

# India

## Agenda item : 7

### Remote Sensing

#### **Madam Chairperson and Distinguished delegates,**

A comprehensive earth observation systems of LEO, MEO and GEO and associated ground segment has been developed by India over the past few decades and has played a significant role in various sectors of national development and in meeting country's requirements. These systems ensure data and services on a continued and assured basis. These Earth Observation Satellites having imaging capabilities in visible, infrared, thermal and microwave regions of the electromagnetic spectrum have helped the country in realizing major operational applications.

#### **Madam Chairperson,**

ISRO has launched many operational remote sensing satellites into orbit, starting from IRS-1A in the year 1988. The data provided by the Low Earth Orbiting Indian Remote Sensing (IRS) Series of satellites and Geostationary INSAT series of satellites are being used for various applications of land and water, ocean and atmosphere. The main objective of the Indian EO programme is to meet the data needs of the country for natural resources management, environmental monitoring, urban planning, rural development, infrastructure development, weather forecasting and disaster management support.

#### **Madam Chairperson,**

At present, 21 remote sensing satellites in low earth orbit are operational comprising of thematic series of satellites for (i) for natural resources and disaster management, (ii) for large scale mapping and cartography applications, (iii) for oceanography applications, ocean altimetry and ocean surface wind vectors. Also, two meteorological satellites are operational in Geostationary orbit, providing meteorological data to the user community facilitating weather forecasting, cyclogenesis and their track prediction.

#### **Madam Chairperson,**

The Indian Remote Sensing Satellites data are mainly acquired at the ground stations at Hyderabad and Antarctica and processed at Integrated Multi-mission Ground Segment for Earth Observation Satellites facility at Hyderabad. Further, IRS data downlinks were enabled at seven Ground Stations across the globe.

**Madam Chairperson,**

The National Natural Resources Management System (NNRMS) was established in 1985, is a multi-pronged implementation architecture through which remote sensing and geospatial technology projects at National, Regional, State and local levels are carried out. User ministries of State and Central Government departments and other institutions play a major role in utilizing remote sensing technology in their respective departments for various purposes. In addition, private sector, non-governmental organizations and academia also utilize this technology in different developmental sectors of the country.

The major application projects include Space based Information Support for Decentralised Planning (SIS-DP), Periodic mapping of Land use/ Land cover and land degradation under Natural Resources Census, Indian Forest Cover Change Alert System, Watershed development planning and monitoring activities, Crop production forecast, Horticulture development, Irrigation infrastructure assessment, Snow and Glaciers dynamics, Inventory and Monitoring of Glacial Lakes/ Water Bodies and Identification of suitable sites for social forestry.

India has formulated the National Information System for Climate and Environment Studies (NICES) with the objective of building long term data records for environmental and climate studies, with inter and intra-departmental linkages. NICES continues to produce 67 geophysical products pertaining to land, ocean and atmosphere, which includes 13 Essential Climate Variables (ECV).

**Madam Chairperson,**

Potential of Space technology applications in governance and development has witnessed increased acceptance and Government of India has taken measures to further enhance the use of Space technology based tools and applications in the activities of various Central Ministries/ Departments and State Governments. Host of web and mobile based applications have been developed to facilitate online mapping, integration of geospatial data, crowd sourcing and capturing field observations for providing value added services and governance support.

**Madam Chairperson,**

ISRO's Geoportal the "Bhuvan", is providing visualisation services and Earth observation data to users in public domain. Many new application releases,

satellite ortho products and mobile geo-tagging applications were carried out in last one year. Bhuvan is being used as national level geospatial platform for data collaboration, mapping, monitoring and evaluation of developmental activities. Some of the applications being catered through Bhuvan Portal include, Watershed monitoring and evaluation; National Highway Authority of India Toll Information System; Detailed infrastructure planning for 500 cities; Virtual 3D city models; Assets mapping; Islands Information System; Inventory, conservation and management plan for the cultural heritage sites; Citizen centric postal information system; Horticulture inventory and site selection; Groundwater database and visualization; and Gas Authority of India's gas pipeline monitoring system. Bhuvan has also become a platform for other Ministries to showcase their activities as well as to carry out their planning and monitoring activities.

Similarly, Meteorological and Oceanographic Satellite Data Archival Centre (MOSDAC) is the web portal for archiving, processing and disseminating the meteorological and oceanographic data of ISRO's satellite missions and ground based systems to Indian and the International scientific community. MOSDAC provides information related to extreme weather events in terms of forecasts and now-cast including daily weather forecast over the Indian region for the next 24, 48 and 72 hours at 5 km resolution and half hourly Nowcast (valid for 6 hours) for intense rain at 4 km resolution.

Visualisation of Earth observation Data and Archival System (VEDAS) host IRS and INSAT data and training to enable such activities. ISRO is encouraging the students, academia and researchers in the use and familiarisation of remote sensing techniques.

**Madam Chairperson,**

India has conceived new Earth Observation missions to ensure data continuity for operational applications, to meet the increased data requirements of the user community, to incorporate improvements in observations & data services and to enable research and development in applications. It is envisaged to realise a Geo Imaging Satellite (GISAT) in geostationary orbit to enable near real time imaging.

**Madam Chairperson,**

India actively participates in the Group on Earth Observations (GEO) initiatives towards developing Global Earth Observation System of Systems (GEOSS), and in pursuing the 10-year implementation plan (2016-2025) in various societal

benefit areas. India is supporting the G20 initiative of GEO, including the initiatives on Agricultural Monitoring, APRSAF initiative on Space Application For Environment (SAFE), Forest Observation, Water strategy and Data sharing. ISRO has taken over as Chair of Committee on Earth Observation Satellites (CEOS) for 2020 and will be hosting its Plenary in India in October 2020. As CEOS Chair, ISRO has taken initiatives in emphasizing the need of Actual Constellation of EO satellites activities, applications focus on SDGs for BIMSTEC Region, Renewable energy assessment (Solar & Wind) from Space and explore new tools for disasters management. India has committed to share its remote sensing satellite data with ASEAN countries for resource assessment and disaster management support. India is also providing the required assistance to establish a network of weather stations in SAARC countries to support severe thunderstorm predictions. Automatic Weather Station (AWS) and GPS radiosonde stations are being set up in Bangladesh, Nepal and Bhutan for this purpose. India actively supports capacity building in Remote Sensing through hosting United Nations affiliated Centre for Space Science and Technology Education for Asia and the Pacific (CSSTEAP), since 1995.

**Madam Chairperson,**

In conclusion, the Indian delegation would like to convey this esteemed gathering that India has developed the necessary expertise to take the benefits of space technology to the grass root level and demonstrated the same through various application projects. India is committed to share her experience with all the member nations.

**Thank You Madam Chairperson.**