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Data server object: LabSea

BCO-DMO dataset: SAMI-CO2 pCO2 and Temperature Mooring Time Series

Contacts

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Dataset description

SAMI-CO2 pCO₂ & temperature mooring time series collected in the Labrador Sea.

Labrador Sea, deployed at 53.04N, 49.207W, 1 SAMI-CO2 deployed at each depth (1, 5, 10, 20 and 35 meters)

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.

Martz, T. R., M. D. DeGrandpre, P. G. Strutton, W. R. McGillis, and W. M. Drennan (2009), *Sea surface pCO₂ and carbon export during the Labrador Sea spring-summer bloom: An in situ mass balance approach*, *J. Geophys. Res.*, 114

Acquisition description

Labrador Sea, deployed at 53.04N, 49.207W, 1 SAMI-CO2 deployed at each depth (1, 5, 10, 20 and 35 meters)

Sampling and Analytical Methodology:

The SAMI-CO2s sampled on a 30 minute interval, a non-absorbing blank measurement was taken every 3.5 days.

Processing description

Data Processing:

See DeGrandpre, et.al (1995). The data were interpolated to 30 minute intervals

BCO-DMO Processing Notes

- Generated from original "LabSea June-Aug 2004_SAMI-CO2.xlsx" file contributed by Corey Beatty

- Parameter names edited to conform to BCO-DMO naming convention found at [Choosing Parameter Name](#)
- Date reformatted to YYYYMMDD
- Time reformatted to HHMMSS

Field Names List

Parameter	Description	Units
Excel_Date	Excel Date	xxxxx.xxxx
Year_Day	Jan 1 = YD1	xxx.xxxx
Date	Date (UTC)	YYYYMMDD
Time	Time (UTC)	HHMMSS
SAMI_52_1m_pCO2	Partial Pressure of Carbon Dioxide – SAMI 52 at 1m	uatm
SAMI_52_1m_Temp	Temperature – SAMI 52 at 1m	oC
SAMI_11_5m_pCO2	Partial Pressure of Carbon Dioxide – SAMI 11 at 5m	uatm
SAMI_11_5m_Temp	Temperature – SAMI 11 at 5m	oC
SAMI_51_10m_pCO2	Partial Pressure of Carbon Dioxide – SAMI 51 at 10m	uatm
SAMI_51_10m_Temp	Temperature – SAMI 51 at 10m	oC
SAMI_12_20m_pCO2	Partial Pressure of Carbon Dioxide – SAMI 12 at 20m	uatm
SAMI_12_20m_Temp	Temperature – SAMI 12 at 20m	oC
SAMI_50_35m_pCO2	Partial Pressure of Carbon Dioxide – SAMI 50 at 35m	uatm
SAMI_50_35m_Temp	Temperature – SAMI 50 at 35m	oC
ASIS_Lat	Latitude Position of ASIS Buoy at time of measurement (South is negative)	decimal degrees
ASIS_Lon	Longitude Position of ASIS Buoy at time of measurement (West is negative)	decimal degrees

Deployment List

[*Air-Sea Interaction Spar \(ASIS\) Buoy EN394_ASIS*](#)

Instruments List

1. Submersible Autonomous Moored Instrument:

Short name: SAMI

PI supplied instrument name: SAMI-CO2 pCO2

Dataset-specific description:

During the deployment 2 separate ASIS Buoys were deployed, ASIS-1 & ASIS-2, upon each of which 2 SAMIs were attached. Each buoy had 1 SAMI-CO2 attached at 1 meter and 1 SAMI-CO2 attached at 5 meters depth. The SAMI-CO2 sampled on a 30

minute interval and a non-absorbing blank measurement was taken every 3.5 days. PAR was measured by a Li-COR LI-192 underwater quantum sensor (not calibrated). Oxygen data was obtained using a calibrated Aanderaa O₂ sensor (model 4175). Both the PAR and O₂ sensors were attached to a SAMI-CO₂ sensor. There is no pCO₂ record at 1 meter on ASIS-2.

Generic 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.sunburstensors.com/> from the manufacturer, Sunburst Sensors, LLC, 1226 West Broadway, Missoula, MT 59802.

2. pCO₂ Sensor:

Short name: pCO₂ Sensor

PI supplied instrument name: SAMI-CO₂ pCO₂

Dataset-specific description:

During the deployment 2 separate ASIS Buoys were deployed, ASIS-1 & ASIS-2, upon each of which 2 SAMIs were attached. Each buoy had 1 SAMI-CO₂ attached at 1 meter and 1 SAMI-CO₂ attached at 5 meters depth. The SAMI-CO₂ sampled on a 30 minute interval and a non-absorbing blank measurement was taken every 3.5 days. PAR was measured by a Li-COR LI-192 underwater quantum sensor (not calibrated). Oxygen data was obtained using a calibrated Aanderaa O₂ sensor (model 4175). Both the PAR and O₂ sensors were attached to a SAMI-CO₂ sensor. There is no pCO₂ record at 1 meter on ASIS-2.

Generic description:

A sensor that measures the partial pressure of CO₂ in water (pCO₂)

3. Water Temperature Sensor:

Short name: Water Temp Sensor

PI supplied instrument name: SAMI-CO2 pCO2 and Temperature

Dataset-specific description:

During the deployment 2 separate ASIS Buoys were deployed, ASIS-1 & ASIS-2, upon each of which 2 SAMIs were attached. Each buoy had 1 SAMI-CO2 attached at 1 meter and 1 SAMI-CO2 attached at 5 meters depth. The SAMI-CO2 sampled on a 30 minute interval and a non-absorbing blank measurement was taken every 3.5 days. PAR was measured by a Li-COR LI-192 underwater quantum sensor (not calibrated). Oxygen data was obtained using a calibrated Aanderaa O₂ sensor (model 4175). Both the PAR and O₂ sensors were attached to a SAMI-CO2 sensor. There is no pCO₂ record at 1 meter on ASIS-2.

Generic description:

General term for an instrument that measures the temperature of the water with which it is in contact (thermometer).

4. **Air-Sea Interaction Spar (ASIS) Buoy:**

Short name: ASIS

PI supplied instrument name: ASIS-1, ASIS-2

Dataset-specific description:

During the deployment 2 separate ASIS Buoys were deployed, ASIS-1 & ASIS-2, upon each of which 2 SAMIs were attached. Each buoy had 1 SAMI-CO2 attached at 1 meter and 1 SAMI-CO2 attached at 5 meters depth. The SAMI-CO2 sampled on a 30 minute interval and a non-absorbing blank measurement was taken every 3.5 days. PAR was measured by a Li-COR LI-192 underwater quantum sensor (not calibrated). Oxygen data was obtained using a calibrated Aanderaa O₂ sensor (model 4175). Both the PAR and O₂ sensors were attached to a SAMI-CO2 sensor. There is no pCO₂ record at 1 meter on ASIS-2.

Generic description:

See: [Air-Sea Interaction Spar \(ASIS\) Buoy](#)