EARTH SYSTEM MONITOR

A guide to NOAA's data and information services

Vol. 19, No. 1 May 2012

CONTENTS

2 From the NODC Director

3 Ocean Climate Data Records

4 Ocean Heat and Salt Content

5 Ocean Acidification Data Management

6 Geoportal Server

7 Hurricane & Tsunami Satellite Paths

8 Gulf of Mexico Data Atlas

9 Institutional Repository

U.S. Department of Commerce
National Oceanic and Atmospheric Administration

Providing Scientific Stewardship of Marine Data and Information

Have you ever performed a Google search on "ocean data" or "ocean temperatures"? NODC comes up first! Hundreds of thousands of people use NOAA's ocean data for research, coastal planning, business actions, commerce and transportation, or beach travel plans.

NODC Provides...

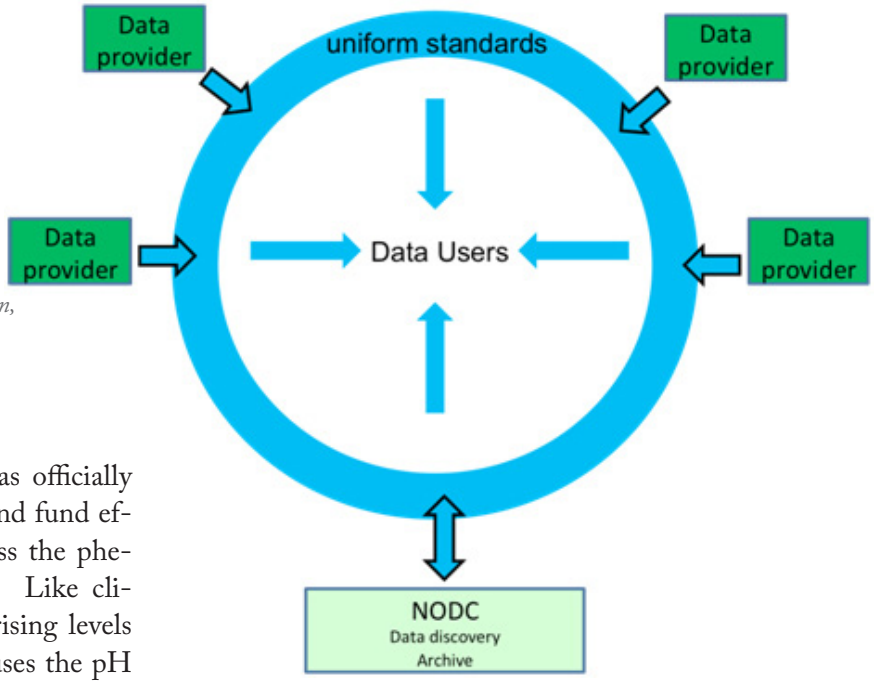
- The World's largest collection of freely available oceanographic data
- Water temperatures dating back to the late 1700's and measuring tens of thousands of meters deep
- A "State of the Ocean Climate" from NODC's Ocean Climate Lab and Satellite Team's scientific analyses
- Scientific journals, rare books, historical photo collections and maps through the NOAA Central Library, a division of NODC
- Data management expertise including metadata training through NODC's National Coastal Data Development Center

Experience Matters

For over fifty years, NODC has served the oceanographic community and the public with unmatched expertise. These experts, made up of a unique blend of ocean scientists, data managers and librarians, know that good decisions are based on good data. By acquiring ocean data from all over the world and from a variety of sources, NODC provides services and products that decision makers and researchers need. Behind the advancing technology are people who understand that oceanographic research and observational data collected for the public's benefit, must be archived, protected, and made available to everyone. NODC is a key component of NOAA's mission. After all, today's data is the foundation for tomorrow's decisions. ■

Towards an Ocean Acidification Data Stewardship System

Krisa Arzayus, Chief, Marine Data Stewardship Division, NODC; Hernan E. Garcia, PhD, Chemical Oceanographer, NODC; Steve Hankin, Computer Scientist, NOAA Pacific Marine Environmental Laboratory; Elizabeth Jewett, Director, NOAA Ocean Acidification Program; Roy Mendelssohn, Supervisory Operations Research Analyst, NOAA Southwest Fisheries Science Center



The NOAA Ocean Acidification Program was officially established in May 2011 in order to integrate and fund efforts across and external to NOAA that address the phenomenon known as ocean acidification (OA). Like climate change, ocean acidification is caused by rising levels of carbon dioxide in the atmosphere, which causes the pH of the world oceans to decrease as they continue to absorb approximately 25% of all anthropogenic carbon (i.e., carbon derived from human activity; Sabine et al., 2004). The decrease in pH is also leading to a decrease in saturation state of certain carbonate minerals important for shell formation in some marine organisms, meaning that the shells of some organisms may have a higher risk of dissolving in these more acidic waters. The OA program has organized monitoring, research and outreach activities along six themes: 1) characterizing the carbon chemistry of the US coastal and open ocean waters through a variety of fixed and underway observing systems, 2) evaluating the impacts on ecosystems with an emphasis on commercially important species, 3) modeling the ecological and socioeconomic impacts of changes in the biogeochemistry in order to provide future projections to policymakers for decision making purposes, 4) developing an integrated data management structure to facilitate the sharing of data both within and beyond the NOAA OA Program, 5) engaging with the public, policy makers, industry and international community in order to share our results and to educate about the scientific basis for and implications of potential changes in the ocean's chemistry, and 6) developing adaptation strategies where possible.

To support NOAA's Ocean Acidification Program and the scientific community, the National Oceanographic Data Center (NODC) will serve as the NOAA OA data management focal point by providing online data discovery, access to NODC-hosted and distributed data sources, and long-term archival for a diverse range of OA data. This effort seeks to build a collaborative relationship with shared responsibilities among scientists, data managers, and NODC staff towards the implementation of an OA data stewardship system (OADS).

Detailed metadata that describes the OA data, including characterizations of data quality, is recognized as a pillar of OADS. OADS will leverage NODC's scientific data stewardship and standard web services, including a new Geoportal discovery tool and other services that facilitate machine-to-machine data discovery and on the fly visualization. Coordinated data flow both to and from OADS with data providers and partner data assembly centers will ensure that audiences will always have access to authoritative versions of the data, regardless of where they are accessing the data. OADS will preserve OA data, ensuring access to original datasets as well as subsequent versions, for this and future generations of data users. The data management and scientific communities are actively engaged in this effort and NODC is excited to play a key role in supporting this National priority. ■

Christopher L. Sabine, Richard A. Feely, Nicolas Gruber, K. L. Robert M. Key, John L. Bullister, Rik Wanninkhof et al. (2004). "The Oceanic Sink for Anthropogenic CO2." Science 305