Underway pCO$_2$ System Description

Laboratory: University of Hawaii, Coupled Ocean-Ice Linkages and Dynamics (COLD)


Reference: A brief system description in:


Location of Data: Contact Chris Carrillo, carrillo@soest.hawaii.edu or Dave Karl, dkarl@soest.hawaii.edu.

Analyzer: LICOR 6262 nondispersive infrared detector.

Method of analysis: Concentrations of CO2 and water were measured in the air stream from the equilibrator. Ambient marine boundary air was used as a reference for estimation of the fCO2 difference between ocean and atmosphere.

Drying method: None. The concentration of water was measured by the LICOR.

Equilibrator (setup, size, flows): A counterflow, rotating disk equilibrator designed after Schink, et. al. 1970 and Sabine and Key, 1998. The capacity of the equilibrator was 16 L.

Standards (number, concentrations, frequency): Three standards (259.28 ppm, 303.86 ppm, 373.19 ppm) were measured approx. every 2.5 hours.

Source of calibration and accuracy: The standards were obtained from NOAA CMDL and calibrated against WMO primary standards. The LICOR water channel was calibrated using a LICOR dew point generator.

Standard consumption: Not known

Operating cycle: Equilibrated gas and bow air are each sampled every 5 minutes.

Parameters recorded/frequency:
**Hardware details**

**Temperature measurements:** An OMEGA RTD measures the temperature of the water inside the equilibrator.

**Pressure measurements:** SETRA Model 270 pressure transducer

**Circulation pathway:**

**Operating software:** LabVIEW 3.1

**Computer interface boards and sensors read:**
- Boards: 
- Sensors: 

**Approximate Size and Footprint:** The equilibrator is approx 1’x1’x 2’

“Unique” **Hardware or operating principles worth highlighting:**

**What improvements would you incorporate in this system?**