
NODC Informal Report No. 9



A National Oceanographic Data Center **CCOMPLISHMENTS, FY 1988**

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service

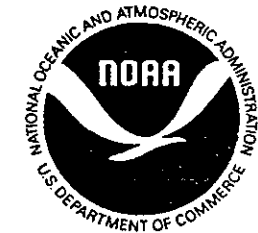
THE NATIONAL OCEANOGRAPHIC DATA CENTER (NODC)

is the U.S. national facility established to "acquire, process, store, and disseminate" global ocean data. NODC operates as a unit of the National Environmental Satellite, Data, and Information Service (NESDIS) of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce.

NODC holds ocean data collected by U.S. Federal agencies; state and local government agencies; universities and research institutions; private industry; and foreign organizations. NODC acquires foreign data through direct bilateral exchanges and through the facilities of the World Data Center A for Oceanography, which is operated by NODC for the U.S. National Academy of Sciences.

Each year NODC responds to thousands of data and information requests from users in the United States and around the world. NODC welcomes inquiries from all potential users.

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A National Oceanographic Data Center **ACCOMPLISHMENTS, FY 1988**

Office of the Director
National Oceanographic Data Center
Washington, D.C.

March 1989

U.S. DEPARTMENT OF COMMERCE
Robert A. Mosbacher, Secretary

National Oceanic and Atmospheric Administration
William E. Evans, Administrator

National Environmental Satellite, Data, and Information Service
Thomas N. Pyke, Jr., Assistant Administrator

NODC User SERVICES

Further information about any of the NODC data and information products or services mentioned in this report can be obtained from the:

National Oceanographic Data Center
User Services Branch
NOAA/NESDIS E/OC21
Washington, DC 20235

Telephone: 202-673-5549
FTS 673-5549

E-mail: *NODC.WDCA* on Omnet/ScienceNet (Telemail)
NODC::SERVICES on SPAN

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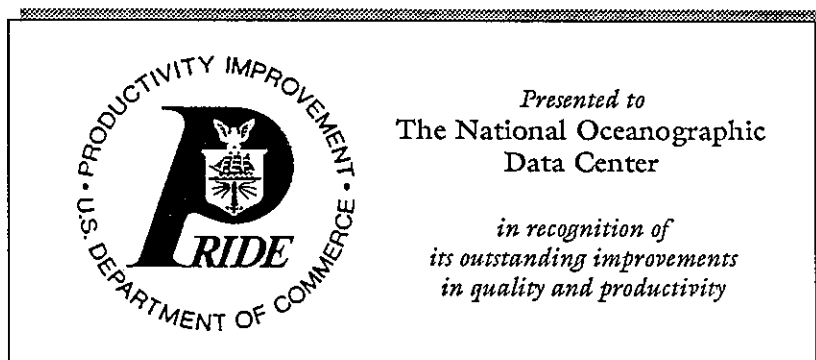
FROM THE DIRECTOR

Gregory W. Withee

Among the National Oceanographic Data Center's many accomplishments in fiscal year 1988, two are especially significant: management of data from the U.S. Navy GEOSAT and receipt of a Department of Commerce PRIDE Program award. These two stand out because they serve as testimony to NODC's success in meeting its twin goals of enhancing data services for global climate research and improving efficiency and productivity.

✓ ● *GEOSAT Data* - In 1988 the Navy released to NODC for public dissemination a global wind/wave data set from its GEODESY SATellite (GEOSAT). This data set covers the first 18 months of GEOSAT operations (the Geodetic Mission). NODC had previously begun receiving and distributing monthly GEOSAT data from the Exact Repeat Mission, the scientific phase of GEOSAT operations that followed its primary military mission. Because of their increased precision and global coverage, GEOSAT data are already being applied to study changes in the tropical Pacific Ocean linked to El Niño events and other ocean phenomena related to global climate change.

● *PRIDE Productivity Award* - In recognition of outstanding achievement in exceeding established goals for data archiving and data dissemination, NODC was awarded the Department of Commerce's Presidential Productivity Award. The award was presented to NODC in August by Dr. Alan Balutis, the Department's Director of Management and Budget.



In the midst of new developments and new successes, the NODC this past year also experienced great sadness. Two NODC employees of gentle spirit and highest professional standards--Wilhelmenia Bowe of the Product Development Branch and John J. Audet, Chief of the Ocean Pollution Data and Information Branch, were stricken by illness and died. We miss these friends and regret that they are not here to share with us the excitement of new advances in ocean data management as NODC contributes to the NOAA mission for this and the next decade.

1. NATURAL RESOURCES

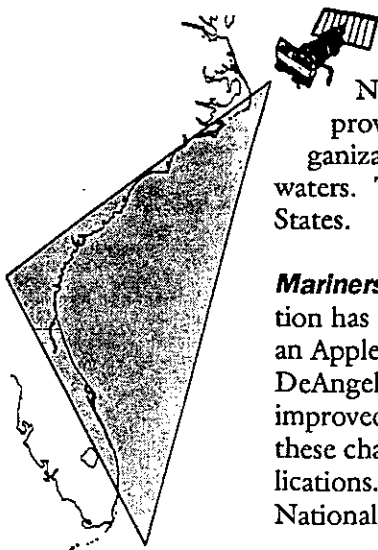


Climate and Global Change Data Management - During FY 88 Principals from NOAA and six other agencies met to coordinate Federal data management activities for global change research. Charged with the task of making it easier for scientists and others to obtain data for studying global change, the group began work in four areas: (1) data directories, catalogs, and inventories; (2) data observation, collection, archiving and distribution; (3) data pricing policies; and (4) international data exchange agreements. ✓

Pollution Data and Information Management - NODC provided support to the National Ocean Pollution Planning Office (NOPPO) by servicing ocean pollution data and information requests from more than 1200 customers. The *Handbook of Federal Systems and Services for Marine Pollution Research* was updated on schedule, and a search for data from pollution studies conducted during the years 1978-83 was successfully completed with the issuance of a summary report. Follow-up work is continuing. The untimely death of Branch Chief John J. Audet was a serious setback to NODC's ocean pollution data and information efforts. Recruitment action to fill this most important position is underway. ✓

Chesapeake Bay Data and Information Management - The Coastal Information System for Chesapeake Bay was completed in April 1988 and demonstrated to other NOAA offices. Arrangements are being made with the National Technical Information Service to distribute the set of diskettes for this PC-based system that provides researchers and managers with a comprehensive information resource on the Bay.

Funding provided to NODC to coordinate NESDIS participation in the Chesapeake Bay Program increased by 23% over FY 87 (\$216K vs. \$175K).



"CoastWatch" Concept Developed with NMFS - Working with the Beaufort Laboratory of the National Marine Fisheries Service, NODC helped develop the concept of "CoastWatch". CoastWatch provides rapid response products and services from NOAA Line Organizations that describe ocean conditions and unusual events in coastal waters. The *CoastWatch Weekly Bulletin* covers the southeastern United States.

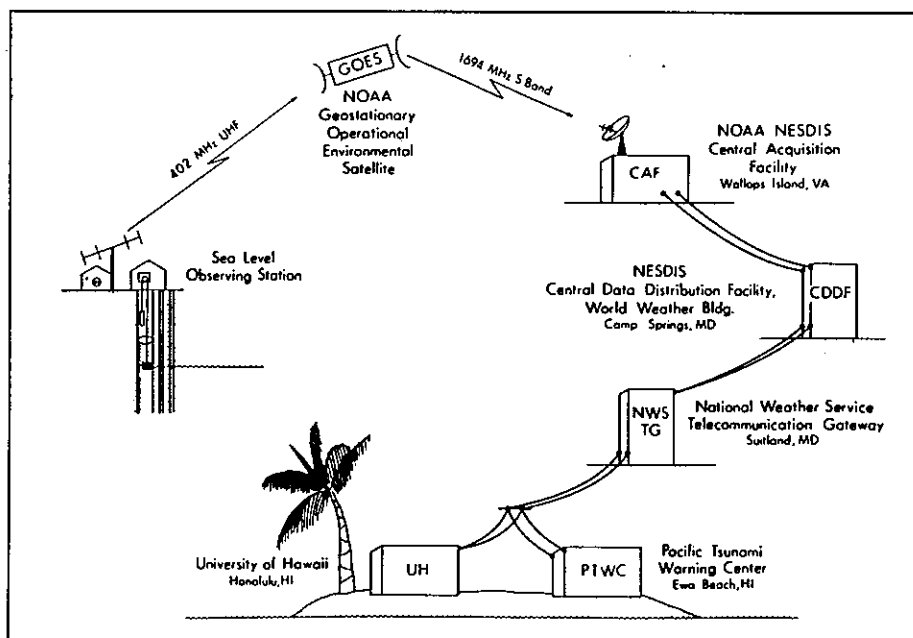
Mariners Weather Log Automated - Production of this quarterly publication has been successfully automated using a desktop publishing system on an Apple Macintosh II computer. Under the editorship of Richard M. DeAngelis the content and appearance of the *Log* have been significantly improved. The *Mariners Weather Log* has received many compliments on these changes and continues to be one of the most widely read NOAA publications. This publication was totally supported by funds from the Navy and National Weather Service. ✓

Status and Trends Data at NODC - Data from the first two years of the Status and Trends Program--a broad-based ocean pollution monitoring study--have been submitted to NODC. These data will be available to the public as soon as documentation is completed by the National Ocean Service/Office of Marine Assessment.

Major OCSEAP Data Request - Under provisions of a Memorandum of Understanding, a large number of data sets collected during the Outer Continental Shelf Environmental Assessment Program and archived at NODC were sent to NOAA offices in Alaska. Before delivery, these data were reprocessed by the NODC field office in Alaska to replace earlier taxonomic codes with current codes. These reprocessed data were also returned to NODC so the archives data files could be updated. On-site processing of these data continues.

New OCEAN Periodical - Through limited distribution of several prototype issues, NODC launched a periodical called *Ocean Climate Environmental Assessment News (OCEAN)*. While the publication was well received by the oceanographic community, it was noted that near-real-time ocean data products in *OCEAN* paralleled meteorological data products published by the Climate Analysis Center (CAC). After some discussion, NODC and CAC collaborated in the production of a single publication issued in two parts (atmosphere and oceans) each month and distributed by the CAC.

✓ **Sea Level Data Management** - The Joint Archive for Sea Level, a cooperative effort between NODC and the University of Hawaii, established and documented processing and archiving procedures for data from the Pacific Ocean Sea Level Network. Sea level acquired and processed by the University of Hawaii from a network of tide stations around the Pacific basin will be submitted to NODC for archiving and dissemination.



Data pathway for stations in the Pacific Sea Level Network

Quality Assessment of Soviet Hydrographic Data - In May 1988 NODC completed a study of Russian contemporary and historical salinity and temperature data as input to the Summary Report for the World Ocean Agreement between the U.S. and U.S.S.R. The study compared temperature and salinity data collected by U.S. Coast Guard vessels (1964 -1973) and Soviet vessels (1976 -1982) at Ocean Weather Station Charlie (52°N, 35°W). Except for a few surface errors, most temperature data values agree. Soviet salinity data, however, showed greater variability than U.S. data. Although average salinities appear to agree well, standard deviations for deep water (1000m, 1500m, and 2000m) for several months appear to be twice those of U.S. data.

Data Management for Global Ocean Flux Study (GOFS) - The National Science Foundation agreed to support NODC's proposed GOFS data management responsibilities. George Heimerdinger, NODC Northeast Liaison Officer stationed at Woods Hole Oceanographic Institution (WHOI), has been designated as the GOFS Data Manager. In early FY 89 additional support for GOFS will be provided by a NOAA Corps Officer to be assigned to the NODC field office at WHOI (the first Corps Officer to be assigned to NODC). Cooperative data management efforts supporting GOFS are planned with Dr. Glenn Flierl (MIT/WHOI). ✓

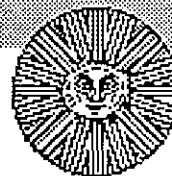


U. S. G O F S

***In situ* Global Chlorophyll Data Set Development** - Under NASA sponsorship NODC is working with Dr. William Balch of the University of Miami to assemble a global chlorophyll data set. The project began with the accumulation of U.S. and foreign oceanographic cruises held by NODC that contain chlorophyll data. The initial data set (approximately 8000 stations) is available from NODC on magnetic tape. This project will continue to compile data from other U.S. and foreign sources to support calibration/validation of satellite acquired ocean color data and estimates of biogenic oceanic fluxes. ✓

New BioGeoChemical Data Format Developed - A new data archival format is under development by Dr. William Balch (Univ. of Miami) and Dr. Elaine Collins (NODC) to accommodate biogeochemical data types anticipated from GOFS, JGOFS, and other global and climate change programs. This new NODC digital data format will first be used for acquisition of *in situ* chlorophyll data and JGOFS Pilot Study data collected in the summer of 1989.

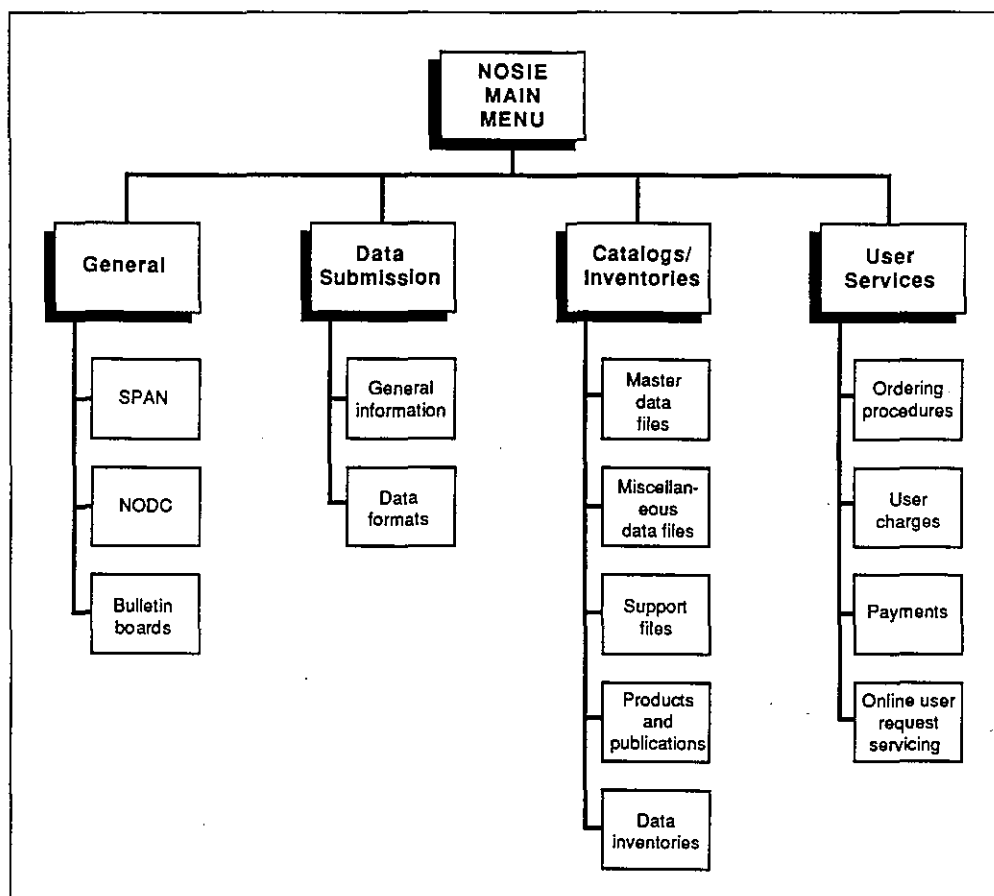
2. PRODUCTS AND SERVICES



✓ **NODC Ocean Science Information Exchange (NOSIE)** - NOSIE Version 1.0 went on-line officially during the week of December 7, 1987, when it was publicly introduced at the annual fall meeting of the American Geophysical Union. This system offers an automated NODC Users Guide featuring data file abstracts and formats and other information describing NODC's products and services. Software has been developed that enables customers to submit data requests and messages and that allows User Services personnel to monitor and produce hard-copy listings of each transaction. Initially NOSIE could be accessed over the NASA SPAN network or by direct dial-up. In early FY 89 it was connected to Omnet/ScienceNet on Telemail to provide easier access to many more users.

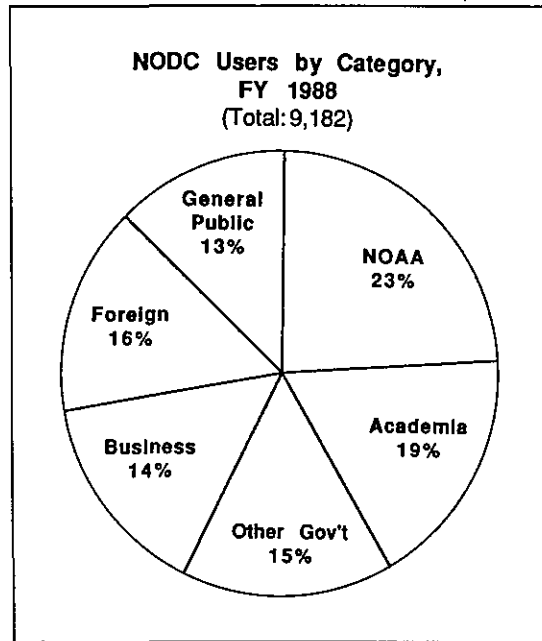
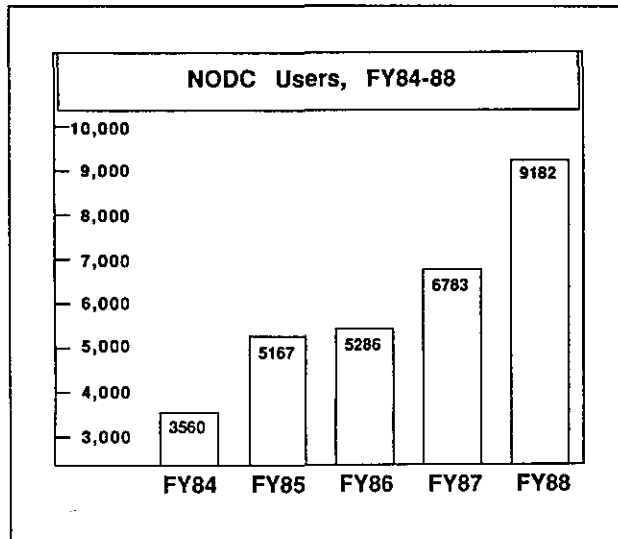
A self-explanatory, menu-driven system, NOSIE provides several new searchable data inventories and directories. For example, the Archive Summary System describes observations (by time and geographic area) available from major NODC files. Inventories for additional archive files are being developed and should be ready in FY 89.

A paper describing NOSIE, "On-line Access to NODC Information Services" was presented at the MTS Oceans '88 Conference.



NOSIE
Menu
Structure
(Top three
levels)

New User Request Record - In FY 88 NODC fulfilled an all-time high record of 9,182 customer requests, smashing the previous record of 6,783 requests set the year before.



Joint NODC/ERL Workshop on Global Ocean Data Files - A Workshop on Global Ocean Data Files was held on June 13-14, 1988, in Washington, D.C. under the joint auspices of NODC and the NOAA Environmental Research Laboratories. Twenty-six representatives and scientists from NOAA, academia, Navy, and industry gathered at NODC to plan for the compilation of new global ocean data sets. A final report of this workshop was completed in September 1988.

NAVOCEANO/NODC Memorandum of Agreement - A data management meeting between NODC and the Naval Oceanographic Office (NAVOCEANO) at the Stennis Space Center on March 30-31, 1988, led to signing of a Memorandum of Agreement to exchange public domain oceanographic data between the two organizations. This agreement will maintain commonality of NAVOCEANO and NODC public domain data holdings.

Circum-Pacific Map Series (Hazards Map) - Irving Perlroth, Chief of the NODC Data Base Management Division, is the NESDIS coordinator for organizing NOAA's input to the Circum-Pacific Map Project of the U.S. Geological Survey (USGS). The USGS and NOAA have been working to produce a Hazards Map in the Circum-Pacific Map Series. The input for this Hazards map has been completed and the final proof should be available in early FY 89. This map was presented at the Circum-Pacific Council meeting (September 27 - October 3, 1988) in Japan. Future meetings with USGS will continue to review and discuss possible additional maps (e.g., oceanographic) in the series.

✓ **New ROSCOP Database** - The Report of Observations/Samples Collected by Oceanographic Programs (ROSCOP) is a form used by investigators to describe recently collected data. ROSCOPs submitted to NODC are now entered into a database (developed using the software package Rbase) that is updated monthly. The database is used to generate monthly reports and to prepare NODC's annual submission to the U.S. State Department for the U.S. Declared National Program. Twice this year ROSCOPs proved their value as a data acquisition mechanism. They were used to determine EP-OCS cruises that collected data of use in GOFS and to locate data from U.K. cruises in the Mediterranean for specific time periods and ships that were needed by the NODC Northeast Liaison Office for a research project.

Inventory of Atlantic XBT Data Available - A new inventory of Atlantic Ocean XBT data held by NODC was produced in cooperation with Dr. Robert Molinari (NOAA/AOML) as part of a proposal for a joint AOML/NODC center for Atlantic ocean thermal data.

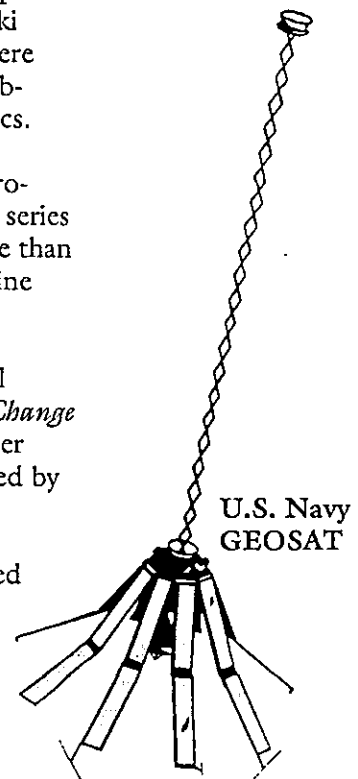
NODC Fliers Issued - During the year NODC prepared and distributed seven new fliers/order forms in the NODC Environmental Information Bulletin series including a pair of fliers providing up-to-date capsule profiles of NODC's principal physical/chemical and biological data holdings.

Ocean Satellite Data Requests - Ocean satellite requests and subscriptions serviced at the Satellite Data Services Division of NCDC by Al Bargeski numbered 588 for the year. Eight different weekly SDSD products were mailed to approximately 300 persons each week. Over 2000 SDSD subscriptions, starting in January 1988 were added to NODC user statistics.

Atlantic Time Series Data - To support the WOCE Hydrographic Program, NODC is searching its data files for oceanographic station time series sections. In the Atlantic Ocean over 50 have been located so far--more than originally estimated. A preliminary inventory is already available on-line and an inventory publication is in preparation.

World Data Center, Oceanography Publications - The 1986 Annual Report (*Oceanographic Data Exchange, 1986*) and Catalog updates (*Change Notices 38 & 39*) were printed and distributed in November/December 1987. The 1987 Report and *Change Notices 40 & 41* will be completed by the end of calendar year 1988.

✓ **GEOSAT Wind/Wave Data Available** - Global wind/wave data derived from the first phase of operations of the U.S. Navy Geodetic Satellite (GEOSAT) are now available from NODC. The data set provides radar cross section, wind speed, and significant wave height for the GEOSAT Geodetic Mission from March 1985 through September 1986. A User Handbook is provided with each order.





People's Republic of China Trainees - Guo Fengyi and Jiang Xingwei, visitors from the National Oceanographic Data Center of the Peoples's Republic of China, spent nearly nine months at the NODC working on data from fixed buoys and marine pollution data. This long-term training benefitted both the visitors and NODC. The trainees learned NODC procedures and gained experience in handling these types of data. Through their diligent efforts, they completed projects that provide NODC with improved quality control and analysis procedures for pollution data and a new formatted print-out for NOAA buoy (spectral wave) data. ✓

ADP Support - NODC's ADP Support Division focussed its energies on several ongoing projects this year, including: development of the bathythermograph data prototype for the Quality Assurance Program ; programming support for DATA ENTRY; support for GEOSAT data distribution; development and maintenance of individual NODC computer programs; and development of a software package to compute oceanographic derived values.

NODC PC Users Group Formed - The NODC PC Users Group was established to provide NODC employees with a forum for exchanging ideas and for acquiring needed computer training at no extra cost to NODC. A series of training seminars on the use and operation of PC hardware and software was established. Courses ranged from PC and MS-DOS basics up through the use of WordPerfect and Lotus 1-2-3. Due to its success the group was expanded to cover VAX software.

Local Area Network - A new XYPLEX local area network was installed providing direct connection of NODC two VAX minicomputers and 13 PCs. The primary benefit is increased speed for uploading and downloading files. Training sessions on its use have been conducted in conjunction with the PC users group. ✓

ETHERNET
INFO

Marketing Plan - A plan was completed and implemented to guide NODC marketing activities, including NODC's exhibits at various conferences and meetings, dissemination of materials on NODC and NESDIS products, and demonstrations intended to stimulate interest in NODC data services. The plan was modified during the year as required to meet unanticipated needs and opportunities.

3. DEVELOPMENT AND TECHNOLOGY TRANSFER



✓
+ JASL
+ JEDA

Joint Center for Research on Management of Oceanographic Data (JCRMOD) - NODC and the University of Delaware agreed to a Memorandum of Understanding (MOU) establishing the Joint Center (JCRMOD) in October 1987. This document was signed on May 5, 1988, by Dr. William E. Evans, NOAA Administrator, and Dr. Russel C. Jones, President of the University of Delaware, at a formal ceremony attended by many dignitaries including Senator William V. Roth, Jr. NODC was praised for this new initiative by NOAA officials and congressional representatives and received excellent press coverage. The Joint Center will study improved approaches to managing large ocean data sets including the flood of data anticipated from new ocean satellites in the 1990s.

✓

Data Management for WOCE - Work on the design of a data management system for the World Ocean Circulation Experiment (WOCE) continues at the University of Delaware. Principal investigators for this NSF-funded project are Jim Churgin of NODC and Dr. Ferris Webster of the University's College of Marine Studies. At the request of the TOGA Advisory Committee, the requirement for TOGA data management has been dropped. One of the accomplishments at the University was the completion of the data management portion of the U.S. WOCE Implementation Plan. This section of the Plan is based on WOCE processing centers which are joint academic/NODC facilities. NODC continues to play an active role in the program through the appointment of NODC Director Gregory Withee to a new WOCE Data Management Working Group which reports to the U.S. WOCE Science Steering Committee.



✓

Data Management for the Joint Global Ocean Flux Study (JGOFS) - Under the Chairmanship of Dr. Trevor Platt (Bedford Institute of Oceanography) work has been initiated on data management for the JGOFS Pilot Study. A JGOFS Data Management Working Group has been convened made up of representatives from the U.S., Canada, F.R.G., Japan and the U.K. The U.S. and U.K. Data Centers are working to accumulate and exchange data from investigators on their respective continents. New methodologies for data submission and exchange are under development at participating institutions. The U.S. NODC participation will be built on the program developed for the U.S. Global Ocean Flux Study.

Small Business Innovation Research - A contractor working under an SBIR award prepared a report describing a concept for a PC-based Automated User Request Feedback System. The report was received on schedule and reviewed by ADP and User Services personnel. The contractor's proposal for a second phase (development of a prototype) was not successful.

GEOSAT Data - With assistance from the Data Base Management Division, the NODC GEOSAT coordination group developed and documented standard procedures for acquiring, processing and archiving GEOSAT data. Data from the GEOSAT Exact Repeat Mission are received on a monthly basis, processed, and distributed to a subscriber list of over 30 researchers around the world.

NODC Digital Storage Plan for FY 1989-92 - A report on alternative ways of dealing with the growth and maintenance of NODC archive data files in the 1990s was prepared. Three major findings of this investigation were that: (1) NODC would be better able to manage its archive utilizing optical disk technology; (2) A single platter WORM system would allow us to gain experience with this technology while reducing our tape holdings of Level A data; and (3) NODC needs to do a complete data management and systems study to thoroughly take advantage of this new technology in our day to day activities.

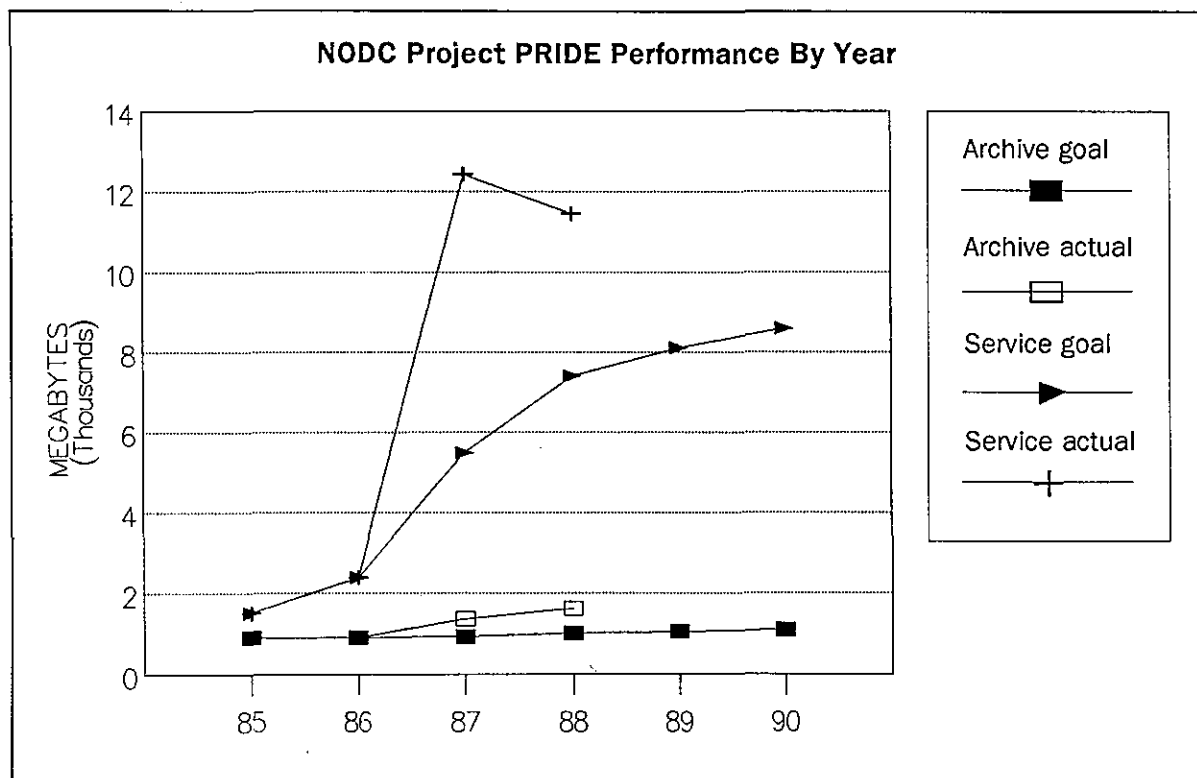
NODC Bulletin Board Established - A new electronic bulletin board system featuring interactive screens was developed and installed on NODC's VAX computer. The bulletin board system, which manages any number of separate bulletin boards, presently supports the following:

- SATELLITE BULLETIN BOARD which contains information concerning satellite activities in NODC.
- ADP BULLETIN BOARD which contains information about NODC data processing, the VAX and other ADP equipment and techniques.

4. PLANNING AND EVALUATION

Project PRIDE/Data Management Workshop - A workshop held in November 1987 in Hedgesville, W.V., kicked off NODC's planning for its PRIDE Program activities for the year. The workshop report served as the framework for developing and implementing the FY 88 Master Performance Plan. A follow-up session held at the Department of Commerce's Decision Analysis Center in June 1988 helped NODC to plan FY 89 NODC activities in the context of long-term goals.

FY88 Project PRIDE Accomplishments - NODC substantially exceeded the PRIDE Program goals it had set the previous year. NODC added 1,620 MB of digital data to its archive, 60% more than the established goal. Users services exceeded its goal by nearly 55% by providing customers with 11,464 MB of digital data. Additionally, during FY 88 the average time lag between oceanographic data collection and archival by NODC decreased from over three years to two and a half years.



PRIDE Productivity Award - In recognition of significant increases in both processing and dissemination of oceanographic data, the Department of Commerce's Presidential Productivity Award was presented to NODC in August 1988 by Dr. Alan Balutis. NODC Director Gregory W. Withee accepted the medal on behalf of NODC employees.

5. MANAGEMENT, ADMINISTRATION, and SUPERVISION

Combined Federal Campaign - NODC's 1987-1988 CFC campaign ended with 100% participation and 93% of the dollar goal. A total of \$5,209 was contributed. This was the largest dollar amount ever raised by NODC for the CFC. The overall NESDIS average was 73.6% participation and 88% of the dollar goal.

Personnel Highlights -

■ Irish Green, promoted from GS-9 to GS-11, was recognized with an NODC PRIDE Employee Award in May 1988 for her outstanding productivity in the Data Acquisition and Management Branch. Ms. Green routinely handles high-volume, frequently requested data which are of great importance for achieving NODC's PRIDE goals.

■ Michelle Miles, a computer assistant in the Inventory and Archives Branch, was presented the PRIDE Employee Award in April 1988 for her assistance by virtue of cross training to other Branches in the Data Base Management Division. She also effectively performed many assignments for the NODC Information Services Division and the NODC staff office.

■ Marguerite Boone, clerk-typist for the Information Services Division, was given a PRIDE Employee Award in June for her assistance to the Data Base Management Division in arranging the NODC/ERL Workshop on Global Ocean Data Files.

■ Melanie Hamilton, Biological Technician (GS-7), was converted to Oceanographer (GS-7) in December 1988.

■ Nelson Ross, NODC Southeast Liaison Officer stationed at the Scripps Institution of Oceanography, La Jolla, Calif., was extended for another year as the West Coast Regional EEO Counselor.

APPENDIX A. NODC ARCHIVE UPDATES, FY 88

MASTER DATA FILE	GROWTH (MB)	VOLUME (MB)
Meteorology & Wave Spectra from Buoys (F191)	630.6	3747.3
Current Meter Data (Components) (F015)	264.3	1780.9
High-resolution C/STD data (F002)	102.2	720.4
Oceanographic Station Data (SD2)	78.7	1295.9
Expendable Bathythermograph Data (XBT)	24.0	219.7
Low-resolution C/STD Data (STD)	22.5	203.7
Drifting Buoy Data (F156)	15.0	62.9
Selected Level Bathythermograph Data (SBT)	10.8	63.2
Radio Message Bathythermograph Data (IBT)	2.6	61.7
Fish/shellfish Surveys (F123)	1.2	69.3
Pressure Gauge Data (F017)	0.9	46.0
Marine Toxic Substances and Pollutants (F144)	0.4	21.3
Mechanical Bathythermograph Data (MBT)	0.2	346.7
Wind Measurements from Buoys (F101)	0.1	6.9
Current Meter Data (Resultants) (F005)	< 0.1	592.3
TOTALS	1153.5	9036.9

APPENDIX B. NODC PUBLICATIONS, FY 88

Key to Oceanographic Records Documentation (KORD)

- No. 16 *Annual Report on Tropical Pacific Subsurface Thermal Data Management - 1986*, November 1987

NODC Environmental Information Bulletins

- No. 87-4 *Publication Announcement (Annual Report on Tropical Pacific Subsurface Thermal Data Management - 1986)*, December 1987
- No. 88-1 *Mariners Weather Log*, January 1988
- No. 88-2 *GEOSAT Satellite Altimetry Data*, February 1988
- No. 88-3 *SEQUAL/FOCAL Data Sets*, April 1988
- No. 88-4 *GEOSAT Wind/Wave Data from the Geodetic Mission*, July 1988
- No. 88-5 *Physical/Chemical Oceanographic Data Available from the NODC*, July 1988
- No. 88-6 *Biological Oceanographic Data Available from the NODC*, July 1988

NODC Informal Reports

- No. 6 *National Oceanographic Data Center Data Submission Guidelines*, April 1988
- No. 7 *NODC Inventory of XBT Data in the North and South Atlantic Oceans*, June 1988
- No. 8 *Guide to Using NODC's ADP Resources*, June 1988

OPDIN Informal Reports

- No. 11 *Central Coordination and Referral Office, Analysis of 1987 Marine Pollution Data and Information Requests Received by the Central Coordination and Referral Office*, March 1988

Technical Reports

Wyrtki, K. *, et. al. and P. Caldwell, *The Pacific Island Sea Level Network*, JIMAR Contribution No. 88-0137, Data Report No. 002, Joint Institute for Marine and Atmospheric Research, University of Hawaii, Honolulu, HI, January 1988

*Non-NODC author

Conference Proceedings

Withee, G. W. and D. R. Hamilton, *Opportunities in Oceanographic Science Offered by New Advances in Data Management*, Proceedings of the 22nd Annual Conference of the Law of the Sea Institute "New Developments in Marine Science and Technology: Economic, Legal, and Political Aspects of Change," University of Rhode Island, Narragansett, Rhode Island, June 1988

Periodicals

DeAngelis, R. (Ed.), *Mariners Weather Log*, Vol. 31, No. 4, Vol. 32, Nos. 1-3, Fall 1987, Winter 1988, Spring 1988, Summer 1988

National Oceanic and Atmospheric Administration, *Coastwatch Weekly Bulletin*, Nos. 1-5 (produced cooperatively by units within NMFS, NWS, and NESDIS, including NODC)

Articles and Abstracts

White, W. B. *, S. E. Pazan*, G. Withee, and C. Noe, *Joint Environmental Data Analysis (JEDA) Center for the Scientific Quality Control of Upper Ocean Thermal Data in Support of TOGA and WOCE*, Eos, 69:9, March 1, 1988

Keeley, J. R. * and S. L. Patterson, *Drifting Buoy Data for Marine Research*, WOCE Newsletter, No. 5, October 1987

Churgin, J. *Status Report on WOCE Data Management Planning*, Abstract of presentation at the AGU Fall Meeting, December 7-11, 1987, San Francisco, CA, Eos, 68:44, November 3, 1987

Agreen, R. W. *, R. E. Cheney*, and S. L. Patterson, *GEOSAT Altimeter Data Management at NOAA*, Abstract of presentation at the AGU Fall Meeting, December 7-11, 1987, San Francisco, CA, Eos, 68:44, November 3, 1987

Graham, W. F. *, D. Atwood*, S. R. Piotrowicz*, and E. V. Collins, *Biogeochemical Ocean Fluxes and NOAA*, Abstract of presentation at the AGU/ASLO Ocean Sciences Meeting, January 18-22, 1988, New Orleans, LA, Eos, 68:50, December 15, 1987

Miscellaneous

Final Report of the NODC/ERL Workshop on Ocean Data Files, 13-14 June 1988, Washington, DC, September 1988

*Non-NODC author

APPENDIX C. NODC VISITORS, FY 88

MONTH	ORGANIZATION (NUMBER OF VISITORS)
October -	Japan Marine Science and Technology Center (11)
November -	Oceanography Section, Israeli Navy (2) Institute of Naval Oceanography, Bay St. Louis, MS (1)
December -	National Science Foundation (3)
January -	Marine Information and Advisory Service (MIAS), UK (1) Institute of Marine Affairs, Republic of Trinidad-Tobago (1)
February -	No visitors
March -	University of Miami (1) World Bank (2, plus a contractor) National Aeronautics and Space Administration (1)
April -	University of Hawaii (1) Jet Propulsion Laboratory (1) University of Edinburgh (1) TOGA Project Office, Geneva (1) Oregon State University (1) Marine Environmental Data Service (MEDS), Canada (1)
May -	Bermuda Biological Station (1)
June -	Venezuela (1)
July -	Geophysical Fluid Dynamics Laboratory (1)
August -	Central Pollution Control Board, India (1) Republic of Guinea (delegation) National Ocean Pollution Program Office (NOPPO) (3)
September -	MIAS, UK (1) Institute for Scientific and Technological Information, People's Republic of China (1)

In accord with the seventh meeting of the Joint Working Group of the U.S./P.R.C. Protocol on Cooperation in the Field of Marine and Fishery Science and Technology, two marine data specialists from the Chinese NODC received training at the U.S. NODC for a nine-month period starting in March 1988.

NODC Informal Reports

Reports in this series are prepared to document NODC systems, procedures, and operations or to provide preliminary or limited-distribution data inventories, summaries, or analyses. They are primarily for internal distribution at the National Oceanographic Data Center, but may also serve to provide information to researchers, data managers, and other members of the oceanographic community outside of NODC. Reports in this series are not considered as formal publications and should be cited as "unpublished manuscript."

- No. 1 Users Guide to the NODC Mailing List System (January 1986)
 - No. 2 Data Characterizations for Western Long Island Sound (June 1986)
 - No. 3 Data Characterizations for Albemarle/Pamlico Sound (November 1986)
 - No. 4 User Requirements for Retrospective Ocean and Related Meteorological Data Collected by Satellites (June 1987)
 - No. 5 Data User Requirements for Ocean Data Management (June 1987)
 - No. 6 National Oceanographic Data Center Data Submission Guidelines (April 1988)
 - No. 7 NODC Inventory of XBT Data in the North and South Atlantic Oceans (June 1988)
 - No. 8 Guide to Using NODC's ADP Resources (June 1988)
 - No. 9 National Oceanographic Data Center Accomplishments, FY 88 (March 1989)
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