INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

Seventeenth Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XVII)
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IODE NATIONAL REPORT FOR GREECE
1. **Name of Data Centre:** Hellenic National Oceanographic Data Centre - HNODC.

2. **National IODE Co-ordinator:**
   
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3. **Data Centre Address:** (As above)

4. **Data Centre URL:** [http://hnodc.ncmr.gr](http://hnodc.ncmr.gr)

5. **IODE Data Centre Designation Date:** 1986, NODC.

6. **Brief History:**

   The HNODC was established in 1986, in the frame of the cooperation of Greece with the Intergovernmental Oceanographic Commission (IOC) of UNESCO. A great progress in the development of the HNODC was noticed in the decade of ‘90s due to the participation of the Centre in several international data management projects, mainly funded by the European Union.

7. **Roles and Responsibilities of the Data Centre:**

   The HNODC is a national agency, part of the international network of national oceanographic data centres operating within the framework of the IOC’s Committee on International Oceanographic Data and Information Exchange (IODE). As part of its contribution to the network, HNODC participates in different elements of the IODE system, including acquiring, formatting, quality controlling, cataloguing, archiving, disseminating and exchanging of marine data and information. In addition, HNODC provides active support to scientists processing their data and carries out work in developing techniques for the processing, display and dissemination of oceanographic data, using computer technology.

8. **Description of national data and information management coordination:**

   The Hellenic National Oceanographic Data Centre (HNODC) operates within the framework of the National Centre for Marine Research (NCMR), in Athens. The latter is the leading marine research institute in Greece with a long experience in various fields of marine science and technology and important research activity. The NCMR, as well as, various other marine research laboratories (mainly university departments) participate in several national development programmes, as well as, in international research projects. Within the framework of these activities systematic multidisciplinary surveys are carried out in coastal and open sea waters (mainly of the Eastern Mediterranean Sea) and a large amount of a wide range of data types is collected. However, data are valuable not only to the primary users, responsible for its original collection but also to a wide range of secondary users. In this context, the Hellenic National Oceanographic Data Centre has been recognized as a national facility to acquire, process, store and disseminate the oceanographic data pertaining to Mediterranean and Black Seas. The geographic area of the HNODC’s interest is the overall Mediterranean Sea, including the Black Sea. However, its main interest is concentrated in the Eastern Mediterranean Sea and the Black Sea.
For data processing the HNODC uses modern computer technologies. In 2002 the HNODC upgraded its technical environment, which at present, consists of:

1. Hardware:
   - Hewllet Packard Itanium technology main server.
   - Hewllet Packard RISC /UNIX work stations.
   - PC Microcomputers.
   - Inkjet A0 Plotters.
   - Colour and laser printers.
   - All systems are connected to HNODC LAN and to Internet using T1 line.

2. Software:
   - ORACLE Relational DBMS.
   - PARADOX Relational DBMS.
   - ARC Info G.I.S.
   - MATLAB, AVS Visual Data Analysis Software.
   - C, C++ and FORTRAN 77 Compilers.

3. Services and security features available:
   - Currently all main Internet services (WWW, e-mail, FTP, etc) are installed as well as many security and network monitoring features (firewall, central antivirus protection etc).

The HNODC holds a great diversity of various data types. The majority of the data sets, are kept in MEDATLAS Format and have been subjected to quality control (using the SCOOP software developed by IFREMER/SISMER) prior to their organization in a database, using the relational database management system (RDBMS) ORACLE.

9. Data Centre Projects and Activities during the Intersessional Period:

During the intersessional period the HNODC was involved in several international projects and other activities related to ocean and marine data management issues. More specifically it participated/participated in the following projects:

   - EU MATER Project: Aim of the Project, which has been supported by the EU, was the study of Mass Transfer and Ecosystem Response issues of the Mediterranean Sea, through an interdisciplinary approach. It was implemented during the period 1996-2000 and gathered 58 research groups from 10 EU member states and three non-EU states. During the Project implementation, a total of 108 oceanographic cruises (representing more than 1000 days of ship-time) were carried out by 12 research vessels (coming from six different countries) and about 254 main scientific equipment were used. This resulted to the collection of a data set consisting of a large amount of a great diversity of various measured parameters. In the above Project a special Work-package was devoted to data management, in which, apart to the HNODC, participated the NODCs of France (co-ordinator of the Work-package) and Italy. The data management work of the Project was officially completed in 2002 with the development of the EU/MATER database. (http://www.ifremer.fr/sismer/program/mater; http://doga.ogs.trieste.it/mater/materhome.html; http://hnodc.ncmr.gr/programmes/mater/materhome.html)

   - EU/IOC MEDAR/MEDATLAS-II Project: Main aims of the Project were: (a) to extend the positive experience gained by the MEDATLAS Project, to the entire Mediterranean and Black Sea communities (b) to enlarge the Mediterranean data base including bio-chemical parameters, and (c) to improve the spatial and temporal resolution of the statistics by adding other data not yet included in the past programmes. In the Project participated NODCs from several countries of the Mediterranean Sea, such as, France (co-ordinator), Greece, Spain, Italy, Egypt, Cyprus, Croatia, Turkey Israel, Tunisia and Marine Laboratories from other countries of the Mediterranean Sea, such as, Lebanon, Algeria, Malta, Morocco. In this, also participate NODCs, Marine Institutes and research Groups from the Black Sea and EU, as well as, IOC, ICES and WDC-A. (advicor). The project, which was financially supported by
the European Union, was officially completed in 2002 with the development of the MEDATLAS-2002 database (http://www.ifremer.fr/sismer/program/medar).

- **EU EURONODIM Project**: Main aim of the project was to strengthen the quality and service of ocean and marine data and information management in Europe, through the development of various databases. In the Project, participated the NODCs of all the EU Member States, as well as, Marine Research and other specialized Institutes from EU Member States. The Project was officially completed in 2002 with the development of various metadata products (http://www.sea-search.net).

- **EU EDIOS Project**: Main aim of the project is to build a database (computerized directory) that will include information on all European ocean-observing sites/devices in routine and repeated operation and to use this directory to define the Initial European Ocean Observing System. The EDIOS (European Directory of Initial Observing System) Project, which is financially supported by the EU, started in October 2001. In this participate various IOC/IODE NODCs, such as those of Greece, France, Italy, UK, Germany, Sweden, Norway), as well as, Marine Institutes and University Departments of EU Member States (http://www.edios-project.de).

- **EU SEA-SEARCH Project**: Main objectives of the Project are: (i) to further develop and upgrade the EURONODIM network, (ii) to improve the exchange, availability and accessibility of ocean and marine data and information within Europe, including non-EU countries of Europe, (iii) to improve the transfer of knowledge, exchange of best practices and communications on ocean and marine data and information management in order to strengthen the overall performance of ocean and marine data and information management both on a national and international level in Europe, (iv) to stimulate the overall awareness of potential users of ocean and marine data and information, and (v) to enhance and improve the European competitiveness in the field of ocean and marine data management. In the SEA-SEARCH project, which is financially supported by the EU and started in December 2002, participate almost all the NODCs from the EU Member States, Mediterranean NODCs and Marine Institutes of non-EU countries, NODCs from the Black Sea, as well as, Marine Institutes from non-EU countries of Europe. (http://www.sea-search.net).

- **MEDBLACK-ODN**: Efforts are made by the NODCs of Greece, France, Russia and Italy for the development of a new Project proposal (Mediterranean and Black Sea Ocean Data Network). Main aim of the proposal is the development of an Internet accessible network of the Mediterranean and Black Sea countries for making available to the user community delayed mode and near real time oceanographic data. The overall effort is co-ordinated by the HNODC. The proposal will be submitted for funding to the EU either as a separate Project proposal under “Marine Infrastructure” of the EU/6FP or as major activity within the framework of a larger Project proposal under “Centres of Excellence” of the EU/6FP.

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

As of its participation in several international projects, the HNODC actively contributed to the development of various data products, the most important of which are:

- **The EU/MATER Database**: The database contains data sets collected within the framework of the EU research project MATER. It includes 3,141 CTD Profiles, 62 floating buoy time series, 1,727 bottle data, 13 thermistor time series, 359 ADCP vertical profiles, 110 sediment trap time series, 447 ADCP time series, 634 XBT profiles, 210 current time series, 70 sediment core data. The database is available to the user community, since 2002, through a CD-Rom derived by IFREMER/SISMER. The CD-Rom also includes software for visualization and extraction of the data.

- **The EURONODIM Metadatabases**: They include: (i) an upgraded European Directory of Marine Environmental Datasets, (ii) Directory of European Research Cruises, and (iii) European Directory of Marine Environmental Research Projects. These are available to the user community through www (http://www.sea-search.net).
− The MEDATLAS 2002 Database: This includes a large amount of a great diversity of fully quality controlled of historical data, plus climatological fields for the Mediterranean and Black Sea. The database, which consists also a valuable contribution to the IOC/IODE GODAR Project, is available to the user community through a set of four CD-Roms, derived by IFREMER/SISMER. The CD-Roms also include data qualification tool (QCMEDAR), data selection and visualization tool (SELMEDAR) and possibilities for extraction of observed or interpolated data at three export formats.

11. List of activities that were undertaken during the intersessional period to promote IODE:

During the intersessional period several other activities were undertaken by the HNODC, aiming at advancing international cooperation on ocean data management, strengthening the IOC/IODE network and thus promoting, directly or indirectly, the IODE objectives. The most important of these activities are:

− The HNODC provided short-term on-the-job training (17 October – 20 December 2001) to a young scientist (Dr Zurab Savaneli) from the DNA of Georgia, who was supported by IOC.

− The HNODC hosted two scientists from the Institute of Oceanology of Bulgaria (BNODC) who paid a two-weeks (05-18 March 2002) working visit to the HNODC in order to be acquainted with various elements of data management, which will assist them to further develop the Bulgarian national infrastructure for data management.

− The HNODC made a donation of used computer material (HP Server, Pendium PC, monitors, CD-rom drivers, keyboards, etc.) to the Institute of Oceanology of Bulgaria (BNODC), which will assist them to further develop the Bulgarian national infrastructure for data management.

− The HNODC organized the following international meetings on data management, during which participated representatives from a large number of NODCs:
  • “EU/SEA-SEARCH Project kick-off Meeting”, 04-06 November 2002, NCMR/HNODC Anavyssos, GREECE.
  • “EU/EDIOS Project IIIrd Partners Meeting”, 09-10 December 2002, NCMR/HNODC, Anavyssos, GREECE.

− Staff of the HNODC participated in several international meetings related to ocean data management, some of which are mentioned below:
  • “IInd EU/IOC MEDAR/MEDATLAS-II Workshop”, 12-15 December 2000, Nicosia, CYPRUS.
  • “EU/IOC MEDAR/MEDATLAS-II Final Workshop”, 10-14 December 2001, OGS, Trieste, ITALY.
  • “EU/EDIOS Project Workshop and IInd Partners Meeting”, 08-14 April 2002, OGS, Trieste, ITALY.
  • “The Colour of the Ocean Data”, International symposium on Oceanographic Data and Information Management with special attention to biological data, 25-27 November 2002, Brussels, BELGIUM.
  • “IInd EUROGOOS Conference, Building the European Capacity in Operational Oceanography”, 3-6 December 2002, Athens, GREECE.

− The Head of the HNODC as a member of the organizing Committee of two Scientific International Conferences for the Mediterranean and Black Sea, that is:

promoted, the organization of a special Session devoted to ocean data management issues, in both Conferences.

The HNODC staff contributed to the preparation of a cooperative (with other NODCs) scientific paper entitled:


which was published in an International Journal. The HNODC is also cooperating with other NODCs for the preparation of additional scientific papers, which will be published in International Journals.

12. Future Plans:

A further expansion of the HNODC activities is planned for the coming years. This will include the management of other data types (e.g., biological data, etc.). Efforts will also be made by the NODC to deal with the management of operational data.

13. Comments:

During the last decade, and especially during the intersessional period, was made very clear that regional programmes on data management as well as research programmes with a data management component, properly planned and implemented, enhance regional cooperation and advance greatly data management capabilities, necessary for the regional sustainable development and management. This is of particular interest to the countries of the Mediterranean and Black Sea, which are two interconnected basins, greatly influencing its other. In this context the NODCs of the above-mentioned regions will try their best in order to plan and implement new, advanced technology, scientific programmes on ocean data management, which will further strengthen the Mediterranean and Black Sea IOC/IODE-NODCs network.

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