

NDBC OceanSITES GDAC

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1. Abstract

The international community sponsors a coordination project called OceanSITES, a global network of ocean timeseries (or reference) sites located around the world's oceans. The NOAA/National Data Buoy Center (NDBC) Data Assembly Center and OceanSITES have agreed to make the NDBC a Global DAC (GDAC), providing a shared and more secure capability together with the Ifremer/Coriolis GDAC in France. These GDACs will provide quality assurance/quality control, provide virtual access to the data, maintain a global timeseries dataset and synchronize catalogues on a periodic basis.

2. Project Summary

OceanSITES is the international project working towards the coordination and implementation of a global system of sustained multi-disciplinary timeseries observatories. Timeseries fill a unique gap in the sampling provided by other elements of the global ocean observing system, enabling co-located observations of many variables and processes in strategic or representative locations over long periods of time, with high temporal resolution, from (and including) the ocean surface to the seafloor. More information can be found at www.oceansites.org.

The scientific applications of such data are to monitor, detect, understand, and predict changes and related processes in the physical climate state of the ocean, the carbon cycle, and the ecosystem. Operational applications include detection of events, initialization and validation of assimilation products, delivery of constraints or reference data for forecasts (especially biogeochemical and ecosystem relevant ones). In addition there are a variety of technical applications, such as calibration and validation of data and products from other observing system elements.

OceanSITES, through its international steering team, has developed a rationale for timeseries observations and for needing a coordinated global network, and has defined a pilot project consistent with the needs and expectations of the sponsoring bodies GOOS, CLIVAR, and POGO. A major requirement for sites in the project is an open data policy. A global timeseries data management system is under construction via a subgroup of the OceanSITES steering team, including a data format coherent with other past and present efforts.

The in situ, time series-based OceanSITES program represents the logical next step in completing the Global Ocean Observing System. As such, the program now is an official component of the global system organized under JCOMM, and is also one of its action groups under DBCP. Much of the technology is available and many elements are in place already. The main challenge is coordination and assuring sustainability of the system, via common advocacy, recruiting a user base, and sharing the operation among communities and countries.

Starting in 2000, NDBC began obtaining and distributing observations from “partners.” These partners are designated as U.S. Integrated Ocean Observing System (IOOS) data providers. NDBC receives these marine meteorological, oceanographic (physical) and water quality observations in real-time, quality controls the observations and distributes the data via the Global Telecommunications System (GTS)/web services. NDBC also serves as the Data Assembly Center (DAC) for the Tropical Atmosphere Ocean (TAO) Pacific array and the tsunameter array which covers the Pacific, Atlantic and Gulf of Mexico. NDBC also quality controls and maintains data from 60 oil and gas platforms located in the Gulf of Mexico. Thus, NDBC is well suited to serve as a Global Data Assembly Center (GDAC) for OceanSITES, as well as an OceanSITES DAC.

NDBC supports these ~700 platforms by collecting, quality controlling and disseminating the observations in real-time to the Global Telecommunications System (GTS) and in delayed mode. Using the NDBC Observing System Monitoring Center (OSMC), OPeNDAP servers and ftp site – NDBC will act as a DAC for physical observations (marine weather and oceanographic – and possibly for biogeochemical variables) for a number of PIs in the United States. NDBC will also serve as the second OceanSITES GDAC and synchronize their OceanSITES files with Coriolis. NDBC proposed a form, similar to the form used to maintain the metadata from the 60 oil and gas platforms, to help maintain all the OceanSITES platforms.

3. Scientific Accomplishments

NDBC’s Data Assembly Center (DAC) serves as an OceanSITES DAC, handling observations from “provider” platforms such as India, Woods Hole, Scripps, MBARI, TAO and tsunameters.

The DAC responsibilities include:

- Sets up the OceanSITES “local” server according to the specifications approved by OceanSITES data management group, <ftp://data.ndbc.noaa.gov/data/oceansites/>
- Guarantees data availability from the provider platforms,
- Complies with the agreed upon OceanSITES format,
- Quality Controls real-time data according to OceanSITES agreed procedures,
- Provides the observations via the Global Telecommunications System (if requested by the provider),
- Provides the data on a FTP server for access by the GDACs, and
- Organizes the data processing, formatting, data transfer and update with the partner.

NDBC also serves as a Global Data Assembly Center (GDAC) with France's Ifremer /Coriolis (who is also a GDAC for the Argo floats). The GDAC responsibilities include:

- Provides a virtual or centralized access to the data that are served by the DACs,
- Checks all files daily using the "File Checker" software,
- Maintains the OceanSITES catalogue, and
- Synchronizes the catalogues with the second GDAC daily.

NDBC and NOAA both benefit from NDBC becoming an OceanSITES GDAC and DAC:

- It solidifies NDBC's role as an international data assembly center by serving the needs of the Global Ocean Observing System (GOOS) community by supplying meteorological, physical, and biogeochemical in real-time and delayed-mode.
- It allows NDBC to strengthen the Climate Program Office's Observing System Monitoring Center (OSMC) by ingesting and displaying all observations of interest from OceanSITES platforms.
- Finally, it allows NDBC to highlight their strong data management capabilities to a large international audience.

Attended OceanSITES 2009 Meeting in Venice, Italy in 17 – 20 September 2009.

- Served as the Co-Chair of the OceanSITES Data Management Committee and as a member of the Executive Committee.
- Implemented a FTP OceanSITES server to host partner observations (DAC),
- Obtained observations from India, MBARI, Woods Hole and Scripps and converting the observations into OceanSITES format (DAC),
- Set up the first OceanSITES OPeNDAP/Thredds server and providing OceanSITES observations through the server (GDAC),
 - <http://dods.ndbc.noaa.gov/thredds/catalog/data/oceansites/catalog.html>
- Drafted the first OceanSITES Data Management Plan and Data Quality Control Plan (GDAC),
- Developed a daily data synchronization software package with Ifremer/CORIOILIS (GDAC),
- Developed the first SensorML document based on the NOAA IOOS Data Integrated Framework (DIF) project (GDAC).
- Developed and implemented the first OceanSITES Word metadata Sheets based on NDBC's Oil and Gas metadata sheets (GDAC).

