Ocean data and information system at INCOIS

The Indian National Centre for Ocean Information Centre (INCOIS) was conceived in 1999, the Ministry of Earth Sciences (MoES) Govt. of India to provide ocean information and advisory services to society, industry, government agencies and scientific community through sustained ocean observations, information management, modelling and constant improvements through systematic and focused research.

INCOIS has a vision to emerge as a knowledge and information technology enterprise for the oceanic realm with a focus on:

1. Developing capability to forecast critical ocean parameters, processes and phenomena, which have significant societal, economic and environmental benefits
2. Providing scientific and technical support for ecosystem-based management for sustainable use of resources.
3. Defining and deploying satellite- and in situ-based ocean observing system to support forecasting and ecosystem-based management system

Real Time Ocean Observations & Ocean Data and Information System

Indian ocean had limited observation coverage with sparse measurements of the physical state of the ocean e.g. temperature, salinity and velocity. During the World Ocean Circulation Experiment (WOCE) which was the component of the international World Climate Research Program, and aimed to establish the role of the World Ocean in the Earth's climate system. WOCE's field phase ran between 1990 and 1998, and was followed by an analysis and modeling phase that ran until 2002.

As an outcome of the Second World Climate Conference, the **Global Ocean Observing System** (GOOS) was established to ensure for sustained observations of the ocean comprising the oceanographic component. Some of the in-situ instruments used in monitoring the ocean are illustrated in Figure 1.

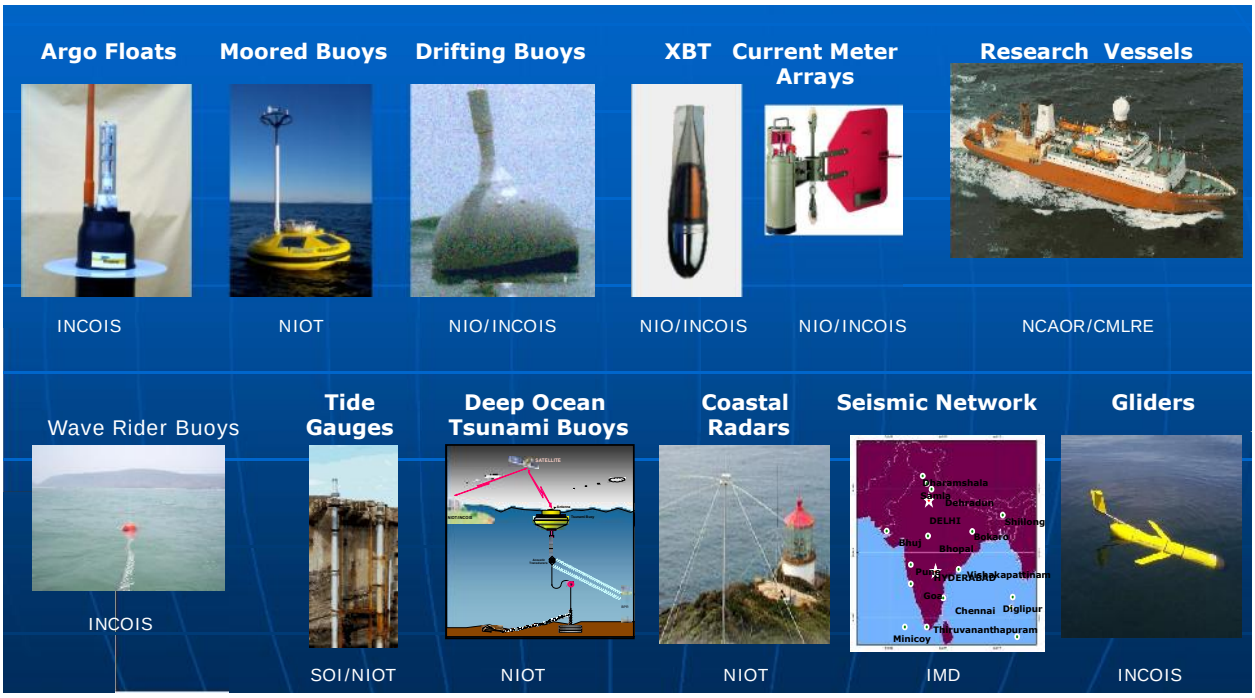

Figure 1: In-situ observing system in the Indian Ocean by India

Long term monitoring of the Equatorial Indian Ocean currents

Among the world Oceans, the tropical ocean basins, encompassing the equatorial regions, have special place in modulating the regional as well as global climate. The research on the equatorial regions has been recognized since the last 3 decades and the Equatorial Pacific and Atlantic were largely studied with respect to equatorial dynamics and air-sea interaction through observations and models. One best example is the El Nino and El Nino-Southern Oscillation (ENSO) in the equatorial Pacific and its linkage to the global climate and its possible influence on the Indian Monsoon Rainfall. Amongst the three equatorial regions, the research on the equatorial Indian Ocean has gained momentum with the set-up of the Indian Ocean Panel (IOP) as a part of the CLIVAR and GOOS programs.

Objectives:

1. To understand the dynamics and the long-term variability of ocean currents in the equatorial Indian Ocean.
2. To study the deep-sea circulation in the equatorial Indian Ocean.
3. To study the upper ocean variability in the thermohaline structures, currents (VM-ADCP and LADCP), nutrients, chlorophyll and Primary Production in the equatorial Indian Ocean and the Bay of Bengal.

Tsunami early warning system

The December 26, 2004 earthquake and the subsequent tsunami exposed the vulnerability of the Indian coastline to Oceanic hazards. Following the event, India started its own interim tsunami warning center in the first quarter of 2005 to issue tsunami bulletins generated from seismic information. The interim services were succeeded by setting up of a state-of-the-art Indian Tsunami Early Warning System (ITEWS) at the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, under the Earth System Sciences Organization (ESSO), Govt. of India.

Following agreements reached during the IOC/UNESCO Assembly, this centre along with those of Australia and Indonesia, is now designated as a Regional Tsunami Service Provider (RTSP) to provide tsunami warnings to countries bordering the Indian Ocean. The centre is connected to a global network of seismometers, tide gauges and buoys through satellite links which provides data and issues warnings concerning earthquakes and ocean surges.