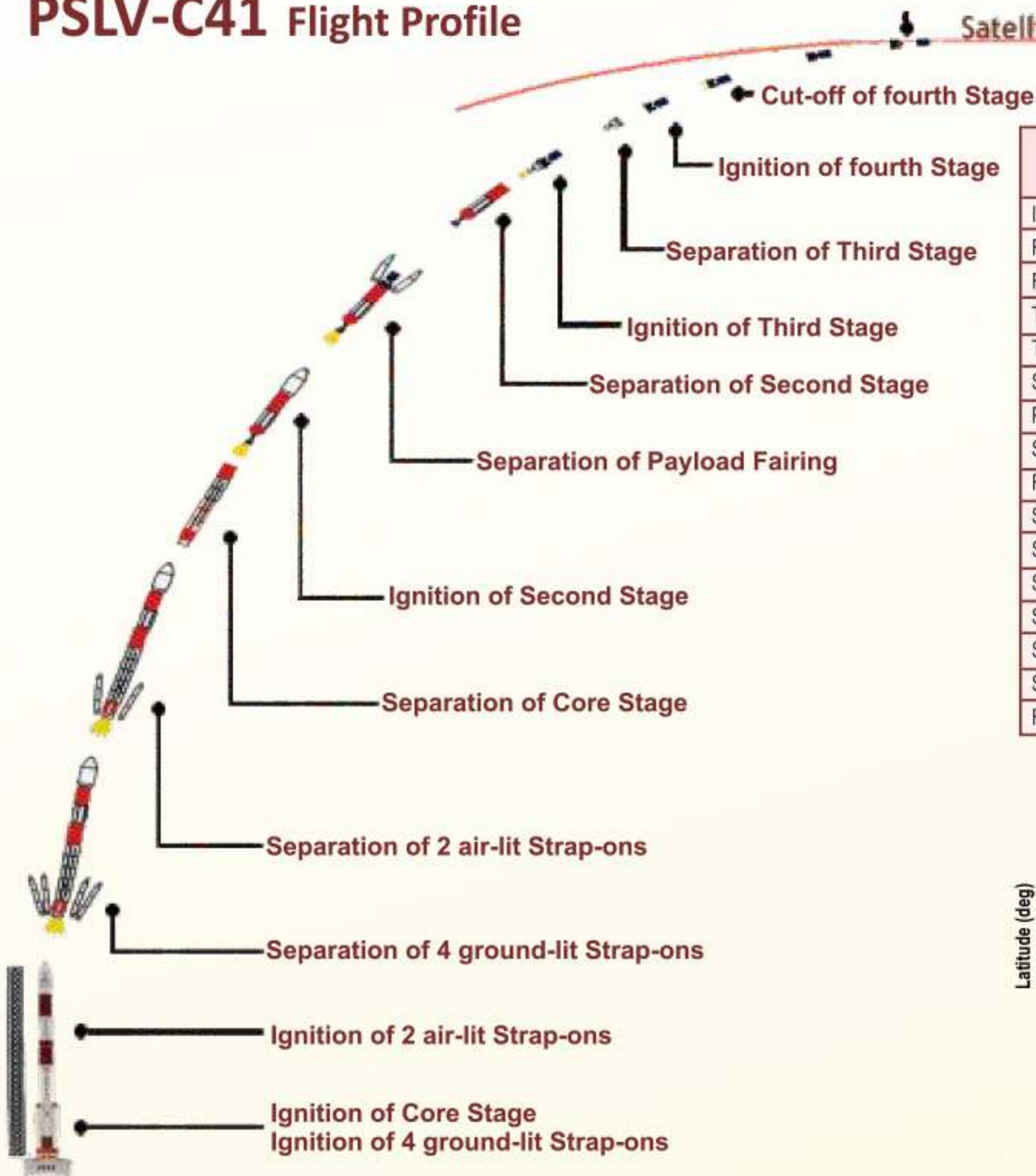
IRNSS-1I during a prelaunch test

## Salient Features of IRNSS 1I

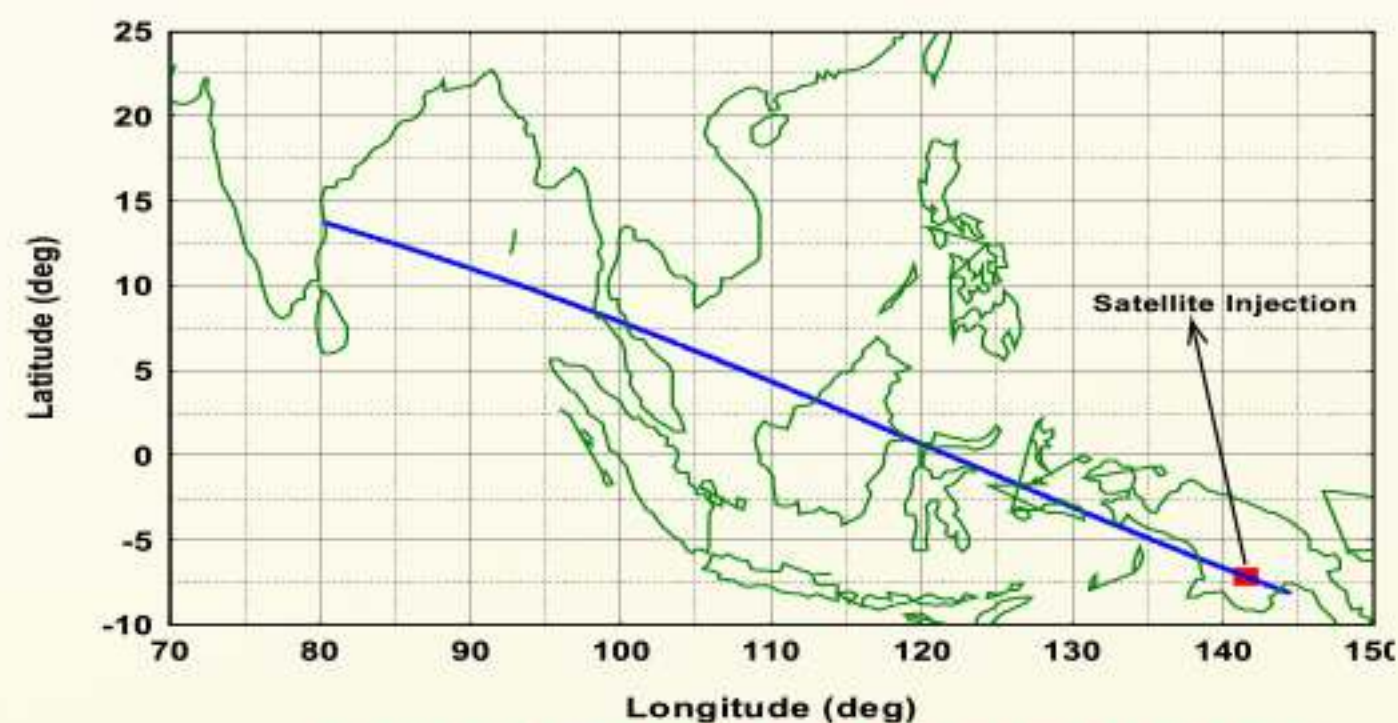
- ▶ Transmits Signals for the determination of position, navigation and time
- ▶ Lift-Off Weight : 1425 kg
- ▶ L5 and S-band Navigation Payload with Rubidium Atomic Clocks
- ▶ C-band Ranging Payload
- ▶ Corner Cube Retro Reflectors for LASER Ranging
- ▶ Overall Size : 1.58m x 1.5m x 1.5m
- ▶ I-1K Spacecraft Bus
- ▶ Power : 1670 W
- ▶ Ninth Satellite realised in the Indian Regional Navigation Satellite System (IRNSS) Space segment



# PSLV-C41 Flight Profile



Event Name	Time after lift-off	Altitude (kilometre)	Velocity (metre per second)
IRNSS-1I Separation	19 min 19.6 sec	506.708	9597.86
Fourth Stage Cut-off (Injection)	18 min 42.6 sec	454.500	9639.68
Fourth Stage Ignition	10 min 8.72 sec	185.138	7736.57
Third Stage Separation	9 min 58.72 sec	183.301	7738.78
Third Stage Ignition	4 min 24.22 sec	131.771	5395.62
Second Stage Separation	4 min 23.02 sec	131.547	5396.01
Payload Fairing Separation	3 min 23.2 sec	112.883	3711.43
Second Stage Ignition	1min 50.4 sec	55.418	2403.89
First Stage Separation	1min 50.2 sec	55.253	2404.39
Strap-on 5, 6 (Airlit) Separation	1min 32.0 sec	39.751	2066.62
Strap-on 3, 4 (Groundlit) Separation	1min 10.1 sec	23.766	1469.62
Strap-on 1, 2 (Groundlit) Separation	1min 9.9 sec	23.638	1464.38
Strap-on 5,6 (Airlit) Ignition	25.0 sec	2.695	618.95
Strap-on 3,4 (Groundlit) Ignition	0.62 sec	0.024	451.89
Strap-on 1,2 (Groundlit) Ignition	0.42 sec	0.024	451.89
First Stage Ignition	0.00	0.024	451.89



**Ground Trace of PSLV-C41 Trajectory**



# Glimpses of Launch Vehicle and Satellite Preparation

PSLV-C41



IRNSS-1I



**Indian Space Research Organisation**

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