

( \* =mandatory field)

- **Investigator:\*(- )**
  - **Name\*:** Dr. Francisco Chavez
  - **Organization:** MBARI
  - **Address:**
    - MBARI
    - 7700 Sandholdt Rd
    - Moss Landing, CA 95039 USA
  - **Phone:** 831-775-1709
  - **Email:** chfr@mbari.org
- **Dataset\_Info:\*(- )**
  - **Dataset\_ID\*:** TAO170W\_2S\_Jun98\_Nov04
  - **Submission\_Dates:\*(- )**
    - **Initial\_Submission:** 20060508 (YYYYMMDD)
    - **Revised\_Submission:** (YYYYMMDD)
- **Cruise\_Info:\*(- )**
  - **Experiment:( - )**
    - **Experiment\_Name\*:**
    - **Cruise:( - )**
      - **Cruise\_ID:** (EXPOCODE)
      - **Section:** (Leg)
      - **Geographical\_Coverage:\*(- )**
        - **Geographical\_Region:**
        - **Bounds:\*(- )**
          - **Westernmost\_Longitude:**  
Enter decimal fractions of degrees: -170 (+ = E, - = W)  
or Degrees, Minutes, Seconds:
          - **Easternmost\_Longitude:**  
Enter decimal fractions of degrees:  
or Degrees, Minutes, Seconds:
          - **Northernmost\_Latitude:**  
Enter decimal fractions of degrees: -2 (+ = N, - = S)
          - **Southernmost\_Latitude:**  
Enter decimal fractions of degrees:
    - **Temporal\_Coverage:( - )**
      - **Start\_Date:** 19980622 (YYYYMMDD)
      - **End\_Date:** 20041123 (YYYYMMDD)
  - **Vessel:\*(- )**
    - **Vessel\_Name:**
    - **Vessel\_ID:**
    - **Country:**
    - **Vessel\_Owner:**

Platform Identifier: Mooring

Mooring Location

Longitude: Enter decimal fractions of degrees: -170 (+ = E, - = W)

Latitude: Enter decimal fractions of degrees: -2 (+ = N, - = S)

Start\_Date: 19980622 (YYYYMMDD)

End\_Date: 20041123 (YYYYMMDD)

- **Variables\_Info:\*(- )**
  - **Variable:( - )**
    - Variable\_Name\*: (show pick list)
    - Description\_of\_Variable: (E.g., in dry air)

**\*\*General notes:**

- All measurements are at sea surface temperature and atmospheric pressure.
- This data sets covered many deployments and the system was calibrated before and after each deployment. There were periods when the system did not function properly resulting in a data gap until the next deployment. The dates of buoy recovery and deployment are shown below:

Date deployed	Date recovered
97 11 22	98 11 06
98 11 07	99 11 06
99 11 07	00 10 30
00 10 30	01 10 14
01 10 15	02 06 18
02 06 19	02 10 17
02 10 17	03 06 27
03 06 27	04 07 07
04 07 08	05 07 01

- During the equilibration cycle, a closed loop of air equilibrates with seawater for 10 minutes. Once the equilibration period is complete, the pump stops and the system opens to the atmosphere allowing the pressure to equilibrate with atmospheric pressure before the measurement is made.
- During the air cycle, fresh air is pumped through the detector for 1 minute. Once the pump stops, the system opens to the atmosphere allowing the pressure to equilibrate with atmospheric pressure before the measurement is made.
- The gas streams for both the air cycle and equilibrator cycle are partially dried before entering the detector. The marine air runs the reference cell and the equilibrated air runs through the sample cell. The Licor is directly reading the delta pCO<sub>2</sub>.
- Sampling occurs every 3 hours. Data are transmitted back daily.
- As a final step in the QC process, each data set is compared with the Marine Boundary Layer data from GlobalView-CO<sub>2</sub>.

GLOBALVIEW-CO<sub>2</sub>: Cooperative Atmospheric Data Integration Project - Carbon Dioxide. CD-ROM, NOAA CMDL, Boulder, Colorado [Also available on Internet via anonymous FTP to ftp.cmdl.noaa.gov, Path: ccg/co2/GLOBALVIEW], 2005

**Measured Information: (Variable Name/Description)**

dpCO<sub>2</sub> – Difference of the partial pressure of the CO<sub>2</sub> in seawater and the partial pressure of the CO<sub>2</sub> in air (pCO<sub>2</sub> SW - pCO<sub>2</sub> Air).

- **Method\_Description:\*(- )**
  - **Equilibrator\_Design:( - )**
    - Equilibrator\_Type: (show pick list) Bubble Equilibrator
    - Equilibrator\_Volume: (L) N/A
    - Water\_Flow\_Rate: (L/min) N/A
    - Headspace\_Gas\_Flow\_Rate: (L/min) ~600 cc/min
    - Vented: (show pick list) Yes

- Measurement\_Method: Dual-cell, non-dispersive infrared (NDIR) gas analyzer
- Manufacturer\_of\_Calibration\_Gas: NOAA CMDL (now Earth System Research Laboratory (ESRL))

- **CO<sub>2</sub>\_Sensors:( - )**

- **CO<sub>2</sub>\_Sensor:( - )**

- Manufacturer: Licor
    - Model: Environmental\_Control: LI-6252
    - Resolution: 0.01 ppm
    - Uncertainty:  $\pm 1$  ppm at 350ppm, 3 ppm maximum (stated)
    - CO<sub>2</sub>\_Sensor\_Calibration: (For each calibration gas, document traceability to an internationally recognized scale, including date and place of last calibration. Include uncertainty of assigned value.)

The LiCor 6252 is calibrated before each deployment with ranges of reference gases from CDML. CMDL standards are traceable to WMO x93 scale with a stated reproducibility of 0.06 micromole/mole. That calibration is presumed to hold for the duration of the deployment. Because we are measuring a delta pCO<sub>2</sub> and not absolute values, an electronic noise or other variability would effect both cells equally and errors would cancel. After recovery, the calibration is confirmed in the laboratory with the CMDL standards again.

- Method\_References: (Publication(s) describing method)

Friederich, G.E., P.G. Brewer, R. Herlein, and F.P. Chavez (1995). Measurement of sea surface partial pressure of CO<sub>2</sub> from a moored buoy. [Deep-Sea Research](#), 42, 1175-1186.

Chavez, F.P., J.T. Pennington, R. Herlien, H. Jannasch, G. Thurmond and G.E. Friederich (1997) Moorings and drifters for real-time interdisciplinary oceanography. [Journal of Atmospheric and Oceanic Technology](#) **14**, 1199-1211.

- Data\_set\_References: (Publication(s) describing data set)

Chavez, F.P., P.G. Strutton, G.E. Friederich, R.A. Feely, G.A. Feldman, D. Foley, and M.J. McPhaden. (1999) Biological and chemical response of the equatorial Pacific Ocean to the 1997 and 1998 El Niño. [Science](#) **286**, 2126-2131.

- Citation: (How to cite this data set)

- **Data\_Set\_Link:( - )**

- URL\*:(m s t)

- Label\*:(m s t)

- Link\_Note: (Optional instructions or remarks)(m s t)