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 ICOIS:
 - 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 <u>Indian Space Research Organisation</u> (<u>ISRO</u>), 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 <u>Light Detection and</u> <u>Ranging (LIDAR)</u> 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 Kolkota 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:
 - <u>Seabed 2030</u> 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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