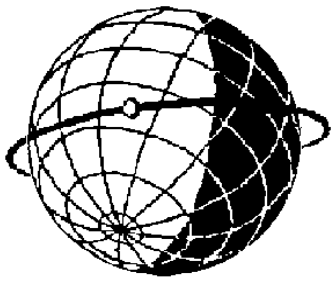
WORLD DATA CENTER
for Oceanography, Silver Spring



CATALOGUE OF DATA

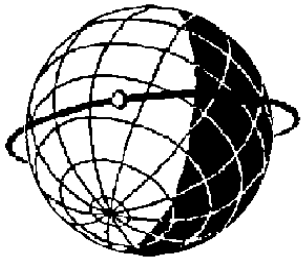
and

REPORT OF DATA EXCHANGE

2000 - 2001

World Data Centers conduct international exchange of geophysical observations in accordance with the principles set forth by the International Council of Scientific Unions. WDCs are established in the United States under the auspices of the National Academy of Sciences.

WORLD DATA CENTER
for Oceanography, Silver Spring



CATALOGUE OF DATA
and
REPORT OF DATA EXCHANGE
2000 - 2001

CHANGE NOTICE NOS. 66, 67, 68, AND 69

(1 JANUARY 2000 - 31 DECEMBER 2001)

World Data Center for Oceanography
Silver Spring, Maryland

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2003

ABSTRACT

This publication lists and describes all data received by the WDC for Oceanography, Silver Spring, during the period 1 January 2000 - 31 December 2001. It supplements the original six-volume Catalogue of Data, which includes Change Notice Nos. 1-16. It also includes tabulations of data received during 2000 - 2001 as well as summarizations of data received prior to 2000. The types of data include oceanographic station data, bathythermograph data, current measurements, biological observations, meteorological observations, and sea surface measurements. An Alphabetical Index of ship names and a Geographical Index of ocean areas assist the user in selecting the required data.

CONTENTS

WORLD DATA CENTER

The World Data Center consists of the Coordination Office and thirteen subcenters:

World Data Center U.S.A.
Coordination Office
National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418, U.S.A.

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GLACIOLOGY (SNOW AND ICE):

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University of Colorado
Boulder, Colorado 80309, U.S.A.

Telephone: (303) 492-5171
FAX: (303) 492-2468

PALEOCLIMATOLOGY:

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NOAA/NGDC E/GC4
325 Broadway
Boulder, Colorado 80303, U.S.A.

Telephone: (303) 497-6160
FAX: (303) 497-6513

ROTATION OF THE EARTH

WDC for Rotation of the Earth,
Washington
Earth Orientation Department
U.S. Naval Observatory
Washington, D.C. 20392-5100, U.S.A.

Telephone: (202) 762-1469
FAX: (202) 762-1563

OCEANOGRAPHY:

WDC for Oceanography, Silver Spring
NOAA/NODC E/OC53
Silver Spring, MD 20910-3282, U.S.A.

Telephone: (301) 713-3295
FAX: (301) 713-3303

METEOROLOGY:

WDC for Meteorology, Asheville
National Climatic Data Center
NOAA, E/CC
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001, U.S.A.

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Telephone: (301) 286-6695
FAX: (301) 286-1635

SOLID-EARTH GEOPHYSICS (TSUNAMIS, GRAVIMETRY, EARTH TIDES, RECENT MOVEMENTS OF THE EARTH'S CRUST, MAGNETIC MEASUREMENTS, PALEOMAGNETISM AND ARCHEOMAGNETISM, VOLCANOLOGY, GEOTHERMICS):

WDC for Solid Earth Geophysics, Boulder
NOAA/NGDC E/GC1
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Boulder, Colorado 80303, U.S.A.

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SOLAR-TERRESTRIAL PHYSICS (SOLAR AND INTERPLANETARY PHENOMENA, IONOSPHERIC PHENOMENA, FLARE-ASSOCIATED EVENTS, GEOMAGNETIC VARIATIONS, MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC PHENOMENA, AURORA, COSMIC RAYS, AIRGLOW):

WDC for Solar-Terrestrial Physics, Boulder
NOAA/NGDC E/GC2
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HUMAN INTERACTIONS IN THE ENVIRONMENT:

WDC for Human Interactions in the Environment
CIESIN/Columbia University
P.O. Box 1000
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Palisades, NY 10964, U.S.A.

Telephone: (914) 365-8988
FAX: (914) 365-8922

MARINE GEOLOGY AND GEOPHYSICS (GRAVITY, MAGNETICS, BATHYMETRY, SEISMIC PROFILES, MARINE SEDIMENT AND ROCK ANALYSIS):

WDC for Marine Geology and Geophysics, Boulder
NOAA/NGDC E/GC3
325 Broadway
Boulder, Colorado 80303-3328, U.S.A.

Telephone: (303) 497-6390
FAX: (303) 497-6513

ATMOSPHERIC TRACE GASES:

WDC for Atmospheric Trace Gases
Carbon Dioxide Information Analysis Center
Oak Ridge National Laboratory
Oak Ridge, TN 37831-6335, U.S.A.

Telephone: (423) 241-4842
FAX: (423) 574-2232

REMOTELY SENSED LAND DATA:

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U.S. Geological Survey
EROS Data Center
Sioux Falls, SD 57198, U.S.A.

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FAX: (605) 594-6589

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U.S. Geological Survey
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Denver, Colorado 80225-0046, U.S.A.

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PREFACE

The six-volume Catalogue of Data and the loose-leaf Change Notice Numbers 1-16, which have been integrated into the Catalogue, list all oceanographic data received by World Data Center for Oceanography, from July 1957 through June 1975. The Catalogue has a loose-leaf arrangement of sheets, which have been punched for standard three-ring binders. It includes station location charts for many cruises.

Beginning with Change Notice No. 17, each Change Notice is printed in a modified format as a separate, bound publication describing all data received during a particular six-month or one-year period. The six-volume Catalogue of Data, including Change Notice Nos. 1-16, continues to serve as a reference volume for data received from July 1957 through June 1975. Provision has been made in the modified format for correlating newly received data for a particular cruise with data previously received for that same cruise and already described in a prior Change Notice. The capability for identifying those data, which have been machine-processed by a national, regional, or responsible national oceanographic data center, has been retained in the modified catalogue format.

Until recently, data gathered before the beginning of the IGY in 1957 had not been extensively accessioned by World Data Center for Oceanography; however, numerous international bodies have pressed the WDCs, Oceanography to accession as much historical data as possible, in order to augment the data bases required for support of Climate Research and Global Change Programs. Thus, the acquisition of pre-IGY, as well as post-IGY data, has become a high priority goal for the WDC. The Catalogue now contains pre-IGY data accessioned by the WDC and available in automated form to requesters in the international oceanographic community. The Global Oceanographic Data Archaeology and Rescue (GODAR) program has generated significant contributions of historical oceanographic observations from numerous countries.

It should be noted that the designations of countries used in this publication do not imply the expression of any opinion whatsoever on the part of this Center concerning the delineation of the territorial boundaries, the political subdivisions, or the legal status of any country or territory. WDC for Oceanography, will make every effort to promptly correct any inconsistency that is brought to its attention.

INTRODUCTION

The World Data Center system was established in 1957 to collect data from the numerous and widespread observational programs of the International Geophysical Year (IGY) under the principles set forth by the International Council of Scientific Unions (ICSU) and to make such data readily accessible for an indefinite period of time to interested scientists and scholars. The system consists of World Data Centers (WDCs) located in the U.S.A., Russia, Western Europe, Japan, India and the People's Republic of China. The WDC in the United States is established under the auspices of the U.S. National Academy of Sciences, where the Coordination Office is located. The WDC is divided into thirteen discipline subcenters whose addresses are given on pages iv and v. These centers are located in institutions which, in the opinion of the Academy, can best serve the interests of science because of their data-handling capabilities for the appropriate scientific disciplines. WDC for Oceanography, is collocated with the National Oceanographic Data Center (NODC) in Silver Spring, Maryland.

After completion of the IGY program, ICSU delegated the responsibility for the operation of the World Data Centers to its Comite International de Geophysique (CIG) and subsequently to the ICSU Panel on World Data Centres. The framework for continued international exchange of oceanographic data is set forth in ICSU's Guide to the World Data Center System and the Intergovernmental Oceanographic Commission's (IOC's) Manual on International Oceanographic Data Exchange.

The types of oceanographic data desired for inclusion in the World Data Center system are those from international cooperative expeditions, Global Change and Climate Research Programs, and those associated with various countries' National Oceanographic Programs. Data are to be exchanged internationally in accordance with provisions of the IOC's Manual and the ICSU Guide. Lists of National Oceanographic Programs are compiled by various national committees on oceanography and submitted to the Intergovernmental Oceanographic Commission for dissemination to the international oceanographic community.

Contributors of oceanographic data to the World Data Center system and national committees on oceanography are urged to compare the Catalogue of Data with data gathering cruises and expeditions listed in IOC information documents or on-line information systems to determine whether the cruises actually completed agree with those listed and to ensure that the data resulting from them are transmitted to the World Data Centers in the manner prescribed by the IOC Manual and the ICSU Guide. Data need not be limited to those identified in IOC documents or on-line systems; WDC for Oceanography, welcomes all data that fall within the framework of the ICSU Guide and the IOC Manual and that contributors may wish to include in the international marine data base of the WDCs.

HOW TO USE THE CHANGE NOTICE TO THE CATALOGUE OF DATA

Catalogue Numbering System

The catalogue numbering system uses groups of numbers and letters to designate identifying references for purposes of data archiving and retrieval. A catalogue number consists of numerals for the assigned: series, country, institution, ship and cruise.

Series — The catalogue numbering system is divided into basic groups called series. At present, these consist of the 100 series for data from ships and other mobile platforms and the 200 series for data from shore and fixed stations in the following categories:

a. Coastal and island stations.
b. Near shore manned stations; i.e., lightvessels and platforms.
c. Offshore manned stations; i.e., ocean weather ships.
d. Unmanned stations; i.e., automatic buoys.
e. Stations on shipping routes.
f. Offshore reference stations visited regularly.
g. Cables in use for oceanographic observations.
h. Repetitive drifting observations; i.e., ice islands, drifting buoys.

Country — A list in the Indexes section includes all countries and institutions from which this Center has received data during this period together with their discrete identifying numbers. The series and two-digit country number comprise the first three digits of the catalogue number.

Example: For country number 01, Argentina, data from ships and mobile platforms are catalogued as 101, and data from shore and fixed stations as 201.

NOTE: The designations of countries used in this publication do not imply the expression of any opinion whatsoever on the part of this Center concerning the delineation of the territorial boundaries, the political subdivisions, or the legal status of any country or territory.

Institution — An institution which contributed data, either directly or through its designated national agency or national, regional or specialized oceanographic data center, is assigned a decimal number following the series/country number.

Example: The number 101.01 is assigned to data taken by ships and mobile platforms and received from the Argentine Servicio de Hidrografia Naval, and the number 201.01 is assigned to data taken at shore and fixed stations and received from the same institution.

Ship — Each ship, or in some instances a group of ships operating together, is

assigned a letter following the series/country/institution number. The letter is followed by a number assigned to the particular cruise as the data are received.

NOTE: The term "cruise" is used in this catalogue to define, whenever possible, the beginning and ending dates of a series of data collected by a ship, usually identified by the contributing institution with a cruise name and/or number. Sometimes it is necessary to group several series of data from one or more ships together under one catalogue number.

Example: The first cruise data received from the Argentine Servicio de Hidrografia Naval are from the ship CAPITAN CANEPA, which is assigned the letter A, followed by the number 01, thus A-01; the second cruise is A-02, the third A-03, etc. Thus, the catalogue numbers 101.01 A-01, A-02, A-03, etc.

A similar system is used in the 200-series for ships but is not applied to lightvessels and fixed shore stations; for the latter the ship/cruise identifier is omitted. For these categories, the series/country/institution numbers are given, but the lightvessel's or station's name must be added instead of the ship/cruise number to complete the catalogue identification.

Example: The Canadian station at Triple Island is identified as: 206.03 Triple Island.

A shore station is listed under the country in or near whose territory it is located. If observations are carried out and the data contributed by an institution of another country, the observing country's name and institution are listed after the name of the country of location.

How to Use the Alphabetical Index

1. Look up the name of the ship or fixed station in the Alphabetical Index where the related country/institution/ship catalogue numbers are listed.

2. Look up, under the respective countries, the indicated Catalogue Numbers.

How to Use the Geographical Index

1. Obtain the geographic area number and name from the Geographical Index Charts.

2. Look up the list of catalogue numbers of available data for the area in the Geographical Index.

3. Use these catalogue numbers to locate information about the types and amount of data available.

How to Obtain Data from WDC for Oceanography

When communicating with the Center for additional information concerning data, the requester should, where possible, refer to the specific catalogue numbers for data of interest. The catalogue numbers are designed to facilitate the identification and retrieval of the information or data you need.

Address all correspondence to:

Director, World Data Center for Oceanography
National Oceanic and Atmospheric Administration
Silver Spring, MD 20910-3282 U.S.A.

If you telephone, the numbers are:

The Director: 301-713-3290.
The Data Archives: 301-713-3295.
FAX: 301-713-3303
E-mail: wdc@nodc.noaa.gov

If you wish to visit the Center, its office hours are from 9:00 a.m. to 3:00 p.m., Monday through Friday. The Center is not open on Saturdays, Sundays, and U.S. national holidays. If you wish the use of study space, you should, if possible, give the Center advance notice so that necessary arrangements can be made. There is no charge for the use of study space.

Data Exchange Policy of World Data Center for Oceanography

World Data Centers are held responsible for the provision of data and information to qualified requesters in the scientific community either in exchange or at a cost not to exceed that of processing and shipping. Unless a requester specifies otherwise, the Center is responsible for using the method which most satisfactorily reproduces the data or information item at the least cost. For certain types of requests, limitations in funding, personnel, or facilities may preclude direct or free provision of data or information by the World Data Center.

Data exchanges between WDC for Oceanography and WDC's in the same discipline usually take place without charge for routine exchanges of mutually agreed-upon types of data received by WDC-A in internationally-approved data exchange formats and in readily reproducible media forms. Non-standard data types are not normally exchanged. The ICSU Panel has now recognized that it is not always economically feasible to copy large data sets from one WDC to another. For certain types of data, the exchange of inventories of available data in a WDC subcenter may be considered acceptable in lieu of the transfer of the actual data sets.

In general, reasonably-sized requests from national or regional contributors to WDC for Oceanography may be considered as exchange, and equivalent data thus provided to the requester without charge. For requests for unusually large amounts of data, for specially formatted data, for derived data products, or for data to be obtained from outside the WDC system, WDC will normally be required to recover the costs of processing and shipping, or, at its discretion, may arrange for the request to be serviced by an RNODC or a regional, national, or disciplinary center. WDC may serve as an intermediary or coordinator for requests for unique types of data or data in other disciplines by placing the originator of the request in contact with the appropriate institution or disciplinary center.

Normally, WDC for Oceanography considers its data exchange commitment with a cooperating Data Center to be limited to the servicing of those requests or routine updating requirements intended to build or enhance standard data bases operated by that Center for specific, mutually agreed-upon data types and geographical areas of national or scientific interest. If the availability of funding and resources permit, the WDC also attempts to assist such cooperating Data Centers when they require special data sets for institutions that are performing project-related research for international climate and global change programs and/or that have historically contributed data to WDC for Oceanography through that Data Center. WDC for Oceanography is obliged, in any case, to follow the exchange and cost recovery policies of its sponsoring (funding) government agency, while attempting to maintain consistency with data exchange guidelines of the ICSU Panel on WDC's as published in the ICSU Guide.

Data and information may be requested from WDC for Oceanography through NODCs, Designated National Agencies, or any other organization identified by national or international initiatives as responsible for communication with the World Data Centers. These materials may also be requested directly from WDC for Oceanography. Organizations, institutions, or individuals from Member States of the IOC may apply to the IOC Secretariat or UNESCO for possible assistance in funding their projects.

Data Centers or institutions in the international community that have acquired an automated data set or specialized data product from the WDC must be aware that original data sets are updated from time to time, errors corrected, or spurious data deleted by the originating data center. Where duplicate data sets are deliberately held in this way, the holder is responsible for making regular contact, as required, with the originating center to check whether the old data set is still valid, whether it should be deleted, or whether new data are available. The WDC bears no responsibility in the conduct of these arrangements, except as regards the provision of information in its role as a coordination and referral center.

Acknowledgment of Data Sources

In many instances, data contributed to the Center are unpublished at the time of receipt. Unpublished data are identified in the Change Notice by the absence of a publication number in the column entitled Data Center Reference Number. Accordingly, as stipulated by the Guide, recipients of copies of such data from the Center are reminded that the rights of the original investigators must always be respected. Thus, it is requested that ***if any data supplied by WDC for Oceanography are published, due acknowledgment be made of the institution (and where appropriate, the principal investigator) which undertook the original observations***. To facilitate proper acknowledgment, the Change Notice indicates the originating institution.

PART I

CATALOGUE INDEXES

EXPLANATION OF THE ALPHABETICAL INDEX OF SHIPS AND FIXED STATIONS

This index presents in alphabetical order the names of the ships, lightvessels, platforms, and shore stations that are listed on the Data Information sheets.

Ship or Fixed Station — The name of the ship, lightvessel, platform, lighthouse, shore station, etc. Names of ships and lightvessels are given in capital letters, with lightvessels identified by (LV) after their name. All others not so identified are shore or other types of fixed stations.

Country — The name of the country that used the ship to collect data, or the name of the country in or near whose territory fixed oceanographic station observations were made. If the data were collected by an institution of another country, the contributing country is listed after the one where the observations were taken.

Catalogue Number — The country and institution numbers and ship letter assigned to each ship are given in this column to facilitate locating data information in the catalogue.

EXPLANATION OF THE GEOGRAPHICAL INDEX

The Geographical Index is based on the divisions of areas shown on the three charts immediately preceding the Index. These divisions are defined in "Limits of Oceans and Seas," Special Publication No. 23 of the International Hydrographic Bureau, third edition, Monaco, 1953. To define the extensive areas of the Atlantic, Indian, and Pacific Oceans more specifically, the following subdivisions have been added:

23 - *North Atlantic Ocean*

23a - Northeast Atlantic
23b - Northwest Atlantic

45 - *Indian Ocean*

45a - Northwest Indian
45b - Northeast Indian
45c - Southwest Indian
45d - Southeast Indian

SO - *Southern Ocean*

South of latitude 50° South

32 - *South Atlantic Ocean*

32a - Southeast Atlantic
32b - Southwest Atlantic

57 - *North Pacific Ocean*

57a - Northwest Pacific
57b - Northeast Pacific

61 - *South Pacific Ocean*

61a - Southwest Pacific
61b - Southeast Pacific

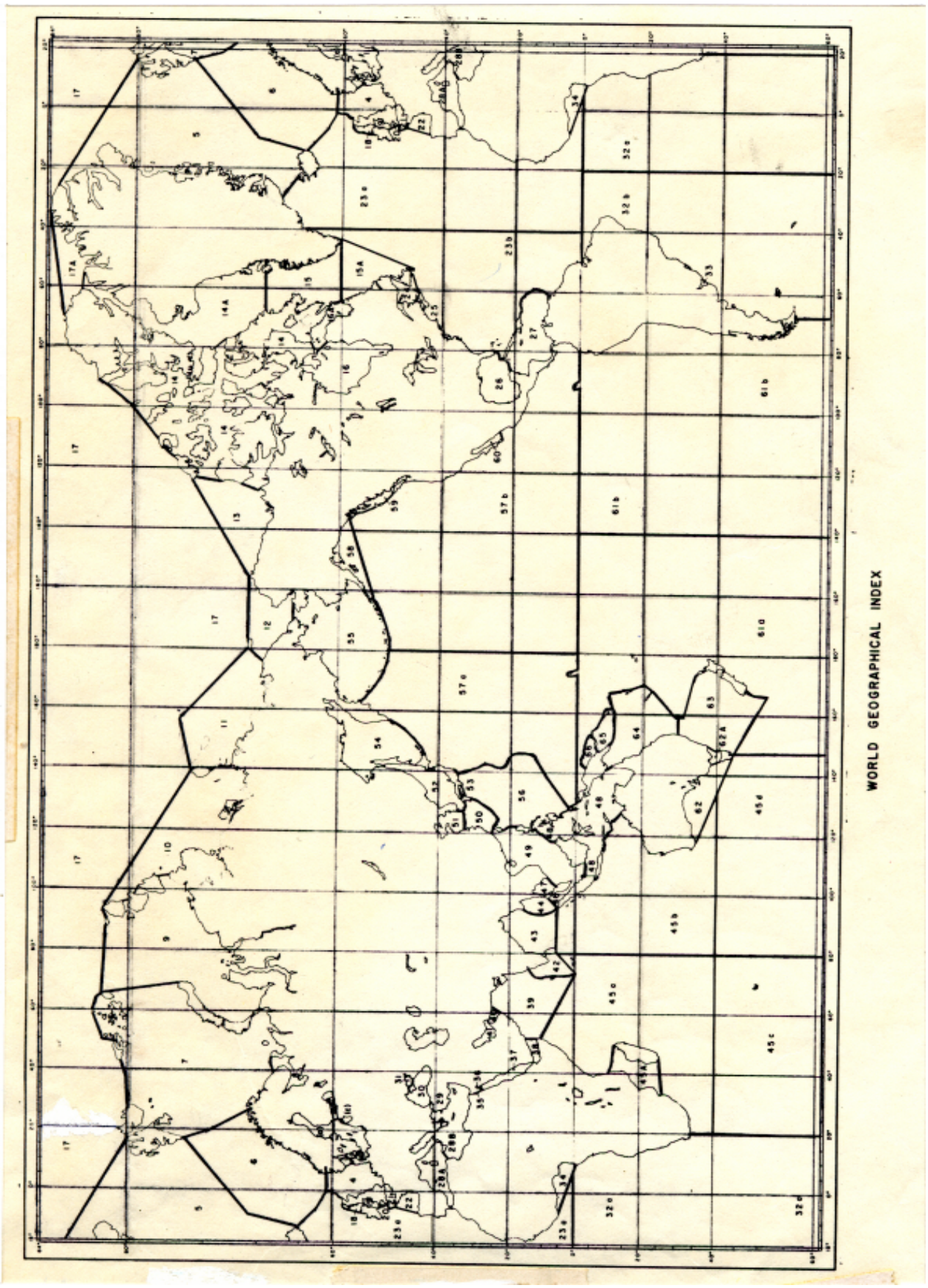
The catalogue numbers of ship cruises extending into any of the areas, or shore or fixed stations located in the areas, are listed under the area's number and name.

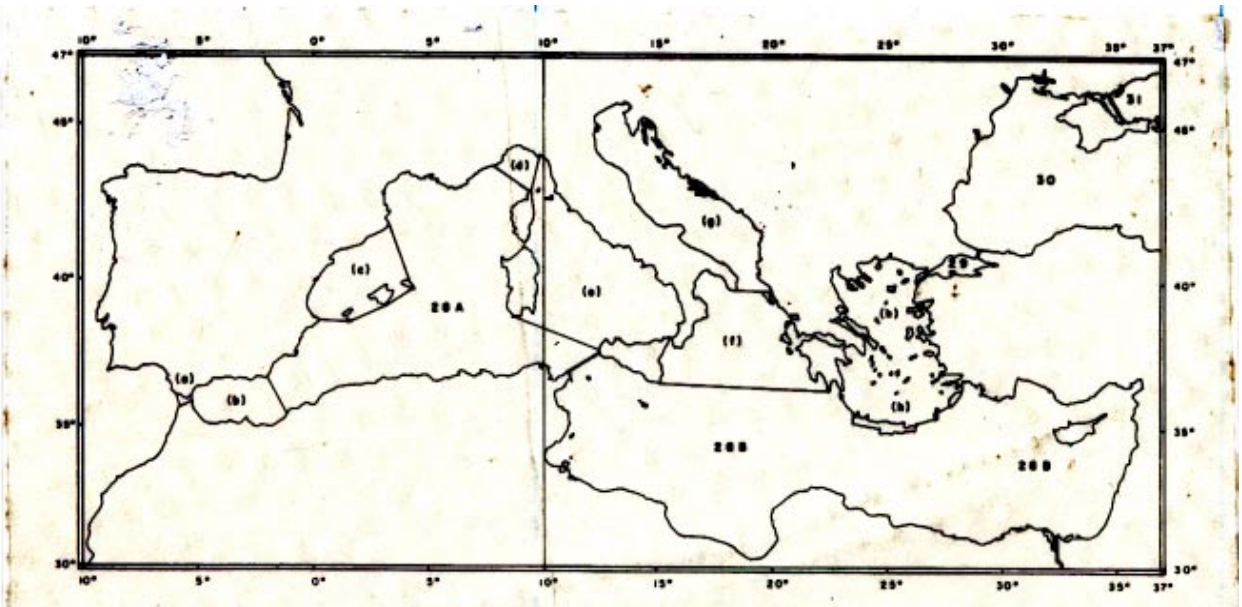
ALPHABETICAL INDEX

Ship or Fixed Station	Country	Catalogue Number
- C -		
CHOFU MARU	JAPAN	124.10 D
- D -		
DAVID STARR JORDAN	UNITED STATES	139.23 Y
- G-		
GYUNGBUG 885	KOREA	143.02 DD
(renamed TAMGU 5)		243.01 F
- H -		
HAKUHO MARU	JAPAN	124.24 B
HOKKO MARU,	JAPAN	124.20 A
HOKUSEI MARU	JAPAN	124.02 C
HOKUSHIN MARU	JAPAN	124.20 E
HOKUYO MARU	JAPAN	124.20 G
- I -		
INCHEON 888	KOREA	143.02 FF
- K -		
KEIFU MARU	JAPAN	124.01 F
KINSEI MARU	JAPAN	124.20 C
KOFU MARU	JAPAN	124.08 D
KOYO MARU	JAPAN	124.16 A
- N -		
Neah Bay (Coast Shore Stations)	UNITED STATES	239.02
NEW HORIZON	UNITED STATES	139.08 V
- O -		
OSHORO MARU	JAPAN	124.02 B
OYASHIO MARU	JAPAN	124.20 B

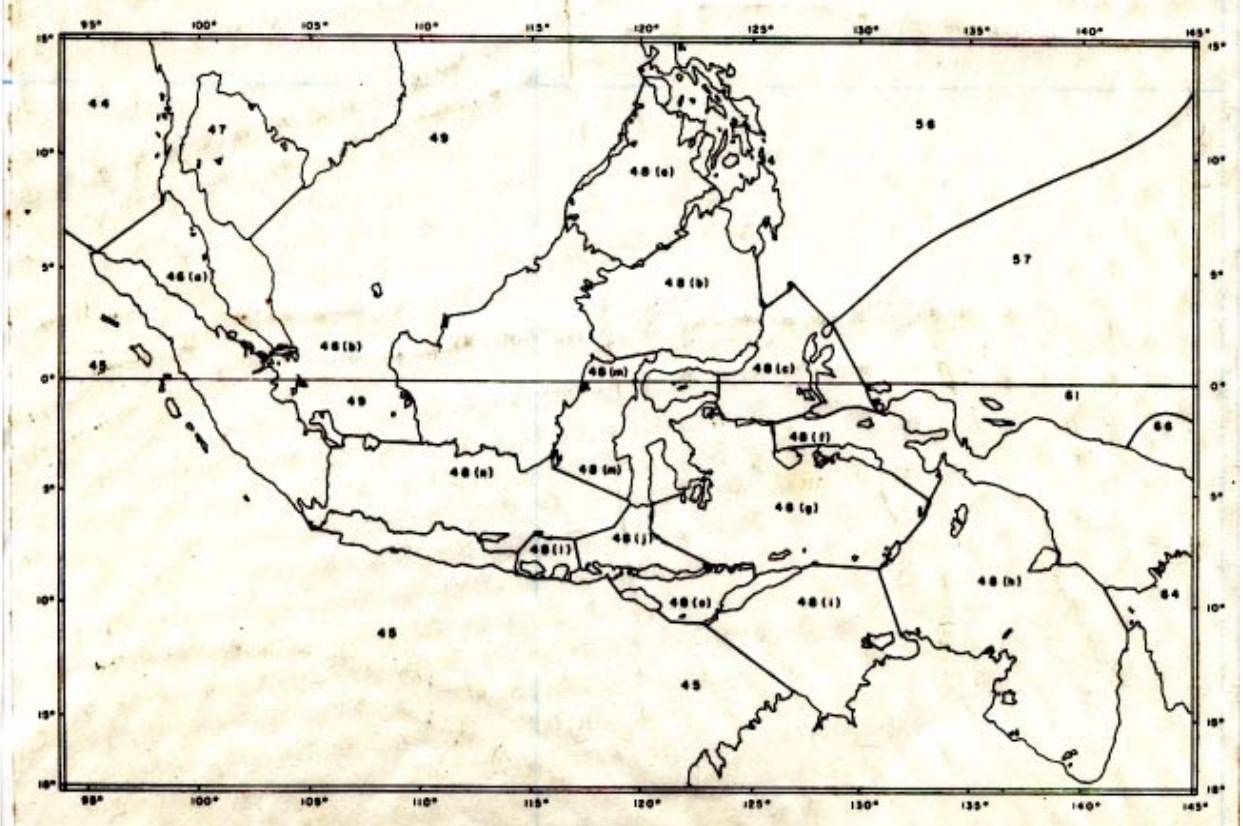
ALPHABETICAL INDEX

Ship or Fixed Station	Country	Catalogue Number
- R -		
ROBERT GORDON SPROUL	UNITED STATES	139.08 Z
ROGER REVELLE	UNITED STATES	139.08 Y
RYOFU MARU	JAPAN	124.01 B
- S -		
SEIFU MARU	JAPAN	124.11 D
SEIYO MARU	JAPAN	124.04 D
SHINYO MARU	JAPAN	124.04 B
SHIRASE	JAPAN	124.31 B
SHUMPU MARU	JAPAN	124.09 A
- T -		
TAMGU 1	JAPAN	143.02 II
TAMGU 3	JAPAN	143.02 HH
	JAPAN	243.01 C
TAMGU 5	KOREA	143.02 DD
(formerly GYUNGBUG 885)		243.01 F
TANKAI MARU	JAPAN	124.20 A
TENYO MARU	JAPAN	124.16 B
- U -		
UMITAKA MARU	JAPAN	124.04 A


WORLD GEOGRAPHICAL INDEX



GEOGRAPHICAL INDEX - DETAILS OF MEDITERRANEAN AREA



GEOGRAPHICAL INDEX - DETAILS OF INDONESIA AREA

GEOGRAPHICAL INDEX

GEOGRAPHICAL INDEX

*NUMERICAL LIST OF COUNTRIES **

1. ARGENTINA
2. AUSTRALIA
3. BELGIUM
4. BRAZIL
5. BURMA
6. CANADA
7. CHILE
8. COLOMBIA
9. DENMARK
10. ECUADOR
11. FINLAND
12. TAIWAN
13. FRANCE
14. GERMANY
15. GERMANY
16. GHANA
17. GUATEMALA
18. ICELAND
19. INDIA
20. INDONESIA
21. IRELAND
22. ISRAEL
23. ITALY
24. JAPAN
25. MEXICO
26. NETHERLANDS
27. NEW ZEALAND
28. NORWAY
29. PAKISTAN
30. PERU
31. PHILIPPINES
32. POLAND
33. PORTUGAL
34. SPAIN
35. SWEDEN
36. SOUTH AFRICA
37. RUSSIA
38. UNITED KINGDOM
39. UNITED STATES OF AMERICA
40. URUGUAY
42. YUGOSLAVIA
43. KOREA (Republic of)
44. IVORY COAST
45. NIGERIA
46. CONGO (People's Republic)
47. MALAYSIA
48. MALAGASY REPUBLIC
49. MOROCCO
50. SENEGAL
51. THAILAND
52. TURKEY
53. VENEZUELA
54. EL SALVADOR
55. COSTA RICA
56. PANAMA
57. HONDURAS
58. DOMINICAN REPUBLIC
59. HAITI
60. CUBA
61. JAMAICA
62. AUSTRIA
63. ROMANIA
64. EGYPT
65. LEBANON
66. ALGERIA
67. MONACO
68. GREECE
69. TANZANIA
70. SIERRA LEONE
71. TUNISIA
72. TRINIDAD AND TOBAGO
73. PEOPLE'S REPUBLIC OF CHINA
74. CZECHOSLOVAKIA
75. MAURITANIA
76. BULGARIA
77. BENIN
78. PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN
79. IRAQ
80. LIBERIA
81. SINGAPORE
82. UKRAINE
83. REPUBLIC OF YEMEN
84. KENYA

* May refer to country designations during period data were received.

LIST OF DATA CENTER ACRONYMS

AODC	Australian Oceanographic Data Centre
BODC	British Oceanographic Data Centre, United Kingdom
CEADO	Centro Argentino de Datos Oceanograficos
CECOLDO	Centro Colombiano de Datos Oceanograficos
CEDO	Centro Espanol de Datos Oceanograficos
CENADO	Centro Nacional de Datos Oceanograficos, Mexico
CENDOC	Centro Nacional de Datos Oceanograficos de Chile
CNODC	China National Oceanographic Data Center
CNRDO	Centro Nazionale Raccolta Dati Oceanografici, Italy
DOD	Deutsches Ozeanographisches Datenzentrum
ENODC	Egyptian National Oceanographic Data Center
ICES	International Council for the Exploration of the Sea
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer
IHO	International Hydrographic Organization
INOCAR	Instituto Oceanographico de la Armada del Ecuador
INODC	Indian National Oceanographic Data Center
ISMARE	Irish Marine Data Centre
JODC	Japan Oceanographic Data Center
KODC	Korean Oceanographic Data Center
MARIS	Marine Information Service, Netherlands
MEDS	Marine Environmental Data Service, Canada
NOD	Norsk Oseanografisk Datasenter
NODC	National Oceanographic Data Center, U.S.A.
PSMSL	Permanent Service for Mean Sea Level
SADCO	South African Data Centre for Oceanography
SISMER	Systeme d'Informations Scientifiques pour la Mer

INSTITUTION INDEX

PART II

WDC for OCEANOGRAPHY DATA INFORMATION

EXPLANATION OF THE WDC FOR OCEANOGRAPHY DATA INFORMATION SHEET

The Change Notice lists on Data Information sheets the data which have been received by this Center. The entries are described below. Countries are arranged in the sequence shown in the numerical list of countries. Data from each country are arranged in the sequence of catalogue numbers. The 200-series data sheets follow the last 100-series data sheet in the catalogue.

Country/Catalogue Number — The series number and two digit number of the contributing country, as well as the identifying number for the data information, are given in this column. Details of the catalogue numbering system are given in the section "How to Use the Change Notice to the Catalogue of Data". The numbers corresponding to the country and institution portions of the Catalogue Number are found in the index section that lists countries and contributing institutions.

Country/Ship or Fixed Station — The country name, as well as the names of ships are printed in capital letters; lightvessels are identified by (LV) following the name. All other names not so designated are those of shore stations and other types of fixed platforms, such as lighthouses (LH) or offshore towers; names are reported as they appear with the data.

Start Date/End Date — The dates during which the data were gathered are given in the order of day/month/year. In some instances, depending on the nature of the project, the dates indicate the beginning and ending of a cruise or expedition, while in others the dates indicate the first and last observations. For shore and fixed stations months and years only are usually given.

Region — The region(s) of the World Ocean where observations were gathered. The areas listed are defined in “Limits of Oceans and Seas,” International Hydrographic Bureau, Special Publication No. 23, third edition, Monaco, 1953, with certain modifications as indicated in the Catalogue Indexes section.

Oceanographic Serial Stations:

Number of Stations — The number of oceanographic serial stations (also referred to as hydrographic, hydrographical, hydrological and hydrochemical stations) at which serial measurements of temperature, salinity, and other chemical values are made, normally to depths of five meters or greater. Data to depths less than five meters are usually catalogued as Surface Observations. The single dagger symbol (†) is used to denote data obtained by electronic, in-situ, Salinity/Temperature/Depth (STD) or Conductivity/Temperature/ Depth (CTD) sensors.

Physical and Chemical Data — All stations as a minimum have readings of both temperature and salinity, unless otherwise noted. The types of physical and

chemical data, available at serial depths as observed values, are listed using the following symbols and abbreviations:

Oxy - Dissolved oxygen content
Nutr - Nitrogen, Phosphorous, or Silicon compounds
Pol - Heavy Metals, Hydrocarbons or other pollutants

BT's — The type and number of mechanical bathythermograph (MBT) or expendable bathythermograph (XBT) observations are indicated by:

MB - Analog prints of bathythermographs taken by a mechanical BT
MTb - Tables or listings of mechanical BT temperature readings at selected depths
XB - Analog prints of bathythermographs taken by an expendable BT
XTb - Tables or listings of expendable BT temperature readings at selected depths
DTb - Table or listings of digital BT temperature readings at selected depths
STb - Tables or listings of bathythermographs reported at selected levels only, eg. 5m. intervals

Currents — The types and quantity of observations of surface and subsurface currents are indicated by:

Surf - Surface
Subs - Subsurface

Biological — The types of marine biological observations made and the number of stations and/or abundance of data are indicated by any of the following categories:

Phyt - Phytoplankton
Pigm - Pigments
PrPr - Primary productivity
Zoo - Zooplankton
Nek - Nekton
Eggs - Fish eggs and/or larvae
Micr - Microbiological data
Biol - Bioluminescence
Poll - Pollution studies
C14 - Carbon
Pleu - Pleuston
Sest - Seston
Neus - Neuston
Bent - Benthos
PeF - Pelagic fishes
DeF - Demersal fishes
FObs - Fishery observations
Bore - Borers and foulers
Cet - Cetacea
Plank - Plankton
Surf - Surface visual observations of birds, fishes mammals, reptiles or discolored water

Meteorological — The presence of meteorological observations taken in conjunction with oceanographic data is indicated. These observations may include wind direction and speed, weather, temperature of the air, dry bulb or wet bulb, atmospheric pressure, clouds, visibility, humidity, dew point, precipitation, solar radiation, or radiosonde observations.

Sea Surface — The types of sea surface observations and measurements taken are listed. In addition to the abbreviations and symbols listed for Physical and Chemical Data, the following are also used:

T - Temperature of the water sample
S - Salinity
Col - Color of the water
Tra - Transparency of the water
Wa - Visual data on waves, including sea state
IWa - Instrumented wave data
Ice - Data on ice in the sea
LP - Light penetration
LPW - Long period wave records

Data Center Reference Number — Data which have been processed at a national, regional, or responsible oceanographic data center, usually have been assigned some type of identifying reference number by that center. The availability of data in automated form is indicated by the initials of the data center followed by that center's reference number. For example, machine-processed oceanographic station data for Reference Number 310863 of the National Oceanographic Data Center would appear as NODC 310863.

Publication number refers to the number from the WDC for Oceanography "Listing of Accessioned Data Publications" identifying the published report in which the referenced data appear. The absence of a number in this column indicates that the data were not received in published or processed form.

Remarks — Any additional information included to further describe the data. The term "(CAT. OF DATA)" or "(Change)", indicates that data for this listed cruise represent an addition to data previously received by WDC for Oceanography, and already described under this Catalogue Number in the Catalogue of Data (including Change Notice Nos. 1-16) or the referenced Change Notice. An asterisk (*) is placed beside each data entry which represents an addition to data catalogued previously; the total number of observations held for this cruise is shown in parentheses ( ) beneath the data entry. Data entries preceded by a minus sign (-) and enclosed in parentheses, e.g. (-9), indicate a deletion of observations.

WDC-A, OCEANOGRAPHY DATA INFORMATION

CATALOGUE NO.	SHIP/FIXED STATION	DATE		IHB	TYPES OF OBSERVATIONS							PUBLICATION	REMARKS
		START	END	REGION	NO. OF STAS.	PARA-METERS HH	BTs	CURRENTS	BIOLOGY	MET.	SEA SURFACE	NUMBER	
124.....	JAPAN.....												
124.01 B-95	RYOFU MARU	28/01/1998	02/12/1998	56 57a 61a	229 H	Oxy, Nutr	XTb-125	Subs-365	Pigm-53		T, S	24.07-096	Cruises 9801, 9804, 9806, 9809, 9811
124.01 B-96	RYOFU MARU	23/01/1999	05/11/1999	56 57a 61a	214 H	Oxy, Nutr	XTb-157	Subs-369	Phyt-34 Zoo-34 Pigm-46		T, S	24.07-097	Cruises 9901, 9904, 9906, 9909, 9911
124.01 F-37	KEIFU MARU	21/01/1998	20/11/1998	50 56 57a	166 H	Oxy, Nutr	XTb-140	Subs-993		X	T, S	24.07-096	Cruises 9801, 9804, 9806, 9808, 9810
124.01 F-38	KEIFU MARU	25/01/1999	21/11/1999	50 56 57a	159 H	Oxy, Nutr	XTb-98	Subs-687		X	T, S	24.07-097	Cruises 9901, 9904, 9906, 9908, 9910
124.02 B-70	OSHORO MARU	16/10/1998	12/11/1999	52 55 56 57a 57b	199 H	Nutr	XTb-134		Zoo-85 FObs-34	X	T Col, Tra	24.04-057	Cruises 89, 90, 91, 93, 95, 96, 100
124.02 B-71	OSHORO MARU	10/03/2000	17/11/2000	50 52 55 57a 57b	201 H	Nutr	XTb-2		Zoo-105 FObs-39	X	T Col, Tra	24.04-058	Cruises 102, 103, 105, 106, 108, 110
124.02 C-23	HOKUSEI MARU	21/01/1999	05/10/1999	52 54 57a 57b	97 H				Zoo-52 FObs-78	X	Col, Tra	24.04-057	Cruises 81, 82, 83, 84
124.02 C-24	HOKUSEI MARU	21/01/2000	06/10/2000	52 54 57a 57b	106 H		XTb-10		Zoo-43 FObs-53	X	Col, Tra	24.04-058	Cruises 85, 86, 88, 89
124.04 A-16	UMITAKA MARU	11/09/1997	13/09/1997	52	8 H	Oxy				X		24.12-057	Cruise 69
124.04 A-17	UMITAKA MARU	03/03/1998	08/03/1998	56	8 H	Oxy				X		24.12-057	Cruise70
124.04 B-06	SHINYO MARU	24/07/1997	19/10/1997	50 52 56 57a	85 H	Oxy			Pigm-44	X		24.12-057	
124.04 B-07	SHINYO MARU	10/02/1998	16/02/1998	43	7 H	Oxy			FObs - 8	X		24.12-057	Cruise 40

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WDC-A, OCEANOGRAPHY DATA INFORMATION

CATALOGUE NO.	SHIP/FIXED STATION	DATE		IHB	TYPES OF OBSERVATIONS							PUBLICATION	REMARKS
		START	END	REGION	NO. OF STAS.	PARA-METERS HH	BTs	CURRENTS	BIOLOGY	MET.	SEA SURFACE	NUMBER	
124.04 D-03	SEIYO MARU	13/06/1997	18/06/1997	53 56	36 H	Oxy				X		24.12-057	
124.08 D-86	KOFU MARU	30/01/1998	10/12/1998	52 57a	303 H	Oxy, Nutr	XTb-68	Subs-451	Pigm-144		T, S	24.07-096	Cruises 9801, 9804, 9806, 9810, 9811
124.08 D-87	KOFU MARU	30/01/1999	04/12/1999	52 57a	350 H	Oxy, Nutr	XTb-103	Subs-500	Phyt-24 Zoo-24 Pigm-103		T, S	24.07-097	Cruises 9901, 9904, 9906, 9909, 9911
124.09 A-102	SHUMPU MARU	22/01/1998	05/11/1998	56	220 H	Oxy, Nutr	XTb-181	Subs-450	Pigm-83		T, S	24.07-096	Cruises 9801, 9804, 9806, 9808, 9810
124.09 A-103	SHUMPU MARU	21/01/1999	02/11/1999	56	205 H	Oxy, Nutr	XTb-201	Subs-456	Phyt-45 Zoo-45 Pigm-75		T, S	24.07-097	Cruises 9901, 9904, 9906, 9908, 9910
124.10 D-90	CHOFU MARU	22/01/1998	04/12/1998	50 56	262 H	Oxy, Nutr	XTb-134	Subs-749	Pigm-40		T, S	24.07-096	Cruises 9801, 9804, 9806, 9810, 9811
124.10 D-91	CHOFU MARU	20/01/1999	26/11/1999	50 56	276 H	Oxy, Nutr	XTb-105	Subs-664	Phyt-32 Zoo-32 Pigm-43		T, S	24.07-097	Cruises 9901, 9904, 9906, 9910, 9911
124.11 D-78	SEIFU MARU	16/01/1998	06/12/1998	52	345 H	Oxy, Nutr	XTb-51	Subs-480	Pigm-77	X	T, S	24.07-096	Cruises 9801, 9804, 9806, 9810, 9811
124.11 D-79	SEIFU MARU	21/01/1999	09/12/1999	52	476 H	Oxy, Nutr	XTb-31	Subs-468	Phyt-45 Zoo-45 Pigm-114	X	T, S Col, Tra	24.07-097 24.25-027 24.25-028 24.25-029 24.25-030	Cruises 9904, 9906, 9910, 9911
124.11 D-80	SEIFU MARU	18/01/2000	02/03/2000	52	485 H	Oxy, Nutr	XTb-42	Subs-422	Phyt-45 Zoo-45 Pigm-111		T, S Col, Tra	24.07-097 24.25-031 24.25-032 24.25-033 24.25-034 24.25-035 24.25-036	Cruises 00-01, 00-04, 00-07, 00-10, 00-11
124.11 D-81	SEIFU MARU	12/01/2001	26/02/2001	52	86 H	Oxy, Nutr	XTb-4	Subs-94	Phyt-8 Zoo-9 Pigm-18		Col, Tra	24.25-036	Cruise 01-01
124.16 A-40	KOYO MARU	12/04/1998	25/12/1998	50 57a	19 H				FObs-5	X	T Wa, Col, Tra	24.11-062	
124.16 A-41	KOYO MARU	12/04/1999	25/12/1999	50 57a	19 H				FObs-10	X	T Wa, Col, Tra	24.11-063	
124.16 B-21	TENYO MARU	11/06/1998	19/01/1999	45b 50 52	45 H		XTb-9		FObs-5	X	T Wa, Col, Tra	24.11-062	

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WDC-A, OCEANOGRAPHY DATA INFORMATION

CATALOGUE NO.	SHIP/FIXED STATION	DATE		IHB	TYPES OF OBSERVATIONS							PUBLICATION	REMARKS
		START	END	REGION	NO. OF STAS.	PARA-METERS HH	BTs	CURRENTS	BIOLOGY	MET.	SEA SURFACE	NUMBER	
124.16 B-22	TENYO MARU	30/05/1999	12/01/2000	45b 50 52	56 H				FObs-8			24.11-063	
124.20 A-27	HOKKO MARU, TANKAI MARU	13/01/1995	12/10/1999	57a	304 H	Nutr			Zoo-294 Pigm-520		T,S, Nutr - 216 Tra	24.06-074	
124.20 B-07	OYASHIO MARU	10/04/1990	13/03/1991	52 57a	375 H	Oxy, Nutr			Phyt-94 Pigm-11	X	Col, Tra	24.06-072	
124.20 B-08	OYASHIO MARU	12/04/1991	10/03/1992	52	542 H	Oxy, Nutr			Phyt-80 Pigm-20	X	Col, Tra	24.06-073	
124.20 C-07	KINSEI MARU, Ship not identifed	11/04/1990	19/02/1991	52 57a	542 H				Plank-18	X	Tra	24.06-072	
124.20 C-08	KINSEI MARU, Ship not identifed	09/04/1991	18/03/1992	52 57a	481 H				Plank-15	X	T, S - 18 Tra	24.06-073	
124.20 E-07	HOKUSHIN MARU	16/04/1990	26/02/1991	57a	346 H				Plank-24	X	Tra	24.06-072	
124.20 E-08	HOKUSHIN MARU	15/04/1991	21/02/1992	57a	346 H				Plank-27	X	Tra	24.06-073	
124.20 G-07	HOKUYO MARU	16/04/1990	18/03/1991	52 54	489 H				Plank-42	X	Tra	24.06-072	
124.20 G-08	HOKUYO MARU	09/04/1991	20/02/1992	52 54	442 H				Plank-18	X	Tra	24.06-073	
124.24 B-67	HAKUHO MARU	23/05/1998	26/06/1998	56	19 H	Oxy			FObs-163			24.13-089	Cruise KH-98-2 (Eel Cruise VIII)
124.31 B-13	SHIRASE	14/11/1994	17/03/1995	45b 45c 45d 61a 63, SO	17 H	Oxy, Nutr	XTb-136		Pigm-113	X	Oxy, Nutr, Pol Wa	24.22-053 24.22-056	JARE-36
124.31 B-14	SHIRASE	14/11/1995	15/03/1996	45b 45c 45d SO	17 H	Oxy, Nutr	XTb-77		Pigm-81	X	Oxy, Nutr, Pol Wa	24.22-054 24.22-056	JARE-37
124.31 B-15	SHIRASE	15/11/1966	17/03/1997	45b 45c 45d 61a 63, SO	11 H	Oxy, Nutr	XTb-237		Pigm-186	X	Oxy, Nutr, Pol Wa	24.22-055 24.22-056	JARE-38
124.31 B-16	SHIRASE	17/11/1997	19/03/1998	45b 45c 45d 61a 63, SO					Pigm-113			24.22-056	JARE-39
124.31 E-02	Ship not identified	22/07/1998	08/12/1998	45c	18 H		XTb-31	Subs-18				24.22-057	JARE-39

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WDC-A, OCEANOGRAPHY DATA INFORMATION

CATALOGUE NO.	SHIP/FIXED STATION	DATE		IHB	TYPES OF OBSERVATIONS							PUBLICATION	REMARKS
		START	END	REGION	NO. OF STAS.	PARA-METERS HH	BTs	CURRENTS	BIOLOGY	MET.	SEA SURFACE	NUMBER	
139.....	UNITED STATES.....												
139.08 V-27	NEW HORIZON	20/09/1998	06/10/1998	57b	136 H	Oxy, Nutr			Zoo-136 Pigm-136 PrPr-27	X	Wa, Col, Tra	39.01.350	CalCOFI Cr. 9807, 9809
139.08 V-28	NEW HORIZON	07/08/1999	21/10/1999	57b	132 H	Oxy, Nutr			Zoo-128 Pigm-132 PrPr-32	X	Wa, Col, Tra	39.01-352	CalCOFI Cr. 9908, 9910
139.08 V-29	NEW HORIZON	07/01/2000	31/10/2000	57b	198 H	Oxy, Nutr			Zoo-196 Pigm-198 PrPr-46	X	Wa, Col, Tra	39.01-353 39.01-354	CalCOFI Cr. 0001, 0007, 0010
139.08 Y-02	ROGER REVELLE	09/01/1999	29/01/1999	57b	65 H	Oxy, Nutr			Zoo-65 Pigm-65 PrPr-14	X	Wa, Col, Tra	39.01-351	CalCOFI Cr. 9901
139.08 Z-03	ROBERT GORDON SPROUL	12/08/1998	15/12/1998	57b	75 H	Oxy			Zoo-64 Pigm-75	X	Wa, Col	39.01-350	CalCOFI Cr. 9808, 9810, 9811, 9812
139.23 Y-41	DAVID STARR JORDAN	01/04/1999	15/04/1999	57b	66 H	Oxy			Zoo-61 Pigm-66 PrPr-14	X	Wa, Col, Tra	39.01-351	CalCOFI Cr. 9904
139.23 Y-42	DAVID STARR JORDAN	07/04/2000	29/04/2000	57b	66 H	Oxy			Zoo-66 Pigm-66 PrPr-15	X	Wa, Col, Tra	39.01-353	CalCOFI Cr. 0004
143.....	KOREA.....												
143.02 DD-06	GYUNGBUG 885	06/02/1999	05/01/2000	52	244	Oxy, Nutr			Zoo-117	X	Wa, Col, Tra	43.02-093	Standard Sections
143.02 DD-07	GYUNGBUG 885 Renamed: TAMGU 5	10/02/2000	17/12/2000	52	384	Oxy, Nutr			Zoo-174	X	Wa, Col, Tra	43.02-094	Standard Sections
143.02 FF-04	INCHEON 888	04/02/1999	28/12/1999	51 52	352	Oxy, Nutr			Zoo-168	X	Wa, Col, Tra	43.02-093	Standard Sections
143.02 FF-05	INCHEON 888	19/04/2000	09/12/2000	51	260	Oxy, Nutr			Zoo-125	X	Wa, Col, Tra	43.02-094	Standard Sections
143.02 HH-02	TAMGU 3	05/02/1999	14/12/1999	50 51 52	370	Oxy, Nutr			Zoo-175	X	Wa, Col, Tra	43.02-093	Standard Sections
143.02 HH-03	TAMGU 3	09/02/2000	13/12/2000	50 51 52	365	Oxy, Nutr			Zoo-179	X	Wa, Col, Tra	43.02-094	Standard Sections
143.02 II-01	TAMGU 1	23/02/1999	20/08/1999	50	43	Oxy, Nutr			Zoo-20			43.02-093	Standard Sections
143.02 II-02	TAMGU 1	23/05/2000	06/08/2000	50	41	Oxy, Nutr			Zoo-29			43.02-094	Standard Sections

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WDC-A, OCEANOGRAPHY DATA INFORMATION

CATALOGUE NO.	SHIP/FIXED STATION	DATE		IHB	TYPES OF OBSERVATIONS							PUBLICATION	REMARKS
		START	END	REGION	NO. OF STAS.	PARA-METERS HH	BTs	CURRENTS	BIOLOGY	MET.	SEA SURFACE	NUMBER	
239.....	UNITED STATES.....												
239.02	Neah Bay, etc. West Coast Shore Stations	01/01/1999	31/05/2000	57b							T, S		* Change period to: 01/08/1916-31/05/2000 NOTE: Not all years available for all stations
243.....	KOREA.....												
243.01 C-29	TAMGU 3	06/02/1999	12/12/1999	50 51 52	66	Oxy			Zoo-24	X	Wa, Col, Tra	43.02-093	Korea - Japan Cooperative (Line 400)
243.01 C-30	TAMGU 3	10/02/2000	08/12/2000	50 51 52	60	Oxy			Zoo-24	X	Wa, Col, Tra	43.02-094	Korea - Japan Cooperative (Line 400)
243.01 F-07	GYUNGBUG 885 Renamed: TAMGU 5	25/08/2000	28/08/2000	52	16	Oxy				X	Wa, Col, Tra	43.02-094	Line 500

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WDC FOR OCEANOGRAPHY DATA INFORMATION

The preceeding section lists primarily those data actually received directly by WDC for Oceanography from its international contributors, usually in either publications or in manuscript form. Data received in automated form from Data Centers (including the U.S. NODC), oceanographic institutions, or special project data centers are now identified and described in later sections of this Catalogue.

LISTING OF ACCESSIONED DATA PUBLICATIONS

The following Listing of Accessioned Data Publications references by title and responsible institution all publications received during the period that contain cataloguable data; it cross-references data publication information with the pertinent WDC Data Information Number.

LISTING OF ACCESSIONED DATA PUBLICATIONS

WDC Publication No.	Data Publication Title	WDC Data Information No.
24	JAPAN	
24.04-057	Data Record of Oceanographic Observations and Exploratory Fishing No. 43 (Hokkaido University, March 2000)	124.02 B-70, 124.02 C-23
24.04-058	Data Record of Oceanographic Observations and Exploratory Fishing No. 44 (Hokkaido University, March 2001)	124.02 B-71, 124.02 C-24
24.06-072	Data Record of Oceanographic Observations, No. 6, April 1990 - March 1991 (Hokkaido Fisheries Experimental Station, March 2000)	124.20 B-07, 124.20 C-07, 124.20 E-07, 124.20 G-07
24.06-073	Data Record of Oceanographic Observations, No. 7, April 1991 - March 1992 (Hokkaido Fisheries Experimental Station, March 2001)	124.20 B-08, 124.20 C-08, 124.20 E-08, 124.20 G-08
24.06-074	Seasonal and Interannual Variations in Nutrients and Plankton in the Oyashio Region: A Summary of a 10-Years Observation along the A-line" (Bulletin of the Hokkaido National Fisheries Research Institute, No. 65, January 2001)	124.20 A-27
24.07-096	Data Report of Oceanographic Observations, No. 89, January - December, 1998 (Japan Meteorology Agency, December 1999)	124.01 B-95, 124.01 F-37, 124.08 D-86, 124.09 A-102, 124.10 D-90, 124.11 D-78
24.07-097	Data Report of Oceanographic Observations, No. 90, January - December, 1999 (Japan Meteorology Agency, November 2000)	124.01 B-96, 124.01 F-38, 124.08 D-87, 124.09 A-103, 124.10 D-91, 124.11 D-79, 124.11 D-80
24.11-062	Oceanographic Observations and Exploratory Fishings in the East China Sea, Eastern Indian Ocean, Japan Sea, and Central Pacific Ocean (National Fisheries University, Shimonoseki, Data of Oceanographic Observations and Exploratory Fishings, No. 25, January 2000)	124.16 A-40, 124.16 B-21

LISTING OF ACCESSIONED DATA PUBLICATIONS

WDC Publication No.	Data Publication Title	WDC Data Information No.
24.11-063	Oceanographic Observations and Exploratory Fishings in the East China Sea, Eastern Indian Ocean, Japan Sea, and Central Pacific Ocean (National Fisheries University, Shimonoseki, Data of Oceanographic Observations and Exploratory Fishings, No. 26, January 2001)	124.16 A-41, 124.16 B-22
24.12-057	Cruise Reports No. 8 (Tokyo University of Fisheries, March 1999)	124.04 A-16, 124.04 A-17, 124.04 B-06, 124.04 B-07, 124.04 D-03
24.13-089	Preliminary Report of the HAKUHO MARU Cruise KH-98-2 May 22, 1998 - July 2, 1998 (Eel Cruise VIII) (Ocean Research Institute, University of Tokyo, 2000)	124.24 B-67
24.22-053	Oceanographic Data of the 36th Japanese Antarctic Research Expedition from November 1994 to March 1995 (National Institute of Polar Research, JARE Data Reports, No. 244 (Oceanography 19), October 1999)	124.31 B-13
24.22-054	Oceanographic Data of the 37th Japanese Antarctic Research Expedition from November 1995 to March 1996 (National Institute of Polar Research, JARE Data Reports, No. 245 (Oceanography 20), October 1999)	124.31 B-14
24.22-055	Oceanographic Data of the 38th Japanese Antarctic Research Expedition from November 1996 to March 1997 (National Institute of Polar Research, JARE Data Reports, No. 246 (Oceanography 21), October 1999)	124.31 B-15
24.22-056	Report on Phytoplankton Pigments measured during the JARE - 36 - ~ 39 Cruises to Syowa Station, Antarctica in 1994 - 1998 (National Institute of Polar Research, JARE Data Reports, No. 249 (Marine Biology 29), March 2000)	124.31 B-13, 124.31 B-14, 124.31 B-15, 124.31 B-16
24.22-057	Oceanographic Data in Lutzow-Holm Bay from July 1998 to December 1998 (JARE-39)" (JARE Data Reports, No. 253 (Oceanography 22), National Institute of Polar Research, Tokyo, March 2001)	124.31 E-02
24.25-027	Oceanographic and Marine Meteorological Observations in the Japan Sea, (Maizuru MarineObservatory, Oceanographic Prompt Report No. 410, July 1999)	124.11 D-79

LISTING OF ACCESSIONED DATA PUBLICATIONS

WDC Publication No.	Data Publication Title	WDC Data Information No.
24.25-028	Oceanographic and Marine Meteorological Observations in the Japan Sea, (Maizuru MarineObservatory, Oceanographic Prompt Report No. 411, October 1999)	124.11 D-79
24.25-029	Oceanographic and Marine Meteorological Observations in the Japan Sea, (Maizuru MarineObservatory, Oceanographic Prompt Report No. 412, January 2000)	124.11 D-79
24.25-030	Oceanographic and Marine Meteorological Observations in the Japan Sea, (Maizuru MarineObservatory, Oceanographic Prompt Report No. 413, February 2000)	124.11 D-79
24.25-031	Oceanographic and Marine Meteorological Observations in the Japan Sea (Maizuru Marine Observatory, Oceanographic Prompt Report No. 414, April 2000)	124.11 D-80
24.25-032	Oceanographic and Marine Meteorological Observations in the Japan Sea", (Maizuru MarineObservatory, Oceanographic Prompt Report No. 415, Aug. 2000)	124.11 D-80
24.25-033	Oceanographic and Marine Meteorological Observations in the Japan Sea", (Maizuru MarineObservatory, Oceanographic Prompt Report No. 416, Oct.2000)	124.11 D-80
24.25-034	Oceanographic and Marine Meteorological Observations in the Japan Sea", (Maizuru MarineObservatory, Oceanographic Prompt Report No. 417, Jan. 2001)	124.11 D-80
24.25-035	Oceanographic and Marine Meteorological Observations in the Japan Sea", (Maizuru MarineObservatory, Oceanographic Prompt Report No. 418, Feb. 2001)	124.11 D-80
24.25-036	Oceanographic and Marine Meteorological Observations in the Japan Sea", (Maizuru MarineObservatory, Oceanographic Prompt Report No. 419, May 2001)	124.11 D-80, 124.11 D-81
39	UNITED STATES	
39.01-350	Data Report - Physical, Chemical and Biological Data, CalCOFI Cruise 9807, 9-27 July 1998; CalCOFI Cruise 9808, 12-18 Aug 1998; CalCOFI Cruise 9809, 13 Sept -1 Oct 1998; CalCOFI Cruise 9810, 16-22 Oct 1998; CalCOFI Cruise 9811, 18-24 Nov 1998; CalCOFI Cruise 9812, 10-15 Dec 1998 (SIO Reference 99-18, 3 Nov 1999)	139.08 V-27, 139.08 Z-03
39.01-351	Data Report - Physical, Chemical and Biological Data, CalCOFI Cruise 9901, 9-29 January 1999; CalCOFI Cruise 9904, 1-20 April 1999 (SIO Reference 00-6, 14 April 2000)	139.08 Y-02, 139.23 Y-41

LISTING OF ACCESSIONED DATA PUBLICATIONS

WDC Publication No.	Data Publication Title	WDC Data Information No.
39.01-352	Data Report - Physical, Chemical and Biological Data, CalCOFI Cruise 9908, 7-29 August 1999; CalCOFI Cruise 9910, 3-21 October 1999 (SIO Reference 00-10, 29 June 2000)	139.08 V-28
39.01-353	Data Report - Physical, Chemical and Biological Data, CalCOFI Cruise 0001, 7-27 January 2000; CalCOFI Cruise 0004, 7-29 April 2000 (SIO Reference 00-16, 21 October 2000)	139.08 V-29, 139.23 Y-42
39.01-354	Data Report - Physical, Chemical and Biological Data, CalCOFI Cruise 0007, 29 June - 14 July 2000; CalCOFI Cruise 0010, 12-31 October 2000 (SIO Reference 01-5, 15 June 2001)	139.08 V-29
43	KOREA	
43.02-093	Annual Report of Oceanographic Observations for 1999 (National Fisheries Research and Development Agency, Volume 48, September 2000)	143.02 DD-06, 143.02 FF-04, 143.02 HH-02, 143.02 I I-01, 243.01 C-29
43.02-094	Annual Report of Oceanographic Observations for 2000 (National Fisheries Research and Development Agency, Volume 49, June 2001)	143.02 DD-07, 143.02 FF-05, 143.02 HH-03, 143.02 II-02 243.01 C-30, 243.01 F-07

PART III

INTERNATIONAL DATA ACQUISITION AND EXCHANGE

THE INTERNATIONAL MARINE DATA BASE

International Data Acquisition and Exchange

For the 40-year period since its inception during the International Geophysical Year (IGY), WDC for Oceanography has provided comprehensive tabulations of its yearly accessions and cumulative holdings as a reference standard by which the relative success of international oceanographic data exchange through the WDC system (under both ICSU and IOC/IODE guidelines) can be measured. The advent of data acquisition programs, such as the Global Data Archaeology and Rescue (GODAR) Project, combined with enhanced capabilities to utilize CD-ROM technology and electronic data transmission for the rapid exchange of large data sets, have resulted in a major infusion of data into WDC data bases.

A problem resulting from this obvious success story has been the difficulty that the WDC has experienced in attempting to catalogue and tabulate these massive data sets, using standard (traditional) cataloguing procedures. Additionally, the sheer magnitude of many of these data sets (which may contain historical observations taken over many years) often tends to overshadow the important yearly data accessions from WDC's regular contributors. To give proper recognition to these regular contributors, while at the same time attempting to provide some detail with regard to data sets received through programs such as GODAR, the following general categories have been identified as representing major components of the WDC's International Marine Data Base (**Figure 1**):

1. Regular accessions from WDC contributors representing observations that can be catalogued using standard (traditional) cataloguing procedures (**Tables 1-4**);

2. Historical data received under the aegis of the GODAR Program (**Tables 5-6**);

3. Data received through the co-located U.S. National Oceanographic Data Center (NODC) (**Tables 7-10**).

The International Marine Data Base of WDC for Oceanography, then, as depicted in Figure 1, now comprises the Center's total data holdings - that is, it summarizes data holdings from all three categories. Category 1 is defined as the material already identified and described in Part II of this Catalogue; explanations are further expanded upon on Page 34. Brief descriptions for Categories 2 and 3 appear on page 32.

In order to give timely recognition to data contributors, this data base includes data sets received at WDC and NODC during 2000-2001 that may not yet be incorporated into NODC's World Ocean Database 2001. Despite out best efforts, some duplicate data may be included in these numbers.

Global Data Archaeology and Rescue (GODAR) Project

The goal of the GODAR program is to augment the historical digital oceanographic data archives by seeking out and recovering manuscript and digital ocean data not yet included in the digital ocean databases accessible to the world research community. The term Data Archaeology and Rescue describes the two-part process of first identifying and locating the data, and then performing the necessary steps to merge them into a digital database. The enhanced historical ocean data archives resulting from this Project have led to improved ocean climatologies and have also supported more complete studies of ocean variability. The following activities are undertaken as a part of the GODAR process:

- prepare inventories of data available only in manuscript or other analog form, as well as data not currently available in digital form at a national or World Data Center;
- digitize data that now exist only in manuscript or other analog form;
- ensure that all oceanographic data available for international exchange are archived in digital form;
- perform Quality Control on all data;
- make all data readily accessible to the international community.

The WDC has very substantially augmented its data bases through numerous GODAR contributions during recent years. Such contributions do not reflect, however, the total benefit derived from GODAR; many digitally-received GODAR contributions, that did not represent data "new" to WDC , were of equal importance because they represented data sets previously received by the WDCs in manuscript form only, as well as "rescued" data that had been held by originators on magnetic media that were susceptible to loss by degradation.

The basic premise of GODAR seems to engender a spirit of cooperation; many countries have contributed data that had previously been unavailable for international exchange. GODAR has also presented an excellent opportunity for developing countries to become more intimately involved with the IODE data management process. GODAR has provided a mechanism with the implementation of Regional Workshops, through which developing countries can facilitate the processing, exchange, and preservation of oceanographic data.

Data Received in Digital Form through NODC

The WDC benefits significantly from its co-location with the U.S. National Oceanographic Data Center (NODC). In addition to providing automated data management services in support of the WDC, the NODC is an excellent source of oceanographic data in digital form for national, as well as international, data-gathering programs. Over the years, NODC has been a Special Project Data Center for numerous international cooperative investigations; this has led to the ready availability to the WDC of many important international data sets in digital form.

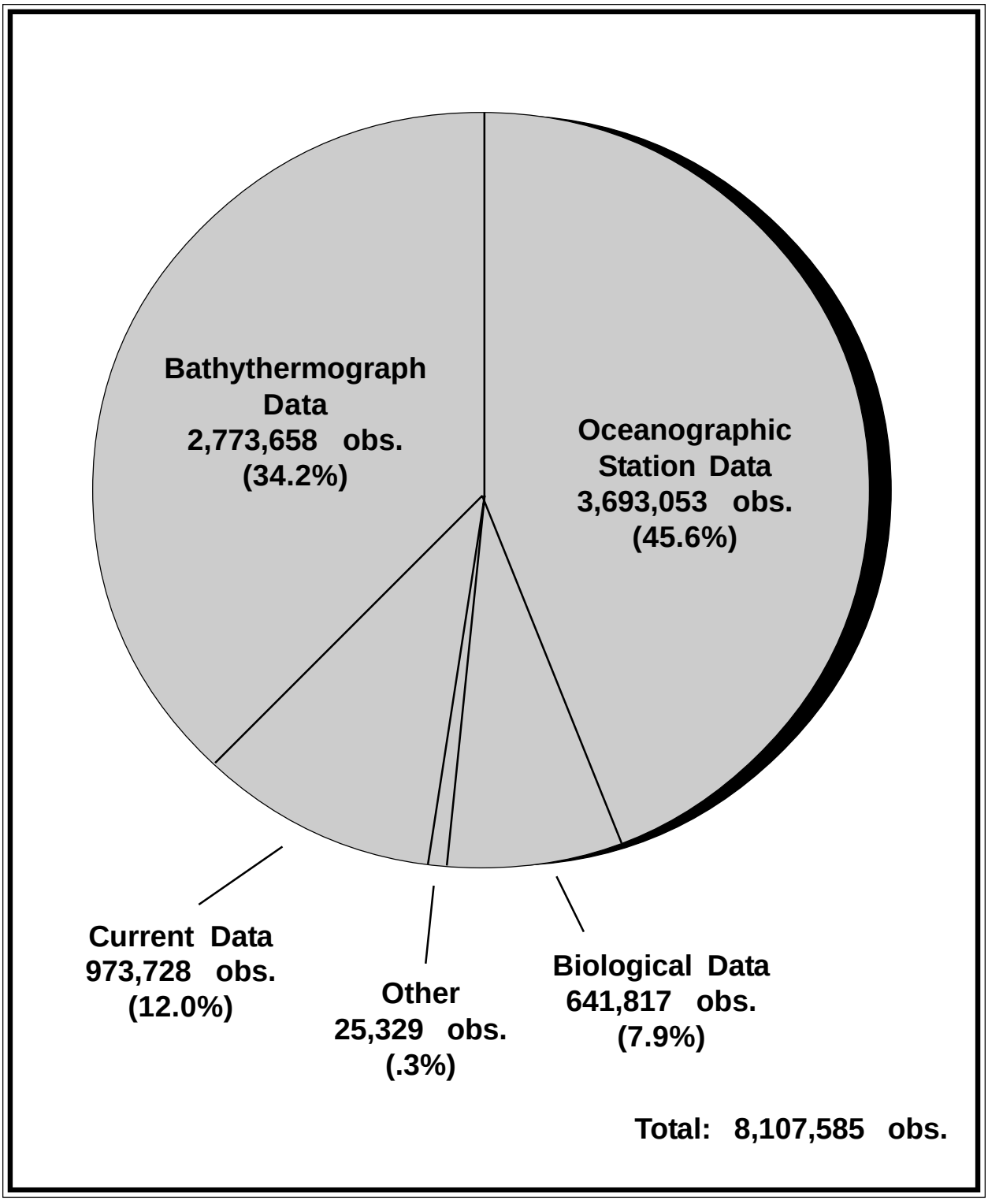


Figure 1. International Marine Data Base of WDC for Oceanography

WDC for Oceanography Data Base* Summaries

Oceanographic Station Data Base

Table 1 (page 35) summarizes the 1,369,363 oceanographic serial stations received by nation under which these data are catalogued. Nations from which no station data have been received are not listed, although in some cases publications or other types of data may have been received.

Bathythermograph Data Base

Table 2 (page 37) summarizes the number of bathythermograph observations received from the nation under which the data are catalogued. The number of cruises on which the data were observed is also listed. A total of 606,510 bathythermograph observations were taken during 9,440 cruises, which includes 2,076 observations received in 2000-2001.

Biological Data Base

Table 3 (page 38) shows, by nation, the number of biological observations received by this Center since its inception and includes 6,399 observations received in 2000-2001. A total of 184,199 observations, including plankton observations, primary productivity measurements, pigment concentration measurements, carbon-14 measurements, and fishery observations, have been taken during 2,434 cruises.

Surface and Subsurface Current Data Base

Table 4 (page 39) summarizes, by nation, the number of surface and sub-surface current measurements received by this Center since its inception. The total of 706,638 current measurements includes 125,806 subsurface and 584,510 surface measurements taken during 4,391 cruises. A total of 7,166 new current measurements were added in 2000-2001.

* Tabulations for these Data Bases (Tables 1 - 4) include cumulative historical and contemporary accessions of data from regular exchanges with WDC contributors, and represent ***only*** observations that could be catalogued using standard cataloguing procedures. Recent data accessions from the GODAR Program and of digital data sets from NODC are ***not*** included in Tables 1-4.

Oceanographic Station Data Base

Table 1 — Number of oceanographic serial stations received by WDC for Oceanography, from various nations

Nation	Stations Received in 2000 - 2001	Total Stations on Hand prior to 2000	Total Stations on Hand at end of 2001
1. Argentina	—	2,963	2,963
2. Australia	—	19,256	19,256
3. Belgium	—	4,941	4,941
4. Brazil	—	7,496	7,496
6. Canada	—	75,904	75,904
7. Chile	—	1,048	1,048
8. Colombia	—	1,267	1,267
9. Denmark	—	40,701	40,701
10. Ecuador	—	2,234	2,234
11. Finland	—	39,194	39,194
12. Taiwan	—	693	693
13. France	—	23,399	23,399
14. Germany	—	68,415	68,415
16. Ghana	—	2,772	2,772
18. Iceland	—	10,567	10,567
19. India	—	2,094	2,094
20. Indonesia	—	2,352	2,352
21. Ireland	—	2,553	2,553
22. Israel	—	2,410	2,410
23. Italy	—	4,160	4,160
24. Japan	8,611	422,639	431,250
25. Mexico	—	1,517	1,517
26. Netherlands	—	10,377	10,377
27. New Zealand	—	1,941	1,941
28. Norway	—	40,152	40,152
29. Pakistan	—	174	174
30. Peru	—	4,066	4,066
31. Philippines	—	199	199

(continued)

Table 1.—Number of oceanographic serial stations received by WDC for Oceanography, from various nations (continued)

Nation	Stations Received in 2000 - 2001	Total Stations on Hand prior to 2000	Total Stations on Hand at end of 2001
32. Poland	—	9,174	9,174
33. Portugal	—	3,959	3,959
34. Spain	—	1,931	1,931
35. Sweden	—	56,975	56,975
36. South Africa	—	16,103	16,103
37. Russia	—	109,530	109,530
38. United Kingdom	—	51,911	51,911
39. United States	738	224,348	225,086
42. Yugoslavia	—	8,292	8,292
43. Korea	2,201	49,815	52,016
44. Ivory Coast	—	4,196	4,196
45. Nigeria	—	997	997
46. Congo (P. Rep.)	—	5,302	5,302
47. Malaysia	—	150	150
48. Malagasy Republic	—	1,311	1,311
49. Morocco	—	9	9
50. Senegal	—	1,795	1,795
51. Thailand	—	2,311	2,311
52. Turkey	—	637	637
53. Venezuela	—	2,184	2,184
60. Cuba	—	812	812
63. Romania	—	355	355
64. Egypt	—	308	308
68. Greece	—	217	217
71. Tunisia	—	157	157
73. China (P. Rep.)	—	9,139	9,139
75. Mauritania	—	411	411
Totals	11,550	1,357,813	1,369,363

Table 2 -- Number of bathythermograph observations received by WDC for Oceanography, from various nations thru 2001

Nation	No. of cruises	Type of data format				Total
		Mechanical BT		Expendable BT		
		Analog	Tabular	Analog	Tabular	
1. Argentina	79	4,050	3,688	–	603	8,341
2. Australia	683	–	9,460	1	28,234	37,695
3. Belgium	2	–	15	–	–	15
4. Brazil	7	43	85	–	485	613
6. Canada	1,678	21,248	469	–	44,627	66,344
7. Chile	8	846	–	–	165	1,011
8. Colombia	2	316	–	–	–	316
9. Denmark	2	70	–	–	–	70
10. Ecuador	11	–	–	–	405	405
11. Finland	2	124	168	–	–	292
13. France	169	352	–	–	8,480	8,832
14. Germany	395	59	14,258	–	19,537	33,854
16. Ghana	1	12	–	–	–	12
18. Iceland	50	124	7,075	–	–	7,199
19. India	2	–	351	–	522	873
20. Indonesia	13	162	118	–	–	280
23. Italy	24	879	561	72	282	1,794
24. Japan	3,551	–	166,878	–	63,071	229,949
25. Mexico	23	–	–	–	378	378
26. Netherlands	67	675	–	–	3,942	4,617
27. New Zealand	21	–	–	–	1,108	1,108
28. Norway	14	82	158	–	462	702
29. Pakistan	2	–	65	–	–	65
30. Peru	31	–	–	–	970	970
31. Philippines	1	–	–	–	8	8
32. Poland	7	–	153	–	279	432
33. Portugal	24	448	2,725	12	194	3,379
34. Spain	6	194	–	–	225	419
35. Sweden	6	10	57	–	612	679
36. South Africa	3	–	–	–	243	243
37. Russia	115	428	12,395	–	5,388	18,211
38. United Kingdom	1,380	276	44,973	–	17,844	63,093
39. United States	942	36,114	3,489	646	59,997	100,246
43. Korea (Rep. of)	28	–	1,427	–	276	1,703
44. Ivory Coast	6	618	–	–	–	618
45. Nigeria	6	1,011	20	–	–	1,031
46. Congo (P. Rep.)	21	2,389	83	–	–	2,472
48. Malagasy Rep.	10	476	–	–	–	476
50. Senegal	8	730	–	–	–	730
70. Sierra Leone	2	194	–	–	–	194
71. Tunisia	1	–	121	–	–	121
73. China (P. Rep.)	7	–	–	–	620	620
99. Ships of Opportunity	30	–	–	–	6,100	6,100
Total	9,440	71,930	268,792	731	265,057	606,510

Table 3 -- Number of biological observations received by WDC for Oceanography, from various nations thru 2001

Nation	No. of cruises	Type of observation				
		Plankton	Primary Productivity	Pigments	C-14	Fishery
1. Argentina	13	452	47	233	129	—
2. Australia	64	1,527	1,599	1,738	—	2,666
4. Brazil	16	754	—	175	—	36
6. Canada	58	1,342	669	1,303	47	100
8. Colombia	7	181	—	496	—	—
10. Ecuador	3	895	191	116	—	—
12. Taiwan	3	98	—	98	—	15
13. France	28	720	288	510	43	92
14. Germany	26	594	238	2,901	1,552	731
19. India	12	424	—	—	—	—
20. Indonesia	61	2,004	5	702	—	7
22. Israel	1	58	—	—	—	—
23. Italy	1	18	18	18	—	—
24. Japan	1,428	45,923	180	27,894	30	8,532
25. Mexico	14	111	13	404	—	—
26. Netherlands	2	150	24	36	—	—
27. New Zealand	1	46	—	69	71	—
29. Pakistan	1	14	—	—	—	—
30. Peru	7	517	3	27	10	12
32. Poland	1	—	—	81	—	—
33. Portugal	5	351	—	128	—	57
34. Spain	7	66	87	175	—	27
35. Sweden	1	—	18	—	—	—
36. South Africa	23	985	165	536	—	—
37. Russia	12	3,837	743	262	—	389
38. United Kingdom	6	416	—	99	—	—
39. United States	349	13,097	6,110	15,088	745	4,445
42. Yugoslavia	1	167	—	—	—	—
43. Korea (Rep. of)	233	22,317	—	—	—	—
44. Ivory Coast	3	27	7	—	—	1
45. Nigeria	6	5	4	—	—	2,018
46. Congo (P. Rep.)	4	24	93	70	—	1
48. Malagasy Rep.	9	84	54	54	—	—
50. Senegal	11	34	—	477	—	258
60. Cuba	1	—	37	—	—	—
63. Romania	10	261	—	—	—	—
64. Arab Rep. of Egypt	2	—	—	—	—	188
71. Greece	1	3	4	—	—	—
73. China (P. Rep.)	2	—	68	139	—	—
75. Mauritania	1	—	—	—	—	1
Total	2,434	97,502	10,665	53,829	2,627	19,576

Table 4 -- Number of surface and subsurface current measurements received by WDC for Oceanography from various nations thru 2001

Nation	No. of cruises	Subsurface	Surface
2. Australia	50	1,663	—
4. Brazil	1	83	—
6. Canada	21	1,558	1,052
9. Denmark	62	—	20,184
10. Ecuador	1	46	9
11. Finland	6	5,472	5708
13. France	20	6,450	632
14. Germany	115	10,794	327,348
20. Indonesia	13	177	40
23. Italy	2	782	—
24. Japan	3,775	30,512	191,036
25. Mexico	6	—	6,816
26. Netherlands	21	10,242	—
28. Norway	6	2,691	86
32. Poland	2	291	—
33. Portugal	4	74	—
35. Sweden	116	22,751	24,237
37. Russia	49	20,660	1,510
38. United Kingdom	9	799	258
39. United States	58	4,493	4,940
42. Yugoslavia	25	603	149
43. Korea (Rep. of)	2	—	284
44. Ivory Coast	3	44	140
46. Congo (P. Rep.)	3	218	—
48. Malagasy Rep.	1	24	24
52. Turkey	1	5,095	40
63. Romania	19	284	17
Total	4,391	125,806	584,510

Table 5. Oceanographic station data received through GODAR, 2000 - 2001

NATION	DATA SET	NO. OF STATIONS
Argentina	Servicio de Hidrografia Naval	2,394
Germany	Bundesamt für Seeschifffahrt und Hydrograph (BSH)	1,068
Russia	Murmansk Marine Biological Institute	9,968
Ukraine	Southern Scientific Research Institute of Marine Fisheries and Oceanography (YugNIRO)	16,765
Ukraine	Marine Hydrophysical Institute	1,551
United States	Woods Hole Oceanographic Institution	10,659
Multi-Country	ICES	327,970
Multi-Country	MEDAR/MEDATLAS	20,208

Table 6. Bathythermograph observations received through GODAR, 2000 - 2001

NATION	DATA SET	NO. OF OBS.
Argentina	Servicio de Hidrografia Naval	7892
Ukraine	Southern Scientific Research Institute of Marine Fisheries and Oceanography (YugNIRO)	28369
Multi-Country	MEDAR/MEDATLAS	31,453

Table 7. Oceanographic station data received through NODC, 2000 - 2001

NATION	DATA SET	NO. OF STATIONS
Argentina	Antarctic Institute	197
Australia	Commonwealth Scientific & Industrial Research Organization	6,205
Canada	Arctic, Atlantic and Pacific Oceans, MEDS	43,500
Canada	JGOFS, Marine Environmental Data Service	2,684
Chile	Naval Hydrographic Institute	6,988
Ecuador	Ecuador Coast, Instituto Oceanografico de la Armada	1,553
France	Global Oceans, SISMER	4,569
Germany	Atlantic Meridonial Transect, Max Planck Institute	60
Japan	Pacific, Indian and Southern Oceans, JMA	3,987
Japan	Pacific, Indian and Southern Oceans, JODC	2,622
Korea	Korean Oceanographic Data Center	11,800
Netherlands	Netherlands Indian Ocean Programme	165
United Kingdom	Arabesque Expedition, Arabian Sea, Gulf of Oman	288
United Kingdom	British Oceanographic Data Center	630
United Kingdom	OMEX-1, NW European Continental Shelf	4,313
United States	Agulhas Retroflection Cruise (ARC)	169
United States	Arlindo Circulation, Lamont-Doherty Earth Observatory	285
United States	Beaufort and Chukchi Seas, Arctic Ocean	473
United States	Coastal Mixing and Optics Experiment (CMO)	88
United States	Fisheries-Oceanography Cooperative Investigations (FOCI)	599
United States	Global Ocean Ecosystem Dynamics (GLOBEC)	3,143
United States	Global Ocean-Atmosphere-Land System, Pan American Climate Studies (GOALS/PACS)	720
United States	Gulf of Alaska and Alaskan Coastal Waters	2,060
United States	Inner Shelf Transfer and Recycling (ISHTAR)	1,965
United States	JGOFS, Bermuda Biological Station	1,410
United States	Kara Sea, EPOCA Cruise	121
United States	Mid Atlantic Coastal Current (MACC)	620

(continued)

Table 7. Oceanographic station data received through NODC, 2000 - 2001 (continued)

NATION	DATA SET	NO. OF STATIONS
United States	National Ocean Survey, NOAA	1,374
United States	North Arabian Sea Environment and Ecosystem Research	136
United States	Outer Continental Shelf Environmental Assessment Program	68
United States	Southern Oceans	1,651
United States	U.S. Coastal Waters	3,583

Table 8. Bathythermograph observations received through NODC, 2000 - 2001

NATION	DATA SET	NO. OF OBS.
Australia	Australian Oceanographic Data Center	1,693
Australia	Commonwealth Scientific & Industrial Research Organization	206
Canada	Marine Environmental Data Service, Arctic, Pacific & Atlantic Oceans	4,575
Chile	Naval Hydrographic Office	91
Germany	Deutsches Ozeanographisches Datenzentrum, Worldwide	19,960
India	India National Institute of Oceanography, Bay of Bengal/Indian Ocean	67
Japan	Japan Meteorological Agency, Pacific, Indian, and Southern Oceans	417
Japan	Japan Oceanographic Data Center, Pacific, Indian, and Southern Oceans	5,136
United Kingdom	British Oceanographic Data Center, OMEX	325
United States	NMFS Groundfish Trawl Surveys, Bering Sea, Gulf of Alaska	761
United States	Shipboard Environmental Data Acquisition System (SEAS) Program	22,316
United States	WOCE Hi-Density Lines	9,752

Table 9. Current Meter data sets received through NODC, 2000 - 2001

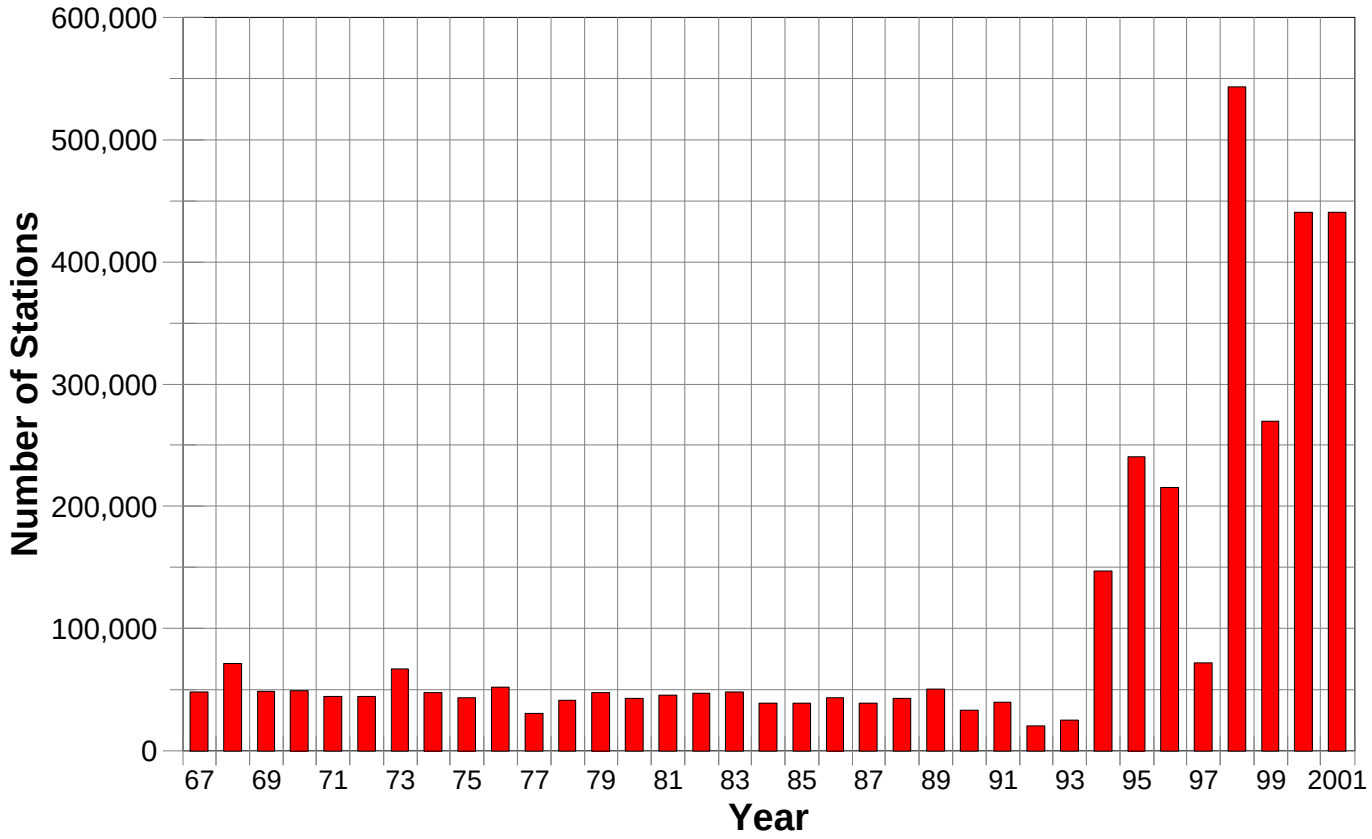
NATION	DATA SET	PERIOD
Australia	PALACE Float, Indian Ocean	Oct 1999 - April 2001
Canada	MEDS Global drifting buoy observations	Jan 1999 - Dec 2000
Japan	NW Pacific ADCP	Mar 1989 - Jun 1995
Japan	Pacific, Indian, Southern Oceans GEKs	Dec 1970 - Jan 1994
United Kingom	BODC OMEX-I drifting buoys observations, Northwest European Continental shelf	Apr 1993 - Dec 1995
United States	Bering Sea	Jul 1985
United States	Florida Coast	Jan 1997 - Dec 1999
United States	Moored buoys along U.S. Coasts	Sep 1999 - Jun 2001
United States	NOAA PMEL, TAO, Equatorial Pacific Ocean	May 1996 - Dec 1997
United States	Sound Ecosystem Analysis, Gulf of Alaska	Oct 1991 - Dec 1998
United States	University of Alaska, Coastal Upwelling Ecosystem Analysis	Aug 1973
United States	University of Washington, Southern California Bight Studies, FLUX Experiment	Apr 1989 - Jul 1990

Table 10. Biological observations received through NODC, 2000 - 2001

NATION	DATA SET	NO. OF OBS.
Japan	Marine Information Research Center (MIRC); Northwest Pacific zooplankton	16,770 tows
Japan	Japan Oceanographic Data Center; Northwest Pacific plankton	350 samples
Japan	Japan Meteorological Agency; Pacific Ocean, Indian Ocean and Southern Ocean zooplankton	1,229 samples
United Kingdom	PRIME Expedition; North Atlantic Ocean plankton	443 samples
United Kingdom	OMEX-I; Northwest European Continental shelf plankton and primary productivity	228 samples 2,530 tows
United Kingdom	Sir Alister Hardy Foundation for Ocean Science (SAHFOS); North Atlantic plankton	5,541 tows 9,244 samples
United States	Gulf of Alaska zooplankton	554 samples 124 tows
United States	Coastal waters of Washington/Oregon zooplankton	3,085 samples
United States	Satellite observed global surface chlorophyll	19,980 obs.
United States	Outfall Assessment Programs, Oahu, Hawaii	39 surveys
United States	Bermuda Biological Station, JGOFS; AESOPS	1,415 samples
United States	Environmental Studies; Port Valdez, Alaska benthic samples	929 samples
United States	JGOFS/AESOPS; Southern Ocean chlorophyll	46 tows
United States	Trans Alantic Study of Calanus (TASC)	1,319 samples
United States	Bering Sea zooplankton	978 samples
United States	Bering Sea zooplankton	247 tows
United States	Kwajalein Atoll and Pacific Islands Coral Reef observations	66 samples
United States	B.P. Bishop Museum Coral reef studies; Pearl Harbor and the North Pacific off Oahu, Hawaii	48 samples
United States	GLOBEC	2,234 samples

Number of Oceanographic Stations

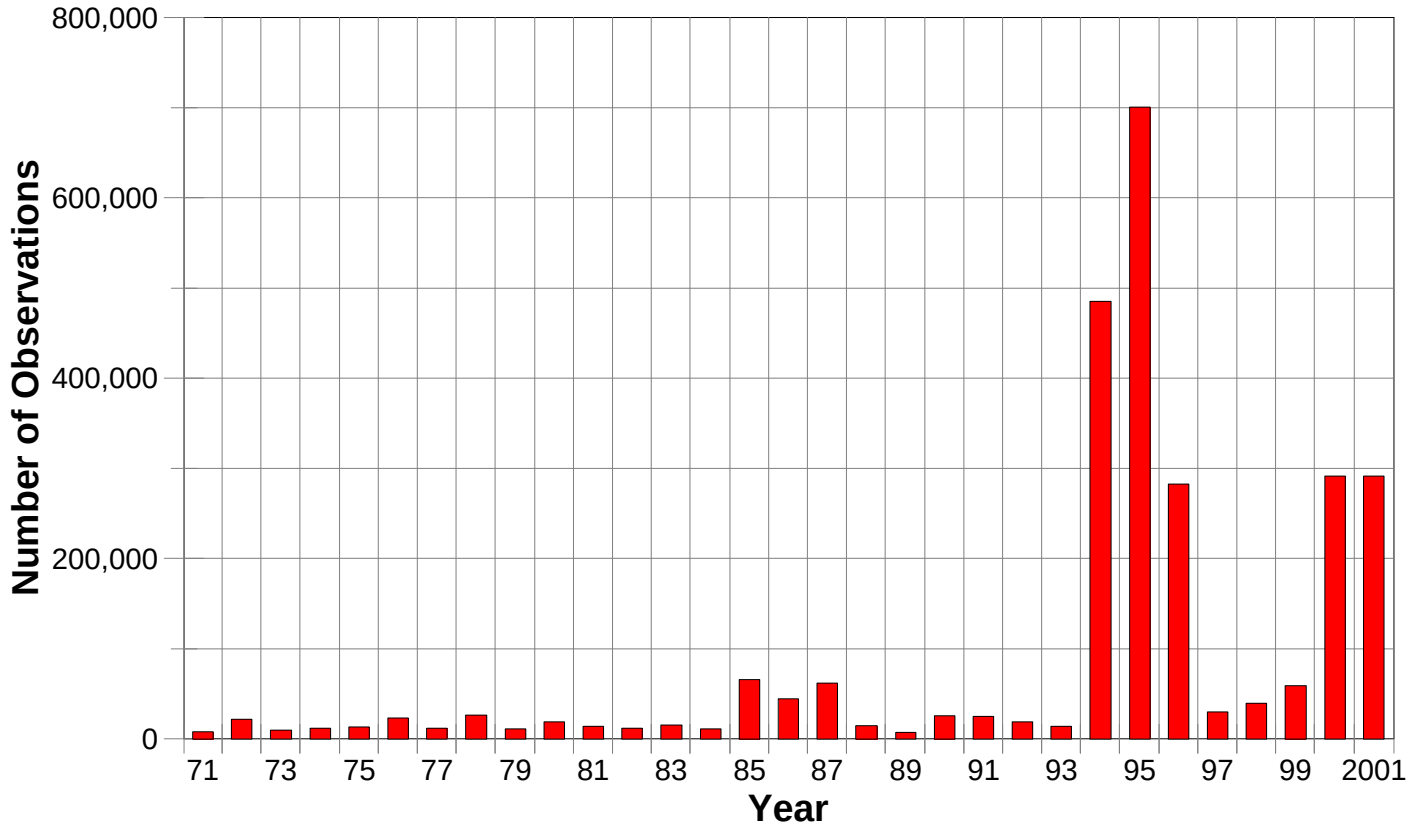
Received at the WDC by Year



1994 through 2001 totals include IOC/IODE/GODAR

Number of Bathythermographs

Received at the WDC by Year



1994 through 2001 totals include IOC/IODE/GODAR

PART IV

DATA HOLDINGS OF RNODC's AND SPECIALIZED DATA CENTERS

DATA HOLDINGS of
RNODC's and SPECIALIZED DATA CENTERS

This section of the Change Notice provides information on the availability of specialized data sets prepared by the various Responsible National Oceanographic Data Centers (RNODC's) and other Specialized Data Centers. Normally, only those data sets that have actually been received by WDC for Oceanography are described in this section; the WDC can provide digital copies of these data sets either in the originator's format or in the prescribed international exchange format.

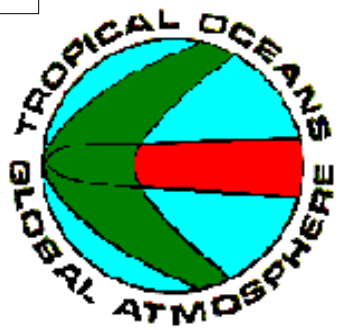
These data products are not described in the usual manner in the Catalogue portion of the Change Notice, as the data are not always merged with the standard WDC for Oceanography data bases. Thus they constitute a suite of data products, prepared by RNODC's and other Specialized Data Centers, that are separate and distinct from the standard data types regularly catalogued in the Change Notices and normally available from the WDC.

Such data products are not necessarily intended to be routinely exchanged by the WDC's under normal international data exchange guidelines. They may be voluminous or costly to prepare and, thus, may be precluded from regular data exchanges between WDC's and their exchange cooperators. Data sets in automated form are available from the WDC's usually at a cost not to exceed the cost of reproduction and postage.

MEDALPEX

ROSCOP

GTSPP



MEDITERRANEAN ALPINE EXPERIMENT SEA LEVEL DATA SET

In 1975, the IOC decided to support the development of an oceanographic program in the Mediterranean during the GARP Alpine Experiment (ALPEX). The MEDALPEX project took place between 1 September 1981 and 30 September 1982, with a special period of observation from 15 February 1982 to 30 April 1982. It was a multi-national project involving scientists from 7 countries.

The main purpose of MEDALPEX was to increase understanding of the effect of wind forcing on the dynamics of the western part of the Mediterranean Basin. Specific studies were undertaken, each having a particular scientific objective including:

1. The interrelationship between the general circulation and mesoscale eddies

2. Offshore dynamic response mechanisms under severe weather conditions

3. Storm surges and the piling up of water, especially in the Adriatic and Ligurian seas

The measurement of sea level was considered to be an important component of the observation program to support these studies. A wide range of other types of oceanographic data were also collected, including classical and synoptic meteorological measurements, data collected using remote sensing techniques and data from current meters, thermistor chains, waverider buoys, CTDs and XBTs.

The Permanent Service for Mean Sea Level (PSMSL) was requested by IOC to fulfil the role of the Responsible National Oceanographic Data Center for the MEDALPEX sea level data. The work was under-taken on behalf of PSMSL by the Marine Information and Advisory Service (MIAS) - U.K.'s national oceanographic data center (now the British Oceanographic Data Centre.)

Sea level data were submitted to MIAS from 29 of the 40 MEDALPEX sites. Measurements from 28 of the sites were taken using conventional stilling wells and, with one exception, were supplied to MIAS as hourly values. Data from the remaining site, off the coast of Corsica, were collected by an Aanderaa water level recorder at half-hourly intervals.

In compiling the dataset, MIAS translated all incoming data into a common format with elevation values standardized to meters and times to GMT. The data for each site were plotted as a time series and checks were carried out for gaps or constant values, spikes, spurious data or punching errors. Further checks were carried out by tidally analyzing and low pass filtering the data. Non-tidal fluctuations were investigated using principal component analysis. Qualifying information applicable to the data from each site was checked for inconsistencies and completeness, and appropriate documentation was stored with the data in the form of plain language records. The complete quality controlled dataset, including documentation, has been stored on a single magnetic tape formatted in GF3, the IOC's standard format for the exchange of oceanographic data. A copy of the data set may be obtained as ASCII files on floppy disk or via FTP over the internet from:

World Data Center for Oceanography, Silver Spring
NOAA
Silver Spring, MD 20910-3282
U.S.A.

E-mail: NODC.WDC@noaa.gov

or

RNODC/MEDALPEX Sea Level Data
BODC
Bidston Observatory
Merseyside L43 7RA
U.K.

E-mail: bodcmail@ua.nbi.ac.uk

RNODC FOR DRIFTING BUOYS

Background

The Marine Environmental Data Service (MEDS) began operation of the RNODC/Drifting Buoy Data in January 1986. The RNODC acquires Drifting Buoy Data from worldwide sources, makes the data available to international scientific programs, and prepares geographical plots of Drifting Buoy locations and tracks for the world oceans on a monthly basis. The RNODC also provides monthly statistics of operational buoys and the number of messages received from them.

Acquisition of Drifting Buoy Data

There are three procedures by which Drifting Buoy Data are received by the RNODC. The first and more traditional is for the principal investigator to submit his data directly to the RNODC, or to his National Oceanographic Data Centre which in turn submits the data to the RNODC. For historical data sets, this is the only option available. Data received in this way are usually of the highest quality, since they have undergone the most discriminating calibration and quality control procedures under the direction of the principal investigator; however, data entering the system in this manner are not sufficiently timely to meet the operational requirements of the major global science programs.

The second path for data flow to the RNODC is via the GTS. An advantage of this procedure is that the data are available in time scales suitable for the operational requirements of researchers in programs such as TOGA and WOCE, as well as for other operational users such as meteorological forecasters. Data received in this way may be less accurate, because they have not been fully reviewed and assessed by the principal investigator. For drifting buoy data, there is also a problem in that using the DRIBU format on the GTS for some buoys may limit the data that can be transmitted, because of a requirement to restrict the information to 256 bits.

A third procedure involves retrieving the DRIBU data as they pass through Services ARGOS. Although these data still have not been reviewed and assessed by the principal investigator, they are an improvement over the GTS data in that both time of observation and position time are available to improve velocity calculations. Data received by Service ARGOS are stored on magnetic tape for a period of 90 days. After this time, the tapes are reused and the data then reside solely in the hands of the principal investigators. Canada and the United States

have agreed to share the cost of buying copies of these tapes for the RNODC. Data from a buoy can only be provided to the RNODC if the principal investigator has given consent in writing.

RNODC/Drifting Buoy Data Base

MEDS utilizes a hierarchical database, called System 2000, to store the drifting buoy data; because of the volume of data, each year of data is stored in its own data base. In order to provide services to users at all time scales and to have available at each time scale the best data possible, the RNODC has decided to accept all data using the following hierarchical guidelines:

1. Where possible, Principal Investigators are requested to make their data available to other operational users and to the RNODC by having the data transmitted on the GTS. The RNODC will copy all available data from the GTS, quality control it, and update it into the data base on a weekly basis.

2. Principal Investigators are also requested to agree to have Service ARGOS provide a copy of their data to MEDS via tape each month whether or not those data have already been on the GTS. The data circulated on the GTS have only the one time included which poses a difficulty in calculating velocities. Thus, the tape data with the two times is an improvement to the database and will be used to replace the GTS data in the database. In addition, data will be picked up which could not be circulated on the GTS because of the format of the transmission from the buoy.

   If Service Argos has not already been supplied with the calibration constants, channel allocations, and algorithms, or has not been requested to make the conversions to physical units, there will be a requirement for the RNODC to obtain this information from the principal investigators. Principal investigators are reminded that if the sensor data cannot be made available, the position data itself is of value for the database.

3. Principal Investigators are requested to provide a copy of their Drifting Buoy Data either directly to the RNODC when the fully processed, quality controlled version is available, or to provide the data to their National Oceanographic Data Centre, where the RNODC will be requesting such data on a regular basis. Data received by this path will replace GTS or Service ARGOS versions of the data in the database.

By receiving data in the configuration set forth above, and replacing earlier, lower quality data as higher quality versions of the data arrive, the RNODC can offer users a choice between timeliness and quality, as dictated by their particular requirements.

The RNODC recognizes that in some cases there exists a need to restrict distribution of data to protect a scientist's right to benefit first from collection activities carried out at considerable effort and cost. It is noted that the large international experiments generally have data exchange agreements that state when the data are available to other participants and to those outside the program. The RNODC will honor such data exchange agreements and will, at a scientist's request, restrict further distribution of the data according to the terms of the pertinent agreement. In regard to data from individual scientists, bilateral agreements on further distribution of data for a period of up to two years can also be made.

RNODC Services

As mentioned earlier, the RNODC maintains its drifting buoy data in a data base structure. This provides maximum flexibility when meeting a request. While a number of different qualifiers may be used to retrieve data, the most common are area and time. Requesters may also specify all data or only those which have passed the quality control procedures. On output, the data can be written on various computer media, such as computer diskette, CD-ROM, 8-mm cartridge, DAT and DLT tapes, in a standard subset of the GF3 formatting system or in some other agreed ad hoc character format. In choosing the data format, users should be aware that the GF3 Formatting System is supported by a powerful and growing software system which is available for many of the more widely used host computers. Note that the data can also be downloaded using File Transfer Protocol (FTP) over the Internet.

Each month, the RNODC publishes a summary of the data it has received in real time; also produced are global maps of drifting buoy tracks for the previous month. These maps are issued regularly on a monthly basis. Anyone wishing to receive this summary should contact the RNODC. There is no charge to receive this product.

To obtain the RNODC Drifting Buoy Data Set, requesters should contact one of the following:

RNODC for Drifting Buoy Data
Marine Environmental Data Service
Department of Fisheries and Oceans
200 Kent Street
Ottawa K1A 0E6 Canada

Telephone: 613-990-0243
FAX: 613-993-4658
Email: services@meds-sdmm.dfo-mpo.gc.ca

World Data Center for
Oceanography, Silver Spring
NOAA
Silver Spring, MD 20910-3282
U.S.A.

Telephone: 301-713-3295
FAX: 301-713-3303
Email: NODC.WDC@noaa.gov

TOGA

TROPICAL OCEAN and GLOBAL ATMOSPHERE PROGRAMME

TOGA Background

A major component of the TOGA International Implementation Plan was the monitoring of the global atmosphere and the upper layers of the three tropical oceans during the ten-year period of 1985-1994. Existing meteorological and oceanographic observation systems were maintained and expanded by TOGA, while new networks were also installed in key locations. These observations, along with available historical data, have provided a description of the ocean-climate system and its variability from sub-seasonal to interannual scales.

TOGA Tropical Subsurface Data Centers

The TOGA Tropical Subsurface Data Centre in Brest, France operated within the framework of both the IOC's International Oceanographic Data and Information Exchange (IODE) system and the Joint IOC-WMO Integrated Global Ocean Services System (IGOSS). This Centre has been continued for the WOCE program as the Global Subsurface Data Centre. The Centre collects subsurface ocean observations from the following sources: (1) tropical oceans observations from the IGOSS network; (2) additional vertical temperature profiles from XBT's and from drifting or moored buoys with thermistor chains, not sent over the GTS; (3) time series of temperature and salinity at fixed depth from moored thermistor chains; (4) surface temperature and salinity data and vertical profiles of temperature and salinity from CTD's, bottle casts, and WCTD's; and (5) other subsurface ocean measurements from process-oriented intensive oceanographic observation projects in the tropical oceans.

Initially, data are collected from radio transmissions, with fully digitized and quality controlled observations added with time. The subsurface thermal data described above are analyzed, and the Centre assembles and disseminates quality-controlled Level II-B data sets for the Global Oceans. The Centre is also re-

sponsible for provision of these data sets to the World Data Centers, Oceanography at appropriate intervals.

WDC-A, by virtue of its collocation with the U.S. National Oceanographic Data Center (NODC), also has access to the Tropical Pacific Ocean data set jointly maintained by NODC and the Scripps Institution of Oceanography (SIO), serving as the Joint Environmental Data Analysis (JEDA) Center. JEDA tracks, acquires, quality controls, and merges all available subsurface thermal data for the Tropical Pacific. NODC assembles, reformats and initiates quality control of the data; SIO performs further quality control and analysis of the data. Each yearly Level II-B Pacific Ocean data set undergoes the full spectrum of quality control and analysis by the JEDA Center; it is then provided to WDC-A.

TOGA Sea Level Center

The TOGA Project, realizing the importance of sea level data for research in ocean dynamics and for the monitoring and prediction of oceanographic processes, established a TOGA Sea Level Center at the University of Hawaii. The purpose of this Center to collect all sea level data taken by island-based and coastal tide gauges in the area between 30°N and 30°S during the TOGA project, and to make them available for research. The TOGA Sea Level Center also obtains and archives past sea level data for the same region, when they are made available from the originators. Hourly, daily, and monthly values are prepared and archived, the data are stored digitally and are passed on yearly to other TOGA data centers, to the Permanent Service for Mean Sea Level (PSMSL), and to the World Data Centers, Oceanography; The Archive is maintained online, with access through the World Wide Web adn FTP. The TOGA Sea Level Center also supports the Global Sea Level Observing System (GLOSS). Sea level data has assumed greater importance because of its utilization in the calibration of satellite altimeters, such as GEOSAT. Since the conclusion of the TOGA program, many of the observing stations have continued to provide sea level data on a regular basis.

Through the creation of the Joint Archive for Sea Level (JASL) with the University of Hawaii, the U.S. NODC is providing data management for this effort and assisting in the acquisition, processing, quality assurance, archiving, and dissemination of the data. The Joint Archive for Sea Level submits sea level time series data updates to NODC on a yearly basis. These updates may include data from new stations, as well as previously unprocessed data from existing stations. In addition, the updates may include data previously submitted to NODC that have been reprocessed to improve data quality. Therefore, to update the sea level data files for a station already in the database, NODC completely replaces the time series of data for that station with a new version that may include both new and reprocessed data.

TOGA TAO Array

The TOGA TAO (Tropical Atmosphere Ocean) Array provided measurements of surface winds, air temperature, humidity, SST, upper-ocean temperatures and currents. This mooring array was established by TOGA in the Equatorial Pacific. The array is comprised of the ATLAS (Autonomous Temperature Line Acquisition System) wind and thermistor chain moorings and the PROTEUS (PROfile TElemetry of Upper ocean currentS) downward-looking Acoustic Doppler Current Profiler (ADCP) current measurement system. For the ATLAS moorings, surface winds, air temperature, humidity, SST, and sub-surface temperature at 10 depths down to 500 m are telemetered to shore via Service Argos serveral times a day, and for PROTEUS, daily-averaged velocity profiles with 8 m vertical resolution between 10 - 250 m are telemetered to shore in real time via Service Argos. Since the conclusion of the TOGA program, TAO coverage in the tropical oceans has been significantly enhanced.

NODC receives periodic updates to the TAO Array data set; WDC-A provides updates of this data set to its counterpart WDCs.

WDC-A, Oceanography Support to TOGA

WDC-A, Oceanography serves as an archival center for each of these TOGA Data Sets. Its responsibilities are to provide TOGA data sets to requesters in the international scientific community, at a cost not to exceed that of data reproduction and postage, and to provide copies of all TOGA data sets received to World Data Centers B and D, Oceanography in exchange. TOGA data and information are available from the following Specialized Data Centers:

Global Subsurface Data Centre
Centre IFREMER de Brest
BP 70
29263 Plouzane, France
Email: Marie.Claire.Fabri@ifremer.fr

JEDA Center
Scripps Institution of Oceanography
University of California
La Jolla, CA 92093 U.S.A.
Email: wbwhite@ucsd.edu

JEDA Center
National Oceanographic Data Center
NOAA
Silver Spring, MD 20910-3282 U.S.A.
Email: Melanie.Hamilton@noaa.gov

The Joint Archive for Sea Level
University of Hawaii - MSB 312
1000 Pope Road
Honolulu, Hawaii 96822 U.S.A.
Email: Patrick.Caldwell@noaa.gov

World Data Center for Oceanography, Silver Spring
National Oceanic & Atmospheric Administration
Silver Spring, MD 20910-3282 U.S.A.
Email: NODC.WDC@noaa.gov

RNODC SOC

SOUTHERN OCEANS DATA SET

The RNODC/Southern Oceans (RNODC/SOC) was created in order to provide a regional data management and data information service for Southern Oceans physical and chemical oceanographic data. The RNODC was created under guidelines set forth in Recommendation XII.1 by the IOC's Technical Committee on International Oceanographic Data Exchange (IODE XII, Moscow 10-17 December 1986).

The Terms of Reference of the RNODC/SOC include the following responsibilities:

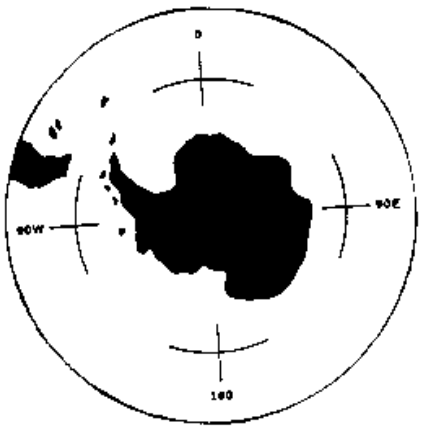
- Acquire, quality control, and store in standard format the physical and chemical data obtained by the international community from the cruises and research programmes carried out in the Southern Oceans;

- Co-operate closely with the World Data Centers, Oceanography by sending regular shipments (at least once a year), free of charge, of complete sets of physical and chemical data stored on magnetic tapes in GF3, and inventories, data summaries, and other data products related to the physical and chemical data from the Southern Oceans;

- Assist the World Data Centers 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.

The RNODC-SOC is located in and operated by the Argentine Oceanographic Data Center (CEADO).



RNODC/SOC Oceanographic Data Set

The RNODC/SOC data set contains data for all available oceanographic stations for the Southern Oceans between 50° and the Antarctic Continent. Data for a total of 15,670 oceanographic stations taken during 387 Southern Oceans cruises are included in the data set. Seasonally, the data totals are approximately 2,500 observations taken during the Austral Winter (April-September) and more than 13,000 observations taken during the Austral Summer (October-March). Southern Oceans observational data taken by 19 countries have been received by the RNODC.

The RNODC/SOC data set is available from:

Argentine Oceanographic Data Center (RNODC/SOC)
Centro Argentino de Datos Oceanograficos
Ave. Montes de Oca 2124
1271 - Buenos Aires
Republica Argentina

Email: ceado@rina.hidro.gov.ar

or

World Data Center for Oceanography, Silver Spring
National Oceanic & Atmospheric Administration
Silver Spring, MD 20910-3282 U.S.A.

Email: NODC.WDC@noaa.gov

GTSPP

GLOBAL TEMPERATURE - SALINITY PROJECT

INTRODUCTION

Making ocean temperature and salinity data quickly and easily accessible to users is the primary goal of the Global Temperature - Salinity Program (GTSPP). A cooperative international program, the GTSPP has now developed a global ocean T-S data base comprised of data that are as up-to-date and of the highest quality possible. Numerous IODE countries are now contributing to the program.

U.S. PARTICIPATION

The U.S. supports the GTSPP through the participation of its National Oceanographic Data Center (NODC). NODC fulfills several functions in support of the GTSPP:

1. Data communications support. The Internet is used daily to transmit and receive data and project information. Real-time data are relayed from NOAA's National Weather Service and the Navy's Fleet Numerical Oceanography Center to Canada's Marine Environmental Data Service (MEDS). In addition, monthly fliers are transmitted to oceanography centers in Hobart, Australia; Brest, France; La Jolla, California; Miami, Florida; and other locations in the United States.

2. Data quality control. All GTSPP data are passed through standard data quality tests, which are documented in the GTSPP Real-Time Quality Control Manual (Intergovernmental Oceanographic Commission Manuals and Guides No. 22, UNESCO, 1990). NODC has implemented two systems to apply quality tests to data destined for the GTSPP database. The systems operate on UNIX-based workstations that are part of NODC's client/server computing environment. One system displays geographical positions of observations as compared to land masses, and shows ship speed between observations as a check on positions dates and times. The second system applies tests to subsurface temperature and salinity data, setting flags to reflect test results.

3. Database maintenance. GTSPP data are maintained in a relational database that is managed by commercial software on the UNIX workstation. Real-time data are added automatically, as they arrive from MEDS. Higher quality delayed mode data are also being quality controlled and added to the data base. As these observations are added, the matching real-time data are tagged to avoid sending two copies of the same data. The database makes it possible to quickly load and retrieve data,

as well as to provide statistics about the number of observations per geographic region, time period, ship, or data type.

GTSPP DATA

Data in the GTSPP database are generated by ships or buoys from all regions of the world's oceans. Instruments used to collect the data include thermistor chains (on buoys), XBTs, digital bathythermographs (DBTs), bottle samplers, and CTDs. The data are sent in real-time (by radio or satellite transmission) and later in delayed mode when ships return to port.

Delayed-mode records are generally of higher resolution than records sent in real time. Therefore, NODC acquires delayed mode data (usually several months after data were collected) and merges them into the database. To avoid duplication of real-time and delayed mode observations, real-time records are matched to corresponding delayed mode records in the database. In that way, the GTSPP data resource is built quickly from real-time records and subsequently enhanced by high quality, high resolution delayed mode records.

SUPPORT TO CLIMATE RESEARCH

NODC continues to provide monthly files of real-time data to WOCE Upper Ocean Thermal science centers in France, Australia, and the U.S.; each of these centers uses the data in ocean climate research. Results of their scientific analyses are fed back into the GTSPP database to enhance data quality. Also, in support of WOCE, NODC now produces reports of the distribution of data along TOGA-WOCE-IGOSS transect lines.

GTSPP has demonstrated the feasibility of a global ocean network of data management and science centers. The project has shown that computer technology and networks, now in place, are sufficient for sustaining cooperative work such as that being done in GTSPP. Experience gained from GTSPP will be useful to future global ocean data management projects, such as the Global Ocean Observing System (GOOS).

To obtain information about the availability of data from the GTSPP Data Base, as well as participation in the Program itself, please contact the following:

National Oceanographic Data Center
NOAA/NESDIS E/OC13
Silver Spring, MD 20910-3282 U.S.A.

Email: Melanie.Hamilton@noaa.gov

World Data Center for Oceanography
NOAA
Silver Spring, MD 20910-3282 U.S.A.

Email: NODC.WDC@noaa.gov

ROSCOP

REPORT OF OBSERVATIONS/SAMPLES COLLECTED BY OCEANOGRAPHIC PROGRAMS

International marine data inventories, particularly the Reports of Observations/ Samples Collected by Oceanographic Programs (ROSCOPs 1 and 2) and their successor, the Cruise Summary Report (ROSCOP 3), have played a significant role in the success of IODE data exchange and data management for more than 20 years. In addition to their stated purpose of providing a means for determining the availability of internationally exchangeable data in advance of its actual receipt, these inventories have also: (1) provided referral service to data not routinely exchanged through the WDC system and (2) supplied important documentation in support of processing by national and regional data centers.

The ROSCOP scheme was initially approved by IODE at its Fifth Session in 1970 as an interim marine data inventory, and the first ROSCOP 1 forms were received by the WDC in 1971. A completely revised version (ROSCOP 2) was developed by the Task Team on Inventories of Marine Data and Samples, and was accepted by IODE at its Seventh Session in 1973; ROSCOP 2 forms were first received during 1974. Subsequently, in consideration of new requirements identified by IODE, the form was completely redesigned in 1989; the resulting Cruise Summary Report (also subtitled ROSCOP 3 for purposes of continuity), which was intended to be more user-friendly, was approved by IODE in 1990.

Through the end of 2001, WDC for Oceanography had received and tabulated a total of 24,612 ROSCOP forms of all types (ROSCOPs 1, 2 and 3) for the twenty-year period. A general decline in numbers of forms received from the first half of the period to the last half is evident. Certain factors have obviously had a significant impact on the receipt of ROSCOP forms: (1) the occurrence of special projects of limited duration (such as the U.S. OCSEAP Program in the 1970s) that generated large numbers of ROSCOPs; (2) a possible overall decrease in many countries' national marine science programs; and (3) significant periods of policy changes or disruptions that impact a Data Center's activities.

In evaluating the long-term success of the ROSCOP program, it is important to recognize the valuable contribution made by ICES in developing the automated system that facilitates utilization of information received on the ROSCOP forms. The automated ICES system is in use at WDC for Oceanography and previous discrepancies between the WDC's ROSCOP tabulations and the ICES system have been resolved. A WDC project has now ensured that all of the WDC's historical ROSCOPs have been provided to ICES.

Number of ROSCOP forms and Cruise Summary Report forms received by WDC for Oceanography, Silver Spring, as of 31 December 2001

Country	ROSCOP 1 Forms	ROSCOP 2 Forms	Cruise Summary Reports
Argentina	1	158	19
Australia	--	89	--
Belgium	15	13	--
Brazil	--	106	21
Canada	63	315	38
Chile	--	1	--
Colombia	9	--	--
Denmark	41	223	--
Ecuador	6	--	--
Finland	27	107	--
France	100	2,335	1,031
Germany	513	1,746	2,102
Ghana	--	2	--
Iceland	39	122	--
India	32	8	--
Indonesia	--	--	2
Ireland	12	43	--
Italy	3	--	--
Japan	214	1,638	212
Netherlands	78	295	11
Norway	108	404	--
Peru	3	--	--
Poland	82	100	--
Portugal	--	1	--
Spain	35	15	--
Sweden	38	203	--
South Africa	--	477	--
Russia	85	393	--
United Kingdom	614	2,412	622
United States	20	6,339	407
Korea (Republic of)	8	58	378
Congo (People's Rep.)	16	1	--
Senegal	1	--	--
Mauritania	2	--	--
Totals	2,165	17,604	4,843

WOCE

WORLD OCEAN CIRCULATION EXPERIMENT

BACKGROUND

The World Ocean Circulation Experiment (WOCE) was a component of the World Climate Research Program that investigated the role played by ocean circulation in the earth's climate system. Its goal is to develop improved ocean circulation models for use in climate prediction. The WOCE observational phase (1990-1998) used satellites and in-situ physical/ chemical measurements taken during this largest and most comprehensive ocean observational program undertaken to date, in compiling a quasi-synoptic data set of unprecedented scope.

DATA MANAGEMENT

The WOCE Hydrographic Program (WHP) is comprised of One-Time Surveys, Repeat Hydrography, and Bathymetry data taken along WOCE tracks. The One-Time Survey encompasses a range of physical and chemical measurements at discrete stations and from continuous sampling. Repeat Hydrography sections and time-series stations provide information on the temporal variability of the ocean in different seasons and years. The WHP Special Analysis Center represents the final stage in the hydrographic data management process, providing a globally-consistent data set and generating dynamical data products. Direct Current Measurements include data from Current Meter Moorings, Subsurface Floats, Surface Drifting Buoys, and Acoustic Doppler Current Profilers (ADCPs). WOCE Upper Ocean and Sea Surface Observations consist of Upper Ocean Thermal Data, Sea Surface Salinity, and Surface Meteorological Data and Surface Fluxes. Upper Ocean Thermal measurements are taken with XBTs, moored buoys, thermistor chains, profiling floats, and CTDs.

The unusually wide variety of data types observed during WOCE has required a somewhat different approach to data management than was employed during previous international ocean surveys:

Data Assembly Centers (DACs) are managed by scientists, handle assembly and quality control of data sets, and generate data products.

Special Analysis Centers (SACs) perform data analysis and synthesis functions, including the generation of derived data sets.

Data Information Unit (DIU) is a central source of information on the status of WOCE, tracking all data collection, processing, and archiving activities, and acting as the primary interface between the WOCE data system and its users.

WOCE DATA AVAILABILITY

Resources and expertise from almost 30 countries have been combined to produce an unprecedented collection of in-situ and satellite observations of the global oceans for the period 1990-1997. The Global Data Version 1.0 CD-ROM Series, which was the inaugural set of WOCE CD-ROMs, was released at the May 1998 WOCE Ocean Circulation and Climate Conference in Halifax, Canada. The WOCE CD Version 2.0 was released in September, 2000 and contains data received by the DACs since 1998. This series, prepared by the U.S. NODC, makes available a unique and diverse set of data that can be expected to provide invaluable assistance to climate researchers. The CDs cover all facets of the WOCE field program: Bathymetry Data, Hydrographic Data and Data Products, Upper Ocean Thermal Data, Subsurface Floats Data, Surface Velocity Data, Current Meter Moorings Data, Acoustic Doppler Current Profilers (ADCP) Data, Sea Level Data, Surface Meteorology Data, Surface Fluxes, Satellite Derived Sea Surface Temperature (SST) and Sea Surface Height Data

Version 2.0 of the CD Series presented many of the datasets in netCDF format. The WOCE Data Products Committee (DPC) envisage that their recommendation to adopt netCDF will allow, particularly in the final version (version 3) of the CDs, a much easier approach to the synthesis of all the WOCE data.

The WOCE CD-ROMs are available upon request from WDC-A, Oceanography and the U.S. NODC.

National Oceanographic Data Center
NOAA/NESDIS E/OC1
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