Regional Workshop on Establishing a Cooperative Mechanism for Protection of Met-Ocean Data and Tsunami Buoys in the Northern Indian Ocean Region

6 - 7 May 2011
Chennai, India

PROSPECTUS

1.0 Background and Rationale

Time series observations are vital to improve our understanding of ocean dynamics, variability and are used to monitor the marine environment and to improve weather and ocean state forecasts. Systematic real-time meteorological and oceanographic observations are also necessary to improve oceanographic services and predictive capability of short and long-term climatic changes. The existing systems for collecting the ocean related information are remote sensing, ships of opportunity and moored/drifting /profiling platforms. Among these the moored buoys play an important role by providing time series information on meteorological variables and surface/ sub-surface observations of a specific location.

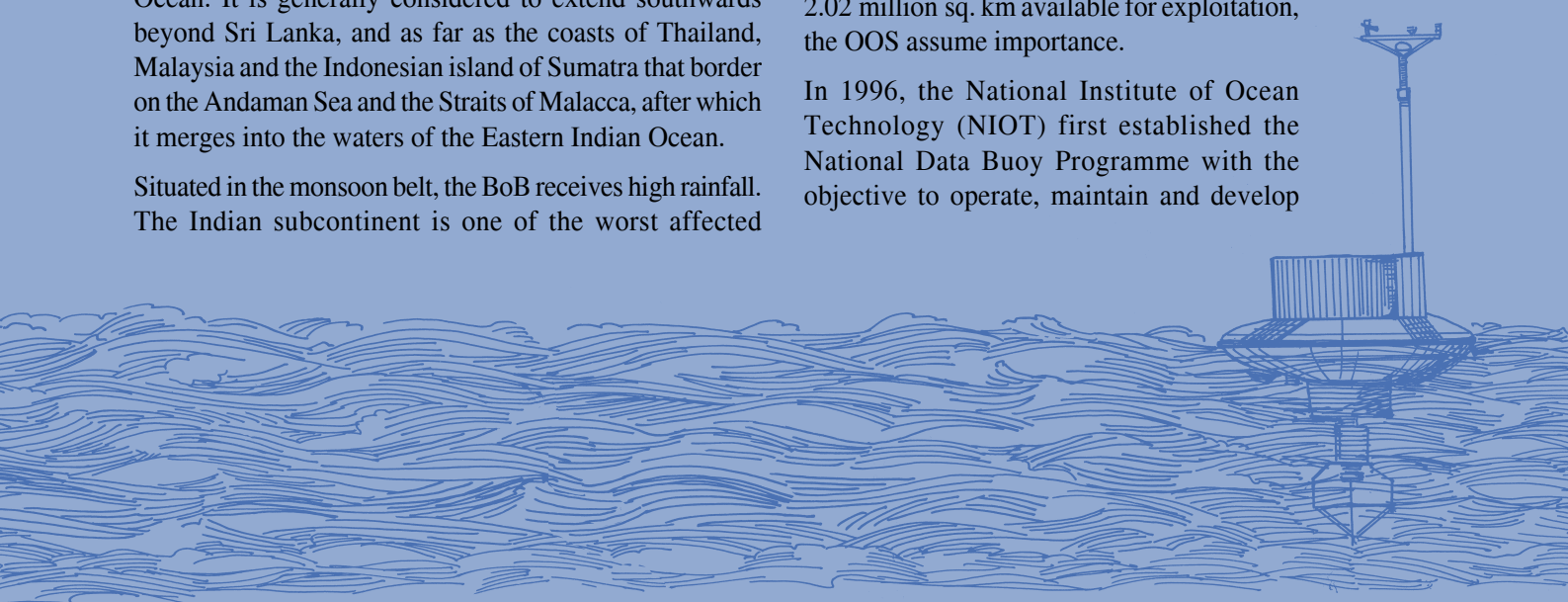
The Bay of Bengal (BoB) is the largest Bay in the world. Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand border the Bay. Resembling a triangle in shape, it occupies an area of 3,657,502 km², between India on the west and the Malay Peninsula on the east, measuring about 2,090 km long and about 1,600 km wide. The Bay forms the northern Indian Ocean. It is generally considered to extend southwards beyond Sri Lanka, and as far as the coasts of Thailand, Malaysia and the Indonesian island of Sumatra that border on the Andaman Sea and the Straits of Malacca, after which it merges into the waters of the Eastern Indian Ocean.

Situated in the monsoon belt, the BoB receives high rainfall. The Indian subcontinent is one of the worst affected regions in the world and is exposed to nearly 10 percent of the world's tropical cyclones. Of these, the majority have their initial genesis over the BoB. On an average, five to six tropical cyclones form every year, of which two or three could be severe. In the recent past cyclonic storms such as Sidr, Nargis and Aila have caused great loss of life in Bangladesh, Myanmar and India. Besides cyclones, the 26 December 2004 Asian Tsunami that hit most of the BoB countries is also remembered with awe and fear.

The BoB is a hot spot of biological diversity flourishing in coral reefs, estuaries, coastal wetlands and mangroves. The Bay is also one of the World's 64 large marine ecosystems. More than a quarter of the world's population resides in the countries bordering the BoB. The high population, many of whom live below international poverty line of US $1/day, depends on coastal resources for food and livelihood security.

Ocean Observation Systems (OOS) are vital for coastal states, especially those located on the BoB. Keeping this in view and also the fact that India has a coastline exceeding 8,000 km and an Exclusive Economic Zone (EEZ) of 2.02 million sq. km available for exploitation, the OOS assume importance.

In 1996, the National Institute of Ocean Technology (NIOT) first established the National Data Buoy Programme with the objective to operate, maintain and develop



moored buoy observational networks and related telecommunication facilities in the Indian seas. Later, the OOS has inherited lead responsibility for a number of important and well-established observational programmes in the northern Indian Ocean.

The Moored Buoys

Many nations rely on the data collected by moored buoys, especially those linked to the India's Ocean Observation Programme, Tropical Atmosphere Ocean-Triangle Trans-Ocean Buoy Network (TAO-TRITON), Prediction and Research Moored Array in the Atlantic (PIRATA), and Research Moored Array for Africa-Asian-Australian Monsoon Analysis and Prediction (RAMA). Presently, the following types of buoys are used in India for Ocean Observation:

Data Buoys: These are moored offshore floating platforms, fitted with meteorological and oceanographic sensors, moored at specific locations to observe *in situ* met-ocean data at regular intervals. These buoys are powered by lithium batteries and are equipped with Global Positioning System (GPS) to provide the buoy location. The observed data is then transmitted through satellite along with location reference, in synoptic hours, to the state-of-the-art shore station facility at NIOT, Chennai.

The Tsunami Buoys: As challenges arise in the form of natural disasters, NIOT is entrusted to deploy buoys capable of identifying Tsunamis as part of IndianTsunami Early Warning System in the BoB region. NIOT has developed, tested and established Tsunami Buoy Systems in the Indian Seas. The new venture has expanded the horizon of NIOT in taking care of the safety and well-being of the coastal communities.

Data Dissemination: The most important aspect of NIOT is the real time dissemination of data, especially during extreme weather conditions. The shore station is manned 24 x 7 and the data obtained from the buoys are disseminated in real time to the Indian National Center for Ocean Information Services (INCOIS), Hyderabad for further processing. The data is utilized by a wide spectrum of end users like; Meteorologists, Oceanographers, Environmentalists, Offshore Engineers, etc. in the region and elsewhere for their reference, studies, research and developmental activities.

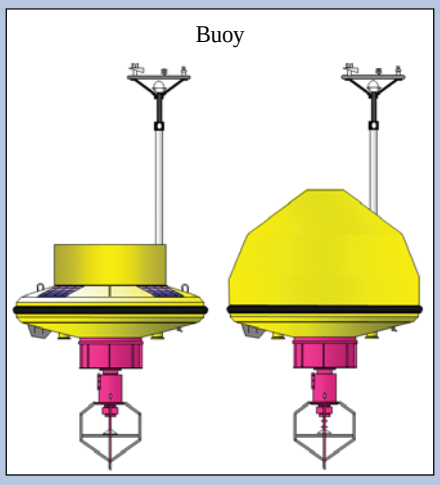
The Issue

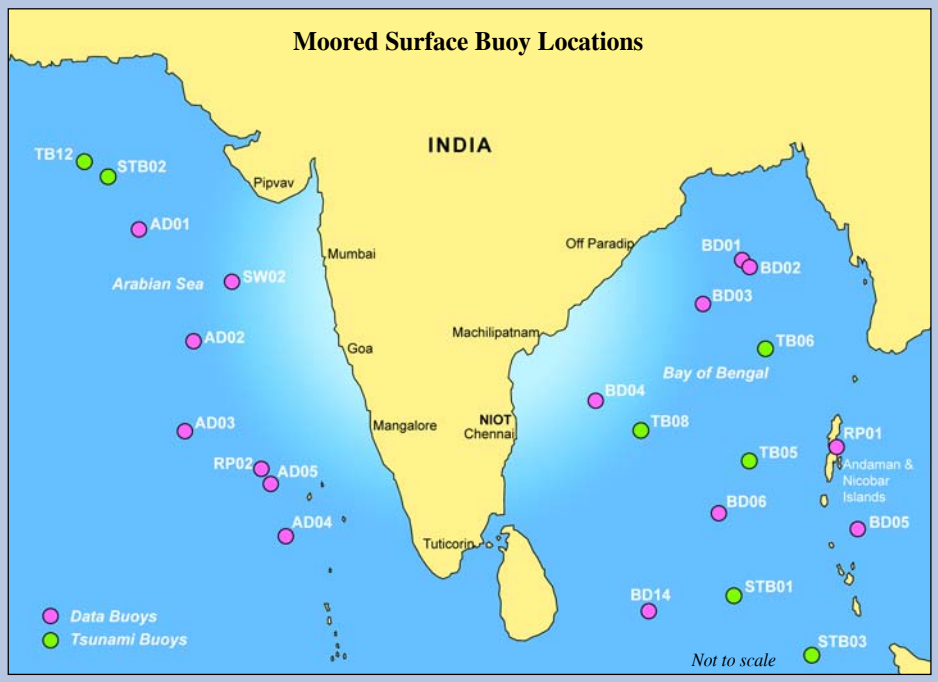
Globally, about 10 percent of data buoys are lost annually due to human interventions. Data buoys are costly and their setting in the sea is a time-consuming exercise. Therefore, any loss of the buoys hampers global climate research and meteorological forecasting to a large extent. Further, it can also undermine the capacity to forecast natural disasters and thus jeopardize the lives of millions of people.

Data buoys are placed both within the EEZ (national issue) and in the international waters (regional and international issue). In the present case, it is seen that in both the locations, data buoys have been frequently reported as damaged. While NIOT is working with fishermen associations and Coast Guard in India to address the issue of safety of data buoys in the national waters, there is an urgent need for regional cooperation and regionally coordinated effort to protect the data buoys in the international waters. At the national level also, cooperation from all coastal states and fishermen associations is required. These data buoys, being part of international climate and ocean observation systems are not only important for India but also for the security of the entire BoB region.

Damages to or destruction of ocean and coastal observation systems (*i.e.,* data buoys) is attributed to both deliberate activities (*e.g.,* theft of buoy parts, fishermen tying up their boats/small vessels to data buoys, which act as fish aggregating devices) and inadvertent activities (*e.g.,* vessels running over buoys).

The OOS Programme in India is passing through a challenging phase as the data buoys in the deep seas have been damaged due to act of vandalism. On most occasions the buoy electronics and sensors are removed making them non-functional. Besides, there are a range of other damages inflicted on the data buoys making them unusable, which results in huge monetary loss to the country. Further, it is also impacting the morale of the scientists and other technical staff working on the development, fabrication and installation of the data buoys. NIOT had made several efforts to reduce the damages to data buoys by buoy identification through WMO Identification code, buoys fitted with beacon lights as per international standard (IALA Maritime Buoyage System), Radar reflector and also through special technological changes like slippery and smooth protective hood to avoid boats being tied to the buoys and difficult to remove fixtures/fasteners. Further, the buoy locations are notified





through mariners notice sent to Naval Hydrographic Organization and through monthly reports sent to Navy and Coast Guard.

Vandalism of data buoys is not only an issue in the BoB region but is a global menace and numerous local and international efforts have been made over more than twenty years to educate and inform the fishing community and others about the negative consequences of data buoy losses, which are invaluable for research, weather, climate, ocean forecasting and for tsunami warning. The Data Buoy Cooperation Panel (DBCP) is facing the problem for many years and considers that concerted actions are required to prevent such vandalism.

Initiatives by UN Organizations and International Community for Protection of Data Buoys

In September 2009, the UN General Assembly (UNGA) demonstrated broad support for action to address data buoy vandalism as reflected in the adoption of its annual Oceans and Law of the Sea Resolution (A/RES/64/71) and Sustainable Fisheries Resolution (A/RES/64/72). The UNGA requested the Member States to preserve the integrity of monitoring system that is so essential to prevent life and property in coastal communities around the world. Recent developments have shown that during the 26 October 2010 Tsunami in Indonesia, the alert failed to work as the buoy systems were damaged. On the other hand, after the most recent earth quack in Japan on 11 March 2011, the observatory and monitoring systems in the Pacific Ocean issued the tsunami alert within 12 minutes leading to evacuation of people from threatened areas.

The international community has also adopted several strategies, which *inter alia* include improved mooring designs and buoy locations, education outreach and statutory penalty and enforcement for preventing vandalism. Technological changes in the buoy hull are being worked out to make the buoys difficult to board and hard to remove the equipment. In shallow waters, watch keeping boats are used, which is not feasible in deep ocean.

The DBCP has produced a leaflet on the value of ocean data buoys, translated in multiple languages, for circulation to fishermen and mariners. The leaflet provides advice with respect to interference with data buoys in six UN languages.

2.0 The Regional Workshop

The Regional Workshop is being jointly organized by the National Institute of Ocean Technology (NIOT) and the Bay of Bengal Programme inter-Governmental Organisation (BOBP-IGO).

NIOT: Considering the importance of oceans, the Ministry of Earth Sciences (formerly known as the Department of Ocean Development), established the National Institute of Ocean Technology in 1993 as an autonomous society to develop reliable indigenous technology to solve the various engineering problems associated with harvesting of non-living and living resources in the Indian EEZ, which is about two-thirds of the land area of India. Of the many technology groups and programmes/projects that the NIOT executes, the OOS is an important Operational Programme. This Programme is mandated with the important task of developing technologies for OOS and their operation and maintenance.

BOBP-IGO: The BOBP-IGO is mandated to enhance cooperation among member-countries, other countries and organizations in the BoB region and provide technical and management advisory services for sustainable coastal fisheries development and management in the region. The Programme (BOBP) was initially established in 1979

as a field Project of the Food and Agriculture Organization of the United Nation. In April 2003, the BOBP became an IGO. The Headquarters of the Organisation are located in Chennai and presently Bangladesh, India, Maldives and Sri Lanka are members of the IGO. The Organisation works very closely with the governments as also the fishers and their associations in the BoB region.

Objectives

The larger objective of the Regional Workshop is to create awareness amongst the concerned stakeholders on the importance of the data buoys and evolve common strategies to tackle the issue. The Workshop will enable raising the profile of the issue as it has potential concerns for the society as a whole in the BoB region. As the buoys are mostly located outside the EEZ in international waters, it assumes regional dimensions and, therefore, a regional meet is more likely to deliver tangible results than isolated national efforts. Since this Regional Workshop would be the first of its kind, it could also be a role model for the other regions where such problems are becoming common. Some of the major outcomes of the Regional Workshop would be:

- Common strategies on awareness creation amongst fisher communities in the countries surrounding the BoB;
- Action plan for notification of moored buoy locations in the BoB;
- Information sharing and networking among the countries in the region and also outside the region on operation of the data buoys in the BoB area;
- Involvement of fisher community through their associations in the region in protection and safeguard of the data buoys;
- Common code of practices for fishers operating in the vicinity of the data buoys; and
- Coordination among responsible agencies such as Coast Guard and Navy of coastal states to prevent damage to the buoys.

Date and Venue

The Regional Workshop will be organized from **6 - 7 May 2011** at the National Institute of Ocean Technology, NIOT Campus, Velachery – Tambaram Main Road, Narayanapuram, Pallikaranai, Chennai – 600 100, Tamil Nadu, India (Tel: +91- 44- 66783300, Fax: +91- 44- 22460275; Email: **bobp@niot.res.in**; *Website:* ***www.niot.res.in).***

Format of the Workshop

The Regional Workshop shall include 08 technical lectures followed by brief presentations from each participating country and industry representatives. Thereafter, the participants will engage in Group Discussions and finalization of a strategy and road map to be implemented by the countries in the BoB region. Copies of the technical presentations shall be distributed to the participants prior to the Regional Workshop. The Provisional Annotated Agenda and Timetable set up for the Workshop is at Annex.

Conduct of the Workshop

The National Workshop will be conducted in English.

Participation

Participants of the Workshop shall include representatives from the (i) Ministries/Departments of Fisheries and other concerned Ministries/Departments, (ii) Navy/Coast Guard and (iii) Fisher Associations of the eight countries surrounding the Bay of Bengal (Bangladesh, India, Indonesia, Maldives, Malaysia, Myanmar, Sri Lanka, Thailand). Besides, representatives from regional and international organizations such as (iv) South Asia Cooperative Environment Programme, (v) UNESCO/IOC, (vi) Food and Agriculture Organization of the United Nations and (vii) Experts and (viii) Industry Representatives working in this field will also participate in the Workshop.

Coordination of Workshop

The BOBP-IGO will coordinate the Regional Workshop arrangements along with NIOT.

For any further information, please contact:

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Workshop Agenda *Annex*

05 May 2011 (Thursday)	***Arrival of the Guests/Participants***
06 May 2011 (Friday)	***Day 1***
0900 - 0930	*Registration*
0930 - 1000	***Session I: Opening Session***
0930 - 0935	Lighting of the Traditional Lamp
0935 - 0940	Welcome and Introductory Remarks: BOBP-IGO
0940 - 0950	Welcome and Introductory Remarks: NIOT
0950 - 1000	Inaugural Address
1000 - 1015	Special Lecture: Efforts taken by IOC-UNESCO
1015- 1030	*Group Photograph; Tea/Coffee*
1030 - 1230	***Session II: Technical Session- Significance of Met-Ocean and Tsunami Buoy data***
1030 - 1050	Natural disasters in the Bay of Bengal region and their impact on the coastal communities: NIOT
1050 - 1110	Towards an integrated approach of Earth System Science in India: MoES
1110 - 1130	Fisheries exploitation in the Bay of Bengal region: BOBP-IGO
1130 - 1150	Issues concerning protection and smooth functioning of the met-ocean and tsunami data buoys: NIOT
1150 - 1210	Monsoonal events in Northern Indian Ocean: IITM
1210 - 1230	Ocean data products for fisheries: INCOIS
1230 - 1240	Usage of buoy data by IMD: IMD
1240 - 1400	*Lunch*
1400 - 1530	***Session III: Technical Session- Sharing of International Experiences***
1400 - 1430	International Scenario on Vandalism: Mr Ken Jarrott, Expert from Australia
1430 - 1500	Experiences from NOAA PMEL: NIOT
1500 - 1530	Presentations from the Industry
1530 - 1545	*Tea/ Coffee*
1545 -1730	***Session IV: Technical Session- Views of the Fisheries Representatives from the Region***
1545 - 1715	Presentation from each Bay of Bengal country (08 presentations -10 minutes each)
1715 - 1730	Formation of Groups for Group Discussion (03 groups)
1730 - 1800	Visit to NIOT Facility
1800 - 1900	Cultural Programme
1900 - 2000	Dinner
07 May 2011 (Saturday)	***Day 2***
0900 - 1100	***Session V: Group Discussion/Presentation***
0900 - 1030	Group discussion
1030 - 1100	*Tea/ Coffee*
1100 - 1230	Preparation of Group Reports (Strategies and Road Map to provide solutions to address the issues)
1230 - 1400	*Lunch*
1400 - 1500	Group Presentation
1500 - 1545	***Session VI: Summing Up/Concluding Session***
1500 - 1530	Summing up the Strategies/Road Maps
1530 - 1535	Concluding Remarks: BOBP-IGO
1535 - 1545	Concluding Remarks: NIOT
1545 - 1555	Concluding Address: Chief Guest
1555 - 1600	Vote of Thanks: NIOT
1600 - 1630	*Tea/ Coffee*
1600 hrs onwards	***Departure of the Guests/Participants***

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