

The logo of Galgotias University, featuring a stylized circular emblem with overlapping curved lines in shades of yellow, orange, and blue, set against a light background.

**Role of Remote Sensing,  
GIS and Space Technology  
In Disaster Management**

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## Role of Remote Sensing, GIS and Space Technology in Disaster Management

### Objectives:

- Concept of remote sensing and GIS
- Role of Remote Sensing and GIS in Disaster Management
- Role of different satellites in monitoring natural and artificial disasters
- Role of Space Technology in Disaster Management
- Advantages of using Space technology and Remote Sensing in Disaster Management

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## Role of Remote Sensing, GIS and Space Technology in Disaster Management

### **GEO-INFORMATION TECHNOLOGY IN DISASTER MANAGEMENT**

**A Case Study in Akkaraipattu  
Municipal Area**

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## Remote Sensing and GIS

### Remote Sensing:

- Remote sensing is the art and science of making measurements of the earth using sensors on airplanes or satellites.
- These sensors collect data in the form of images and provide specialized capabilities for manipulating, analyzing, and visualizing those images.

### Geographic Information System (GIS):

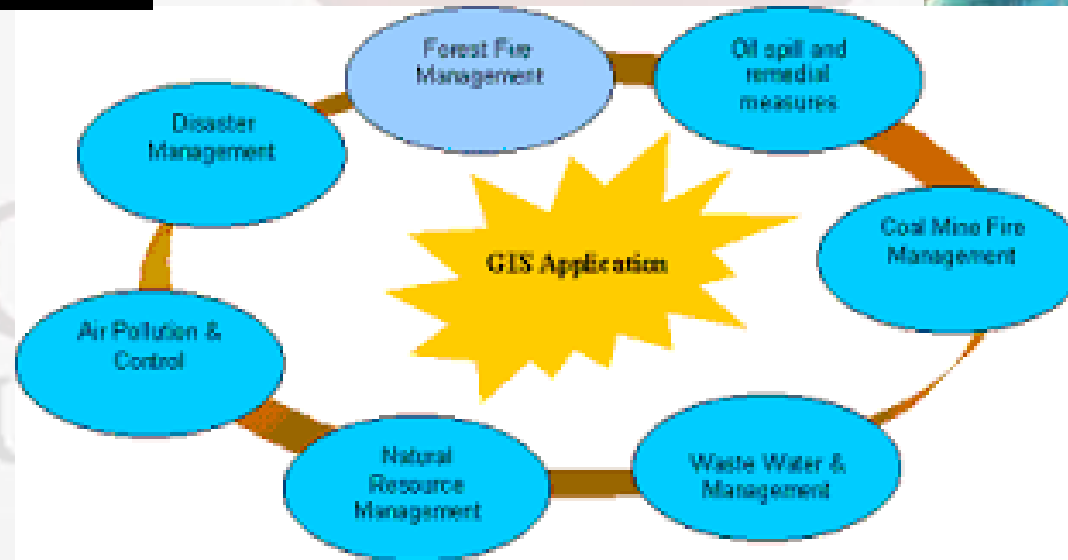
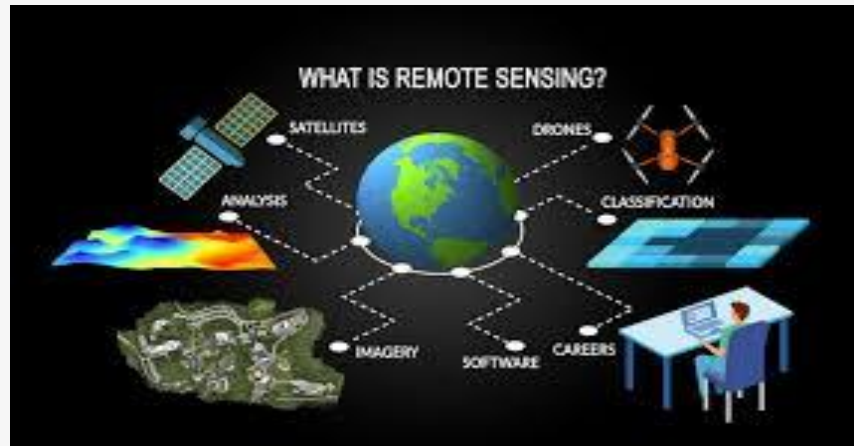
- A geographic information system (GIS) is a computer-based tool for mapping and analyzing feature events on earth.
- GIS technology integrates common database operations, such as query and statistical analysis, with maps. GIS manages location-based information and provides tools for display and analysis of various statistics, including population characteristics, economic development opportunities, and vegetation types.
- GIS allows you to link databases and maps to create dynamic displays.

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## General Applications of Remote Sensing and GIS



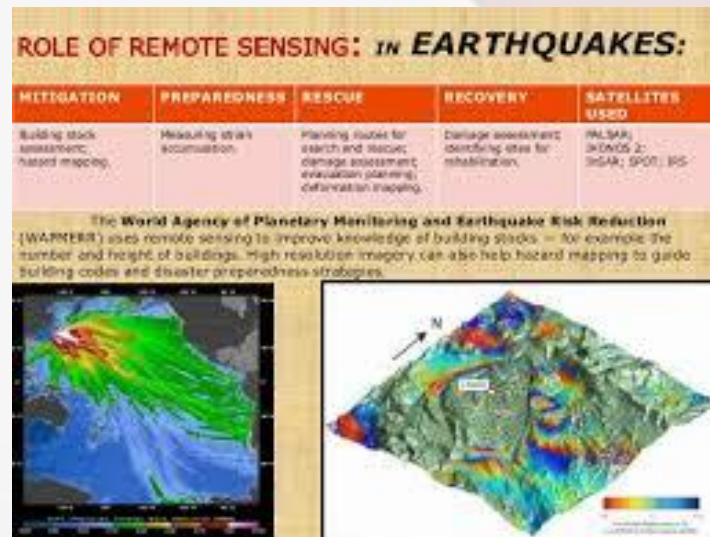
## Role of Satellites in Disaster management

- Space systems can provide vital information and services towards disaster management
- Most of these contributions can be made using existing satellites and sensors
- Satellites used for disaster management can be grouped into four different categories:
  1. Communication
  2. Meteorology
  3. Remote Sensing and
  4. Geophysical



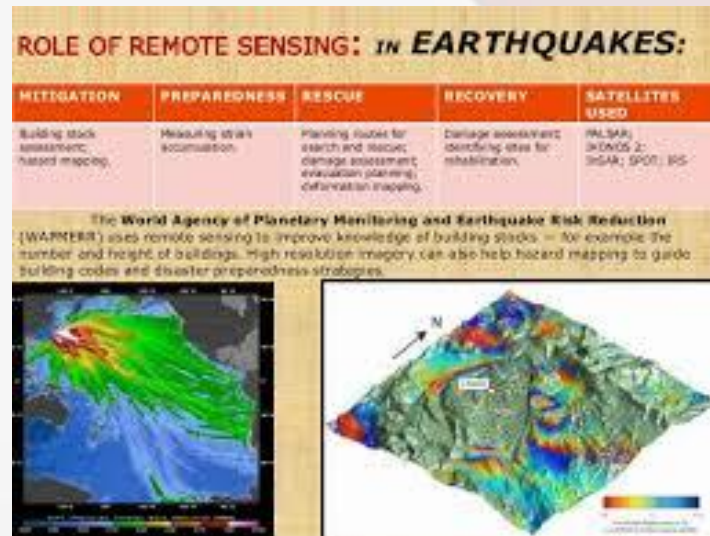
## Remote Sensing Satellite

- Remote sensing technology was initially used for aerial photography
- Remote sensing satellites Bhaskara-1 and Bhaskara-2 launched in 1979 and 1981 were primarily used for weather forecasting
- High resolution cameras are used for monitoring aerial photographs of affected areas in a disaster
- Development of active microwave systems like imaging radars, scatterometer and altimeter gave a new dimension to remote sensing satellites



## Geophysical Satellites

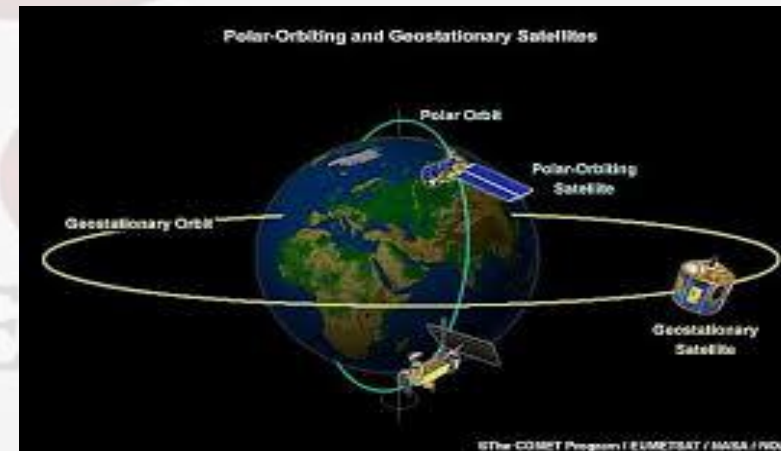
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## Meteorological Satellites

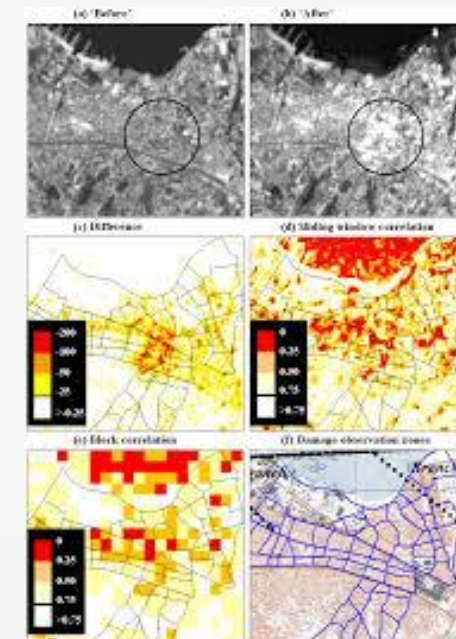
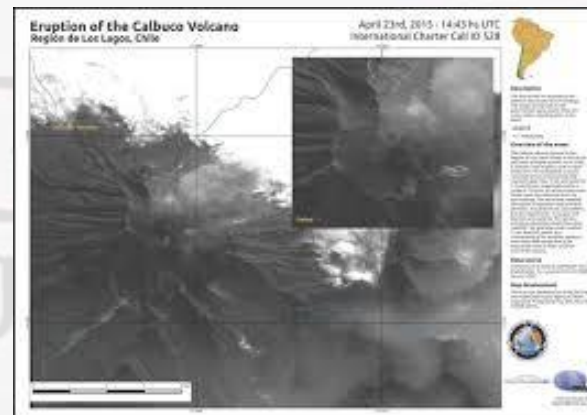
- They are advantageous because they can take pictures over larger areas
- Used for tracking cyclones and measurement of wind vectors
- INSAT is in used for gathering information in the Indian sub-continent over the last few years
- Important information like cloud cover, cloud motion vectors, sea surface temperature are disseminated through it



## Application of Remote Sensing Data in Disaster Management

Remote sensing data has find applications in the following disaster management:

- Cyclone monitoring and warning through INSAT by implementing Cyclone Warning Dissemination System (CWDS)
- Flood Management
- Inundation mapping and damage assessment
- Drought management using NADAMS
- Earthquakes, Landslides and Forest Fires



## Role of Space technology in Disaster Management

- Indian Space Research Organization is providing support to the Government in relation to disaster management in more ways than one.
- INSAT (Indian National Satellite) and IRS (Indian Remote Sensing) are providing information regarding wind vectors, cyclone etc.
- GPS (Geographic Positioning System) is being used to exactly locate the position of disaster
- Mobile telephonic system, MSS reporting terminal and VSAT based communications have enhanced communication capabilities in disaster affected areas.
- DAT(Distress Alert Terminal), a compact instrument, can send message to a controlled hub in case of distress situation.
- ISRO has established a Decision Support Centre (DSC) at National Remote Sensing Centre(NRSC), Hyderabad, under its Disaster Management Support Programme (ISRODMSP). It provides dedicated services for timely information meeting the user needs in terms of information content, turn-around time and format.

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## References

1. Indian Remote Sensing Satellite series & Applications - a saga of 25 years', NNRMS Bulletin, March 2013, Department of Space, Government of India, Bangalore
2. Subbarao, A.; Priya R; Joshi, J. Krunal; Science Horizon, 2014

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The logo of Galgotias University is a stylized circular emblem. It features a central white swirl that transitions into a yellow arc at the top, a blue arc on the right, and a red arc at the bottom. The entire emblem is set against a light grey circular background.

**Thank You !!!**

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