

Overview of Calcofi Oceanographic Data (calcofi.org)

Cast: In oceanography, a “cast” refers to placing a **CTD** device (which tracks **Conductivity, Temperature, and Depth**) into the ocean and then retrieving it. These measurements help scientists understand seawater properties, such as *salinity* (calculated from conductivity), and conditions at different depths. In this context, **conductivity** refers to **how well seawater can conduct an electric current**. Because salinity (the amount of salt in the water) affects conductivity, measuring it helps scientists to figure out how salty the water is. Each cast covers the entire trip from the surface down to a specific depth (or multiple depths) and back up to the surface, collecting data and/or water samples.

Cast data: The CSV file "**MERGED_CalCOFI_DATA_CAST_BOTTLE**" includes cast data fields named Cast-####, where "####" represents the field name (e.g., **Cast-Cst_Cnt**). Each CTD cast’s metadata—covering date, time, latitude, longitude, and weather—is collected during a CalCOFI cruise. Every row corresponds to one cast, uniquely identified by the “**Cast-Cst_Cnt**” column. In the “**CalCofi DataSets CodeBook**”, the same pattern applies, with fields written as [Cast-####], where "####" indicates the field name (e.g., [Cast-Cst_Cnt]).

Bottle: In oceanography, “Bottle” usually refers to a water-sampling container (often a Niskin bottle) used to collect water at specific depths. These bottles are attached to a device called a rosette, which allows multiple bottles to be closed at different depths.

Bottle Data: The CSV file "**MERGED_CalCOFI_DATA_CAST_BOTTLE**" features “bottle” data fields labeled as "Bottle-####," where "####" indicates the field name (e.g., **Bottle-Cst_Cnt**). This dataset offers oceanographic information for each sampling depth (or “bottle”) collected on CalCOFI cruises, and also includes columns for data codes and precision that show the reliability of each measurement. Every row corresponds to a single sampling depth, identified by the "Bottle-Btl_Cnt" column. A single cast can have up to 24 sampling depths. In the "**CalCofi DataSets CodeBook**", fields follow the same naming pattern, listed as [Bottle-####], where "####" stands for the field name (e.g., [Bottle-Cst_Cnt]).

Additionally, the dataset features a “**Bottle-Cst_Cnt**” column, which allows it to be linked back to the “**Cast-Cst_Cnt**”.

Definition of the data:

Cast-Sta Code:

- ST: “Standard CalCOFI Station”
- SCO: “SCCOOS nearshore/20m Station”
- NRO: Original Occupied CalCOFI Station that isn’t occupied regularly

- OCO: “Occasionally Occupied CalCOFI Station”
- IMX: “IMECOCAL Occupied”
- NST: “Non-Standard Station”
- MBR: MBARI-Occupied Station

Cast-Data Type:

- PR: “Productivity Cast”
- HY: “Hydrographic Cast”
- 10: “Ten-meter Cast”
- CT: “Compressed CTD Cast (Low Resolution)”
- MX: Combined CTD and Bottle Data

“Quality Code” (found in Bottle-#### fields(e.g., Bottle-PO4q):

- Blank: Data is acceptable
- 4: Measurement is zeroed out because it falls below the detection limit
- 6: Value is derived from a CTD sensor
- 8: Technician suspects the measurement
- 9: Data is missing

Bottle-Reclnd:

- 3: Reported Data
- 4: Educated guess made in the office (“ghost” data)
- 5: Value taken from an STD or CTD sensor
- 6: “Duplicate depth measurement”
- 7: Value interpolated to a standard depth