



Airline Mapping of Ocean Floor

Why in News

The [Indian National Centre for Ocean Information Services \(INCOIS\)](#) is planning to conduct **airline mapping of Andaman and Nicobar Islands and Lakshadweep** to get a better picture of the ocean floor.

- [Lakshadweep Islands](#) are located in the Arabian Sea. These are **coral islands** located off the coast of Kerala. The [Andaman and the Nicobar Islands](#) lie to the southeast of the Indian mainland in the Bay of Bengal.

Key Points

▪ About INCOIS:

- INCOIS is an **autonomous organization** under the **Ministry of Earth Sciences (MoES)**.
- It is located in **Hyderabad** & was established in 1999.
- It is a unit of the [Earth System Science Organization \(ESSO\)](#), New Delhi.
 - The ESSO operates as an **executive arm of the Ministry of Earth Sciences (MoES)** for its policies and programmes.
- **Mandate of INCOIS:** To provide the best possible ocean information and advisory services to society, industry, government agencies and the scientific community through sustained ocean observations and constant improvement through systematic and focused research.

▪ Recent Initiative:

- The INCOIS is planning to take the help of the **National Remote Sensing Centre (NRSC)** to conduct '**bathymetric**' study of Andaman and Nicobar Islands and Lakshadweep.
 - **NRSC:** It is one of the primary centres of [Indian Space Research Organisation \(ISRO\)](#), Department of Space (DOS).
 - **Bathymetry:**
 - It is the study of the "beds" or "floors" of water bodies, including the ocean, rivers, streams, and lakes.
 - The term "bathymetry" originally referred to the ocean's depth relative to sea level, although it has come to mean "submarine topography," or the depths and shapes of underwater terrain.
- NRSC has already done a similar high resolution topographic **Airborne Laser Terrain Mapping (ALTM)** for entire coastal areas of the country.
 - ALTM is an active remote sensing technology that employs [Light Detection and Ranging \(LIDAR\)](#) to measure topography at high spatial resolution over large areas.
 - ALTM pulses a laser to measure the range between an airborne platform and the Earth's surface at many thousands of times per second.
 - Using a rotating mirror or other scanning mechanism inside the laser transmitter,

the laser pulses can be made to sweep through an angle, tracing out a line or other patterns on the reflecting surface.

- The scientists are in the **process of integrating the data for a 3D multi-hazard mapping of both the east and west coastline** for a more precise picture of the ocean floor.

▪ **Significance:**

- Such a study has become imperative **in view of the recent tsunamis warning**.
- Recently, at Indonesian coasts, where more than the quake related high waves, **damage was due to landslides that had under the sea beds** causing sudden wave surge leading to much damage without giving sufficient time to alert people.

▪ **Other Initiatives:**

- It had also **identified 'gaps' across the coast of Andhra Pradesh and Odisha** for installing more tide gauges for better monitoring of the sea and more accurate prediction of impending disasters like **cyclones**.
- The INCOIS scientists in association with their counterparts in the **Chennai-based National Institute of Ocean Technology (NIOT)** and an United States independent scientific agency, **Massachusetts-based Woods Hole Oceanographic Institute (WHOI)**, have been mining the data recorded by a unique **'Flux Buoy'** retrieved from the Bay of Bengal off the Kolkata coast.

- The buoy was dropped off into the sea to monitor the temperatures, pressures, salinity, radiation and geo-chemical changes at various depths in a high resolution scale, compared to other buoys in the seas.

▪ **Similar Global Initiative:**

- **Seabed 2030** is a collaborative project between the Nippon Foundation of Japan and the General Bathymetric Chart of the Oceans (GEBCO).
- The project **aims to bring together all available bathymetric data to produce the definitive map of the world ocean floor by 2030** and make it available to all.

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