

Annex 2

NOMINATION / REGISTRATION FORM

IOC-WMO Fourth Workshop of DBCP Capacity Building for the North Pacific Ocean and Its Marginal Seas with a Focus on Typhoon

The Government of: INDIA

proposes the following nomination:

NOTE TO THE NOMINATED PARTICIPANT:
PLEASE COMPLETE ALL THE QUESTIONS IN THIS FORM. PLEASE WRITE CLEARLY, AND
SUBMIT IT, PREFERABLY, IN ELECTRONIC FORMAT.

Mr /Mrs /Dr /etc	<input checked="" type="checkbox"/> Mr / Ms	Dr / Professor / Eng / etc.
Family name	PUDIPEDDI	
First name	LN MURTY	
Job title	SCIENTIST	
Professional specialization	STORM SURGE MODELING	
Graduation degree(s)	M.TECH IN ATMOSPHERIC SCIENCES	
ADDRESS:		
Dept/Div.	ASG	
Street		
Suite/Office/etc	ESSO - INCOIS	
City /postal codes	HYDERABAD	
State/Province/etc	TELANGANA	
COUNTRY	INDIA	
Tel. number(s)	040 23886067	
Fax number(s)		
Email(s) - PLEASE WRITE YOUR E-MAIL(S) VERY CLEARLY		
E-mail (1) <u>murty.pln@incois.gov.in</u>		
E-mail (2) <u>murty.pln@hotmail.com</u>		
Job responsibilities:		
<u>Real time storm surge warning and guidance to Indian Coasts</u>		
Financial assistance is requested for:		
	travel <input checked="" type="checkbox"/>	per diem <input checked="" type="checkbox"/>

Annex 2

QUESTIONS TO THE EXPERT NOMINATED FOR THE TRAINING WORKSHOP	
1.	Please indicate the plans you may have in your country for; (i) initialization/maintenance ocean observing systems in Eastern Asia region, and/or; (ii) cooperation with international programmes regarding the implementation of such systems (e.g. through the provision of instrument deployment opportunities). <i>N.B.: Please use a separate sheet to provide a brief description on this question.</i>
1.	Please indicate the plans you may have in your country for; (i) utilizing ocean observing systems in Eastern Asia region, for improving typhoon track and intensity forecasts; (ii) cooperation with international programmes regarding the implementation of such systems (e.g. through the provision of instrument deployment opportunities). <i>N.B.: Please use a separate sheet to provide a brief description on this question.</i>
3.	Do you have an understanding of physical oceanography and the basics in geophysical fluid dynamics (e.g. Equation of State, etc.)? <i>Yes</i>
4.	What operating system will you have on your laptop (e.g. PC/Windows, Linux-Ubuntu, Linux-Mandriva, etc.)? <i>PC/WINDOWS</i> 4.1. What is your level of knowledge and experience with your Operating System (O/S), and with an alternative system (with Windows in case your O/S is Linux; and with Linux in case your O/S is Windows)? <i>Good</i>
5.	What do you expect from this Training Workshop? <i>This can be useful and enhance my existing knowledge</i>
6.	In your view, what would make the Training Workshop successful? <i>Demonstration of role of ocean observations and their importance.</i>
7.	Do you have any questions or comments? <i>NO</i>
8.	Did you participate at NPOMS-1, 2 or 3? <i>NO</i>

PLEASE NOTE, ONLY NOMINATION/REGISTRATION FORMS, SIGNED BY THE PERMANENT REPRESENTATIVE (PR) OF YOUR COUNTRY WITH WMO OR THE IOC ACTION ADDRESSEE(S) OF YOUR COUNTRY, WILL BE CONSIDERED.

Name of PR with WMO or IOC Action Addressee: *[Signature]*

Date: *20-08-2015*

(Signature of the Permanent Representative with WMO or IOC Action Addressee)

Dr. S.S.C. Shenoi
Director

Please return the completed form before 31 August 2015, preferably by e-mail, to the attention of Mr Tom Gross, tgross@unesco.org, with cc: Mr Etienne Charpentier, echarpen@wmo.int, and/or to the WMO Secretariat, at:

World Meteorological Organization
Observing and Information Services Department (OBS)
P.O. Box 2300
CH-1211 GENEVA 2
Switzerland
Fax: (+41 22) 730 8021

Indian National Centre for
Ocean Information Services (INCOIS)
Ministry of Earth Sciences, Govt. of India,
"Ocean Valley" Pragathi Nagar (BO)
Nizampet (SO), Hyderabad - 500 090.

1: Please indicate the plans you may have in your country for;**(i). Initialization/maintenance of Ocean Observing Systems**

India has been playing key role in implementation of the Ocean observation system in the Indian Ocean region. Ministry of Earth Sciences (MoES), Government of India is the responsible agency to implement and maintain the Ocean Observing System in the Indian Seas. Indian National Centre for Ocean Information Services (INCOIS) under Ministry of Earth Sciences coordinates with other partner institutes for the implementation and maintenance of the Ocean Observing System. India primary objective is (i) to establish a comprehensive ocean observing system to collect marine meteorological and oceanographic data using different in-situ systems both from offshore and coastal ocean of Indian Seas as well as remote sensing data and (ii) to set up a real-time and delayed mode coastal and offshore observational system for understanding the boundary currents and to facilitate data assimilation and real time validation of operational nowcast/forecast of ocean variables in and around Indian Seas. The following observation systems have been deployed and maintained in and around Indian Seas.

- Moored buoys (Offshore)
- Argo profiling floats (one float per 3 deg box in the North Indian Ocean)
- Drifters (one drifter per 5 deg box in the North Indian Ocean)
- XBT/XCTD (5 lines)
- Current meter moorings (At equator)
- ADCP moorings (coastal)
- Wave rider buoys (coastal)
- AWS (on board ships)
- HF Radar (coastal)
- CAL/VAL site
- Tsunami Buoys
- Tide Gauges
- Bay of Bengal Observatory (Physical)

The above observation platforms were sustained and the data is receive in near-real time to real time at INCOIS. In addition to this, several time-series stations are being maintained to collect the physical-chemical, biological parameters, fisheries data and to measure apparent and inherent optical properties of sea water.

The existing platforms are being enhanced by putting more observing systems through deployment of moored buoys in the coastal locations, to measure surface (met-ocean) and sub-surface observations, Glider operations along 3-5 sections, Wave measurements from ships and offshore platforms, Bottom mounted tide gauges on the shelf, Microstructure and mixing (ship based and autonomous instruments), underway CTD, Microgravity meter, moored profiler, Current meter arrays (coastal) to monitor western and eastern boundary currents, contribution to RAMA moorings, etc.

(ii) Cooperation with international programs regarding the implementation of such systems

INCOIS has been actively involved in the Global Ocean Observing System (GOOS) of IOC. INCOIS hosts the secretariat of GOOS Regional Alliance i.e. Indian Ocean Global Ocean Observing System (IOGOOS). IOGOOS. Indian Ocean Observing System (IndOOS) has been established under the international coordination of CLIVAR and IOGOOS –IOP since 2004. IndOOS provides high-quality, real-time upper-ocean and surface meteorological data through various observation platforms as specified above. The IndOOS and Argo data can be accessed at the following websites hosted by INCOIS, India.

IndOOS Data: http://www.incois.gov.in/Incois/iogoos/home_indoos.jsp

Argo Data: http://www.incois.gov.in/Incois/argo/argo_home.jsp

INCOIS, India is also recognized as a National Oceanography Data Centre (NODC) by IODE / IOC and hosts several data. The Indian Ocean Regional Ocean Biogeographic Information System (OBIS) Node (IndOBIS) will be hosted by the Centre for Marine Living Resources and Ecology (CMLRE) based in Kochi and through INCOIS, the Indian Government is contributing to the international activities of OBIS.

2: Please indicate the plans you may have in your country for;**(i). Utilization of Ocean Observations in track and intensity predictions**

The National Data Buoy Program (NDBP) of Government of India has deployed moored and drifting buoys in coastal as well as offshore locations. The data buoys are fitted with sensors to measure air pressure, air temperature, wind speed and direction and sea surface temperature among other parameters. All these instruments have the accuracy as per WMO standard. These buoys, especially offshore buoys, have resulted in better monitoring and reduction in location and intensity error of a cyclone in association with ship and satellite observations. The accuracy of the track and intensity forecasts were improved by utilizing these real time observations in meso-scale models. The analysis in recent years indicates that the track forecast errors have decreased, mainly due to the increase in observational network over the region. The error in predicting the landfall point was also reduced to about 25 km by 2010 mainly due to installation of coastal AWS during late 2000s. INCOIS, India also established several Wave-rider buoy systems for real-time data reception on the status of the sea state. The Wave-rider buoys installed in recent years have played critical role in validation and improvement of the wave models.

The satellite ground station established at INCOIS, for reception of METOP and MODIS satellite data, is providing atmospheric data products that are useful for cyclone monitoring and prediction. Steps are underway for assimilation of these additional data especially vertical profile of temperature and moisture in the NWP models. The scatterometer onboard Ocean Sat-II satellite, launched by India in 2009, helps in monitoring the ocean surface winds data which is very useful.

(ii). Cooperation with international programs regarding the implementation of such systems

India Meteorological Department (IMD), Ministry of Earth Sciences, Govt. of India has mandate for track and intensity forecasts. IMD has active international collaborations and linkages with World Meteorological Organization (WMO) and other countries namely USA, Russian Federation, UK, Nepal, Bhutan, Sri Lanka, Maldives, Indonesia, Oman, etc. IMD also associated actively with South Asian

Association for Regional Cooperation (SAARC) Program and is a member of its Technical Committee on Science & Technology and Meteorology.

A public weather service (PWS) system has been set up in IMD with the collaboration of Meteo France International for automatic production of cyclone warning bulletins, graphical display of warnings and automatic warning dissemination to various users through different telecommunication channels. Under the Indo-French collaboration, MEGHA-TROPIQUE satellite, with capability of repeated scanning over the Bay Bengal region, has been launched recently. A technical and Scientific cooperation was also established between IMD, MoES and NESDIS, NOAA for INSAT 3D mission and its applications. Under this collaboration, a communication link was established for the exchange of INSAT satellite data & publicly available U.S. Earth observations, in operation since 1999. The establishment of the Indo-US Data Center at IMD, New Delhi has further enabled scientists to access data from India's Kalpana & INSAT satellites as well as U.S. Earth observation data & information.