

Recent Indian Space Missions



**Dr M Annadurai,
Director, ISRO Satellite Centre**

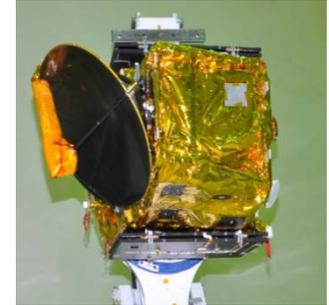
**Indian Space Research Organisation
Department of Space
Government of India**

**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)



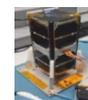
SKYSAT-Gen2-1 USA
(Sub-metre resolution EO)



GHGSAT-D Canada
(Atm. GHG measurement)



DOVE (12 Sats.) USA
(Earth Observation)

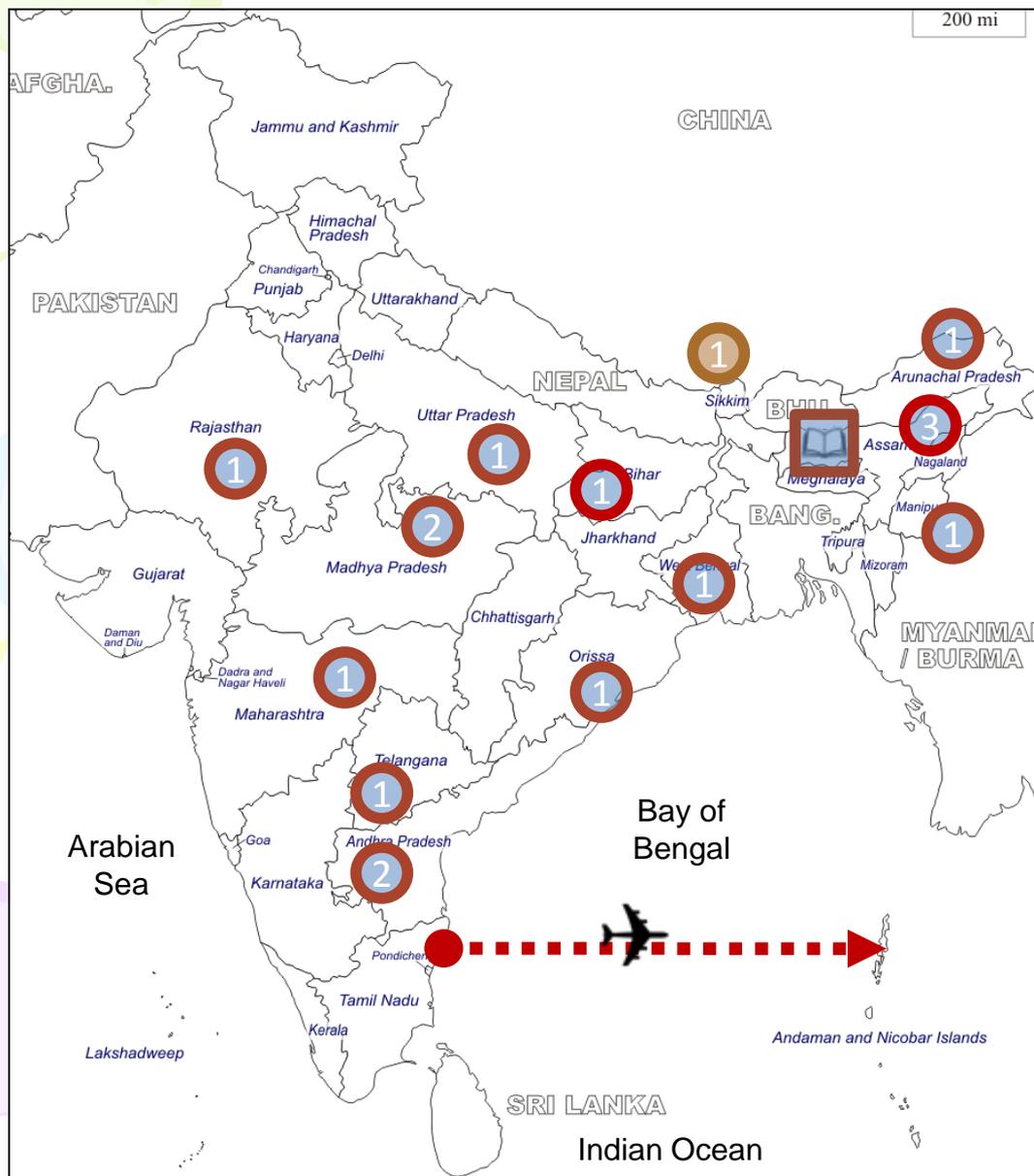


SATYABAMASAT
Satyabama Uni.
(GHG data collection)



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

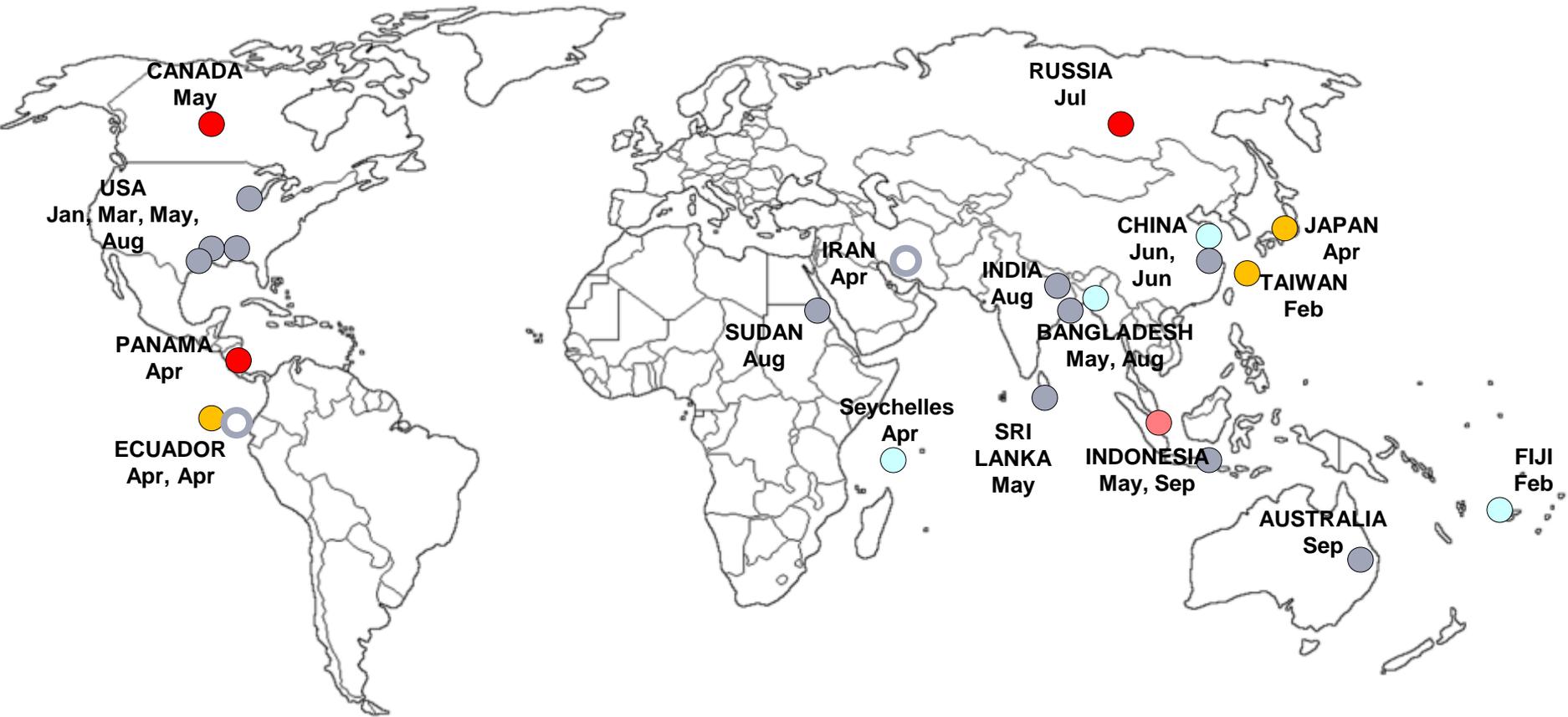
Support to Manage Disasters in India - 2016



- **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

- | | |
|--|--|
|  Flood |  Hazard Atlas |
|  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

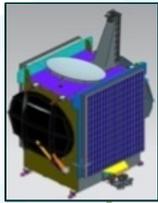


UPCOMING MISSIONS



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

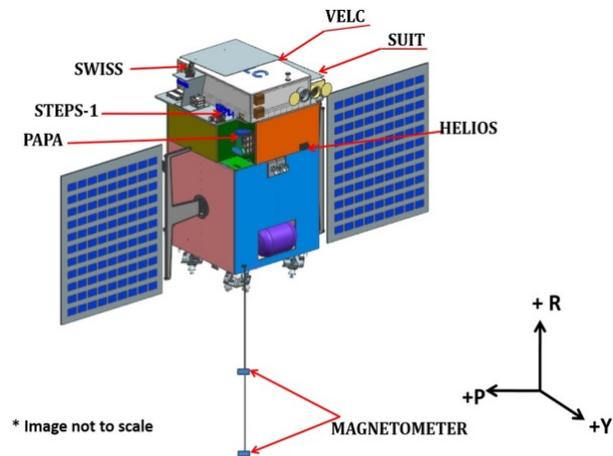
Lunar Electrostatic & Dust Levitation Experiment

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...