

## DATABASE

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## Dataset: SAMI-CO2 pCO2 Temperature and Oxygen Time series dataset

### Deployment: DOGEE\_ASIS1\_1m\_SAMICO2

#### SAMI-CO2 pCO2 Temperature and Oxygen Time series dataset

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**BCO-DMO Data Manager:** [Mr Stephen R. Gegg](#) (Woods Hole Oceanographic Institution, WHOI BCO-DMO)

**Project:** [Collaborative Research: Near-Surface controls of Air-Sea CO2 Exchange: A Contribution to the UK-SOLAS "Deep Ocean Gas Exchange Experiment" \(DOGEE-II\)](#)
**Current State:** Final no updates expected

**Version:** 06 January 2016

**Deployment Synonyms:** DOGEE-II, UK-SOLAS Deep Ocean Gas Exchange Experiment, DOGEE-II: air-sea gas exchange in the Atlantic Ocean

**Coordinated Deployments:** [D320](#), [DOGEE\\_ASIS1\\_5m\\_SAMICO2](#), [DOGEE\\_ASIS2\\_1m\\_SAMICO2](#), [DOGEE\\_ASIS2\\_5m\\_SAMICO2](#)
**Version Date:** Wednesday, January 6, 2016

**Data URL:** <http://www.bco-dmo.org/dataset-deployment/630606/data> [↗](#)

## GEOSPATIAL ACCESS



## CONTRIBUTE DATA

**Getting started**

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**Description**

SAMI-CO2 pCO2 Temperature and Oxygen Time series dataset collected by ASIS spar buoys during RRS DISCOVERY Cruise D320 (DOGEE-II)

North Atlantic, ASIS-1 deployed at 43o41.5'N, 18o8.5'W, ASIS-2 deployed at 43o22.4'N, 17o51.4'W. ASIS-1 was recovered at 42o29.6'N, 15o55.3'W, ASIS-2 was recovered at 42o45.6'N, 15o55.8'W.

**Acquisition Description****Dataset acquisition description**

North Atlantic, ASIS-1 deployed at 43o41.5'N, 18o8.5'W, ASIS-2 deployed at 43o22.4'N, 17o51.4'W. ASIS-1 was recovered at 42o29.6'N, 15o55.3'W, ASIS-2 was recovered at 42o45.6'N, 15o55.8'W.

**Sampling and Analytical Methodology:**

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.

**Processing Description****Dataset Processing Description****Data Processing:**

The data were interpolated to a 30 minute interval

**BCO-DMO Processing Notes**

- Generated from the following list of original .xlsx files contributed by Corey Beatty
- DOGEE\_ASIS1\_1m\_SAMICO2.xlsx
- DOGEE\_ASIS1\_5m\_SAMICO2.xlsx
- DOGEE\_ASIS2\_1m\_SAMICO2.xlsx
- DOGEE\_ASIS2\_5m\_SAMICO2.xlsx
- Parameter names edited to conform to BCO-DMO naming convention found at [Choosing Parameter Name](#)
- Date reformatted to YYYYMMDD
- Time reformatted to HHMMSS

### More information about this dataset deployment

#### Funding

Award Number	Funding Source
<a href="#">OCE-0623294</a>	<a href="#">NSF Ocean Sciences</a>

#### Instruments

##### [Aanderaa Oxygen Optodes](#)

([more info](#))

**Short Name:** AOO

##### [Community Standard Description](#)

##### **Generic Description**

Aanderaa Oxygen Optodes are instrument for monitoring oxygen in the environment. For instrument information see the [Aanderaa Oxygen Optodes Product Brochure](#).

**PI supplied instrument name:** Aanderaa O2 sensor (model 4175)

##### **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.

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

([more info](#))

**Short Name:** ASIS

##### **Generic Description**

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

**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.

##### [LI-COR LI-192 PAR Sensor](#)

([more info](#))

**Short Name:** LI-COR LI-192 PAR

**PI supplied instrument name:** Li-COR LI-192

**Community Standard Description****Generic Description**

The LI-192 Underwater Quantum Sensor (UWQ) measures underwater or atmospheric Photon Flux Density (PPFD) (Photosynthetically Available Radiation from 360 degrees) using a Silicon Photodiode and glass filters encased in a waterproof housing. The LI-192 is cosine corrected and features corrosion resistant, rugged construction for use in freshwater or saltwater and pressures up to 800 psi (5500 kPa, 560 meters depth). Typical output is in  $\mu\text{m s}^{-1} \text{ m}^{-2}$ . The LI-192 uses computer-tailored filter glass to achieve the desired quantum response. Calibration is traceable to NIST. The LI-192 serial numbers begin with UWQ-XXXXX. LI-COR has been producing Underwater Quantum Sensors since 1973.

These LI-192 sensors are typically listed as LI-192SA to designate the 2-pin connector on the base of the housing and require an Underwater Cable (LI-COR part number 2222UWB) to connect to the pins on the Sensor and connect to a data recording device.

The LI-192 differs from the LI-193 primarily in sensitivity and angular response.

193: Sensitivity: Typically 7  $\mu\text{A}$  per 1000  $\mu\text{mol s}^{-1} \text{ m}^{-2}$  in water. Azimuth:

192: Sensitivity: Typically 4  $\mu\text{A}$  per 1000  $\mu\text{mol s}^{-1} \text{ m}^{-2}$  in water. Azimuth:

([www.licor.com](http://www.licor.com))

underwater quantum sensor

**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.

**pCO2 Sensor**

([more info](#))

**Short Name:** pCO2 Sensor

**Generic Description**

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

**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.

**Submersible Autonomous Moored Instrument**

([more info](#))

**Short Name:** SAMI

**Generic Description**

The Submersible Autonomous Moored

**PI supplied instrument name:** SAMI-CO2 pCO2

**Dataset-specific description**

During the deployment 2 separate ASIS Buoys

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.

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.

#### Water Temperature Sensor

([more info](#))

**Short Name:** Water Temp Sensor

#### Community Standard Description

##### Generic Description

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

**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.

#### Parameters

Supplied Name	Supplied description	Supplied Units	Standard Name
CruiseId	Cruise Id	text	cruise_id
Expedition	Expedition Name	text	cruise_name
Dataset_Id	Dataset/Deployment Id	text	dataset_id
Date_Start	Start Date of Dataset/Deployment (UTC)	YYYYMMDD	date_start
Time_Start	Start Time of Dataset/Deployment (UTC)	HHMMSS	time_start
Lat_Start	Start Latitude of Dataset/Deployment (South is negative)	decimal degrees	lat_start
Lon_Start	Start Longitude of Deployment (West is negative)	decimal	lon_start

		degrees	
Date_End	End Date of Dataset/Deployment (UTC)	YYYYMMDD	date_end
Time_End	End Time of Dataset/Deployment (UTC)	HHMMSS	time_end
Lat_End	End Latitude of Dataset/Deployment (South is negative)	decimal degrees	lat_end
Lon_End	End Longitude of Deployment (West is negative)	decimal degrees	lon_end
Excel_Date	Excel Date	xxxxx.xxxx	unknown
Year_Day	Jan 1 = YD1	xxx.xxxx	yrday
Date	Date (UTC)	YYYYMMDD	date
Time	Time (UTC)	HHMMSS	time
Temp	Temperature	oC	temp
pCO2	Partial Pressure of Carbon Dioxide	uatm	pCO2
PAR	PAR	uE m-2 sec-1	PAR
O2	O2	uM	O2
ASIS_Lat	Latitude Position of ASIS Buoy at time of measurement (South is negative)	decimal degrees	lat
ASIS_Lon	Longitude Position of ASIS Buoy at time of measurement (West is negative)	decimal degrees	lon



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