

20 AUG 1991

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**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)**

**COMMITTEE ON INTERNATIONAL  
OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE**

**IODE HANDBOOK  
(Revised edition, 1990)**

This document is an up-dated version of the IODE Handbook published in 1987 as IOC/INF-747. This publication is issued every two-three years and lists information on the composition of the International Oceanographic Data and Information Exchange System.

It also contains practical information relating to the C/IODE and its subsidiary bodies. Member States participating or wishing to participate in IODE activities are invited to keep the Secretariat of IOC informed of all changes in the Handbook's content, particularly in so far as IODE National Co-ordinators and members of the C/IODE Subsidiary Bodies are concerned. Amendments will be published, if available, every six months.

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**A. HISTORICAL BACKGROUND AND TERMS OF REFERENCE OF THE COMMITTEE ON INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE**

During the Intergovernmental Conference on Oceanographic Research, 1960, at which the setting up of an Intergovernmental Oceanographic Commission was recommended, certain initial tasks for the new Commission were outlined and amongst these was included the requirement for a structure to co-ordinate international oceanographic data exchange. The first formal establishment of a Working Group on Exchange of Oceanographic Data was made by IOC Resolution I-9 adopted at the First Session of the Commission in October 1961, which also prescribed that:

"The mission of this Working Group shall be the facilitating of exchange of oceanographic data, the standardization of forms for reporting and coding data, the encouragement of the preparation of data catalogues, and the assistance of development of national oceanographic data centres."

The Commission authorized the continuation of the Working Group at its Second Session (September 1962).

At its Fifth Session (September 1967) the Commission (Resolution V-20A) amended the terms of reference of the Working Group by adding the following:

- "(a) to review and re-appraise the whole international oceanographic data exchange system as recommended by Section 8 of the report 'International Ocean Affairs' (IOC/V-INF.111), and as reaffirmed by Recommendation IX of the summary of the recommendations of the Working Group meeting in the Hague in September 1967 (IOC/V-4);
- (b) to continue and encourage the present work leading towards format standardization for use with automated techniques for data input, storage, retrieval, dissemination and exchange, but recognizing the considerable financial implications inherent in such automation;
- (c) to continue the development of means whereby geological, geophysical, biological, special air-sea interaction data and data from 'continuously recording' sensors are incorporated into the international oceanographic data exchange system."

The Eighth Session of the IOC Assembly decided that the Working Group for International Oceanographic Data Exchange be renamed Working Committee (Resolution VIII-31) and it also amended its Terms of Reference (Report of the Eighth Session of the IOC Assembly, Doc. SC/MD/39, Annex V, page 8, Item II).

**Terms of Reference**

The Working Committee on International Oceanographic Data Exchange shall:

- (i) facilitate exchange of oceanographic data, the standardization of forms for reporting and coding data, the encouragement of the preparation of data catalogues and the assistance of development of national oceanographic data centres;
- (ii) facilitate exchange of, and access and referral to, information resulting from, or relating to marine programmes emanating from related activities (ASFIS, MEDI, UNISIST, UNEP, IRS, CODATA, etc.);
- (iii) review and re-appraise the whole international oceanographic data exchange system, recommending changes to the Commission, as appropriate;
- (iv) continue and encourage format standardization for use with automated techniques for data input, storage, retrieval dissemination and exchange;

- (v) continue the development of means whereby geological-geophysical, biological, special air-sea interaction, marine pollution data and data from "continuously recording" and remote sensors are incorporated into the international oceanographic data exchange system;
- (vi) take action as necessary to give effect to the Commission's policy decisions, within its prescribed terms of reference;
- (vii) make recommendations to the Commission on policy matters within its terms of reference and on the need for Consultants and/or temporary Groups of Experts to deal with special scientific and technical matters connected with the Commission's programmes;
- (viii) report regularly and make recommendations to the Commission of the work accomplished and on future action required and prepare with the assistance of the Secretary, a draft two-year programme of the work and financial requirements for submission to each Assembly;
- (ix) maintain close collaboration with World, National, Regional and Responsible Data Centres, with the other Working Committees, with the International Co-ordination Groups for the Co-operative Investigations, and with international organizations, within its terms of reference;
- (x) have the right to form *ad hoc* task teams to carry out specific parts of the work of the Committee during intersessional periods provided no costs fall on the Commission;
- (xi) make recommendations to the Assembly and the Executive Council regarding the provision of technical guidance and for the formulation and execution of the marine science programmes of UNESCO relating to marine data and information management, and, when appropriate, to facilitate co-ordination with related programmes of other ICSPRO agencies.

The Fourteenth Session of the IOC Assembly (Paris, 17 March - 1 April 1987) "noting the increasing interest in marine scientific information ... recalling also the decision of the Executive Council at its Nineteenth Session, on the Guidelines for the Structure and Responsibilities of the Subsidiary Bodies of the Commission", changed the name of the Technical Committee on International Oceanographic Data Exchange to the Committee on Oceanographic Data and Information Exchange, retaining the acronym IODE.

## **B. GUIDELINES FOR THE STRUCTURE AND RESPONSIBILITIES OF THE SUBSIDIARY BODIES OF THE COMMISSION**

The Guidelines for the Structure and Responsibilities of the Subsidiary Bodies of the Commission are presented in the IOC Manual, Part I, Section 5 and the general Terms of Reference of the IOC Subsidiary Bodies and their membership, in the IOC Manual, Part II, of December 1985.

# C. CHAIRMAN AND VICE-CHAIRMAN OF THE COMMITTEE ON IODE

At the Twelfth Session of the Committee on IODE (December 1986) Dr. N. Flemming (United Kingdom) was elected Chairman and Dr. V. Smirnov (USSR) was elected Vice-Chairman of the Committee on IODE. Their addresses are:

Dr. N.C. Flemming  
Institute of Oceanographic Sciences  
Deacon Laboratory  
Wormley, Godalming  
Surrey GU8 5UB  
UNITED KINGDOM  
Tel : <44> (42) 868 41 41  
Tlx : 858833 OCEANS G  
Fax : <44> (42) 868 30 66  
Tlm : N.FLEMMING

Dr. V.I. Smirnov  
Deputy-Director  
All Union Research Institute of Hydrometeorological Information (VNIIGMI) -  
World Data Centre  
6, Korolev street  
249020 Obninsk  
USSR  
Tel : <7> (095) 546 39 10  
Tlx : 412633 INFOR SU  
Fax : <7> (095) 255 22 25

# D. LIST OF SESSIONS OF THE IOC COMMITTEE ON INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE (IODE)

Session	Date		Place	Chairman	
1st	07 - 10 Aug	1962	Washington	Dr. W.C. Jacobs,	USA
2nd	27 - 30 Jan	1964	Paris	Mr. Ch. Sauer,	Canada
3rd	31 Mar - 2 Apr	1966	Copenhagen	Mr. Ch. Sauer,	Canada
4th	23 - 26 Sep	1968	Paris	Dr. T. S. Austin,	USA
5th	21 - 25 Sep	1970	Geneva	Dr. T. S. Austin,	USA
6th	20 - 24 Sep	1971	Rome	Dr. T. S. Austin,	USA
7th	09 - 13 Jul	1973	New York	Dr. T. S. Austin,	USA
8th	12 - 17 May	1975	Rome	Dr. T. S. Austin,	USA
9th	15 - 19 Jan	1979	New York	Mr. T. Winterfeld,	USA
10th	05 - 13 Aug	1981	Hamburg	Mr. T. Winterfeld,	USA
11th	09 - 18 Jan	1984	New York	Mr. D. Kohnke,	FRG
12th	10 - 17 Dec	1986	Moscow	Mr. D. Kohnke,	FRG
13th	17 - 24 Jan	1990	New York	Dr. N. Flemming,	UK

A. NATIONAL CO-ORDINATORS FOR INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE  
AND OCEANOGRAPHIC DATA CENTRES

	NODC or DNA	Date when Founded	Special Responsibilities
<p>Adolfo J. Gil Villanueva Director, Centro Argentino de Datos Oceanograficos (CEADO) Avenida Montes de Oca 2124 1271 Buenos Aires ARGENTINA</p> <p>Tel : &lt;54&gt; (1) 21 00 61/67 Ext. 59 Fax : &lt;54&gt; (1) 21 77 97 Tlx : 21338 RACEL AR Attn. SIHN Tlm : HIDRO.ARGENTINA</p>	NODC	1974	RNODC-SOC
<p>The Director Australian Oceanographic Data Centre (AODC) Hydrographic Office, R.A.N. P.O. Box 1332 161, Walker street North Sydney, N.S.W. 2090 AUSTRALIA</p> <p>Tel : &lt;61&gt; (2) 925 48 70 Fax : &lt;61&gt; (2) 925 48 35 Tlm : B.SEARLE</p>	NODC	1964	
<p>Departamento de Geofisica Directoria De Hidrografia e Navegacao Rua Barao de Jacequai, s/no. 24040 Ponta da Armacao Niteroi, RJ BRAZIL</p> <p>Tel : &lt;55&gt; (21) 713 40 43 Fax : &lt;55&gt; (21) 718 79 41</p>	NODC	1971	
<p>Prof. Dr. Christo I. Christov Head of Department of Informatics Institute of Meteorology &amp; Hydrology 66, boulevard Lenin Sofia 1184 BULGARIA</p>	NODC	1985	
<p>Marine Environmental Data Service Department of Fisheries &amp; Oceans 200, Kent street, Ottawa Ontario K1A 0E6 CANADA</p> <p>Tel : &lt;1&gt; (613) 990 02 64 Tlm : R.WILSON.MEDS</p>	NODC		RNODC for Drifting Buoy Data

Mr. R.E. Montaner  
Chief, Centro Nacional de Datos Oceanograficos de Chile  
Instituto Hidrografico de la Armada  
Casilla 324  
Valparaiso  
CHILE

NODC 1968

Tel : <56> (32) 25 10 56  
Fax : <56> (32) 25 32 83  
Tlx : 230362 HIDRO CL  
Tlm : TOGA.CHILE

Mr. Hou Wenfeng  
National Marine Data & Information Service  
State Oceanic Administration (SOA)  
93, Liuwei road, Hedong district  
Tianjin 300171

NODC 1979

PEOPLE'S REPUBLIC OF CHINA  
Tel : <86> (22) 24 41 62  
Tlx : 23138 NODC CN

The Director  
Centro Colombiano de Datos Oceanograficos (CECOLDO)  
Mindefensa-Can-Oficina, 113  
Apartado Aereo 28466  
Bogota  
COLOMBIA

NODC

The Royal Danish Hydrographic Office  
Esplanaden 19  
1263 Copenhagen K  
DENMARK

Captain R. Toledo Echeverria  
Instituto Oceanografico de la Armada  
P.O. Box 5940  
Guayaquil  
ECUADOR

NODC 1972

Institute of Oceanography & Fisheries  
101, Kasr 21 - Ainy street  
Cairo  
ARAB REPUBLIC OF EGYPT

NODC 1971

Mr. P. Malkki  
Institute of Marine Research  
Asiakkaankatu 3  
P.O. Box 33  
SF 00931 Helsinki 93  
FINLAND

DNA 1960

Tel : <358> (0) 33 10 44

National Co-ordinator IODE  
IFREMER, Technopolis 40  
155, rue Jean-Jacques Rousseau  
92138 - Issy les Moulineaux Cedex  
FRANCE

NODC 1971

Tel : <33> (1) 47 23 55 28  
Tlx : 610775  
Tlm : G.STANISLAS

Mr. C. Brockmann  
Deutsches Ozeanographisches Datenzentrum  
Bundesamt für Seeschifffahrt und Hydrographie  
Bernhard-Nocht-Strasse 78  
Postfach 301220  
D-2000 Hamburg 36  
GERMANY

NODC 1967

Tel : <49> (40) 31 90 52 02  
Fax : <49> (40) 31 90 51 50  
Tlx : 211138 BSH HHD  
Tlm : C.BROCKMANN

Mr. M.A. Mensah  
Fishery Research Unit  
United Nations Development Programme, FAO  
P.O. Box B 62, Community 2  
Tema  
GHANA

DNA

Dr. E. Balopoulos  
Head, Greek National Oceanographic Data Centre  
National Centre for Marine Research  
GR-16604 Hellenikon  
GREECE

NODC 1986

Tel : <30> (1) 981 57 03  
Fax : <30> (1) 983 30 95  
Tlx : 224135 NCMR GR

Chief, Section of Hydrography  
Institute of National Geography  
Guatemala  
GUATEMALA

NODC 1949

Dr. Sekou Cisse  
Chef de la Division Gestion de l'Information  
B.P. 561, CERESCOR  
Conakry  
REPUBLIC OF GUINEA

NODC 1990

Tel : <224> 46 59 51/46 36 50  
Tlx : MDEC 22331 GE

Dr. J. Jonsson  
Marine Research Institute  
Skulagata 4  
Reykjavik  
ICELAND

NODC

Tel : <354> (1) 12 02 40  
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Tlm : MRI.ICELAND.LIBRARY

Mr. J.S. Sarupria  
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Dona Paula  
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INDIA

NODC 1964

Tel : <91> (62) 53-56/59 88  
Fax : <91> (62) 08 32/46 12  
Tlx : 194216 NIO IN, 194 316 MGG IN  
Cbl : OCEANOLOGY, PANAJI

Dr. Mohmood M. Abdul-Hussein  
Basrah University  
Marine Science Centre  
Basrah  
IRAQ

Tlx: 7025 UNEVRSTY IK

Dr. A. Hecht  
Oceanographic & Limnological Research Company  
P.O. Box 1793  
Haifa  
ISRAEL

Centro Nazionale per la Raccolta di Dati Oceanografici  
Consiglio Nazionale delle Ricerche  
7, Piazzale delle Scienze  
Rome  
ITALY

NODC 1965

Mr. Osamu Yamada  
Director, Japan Oceanographic Data Centre (JODC)  
Hydrographic Department, Maritime Safety Agency  
5-3-1 Tsukiji Chuo-ku  
Tokyo 104  
JAPAN

NODC 1965 IGOSS RNODC

Tel : <81> (3) 35 41 38 11  
Fax : <81> (3) 35 45 28 85  
Tlx : 2522452 HD JODC J  
Tlm : T.MORI/OMNET

RNODC for  
MARPOLMON  
(for WESTPAC  
region)  
RNODC  
WESTPAC  
RNODC-ADCP

Dr. E. Okemwa  
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KENYA

Head, Korea Oceanographic Data Centre  
National Fisheries Research & Development Agency  
Shirang-Ri, Kijang-Up, Yangsan-Gun  
Kyungsangnam-Do 626-900  
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NODC 1974

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LEBANON

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Nosy Be  
MADAGASCAR

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The Royal University of Malta  
Msida  
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Mr. Geog. Jose Luis Frias Salazar  
Jefe del Departamento de Oceanografia INEGI-SPP  
Insurgentes Sur 795 - 4º. Piso  
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MEXICO

NODC

Institut des Peches Maritimes  
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Rue du Chevalier Bayard  
Casablanca  
MOROCCO

NODC

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Laan van N.O. Indie 131  
P.O. Box 93120  
2509 AB Den Haag  
NETHERLANDS

NODC 1972

Tel : <31> (70) 344 07 80  
Fax : <31> (70) 383 21 73

Mr. J.G. Tobor  
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Victoria Island  
Lagos  
NIGERIA

NODC 1990

Tel : <234> (1) 61 73 85  
Cbl : OCEANOGRAPH

Mr. R. Leinebo  
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Nordnesparken 2,  
P.O. Box 1870/72  
5024 Bergen  
NORWAY

NODC 1972

Tel : <47> (5) 32 71 69  
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Tlx : 42297 OCEAN N  
Tlm : NODS.NORWAY  
Cbl : METEOCEAN

National Oceanographic Data Centre  
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37-K, Block 6, PECHS  
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PAKISTAN

NODC 1962

Tel: <92> (21) 43 43 08  
Tlx: 24681 NIO PK

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NODC 1984

Tel : <51> (14) 29 76 30

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NODC

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PORTUGAL

DNA 1986

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Tlx : 65990 HIDROG P

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Ing. G. Serpoianu  
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ROMANIA

DNA 1970

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28020 Madrid  
SPAIN

NODC 1968

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S-403 14 Goteborg  
SWEDEN

DNA 1971

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Fax : <46> (31) 13 04 47  
Tlx : 27108 NATFISH S

Dr. C.L. Hottinger  
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4056 Basel  
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Marine Science Department  
Faculty of Science  
Chulalongkorn University  
Bangkok 5  
THAILAND

Mr. A. Duncan  
Chief Information Officer  
Institute of Marine Affairs  
Hilltop Lane, Chaguaramas  
P.O. Box 3160  
Carenage Post Office  
TRINIDAD & TOBAGO, W.I.  
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Tlm : IMA.TRINIDAD.LIBRARY

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Tlx : 29474 DKSH TR

DNA 1982

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of Hydrometeorological Information (VNIIGMI)  
World Data Centre  
6, Koroleva street, Kaluga district  
Obninsk 249020  
USSR  
Tel : <7> (095) 546 39 10  
Tlx : 412633 INFOR SU  
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NODC 1962 IGOSS RNODC  
RNODC-  
MEDALPEX  
RNODC for  
MARPOLMON  
(for North  
Atlantic &  
Mediterranean)

Dr. M.T. Jones  
British Oceanographic Data Centre  
Proudman Oceanographic Laboratory  
Bidston Observatory, Birkenhead  
Merseyside L43 7RA  
UNITED KINGDOM  
Tel : <44> (51) 653 86 33  
Fax : <44> (51) 653 62 69  
Tlx : 628591 OCEANSB G  
Tlm : BODC.UK

NODC 1968 RNODC for  
instrumented  
& Remote  
Sensed wave  
data  
RNODC-JASIN

The Principal Secretary  
Ministry of Natural Resources & Tourism  
P.O. Box 9372  
Dar-es-Salem  
UNITED REPUBLIC OF TANZANIA

DNA 1971

Mr. Gregory Withee  
Director, National Oceanographic Data Centre  
National Oceanic & Atmospheric Administration/NESDIS  
1825, Connecticut avenue, NW  
Washington DC, 20235  
USA

NODC 1961    IGOSS/RNODC  
RNODC/  
CARIPOL

Tel : <1> (202) 673 55 94  
Fax : <1> (202) 673 55 86  
Tlx : 7401815  
Tlm : NODC.WDCA

Sr. Jorge Cigliutti  
Director, Centro Nacional de Datos Oceanograficos (CENDO)  
Capurro 980  
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Montevideo  
URUGUAY

NODC 1986

Director  
Direccion de Hidrografia y Navegacion de la Armada  
Observatorio Naval Cajigal  
23 de Enero, la Planicie  
Apartado Postale 6745, Carmelitas  
Caracas  
VENEZUELA  
Tlx : 21168 DCOTE ATT. DIHN

NODC 1985

Dr. Pham Van Ninh  
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Hanoi  
VIETNAM  
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Tlx : 411525 NCSR VT

NODC 1990

Mr. Vlado Dadic  
Institute of Oceanography & Fisheries  
P.O. Box 114  
58000 Split  
YUGOSLAVIA

WDC-A (Oceanography)  
National Oceanic & Atmospheric Administration  
1825, Connecticut Avenue, NW  
Washington DC, 20235  
USA

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Tlm : NODC.WDCA

WDC-B1 (Oceanography)  
Dr. V.I Smirnov  
Deputy-Director  
All-Union Research Institute of Hydrometeorological Information (VNIIGMI)  
6, Koroleva street, Kaluga district  
Obninsk 249020  
USSR

Tel : <7> (095) 546 39 10  
Tlx : 412633 INFOR SU  
Fax : <7> (095) 255 22 25

World Data Centre D (Oceanography)  
National Marine Data & Information Service  
State Oceanic Administration (SOA)  
P.O. Box 74  
93, Liu Wei road, Hedong district  
Tianjin 300171  
PEOPLE'S REPUBLIC OF CHINA  
Tel : <86> (22) 24 41 64  
Tlx : 23138 NODC CN  
Fax : <86> (22) 31 44 08  
CHINAPAC: 04602-24100104

International Council for the Exploration of the Sea  
Regional Oceanographic Data Centre  
Palaegade 2-4  
1261 Copenhagen K  
DENMARK  
Tel : <45> (1) 15 42 25  
Fax : <45> (1) 93 42 15  
Tlx : 22498 ICES DK  
Tlm : ICES.DK

RNODC-  
Formats

Dr. D. Pugh  
Director, Permanent Service of Mean Sea Level (PSMSL)  
Proudman Oceanographic Laboratory  
Bidston Observatory, Birkenhead  
Merseyside L43 7RA  
UNITED KINGDOM  
Tel : <44> (51) 653 86 33  
Tlx : 628591 OCEANB G  
Tlm : D.PIJGH

**B. GEOGRAPHICAL DISTRIBUTION OF OCEANOGRAPHIC DATA CENTRES**

**EUROPE**

Bulgaria	NODC
Finland	DNA
France	NODC
Germany	NODC
Greece	NODC
Iceland	NODC
Italy	NODC
Netherlands	NODC
Norway	NODC
Poland	NODC
Portugal	DNA
Romania	DNA
Spain	NODC
Sweden	DNA
Turkey	DNA
USSR	NODC
United Kingdom	NODC

**ASIA**

People's Republic of China	NODC
India	NODC
Japan	NODC
Pakistan	NODC
Philippines	NODC
Republic of Korea	NODC
Vietnam	NODC

**NORTH AMERICA**

Canada	NODC
USA	NODC

**CENTRAL AMERICA**

Guatemala	NODC
Mexico	NODC
Trinidad & Tobago	DNA

**SOUTH AMERICA**

Argentina	NODC
Brazil	NODC
Chile	NODC
Colombia	NODC
Ecuador	NODC
Peru	NODC
Uruguay	NODC
Venezuela	NODC

**AFRICA**

Arab Republic of Egypt	NODC
Ghana	DNA
Guinea	NODC
Morocco	NODC
Tanzania	DNA
Nigeria	NODC

**AUSTRALIA**

Australia	NODC
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C. EXISTING RNODCs AND THEIR TERMS OF REFERENCE

**RNODC - SOC : Operated by NODC of Argentina (28 August 1987)**

- Receive, control the quality and store in standard format the physical and chemical data obtained by the international scientific community from cruises and research programmes carried out in the Southern Oceans, and distribute on request the information contained in such files;
- Co-operate closely with WDCs-Oceanography, sending regular shipments (at least once a year) free of charge of complete sets of physical and chemical data stored on magnetic tape and in GF3, inventories, data summaries and other data products related to the physical and chemical data from the Southern Oceans;
- Assist the World Data Centres by sending copies to them of any ROSCOP forms submitted to the RNODC-SOC;
- Co-operate with the BIOMASS Data Center, regarding exchange of data and inventories, as well as other data products.

At present, the responsibility of the Center is not limited to a particular geographical area or data types within the Southern Oceans. However, if new offers are submitted to the Committee by other appropriate National Oceanographic Data Centres willing to act as RNODC-SOC for specific geographical areas or data types, the Committee may examine such offers to determine whether they would be compatible with responsibilities of the RNODC-SOC in Argentina.

**RNODC for Drifting Buoys Data : Operated by MEDS, Canada (1 January 1986)**

- Data from the GTS are accumulated for one week when they are processed, quality controlled and updated in the archival database;
- As soon as an agreement is reached with Service Argos, data from Service Argos will be acquired on a regular basis and archived in its original form;
- Data received from Service Argos will be available from MEDS archives within 30 days of reception. The archive base will be a 2000-database with special MEDS-written software for data input and output products;
- Data inventories and format information, as well as information on processing algorithms and quality control will be shipped within 7 days of receipt of request, free of charge;
- Data will be shipped, on IBM standard magnetic tape in GF3 subset format, within 30 days of receipt of a request. Every data shipment will be accompanied by sufficient documentation to enable the user to read the tape. The requestor will be asked to acknowledge receipt within 15 days of receiving the data;
- Accumulated data will be submitted each year to a World Data Centre within 3 calendar months of the end of the year. The data will be forwarded in GF3 format, on magnetic tape. All other aspects of data forwarding to the WDCs will be in accordance with IOC Manuals and Guides No. 9;
- Capability to produce data products from the data in the archive will be gradually developed. As these products are developed, they will be made available to users on request;
- Capability to produce data products from the data in the archive will be gradually developed. As these products are developed, they will be made available to users on request;
- Report regularly on its activities to the Group of Experts on RNODCs and to the WC/IODE.

**RNODCs for IGOSS (BATHY and TESAC) : Operated by NODCs of Japan, the USA and the USSR.**

- (a) acquire BATHY, TESAC data sets and sub-surface temperature data from drifting and moored buoys from IGOSS Specialized Oceanographic Center (SOC) for area of responsibility;
- (b) apply supplementary quality control to acquired data and provide services to users after 30 days from receipt of that data;
- (c) archive, and make available to users, selected data products from SOC and analysis centres;
- (d) acquire non-operational BATHY, TESAC and sub-surface temperature data from drifting and moored buoys and/or data sets for area of responsibility;
- (e) apply quality control of non-operational data, prepare integrated data sets and provide services to users;
- (f) provide for exchange of IGOSS data in GF-3 format with other RNODCs or to others users as requested;
- (g) maintain a database and inventories for areas of responsibility;
- (h) prepare products based on operational and non-operational IGOSS data, as appropriate;
- (i) transmit to the WDCs annually data sets in GF-3 format, inventories and selected data products;
- (j) 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;
- (k) participate in efforts to monitor data flow;
- (l) participate as feasible in IOC training programmes;
- (m) provide for exchange of documentation and software regarding quality control and processing procedures, with other RNODCs, as possible.

**RNODCs for MARPOLMON : Operated by NODCs of Japan, the USA and the USSR (3 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 them to such a form;
- a capability for performing quality control (format checks and/or environmental);

- 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 the 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.

Bearing in mind the Recommendations of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment, at its Sixth Session (Paris, 25 September - 1 October 1986), on the regional relevance to marine pollution management activities, RNODCs-MARPOLMON have been established in Japan, for the WESTPAC region, in the USA for the Caribbean region and in the USSR for the Atlantic, Mediterranean and Baltic Seas.

**RNODC - WESTPAC : Operated by NODC of Japan (24 February 1979)**

1. Producing 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;
2. Providing a mechanism for registration of WESTPAC cruises with RNODC-WESTPAC;
3. Working 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;
4. Publishing a guide for WESTPAC data management for distribution to Member States through national contact points.

**RNODC - Waves : Operated by BODC, UK**

1. Compile comprehensive inventories of instrumented wave data, using a standard reporting form and a worldwide community national co-ordinators for wave data.
2. Bank wave data values for remote-sensed satellite altimeter wave data and produce data products at level-2 and above.
3. Assist the WDCs, Oceanography through production of a world catalogue of instrumental wave data and forward data to the WDCs where these are held.
4. Provide services to users which include advice on wave data management, on wave data products, and on specialized data products derived from Remote Sensed data; sales of the world data catalogue.

5. Prepare a report and work closely with the Technical Committee on IODE, through its Group of Experts on RNODCs and Climate Data Services highlighting new developments and ensuring the provision of expert knowledge on instrumented and Remote Sensed satellite wave data to the data centres, PLANC, subsidiary bodies and other international organizations.

**RNODC - JASIN : Operated by BODC, UK (17 October 1985)**

The JASIN project was an intensive study, conducted during 2 months in 1978 in the North Rockall Trough, of the atmospheric and ocean boundary layer to observe the structure of the layer and its interaction with the large scale motions of the sea and air. More than 50 team. of investigators from 9 countries participated, using 14 ships and 3 aircraft, and deploying 35 mooring systems. Approximately, 20 different types of oceanographic and meteorological data make up the 44 data sets planned for inclusion in the project archive. These include wave spectra, moored and drifting current meter data, vertical current profiles, temperature data (atmosphere and sea surface), thermistor chain data, data from conductivity/temperature/depth type instruments (for example CTDs, XBTs, water bottles, towed thermistors), meteorological data from surface ship/buoys, tethered balloons, aircraft and radio sondes and heat and moisture flux data.

The importance now attached to a more complete scientific understanding of the large scale processes controlling the global circulations of the oceans and atmosphere systems gives a particular value to detailed observations of air-sea interaction processes such as those in the JASIN project. The intensive observation period of the project also lay within the brief active observing life of the pioneering SEASAT microwave ocean observation satellite. The use of the 2 data sets in combination has proved extremely fruitful.

In order to establish the JASIN project archive, the RNODC is established to acquire copies of the data sets, to screen them for corruption or major errors, collating the necessary data documentation, and to convert them into the IOC GF-3 format for international oceanographic data exchange. Once the preparation of the archive is complete, an inventory will be produced describing its contents.

The RNODC will provide copies of project data sets in GF-3 format in response to inquiries received through the IODE system. A number of the data sets are already available; others will be made available as and when their archival is completed.

**RNODC - Formats : Operated by the Service Hydrographique of ICES**

1. Act as an archive centre for international marine environmental data formats, maintaining a full set of documentation on all such formats.
2. Act as an archive centre for code tables for GF3 and code tables for all other international archival formats, and for external code tables (e.g., taxonomic codes, chemical substance codes, etc.). The RNODC would maintain references to all such code tables.
3. Manage the expansion of the existing GF3 parameter code table as necessary under the guidance of the Committee on IODE (through its Group of Experts on Format Development or its successor) and to provide a focal point to which user requirements for new parameter codes may be directed.
4. Maintain user aids for GF3, including a programme library for processing of GF3, guidance notes and user guides, documentation of standard and experimental subsets of GF3, and sample data tapes of GF3 subsets.
5. Function as a centre for services to other centres in IOC and ICES Member States in such GF3 matters as responses to requests for information about, or copies of, items mentioned above.

6. Prepare a report to the Working Committee, through its Group of Experts on RNODCs, together with an annual newsletter for distribution to National Co-ordinators for IODE, National Oceanographic Data Centres, and other interested parties, such as WMO, ECOR and SCOR, highlighting new developments in GF3 and including an updated inventory of the documents, programmes, tapes, formats and code tables available.
7. Work closely with the Group of Experts on Format Development or its successor to ensure the provision of expert knowledge on formats to other centres, including WDCs-A and -B (all disciplines) and subsidiary bodies of WMO, IOC and other international organizations and in the promotion of GF3 as an exchange format. The provision of expert knowledge will be assured in fields covering:
  - (a) guidance in the uses of GF3;
  - (b) assistance to developing countries with the development of national formats compatible with GF3, and
  - (c) assistance to developing data centres and countries, in collaboration with other RNODCs, in converting data into GF3.

**A. COMPOSITION OF THE IODE SYSTEM**

Chairman:	Dr. N. Flemming (UK)
Vice-Chairman:	Dr. V. Smirnov (USSR)

**GROUPS OF EXPERTS**

**Chairman**

RNODCs and Climate Data Services	Mr. G. Withee (USA)
Technical Aspects of Data Exchange	Dr. M.T. Jones (UK)
Marine Information Management	....

**TASK TEAMS**

Marine Biological Data (Netherlands)	Prof. Dr. S. van der Spoel
Marine Geological and Geophysical Data	Dr. M. Loughridge (USA)
Development of IODE Data Centre Services and Products	Dr. Y. Sychov (USSR)
Remotely Sensed Oceanographic Data	....
Oceanographic Data Quality Control	....

**RAPPORTEURS**

Banking of Marine Chemical Data	....
IODE-IGOSS Data Flow	Mr. G. Withee (USA)

**B. GROUP OF EXPERTS ON RNODCs AND CLIMATE DATA SERVICES**

Chairman: Mr. G. Withee (USA)

Date of Establishment: May 1975

Rec. IODE-VIII.12

Res. IX.28

Res. IODE-X.2

Res. IODE-XII.1

Terms of Reference: (modified by IODE-XIII, January 1990)

- Establish RNODCs as necessary to meet IODE responsibilities in accordance with the Guidelines specified in the IOC Guide on RNODCs (IOC Manuals & Guides No. 9, Annex II);
- Develop and implement criteria based on scientific requirements of the research programmes under which climate related RNODCs will operate;
- Monitor the performance of the Centres and co-ordinate the international tracking of climate data sets;
- Propose policies to enhance submission and exchange of ocean climate research data, giving particular attention to the data needs of the ocean component of IGBP, together with ocean data management activities within TOGA, WOCE and JGOFS;
- Plan and implement the GTSP and prepare for the Ocean Climate Data Workshop provisionally scheduled for September 1991.

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**GROUP OF EXPERTS ON TECHNICAL ASPECTS OF DATA EXCHANGE**

**Chairman:** Dr. M.T. Jones (UK)

**Date of Establishment:** January 1979

**Terms of Reference:** (Modified by IODE-XIII, January 1990)

- Incorporate binary data in GF3 with supporting software preparation, restricting this type of data to use through GF3-Proc;
- Prepare and Publish the remaining volumes in IOC Manuals & Guides No. 17;
- Evaluate the JGOFS format and develop a free format version of GF3 suitable for use on microcomputers by non-programmers, also considering the use of such a format for environmental quality and biological data;
- Collaborate with the IGOSS GE/OTA with a view to identifying and developing common areas of interest, improving the effectiveness of data exchange between IGOSS and IODE systems, and continually reviewing the link between the GF3 and BUFR formats;
- Evaluate the demands on the IODE for new technical solutions, particularly with reference to the requirements expressed by the Ocean Climate Data Workshop.

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**GROUP OF EXPERTS ON MARINE INFORMATION MANAGEMENT**

**Chairman:** ....

**Date of Establishment:** January 1984  
Rec. IODE-XI, 4  
Res. EC-XVII.5

**Terms of Reference (adapted by IODE-XIII, January 1990):**

- Advise the Committee on IODE on the policy, development and further implementation of an effective international system for scientific and technical information relating to the marine environment by keeping user requirements under continuing review and ensuring that these requirements can be met adequately;
- Identify the policy, technical and financial problems involved in the development and implementation of marine information management systems, and make recommendations concerning solutions of those problems;
- Develop programmes to improve the ability of Member States, particularly developing countries, to benefit from, and participate in, marine information management systems and keep Member States informed on how they might best gain access to such systems;
- Report to the Committee on IODE on matters related to marine information and services of the UN and the specialized agencies with special emphasis on ASFIS and MEDI;
- Advise the Secretary of IOC on the technical aspects of marine information management, particularly ASFIS and MEDI maintained or co-ordinated by ICSPRO Members and UNEP;
- Develop activities leading to the compilation and publication of Directories of Marine Scientists and Institutions.

Composition of the Group of Experts on Marine Information Management

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**TASK TEAM ON MARINE BIOLOGICAL DATA**

**Chairman:** Prof. Dr. S. van der Spoel (Netherlands)

**Date of Establishment:** August 1981  
Res. IODE-X.5

**Terms of Reference (modified by IODE-XIII, January 1990)**

- further investigate the general need for the international exchange of marine biological data and information;
- develop more specific guidelines for the recording, documenting and exchange of marine biological data for eventual incorporation in IOC Manuals and Guides No. 9; and consider mechanisms (including Groups of Experts, RNODC's etc.) which could be established to facilitate the international exchange of biological data, including the development of inventories of the sources of marine biological data;
- study the various biological taxonomic coding schemes currently in use nationally, internationally or regionally, with a view to recommending on their suitability for IODE, giving special attention to standardization in taxonomy, biogeography and ecology;
- act as the focal point of the Committee on IODE for matters relating to marine biological data management working in close co-operation with appropriate intergovernmental and non-intergovernmental bodies and programmes (such as OSLR, BIOMASS, IABO, the Baltic Monitoring Programme, JGOFS, IGBP, etc.);
- design promotional material explaining the merits of archiving and exchanging marine biological data;
- consider, in co-operation with the GETADE and interested national institutions the development of a pilot project for GF3 formatting of Biomass and chlorophyll data.

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**TASK TEAM ON EXCHANGE OF MARINE GEOLOGICAL AND GEOPHYSICAL DATA**

**Chairman:** Dr. M.S. Loughridge (USA)

**Date of Establishment:** August 1981  
Rec. IODE-X.10  
Res IODE-XI.6

**Terms of Reference (modified by IODE-XIII, January 1990)**

- Identify the most pressing needs of the international community for marine geological and geophysical data exchange;
- Review the status of existing data management systems, including inventories, with regard to marine geological and geophysical data, including resource oriented data, needs within the IODE systems and in other relevant international organizations;
- Consider data exchange formats related to newly developed technology (e.g., multi-beam echo sounders);
- Advise the Committee and the Group of Experts on Format Development, as necessary on parameters to be included in additional standard GF-3 marine geological and geophysical data subsets;
- Advise the Committee on ways to encourage and increase the international exchange of such data;
- Establish appropriate liaison with the IOC Consultative Group on Ocean Mapping and IOC-UN(OALOS) Guiding Group of Experts on OSNLR activities;
- Advise the Committee on new developments and data needs for OSNLR and Ocean Mapping activities;

Composition of the Task Team on Exchange of Marine Geological and Geophysical Data

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**TASK TEAM ON DEVELOPMENT OF IODE DATA CENTRE SERVICES AND PRODUCTS**

**Chairman:** Dr. Y. Sychov (USSR)

**Date of Establishment:** August 1981  
Res. IODE-X.8

**Terms of Reference (continued by IODE-XIII, January 1990)**

- Examine the data products and services provided by different oceanographic data centres, and make recommendations to the IOC Committee on IODE on the publication of a catalogue of typical data products, with indications of their typical uses and users;
- Review and collate the requirements already expressed by CCCO, SCOR, and the IODE Task Team on Ocean Data Management for Climatic Studies, in order to identify the principle oceanographic variables, parameters, presentation methods spatial and temporal resolution, interpolation techniques, gridding and other specifications to define data products which will meet their needs. To identify a small number of data types which could be considered for the most urgent attention within the capabilities of the IODE system;
- Report to the IOC Committee on IODE on the technical and resource implications of preparing standard data products and their scientific usefulness;

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## **TASK TEAM ON REMOTELY SENSED OCEANOGRAPHIC DATA**

**Chairman:** ....

**Date of Establishment:** December 1986  
Res. IODE-XII.7

**Terms of Reference (modified by IODE-XIII, January 1990):**

- Develop a range of information products for the marine science community, including an update of the MEDI Catalogue on Remotely Sensed Oceanographic Data, and using, besides printed products, floppy discs, CD-ROMs and electronic mail;
- Actively participate in and contribute to the development of training courses on Remote Sensing of the marine environment through the IODE TEMA activities;
- Liaise with the relevant groups and committees of WMO and IGOSS, in order to develop a solution for the problems related to satellite-derived SST data products;
- Assist in developing in close relation with the relevant agencies and programmes, a global satellite derived SST contour demonstration product in GF3 format, intended to demonstrate the possibility of integrating such satellite-derived data with in-situ data on the format level, and subsequently evaluate the interest for such a product being produced on a regular basis;
- Investigate, in close collaboration with the Group of Experts on Technical Aspects of Data Exchange, the possible development of, and interest for, GF3 subsets for specific types of satellite data products;
- Provide the Committee and IOC with advice and assistance in the implementation of Recommendations of IOC/IODE related to Remote Sensing and act as a focal point within IODE on this topic.

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## **TASK TEAM ON OCEANOGRAPHIC DATA QUALITY CONTROL**

Chairman: ....

Date of Establishment: December 1986  
Res. IODE-XII.9

Terms of Reference (adapted by IODE-XIII, January 1990):

- Study national algorithms, quality control procedures, standards and software for oceanographic data and make analytical reviews;
- Prepare a Manual of Data Quality Control Algorithms and Procedures for publication, taking into account the Quality Control Manuals developed for the TOGA Subsurface Data Centre and the planned GTSP, and keep track of any changes in the algorithms;
- Advise NODCs on the application of international quality control algorithms and procedures and give practical assistance;
- Collaborate with national and international scientific organizations in reviewing quality control algorithms and procedures,
- Develop and obtain international agreement on the requirements for the quality control of oceanographic data;
- Approve and recommend for international use appropriate data quality control procedures for a variety of observations in physical oceanography.

Composition of the Task Team on Oceanographic Data Quality Control

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**D. RAPPORTEUR ON BANKING OF MARINE CHEMICAL DATA**

**Rapporteur :**

**Date of Establishment:** December 1986  
Res. IODE-XII.8

**Terms of Reference:**

- Establish in co-operation with the Group of Experts on RNODCs and Climate Data Services, a list of chemical data types which are most important as tracers of oceanic water movements;
- Identify priorities in the data banking of marine chemical tracers in consultation with the Joint SCOR-IOC/CCCCO;
- Prepare a report with a list of important tracer chemicals, identifying their use in ocean climate studies, defining the quality control procedures needed in each case, identifying the documentation on analytical procedures needed with each data type, and examining the suitability of GF3 to handle these data;
- Assist in convening an ad hoc meeting on the subject of marine chemical tracers during the intersessional period, and report to IODE-XIII on the recommendations of the meeting;
- Assist in identification of need of an NODC or other specialized data centre which would be prepared to provide services as an RNODC-Chemical Tracer Data.

**RAPPORTEUR ON IODE-IGOSS DATA FLOW**

**Rapporteur:** Mr. G. Withee (USA)  
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**Date of Establishment:** December 1986  
IODE-XII.SR para. 95

**Terms of Reference:**

The Committee noted the decision of the Fourth Session of the 95 Joint Working Committee for IGOSS to nominate an IGOSS-IODE Rapporteur and was pleased to accept the proposal of its Chairman to nominate Mr. G. Withee to serve as IODE-IGOSS Rapporteur. The nomination of the Rapporteurs by the Working Committee on IODE and for IGOSS will certainly be useful to meet increased requirements for IGOSS data and products.

## LIST OF IOC PUBLICATIONS RELEVANT TO THE IODE ACTIVITIES

- Guide to IGOSS Data Archives and Exchange (BATHY and TESAC), Revised Edition. IOC Manuals and Guides No. 1, UNESCO, 1985 (now under revision).
- International Catalogue of Ocean Data Stations. IOC Manuals and Guides No. 2, UNESCO, 1975 (now under revision).
- Guide to Operational Procedures for the Collection and Exchange of Oceanographic Data (BATHY and TESAC) Revised Edition. IOC Manuals and Guides No. 3, UNESCO, 1984.
- Guide for Establishing a National Oceanographic Data Centre. IOC Manuals and Guides No. 5, UNESCO, 1975.
- Manual on International Oceanographic Data Exchange (Fourth Edition). IOC Manuals and Guides No. 9, UNESCO, 1991 (in preparation)
- Guide for Responsible National Oceanographic Data Centres. IOC Manuals and Guides No. 9, Annex II, UNESCO, 1982.
- Marine Environmental Data Information Referral Catalogue. 2nd Edition. IOC Manuals and Guides No. 16, UNESCO, 1985.
- Description of GF3, A General Formatting System for Geo-Referenced Data.  
IOC Manuals and Guides No. 17.  
Vol. 1, Introductory Guide (not yet available).  
Vol. 2, Technical Description of GF3 Format and Code Tables, UNESCO, 1987.  
Vol. 3, Standard Subsets of GF3 (planned for 1991)  
Vol. 4, User's Guide to the GF3-Proc Software, UNESCO, 1989.  
Vol. 5, Reference Manual for the GF3-Proc Software (planned for 1991).  
Vol. 6, Quick Reference Sheets for GF3 & GF3-Proc, UNESCO, 1989.
- User Guide for the Exchange of Measured Wave Data. IOC Manuals and Guides No. 18, UNESCO, 1987.
- Cruise Summary Report (ROSCOP), Third Edition, UNESCO, 1990.
- Global Temperature Salinity Pilot Project (GTSP) Quality Control Manual, IOC Manual and Guides No. 22, UNESCO, 1990.