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**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION**  
(of UNESCO)

**Seventeenth Session of the IOC Committee on International Oceanographic Data and Information  
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Paris, France, 3-7 March 2003**

**Reports on Activities of RNODCs**

**IODE RNODC REPORT FOR INDIAN OCEAN (RNODC-INDO)**

# IODE RNODC REPORT FOR INDIAN OCEAN

Version: 26 February 2003

## 1. Name of Data Centre:

Responsible National Oceanographic Data Centre for the Indian Ocean (RNODC-INDO).

## 2. RNODC Coordinator:

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## 3. Data Center Address:

Same as above

## 4. Data Center URL:

<http://www.indian-ocean.org/support/inodc/index.html>

## 5. IODE RNODC Designation Date:

January 1996

## 6. Brief History:

The RNODC-INDO proposal was approved by IOC/IODE Fifteenth Session held in Athens, Greece, 23-31 January 1996 (Ref. Resolution IODE - XV.I) and was established at the National Institute of Oceanography (NIO), Goa, India. Since then RNODC-INDO is working actively to enhance the oceanographic data / Information management activities in the region. The centre also actively disseminate the oceanographic data / information through the IOC/ IODE regional network

## 7. Roles and responsibilities of the Data Center:

The main objective of the RNODC-INDO is to strengthen the IODE system for the benefit of the member states of IOC. The centre is to play a regional role for improving the oceanographic data and information management activities and infrastructure specially in the developing countries. The terms of references of the centre for oceanographic data / information management are:

- Actively acquire, quality control and store in standard format the oceanographic data / information obtained from the declared National Oceanographic Programs (NOP), research programs and other ocean observational programs in the Indian Ocean (INDO);
- To provide data /information services to the user community;
- Co-operate closely with WDC'S, Oceanography and WDC, MGG sending shipments of complete data sets on magnetic media, inventories, data summaries and in other data products from the Indian Ocean (INDO) in accordance with IODE procedures;
- Maintain databases and inventories for Indian Ocean.;
- Exchange documentation and software regarding quality control and processing procedures with other RNODCs, WDCs and NODCs;
- Conduct formal or informal training sessions for data personals from the region;
- Work closely with the relevant IOC regional bodies IOCINDIO and IOCINCWIO in the execution of and support for regional programs;

Report regularly the progress of RNODC activities to the IOC Committee on IODE.

## 8. Description of data and information management coordination:

RNODC-INDO is working to improve oceanographic data and information services in the region. The centre is also helping IOC member states by providing training to the data personnel on oceanographic data / information management in the IOCINDIO region. The centre is working to enhance IOC regional capabilities to interpret and to use results from field experiments through participation in the IOC regional programs. The centre holds the oceanographic data sets for more than 70,000 stations collected from the Indian Ocean since 1906.

## **9. Data Center Projects and Activities during the Intersessional Period:**

The following projects on Data / Information Management were undertaken during the inter session period (2001-2002)

- a) To develop Marine Integrated Information System on the Indian Ocean (MIIS). This is collaborative work between RNODC-INDO and All-Russian Research Institute of Hydrometeorological Information-World Data Center (RIHMI-WDC-B), Obninsk, Russia. The first meeting for the project implementation was held in Goa, India during 3-10 Jan.2003.
- b) Indian National Center for Ocean Information Services (INCOIS) an autonomous body under Dept. of Ocean Development (DOD) was established in February 1999 with a mandate to synthesize, ocean observations, satellite oceanography, ocean information and advisory services. The centre is managing the projects on ocean modeling ,coastal research and Argo floats deployment etc.:

Eighteen workshops/Symposium, six training programs and seventeen meetings were organized / participated by NIO/ RNODC staff on different topics related to marine sciences during the period. These are as follows:

### **9.1 International Workshops / Symposium participated by NIO / RNODC:**

- Conference on the Geologic and Climate Evolution of the Arabian Sea Region .held in UK , 4-6 April 2001
- Workshop on Coupling of Winds, Waves and Currents in Coastal Oceanographic Models, held in USA, 6-11 April,2001
- Workshop on Ocean Fertilization ,held in USA, 23-26 April, 2001
- Workshop on Partnership for Observation of the Global Oceans (POGO) - Biology , held in UK 27 June- 1 July,2001
- Conference on Coastal Zone 2001 held in NOAA USA, 15-19 July,2001
- Workshop on topical mooring array of buoys along the equatorial in NOAA USA, 10-14 August, 2001
- Workshop on Coastal Biogeochemistry and Scaling held in USA 11-14 November,2001
- Conference on Estuarine Research Federation (ERF 01) & Global Sea grass Workshop held in USA, 11-14 November 2001
- Symposium on Ocean Atmosphere Coupled Dynamics in the Indian Ocean held in Japan, 12-22 December 2001.
- Workshop on the Feasibility Study for Establishing a regular process for the Assessment of the State of Marine Environment held in Germany,18-20 March,2002
- Conference on Indian Ocean GOOS held in Mauritius 1-8 November,2002 .
- Symposium on Techno-Ocean 2002 held in Japan, 20-22 November,2002 .
- Conference on the Colour of Ocean Data held in Belgium , 25-27 November,2002 .
- Conference on IOGOOS and Business development held in Mauritius, 3-6 November,2002
- Workshop on Assessment of Material Fluxes to Coastal Zones in South Asia and their impacts held in Sri Lanka, 9-11 December,2002 .
- Workshop on Global Ballast Water Management, Regional Replication held in Maldives, 25-29 December,2002
- To participate in Ocean Biogeochemistry and Ecosystems Analysis : Open Science Conference held in Paris France, 7-14 Jan.2003.

### **9.2 Training Provided by NIO/ RNODC:**

- Resource person for the Marine Information Management Training course for the ODINAFRICA centres. Cape Town, South Africa, 29 October - 9 November ,2001
- Training programme on Monitoring and Modelling of Coastal Marine processes (MAMCOMP) was held at Abu Dhabi UEA 3-8 November ,2001. Attended by 35 participants from 8 countries.
- IOC Mission to assist NODC, Sri Lanka, Colombo. In 4-10 November ,2001,
- Training on oceanographic data/ information management was provided by IODC to NODC Sri Lanka at NIO Goa India during April-May, , 2002.
- Training was provided to the scientists from Myanmar on oceanographic data / samples collection and analysis as a part of the India Myanmar Joint Oceanographic Studies 6-13 March,2002
- Training was provided On board Sagr Kanya to the scientists from Mauritius for the samples collection and analysis 6-29 November, 2002.

### **9.3 Organized / Participated in International Meeting:**

- IODE Steering Group for the Resource Kit held in Miami, Florida, USA 19-23 March, 2001
- 46th Session of the Marine Environment Protection Committee Held in UK 23-26 April, 2001
- Aquatic Science and Fisheries Abstracts (ASFA) Advisory Board Meeting held in France , 19-22 Jun,2001.
- 34<sup>th</sup> Session of the EC of IOC and the 21<sup>st</sup> Session of the IOC Assembly held in France 2-6 July,2001.
- Indian Ocean Argo Implementation meeting held at Hyderabad India, 26-27 July,2001
- Fifth Committee Meeting of the International Body Programme for the Indian Ocean (IBPIO) and seventeenth meeting of the Data Buoy Cooperation Panel (DBCP).held in Perth Australia, 18-26 October,2001
- Scientific Steering Committee Meeting of Surface Ocean Lower Atmosphere Study (SOLAS).held in USA, 14-17 December 2001,
- JGOFS (Joint Global Ocean Flux Study) Data Management Task Team Meeting held in USA, 26 January-3 February, 2002
- Ocean Research Working Group 120 on Marine Phytoplankton and Global Climate Regulation held in UK , 7-9 March,2002
- 4<sup>th</sup> meeting of international Argo Science held in Hobart ,Australia, 12-14 march,2002
- Group Meeting of APN supported Water Resources Project held in Bangladesh, 23-25 May 2002
- 35<sup>th</sup> Session of the Executive Council of the Intergovernmental Oceanographic Commission (IOC), UNESCO held in France 4-12 June,2002
- To participate in the Group of Experts in Marine Information Management Session VII held in France 23-26 October ,2002
- SCOR working group 118-Meeting held in South Africa, 28-31 October ,2002 .
- IGBP/SCOR Ocean Biogeochemistry and Ecosystems Transition Team Open Science Planning Committee Meeting held in Maryland USA ,13-16 November,2002.
- 2nd Scientific Steering Committee (SSC) meeting of Surface Ocean-Lower Atmosphere Study (SOLAS) held in France, 24-27 November, 2002..

### **9.4 Marine Information Management activities**

Marine information related activities at the National Information Centre for Marine Science (NICMAS) are as follows:

- The centre continued to provide information required by the specialists within India and abroad. The services like Document delivery, Literature search etc.
- The centre produced a database of literature on Indian Ocean (IndOcean: A database of abstracts) and is available on CD for a membership. The updates are available at yearly intervals (July). As of now, there are over 30000 items on IndOcean.
- The website on providing general information to the seekers on Indian Ocean (<http://www.indian-ocean.org>) was revamped for dynamic retrieval of data.
- The National Institute of Oceanography, where the NICMAS is located, is now a part of CSIR Consortium (The Council of Scientific and Industrial Research in India has 38 research

- laboratories for various disciplines). Electronic access to 1200+ ScienceDirect full-text STM journals became the reality in the year 2002.
- NICMAS continues to provide contributions to IOC's MIM activities by extending expertise and voluntary inputs. The centre also meets information requirements of ODINAFRICA countries keeping contact with Kenya as RDC.
  - Food and Agriculture Organisation of UN on behalf of ASFA Advisory Board contracted NICMAS for retrospective conversion of the ASFA print journal of the year 1972. The job was done within the timeframe and handed over. NICMAS had an experience of conversion of such data by first contract two years earlier for the print journal of the year 1974.
  - NICMAS volunteered 5 ODINAFRICA Information Centres (Kenya, Mauritania, Mauritius, Senegal, Seychelles) in conversion /testing feasibility of conversion of CDS/ISIS databases to Inmagic structure.
  - NICMAS provided inputs to the OceanTeacher (a educational website of IODE) on Marine Information Management topics.

#### **10. Data Center Products and Services Developed and/or Made Available during the Intersessional Period:**

Processed information / data are utilized to satisfy the oceanographic user society as per their requirements. We have supplied oceanographic data and data products to more than 120 users during the inter session period. These agencies are working in the fields such as research and development, educational, defense, industrial and data management sectors. During the inter session period, we have developed and updated thirteen databases on oceanographic parameters for the Arabian Sea, Bay of Bengal, Laccadive Sea, Andaman & Nicobar Seas and Indian Ocean region. We have exchanged the data / information under IODE network of NODCs, RNODCs and WDCs.

The following information /software products were developed by RODC.

- Biological Oceanographic Data CD for Indian Ocean (Test Version)
- Data Visualization software
- Biological Oceanographic Data Quality Control software

##### **10.1 Ocean observations and information services:**

- Drifting and moored data buoys were deployed in the Indian seas in shallow and deep waters
- Argo float was deployed in the Northern Indian ocean under the national Argo programme
- XBT observations were carried out along shipping route under ship of opportunity programs:
  - a) In Bay of Bengal region (Chennai - Calcutta),
  - b) Western Indian ocean (Chennai - Singapur)
  - c) Southern Indian ocean (Mumbai - Mauritius)
- 3 Current Meter Arrays were deployed at the locations 93E, 83E and 76E longitudes along the equator in the Indian Ocean
- 2 Sea truth campaigns for IRS-P4 sensors were carried out.

##### **10.2 Data Dissemination/ publications:**

- A total 120 data requests were handled during the year and the requested data were disseminated to users on computer media (floppies / CDs, email).
- Sarupria, J.S. and G.V. Reddy, 2001. An integrated marine data and information management system. Paper presented in the national workshop on Bay of Bengal Monsoon Experiment (BOBMEX) initial results held at NIO, Goa, 15-16 February 2001.
- Thadathil, P.,A.K.Ghosh,J.S.Sarupria ,V.V.Gopalakrishana, 2001:An interactive graphical system for XBT data quality control and visualization. *Computer & geosciences* 27(2001),867-876.
- Kunte P.D. and B.G.Wagle and Y. Sugimori 2001 Littoral transport studies along coast of India .A review *Indian Jr. of Mar. sci.* 30,57-64.
- Kunte P.D., B.G. Wagle 2001 .Spitbase of west coast of India :Potential Appraisal .*Giornale Di Geologia,Ser.3,62,3-10 ,Bilogna ,Italy*
- Kunte,P.D. 2001 .Databases in Encyclopedia of Coastal Science (Ed.) Maurice Schwartz, Pub.Kluwer Academic Publishers,USA

- Sarupria J.S. 2002 Progress reports on JGOFS (India) Oceanographic Data / Information Management, were presented in the JGOFS Data Management Task Team meeting held in US NODC Silver Spring USA 20-31 January, 2002.
- Thadathil, P., A. K. Saran, V. V. Gopalakrishna, P. Vethamony, A. Nilesh, and R. Bailey, 2002: XBT Fall Rate in Waters of Extreme Temperature: A Case Study in the Antarctic Ocean. J. Atmo. and Ocean. Tech., vol. 19, 391-396.
- Sarupria J.S. 2002 Report on IOC mission to Sri Lanka to assist the National Oceanographic Data Center of Sri Lanka (NODC-SL) and provided the training to staffs of NODC-SL .Nov.,2002
- Sarupria J.S. and P.M.A. Bhattathiri ,2002 A quality control system for biological oceanographic data in the Northern Indian Ocean.Paper presented in the international symposium on the colour of ocean data held 25-27 November,2002 in Brussels ,Belgium Abstracts pp.22
- Sarupria J.S. and P.M.A. Bhattathiri ,2002 An interactive hydrographic data visualization and retrieval system for the Indian Ocean.Paper presented in the international symposium on the colour of ocean data held 25-27 November,2002 in Brussels ,Belgium Abstracts pp.33

#### 11. List of activities that were undertaken during the Intersessional Period to promote IODE:

- Dr. Yutaka Nagata, Director, Marine Information Research Centre, Japan visited Indian Oceanographic Data Centre (IODC) from 9-10 January 2001 and discussed the oceanographic data quality control system developed by them.
- Dr.M.Shaimardanov, Mr.N.Mikhailov and Mr.a.Voronsov from RHIMI-WDC-B Obninsk visited rnodc-indo for the collaborative work for the development of integrated information system for the Indian Ocean during 3-10 January,2003.
- Participated in the IOC Mission to Sri Lanka to assist SL-NODC during 4-10 November,2001.
- NICMAS continues to provide contributions to IOC's MIM activities by extending expertise and voluntary inputs. The centre also meets information requirements of ODINAFRICA countries keeping contact with Kenya as RDC.
- As a part of the India Myanmar Joint Oceanographic Studies in the Andaman Sea under the "Aid to Myanmar" 6-13 March,2002.
- **To carry out "India-Myanmar joint Oceanographic Studies in the Andaman Sea 14 April-25 May 2002**
- MOU between JAMSTEC Japan and NIO for ocean research in the Indian Ocean.
- MOU between Portugal and India for the cooperation in the field of ocean science and technology
- To organized IO-GOOS cruise from Mauritius to India on board ORV Sagar Kanya 6-29 Nov.2002 Mauritius

#### 12. Future plans:

We propose to take the following major activities in next two years:

- To establish new DNA/ NODC in the developing countries in the region
- To develop meta data directory for the Indian Ocean.
- To enhance the oceanographic data/information net work in the region
- To participate in the national and international ocean observations programs in the Indian Ocean
- To develop value added oceanographic information products .
- To develop coastal oceanographic databases for the countries bordering Indian Ocean.

#### 13. Comments:

We suggest that IOC / IODE should provide substantial resources to take up a new project in the Indian Ocean region. We would propose end to end data management approach which involves major participants from India, South Africa, Australia and WDC-A & B for building up oceanographic databases for the Indian Ocean region. Also IOC must enhance the IODE network by establishing a new DNA / NODC in the Indian Ocean region.

[end]