

- The Interactive Data Access and Retrieval System (IDARS) development continued toward the goal of providing a common graphical user interface-based tool to data access and browsing. The most recent real-time beach water temperatures and 24-hour temperature plots from beaches around all U.S. coasts are now online. IDARS users can now composite satellite sea surface temperature images while online in intervals of from one day to months.
- More than 5,000 images were added to the NOAA Photo Library Home Page bringing the total to more than 11,000. The NOAA images have generated 4 million accesses to the library's online usage statistics, and the NOAA Photo Library Web site was selected as a "Hot Site" by *USA Today*. Photos from the Library have been published in newspapers and magazines around the world.
- NODC Director, Dr. Henry Frey, served as the Chair of the Technical Programs Committee of the Marine Technology Society's Ocean Community Conference '98, which included over 300 papers; he also chaired the technical session on Physical Oceanographic Real-Time Systems.
- The Central Library hosted 13 popular Brown Bag Luncheon programs featuring presentations by NOAA experts. Topics included Striped Bass Restoration, La Niña, Remote Sensing of Coral Reefs, the Global Ocean Observing System, NEXRAD, and footage on the Oklahoma City tornadoes.
- The NOAA Central Library coordinated desktop access to 48 electronic journals for NOAA staff in Silver Spring, Miami, and Seattle.

Awards and Honors

- Sydney Levitus received the Department of Commerce Gold medal in a group award for research describing the temporal variability of the temperature-salinity structure of the World Ocean and its effects on global climate change.
- The Reference Staff of the NOAA Central Library received the Department of Commerce Bronze Medal for the creation of "WINDandSEA", an Internet locator to over 800 referred sources of NOAA-related information.
- J. David Hardy received the Department of Commerce Bronze Medal for his contribution of thousands of researched taxonomic names to the inter-agency Integrated Taxonomic Information System.
- Members of NODC's Laboratory for Satellite Altimetry are part of the TOPEX/Poseidon Team that won this year's William T. Pecora Award for group achievement. The William T. Pecora Award is presented annually to recognize outstanding contribu-

tions by individuals or groups toward the understanding of the Earth by means of remote sensing.

- NODC's web site was awarded a Snap Editors' Choice designation in recognition of its excellence in design, content and editorial presentation.

Selected Publications

- Boyer, T.P., M. Conkright, and S. Levitus, 1999: Seasonal variability of dissolved oxygen and percent oxygen saturation in the Atlantic and Pacific Oceans. *Deep-Sea Research*, 46, 1593-1613.
- Conkright, M.E., W.W. Gregg, and S. Levitus, 1999: Seasonal cycle of phosphate in the world ocean. *Deep-Sea Research* (in press).
- Cheney, R.E., M.M. Ali, and R. Sharma, 1998: *An Atlas of the North Indian Ocean Eddies from Topex Altimeter Derived Sea Surface Heights*, Special Publ. 69-98, Indian Space Research Org., Bangalore, India.
- Sun, L.C., 1999: Data Inter-Operability Driven by Oceanic Data Assimilation Needs. *Marine Technology Society Journal* (in press).
- Vossepoel, F., R. Reynolds, and L. Miller, 1999: Use of dynamic height observations to estimate salinity variability in the equatorial Pacific, *J. Atmos. Oceanic Tech.*, 16 (10), 1400-1414.

FY 2000 Plan

- Ensure that all data sets obtained by NODC are archived, and migrate archived original 9-track tapes to optical media.
- Expand the amount of data available online.
- Provide WEB-based, integrated, online access to archived originator data files, and provide online links to full-text NOAA documents.
- Provide increased access to cross-discipline data sets through the NOAA Virtual Data System.
- Implement the Harmful Algal Bloom database prototype with sample data sets for decision support.
- Complete the design of the Coral Reef Information Management System.
- Expand the Coastal Ocean Time Series database.
- Produce Version 2 of the World Ocean Database '98 (WOD98) in time and geographic sorts.
- Complete Version 2 of the World Ocean Circulation Experiment Data Set CD-ROMs.
- Publish papers documenting interannual-decadal variability in ocean heat storage.

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The National Oceanographic Data Center is the nation's archive and distribution center for U.S. coastal and global ocean data. It supports the strategic goals of the U.S. Department of Commerce and the National Oceanic and Atmospheric Administration.



Message from the Director

In 1999, NODC tripled its online data availability, issued many important new data and information products, and enhanced others. Three CD-ROM products were published—the World Ocean Atlas 1998, the NOAA Marine Environmental Buoy Data web-disc, and the Barents Sea Atlas 1998. The Harmful Algal Bloom and Coral Reef Data Management Systems are taking shape; users can obtain more types of data from the Interactive Data Access and Retrieval system; and for the first time, time-series data were made available online by NODC through the Coastal Ocean Time Series Database. The NOAA Central Library increased the holdings of the NOAA Photo Library Home Page. Several NODC staff won Department of Commerce and national awards, and published numerous papers in peer-reviewed journals.

NODC continued its active role in the exchange of data and expertise with other countries. We hosted a number of national and international dignitaries and scientists, and coordinated and participated in international data management meetings. NODC also ensured that its goals match those of the NOAA Strategic Plan.

We congratulate Mr. Gregory W. Withee, who served as NODC Director from 1985 to 1991 and was appointed in July to the position of NOAA's Assistant Administrator for Satellite and Information Services. NODC joins in the celebration of NOAA's 30th birthday in the year 2000. We look forward to the next year in which NODC will continue to improve the quality of its products and services in support of our customers in NOAA and other national and international agencies and institutions.

Henry R. Frey, Ph.D.
Director
October 1, 1999



New products from NODC

World Ocean Atlas 1998

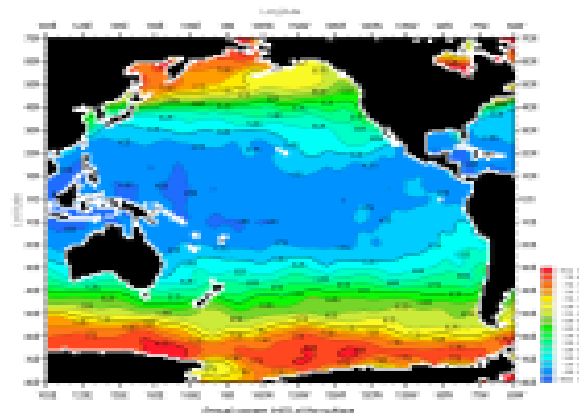
This atlas enables users to learn about the ocean's properties, including temperature, salinity, dissolved oxygen, derived oxygen variables, nutrients (phosphate, nitrate, silicate) and chlorophyll along with fields of various statistics. The atlas, a three CD-ROM set, is based on data in NODC's World Ocean Database 1998 (WOD98) which was released in 1998.

Harmful Algal Bloom (HAB) Data Management System (DMS)

This project aims to provide coastal physical, chemical, and biological data for decision support and model development. During FY 1999, a database design was chosen and work began on obtaining significant data sets. The HAB DMS development is being guided by industry and research representatives.

Barents Sea Atlas 1998

The time and space distribution of nearly 75,000 ocean stations (temperature, salinity, and oxygen) occupied in the Barents Sea during 1898-1993 is presented in this CD-ROM atlas. Data are recorded in a form designed for use in electronic spreadsheets and/or databases. Monthly maps defining the station distributions are given for every year. Monthly mean fields of temperature and salinity distribution for the depths 0, 30, 50, 100, and 200 meters, with a grid distance of



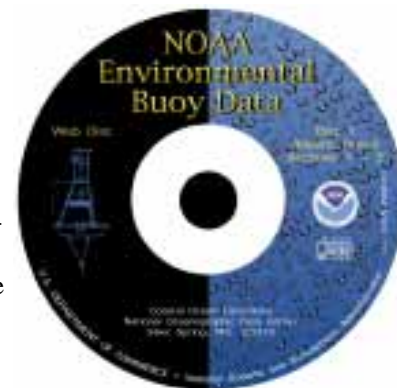
10 minutes latitude x 30 minutes longitude, are plotted using objective analysis techniques. A description of the summer and winter seasons is given in terms of the spatial-temporal variability of thermohaline characteristics of the Barents Sea. This atlas was issued jointly by the Murmansk Marine Biological Institute (Russia) and NODC.

Coral Reef Information Management System

NODC established important links with NOAA and other groups studying coral reefs—the rainforests of the sea. NODC is working with the NOAA Working Group on Coral Reefs and the U.S. Coral Reef Task Force. A Coral Reef Data Management and Monitoring Initiative was included in the FY 2001 NOAA Strategic Plan to obtain funding for this work. An NODC web site for coral reef, sea grasses, and mangrove forests is under development, and lists of coral reef locations and coral reef related species are being compiled.

NOAA Marine Environmental Buoy Data (An Internet Connectable CD-ROM Set)

A seven-disc CD-ROM set contains meteorological and oceanographic data collected from moored buoys and shore stations operated by NOAA's National Data Buoy Center (NDBC). The set includes 16.5 gigabytes of coastal buoy data through December 1997. This is an Internet/CD-ROM hybrid set that can be viewed using an Internet browser. Internet links on the discs provide direct access to real-time data and time series plots available on the NODC website.

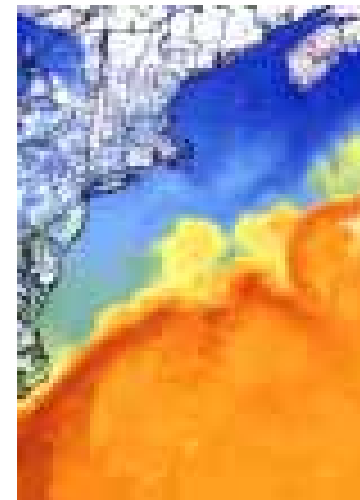


Time Series Database

The new Coastal Ocean Time Series Data Base prototype includes all of the moored current meter data at NODC (over 10,000 stations). It is available through NODC's Internet site. The web-based interface permits graphical selection of region and time period of interest, and various graphical displays of the data. It features real-time series data analysis and display.

Data Management

A backlog of unprocessed ocean profile data, that developed during 1994-1998, was reduced by over 90%. NODC also significantly reduced the backlog of uncataloged data sets.



The number of online hosts more than doubled from 290,000 in FY 1998 to 610,000 in FY 1999. Both the volume of data and the number of data files served tripled during the same period.

Data contributors from 36 institutions forwarded 173 data shipments to NODC. Data in all shipments, amounting to over 5.8 gigabytes, were archived and are available in their original formats.

Data Management for Ocean Research Programs

- Dr. Frey was appointed as a member of the U.S. Coastal GOOS (Global Ocean Observing System) Steering Committee and of the World Ocean Circulation Experiment (WOCE) Data Products Committee.
- Dr. Margarita Conkright was chosen to lead the JGOFS (Joint Global Ocean Flux Study) team on data management.
- Mr. Robert Gelfeld served as chairman of the ICES (International Council for Exploration of the Seas) Working Group on Marine Data Management.

International Activities

The World Data Center-A (WDC-A) for Oceanography hosted the "International GODAR (Global Ocean Data Archaeology and Rescue) Review Meeting". More than 75 individuals from countries around the world attended.



NODC and the Irish Marine Institute (MI) began making plans for co-hosting the next International Ocean Data Symposium in 2001. Leading the MI group were Geoffrey O'Sullivan, MI Development Director, and Bronwyn Cahill, Director of the MI Oceanographic Data Center.

NODC hosted several international visitors including Dr. Yuval Cohen (Director General, Israel Oceanographic and Limnological Research), Mr. Hae-Saek Kang (Korea Ocean Research and Development Institute), and Mr. Wang Hong (Deputy Director of the Chinese National Marine Data and Information Service). Lt. Cdr. Antonio Guimares (Brazil) visited NODC for data management training.

The Russian Naval Ocean Research Center in St. Petersburg agreed to declassify Russian naval oceanographic data from the Atlantic Ocean as part of a project with WDC-A for Oceanography to develop an Atlas of the Atlantic Ocean.

The NOAA Central Library hosted the annual meeting of the Aquatic Sciences and Fisheries Abstracts (ASFA) Board. The Board is comprised of national partners from 27 countries and 4 United Nations agencies.



NODC participated in the International Conference on Scientific Aspects of Coral Reef Assessment, Monitoring, and Restoration. The conference was attended by approximately 500 coral reef scientists and managers from around the world.

Highlights

- NODC provided daily, near real-time satellite altimeter analyses of the Gulf Stream region to NOAA's National Center for Environmental Prediction in support of an operational demonstration of the Coastal Ocean Forecast System (COFS). Assimilation of these data into the COFS model resulted in improved initial conditions and more reliable forecasts.