

California Cooperative Oceanic Fisheries Investigations (CalCOFI) Sensor Plan

June 29, 2017

Background

CalCOFI Data Reports are a compilation of the physical, chemical, and biological data that are collected on quarterly cruises. These reports include materials & methods, reference citations, plots of cruise track, personnel, physical & biological parameters, tabular physical and productivity data, zooplankton biomass, and avifauna (bird) observations. Supplementing these reports, electronic hydrographic bottle data, CTD cast data and surface underway data are publically available from each cruise.

CalCOFI imports all of the final hydrographic data into a Microsoft Access Database. Then, csv's, XML and SQL files are generated from this database. Column Definitions for Cast and Bottle Tables: <http://www.calcofi.org/new.data/index.php/reporteddata#database>

CalCOFI CTD Data are available in three formats:

1. CTD cast files
2. CTD preliminary files
3. CTD final files.

Data Ingestion

Bottle samples are collected and analyzed at sea. Conductivity, temperature and depth (CTD) data are also collected at every station. Surface underway data are collected for the duration of the cruise.

Data Management

Each seawater property analysis produces data files which are then ingested into a single station csv file. CTD data are processed using SEASERV software. Underway surface TSG measurements combined with fluorometry, pH, ship instrumentation (such as heading & speed) & meteorological data are combined into 30 second records and collected into daily files.

Data Distribution

Data are available raw upon request or available through quarterly reports.

1. ACCESS DATABASE

Microsoft Access format; version 1July2015 (mirror link). Includes final hydrographic data from March 1949 -Present (IEH data + published Data Report data).

a. CSV

- CSV format; version 1July2015 (mirror link). Includes final hydrographic data from March 1949 -Present taken from the Cast, Bottle and DIC Tables of the Access Database.

b. XML

- XML format; version 1July2015 (mirror link). Includes final hydrographic data from March 1949 -Present taken from the Cast, Bottle and DIC Tables of the Access Database.as separate XML-XSD files.

c. SQL

- SQL format; version 1July2015 (mirror link). Includes final hydrographic data from March 1949 -Present as Access to MySQL 'dump' SQL file. Complete web version, includes Cast, Bottle, Standard Station, Standard Depth, and metadata tables, uncompresses to over 870mb

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2. ERDDAP
 - a. Tabledap
 - Tabledap lets you use the OPeNDAP constraint/selection protocol to request data subsets, graphs, and maps from tabular datasets (for example, buoy data). For details, see ERDDAP's [tabledap Documentation](http://coastwatch.pfeg.noaa.gov/erddap/tabledap/index.html?page=1&itemsPerPage=1000). (<http://coastwatch.pfeg.noaa.gov/erddap/tabledap/index.html?page=1&itemsPerPage=1000>)
 - b. Universal Ascii data files
 - Underway data is available in raw, 30sec MET ascii format and 10 minute binavg, corrected data.

Quality Control

For each seawater property analysis, certified standards are used to assure data quality. Once the hydrographic bottle data are combined into a single station csv, the data are then plotted and compared to the CTD data for further quality control. Once bottle data are finalized, the CTD data can be re-processed using the bottle data to make regressions. Underway data are converted into a universal ascii data format. Final underway data files contain both the processed ship specific RAW data and calculated values.

All raw data are available upon request. Finalized data are available within six months of each quarterly cruise.

Descriptive tables are available online with the intention of being used as metadata, also, ERDDAP metadata documentation is available.

1. ACCESS DATABASE METADATA
 - a. Table 1.: <http://www.calcofi.org/new.data/index.php/reporteddata/2013-09-30-23-23-27/cast-table-column-descriptions>
 - b. Table 2.: <http://www.calcofi.org/new.data/index.php/reporteddata/2013-09-30-23-23-27/database-tables-description>
2. ERDDAP DATABASE METADATA
 - a. FGDC
 - b. ISO 19115-2/19139
 - c. .xml

<http://www.calcofi.org/data/underway/151-underway-data-format/261-underway-data-format.html>

Archiving

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The University of California has a process in place for personnel evaluation. These evaluations are on file with UC San Diego Human Resources. All personnel listed have received excellent evaluations.

Data are archived and stored through a local hard drive, backup hard drive, web-server and mirror web serve. Addressing long-term data storage, CalCOFI plans on maintaining current infrastructure and continuing to work with and submit data to NOAA.

The CalCOFI data will be archived at the National Centers for Environmental Information (NCEI).

CalCOFI data also plan to be archived on the data.noaa.gov facility <<https://data.noaa.gov/dataset/california-cooperative-oceanic-fisheries-investigations-calcofidatabase>> which is supposed to be an archive for all NOAA data, but the facility is still under development.

What related information will be deposited?

Hydrographic Data Reports

We report the data that we collect on our cruises in a Hydrographic Data Report. These reports consist of:

INTRODUCTIONS

Contains the standard procedures, tabulated data descriptions, associated ancillary projects, footnote definitions, and literature cited.

CRUISE DATA REPORTS

Quarterly tabulated data reports. The 60+ year dataset includes temperature, salinity, oxygen and phosphate observations. In 1961, nutrient analysis expanded to include silicate, nitrate and nitrite; in 1973, chlorophyll was added; in 2008, the nutrient analysis expanded to include ammonium. Data Report Format.

PRIMARY PRODUCTIVITY DATA REPORT

These are a subset of the quarterly tabulated cruise data report containing only stations in which primary productivity experiments were carried out. Includes hydrographic data along with primary productivity data.

PERSONNEL

List of personnel per cruise, cruise dates, ports of call, ship name, and captain's name.

MACROZOOPLANKTON BIOMASS REPORT

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Contains the macrozooplankton biomass, as wet displacement volume, after removal of large (>5 ml) organisms from the starboard side of a 71 cm mouth diameter paired net (bongo net) equipped with 0.505mm plankton mesh; towed obliquely from 210 meters to the surface.

SPATIAL PATTERN FIGURES

Contains vertical (line 90 only) and horizontal (10 and 200 meters along the standard CalCOFI grid) contour plotted hydrographic data.

BIRD FIGURES

Quarterly Avifauna distribution observations over the standard CalCOFI grid.

Intellectual Property

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Published Data

- a. <http://www.calcofi.org/new.data/index.php/publications/2014-02-18-22-26-15/2014-2015-publications>
- d. <http://www.calcofi.org/new.data/index.php/publications/2014-02-18-22-26-15/2013-2014-publications>
- e. <http://www.calcofi.org/new.data/index.php/publications/2014-02-18-22-26-15/2012-2013-publications>
- f. <http://www.calcofi.org/new.data/index.php/publications/2014-02-18-22-26-15/2011-2012-publications>