

NOAA Support for the CLIVAR and Carbon Hydrographic Data Office at UCSD/SIO

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Project Summary

The CLIVAR and Carbon Hydrographic Data Office (CCHDO), brings together, verifies, and corrects content and format errors in hydrographic and tracer data used in large scale ocean carbon, global change, water mass, and circulation studies [CLIVAR = Climate Variability and Predictability, a component of the World Climate Research Programme]. It assembles the data with relevant documentation, and carefully prepares them for dissemination and archive. In addition they work to promote appropriate methodology, applicable community standards, communications, and data compatibility. The CCHDO brings data together to a common content and readability standard, thereby greatly reducing the difficulties research and education data users encounter. Documentation associated with the data are collected, reorganized to a common standard (where possible), and preserved with the data. The CCHDO makes it possible for all data users to cope with the temporal-, content-, and format-related file diversity the different originators engender. The CCHDO supports CLIVAR and ocean carbon science programs, and is a critical component of a global observing system for the physical climate/CO₂ system.

The largest share of CCHDO support is provided by NSF. CCHDO activities of special interest to NOAA, and for which NOAA support is applied, include:

1. Provide data from specific cruises that are of special interest to NOAA.
2. Continue working to improve relationship with NOAA's National Oceanographic Data Center (NODC) via:
 - a. Continued data assembly of cruise hydrographic data and metadata, particularly those from the GO-SHIP program.
 - b. Working with NODC to improve efficiency of transfer of data and to make CCHDO data more "archive ready".
 - c. Improved CCHDO participation in discussions towards enhancing integration of specific related Data Assembly Centers to reduce ambiguity and redundancy in data archiving.
3. Broaden and simplify the accessibility of CCHDO data sets.
4. Support CCHDO Data Manager travel to data meetings of special interest to NOAA.

The data served by the CCHDO are used by many oceanographers in a wide range of oceanographic studies worldwide. For example, not including SIO usage (which is significant), during the year ending July 1, 2012, there were 10,548 CCHDO site visits (counting only visitors who stayed on the site longer than one minute) from users from 80 countries, including 4402 unique visitors, 1277 unique returning visitors, and 3125 unique new site visitors. Myriad studies use CCHDO data. The principal scientific objectives of the core research program that gave rise to the CCHDO include using the data for model calibration and validation; for carbon system studies including changes in anthropogenic carbon inventory, transport of carbon, oxygen and nutrients, and large-scale natural and anthropogenic variability of biogeochemical properties; for

heat and freshwater storage and flux studies including divergence of transport-surface fluxes, transport of heat and salt, storage of heat and freshwater, and globally changing inventories of heat and freshwater; for deep and shallow water mass and ventilation studies, including changes in subduction and formation rates, effective spreading rates, pathways of ventilation, rates of dilution, and water mass ages; and for calibration of autonomous sensors including ARGO salinity sensors and biogeochemical moorings and floats, and determining the relationships between sensors and other properties.