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IODE NATIONAL REPORT FOR RUSSIAN FEDERATION
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1. **Name of Data Centre:**
   Oceanographic Data Centre of Research Institute of Hydrometeorological Information – World Data Centre (RIHMI-WDC), Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet), Russian Federation

2. **National IODE Coordinator:**
   Name: Nickolay Mikhailov
   Address: 6, Koroleva, Obninsk, Kaluga Region, 249035, Russia.
   Tel: +7 (08439) 74907
   Fax: +7 (095) 2555 22 25
   E-mail: nodc@meteo.ru

3. **Data Centre Address:**
   As above

4. **Data Centre URL:**
   [http://www.meteo.ru/nodc](http://www.meteo.ru/nodc)

5. **IODE Data Centre Designation Date:**
   1964

6. **Data Centre Description**
   The National Oceanographic Data Centre (NODC) of Russian Federation is a subdivision of RIHMI-WDC, functioning as one of the four centres of the Russian state system for acquisition, check, classification, storage and computer processing, and dissemination of marine data and information.

   Currently the Russian NODC consists of 3 laboratories with the following distribution of responsibility: data acquisition; data integration and databases support; data processing and analysis for science-practical aims. The total number of people on the staff of Russian NODC is 25 (including scientists, engineers and technicians). In addition to NODC several RIHMI-WDC divisions are involved in implementing the tasks of Russian NODC.

   Basic data management facilities of the Russian NODC:
   
   (i) PCs (Pentiums and other under Windows NT 4.0), the corporate and local network, GIS, the CD recording system, DBMS, the object-oriented instrumental software (Delphi, Java);

   (ii) the marine information- reference subsystem under Oracle DBMS to support oceanographic metadata management - ROSCOP forms, descriptions of cruise information, coastal stations data etc.;

   (iii) the specialized software for key-entry, primary processing, QC, reformating and preparing the oceanographic and marine hydrological data for long-term storage in the State holdings and loading under DBMS;

   (iv) the marine data management subsystem for integrated supporting of oceanographic and marine hydrological data, sampling, providing the characteristics of marine condition by computation and modelling, graphical and textual data and information viewing under DBMS Oracle and GIS ArcView.

   Oceanographic observations arrive to the Russian NODC in accordance with:

   (i) legal norms and agreements with marine agencies of Russia to forward oceanographic and hydrometeorological data to RNODC on a regular basis;
(ii) real time data exchange through GTS (BATHY, TESAC, BOUY messages);
(iii) international data exchange under the IODE system and international projects such as GTSSP, GODAR, GLOSS/PSMSL and other.

During 1964-2000 the Russian NODC accumulated oceanographic data from over 35,000 R/V cruises for 1890-2000 from 64 countries (including the former Soviet republics) - about 6,000,000 hydrological and hydrochemical profiles, 25,000 CTD profiles, 4,000 current meter series, 350,000 pollution records.

During the intersessional period the annual amount of the ocean data coming to the Russian NODC appeared to be as follows:

(i) data from 20-25 RV cruises coming with a 2-3 year delay;
(ii) data from more than 800 RV cruises for the historical period as the outcome of the national GODAR project implementation.

Russian NIODC also accumulates the time series of coastal marine hydrometeorological observations. By now the coastal marine hydrometeorological data set has been prepared, which includes more than 430 coastal and island stations for 1977-1992, more than 180 coastal and island stations for 1977-2002 and more than 25 stations for 1968-2002.

Data being accumulated are supported by the Russian NODC is the form of metadata bases and 8 sets of the observed, derived and calculated data. Data are held in the State Data Holding. Data sets loaded under Oracle DBMS are used most extensively.

The Russian NODC is actively involved in the international oceanographic data exchange. During 1964-2000 the Russian NODC submitted to WDCs more than 200,000 ocean stations, 400,000 BT and 5000 CTD profiles.

The Russian NODC coordinates the “Development of the Unified System of Information on the State of the World Ocean” subprogramme of the “World Ocean” Federal Purpose-Oriented Programme and provides the information assistance to marine institutions of Russia in the form of data and the results of their processing applied for the implementation of research programmes and practical tasks. In particular, in 2000-2002 72 various user requests were met, including the provision of information on the data availability and their space-time distribution, preparation of data samples and computation of climatic characteristics. The types of requests are as follows: information on the data availability - 29%, copying and sampling of data sets - 30%, computation of statistic characteristics- 16%, other types of requests -25%.

Users of the Russian NODC are the organisations of the Federal Service for Hydrometeorology and Environmental Monitoring, the Ministry of Defence, the Committee for Fishery, the Ministry of Transport, the Ministry of Natural Resources, the Russian Academy of Sciences, the Russian Space Agency, the State Committee for Cartography, stock companies and associations (GASPROM, ROSSH ELF) and etc.

7. Brief History of the Data Centre:

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>The Oceanographic Data Centre (Russian NODC) was established under the Main Directorate of Hydrometeorological Service of USSR.</td>
</tr>
<tr>
<td>1965</td>
<td>Russian NODC began to prepare the oceanographic cruise data set on punch cards. In 1965-1975 more than 12 mln punch cards were prepared. Data were used for the calculation of hydrological characteristics made with the help special mechanical devices.</td>
</tr>
<tr>
<td>1970-1980</td>
<td>The Russian NODC participates in GARP programme including such experiments as TROPEX-72, GATE, FGGE and others</td>
</tr>
<tr>
<td>1975</td>
<td>The Russian NODC produced the oceanographic data set on magnetic tapes of the second generation of the USSR mainframe computers (M-222, Minsk-32).</td>
</tr>
<tr>
<td>1977</td>
<td>The Russian NODC began the collection, primary processing and archival of coastal hydrometeorological data using punch tapes and frame computers of Minsk-32 type</td>
</tr>
<tr>
<td>1980</td>
<td>The Russian NODC produced the oceanographic cruise data set on magnetic tapes of the third generation of the USSR mainframe computers. The use of punch cards for ocean data</td>
</tr>
</tbody>
</table>
management was terminated.

1975-1980 The Russian NODC undertakes and carries out activities to collect and accumulate historical data of USSR Seas (a prototype of GODAR). In the course of 5 years more 11,000 R/V cruises data were collected and put on magnetic tapes.

1979-1983 The Russian NODC in collaboration with the Institute of Oceanology of the Academy of Science prepares a series of atlases on the temperature, salinity, density, sound velocity, conductivity and others parameters for the Pacific and Atlantic Oceans using the created data sets.

1981-1995 The Russian NODC in collaboration with the other marine organisations carries on activity to prepare atlases and books on marine hydrometeorological and hydrochemical conditions (USSR Seas project) using the created data sets.

1990 The Russian NODC produced the new version of the marine data sets: squared ocean data set (2 mln. of ocean stations and BT profiles); squared marine ship data set (20 mln. of observations); hydrometeorological data time series set for 430 coastal stations.

1992 Modern technology for the statistical analysis and obtaining of information products including grid point climatic characteristics was developed.

1993 Russian NODC along with other marine organisation of Russia began to participate in GODAR Project.

1995 PC ocean data sets and data collection and processing software were developed. The Russian NODC formulated the approach to use new information technologies for marine data management. The Internet, computer networks, GIS, a CD recording system, DBMS began to be applied by the centre.

1997-1998 Russian NODC participates in the preparation of the “World Ocean” Federal Purpose-Oriented Program including the “Development of the Unified System of Information on the state of the World Ocean” subprogram This program was adopted by the Russian Federation Government.

1997 Russian NODC along with other marine organisation of Russia developed the prototype of a specialised information system for information support of marine activities using computer networks, DBMS and GIS based on the information technology integration approach.

1998 The International Year of the Ocean. The Russian NODC hosts the IOC Training Course for trainers on Oceanographic Data Management and the International Conference “Expeditionary Research of the World Ocean and Oceanographic Information Resources - OIR-98”

1999-2002 The Russian NODC is actively involved in the “Development of the Unified System of Information on the State of the World Ocean” (ESIMO) subprogram of the “World Ocean” Program and becomes the main coordinator of the subprogram.

8. Roles and Responsibilities of the Data Centre:
The Russian NODC performs:

(i) acquisition, archiving, processing and disseminating of oceanographic (hydrology/hydrochemistry, pollution, BT, CTD, current, coastal stations, marine ship data) data from national and international sources; coordination of such activity in Russia;

(ii) monitoring of national data flows involved in the international exchange and participating in international programmes and projects. The Russian NODC takes responsibility to implement the oceanographic data management under the WDC-B;

(iii) development of technologies for data acquisition, processing, archiving and dissemination; development of data formats for computer-compatible media.

The Russian NODC is the coordinator of the “Development of the Unified System of Information on the State of the World Ocean” subprogramme of the “World Ocean” Programme including:

(i) planning and management of activities of more than 50 organisations of Russia involved in 58 projects of the subprogramme;
(ii) implementation of basic projects focused on development of major components of ESIMO.

9. Data Centre Products and Services Developed and/or Made Available During the Intersessional Period:

<table>
<thead>
<tr>
<th>Products</th>
<th>Output form</th>
<th>Source</th>
<th>Time schedule</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on R/V cruises and coastal stations</td>
<td>Computer inventory</td>
<td>Metadata base</td>
<td>On request</td>
<td>World ocean</td>
</tr>
<tr>
<td>Information on data sets, formats, software, marine organizations, experts and other metadata</td>
<td>Computer inventory</td>
<td><a href="http://www.oceaninfo.ru">http://www.oceaninfo.ru</a></td>
<td>As updated</td>
<td>World ocean</td>
</tr>
<tr>
<td>Codifiers and dictionaries</td>
<td>Computer inventory</td>
<td><a href="http://www.oceaninfo.ru">http://www.oceaninfo.ru</a></td>
<td>As updated</td>
<td>World ocean</td>
</tr>
<tr>
<td>ESIMO news</td>
<td>Computer publication</td>
<td><a href="http://www.oceaninfo.ru">http://www.oceaninfo.ru</a></td>
<td>4 times a year</td>
<td>World ocean</td>
</tr>
<tr>
<td>Space-time distribution of data, information on long-term time series</td>
<td>Computer maps</td>
<td>Database</td>
<td>4 times a year</td>
<td>World ocean</td>
</tr>
<tr>
<td>Legal and regulatory-methodical information</td>
<td>Computer inventory, text</td>
<td><a href="http://www.oceaninfo.ru">http://www.oceaninfo.ru</a></td>
<td>As updated</td>
<td>World ocean</td>
</tr>
<tr>
<td>Data transmitted by GTS</td>
<td>Data base</td>
<td>Data base</td>
<td>On request</td>
<td>World ocean and seas of Russia</td>
</tr>
<tr>
<td>Oceanographic and hydrometeorological data</td>
<td>Data base</td>
<td>Data base</td>
<td>On request</td>
<td>World ocean and seas of Russia</td>
</tr>
<tr>
<td>Statistical estimations of annual cycle and interannual variability, climatic characteristics fields of hydrometeorological and hydrochemical conditions</td>
<td>Data base</td>
<td>Data base</td>
<td>On request</td>
<td>North Atlantic, Barents, Norwegian, Greenland and Black Seas</td>
</tr>
<tr>
<td>A time series of mean monthly sea level for GLOSS stations</td>
<td>Figures</td>
<td>[<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc](<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc)</td>
<td>Monthly</td>
<td>Seas of Russia</td>
</tr>
<tr>
<td>Extreme water temperature and salinity at 0,100 and 500 m</td>
<td>Computer maps</td>
<td>[<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc](<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc)</td>
<td>As updated</td>
<td>North Atlantic</td>
</tr>
<tr>
<td>Descriptions of information resources of Russia, data and product samples, access to data</td>
<td>HTML/ASCII tables</td>
<td><a href="http://www.oceaninfo.ru">http://www.oceaninfo.ru</a></td>
<td>Monthly</td>
<td>World ocean</td>
</tr>
<tr>
<td>Formats for ocean data sets description and entry on technical media in the ESIMO centres</td>
<td>Computer inventory</td>
<td>[<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc](<a href="http://www.meteo.ru/no">http://www.meteo.ru/no</a> dc)</td>
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