

# REMOTE SENSING - APPLICATIONS



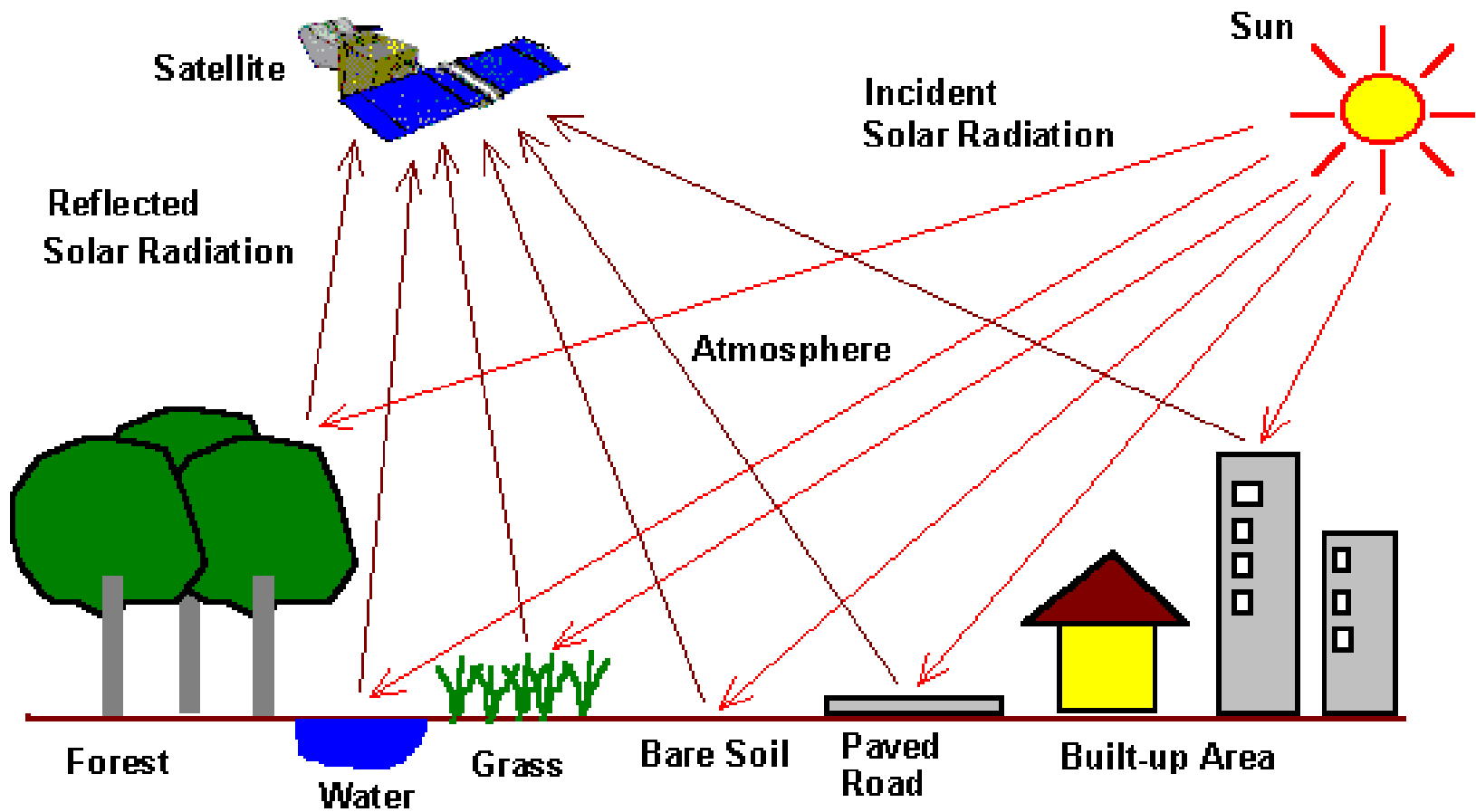
*Dr. V M Anandakumar*  
*Associate Professor, Department of Physics*  
*Mahatma Gandhi College, Kesavadasapuram*  
*Thiruvananthapuram*

# REMOTE SENSING - APPLICATIONS

- **What is Remote sensing?**

**Science of collection of information about an object with out physical contact**

**The term ‘ remote sensing ’ is most commonly employed with electromagnetic techniques of information acquisition**



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# SATELLITE REMOTE SENSING

- **gathering information about features on the Earth's surface from orbiting satellites**
- **ADVANTAGES**
- **continuous acquisition of data**
- **regular revisit capabilities (resulting in up-to-date information)**
- **broad regional coverage**
- **good spectral resolution (including infra-red bands)**

## ADVANTAGES CONTD...

- **good spatial resolution**
- **ability to manipulate/enhance digital data**
- **ability to combine satellite digital data with other digital data**
- **cost effective data**
- **map-accurate data**
- **possibility of stereo viewing**
- **large archive of historical data**

# APPLICATION AREAS

- **Resources Mapping / Inventory and Monitoring**
- **Land & water resources development planning**
- **Urban & regional planning**
- **Infrastructure planning**
- **Disaster management**
- **Integrated studies**

# APPLICATION AREAS

- **Environmental Impact Analysis**
- **Change detection**
- **Digital cartographic database**
- **Site suitability assessment**
- **Crop Area Assessment**
- **Coastal / Marine Applications**
- **Urban Environmental studies**

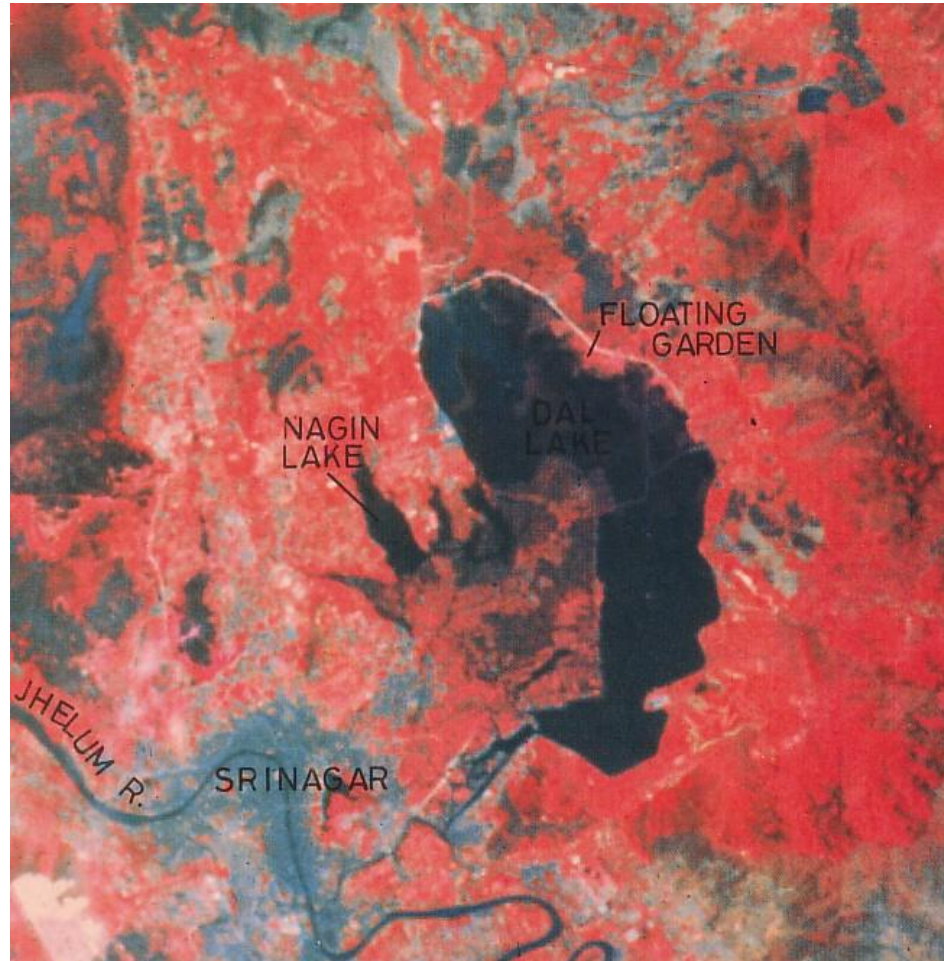
# R & D EFFORTS

- **Assessment of horticulture crops**
- **Onion crop estimation**
- **Cadastral level applications**
- **Topomap update**
- **Chlorophyll estimation**
- **Sediment dynamics**



# DAL LAKE, J & K

## IRS 1A FCC



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# DAL LAKE, SRINAGAR

## IRS 1D LISS III



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# PARTS OF TAMILNADU IRS 1A



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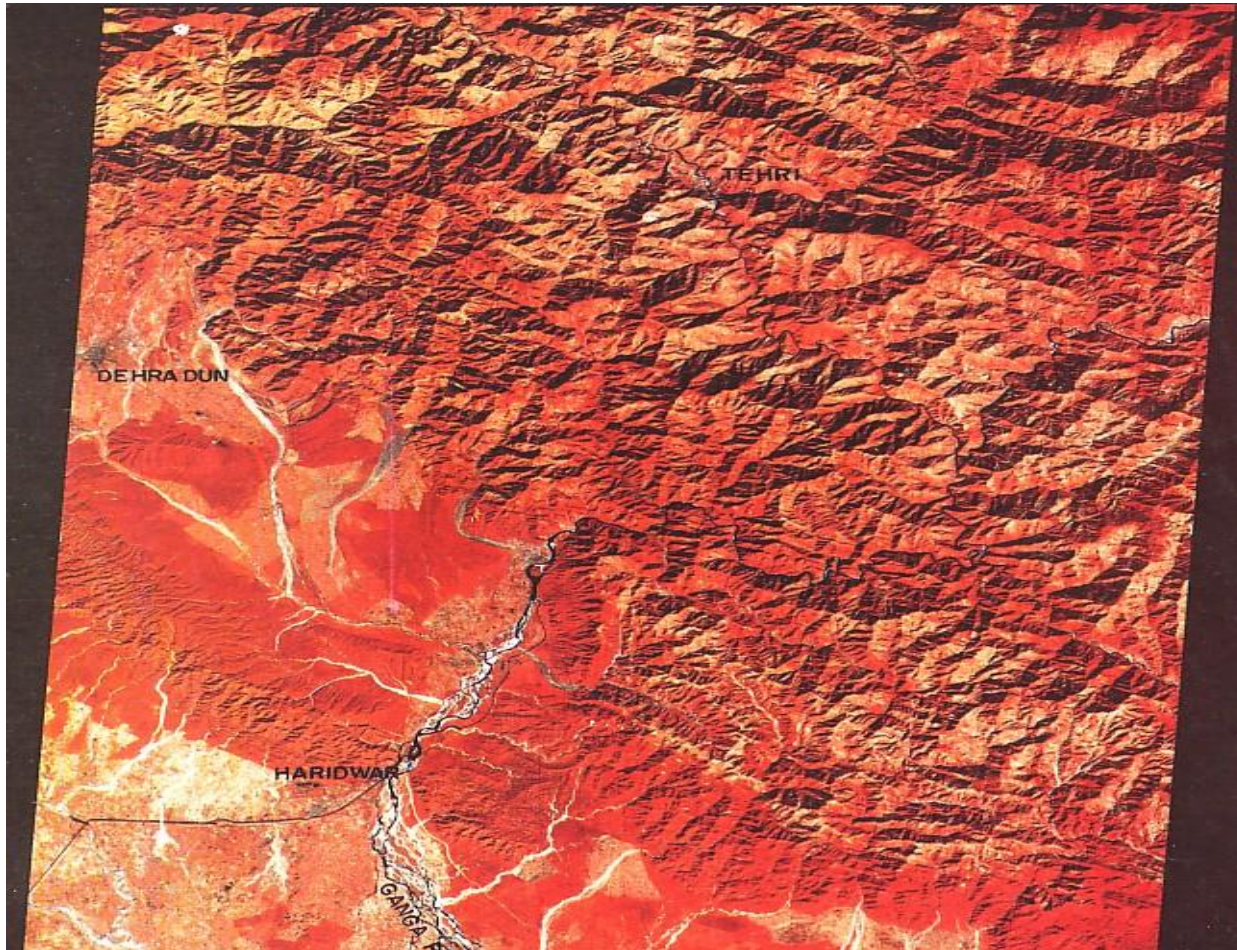
# JHUMING IN NORTH EAST INDIA



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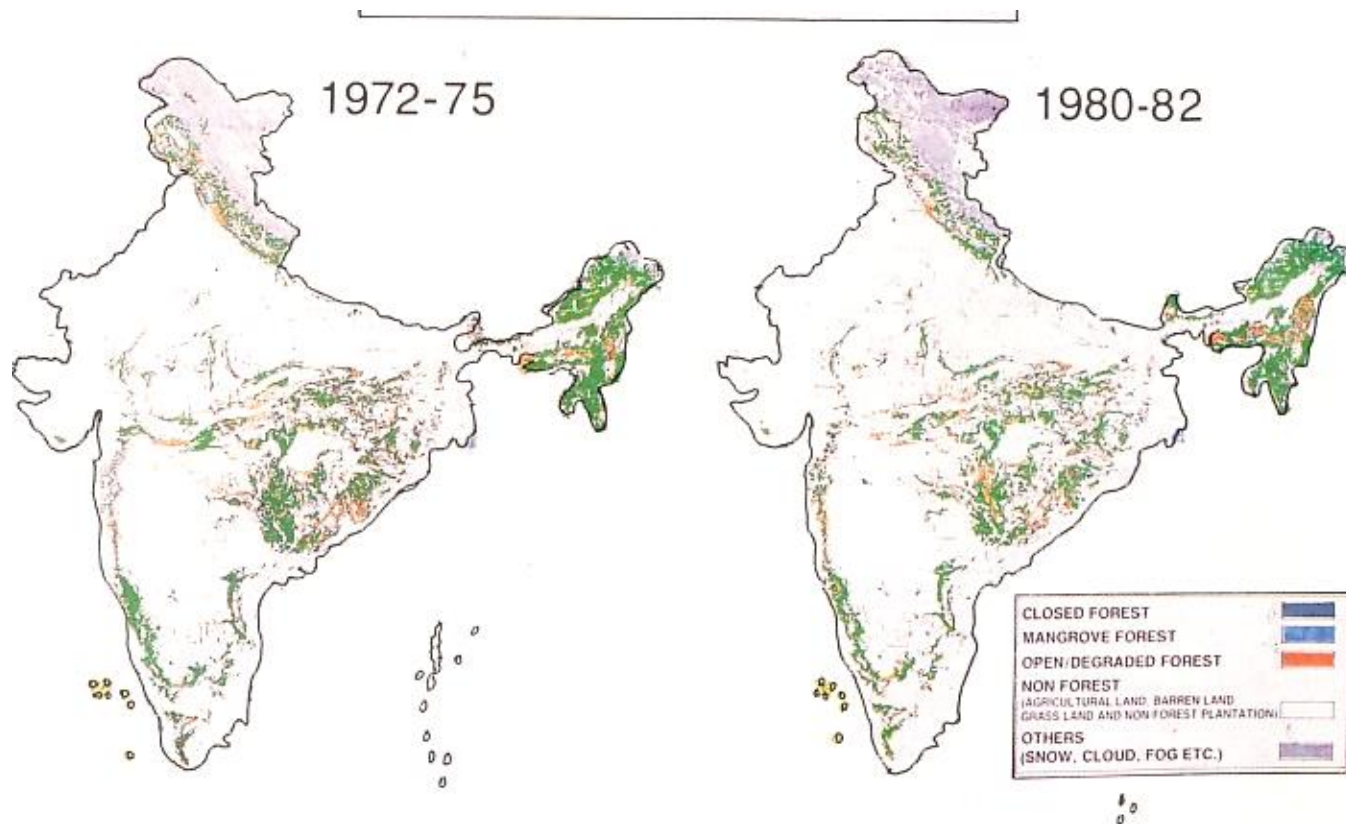
# DHERADUN AREA

## IRS 1A LISS 2



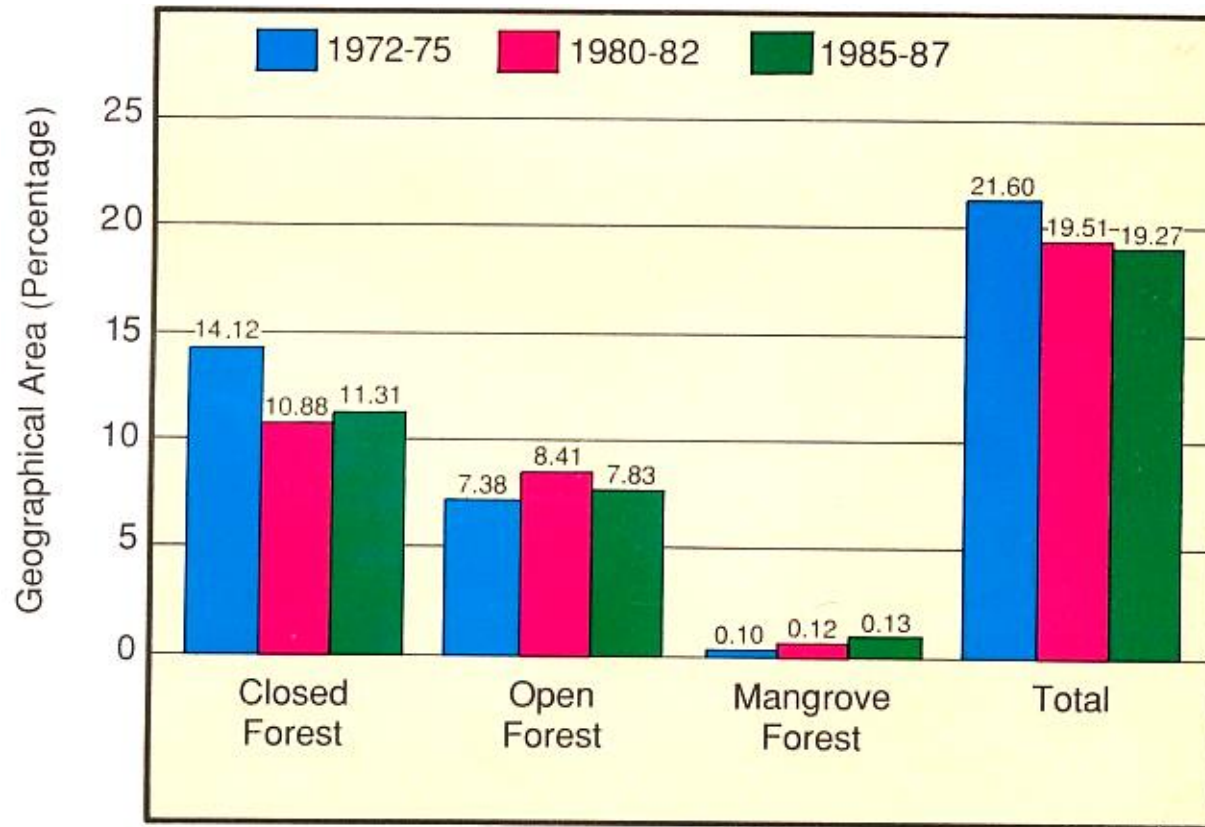
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# FOREST MAP OF INDIA

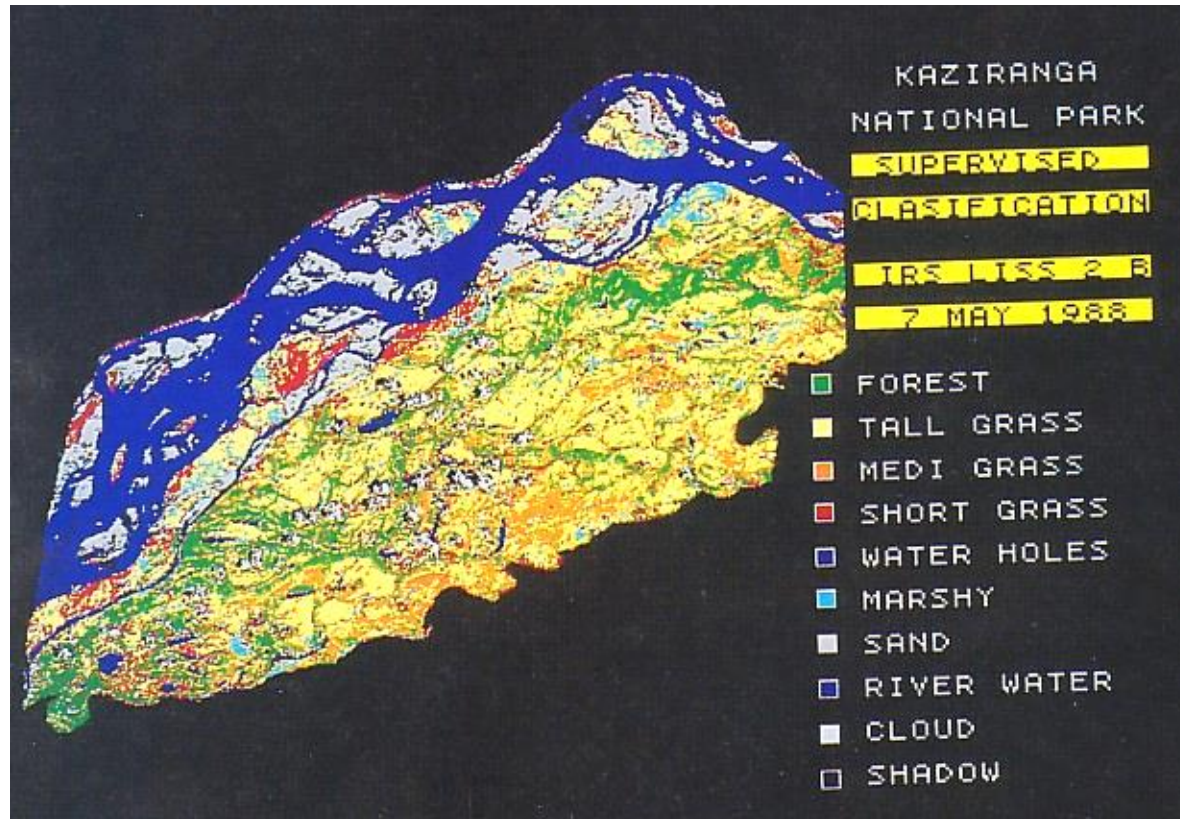


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# FOREST COVER %



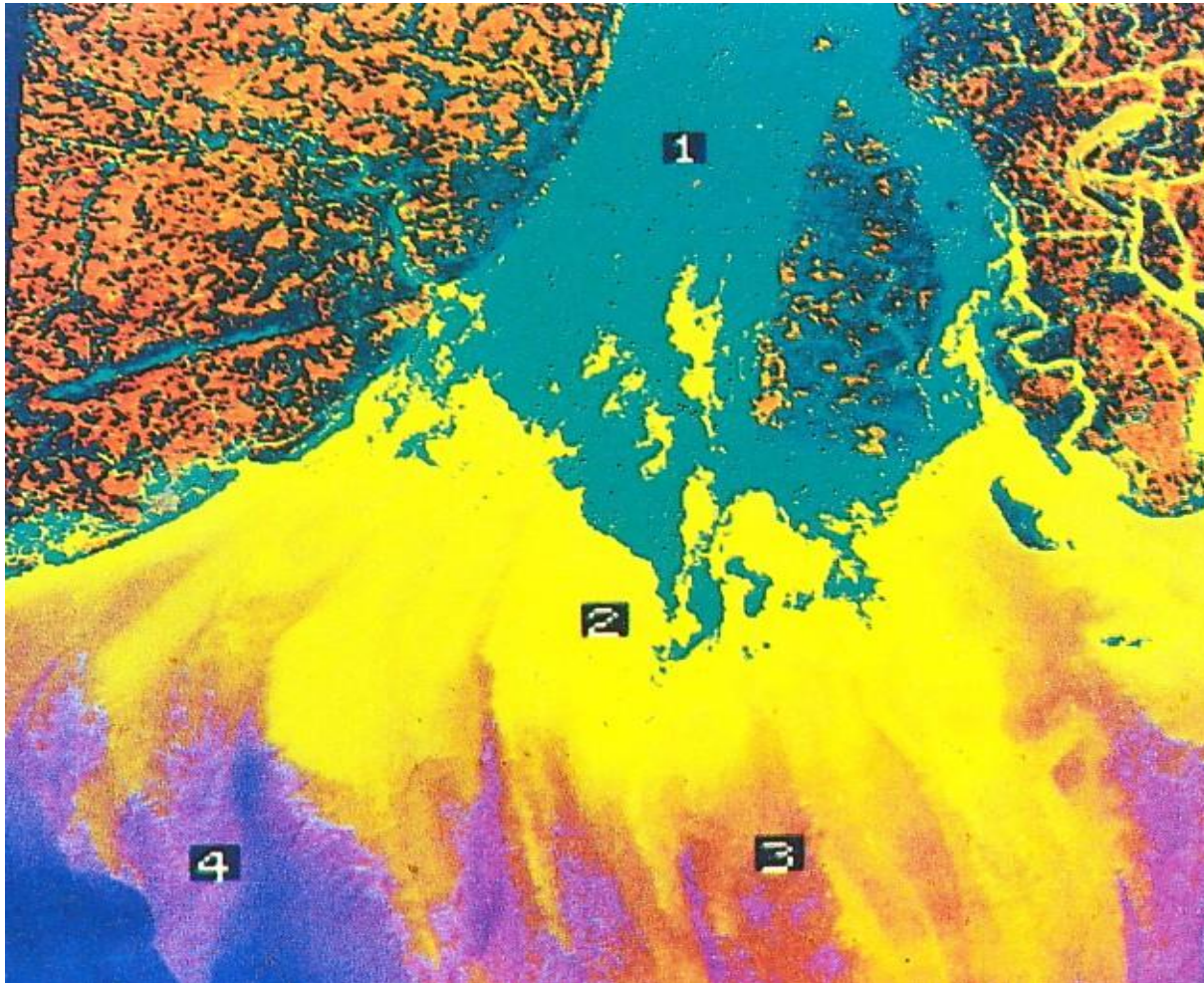
# KAZIRANGA NATIONAL PARK CLASSIFIED



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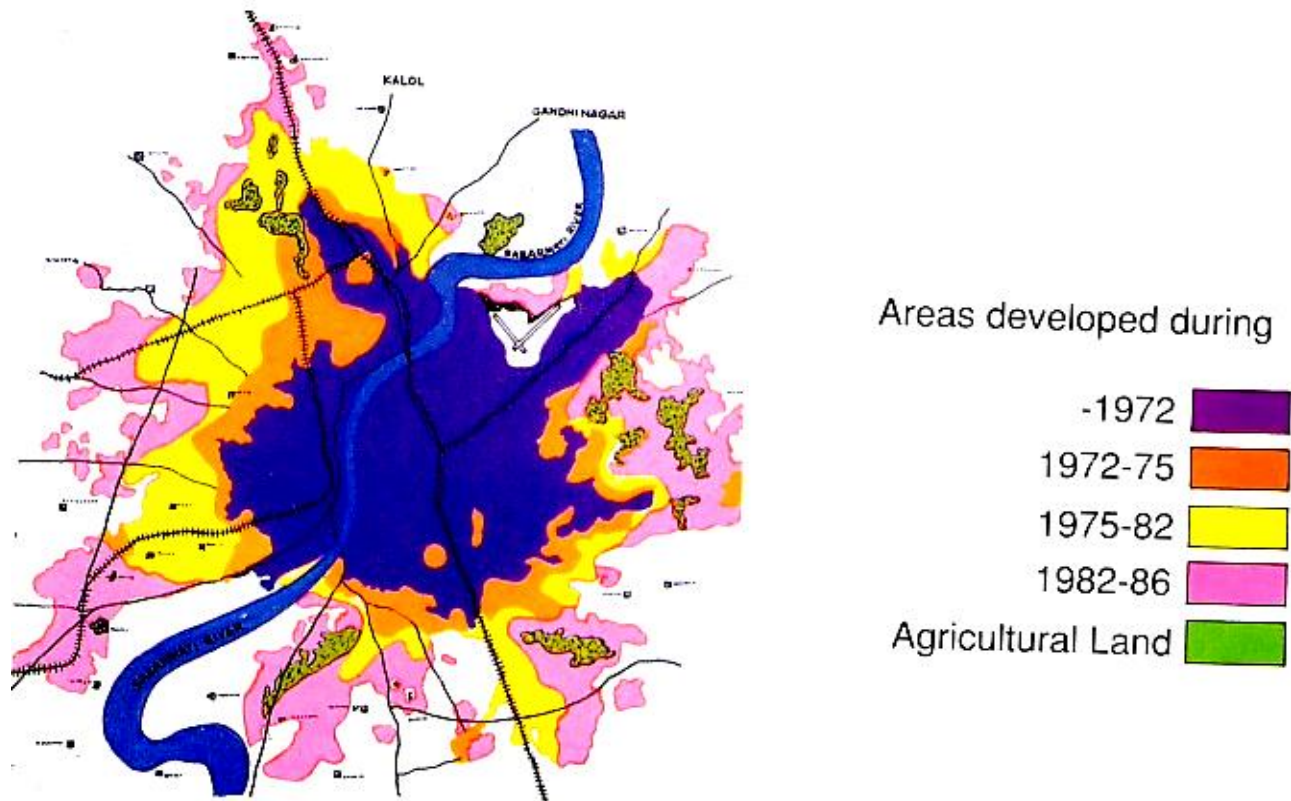


# SEDIMENTATION LEVELS AT THE MOUTH OF GANGA ( HOOGLY)



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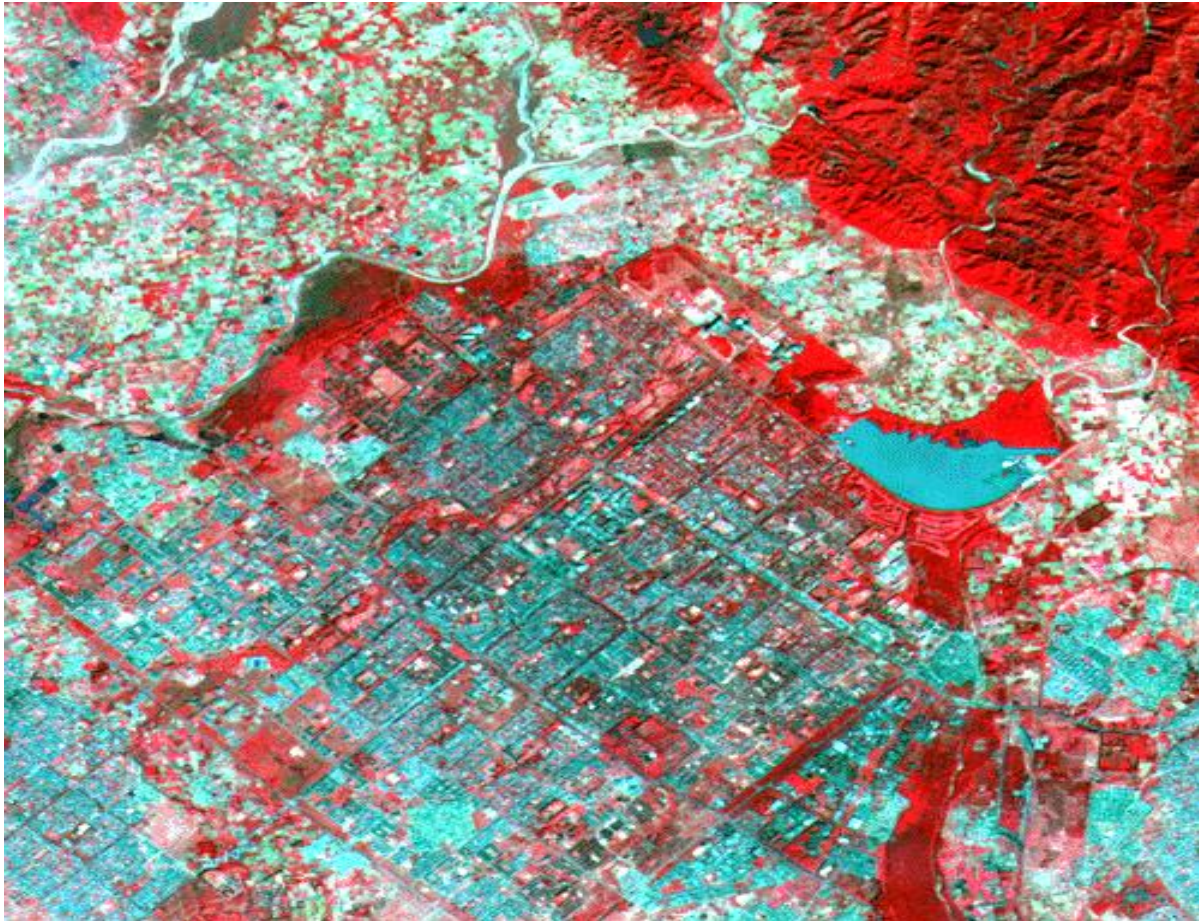
# URBAN SPRAWL MAP – AHMEDABAD



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# CHANDIGARH

## IRS-1D LISS III Resolution 23.7 m



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# PONDICHERRY

## LANDSAT 5 TM Resolution 30m



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**GULF OF OMAN, MUSCAT**  
**IRS 1D WiFS 188 m Resolution**



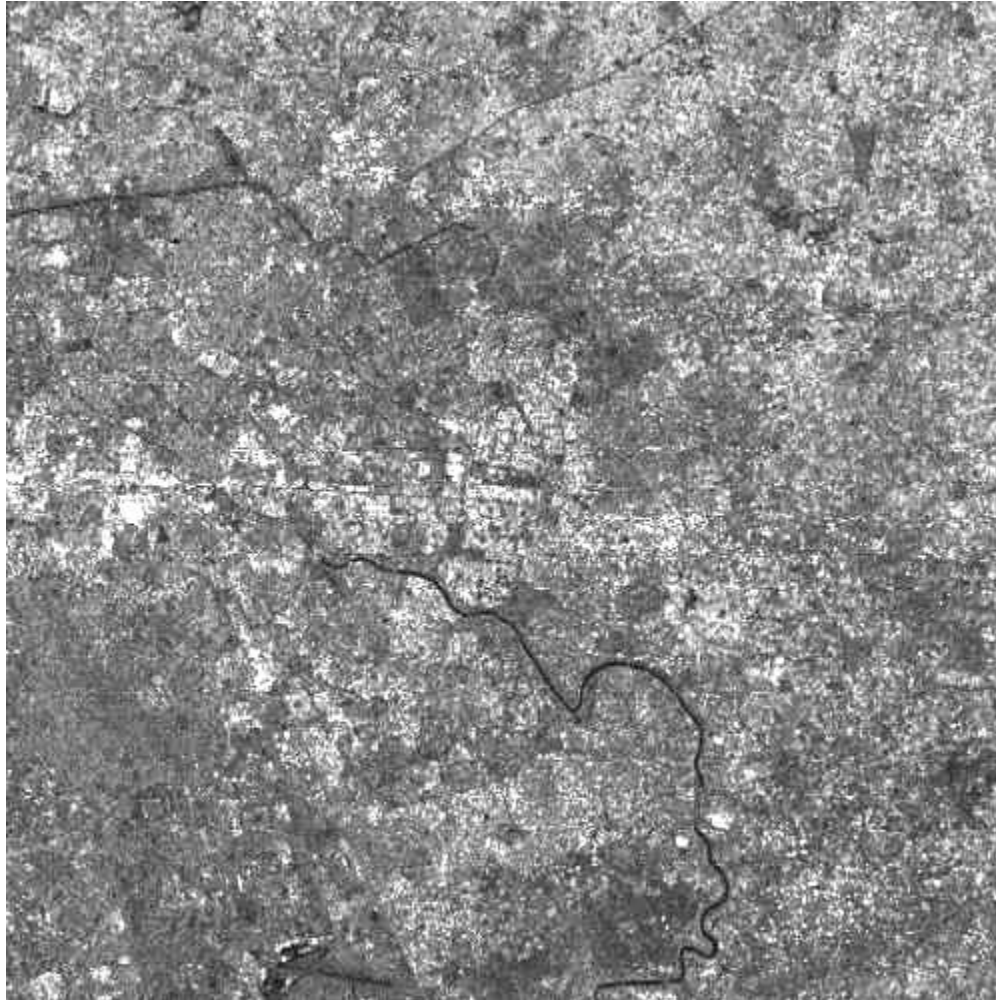
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**PART OF ROME, ITALY**  
**PAN + LISS III IRS 1C 5.8 m resolution**



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# PART OF DELHI ERS SAR IMAGE



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**KUWAIT**  
**RESOURCESAT 1 LISS IV MX IMAGE 29 OCT 2003**  
**23.5 m Resolution**

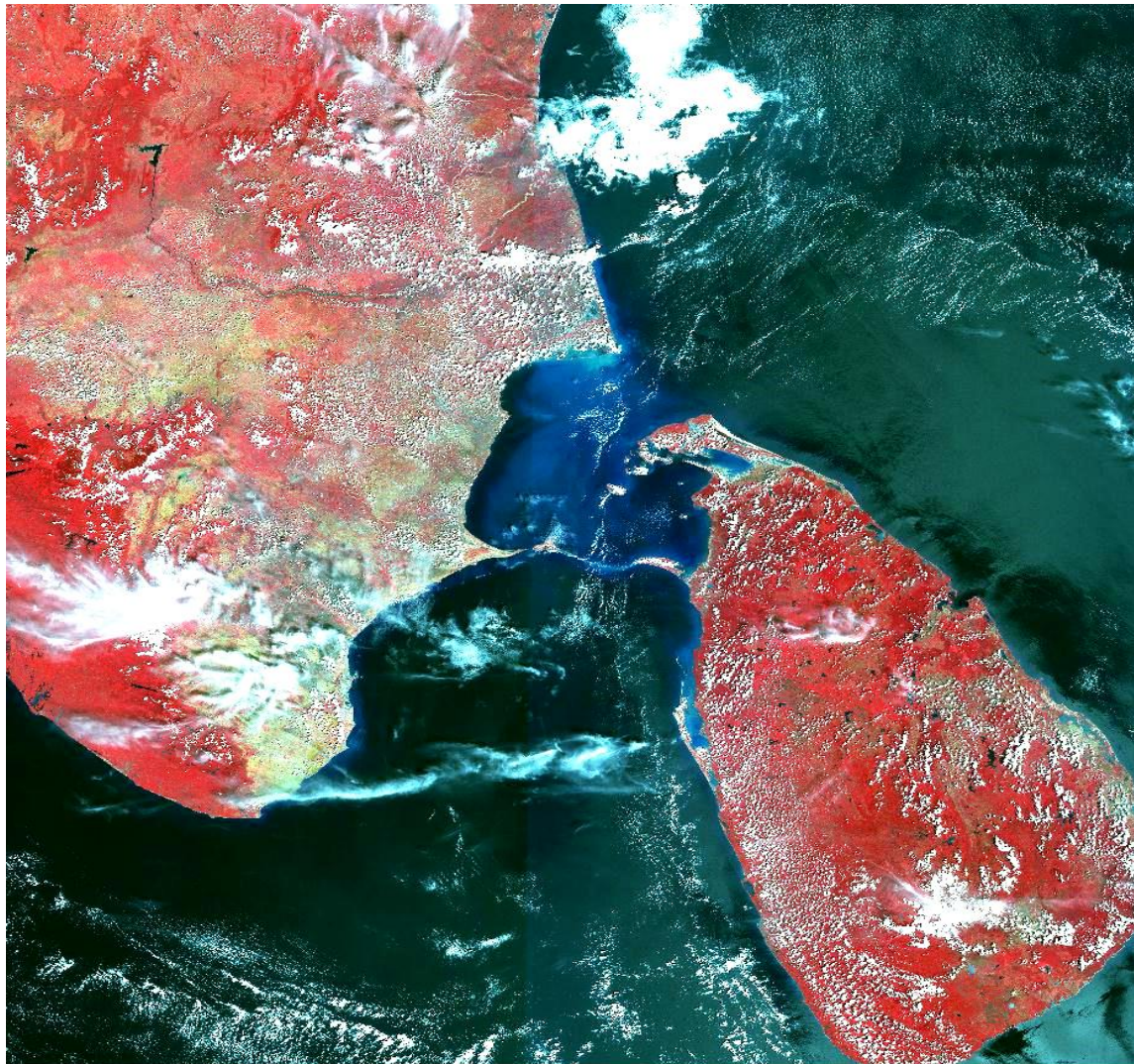


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# **SOUTH INDIA & SRILANKA**

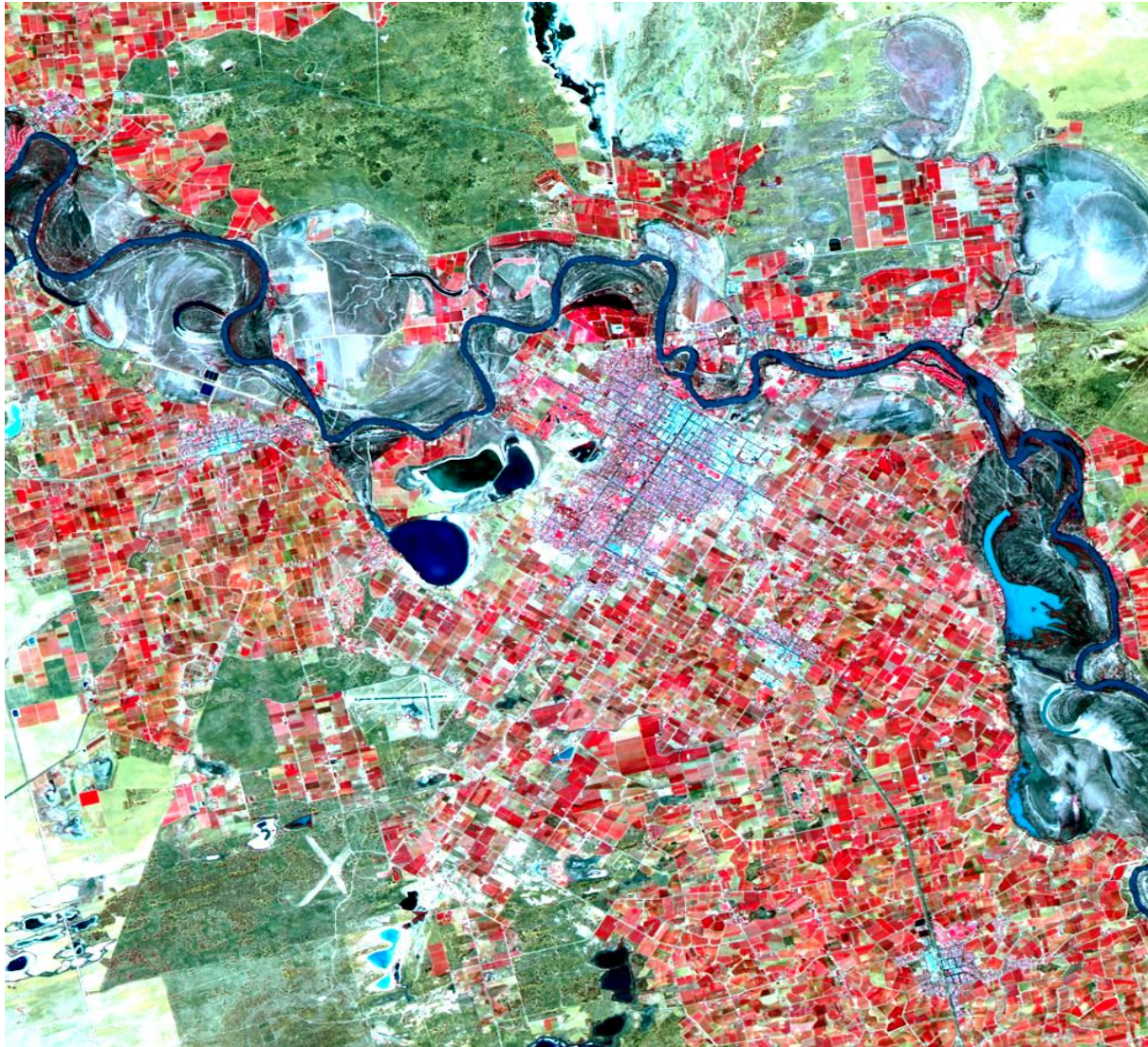
**RESOURCESAT 1 A WiFS 26 OCT 2003 56 m Resolution**



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# AUSTRALIA, RESOURCESAT 1 LISS III IMAGE 15 NOV 2003

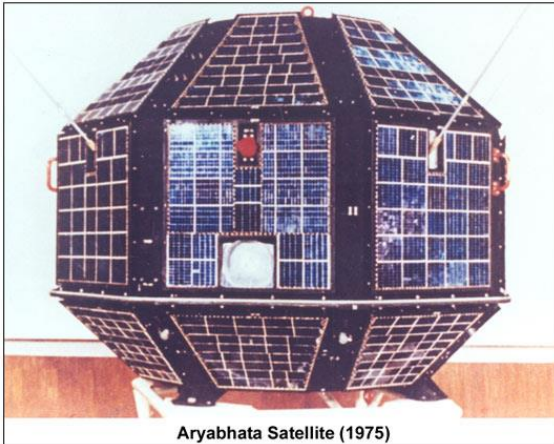
23.5 m Resolution



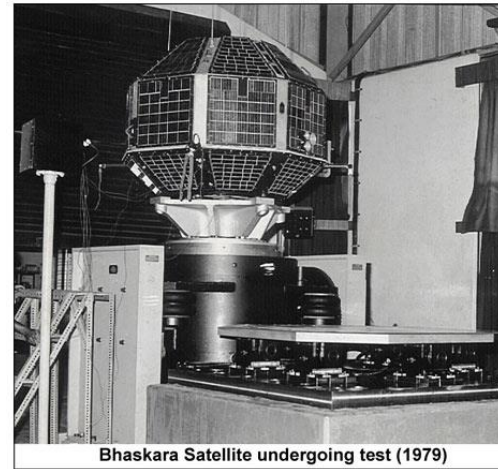
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<b>Jugnu</b>	<b>12.10.2011</b>	<b>PSLV-C18</b>	<b>Experimental / Small Satellite</b>
<b>SRMSat</b>	<b>12.10.2011</b>	<b>PSLV-C18</b>	<b>Experimental / Small Satellite</b>
<b>Megha-Tropiques</b>	<b>12.10.2011</b>	<b>PSLV-C18</b>	<b>Earth Observation Satellite</b>
<b>GSAT-12</b>	<b>15.07.2011</b>	<b>PSLV-C17</b>	<b>Geo-Stationary Satellite</b>
<b>GSAT-8</b>	<b>21.05.2011</b>	<b>Ariane-5 VA-202</b>	<b>Geo-Stationary Satellite</b>
<b>RESOURCESAT-2</b>	<b>20.04.2011</b>	<b>PSLV-C16</b>	<b>Earth Observation Satellite</b>
<b>YOUTHSAT</b>	<b>20.04.2011</b>	<b>PSLV-C16</b>	<b>Experimental / Small Satellite</b>
<b>GSAT-5P</b>	<b>25.12.2010</b>	<b>GSLV-F06</b>	<b>Geo-Stationary Satellite</b>
<b>STUDSAT</b>	<b>12.07.2010</b>	<b>PSLV-C15</b>	<b>Experimental / Small Satellite</b>
<b>CARTOSAT-2B</b>	<b>12.07.2010</b>	<b>PSLV-C15</b>	<b>Earth Observation Satellite</b>

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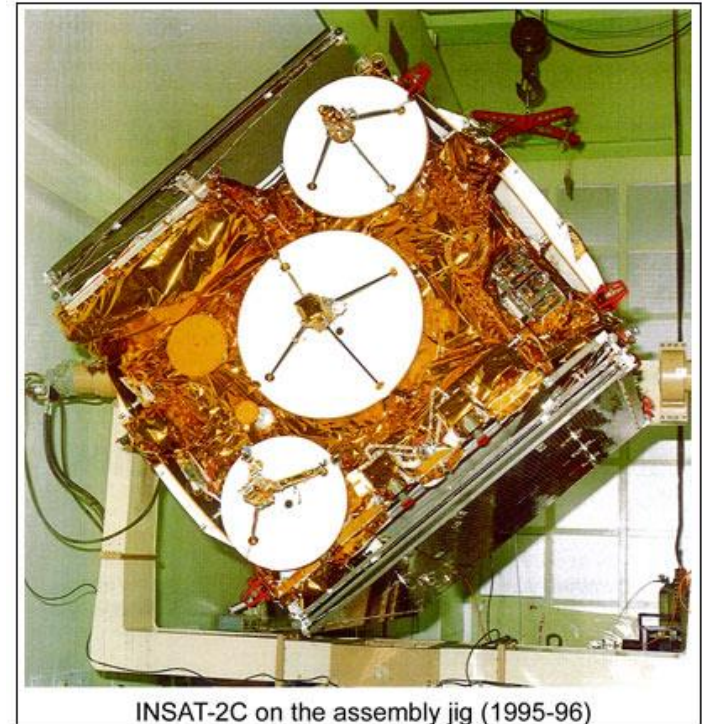
Aryabhata Satellite (1975)



Bhaskara Satellite undergoing test (1979)

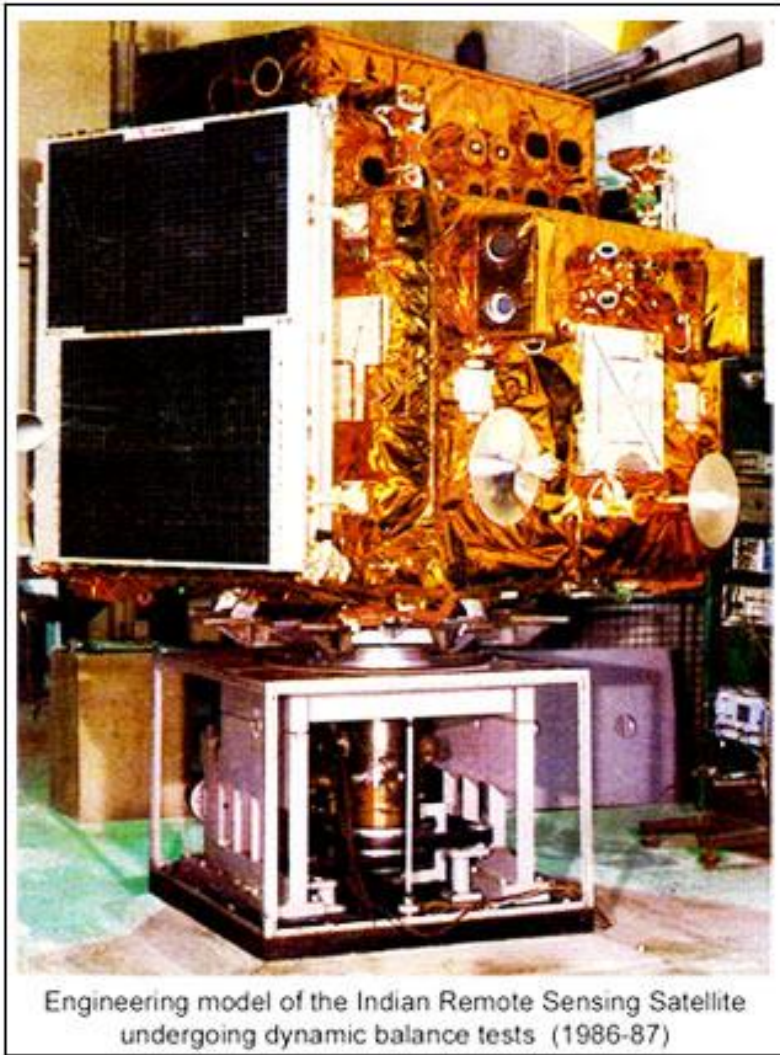


CHANDRAYAAN - 1 INDIA'S FIRST MISSION TO MOON



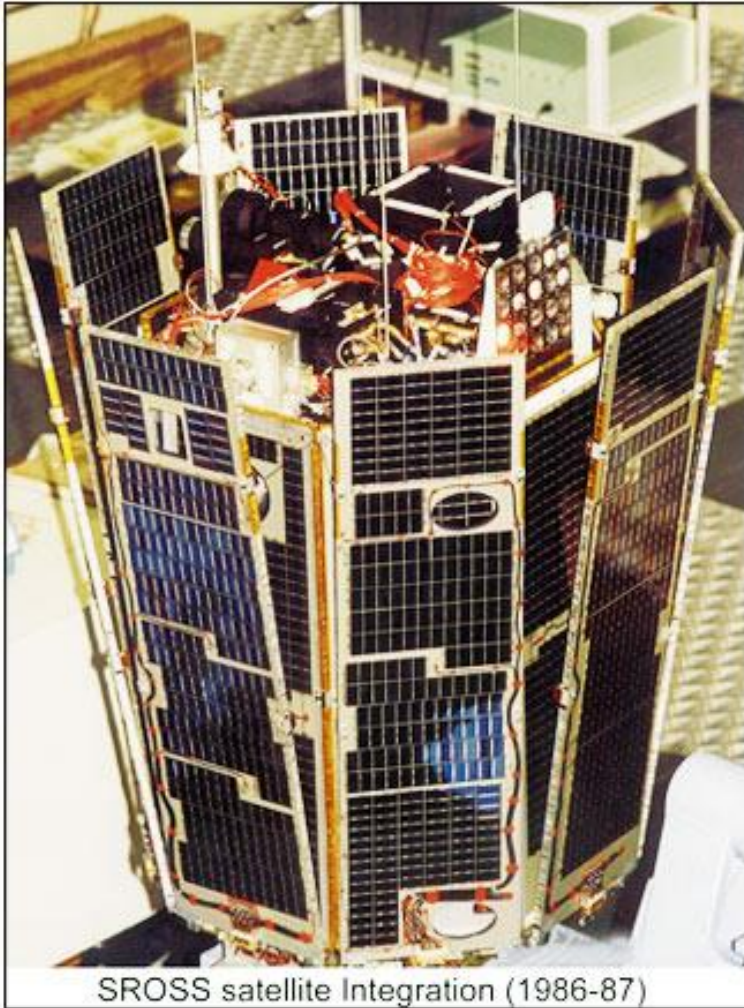
INSAT-2C on the assembly jig (1995-96)

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## OCEANSAT

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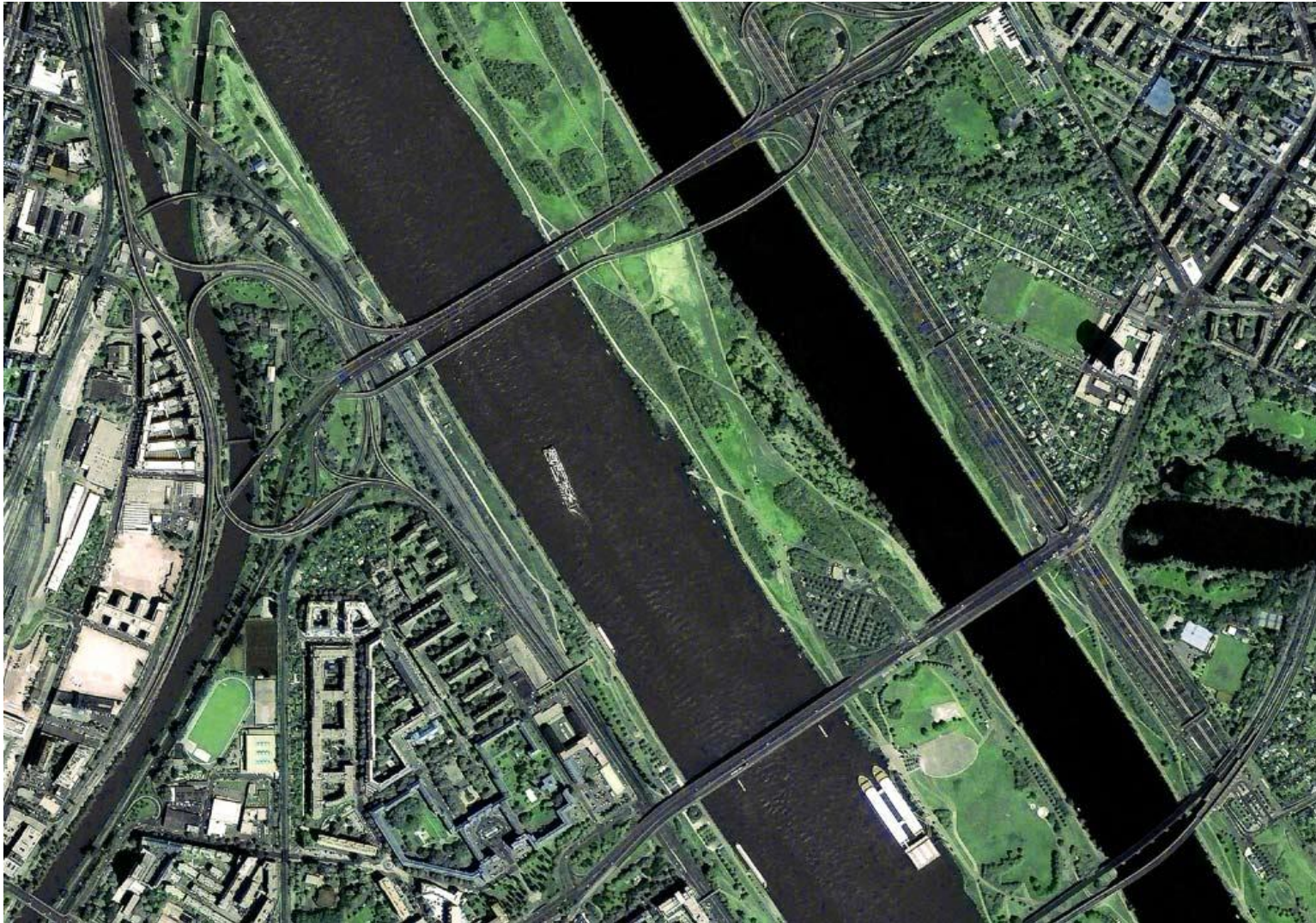


SROSS satellite Integration (1986-87)



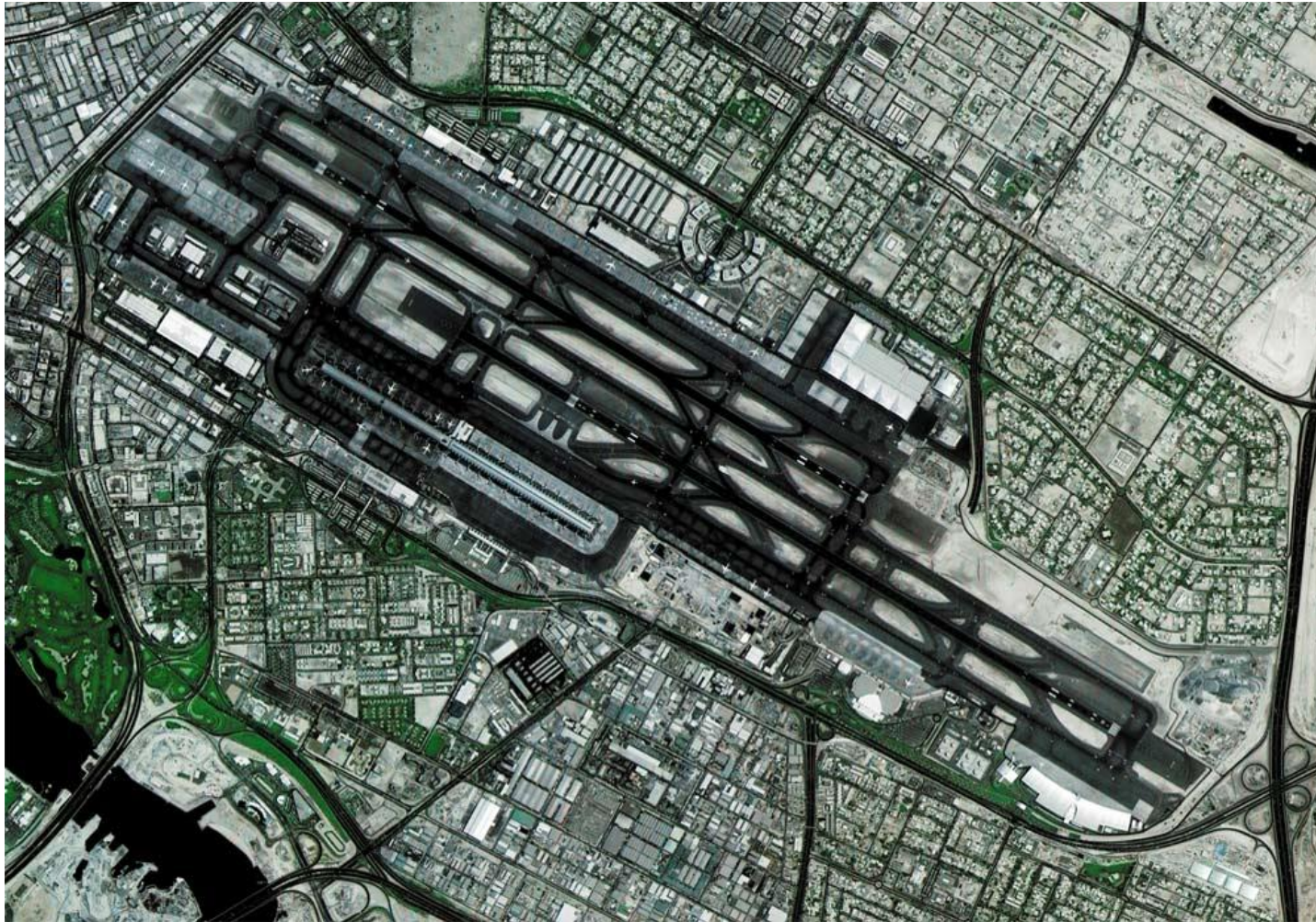
SROSS satellite - Integration (1986-87)

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**PART OF VIENNA – CARTOSAT 2 + RESOURCESAT MERGED**  
**1 m RESOLUTION**

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## **DUBAI AIRPORT – CARTOSAT 1 + RESOURCESAT 1 MERGED 2.5 M RESOLUTION**

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## **PERTH AIRPORT – CARTOSAT 2**

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## **MOON CRATERS FROM CHANDRAYAN 1**

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Landsat TM image of Coastal Orissa showing the famous Bhitarkanika Mangrove forest. The image also clearly shows the Gahirmata Beach (known for turtle nesting), Agriculture land, Plantation, Dhamra River, Islands and spits. Meandering streams with oxbow lakes are also visible.

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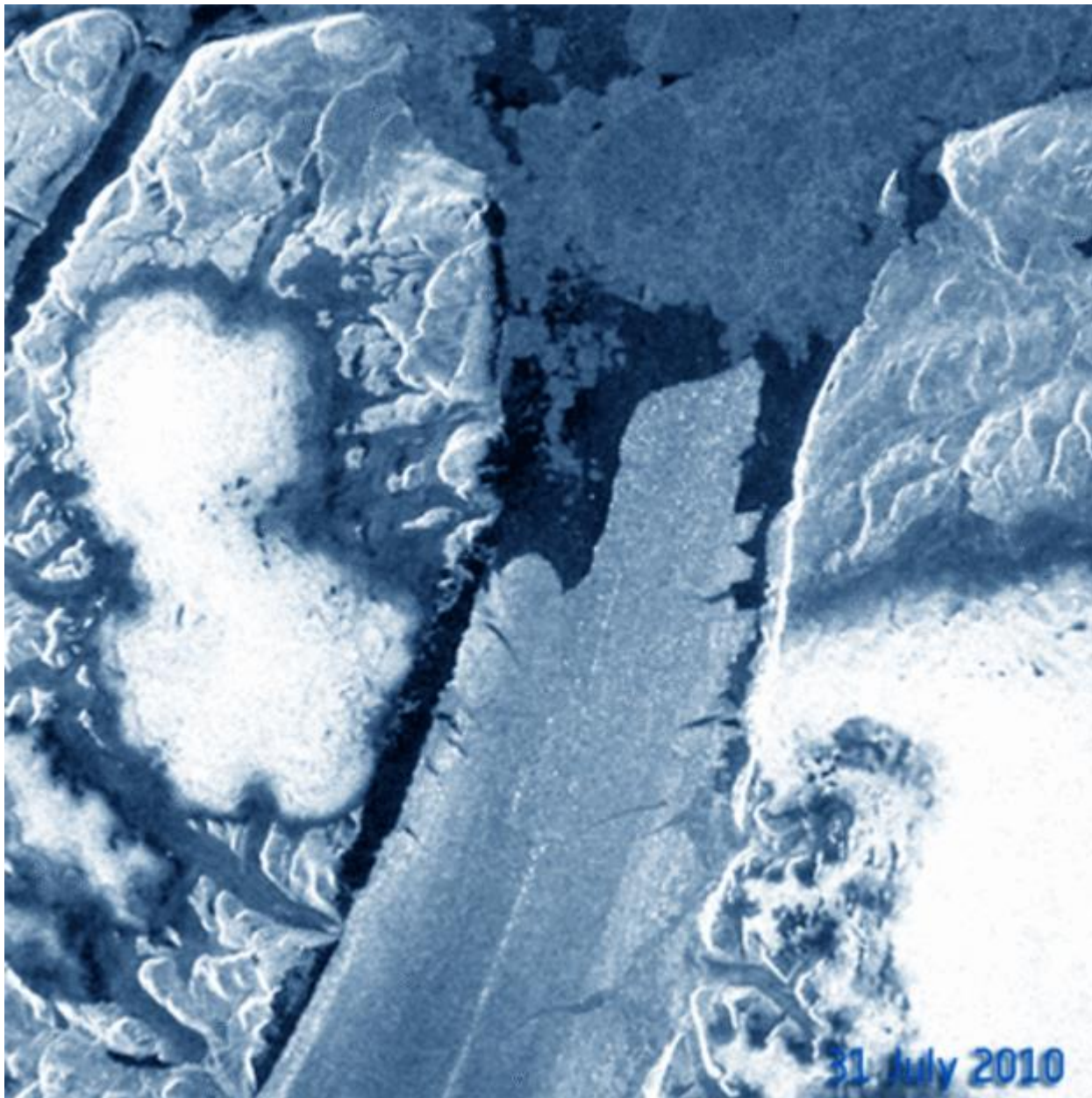


PAN  
Sharpened  
LISS-III image  
shows the  
southern part of  
Mumbai in  
Maharashtra.  
The Marine  
drive ( arc  
shape in the  
middle)  
is seen



## **Multispectral image shows Marmagao & Tiswadi areas of Goa**

Sedimentation in the River Zuari & River Mandovi seen in light blue. The red patches represent densely vegetated areas.



ENVISAT  
image of  
Petermann  
Glacier, one  
of the largest  
glaciers  
connecting  
Greenland  
with Arctic  
Ocean 70 km  
extension,  
breaking off  
Images 31 July  
2010, 4 & 7  
August 2010

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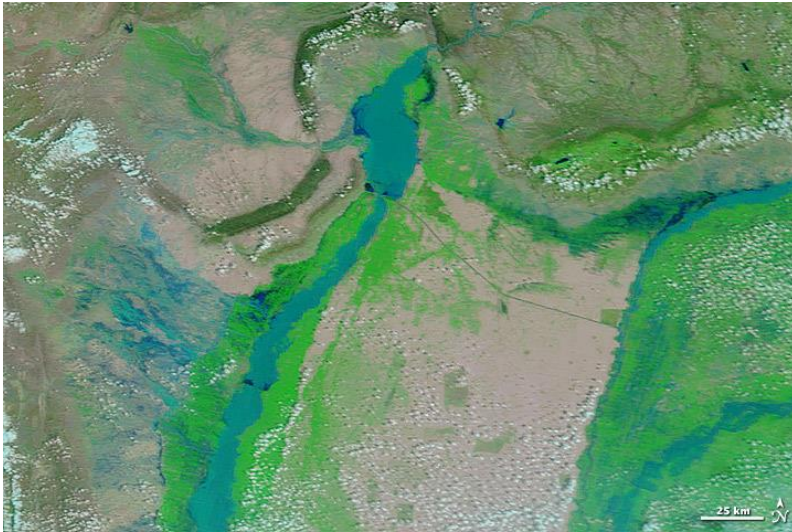
Natural colour picture of Moscow  
TERRA Satellite, NASA Picture July 27, 2010  
Showing smoke from fires  
(Moderate Resolution Imaging Spectroradiometer (MODIS))



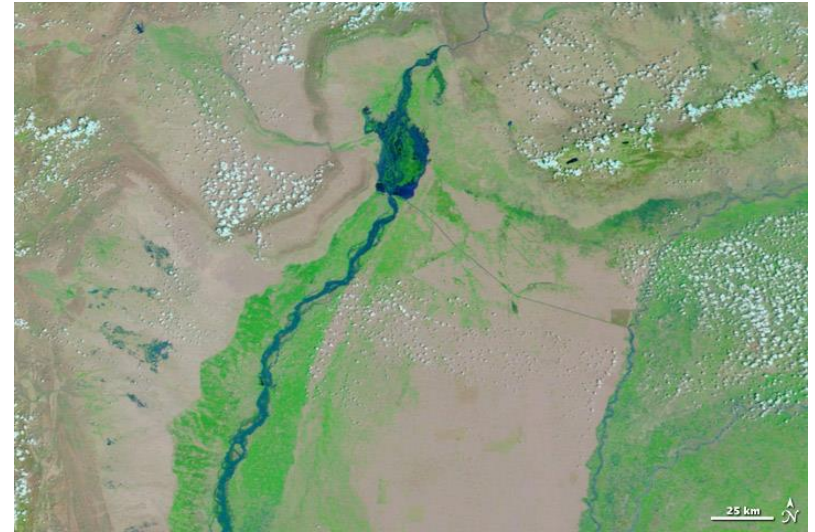
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# Flooding of Indus River in Pakistan

## TERRA Satellite, NASA



August 1, 2010



July 31, 2009





**October 9, 2010  
images**

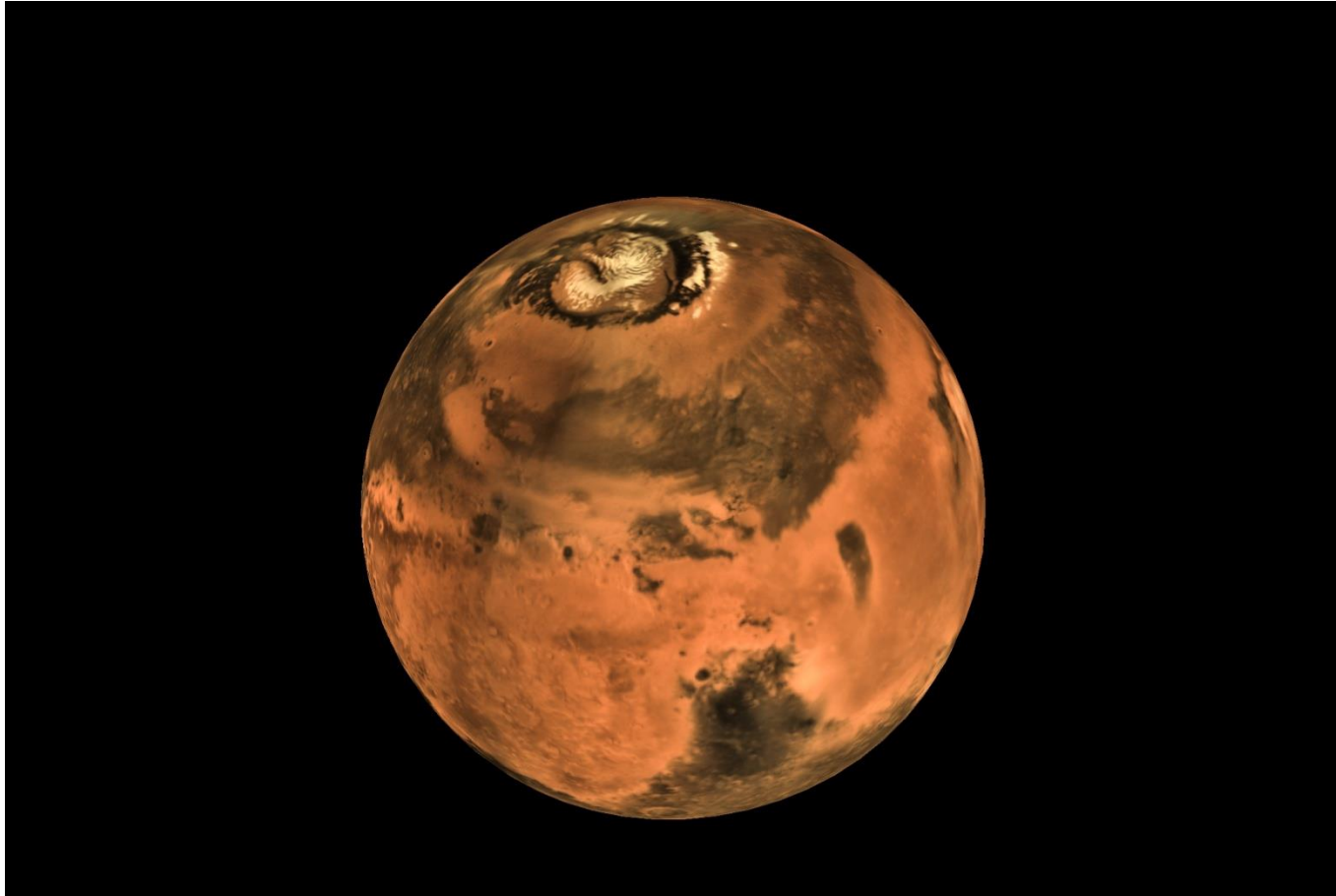
**Advanced  
Land Imager  
on EO-1  
satellite NASA**



**Disaster at  
Alumina Plant  
in Hungary on  
October 4,  
2010**

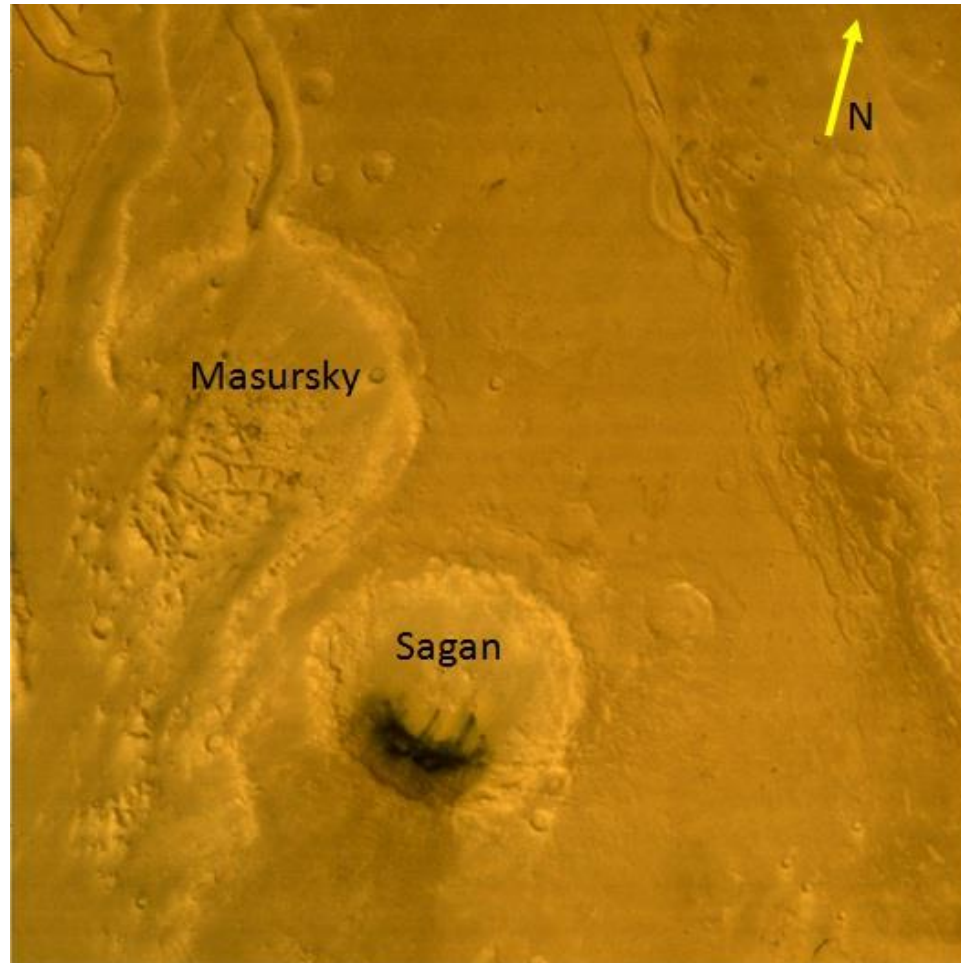
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# MARS ORBITER MISSION



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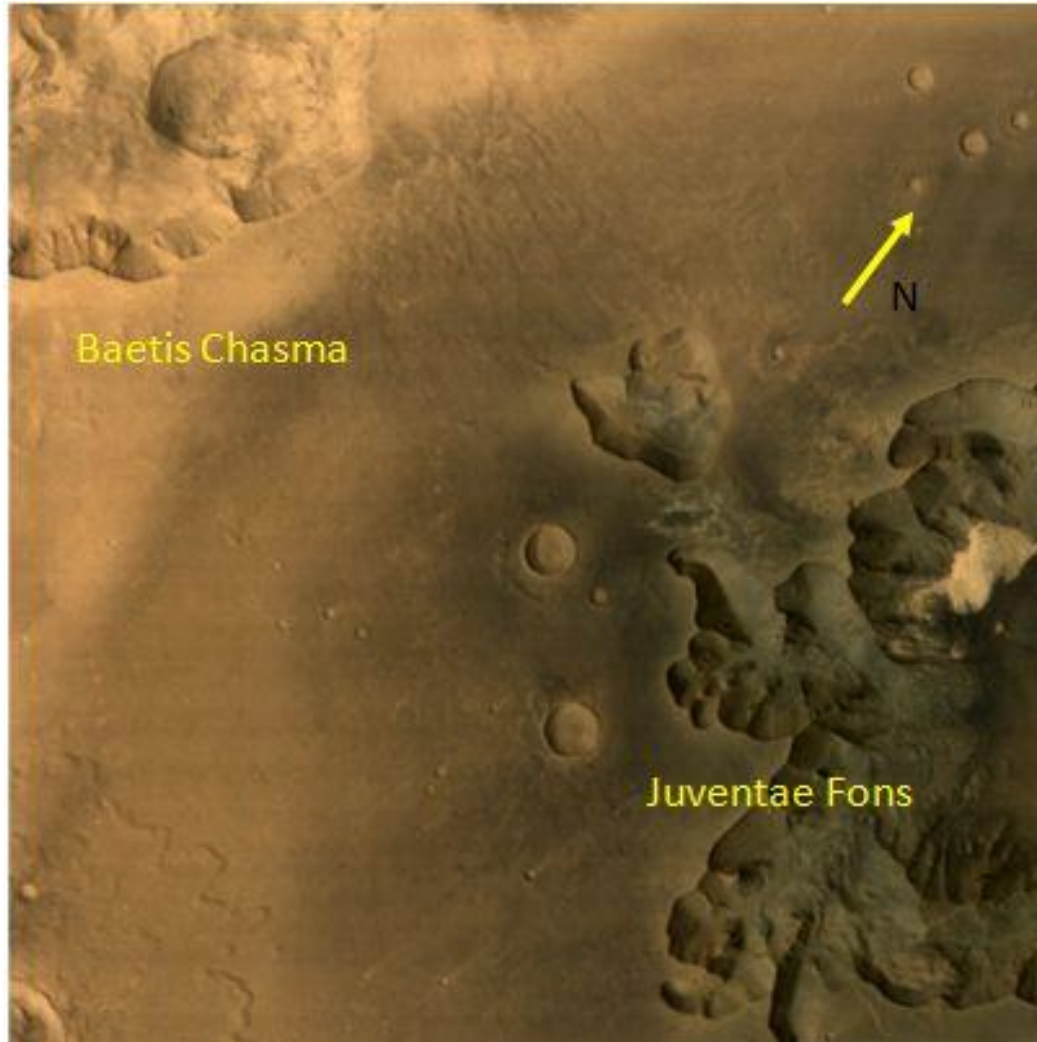
# MARS ORBITER MISSION



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# MARS ORBITER MISSION

## Terrains on Planet Mars



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# MARS ORBITER MISSION

## Coprates region of Mars

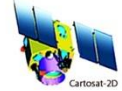


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First day Image of Cartosat-2 Series  
Part of Busto Arsizio, Italy

Acquired on 18-02-2017



Panchromatic 0.60m

Scale 1 : 4000

NRSC / ISRO

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# Multi-spectral Image of Jarhar Haripur, UP taken on June 27, 2017 CARTOSAT 2



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*Thank you*