

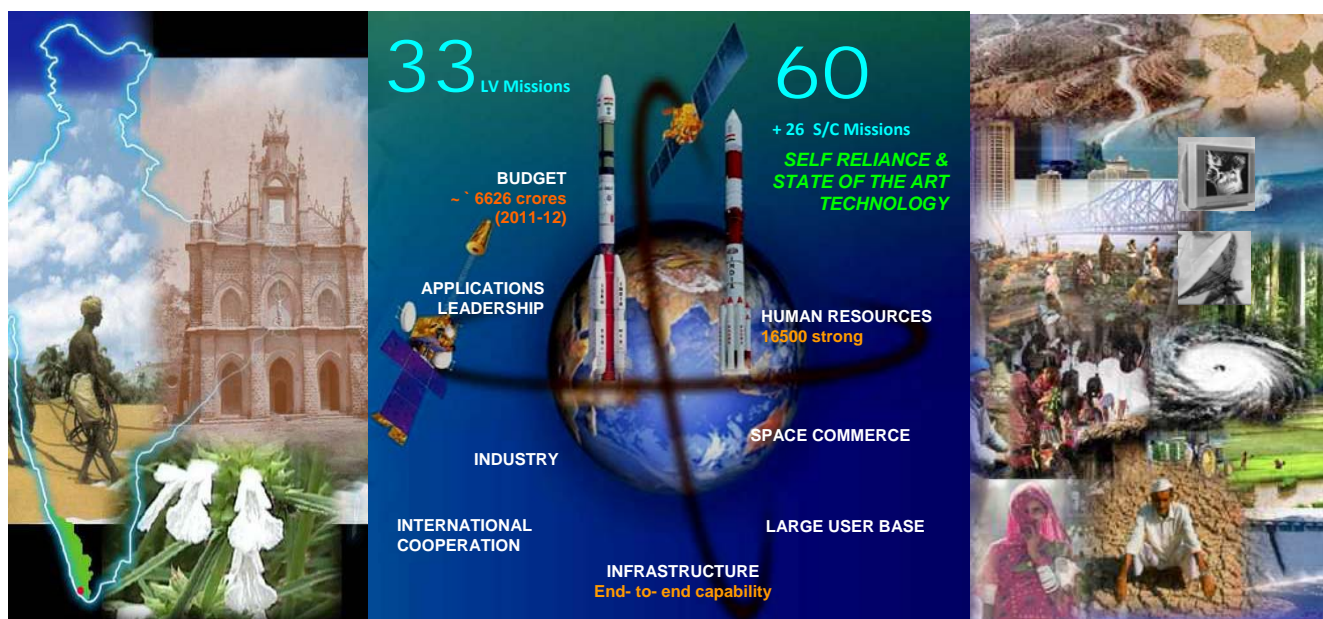
ISRO's EARTH OBSERVATION SYSTEM (updates about Resourcesat-2 satellite)



AS Kiran Kumar
ISRO, INDIA

SIT – 26 Meeting at ESRIN-ESA, Frascati, Italy, 24-25 May, 2011

Four Decades of Indian Space Programme



“.....we must be second to none in the applications of advanced technologies to the real problems of man and society.”

- Dr Vikram Sarabhai Father of Indian Space Programme.

EO Satellites operational in India

Towards National Development



- Food & Water Security
- Weather & Climate
- Environment & Ecosystems
- Education & Healthcare
- Rural Development



- Infrastructure Development
- Disaster Management Support
- Smart Governance
- Sustainable Development
- Strategic Applications

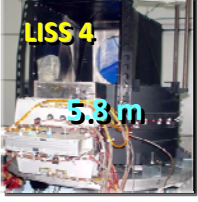
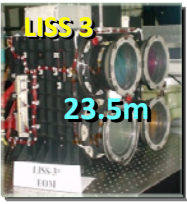
RESOURCESAT-2



Launch: 20 April 2011



- **Mass:** 1206 kg
- **Power:** 1250 watts
- **Altitude :** 817 km
- **Inclination :** < 97 deg.
- **Vehicle:** PSLV-C16
- **Launch:** 20 April, 2011
- **Operational life:** 5 years



RESOURCESAT-2

- 3 Cameras (AWiFS, LISS 3, LISS 4)
- Repetitivity: 5 days (AWiFS) to 24 days (LISS 3) & Revisit : 5 days (LISS 4)
- Spatial resolution of 5.8 m (LISS 4) – 56 m (AWiFS)
- Swath of 23 km (LISS 4) to 740 km (AWiFS)



| Parameter | LISS-4 | LISS-3 | AWiFS |
|------------------------------|----------------------|--------|-------|
| Spatial Resolution (m) | 5.8 | 23.5 | 56 |
| Swath (Km) | 23/70 MX, 70 Mono | 141 | 740 |
| Repetivity (Days) | 5 | 24 | 5 |
| Coverage/day (Million Sq Km) | 1.75 (23/70 MX) | 10 | 55 |

SSR : 200 Gb for 12 min. recording of each payload of LISS-4 or LISS-3 + AWiFS
 Capability : Steerable with ± 26 deg. across track
 Payload can be operated in every orbit for duration of 16 min.

MAJOR CHANGES RESOURCESAT-2 wrt RESOURCESAT-1

- Miniaturization of Electronics for all 3 payloads, thereby significantly reducing the mass by 65 %, volume by 70% and power by 50%.
- LISS-4 Coverage increased by 3 times : LISS-4 MX 70 km coverage in Multi-spectral mode using onboard memory in Resourcesat-2 as against 23.5 km in Resourcesat-1
- Resourcesat-2 facilitates simultaneous imaging of high intensity (100% albedo) to low intensity objects in a single gain setting.
- LISS-3 & LISS-4 provides 10-bit performance as against 7-bit performance in Resourcesat-1
- AWiFS provides 12-bit performance with 10 bit transmission as against 10-bit performance of Resourcesat-1

RESOURCESAT-2 APPLICATIONS



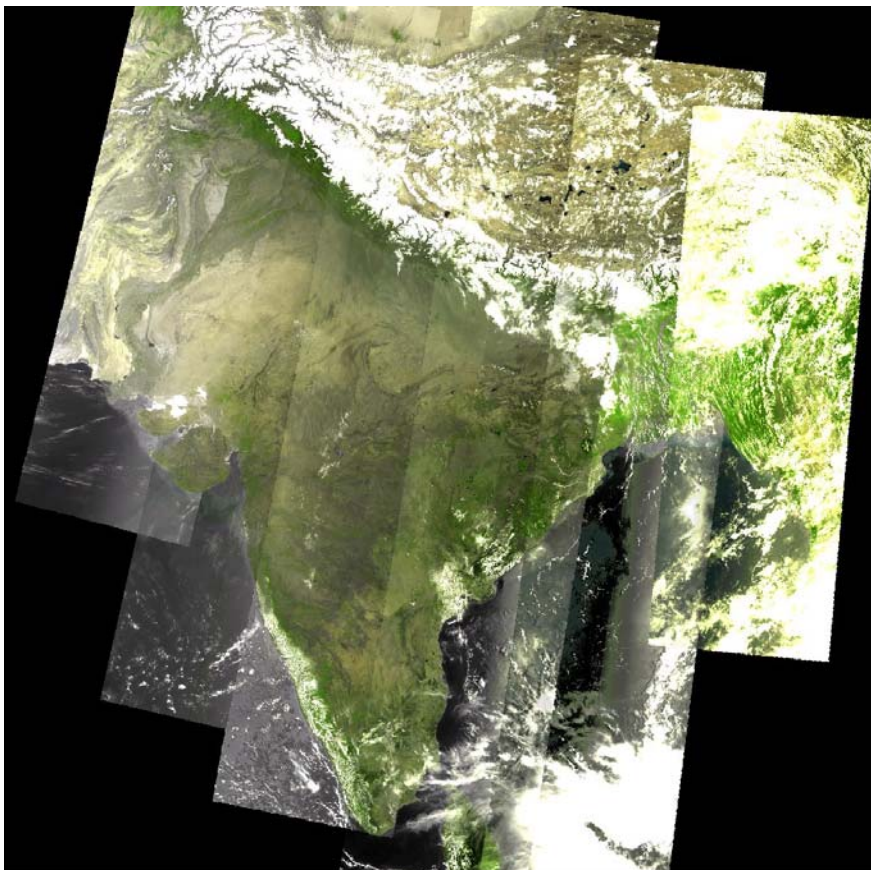
- Agriculture
- Forest and Environment
- Rural Development
- Water Resources
- Urban Development
- Mines and Geology
- Ocean Development
- Climate modeling
- Disaster Management Support

Multistage Mapping capability with high repetivity for various Natural Resources & Disaster management.

Uniqueness of Resourcesat-2: It is the only satellite at present with less than 10 m spatial resolution in multispectral mode with 70 km swath.



India as seen by RS-2 AWiFS

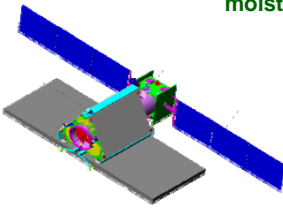


LISS-4 Over Himalayan Region



Forthcoming satellites in near future

RISAT-1



For applications in agriculture, soil moisture, flood & water spread etc.

Payloads

C band SAR 5.35 GHz frequency; 5 imaging modes single, dual & quad polarisation modes 18.3 to 48.6° look angle; 20.1-54.5° orbit incidence

Orbit : 500-600 km in sun-synchronous

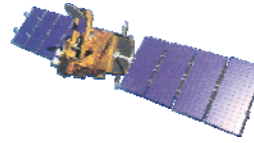
Status

- Payload development in progress
- Subsystem fabrication initiated
- Launch by PSLV in first quarter of 2011

MEGHA TROPIQUES

For better understanding life cycles of tropical convective system

A Joint ISRO-CNES Mission



Payloads

- Microwave Radiometer (MADRAS)
- Earth Radiation Budget (SCARAB)
- Humidity Profiler : SAPHIR

Orbit : 867 km with inclination of 20 deg.

Status

- Payloads in the final stages of testing
- Subsystem development in progress
- Launch by PSLV in 2012

SARAL



Satellite with ARGOS and ALtika - Joint ISRO-CNES Mission

Payloads

- Ka-band Altimeter (~35.5GHz)
- Dual frequency Radiometer (23.8/36.8 GHz)

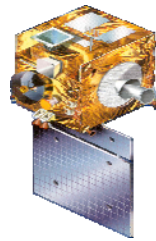
Orbit : ~800 km in sun-synchronous with inclination of 98.38 deg.

Status

- Payloads under testing
- Subsystems under development
- Launch by PSLV in first quarter of 2012

INSAT - 3D

For improved understanding of weather systems



Payloads

- 19 channel Sounder
- 6 Channel Imager

Status

- Payload QM realised
- Subsystems under fabrication
- Launch by end 2011



THANK YOU