SAMI-pH, temperature and salinity data from MBARI M0 mooring at 36.893N, 121.90W in 2007 (MBARI project)

Website: https://www.bco-dmo.org/dataset/632439
Version: 12 January 2016
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Project
» Commercialization of Autonomous Sensor Systems for Quantifying pCO2 and Total Inorganic Carbon (MBARI)

Contributors	Affiliation	Role
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Dataset Description

SAMI-pH, temperature and Salinity data collected on the MBARI M0 mooring in 2007

Methods & Sampling

The SAMI sampled on a 1 hour interval.

Related files and references:
DeGrandpre M.D. , Hammar T.R. , Smith S.P. , Sayles F.L., (1995), *In situ measurements of seawater pCO2 , Limnology and Oceanography, 40.*

Sarah E. Cullison Gray, Michael D. DeGrandpre, Tommy S. Moore, Todd R. Martz, Gernot E. Friederich, Kenneth S. Johnson, (2011). Applications of *in situ* pH measurements for inorganic carbon calculations. Mar.Chem. 125, 82-90.

Data Processing Description

Data Processing:
See DeGrandpre et al. (1995)

BCO-DMO Processing Notes
- Generated from the original .xlsx file: "MBARI_2007_SAMIpH.xlsx contributed by Cory Beatty
- Parameter names edited to conform to BCO-DMO naming convention found at Choosing Parameter Name
- Date reformatted to YYYYMMDD

- Time reformatted to HHMMSS

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Data Files

File
MBARI.csv (Comma Separated Values (.csv), 149.70 KB) MD5:b6258fdc242700d42b28fe090ab1a733 Primary data file for dataset ID 632439

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Parameters

Parameter	Description	Units
Site	Site	text
Deployment	Deployment Id	text
Latitude	Latitude of Deployment (South is negative)	decimal degrees
Longitude	Longitude of Deployment (West is negative)	decimal degrees
Excel_Date	Excel Date	xxxxx.xxxx
Year_Day	Jan 1 = YD1	xxx.xxxx
Date	Date (UTC)	YYYYMMDD
Time	Time (UTC)	HHMMSS
pH	pH	pH Units
Temp	Temperature	oC
Sal	Salinity	psu

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Instruments

Dataset-specific Instrument Name	SAMI-CO2 pCO2
Generic Instrument Name	pCO2 Sensor
Dataset-specific Description	SAMI-CO2 pCO2 and Temperature mooring time series data collected on the Buzzards Bay mooring
Generic Instrument Description	A sensor that measures the partial pressure of CO2 in water (pCO2)

Dataset-specific Instrument Name	SAMI-CO2 pCO2
Generic Instrument Name	Submersible Autonomous Moored Instrument
Dataset-specific Description	SAMI-CO2 pCO2 and Temperature mooring time series data collected on the Buzzards Bay mooring
Generic Instrument Description	The Submersible Autonomous Moored Instrument (SAMI) measures and logs levels of dissolved chemicals in sea and fresh water. It is a plastic cylinder about 6 inches wide and 2 feet long that is self-powered and capable of hourly measurements for up to one year. All data collected are logged to an internal memory chip to be downloaded later. SAMI sensors usually are placed a few feet underwater on permanent moorings, while others on floating drifters sample the water wherever the wind and currents carry them. The instruments have been used by researchers around the globe in a variety of studies since 1999. Dr. Mike DeGrandpre, University of Montana, developed the SAMI between 1990 and 1993 during his postdoctoral work at the Woods Hole Oceanographic Institution (Woods Hole, MA, USA). For additional information, see URL: http://www.sunburstsensors.com/ from the manufacturer, Sunburst Sensors, LLC, 1226 West Broadway, Missoula, MT 59802.

Dataset-specific Instrument Name	SAMI-CO2 pCO2 and Temperature
Generic Instrument Name	Water Temperature Sensor
Dataset-specific Description	SAMI-CO2 pCO2 and Temperature mooring time series data collected on the Buzzards Bay mooring
Generic Instrument Description	General term for an instrument that measures the temperature of the water with which it is in contact (thermometer).

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Deployments

MBARI_2007_SAMIpH

Website	https://www.bco-dmo.org/deployment/632436
Platform	MBARI M0
Start Date	2007-06-21
End Date	2007-08-28

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Project Information

Commercialization of Autonomous Sensor Systems for Quantifying pCO2 and Total Inorganic Carbon (MBARI)

Coverage: Northeastern Pacific Ocean, MBARI M0 mooring, 36.893N, 121.90W

ABSTRACT

The PIs propose to use the NOPP Topic 4B funding to promote commercialization of their Submersible Autonomous Moored Instrument, SAMI-CO2, a sensor developed for autonomous measurements of the partial pressure of CO2 (pCO2). Field deployments by the PI and others have demonstrated the excellent long-term stability predicted by SAMIs' well-understood theoretical response. The PIs propose to redesign the sensor to improve reliability, make it more user friendly and to implement modern electronic and manufacturing technologies. The new design will allow individual investigators to make pCO2 measurements reliably over long time periods in widespread ocean locations on many different ocean platforms.

Broader Impacts
The proposed work will not only increase the availability of autonomous pCO2 sensors but will also provide the means for quantifying total inorganic carbon through pH-alkalinity or pCO2-alkalinity calculations. The research directly addresses an important need for chemical sensors for implementing ocean observatory systems such as the IOOS with systems to determine impacts of chemical species in the oceans.

PUBLICATIONS PRODUCED AS A RESULT OF THIS RESEARCH
Note: *When clicking on a Digital Object Identifier (DOI) number, you will be taken to an external site maintained by the publisher. Some full text articles may not yet be available without a charge during the embargo (administrative interval).*

Some links on this page may take you to non-federal websites. Their policies may differ from this site.

Edson, JB; Degrandpre, MD; Frew, N; McGillis, WR. "Investigations of Air-Sea Gas Exchange in the CoOP Coastal Air-Sea Chemical Exchange Project," *OCEANOGRAPHY*, v.21, 2008, p. 34. View record at Web of Science

Jickells, TD; Liss, PS; Broadgate, W; Turner, S; Kettle, AJ; Read, J; Baker, J; Cardenas, LM; Carse, F; Hamren-Larssen, M; Spokes, L; Steinke, M; Thompson, A; Watson, A; Archer, SD; Bellerby, RGJ; Law, CS; Nightingale, PD; Liddicoat, ML; Widdicombe, CE; B. "A Lagrangian biogeochemical study of an eddy in the Northeast Atlantic," *PROGRESS IN OCEANOGRAPHY*, v.76, 2008, p. 366. View record at Web of Science doi:10.1016/j.pocean.2008.01.00

Kortzinger, A; Send, U; Lampitt, RS; Hartman, S; Wallace, DWR; Karstensen, J; Villagarcia, MG; Llinas, O; DeGrandpre, MD. "The seasonal pCO(2) cycle at 49 degrees N/16.5 degrees W in the northeastern Atlantic Ocean and what it tells us about biological productivity," *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*, v.113, 2008. View record at Web of Science doi:10.1029/2007JC00434

Kortzinger, A; Send, U; Wallace, DWR; Karstensen, J; DeGrandpre, M. "Seasonal cycle of O-2 and pCO(2) in the central Labrador Sea: Atmospheric, biological, and physical implications," *GLOBAL BIOGEOCHEMICAL CYCLES*, v.22, 2008. View record at Web of Science doi:10.1029/2007GB00302

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0529557

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