

# **Recent Indian Space Missions**



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**Indian Space Research Organisation  
Department of Space  
Government of India**

**54th session of STSC  
Vienna**

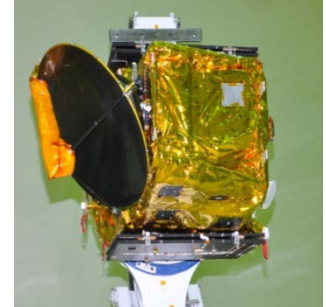
# ISRO missions in last one year

- Jan 20: **PSLV C31/IRNSS 1E**
- Mar 11: **PSLV C32/IRNSS 1F**
- Apr 28: **PSLV C33/IRNSS 1G**
- Jun 22: **PSLV C34/ Cartosat 2Series +..**
- Sep 08: **GSLV F05/INSAT 3DR**
- Sep 26: **PSLV C35/ SCATSat-1 +..**
- Oct 06: **GSAT-18**
- Dec 07: **PSLV C36/ Resourcesat 2A**

*Additionally ...*

**4 Student satellites**

**22 Satellites of 5 Nations**



# Technology Demonstration Experiments



May 23: **RLV – TD**



Aug 28: **SCRAMJET**



**20 Satellites**

**2 orbits**

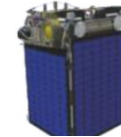
**One mission**



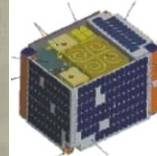
**Cartosat-2 Series**  
Sub-metre Pan & 2m MX  
June 22, 2016



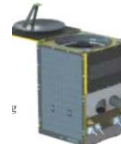
**LAPAN-A3 Indonesia**  
(Earth Observation)



**BIROS Germany**  
(RS of High Temperature events)



**M3MSAT Canada**  
(Study AIS signals from LEO)



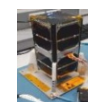
**SKYSAT-Gen2-1 USA**  
(Sub-meter resolution EO)



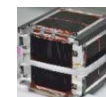
**GHGSAT-D Canada**  
(Atm. GHG measurement)



**DOVE (12 Sats.) USA**  
(Earth Observation)

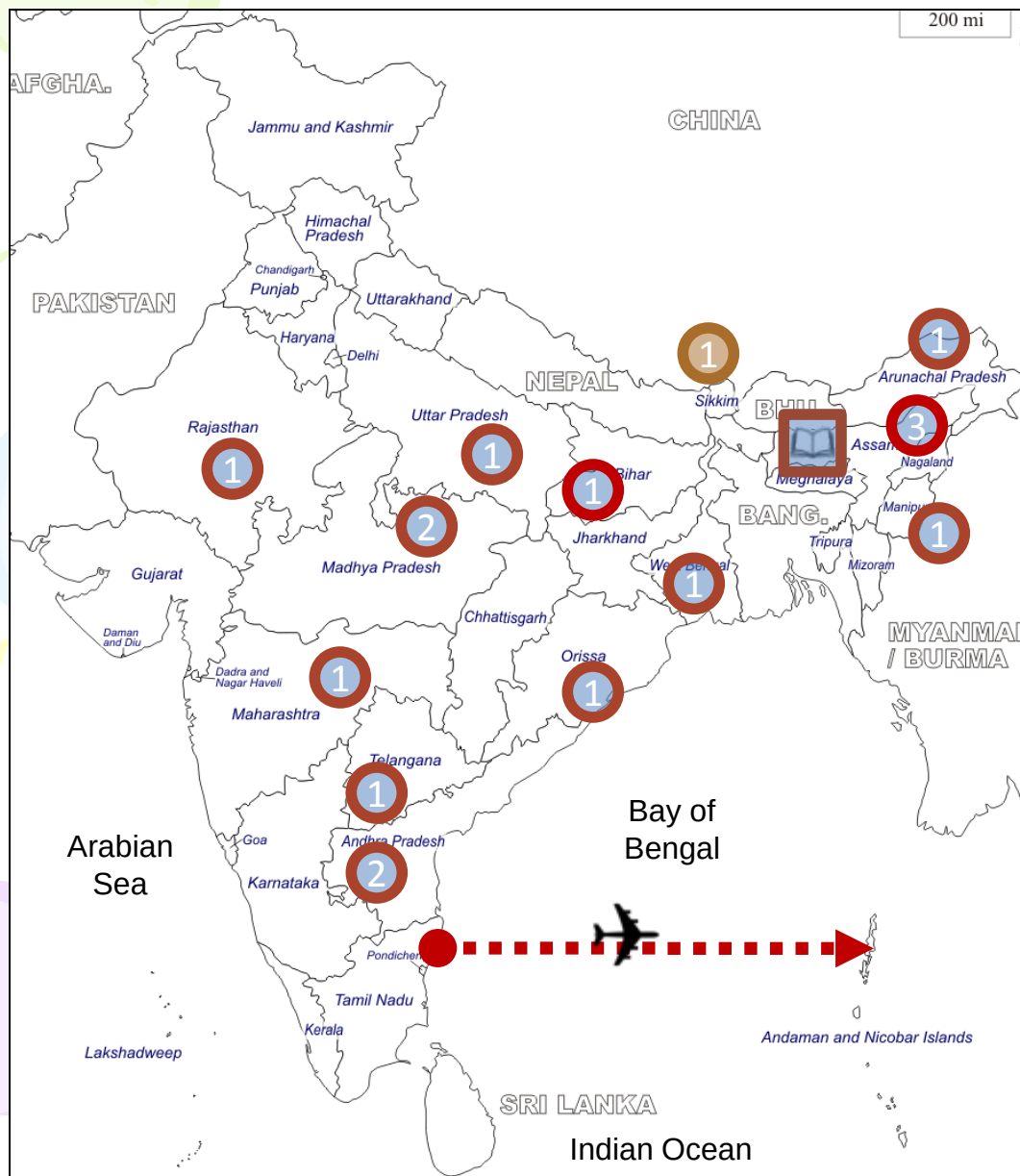


**SATYABAMASAT**  
**Satyabama Uni.**  
(GHG data collection)



**SWAYAM**  
**College of Engineering ,Pune**  
(point to point messaging for HAM)

# Support to Manage Disasters in India - 2016



## **Floods – 12 States**

Andhra Pradesh – Jul, Sep

Arunachal Pradesh – Jul

**Assam – Apr, Jun, Jul**

**Bihar – Aug-Sep**

Madhya Pradesh – Jul, Aug

Maharashtra – Aug

Manipur – Apr

Odisha – Sep

Rajasthan – Aug

Uttar Pradesh – Jul-Aug-Sep

West Bengal – Aug

## **Landslide**

Sikkim – Aug

## **Missing Aircraft**

Bay of Bengal - Jul

## **Flood Hazard Atlas**

Assam State

**1 Flood**



**Hazard Atlas**

**1 Land Slide**



**Missing Aircraft**

# Support to International Charter in 2016



|              |               |
|--------------|---------------|
| ● Earthquake | ● Flood       |
| ● Volcano    | ● Ocean Storm |
| ● Fire       | ● Land Slide  |

|                   |    |
|-------------------|----|
| Activations       | 24 |
| Requests to ISRO  | 22 |
| ISRO Contribution | 22 |





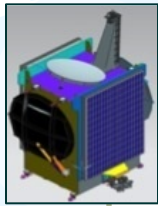
# International Space Events in India



# UPCOMING MISSIONS



**GSAT-17**  
Communication satellite with 39  
Transponders



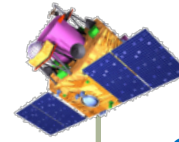
**GSAT-19**  
Payload for GSLV-MKIII D1  
Flight (5Gbps)



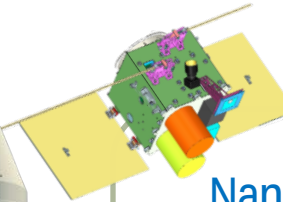
**GSAT-11**  
High Throughput Satellite - 10  
Gbps capacity



**GSLV MK III**



**Cartosat -2 Series Mission**  
PAN with 0.63m & MX with 2.0m



**Nanosatellites ( 10 Kg)**  
2 Nos as Co passengers for  
Cartosat 2 Series



**GSAT-9**  
Ku band  
Communication services



# UPCOMING MISSIONS

## Chandrayaan-2 Mission

Indigenous Lunar Lander & Rover

Orbiter Payloads: CLASS, SAR, IIRS, Chace-2 & TMC

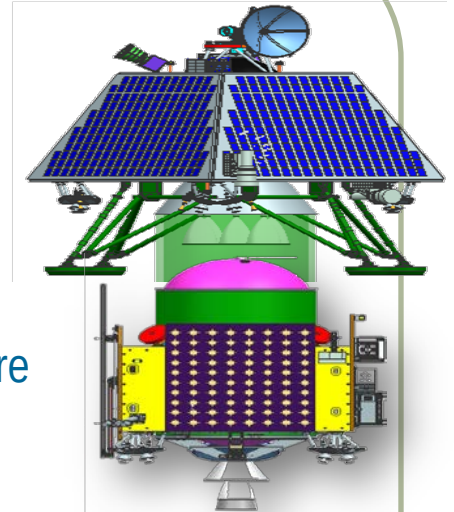
Lander Payloads: Rover with LIBS & APXS

Radio Anatomy of Moon bound Hypersensitive Ionosphere & atmosphere

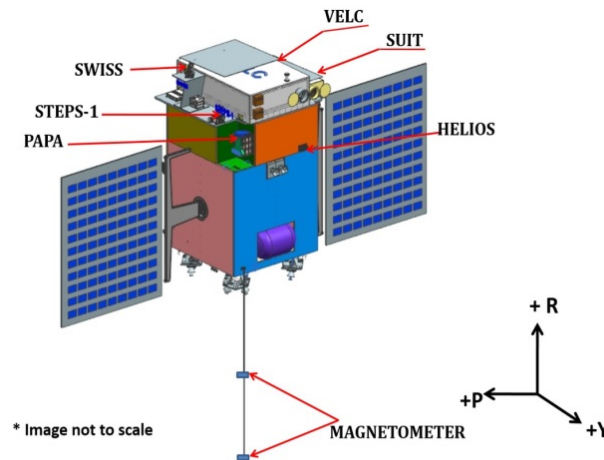
Lunar Electrostatic & Dust Levitation Experiment

Chandra's surface thermal experiment

MEMS based Seismometer



## ADITYA L1 Mission



*Deployed view*

# *The Road Ahead.....*

- † *Reducing the cost of access to space*
- † *Shorter turnaround times*
- † *Building capabilities for exploration*
- † *Development of new technologies*
- † *Sustaining the application program to touch everybody's, everyday life*
- † *Increased industrial participation*

## *In transition*

*4 → 7 launches per annum*

*12-18 launches per annum*

*Component supply from industries*

*Integrated systems supply from industries*

*Casings, hardware, sub-systems*

*Stages, engines, thrusters*

*Activities at work centres*

*Assembly and testing close to launch site*



**Thanks...**