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IODE

JODC
JAPAN OCEANOGRAPHIC DATA CENTER
since1965

RNODC ACTIVITY REPORT

Responsible National Oceanographic Data Center
for WESTPAC
for IGOSS
for MARPOLMON
for ADCP

No16
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JAPAN OCEANOGRAPHIC DATA CENTER
HYDROGRAPHIC & OCEANOGRAPHIC DEPARTMENT,
JAPAN COAST GUARD

Preface

First of all, as a member involved in oceanographic research activities, please allow me to express my deepest sympathy for the victims in the Sumatran Earthquake and Tsunami Disaster in the Indian Ocean occurred on 26 December 2004. Japan Oceanographic Data Center (JODC) does not deal with tsunami data directly, but data that are closely-related to it such as sea level. I hope our Oceanographic Data Center activities can deepen understanding of the sea and be helpful for mitigation of marine disasters.

This 16th RNODC Activity Report is a report on JODC's activity related to IOC/IODE in 2004. JODC plays as RNODC for WESTPAC and for specific items such as MARPOLMON and ADCP. We appreciate relevant organizations' contribution in sending us many data for international exchange and mutual utilization again this year.

As a special event in 2004, the 2nd GODAR-WESTPAC workshop was held under the auspices of Japan-UNESCO Funds in Trust and the Ship & Ocean Foundation, Japan. As you know, the purpose of GODAR is to locate and/or rescue oceanographic data unused in each oceanographic research organization or data storages. The social impacts of global climate/ocean change such as global warming and sea-level rise are recent concern. It is expected to clarify and verify realities of ocean change from the past to the present with oceanographic observation data obtained by GODAR. In the workshop held on 10 to 12 November 2004, with 17 participants from overseas and 120 participants from domestic, the keynote speeches on ocean change findings based on the oceanographic observation data and enthusiastic discussion were held for further activating of GODAR-WESTPAC. JODC will continue to promote those activities as the organizer of GODAR-WESTPAC. We request your continued cooperation.

March 2005
Minoru Odamaki, Dr.
Director of Japan Oceanographic Data Center

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ANNEXES

1. Topics in JODC

1.1. JODC Data On-line Service System(J-DOSS)

1.1.1. Update of the Data

The following are the data updated in 2004:

- **Tide Data**
  Data period: 2002 to 2003
- **Ocean Current Data (ADCP)**
  Data period: 1985 to 2003
- **Serial Station Data**
  - CTD
    Data period: 2002, 2004
  - XBT
    Data period: 2002 to 2004
  - XCTD
    Data period: 2002 to 2004
  - Antarctic Expedition Data
    Data period: 2002

1.1.2. Update of the Statistics of Water Temperature and Salinity

Statistics of Water Temperature and Salinity have been updated by using the data that JODC contained as of the year 2003. Its URL is http://www.jodc.go.jp/service.htm.

As before, the number of observations in each standard layer, mean value, standard deviation, and minimum and maximum values are displayed in each 1 degree mesh. Also available are vertical profiles in each mesh containing mean values and standard deviations. With these profiles, you can easily understand changes in the water temperature and salinity in different water depths. In addition, color-coded charts showing statistics of these water temperature and salinity have been published.

1.1.3. New Data Type

(1) Coastal Marine Meteorological Data

Japan Coast Guard provides the latest information on meteorological and oceanographic conditions, including regional winds, sea swells and waves observed by lighthouses built on capes around the country and other facilities, by radio, by phone services, or/and through websites of regional Coast Guard Offices, for ensuring maritime safety of vessels, safe operation of fishing vessels and safety of marine leisure in coastal waters.

JODC has already collected and digitized records of these meteorological and oceanographic observations and provided them for research institutes and other organizations which need these observation data. Furthermore, in September 2004 these data became available on the JODC Data On-line Service System (J-DOSS), as a new data type.

At present, the data provided by JODC include meteorological and oceanographic observations for every one-hour interval (for every 30-minute interval at some observation points) at 56 coastal observation points. The period of time covered by observations varies with observation points. One of the earliest observation data provided is those observed in 1974.

The data items provided include wind direction, wind speed, weather, atmospheric pressure, meteorological visibility, wave scales and swell scales.

To download these data, select "Coastal Marine Meteorological Data" on the top page of J-DOSS in Japanese (http://www.jodc.go.jp/service_j.htm). Then, the search engine page for coastal marine meteorological data appears. You can select an observation point of which data you need, either by choosing an observation point listed on the map or by choosing a name of place. You can then download data of each observation point for a one-year period as a CSV (Comma Separated Value) file.

JODC has analyzed statistics of these coastal marine meteorological data, and published findings from the analysis as "Statistical charts on waves in Japanese waters" data set. The data set allows you to search tables and charts containing monthly frequency of winds, waves and swells for each observation point.

(2) Sea surface water temperature measured at coastal sites

Until the year 2003, Geological Survey of Hokkaido had annually collected data on 10-day mean water temperature measured at Japanese coasts to prepare comparative tables for comparing and contrasting surface water temperature around the country, and published the findings in "Records of water temperature observed at Japanese coasts." The contents of the Records are also available on the website of Geological Survey of Hokkaido, at http://www.gsh.pref.hokkaido.jp/index.html.

In 2004, JODC took over the collection and compilation of these water temperature records. JODC started publishing these water temperature data in November 2004 on the website of J-DOSS at http://www.jodc.go.jp/service_j.htm. The website contains data as old as 2002.

To view these data on the website, first, select "Data of sea surface water temperature at coastal sites" on the top page. Then the data search page appears. On this search page, you can choose an observation point on the map or a name of place to see the data you want.

JODC collects daily temperature data. JODC publishes daily water temperature as well as 10-day mean water temperature that Geological Survey of Hokkaido had published. Both the daily water temperature data and the 10-day mean water temperature data can be downloaded as CSV files.

The data for the year 2002 published include water temperature observed at 109 observation sites around the country. Please note that measurement methods differ among observation sites. Among the water temperature contained in the data, some were measured at the sea surface and others at several meters below the surface. Some were measured with equipment and others observed with stick water temperature gauges. So please refer to "List of information on observing institutes" which contains their names, addresses and measurement methods they adopt.

1.1.4. Data Catalog of Serial Station Data

This data catalog provides the distributions of data available on J-DOSS. Its URL is http://www.jodc.go.jp/jdoss_stat/catalog-infor-sca_e.htm. The map of the serial station data distribution is shown by each data item, data file, and data classification, which covers the area around Japan or the world. The number of data in each grid is shown by integer or color scale.

The following items can be selected to the data distributions.

DATA FILE

ALL DATA:	All data available on J-DOSS
JODC:	The data collected from Japanese research institutes and processed by JODC
WOD:	The data observed by foreign institute which converted from World Ocean Database 1998.

DATA CLASSIFICATION

EACH INSTRUMENT: XBT, CTD, and so on.
EACH ITEM: Temperature, Salinity, and so on.

AREA
WORLD: 10 degree grid
AROUND JAPAN: 1 degree grid around Japan

TYPE OF IMAGE
STATION MAP: Observational sites are plotted.
NUMBER OF STATION(INTEGER): The number of data in grid.
NUMBER OF STATION(COLOR BAR): The number of data in grid by color scale.

1.2. New Publication of JODC

1.2.1. JGOFS North Pacific Process Study Data Set

JODC has published a DVD Dataset, "JGOFS North Pacific Process Study (NPPS) Data Set".

The Joint Global Ocean Flux Study (JGOFS) has been organized under the auspices of the International Council of Scientific Unions (ICSU) together with the Scientific Committee on Oceanic Research (SCOR). It became a Core Project of the International Geosphere-Biosphere Programme (IGBP) in 1990.

The North Pacific can be viewed as the largest global estuary in which a steep halocline at 100-120 m depth separates the surface from deeper waters. Nutrient concentrations in deep waters are the highest in the global ocean because it is the terminal region for the abyssal circulation. This setting provides a unique situation in the northern North Pacific where high concentrations of nutrients are located below the shallow halocline with very large concentration gradients with depth. This region is also known as a region of intense winter cooling due to air-sea interactions with the monsoonal wind, in that the winter cooling takes place to a greater extent in the western subarctic Pacific. The regional difference is also noted in the ecosystem structure in the eastern and western subarctic Pacific. It is well documented that the spring blooms, mainly consisting of diatoms, occur only in the western part of the subarctic Pacific. The intense air-sea interactions in winter causes CO_2 exchange that needs to be evaluated quantitatively in the context of the global carbon cycle.

Considering the above background, the North Pacific Process Study was carried out under the JGOFS mandate. Its intensive phase was from July 1998 through February 2000.

The purposes of this dataset are to collect the results of marine biogeochemical studies in the North Pacific and to make them available for the further study. This dataset was compiled under the supervision of the North Pacific Synthesis Group of JGOFS, in collaboration with the researchers involved in the related programs. In this context, this dataset contains not only the data from the JGOFS NPPS, but also the data from the other international research programs in the North Pacific and the data of the related national programs of Canada, Japan, Taiwan and USA. The data are recorded both in the original format of each program and in the ODV (Ocean Data View) spreadsheet. The total volume of the data contained in this dataset reaches 2GB.

1.2.2. The Ocean Data View User's Guide Version 2.0

In September 2003 JODC started to provide serial station data and ocean current data in ODV (Ocean Data View) spreadsheet. Ocean Data View is the visualization software developed by Alfred Wegener Institute (AWI) in Germany and widely used by ocean scientists in the world.

Because the Ocean Data View version was updated from 1.3a to 2.0 in April 2004, for the convenience of Japanese ODV users who would download data from the J-DOSS website, with the

approval of its producer, JODC translated “Ocean Data View Ver. 2.0 User’s Guide” into Japanese, in collaboration with Marine Information Research Center (MIRC) of Japan Hydrographic Association (JHA).

The Ocean Data View User’s Guide Ver. 2.0 in Japanese language on the JODC website has been available both in Adobe PDF format and Microsoft Word format, since August 2004.

(http://www.jodc.go.jp/jodc_pub/digitalpub.html)

1.2.3. Publishing of “Guide for Data Quality Control of Oceanic CO_2-Related Data”

To clarify how ocean absorbs and stores carbon dioxide from the atmosphere is one of critical issues in the prediction of future global climate change. However, scientists encounter some problems when they are to use Oceanic CO_2-Related Data. First, these data are not stored in one location. Instead, they are stored in a number of research organizations which originally obtained them. Second, the accuracy and certainty of these observation data may vary between past observations and present ones. This is because various methods have been developed and adopted to observe oceanic CO_2 related substances and they have become increasingly sophisticated year by year through technical innovation.

In fiscal 2001 Japan Oceanographic Data Center started carrying out the three-year research plan on quality control methods of Oceanic CO_2-Related Data in North Pacific. The Oceanic CO_2-Related Data in this research include data related to carbonic acid, such as data on total carbonic acid, alkalinity, pH, and partial pressure of carbon dioxide, as well as data on chlorophyll-a representing the biological activity which influences the CO_2 density distribution, dissolved oxygen data and data on nutrients which are closely related to the biological activity.

Based on results of this research, Dr. Sachiko Oguma and Dr. Toshihiro Usui of Graduate School of Environmental Earth Science, Hokkaido University summarized knowledge on the data quality control from researchers in Japan and produced “the guideline on data quality control” in Japanese language. JODC published the guideline as “Guide for Data Quality Control of Oceanic CO_2-Related Data,” JODC manual & guide series No.9, in September, 2004.

This guide describes how to manage quality of a massive amount of data stored in data centers and how to control data quality for each observation point so as to allow individual researchers to process these data. When utilizing 10-year-old data or older ones, you should get acquainted with the transition of analysis methods and data accuracy. Items to be described in metadata, which are essential for tracking the observation methods, are also proposed in this guide.

1.3. The 2nd International Workshop for the GODAR-WESTPAC

The IOC/IODE has established the Global Ocean Data Archaeology and Rescue (GODAR) project in 1993 in order to save oceanographic data from the risk of losing by degradation of recording media or disaster, etc., and also to increase the volume of historical data available to climate change study and other subjects. The large volume of data are collected through this project under the cooperation of IOC member states, and has been made available internationally, without restriction, via CD-ROM and online as the World Ocean Database by US-NODC/WDC for Oceanography, Silver Spring.

The GODAR project has achieved the great success since its establishment, but there is a large amount of data still in manuscript form in the WESTPAC region. Under such circumstances, the IOC organized the International Conference on the International Oceanographic Data and Information

Exchange in the Western Pacific 1999 (ICIWP'99) in collaboration with JODC and the Oceanographic Research Coordination Committee of Malaysia. It was held in Langkawi, Malaysia from 1st to 4th November, 1999. The Conference was aimed at bringing together scientists and data managers to discuss the many new challenges facing the International Oceanographic Data and Information Exchange (IODE) of IOC in the WESTPAC region and to identify measures for increasing the effectiveness of the system. This conference recommended that GODAR type project be developed in the WESTPAC region, on basis of the recognition that there are large amounts of oceanographic data still in a manuscript form, which are not open to scientists other than originator in the region.

And, the 16th Session of IOC/IODE, held in Lisbon, Portugal in November 2000, approved the GODAR project in the WESTPAC region (GODAR-WESTPAC) as a regional sub-project of GODAR.

In order to start the project and to establish cooperation between the member states and related organizations, JODC held the first International Workshop for the GODAR-WESTPAC at Japan Hydrographic Department in Tokyo, Japan from 5th to 7th March 2002 with support from the Ministry of Land Infrastructure and Transport in Japan. More than 40 persons from 12 WESTPAC member countries attended the workshop.

The workshop recognized again that it is very important to locate, rescue and make available marine data from the WESTPAC region that is in danger of being lost, and the workshop confirmed that the GODAR-WESTPAC would be promoted on the basis of the volunteer spirits in the same way as in the IODE system.

The work plan for the GODAR-WESTPAC was adopted by the workshop. The workshop decided that the project office would be established at JODC, and the second and final workshops would be held in 2004 and 2006, respectively. JODC established the GODAR-WESTPAC web site, as the project office. Its URL is http://www.jodc.go.jp/project/GODAR/.

The 2nd International Workshop for the GODAR-WESTPAC was held at Japan Hydrographic and Oceanographic Department in Tokyo, Japan from 10th to 12th November 2004, under the auspices of the Japan-UNESCO Funds in Trust and the Ship and Ocean Foundation Japan. It was attended by representatives of 11 WESTPAC member countries and international organizations, IOC, IOC/WESTPAC, PICES, SEAFDEC (cf. ANNEX I). We invited the representatives of Fiji, Philippines, and Thailand. But, unfortunately, the representative of Fiji could not attend the workshop for his illness, and Philippines and Thailand didn't accept our invitation.

At 10:00 am on 10th November 2004, the workshop was opened by Dr. Odamaki, the Director of JODC, and the opening addresses were made by Dr. Yashima, the Director-General of Japan Hydrographic and Oceanographic Department, and Dr. Fortes, the Head of IOC/WESTPAC office.

After the opening addresses, the keynote presentations concerning IOC/IODE were given by Mr. Pissierssens, the Head of Ocean Service, IOC, and Dr. Rickards, the Chair of IOC/IODE. Mr. Pissierssens focused on the present activities of IODE and Dr. Rickards presented the perspective of the future IODE. Dr. Nojiri gave the keynote lecture concerning recent global ocean carbon observations and their scientific result, and another keynote lecture was given by Dr. Suga, concerning the study of upper ocean water properties in the Pacific and its relation to the climate change. Both stressed the importance of historic oceanographic data and its management. Mr. Levitus, the GODAR project leader, presented the time series of global heat content, which is one of scientific results made possible by the large amount of ocean station data collected from the world through the

GODAR project (cf. ANNEX II).

On the second day, 11th November 2004, national activities on GODAR, data management and archive, and/or marine research were presented by representative of WESTPAC member countries. Mr. Reed of Australia presented an Australian new governmental approach to ocean data management, the Australian Ocean Data Centre Joint Facility (AODCJF), which is a joint venture between six Australian government marine data agencies. Mr. Sato of JODC presented several kinds of data rescue activities at JODC, such as digitizing hydrographic observation data by Japanese Navy before World War II, historic tide data around Japan, and etc. Mr. Levitus presented the activities on historical data rescue in USA. Some representatives explained the difficulty to internationally exchange the data observed within territorial seas and EEZ areas due to the national legislation.

In addition, Japanese activities related to GODAR-WESTPAC were presented by three Japanese organizations, Fisheries Research Agency, Japan Meteorological Agency, and Japan Agency for Marine-Earth Science and Technology.

On the final day, 12th November 2004, the workshop reviewed the progress of GODAR-WESTPAC and discussed the problems that the WESTPAC member countries faced and recommended several actions to promote the project in the future.

Several participants noted that a lot of work still needs to be done in terms of digitizing historical data records and that sufficient resources are not always available. In addition national policies make international exchange of the digitized records difficult in a number of cases, and a lot of marine researchers don't like to make the data observed by themselves available to the public.

The workshop recommended the following actions:

- activate the GODAR-WESTPAC Steering Group;
- prepare a detailed quantitative report on national data rescue progress;
- identify data sets in the World Ocean Database (WODB) relevant to the WESTPAC region and collate these on a CD or DVD for distribution in the region;
- locate historical data sampled in WESTPAC waters by non-WESTPAC countries and invite these countries to make them available to WESTPAC (may require GODAR digitization);
- remind IOC Member States organizing research cruises in the region of the requirement to make collected data available to the coastal countries in whose EEZ they collected the data;
- ensure the availability of rescued data as soon as possible (ie prior to the end of the GODAR-WESTPAC project);
- for the IODE national coordinators in the region (and other GODAR-WESTPAC national coordinators) to actively promote IODE and GODAR-WESTPAC at the level of individual scientists and institutions in the WESTPAC region;
- prepare promotional material on GODAR-WESTPAC clearly explaining the benefits of large, long-term oceanographic data holdings for science and society, for distribution to scientists and policy makers in the region;
- for the project leader to investigate to create a "WESTPAC view" of WODB data to clearly identify the available data and progress of the GODAR-WESTPAC project;
- for the project leader to investigate the possibility to obtain NOAA project-based funding for the digitization of large amounts of historical data as relevant to GODAR-WESTPAC;
- for the IOC Secretariat to issue a Circular Letter to WESTPAC Member States recalling their attention to the GODAR-WESTPAC and to ask them to reinforce their support for the project. The Letter should include a clear description of the project highlighting its benefits for science and society, and, in annex, a copy of the IOC oceanographic data exchange policy, a short report on progress of the project and related promotional material;

1.4. The 33rd session of Japanese National Group for Oceanographic Data and Information Exchange

Japanese National Group for Oceanographic Data and Information Exchange was established in 1972, with the approval of the Sub-committee for Oceanography, Natural Sciences Committee of Japanese National Commission for UNESCO, for reporting and reviewing issues related to IODE (International Oceanographic Data and Information Exchange), which is promoted by IOC. Since then, JODC has organized this group.

The 33rd session was held on March 8, 2004 at Hydrographic and Oceanographic Department of Japan Coast Guard.

[Attending organizations] (Listed in random order)

Secretariat of Japanese National Commission for UNESCO, Maritime Self Defense Force, Resources Enhancement Promotion Department of Fisheries Agency, Natural Resources and Fuel Department of Agency for Natural Resources and Energy, Global Environment Bureau of Ministry of the Environment, Environmental Management Bureau of Ministry of the Environment, Ports and Harbors Bureau of Ministry of Land, Infrastructure and Transport, Policy Bureau of Ministry of Land, Infrastructure and Transport, Climate and Marine Department of Japan Meteorological Agency, Fisheries Research Agency, National Institute of Advanced Industrial Science and Technology, National Institute for Environmental Studies, Ocean Research Institute of the University of Tokyo, Japan Agency for Marine-Earth Science and Technology, Japan Fisheries Resource Conservation Association, Northwest Pacific Region Environmental Cooperation Center, Japan Hydrographic Association, Japan Marine Surveys Association, Hydrographic and Oceanographic Department of Japan Coast Guard, Japan Oceanographic Data Center (JODC)

(1) Reports of JODC

JODC presented the following reports.

(a) JODC Activity Report for 2003

The report referred to the fact that JODC started providing data and information from J-DOSS (JODC Data On-line Service System) in the ODV spreadsheet and the NetCDF format as well as in JODC standard format. The report also referred to oceanographic data provided from various organizations and those received by JODC during the year 2003.

(b) Recent developments in IOC/IODE

The 22nd Session of the Intergovernmental Oceanographic Commission (IOC) of UNESCO took place at UNESCO Headquarter in Paris in June, 2003. It was reported, in this session IOC adopted the Oceanographic Data Exchange Policy, and it was agreed that IODE Project Office to be established in Oostende, Belgium. In addition, it was also decided to establish IODE Review Team in October 2003. This team was tasked to review the roles of data centers and the scheme of managing and disseminating data and information, and will present the final report to the IOC Assembly in April 2005.

(c) International Workshops for GODAR-WESTPAC (Global Ocean Data Archaeology & Rescue project in the Western Pacific region) project

In accordance with the outline of the first International Workshop for GODAR-WESTPAC taking place in March, 2002 and work plans adopted there, it was decided that the second international workshop for GODAR-WESTPAC would be held at JODC in November 2004.

(2) Reports of attending organizations

The attending organizations presented 8 reports on their activities, including the introduction of their oceanographic data management and information provision.

(a) Present situation of real-time oceanographic data exchange
【Climate and Marine Department of Japan Meteorological Agency】
(b) Publication of NOWPHAS：Nationwide Ocean Wave information network for Ports and Harbors
【Ports and Harbors Bureau of Ministry of Land, Infrastructure and Transport】
(c) NOWPAP（Northwest Pacific Action Plan）
【Northwest Pacific Region Environmental Cooperation Center】
(d) Establishment of Technical Support Office
【Ocean Research Institute, The University of Tokyo】
(e) Present situation of information on marine geology provided by Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology
【National Institute of Advanced Industrial Science and Technology】
(f) CGER's Meteorological Data Explorer (METEX)
【National Institute for Environmental Studies】
(g) Approaches for the regeneration of Tokyo Bay
【Hydrographic and Oceanographic Department of Japan Coast Guard】
(h) Provision of aerial photographs on the web
【Hydrographic and Oceanographic Department of Japan Coast Guard】

2. International Projects / Meetings Participated in by JODC

2.1. The First CLIVAR Data Planning Meeting, focussing on Ocean Observation

The First CLIVAR Data Planning Meeting was held at Scripps Institute of Oceanography from 24th to 26th March 2004 and was co-chaired by the director of US CLIVAR, Dr. David Legler, and the co-chair of the CLIVAR Global Synthesis and Observations Panel (GSOP), Dr. Dean Roemmich. It was attended by 28 scientists and data managers from Australia, Canada, France, Germany, Japan, UK, and USA. A member of JODC attended the meeting as the representative of a Co-DAC (Data Assembly Center) of the Shipboard Acoustic Doppler Current Profiler.

The objectives of the meeting are:

(1) Articulate the needs/requirements of CLIVAR science for provision of ocean observation data (what, when, and how observations data should be provided?).
(2) Assess current status of CLIVAR DACs and their data management activities through input from DAC representatives.
(3) Provide an overview of other plans and developing activities that can contribute towards meeting CLIVAR's needs.
(4) Identify gaps between capabilities and abilities of existing data structures (DACs) to meet CLIVAR science requirements. What follow-up activities can be undertaken to address these gaps?

In order to articulate the requirements of CLIVAR data, at first, presentations were made by the data liaisons of the CLIVAR Basin panels, Atlantic, Pacific, Indian Ocean, and Southern Ocean. In addition, presentations on data requirements were given from the views of data assimilation and real time ocean forecasting. Second, CLIVAR DACs gave presentations on the present statuses of CLIVAR data management, data quality control, and data streams. Following these presentations, more than twenty action items were adopted by the meeting concerning CLIVAR data requirements, integration data streams, and products and value added summaries. It was agreed that any further coordinated efforts tracking CLIVAR data, assessing the progress of DACs, and integrating data important for CLIVAR, would require the managers of the CLIVAR DACs to meet.

The detail of the meeting is shown on the CLIVAR web site, http://www.clivar.org/data/index.htm. And, the action items are shown on http://www.clivar.org/organization/gsop/implementation/ocean_obs/Meeting_info/DPM1_ACTIONS.pdf.

2.2. The 6th International IOC/WESTPAC Scientific Symposium

The International IOC/WESTPAC Scientific Symposium is an activity of WESTPAC (IOC Sub-Commission for the Western Pacific), a regional committee of IOC (Intergovernmental Oceanographic Commission) of UNESCO. This symposium has been hosted by a WESTPAC member state once every three years. The last symposium, the fifth International IOC/WESTPAC Scientific Symposium was held in Seoul, Korea and the fourth symposium was held in Okinawa, Japan. The objective of the International IOC/WESTPAC Scientific Symposium is to develop new international cooperation on oceanographic research, by presenting various oceanographic studies and internationally sharing research information. In this way, the symposium aims for the promotion of international cooperative oceanographic research in the Western Pacific, which is the mission of WESTPAC.

The 6th International IOC/WESTPAC Scientific Symposium was hosted by State Oceanic Administration of the People's Republic of China, and took place at Dragon Hotel in Hangzhou city, China from April 19 to April 23. Around 190 oceanographic scientists from 19 countries and regions attended the symposium. More than 150 research presentations were made at 15 sessions. On the first day of the symposium, five keynote speeches by Dr. Patricio Bernal, Executive Secretary of IOC, Prof. Yanagi of Ehime University and others followed the opening ceremony in the main conference hall, after a long speech of the deputy mayor of Hangzhou city and other speeches.

From the afternoon of 19th, a number of sessions on were held in conference rooms in the hotel, “Western Pacific boundary currents and the Pacific-Indian Ocean Throughflow”, “Hot Spots of Marine Bio-diversity in the western Pacific Ocean”, “The scientific basis for marine assessment and coastal management”, and other themes.

A symposium session on NEAR-GOOS (North-East Asia Regional - Global Ocean Observing System) took place on April 20, and the workshop on the development of data and products in operational oceanography was held on April 21 and 22. In these session and workshop, a number of reports and research presentations were made. At the workshop, JODC presented the current status of operation and usage of NEAR-GOOS Regional Delayed Mode Database (RDMDB), and asked for the provision of oceanographic data for RDMDB.

A number of proposals on future activities of NEAR-GOOS were presented at the three-day long session on NEAR-GOOS. NEAR-GOOS, which has already established the mechanism for data flow, intends to expand its activities in the second phase. So, to put these proposals into action, it was decided to set up working groups to address the following four issues:

1) Coordination of hydrographic observation timings by research vessels of member countries.
2) Observation by drifting buoys
3) Satellite data products
4) Data management

3. RNODC's Activities under the Charge of the JODC

3.1. RNODC for WESTPAC

3.1.1. Status of CSR and Data Management

The major activities of JODC are the collection and archiving of CSR (Cruise Summary Report of IODE, ROSCOP's third edition), and data from the beginning of the WESTPAC program in 1979.

The terms of reference for RNODC-WESTPAC are shown in Annex III.

The CSRs received by JODC in 2004 are shown in Table 1.

Number of Archived Data in the WEATPAC region is shown in Table 2.

The WESTPAC region was referred as from 100 to 180 degree of longitude for the North Hemisphere and the area enclosed by from 110 to 230 degree of longitude and from 0 to 30 degree of latitude in the South Hemisphere, here.

Table 1 Inventory of CSR Received by JODC in 2004

AGENCY	SHIP	AREA	PERIOD	DATA TYPE
AEI,NFRDI	TAMGU 10	Japan Sea	2003/02/12～2003/02/14	G,H,P
AEI,NFRDI	TAMGU 10	Yellow Sea	2003/05/13～2003/05/15	H,P
AEI,NFRDI	TAMGU 10	Japan Sea	2003/08/05～2003/08/07	H,P
AEI,NFRDI	TAMGU 10	Yellow Sea	2003/11/13～2003/11/15	
CMD,JMA	KEIFU MARU	Philippine Sea	2002/09/06～2002/09/10	D,G,H,M
CU	TANSEI MARU	Japan Sea	2002/11/09～2002/11/20	
FF,NU	NAGASAKI MARU	East China Sea	2004/04/02～2004/04/14	B,H
FF,NU	NAGASAKI MARU	East China Sea	2004/04/19～2004/04/23	B,H
FF,NU	KAKUYO MARU	East China Sea	2004/05/20～2004/05/25	H,B
FF,NU	NAGASAKI MARU	East China Sea	2004/06/17～2004/06/26	B,D,H
FF,NU	KAKUYO MARU	East China Sea	2004/07/09～2004/07/20	B
FF,NU	NAGASAKI MARU	East China Sea	2004/09/13～2004/10/03	B,H
FF,NU	NAGASAKI MARU	East China Sea	2004/10/15～2004/10/17	B,G,H
FF,NU	NAGASAKI MARU	East China Sea	2004/11/05～2004/11/10	B
FRRMD,NFRDI	TAMGU 1	Yellow Sea, Japan Sea	2003/03/19～2003/04/10	B,H
FRRMD,NFRDI	TAMGU 3	Yellow Sea, Japan Sea	2003/11/21～2003/12/06	
GSES,NagoyaU	TANSEI MARU	Philippine Sea	2001/12/04～2001/12/12	
GSES,NagoyaU	TANSEI MARU	Philippine Sea	2004/03/11～2004/03/17	
GSJ,AIST	HAKUREI MARU No.2	Pacific Ocean	2003/05/29～2003/06/27	B,G
GSS,UT	TANSEI MARU	North Pacific Ocean	2003/04/03～2003/04/09	B,G
HyARC,NagoyaU	TANSEI MARU	Philippine Sea	2000/09/15～2000/09/22	
HyARC,NagoyaU	TANSEI MARU	Philippine Sea	2002/06/02～2002/06/07	
HyARC,NagoyaU	TANSEI MARU	Philippine Sea	2002/08/30～2002/09/04	
HyARC,NagoyaU	TANSEI MARU	Philippine Sea	2003/05/22～2003/05/27	
HyARC,NagoyaU	TANSEI MARU	Philippine Sea	2003/08/30～2003/09/04	
HMO,JMA	KOFU MARU	North Pacific Ocean, Japan Sea	2004/01/17～2004/03/04	B,D,H,M,P
HMO,JMA	KOFU MARU	North Pacific Ocean	2004/04/21～2004/06/01	B,D,H,M,P
HOD,JCG	MEIYO	North Pacific Ocean	2003/04/17～2003/04/25	
HOD,JCG	MEIYO	North Pacific Ocean	2003/05/25～2003/06/13	
HOD,JCG	KAIYO	North Pacific Ocean	2003/07/10～2003/07/28	
HOD,JCG	KAIYO	North Pacific Ocean	2003/08/05～2003/08/12	
HOD,JCG	KAIYO	North Pacific Ocean	2003/08/20～2003/08/28	
HOD,JCG	KAIYO	North Pacific Ocean	2003/09/07～2003/09/26	
HOD,JCG	SHOYO	Philippine Sea	2003/10/08～2003/10/24	

AGENCY	SHIP	AREA	PERIOD	DATA TYPE
HOD,JCG	KAIYO	North Pacific Ocean	2003/10/09〜2003/10/28	
HOD,JCG	SHOYO	North Pacific Ocean	2003/11/06〜2003/11/26	
HOD,JCG	MEIYO	North Pacific Ocean	2003/11/20〜2003/11/28	
HOD,JCG	TAKUYO	North Pacific Ocean	2003/11/25〜2003/12/15	
HOD,JCG	SHOYO	Philippine Sea	2003/12/08〜2003/12/19	
HOD,JCG	MEIYO	North Pacific Ocean	2004/01/09〜2004/01/16	
HOD,JCG	TAKUYO	North Pacific Ocean	2004/01/09〜2004/01/29	
HOD,JCG	KAIYO	North Pacific Ocean	2004/02/12〜2004/02/20	
HOD,JCG	SHOYO	North Pacific Ocean	2004/02/16〜2004/03/09	
HOD,JCG	TAKUYO	North Pacific Ocean, Philippine Sea	2004/02/17〜2004/03/15	D,H
HOD,JCG	TAKUYO	Philippine Sea	2004/04/21〜2004/05/10	
HOD,JCG	SHOYO	Philippine Sea	2004/04/21〜2004/05/12	
HOD,JCG	KAIYO	North Pacific Ocean	2004/04/22〜2004/05/09	
HOD,JCG	SHOYO	Philippine Sea	2004/05/25〜2004/06/15	
HOD,JCG	TAKUYO	Philippine Sea	2004/05/28〜2004/06/17	
HOD,JCG	KAIYO	Philippine Sea	2004/06/02〜2004/06/11	
HOD,JCG	MEIYO	Philippine Sea	2004/06/30〜2004/07/17	
HOD,JCG	SHOYO	Philippine Sea	2004/07/05〜2004/07/28	
HOD,JCG	KAIYO	Philippine Sea	2004/08/02〜2004/08/10	
HOD,JCG	TAKUYO	Philippine Sea	2004/08/05〜2004/08/23	
HOD,JCG	MEIYO	North Pacific Ocean	2004/08/16〜2004/09/04	
HOD,JCG	TAKUYO	Philippine Sea	2004/09/09〜2004/09/28	
HOD,JCG	KAIYO	Philippine Sea	2004/09/18〜2004/09/27	
HOD,JCG	MEIYO	North Pacific Ocean	2004/10/07〜2004/10/27	
HOD,JCG	MEIYO	Japan Sea	2004/11/10〜2004/12/01	
HTU	BOSEI MARU	Japan Sea	2003/07/09〜2003/07/16	H
ISV,FS,KU	NAGASAKI MARU	Philippine Sea	2004/07/20〜2004/07/27	
KIGAM	TAMHAE 2	Yellow Sea	2003/03/15〜2003/04/10	G
KIGAM	TAMHAE 2	Japan Sea	2003/04/25〜2003/05/15	G
KMO,JMA	KEIFU MARU	North Pacific Ocean	1999/05/06〜1999/06/18	
KMO,JMA	KEIFU MARU	North Pacific Ocean	2001/05/09〜2001/06/18	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2001/07/10〜2001/08/10	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	Philippine Sea	2001/09/10〜2001/09/20	D,G,H,M
KMO,JMA	KEIFU MARU	North Pacific Ocean	2001/11/07〜2001/12/11	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2002/01/17〜2002/03/06	D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2002/04/26〜2002/06/08	B,D,G,H,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2002/06/25〜2002/08/01	B,D,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2002/10/31〜2002/12/04	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean, Philippine Sea	2003/01/15〜2003/03/07	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean, Philippine Sea	2003/04/22〜2003/05/21	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2003/06/25〜2003/08/22	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	Philippine Sea	2003/09/25〜2003/09/30	D,G,H,M
KMO,JMA	KEIFU MARU	North Pacific Ocean	2003/10/28〜2003/11/30	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	Philippine Sea	2003/12/03〜2003/12/07	D,G,H,M
KMO,JMA	KEIFU MARU	North Pacific Ocean	2004/01/20〜2004/03/01	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2004/04/21〜2004/05/25	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2004/06/16〜2004/08/13	B,D,G,H,M,P
KMO,JMA	KEIFU MARU	North Pacific Ocean	2004/11/01〜2004/11/10	B,D,G,H,M,P
KORDI		South Pacific Ocean	2003/02/11〜2003/02/18	B
KORDI	EARDO	Yellow Sea	2003/02/15〜2003/02/18	B,D,H,M

AGENCY	SHIP	AREA	PERIOD	DATA TYPE
KORDI		Japan Sea	2003/03/05～2003/03/06	B,D,G,H
KORDI	EARDO	Japan Sea	2003/04/01～2003/05/23	G
KORDI		Yellow Sea	2003/04/04～2003/04/10	G
KORDI	ONNURI	Japan Sea	2003/04/04～2003/04/14	G,P
KORDI	EARDO	Yellow Sea	2003/04/26～2003/05/06	G
KORDI		Yellow Sea	2003/05/18～2003/05/18	D
KORDI		Japan Sea	2003/05/26～2003/05/31	B
KORDI		Japan Sea	2003/05/27～2003/05/27	B
KORDI		Japan Sea	2003/06/24～2003/06/25	B,D,G,H
KORDI	EARDO	Yellow Sea	2003/06/24～2003/06/27	B,G,H,P
KORDI	EARDO	East China Sea	2003/08/26～2003/09/02	B,H,P
KORDI	ONNURI	North Pacific Ocean, Philippine Sea	2003/09/18～2003/09/25	G
KORDI		South Pacific Ocean	2003/09/29～2003/10/08	B
KORDI	ONNURI	East China Sea	2003/10/01～2003/10/02	D,H
KORDI		Yellow Sea	2003/10/21～2003/10/27	G
KORDI		Japan Sea	2003/11/11～2003/11/12	P
KORDI	YUZHMORGEOLOGIYA	South Atlantic Ocean	2003/11/21～2004/01/02	B,G,H,P
KORDI		Japan Sea	2003/11/29～2003/11/29	D
KORDI		Japan Sea	2003/12/04～2003/12/04	B
KU	NAGASAKI MARU	Philippine Sea	2004/05/07～2004/05/13	G
MEND,NFRDI	TAMGU 7	Japan Sea	2003/02/04～2003/02/09	G,H,P
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/02/16～2003/02/18	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/03/15～2003/03/17	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/04/19～2003/04/21	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/05/17～2003/05/19	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/06/14～2003/06/16	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/07/19～2003/07/21	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/08/06～2003/08/08	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/09/19～2003/09/21	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/10/18～2003/10/20	B,H
MHOD,NFRDI	TAMGU 17	Japan Sea	2003/11/15～2003/11/17	B,H
NFRDI	TAMGU 11	Japan Sea	2003/02/04～2003/02/08	G,H,P
NFRDI	TAMGU 2	Yellow Sea	2003/02/05～2003/02/13	G,H,P
NFRDI	TAMGU 15	Yellow Sea	2003/02/06～2003/02/09	G,H,P
NFRDI	TAMGU 9	Japan Sea	2003/02/11～2003/02/14	G,H,P
NFRDI	TAMGU 6	Japan Sea	2003/02/13～2003/02/15	G,H,P
NFRDI	TAMGU 6	Japan Sea	2003/02/15～2003/02/18	G,H,P
NFRDI	TAMGU 15	Yellow Sea	2003/05/05～2003/05/08	H,P
NFRDI	TAMGU 2	Yellow Sea	2003/05/06～2003/05/12	H,P
NFRDI	TAMGU 6	Japan Sea	2003/05/12～2003/05/13	H,P
NFRDI	TAMGU 9	Japan Sea	2003/05/12～2003/05/15	H,P
NFRDI	TAMGU 7	Japan Sea	2003/05/12～2003/05/17	G,H,P
NFRDI	TAMGU 6	Japan Sea	2003/05/13～2003/05/16	H,P
NFRDI	TAMGU 11	Japan Sea	2003/05/14～2003/05/18	H,P
NFRDI	TAMGU 7	Japan Sea	2003/08/04～2003/08/09	G,H,P
NFRDI	TAMGU 9	Japan Sea	2003/08/04～2003/08/09	H,P
NFRDI	TAMGU 11	Japan Sea	2003/08/05～2003/08/09	G,H,P
NFRDI	TAMGU 15	Yellow Sea	2003/08/06～2003/08/10	
NFRDI	TAMGU 2	Yellow Sea	2003/08/08～2003/08/14	H,P
NFRDI	TAMGU 6	Japan Sea	2003/08/09～2003/08/16	

AGENCY	SHIP	AREA	PERIOD	DATA TYPE
NFRDI	TAMGU 6	Japan Sea	2003/08/11～2003/08/13	H,P
NFRDI	TAMGU 5	Japan Sea	2003/10/08～2003/10/19	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2003/10/09～2003/10/18	B,D,H,M
NFRDI	TAMGU 8	Yellow Sea	2003/10/16～2003/10/31	B,D,H,M
NFRDI	TAMGU 6	Japan Sea	2003/11/03～2003/11/04	H,P
NFRDI	TAMGU 15	Yellow Sea	2003/11/04～2003/11/06	H,P
NFRDI	TAMGU 3	East China Sea	2003/11/05～2003/11/16	B,H,M
NFRDI	TAMGU 7	Japan Sea	2003/11/10～2003/11/22	G,H,P
NFRDI	TAMGU 11	Japan Sea	2003/11/11～2003/11/15	H,P
NFRDI	TAMGU 9	Japan Sea	2003/11/12～2003/11/15	H,P
NFRDI	TAMGU 2	Yellow Sea	2003/11/12～2003/11/19	H,P
NFRDI	TAMGU 6	Japan Sea	2003/11/14～2003/11/17	H,P
NFRDI	TAMGU 5	Japan Sea	2003/12/09～2003/12/22	B,D,H,M
NFRDI	TAMGU 8	Yellow Sea	2003/12/10～2003/12/22	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2003/12/11～2003/12/22	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2004/01/29～2004/02/09	B,D,H,M
NFRDI	TAMGU 5	Japan Sea	2004/02/07～2004/02/19	B,D,H,M
NFRDI	TAMGU 8	Yellow Sea	2004/02/11～2004/02/18	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2004/02/14～2004/02/26	B,H,M
NFRDI	TAMGU 3	East China Sea	2004/04/08～2004/04/13	B,D,H,M
NFRDI	TAMGU 8	Yellow Sea	2004/04/16～2004/04/26	B,D,H,M
NFRDI	TAMGU 5	Japan Sea	2004/04/20～2004/05/05	B,D,H,M
NFRDI	TAMGU 1	East China Sea	2004/05/07～2004/05/12	B,H,M
NFRDI	TAMGU 5	Japan Sea	2004/06/09～2004/06/23	B,D,H,M
NFRDI	TAMGU 8	Yellow Sea	2004/06/10～2004/06/16	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2004/06/16～2004/06/23	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2004/08/03～2004/08/09	B,D,H,M
NFRDI	TAMGU 5	Japan Sea	2004/08/09～2004/08/21	B,D,H,M
NFRDI	TAMGU 3	East China Sea	2004/09/01～2004/09/14	B,H,M
NFRDI	TAMGU 8	Yellow Sea	2004/11/22～2004/11/22	B,D,H,M
NIST	SEIUN MARU	North Pacific Ocean, Indian Ocean, North Atlantic Ocean, South Atlantic Ocean	2003/06/18～2003/09/01	
NIST	HOKUTO MARU	North Pacific Ocean, Philippine Sea	2004/01/23～2004/03/08	
NMPA	TAMGU 8	Yellow Sea	2003/02/05～2003/02/15	B,H,P
NMPA	TAMGU 5	Japan Sea	2003/02/07～2003/02/14	B,H,P
NMPA	PREVENTION SHIP 16	Japan Sea	2003/03/19～2003/03/24	B,H,P
NMPA	PREVENTION SHIP 19	Yellow Sea	2003/05/12～2003/05/15	B,H,P
NMPA	TAMGU 8	Yellow Sea	2003/08/05～2003/08/14	B,G,H,P
NMPA	TAMGU 5	Japan Sea	2003/08/14～2003/08/19	B,H,P
NMPA	PREVENTION SHIP 19	Yellow Sea	2003/11/11～2003/11/13	B,H,P
NMPA	PREVENTION SHIP 16	Japan Sea	2003/11/12～2003/11/20	B,H,P
NORI	BADARO 2	Japan Sea	2002/06/02～2002/06/28	D,H,M
NORI	BADARO 2	Japan Sea	2002/07/31～2002/08/31	D,H,M
NORI	BADARO 2	Japan Sea	2002/09/30～2002/10/31	D,H,M
NORI	HAE YANG 2000	Japan Sea	2002/11/27～2002/12/12	D,H,M
NORI	HAE YANG 2000	Japan Sea	2003/02/02～2003/02/26	D,H,M
NORI	BADARO 1	East China Sea	2003/04/01～2003/11/15	G
NORI	HAE YANG 2000	Japan Sea	2003/04/05～2003/04/28	D,H,M
NORI	BADARO 3	East China Sea	2003/04/11～2003/05/31	D

AGENCY	SHIP	AREA	PERIOD	DATA TYPE
NORI	NAMHAERO	East China Sea	2003/05/01〜2003/09/20	G
NORI	DONGHAERO	Japan Sea	2003/05/03〜2003/09/17	G
NORI	HWANGHAERO	Yellow Sea	2003/06/01〜2003/10/31	G
NORI	BADARO 3	Yellow Sea	2003/06/02〜2003/07/31	D
NORI	HAE YANG 2000	Japan Sea	2003/06/05〜2003/07/05	D,H,M
NORI	BADARO 3	Yellow Sea	2003/08/01〜2003/09/30	D
NORI	BADARO 2	Japan Sea	2003/08/04〜2003/08/31	D,H,M
NORI	BADARO 2	Japan Sea	2003/10/02〜2003/10/30	D,H,M
NORI	BADARO 2	Japan Sea	2003/11/26〜2003/12/10	D,H,M
NORI	HAE YANG 2000	Japan Sea	2003/12/11〜2003/12/17	D,H,M
ORI,UT	TANSEI MARU	North Pacific Ocean	2000/04/21〜2000/04/28	H
ORI,UT	HAKUHO MARU	North Pacific Ocean	2000/06/20〜2000/07/27	B,H
ORI,UT	TANSEI MARU	North Pacific Ocean	2001/03/10〜2001/03/16	B,H
ORI,UT	TANSEI MARU	North Pacific Ocean	2001/04/09〜2001/04/17	B,D,H
ORI,UT	TANSEI MARU	North Pacific Ocean	2001/04/20〜2001/04/25	B,H
ORI,UT	HAKUHO MARU	North Pacific Ocean, Philippine Sea	2001/06/18〜2001/07/06	D,H,M
ORI,UT	TANSEI MARU	North Pacific Ocean, Philippine Sea	2002/05/19〜2002/05/30	
ORI,UT	TANSEI MARU	North Pacific Ocean	2002/07/05〜2002/07/16	
ORI,UT	HAKUHO MARU	North Pacific Ocean, East China Sea, Japan Sea	2002/09/09〜2002/10/25	B,D,G,H,M,P
ORI,UT	TANSEI MARU	Philippine Sea	2002/10/29〜2002/11/06	B,H
ORI,UT	TANSEI MARU	Philippine Sea	2003/05/06〜2003/05/11	B,H
ORI,UT	HAKUHO MARU	North Pacific Ocean	2003/05/13〜2003/06/20	H,D,M
ORI,UT	TANSEI MARU	Philippine Sea	2003/06/17〜2003/06/25	B,G
ORI,UT	TANSEI MARU	North Pacific Ocean	2003/08/04〜2003/08/13	
ORI,UT	HAKUHO MARU	South Pacific Ocean	2003/08/16〜2003/09/08	G
ORI,UT	TANSEI MARU	Philippine Sea	2003/09/04〜2003/09/09	B,H
ORI,UT	TANSEI MARU	Philippine Sea	2004/07/05〜2004/07/12	D,H
ORI,UT	TANSEI MARU	North Pacific Ocean	2004/08/05〜2004/08/12	B,D,H
ORI,UT	TANSEI MARU	Sea of Okhotsk, Japan Sea	2004/08/24〜2004/08/31	
ORI,UT	HAKUHO MARU	North Pacific Ocean, Philippine Sea	2004/09/07〜2004/10/28	D,H,M
ORI,UT	TANSEI MARU	Sea of Okhotsk, Japan Sea	2004/09/12〜2004/09/19	B,G
ORI,UT	TANSEI MARU	East China Sea, Philippine Sea	2004/10/01〜2004/10/08	H
ORI,UT	TANSEI MARU	East China Sea, Philippine Sea	2004/10/18〜2004/10/27	
PES,UR	NAGASAKI MARU	East China Sea	2004/05/18〜2004/06/01	D,G,H
REI,NFRDI	TAMGU 16	Japan Sea	2003/02/07〜2003/02/09	G,H,P
REI,NFRDI	TAMGU 16	Japan Sea	2003/05/13〜2003/05/15	H,P
REI,NFRDI	TAMGU 16	Japan Sea	2003/08/04〜2003/08/05	H,P
REI,NFRDI	TAMGU 16	Japan Sea	2003/11/07〜2003/11/10	H,P
RIAM,KU	KAKUYO MARU	Japan Sea	2004/06/14〜2004/06/26	D,H,M
RIAM,KU	NAGASAKI MARU	East China Sea	2004/07/20〜2004/07/27	D,H,M
SMBL,FSERC,KyotoU	TANSEI MARU	Philippine Sea	2003/04/12〜2003/04/17	B,H,M,P
TU	TANSEI MARU	Japan Sea	2003/07/23〜2003/08/01	
UTRC,IIS,UT	TANSEI MARU	Japan Sea	2003/07/14〜2003/07/20	
YNCMT	HAMAKAZE	Inland Sea	2003/07/29〜2003/07/31	
YNCMT	YUGE MARU	Inland Sea	2003/08/04〜2003/08/06	

Data Type Code

B:	Biology & Fisheries	D:	Physical Oceanography (Current)
G:	Geology & Geophysics	H:	Physical (Salinity & Temperature) & Chemical Oceanography
M:	Meteorology	P:	Contamination

Abbreviations of Agencies

Japan

CMD,JMA:	Climate and Marine Department, Japan Meteorological Agency
CU:	Chiba University
FF,NU:	Faculty of Fisheries, Nagasaki University
GSES,NagoyaU:	Graduate School of Environmental Studies, Nagoya University
GSJ,AIST:	Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology
GSS,UT:	Graduate School of Science, University of Tokyo
HyARC,NagoyaU:	Hydrospheric Atmospheric Research Center, Nagoya University
HMO,JMA:	Hakodate Marine Observatory, Japan Meteorological Agency
HOD,JCG:	Hydrographic and Oceanographic Department, Japan Coast Guard
HTU:	Hokkaido Tokai University
ISV,FS,KU:	Institute of Seismology and Volcanology, Faculty of Sciences, Kyushu University
KMO,JMA:	Kobe Marine Observatory, Japan Meteorological Agency
KU:	Kyushu University
NIST:	National Institute for Sea Training
ORI,UT:	Ocean Research Institute, University of Tokyo
PES,UR:	Physics and Earth Sciences, University of the Ryukyus
RIAM,KU:	Research Institute for Applied Mechanics, Kyushu University
SMBL,FSERC,KyotoU:	Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University
TU:	Toyama University
UTRC,IIS,UT:	Underwater Technology Research Center, Institute of Industrial Science, University of Tokyo
YNCMT:	Yuge National College of Maritime Technology

Korea

AEI,NFRDI:	Aquaculture Environmental Institute, NFRDI
FRRMD,NFRDI:	Fisheries Resources Research and Management Division, NFRDI
KIGAM:	Korea Institute of Geoscience and Mineral Resources
KORDI:	Korea Ocean Research & Development Institute
MEND,NFRDI:	Marine Environmental Management Division, NFRDI
MHOD,NFRDI:	Marine Harmful Organism Division, NFRDI
NFRDI:	National Fisheries Research and Development Institute
NMPA:	National Maritime Police Agency
NORI:	National Oceanographic Research Institute
REI,NFRDI:	Resources Enhancement Institute, NFRDI

Table 2 Number of Archived Data in the WESTPAC Region

YEAR	SD	STD	CTD	XCTD	XBT	DBT	AXBT	BT	GEK	DRIFT	ADCP	unknown
1979	7,225	47	2,709	0	7,610	672	0	17,226	5,223	118	0	12,370
1980	8,148	643	2,299	0	11,559	2,257	0	17,083	6,215	185	0	12,666
1981	6,857	120	3,081	0	9,112	2,337	1,231	16,825	5,982	215	0	12,825
1982	7,836	214	2,967	0	11,042	2,870	509	15,076	6,035	52	0	12,761
1983	7,967	368	3,965	0	11,337	3,068	824	13,290	6,016	107	0	12,386
1984	6,021	3	4,670	0	11,618	3,855	860	15,786	7,059	68	0	12,776
1985	5,436	463	5,765	0	14,909	3,510	1,059	12,805	5,471	84	3,386	12,342
1986	8,526	269	5,770	0	16,955	2,365	1,502	11,600	5,793	28	7,574	9,822
1987	10,048	231	7,072	0	16,427	1,700	1,272	12,907	4,970	4	7,276	6,664
1988	10,207	0	9,812	0	17,591	873	1,177	9,872	2,811	247	13,718	5,736
1989	8,817	0	10,487	0	16,044	475	1,323	7,796	1,623	314	57,410	4,744
1990	8,719	328	11,731	0	22,151	1,098	1,305	6,285	871	311	69,104	4,554
1991	6,408	0	14,903	0	20,329	1,405	1,509	1,825	841	348	48,648	3,564

YEAR	SD	STD	CTD	XCTD	XBT	DBT	AXBT	BT	GEK	DRIFT	ADCP	unknown
1992	4,487	105	15,714	0	25,563	18	1,199	1,146	216	226	64,100	3,516
1993	3,684	119	14,245	0	38,091	1,313	1,169	1,420	152	20	94,617	3,148
1994	1,601	128	1,996	0	29,246	108	0	7,763	24	0	21,142	0
1995	1,381	0	1,780	0	42,315	115	1,002	659	97	0	302,758	0
1996	1,323	0	2,029	0	32,778	208	939	344	0	0	826,070	0
1997	1,259	0	1,934	0	10,010	242	918	91	0	0	647,735	0
1998	1,166	0	1,712	7	11,272	178	934	101	0	0	597,124	0
1999	962	0	1,839	40	10,130	208	1,017	56	0	0	505,597	0
2000	958	0	1,729	48	11,234	155	875	72	0	0	66,293	0
2001	935	0	1,705	77	11,951	146	1,890	7	0	0	141,091	0
2002	0	0	2,285	178	1,674	19	40	0	0	0	67,502	0
2003	0	0	0	79	1,494	0	9	0	0	0	570	0
2004	0	0	0	120	735	0	0	0	0	0	0	0
Total	**119,971**	**3,038**	**132,199**	**549**	**413,177**	**29,195**	**22,563**	**170,035**	**59,399**	**2,327**	**3,541,715**	**129,874**

Data Items

SD: Serial station Data
STD: Salinity, Temperature, Depth profiler
CTD: Conductivity, Temperature, Depth profiler
XCTD: eXpendable Conductivity, Temperature, Depth profiler
XBT: eXpendable Bathy Thermograph
DBT: Digital memorial Bathy Thermograph
AXBT: Airborne eXpendable Bathy Thermograph
BT: Bathy Thermograph
GEK: Geomagnetic Electro Kinetograph
DRIFT: ship DRIFT
ADCP: Acoustic Doppler Current Profiler

3.1.2. NEAR-GOOS RDMDB

The NEAR-GOOS (North-East Asia Regional – Global Ocean Observing System) has been implemented as regional GOOS by Russia, China, Korea and Japan. The NEAR-GOOS RDMDB (Regional Delayed Mode Data Base) undertakes the final management of the oceanographic and marine meteorological data of the NEAR-GOOS.

The JODC has managed and operated the RDMDB based on the Recommendation of the 1st NEAR-GOOS Coordinating Committee held in 1996. The RDMDB started to operate as a DMDB in October 1996 and was given the status of the RDMDB by the Recommendation of the 3rd Coordinating Committee in August 1998, and at the same time the registration application procedure was abolished to activate its use. In addition, the provision of data to the anonymous users using guest account became possible based on the approval of the 7th NEAR-GOOS Coordinating Committee in October 2002. Incidentally, the user name of guest account is guest@onetime.

In the current system, each country's NRTDB (National Real Time Data Base) is supposed to collect data and send it to its own country's NDMDB (National Delayed Mode Data Base) and the RRTDB (Regional Real Time Data Base) operated by the Japan Meteorological Agency. The NDMDB independently collects the delayed mode data other than the data received from the NRTDB. The RDMDB receives the data collected by each country's NRTDB via the RRTDB and collects the delayed mode data from other sources to provide data for the users with monthly update.

At first, the data to be registered in the DMDB were only 6 items, which were collected by the RTDB via the GTS. With the items added every year, the data to be registered in the RDMDB today are up to 36 items. Below is the main part of the data items:

- Oceanographic data obtained by the Meteorological Agency via the GTS
  (BATHY, BUOY, SHIP, TESAC, TRACKOB)
- Data converted into unified format by RRTDB
  (water temperature, salinity, wind)

- Average water temperature data developed by the Meteorological Agency (serial station, sea surface)
- Tide data with 30-second interval by the Japan Coast Guard
- Water temperature data provided by the Russia Far Eastern Regional Hydrometeorological Research Institute
- Water temperature data provided by the Japan Fisheries Information Service Center (JAFIC)
- Water temperature data provided by the Ocean Research Institute of the University of Tokyo
- XBT observation data provided by the Tohoku University
- Wave observation data provided by the Port and Airport Research Institute
- Quality controlled data by the Canada Marine Environmental Data Service (MEDS) (water temperature, salinity)

The data registered in the RDMDB can be obtained through the Internet. The RDMDB data provision system displays a list of data by item and by period so that data can easily be obtained only by selecting the item on the screen. The URL of the RDMDB data provision system is given below.

http://near-goos1.jodc.go.jp/index.html

Archived data type and volume of NEAR-GOOS RDMDB is shown in Table 3.

Table 3 Data Type and Volume of NEAR-GOOS RDMDB

TYPE OF DATA	DESCRIPTION OF DATA	PERIOD	VOLUME(MB)
BATHY	Regional Datasets of BATHY Report	Jun,1996 -	11.6
BATHY_G	Global Datasets of BATHY Report	Apr,2000 -	30.5
BUOY	Regional Datasets of BUOY Report	Jun,1996 -	175.3
BUOY_G	Global Datasets of BUOY Report	Apr,2000 -	2376.3
SHIP	Regional Datasets of SHIP Report	Jun,1996 -	152.6
SHIP_G	Global Datasets of SHIP Report	Apr,2000 -	1487.9
TESAC	Regional Datasets of TESAC Report	Sep,1998 -	18.9
TESAC_G	Global Datasets of TESAC Report	Jan,1996 -	190.2
TRACKOB	Regional Datasets of TRACKOB Report	Jun,1996 -	0.7
TRACKOB_G	Global Datasets of TRACKOB Report	Apr,2000 -	19.2
SUBST	Subsurface Temperature Decode Result	Jun,1997 -	449.7
SUBST_ERROR	Subsurface Temperature Decode Error Report	Jun,1997 -	5.1
TS	Temperature and Salinity Decode Result	Jul,2001 -	350.9
GLBTS	Global Temperature and Salinity Decode Result	Aug,2001 -	4699.0
WIND	Wind Data Decode Result	Jan,1998 -	113.4
WIND_ERROR	Wind Data Decode Error Report	Jan,1998 -	1.2
WIND2	Wind Data (Format Ver.2.0)	Jul,2001 -	76.3
GLBWIND	Global Wind Data Decode Result	Aug,2001 -	1095.1
SSTANL	Gridded Daily Sea Surface Temperature Data in the Northwest Pacific	Jun,1996 - May,2000	101.0
DAILYSST(JMA)	Daily Sea Surface Temperature Data Analysis	Apr,2000 -	100.6
WNPSST(JMA)	10-day Mean Sea Surface Temperature in the Northwest Pacific	Apr,2000 -	2.5
GLBSST(JMA)	Global Monthly Mean Sea Surface Temperature	Apr,2000 -	2.5
ADJSUBS(JMA)	Monthly Mean Subsurface Temperature in Seas Around Japan (100m,200m,400m)	Mar,2000 -	7.4
PACSUBS(JMA)	Monthly Mean Subsurface Temperature in Pacific (100m,200m,400m)	Mar,2000 -	12.5
SSDH(JMA)	Analyzed Sea Surface Dynamic Height in the Pacific	Jan,2003 -	90.1
SSHA(JMA)	Analyzed Sea Surface Height Anomalies in the Pacific	Jan,2003 -	90.1

TYPE OF DATA	DESCRIPTION OF DATA	PERIOD	VOLUME(MB)
SEA_ICE	Sea Ice Concentration in the Northeast Asia marginal Seas	Dec,2003 -	235.8
MGDSST	Merged satellite and in-situ data Global Daily Sea Surface Temperature	Apr,2004 -	840.5
GTSPP	GTSPP Quality Controlled Subsurface Temperature and Salinity Data Provided by MEDS	Jan,2003 -	91.1
FERHRI ship	Marine Meteorological Onboard Observation Data by FERHRI, Russia	Sep,1997 -	4.0
FERHRI station	Marine Meteorological Observation Data at the Station by FERHRI, Russia	Apr,2002 -	0.2
JAFIC	Sea Surface / Subsurface Temperature Data from Japan Fisheries Information Service Center	Jul,1998 -	41.3
PALACE	Subsurface Temperature Profile Data Observed by PALACE Float of Ocean Research Institute, University of Tokyo	Aug,1998 - Nov,2000	0.1
TOHOKU Univ.	XBT Data Observed by Tohoku University	Nov,1999 - Sep,2000	0.1
NOWPHAS	Japanese Nationwide Coastal Wave Data by Port and Airport Research Institute	Jan,2001 - Dec,2002	36.8
30s_TIDEST	30-sec. Interval Sea Tide Data at Tidal Stations of Japan Coast Guard	Jan,1999 -	4566.0
Total			**17476.5**

3.2. RNODC for IGOSS

JODC has been acting as RNODC for IGOSS since September 1979 with the USA and Russia.

The terms of reference for RNODC-IGOSS are introduced in Annex IV.

JODC receives BATHY/TESAC data through the GTS (Global Telecommunications System) from JMA (Japan Meteorological Agency), which is one of SOC (Specialized Oceanographic Center), and applies quality control procedures for final archiving.

KODC has regularly submitted the log form of IGOSS BATHY/TESAC, totally 49 sheets of the log sheets were submitted by KODC in 2004. Data Holding Status is shown in Table 4 and Station Plots are shown in Fig. 1-1 and Fig 1-2.

Table 4 Data Holding Status of IGOSS BATHY/TESAC

YEAR	BATHY	TESAC
1982	22,677	710
1983	25,478	5,443
1984	22,980	7,068
1985	26,079	5,784
1986	31,044	5,640
1987	40,301	6,580
1988	32,245	5,074
1989	27,933	4,966
1990	30,027	4,947
1991	22,731	2,137
1992	34,071	1,303
1993	35,058	2,153
1994	32,721	2,619
1995	33,908	2,207
1996	34,722	2,221
1997	37,993	1,427
1998	20,772	4,870
1999	19,701	9,632
2000	22,069	8,240
2001	26,998	21,126
2002	26,446	24,204
2003	29,196	55,212
2004	27,742	117,492
Total	**662,892**	**301,055**

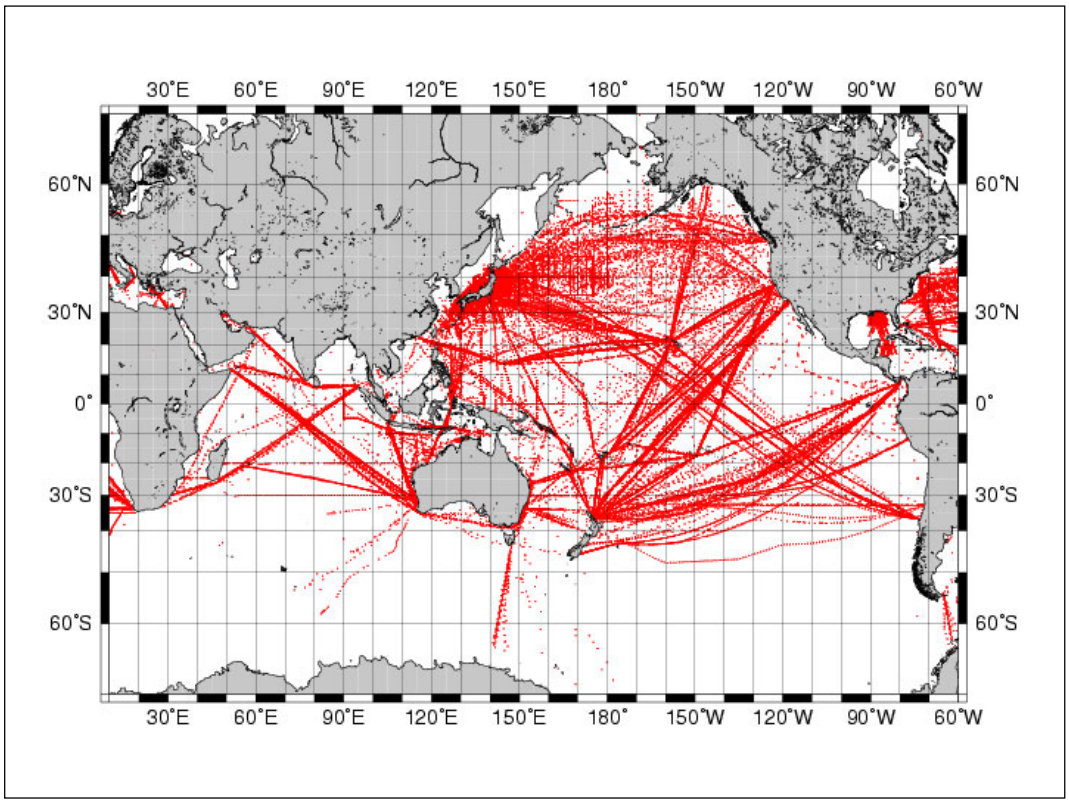

Fig. 1-1 Station Plots for BATHY

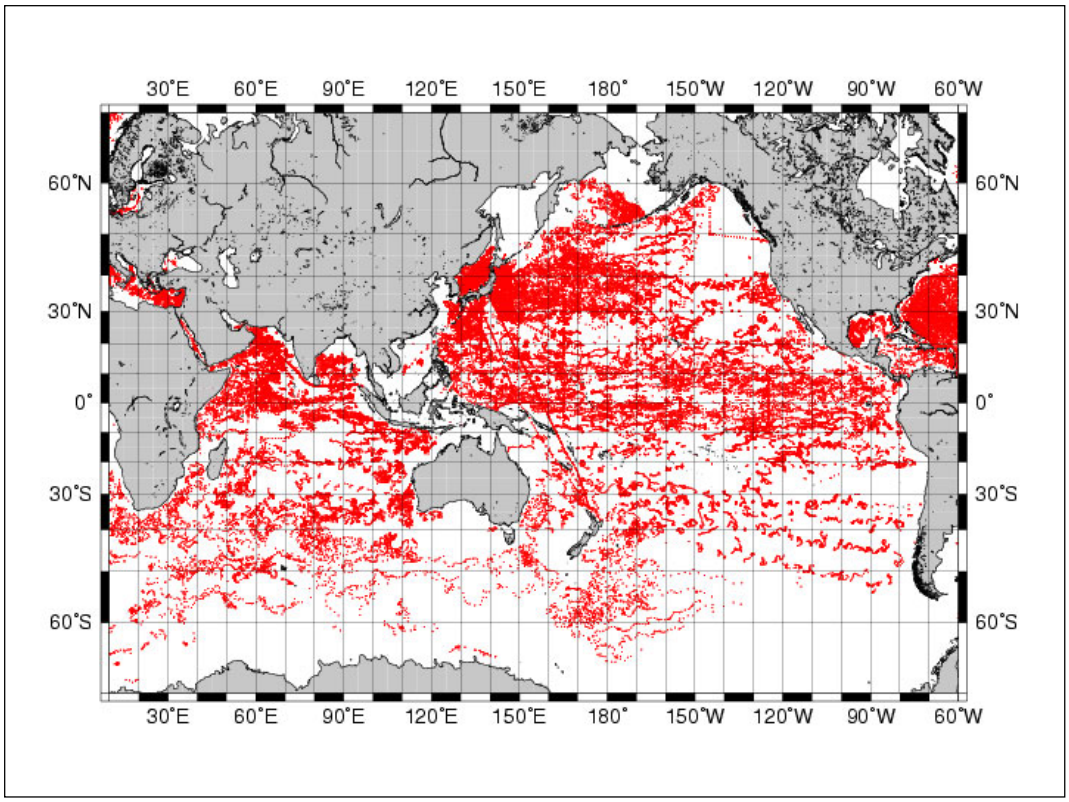

Fig. 1-2 Station Plots for TESAC

3.3. RNODC for MARPOLMON

In response to a recommendation by the United Nations Conference on the Human Environment (Stockholm, 1972), the IOC and WMO agreed to jointly undertake the design, planning, and development of a marine pollution-monitoring program.

As an initial step in this direction, a Pilot Project on Marine Pollution (Petroleum) Monitoring (MAPMOPP) was launched in 1975 within the framework of the Integrated Global Ocean Station System (IGOSS) and was aimed at monitoring petroleum-derived oils.

Bearing in mind the recommendations of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment adopted at its Sixth Session (Paris, 25 September - 1 October 1986) on the regional relevance to marine pollution management activities, RNODC for MARPOLMON have been established in Japan for the WESTPAC region.

The terms of reference for RNODC-MARPOLMON are introduced in Annex V.

The major activities of the JODC are the collection and management of four types of data: oil slicks, tar-ball, beach tar, and hydrocarbon, since 1975. Station Plots are shown in Fig. 2 and Data holding status is shown in Table 5.

With regard to other type of Marine Pollution data, the present holding status of these data in JODC is introduced in Table 6, and the Station Plots of the cadmium, lead and polychlorinated biphenyls data are indicated as Fig. 3-1, Fig. 3-2 and Fig. 3-3, respectively.

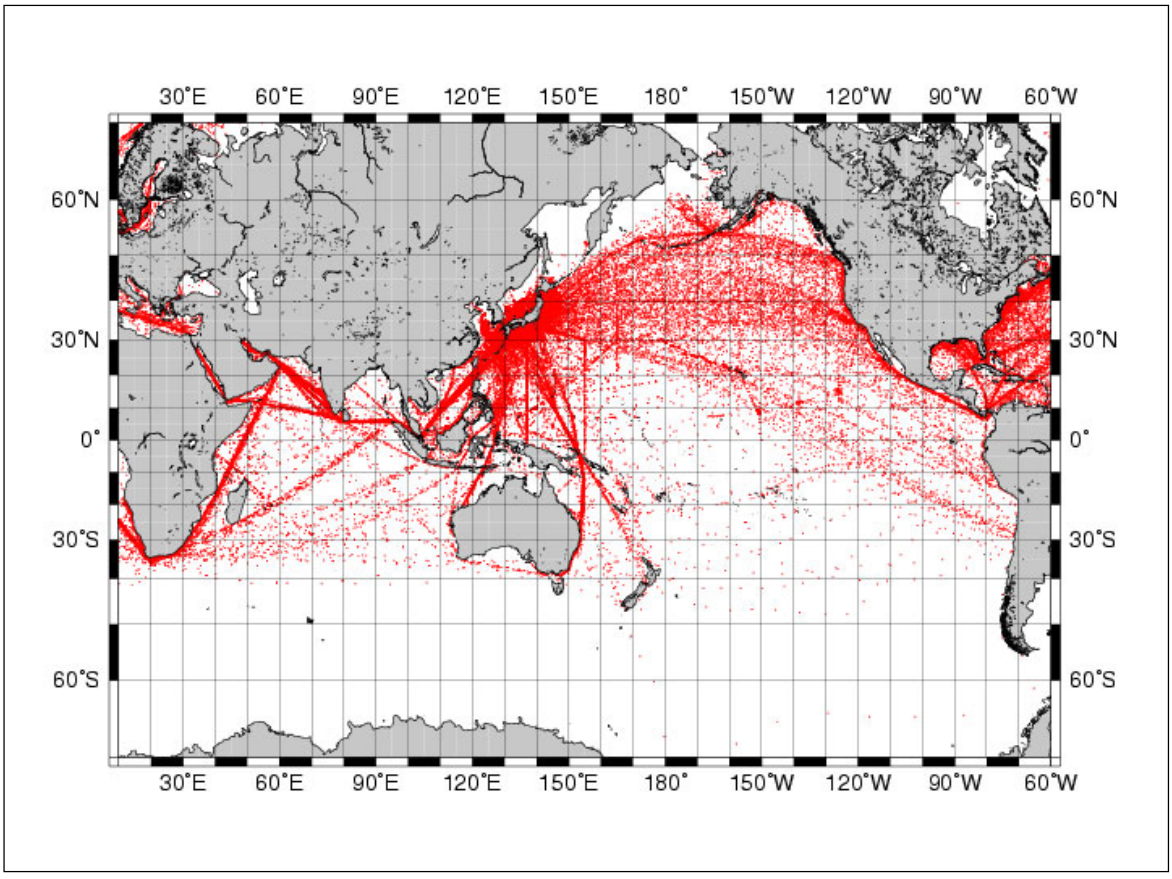

Fig. 2 Station Plots for Oil Slick

Table 5 Number of Archived Data for MARPOLMON

YEAR	BEACH TAR	TAR BALL	HYDRO CARBON	OIL SLICK
1973	0	341	0	0
1974	0	229	10	1,493
1975	404	1,059	604	16,712
1976	799	1,096	722	16,236
1977	740	738	877	19,683
1978	665	606	482	22,580
1979	676	384	387	14,699
1980	581	504	423	5,988
1981	570	501	362	3,948
1982	588	459	334	1,122
1983	560	585	329	583
1984	588	417	98	277
1985	582	449	239	382
1986	624	536	81	865
1987	638	598	62	1,015
1988	653	495	65	1,492
1989	679	564	68	1,948
1990	650	527	65	1,674
1991	647	467	60	1,286
1992	634	441	61	1,215
1993	618	420	60	991
1994	588	346	52	1,221
1995	583	324	53	1,517
1996	0	119	71	1,413
1997	0	110	86	1,783
1998	0	90	26	2,152
1999	10	95	66	1
2000	548	233	67	0
2001	539	205	35	0
2002	0	105	64	0
Total	**14,164**	**13,043**	**5,909**	**122,276**

Table 6 Number of Data Related Marine Pollution

DATA TYPE	NUMBER	DATA TYPE	NUMBER
COD	1,927	PCB	1,794
NH4-N	9,464	As	1,768
Chlorophyll-a	132,800	Pb	1,721
Phaeophytin	36,550	Hg	1,785
TOC	1,744	Total-Hg	2,722
HC	2,348	Cd	4,241

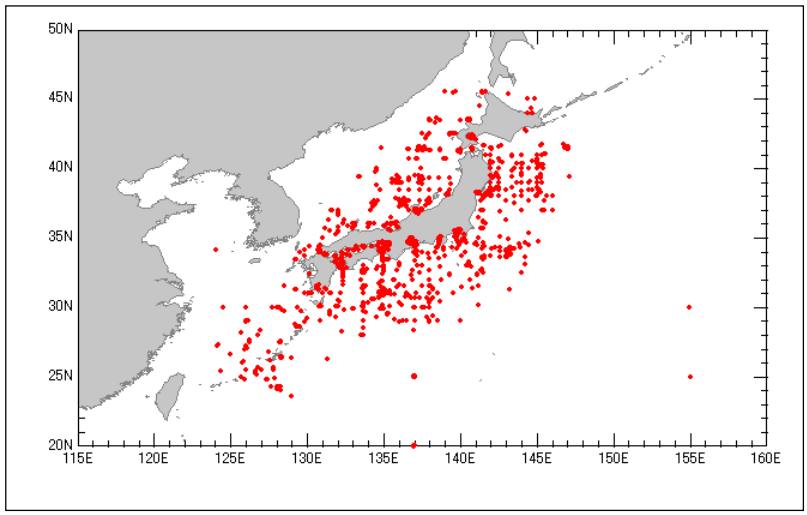

Fig. 3-1 Station Plots for Cd Data in the Northwest Pacific Ocean

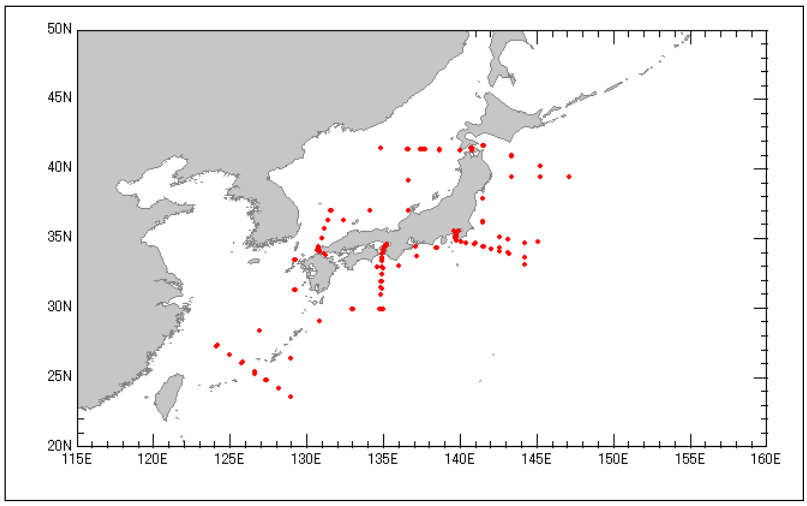

Fig. 3-2 Station Plots for Pb Data in the Northwest Pacific Ocean

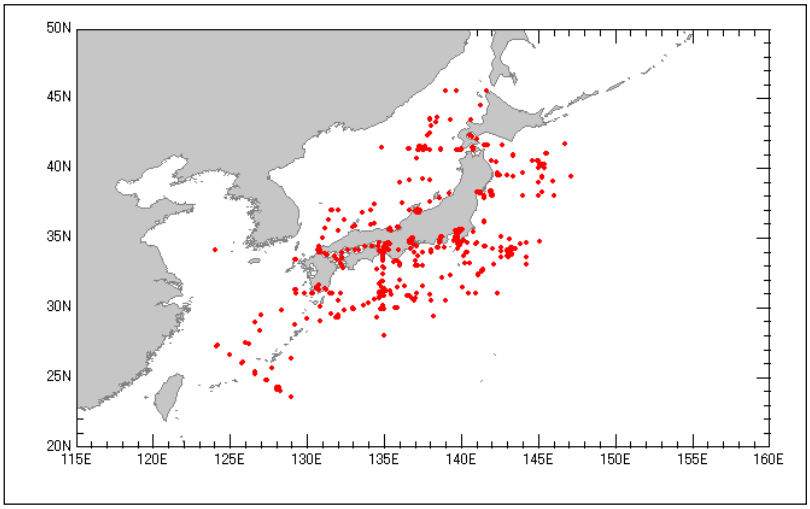

Fig. 3-3 Station Plots for PCB Data in the Northwest Pacific Ocean

3.4. RNODC for ADCP

The JODC is RNODC for ADCP since 1991 and CLIVAR (An International Research Programme on Climate Variability and Predictability) Data Assembly Center (DAC) for Shipboard ADCP in cooperation with the University of Hawaii since 2003.

JODC and Univ. of Hawaii accepted the request from Dr. Howard Cattle, Director of International CLIVAR Project Office to continue the activities of ADCP DAC for the CLIVAR project, World Climate Research Program (WCRP) after the WOCE project finished.

The terms of reference for RNODC-ADCP are introduced in Annex VI.

The major activities of the JODC are the collection and archiving of data and the development of the methodology of ADCP data management, plus development and usage of the ADCP data management system on the database of the JODC. Data holding status is shown in Table 7 and Station Plots are shown in Fig. 4-1 and Fig. 4-2.

Table 7 Number of Archived Data for ADCP

YEAR	NUMBER	YEAR	NUMBER
1985	3,545	1995	339,314
1986	7,844	1996	844,061
1987	7,725	1997	678,912
1988	13,912	1998	623,868
1989	64,146	1999	526,226
1990	73,120	2000	80,691
1991	61,320	2001	152,001
1992	82,688	2002	70,356
1993	133,081	2003	4021
1994	54,026	2004	0
Total			**3,820,857**

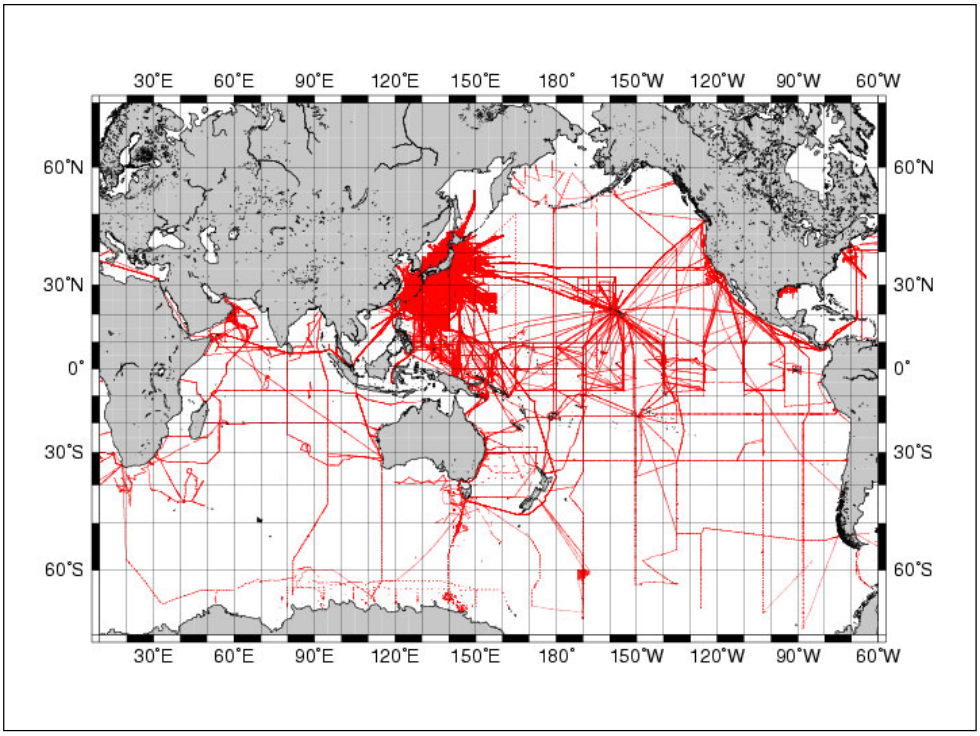

Fig. 4-1 Station Plots for ADCP Data in the Indian Ocean and the Pacific Ocean

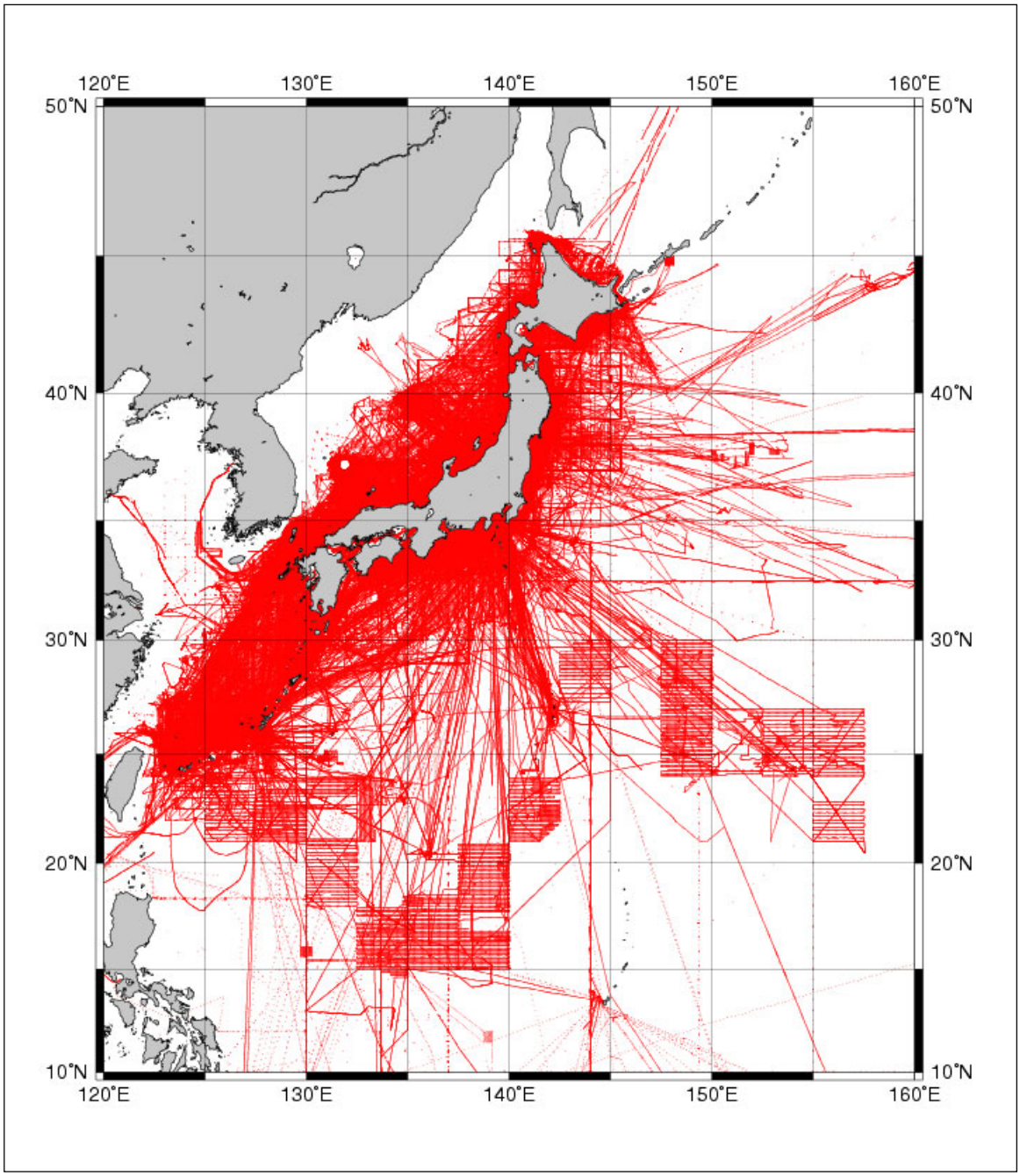

Fig. 4-2 Station Plots for ADCP Data in the Northwest Pacific Ocean

ANNEX I
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ANNEX II
Agenda of 2nd International Workshop for GODAR-WESTPAC

1st Day: November 10, 2004

0930: Open the registration desk

1000: Opening

Opening address by Dr. Minoru Odamaki, Director of Japan Oceanographic Data Center

Remarks by Dr. Kunio Yashima, Director General of Hydrographic & Oceanographic Dept., JCG

Remarks by Dr. Miguel D. Fortes, Head of IOC/WESTPAC office

1010: Information from Local Secretariat

1020: Keynote Lectures/Presentations

- 1020-1035 IODE Activities by Mr. Peter Pissierssens, IOC
- 1035-1050 Future Directions for IODE by Dr. Lesley Rickards, Chair of IODE
- 1050-1120 Recent Science Topics and Data Needs on Chemical Oceanography by Dr. Yukihiro Nojiri, National Environ Research Institute, Japan
- 1120-1150 Recent Science Topics and Data Needs on Physical Oceanography by Dr. Toshio Suga, Tohoku University
- 1150-1220 Science Results made possible by the GODAR Project - Ocean Heat Content, Fresh Water Content, and Steric Sea Level by Mr. Sydney Levitus, WDC for Oceanography Silver Spring

1220: Group Photo

1230: Lunch

Light meal will be provided by Japanese Organizer with free.

1400: International Activities

- 1400-1420 History and Results of the IOC GODAR Project by Mr. Sydney Levitus, WDC for Oceanography Silver Spring
- 1420-1440 GODAR-Sea level by Dr.Lesley Rickards, Chair of IODE
- 1440-1500 GODAR-WESTPAC by JODC
- 1500-1520 Global Ocean Surface Underway Data (GOSUD) project by Dr. Catherine Maillard, IFREMER

1520: Coffee break

1550: International Activities (cont.)

- 1550-1610 SEAFDEC Initiative for the Oceanographic Data Collection in Southeast Asian Region by Dr. Somboon Siriraksophon, SEAFDEC
- 1610-1630 The PICES TCODE Activity by Dr. Igor Shevchenko, PICES/TCODE Chair

1630: Discussion

1720: Closing of 1st day

1830: Welcome Reception hosted by Dr. Kunio Yashima, Director General, HOD, JCG

2030: End of 1st Day.

2nd Day: November 11, 2004

0930: National Reports

- 0930-0955 Australia: Australian Initiative for Oceanographic Data Management Australian Ocean Data Centre Joint Facility by Dr. Greg Reed, AODCJF
- 0955-1020 China: The Activities of GODAR project in China by

Prof. Fengyi Guo, NMDIS

1020-1045 France: Sea-Datanet by Dr. Catherine Maillard, IFREMER

1045: Coffee break

1115: National Reports

1115-1140 Indonesia: The Oceanographic Research and Data Management Activities in Indonesia by Drs. Tri Wiyanto, HOS

1140-1205 Japan: JODC's Activities Related to GODAR-WESTPAC by Mr.Satoshi Sato, JODC

1205-1230 Korea: Korean Oceanographic Data and Practical Applications for Marine Science and Industry by Dr. Hak-Gyoon Kim, KODC

1230: Lunch

1330: National Report

1330-1355 Malaysia: by Mr. Shamsuddin bin Yusoff, RMNavy

1355-1420 Russia: by Dr. Nikolay A. Rykov, FERHRI

1420-1445 United State: by Mr. Sydney Levitus, WDC for Oceanography Silver Spring

1445-1510 Vietnam: by Dr. Dung Tran Tuan, VNODC

1510: Coffee break

1540: Reports by Japanese Organizations

1540-1605 Fisheries Research Agency: by Dr. Tomowo Watanabe, FRA

1605-1630 Japan Meteorological Agency: Rescuing Marine Meteorological Data by Ms. Mizuho Hoshimoto, JMA

1630-1655 Integrated Oceanography DATA Management at JAMSTEC by Dr. Kazuhiko Sono, JAMSTEC

1655: Discussion

1720: Closing 2nd day

3rd Day: November 12, 2004

0930: Discussion

1040: Coffee break

1100: Discussion

1230: Lunch

1400: Wrap Up

1500: Closure

ANNEX III
Terms of Reference for RNODC-WESTPAC

(24 February 1979)

- Produce a work plan to define: i) the procedures of JODC in acquiring, processing, reformatting and archiving, distribution of data and inventory of research cruises in the WESTPAC region with reference to the WDC system, and ii) the implementation of this work plan;
- Provide a mechanism for registration of WESTPAC cruises with RNODC-WESTPAC;
- Work closely with National Co-ordinators for IODE and any other national contact points for data management within WESTPAC who might be appointed by Member States;

- Publish a guide for WESTPAC data management for distribution to Member States through national contact points.

ANNEX IV
Terms of Reference for RNODC-IGOSS

(September 1979)

- Acquire BATHY, TESAC datasets and sub-surface temperature data from drifting and moored buoys from the IGOSS Specialized Oceanographic Center (SOC) for areas of responsibility;
- Apply supplementary quality controls to acquired data and provide services to users after 30 days from receipt of that data;
- Archive, and make available to users, selected data products from SOCs and analysis centres;
- Acquire non-operational BATHY, TESAC and sub-surface temperature data from drifting and moored buoys and/or datasets for areas of responsibility;
- Apply quality controls to non-operational data, prepare integrated datasets and provide services to users;
- Provide for exchange of IGOSS data in GF-3 format with other RNODCs or to other users as requested;
- Maintain a database and inventories for areas of responsibility;
- Prepare products based on operational and non-operational IGOSS data, as appropriate;
- Transmit to the WDCs datasets in GF-3 format, inventories and selected data products;
- Prepare summary and BATHY, TESAC and sub-surface temperature from drifting and moored buoys database plots and transmit to the IOC Secretariat every 15 August and 15 February for data received during the previous 6 months;
- Participate in efforts to monitor data flow;
- Participate as feasible in IOC training programmes;
- Provide for exchange of documentation and software regarding quality control and processing procedures, with other RNODCs as possible.

ANNEX V
Terms of Reference for RNODC-MARPOLMON

(May 1987)

A. Referral

The RNODC-MARPOLMON will:

- Provide a referral capacity to worldwide holdings of marine pollution data.

B. Access

The RNODC-MARPOLMON will be expected to demonstrate:

- A capability and willingness to perform automated data processing functions for marine pollution data;
- A willingness to accept marine pollution data which may not be received in automated form, and to convert the data to such a form;
- A capability for performing quality control (format and/or environmental) checks;

- A capability to work with discipline-oriented codes (biological and chemical);
- A capability for converting marine pollution data to GF3 format or other internationally recognized format.

C. Products

The RNODC-MARPOLMON will:

- Provide copies of processed data to World Data Centres A and B (Oceanography);
- Provide machine listings and simple statistics of marine pollution data;
- Produce graphics of marine pollution data, for use of concerned Member States.

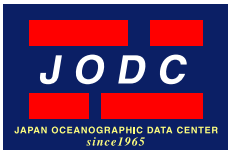
D. Training

The RNODC-MARPOLMON will conduct formal or informal training sessions for data centre personnel involved in the programme and who actively submit marine pollution data. Expenses of trainees will not however, be borne by the RNODC concerned. Selection of trainees will be jointly arranged by IOC and the RNODC.

ANNEX VI
Terms of Reference for RNODC-ADCP

(27 June 1991)

- Compile, evaluate and keep updated information on existing datasets held by Member States already active in ADCP measurements;
- Produce, and keep updated a catalogue of ADCP users which will include information about ADCP instruments, related instrumentation (GSP, Loran, measurement of ship motion, etc.), procedures for averaging and sampling (temporal and spatial, vertical and horizontal), quality control methods, formats and products;
- In consultation with other NODCs, ICES and SCOR, establish and maintain standards and procedures for the reduction, quality control, archiving, and exchange of ADCP data;
- Assemble an archive of ADCP data received from other member states so as to assess the effectiveness of the proposed standards and procedures;
- Prepare guidelines concerning different performance characteristics and data documentation relevant to each instrument type in order to formulate adequate data documentation and quality control procedures;
- Report on the progress of RNODC ADCP to the Group of Experts on RNODCs and Global programs and to the IOC Committee on IODE.



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