

Dataset Expocode	08D820191014
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Dataset	Funding Info: Programa Dinámica del Plancton Marino y Cambio Climático (DiPlaMCC)-INIDEP; Pier2Peer-GOA-ON Initial Submission (yyyymmdd): 20210114 Revised Submission (yyyymmdd):
Campaign/Cruise	Expocode: 08D820191014 Campaign/Cruise Name: VA201910 Campaign/Cruise Info: DiPlaMCC Platform Type: CO2 Instrument Type: Equilibrator-IR or CRDS or GC Survey Type: Research Cruise Vessel Name: Víctor Angelescu Vessel Owner: Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP)-Argentina Vessel Code: 08D8
Coverage	Start Date (yyyymmdd): 20191014 End Date (yyyymmdd): 20191018 Westernmost Longitude: 64.9 W Easternmost Longitude: 61.6 W Northernmost Latitude: 42.7 S Southernmost Latitude: 54 S Port of Call: Puerto Madryn Port of Call: Ushuaia
Variable	Name: xCO2_EQU_ppm Unit: ppm Description: Mole fraction of CO2 in the equilibrator headspace (dry) at equilibrator temperature (ppm)
Variable	Name: xCO2_ATM_ppm

Unit: ppm
Description: Mole fraction of CO₂ measured in dry outside air (ppm)

Variable **Name:** xCO₂_ATM_interpolated_ppm
Unit: ppm
Description: Mole fraction of CO₂ in outside air associated with each water analysis. These values are interpolated between the bracketing averaged good xCO₂_ATM analyses (ppm)

Variable **Name:** PRES_EQU_hPa
Unit: hPa
Description: Barometric pressure in the equilibrator headspace (hPa)

Variable **Name:** PRES_ATM@SSP_hPa
Unit: hPa
Description: Barometric pressure measured outside, corrected to sea level (hPa)

Variable **Name:** TEMP_EQU_C
Unit: Degree C
Description: Water temperature in equilibrator (°C)

Variable **Name:** SST_C
Unit: Degree C
Description: Sea surface temperature (°C)

Variable **Name:** SAL_permil
Unit: ppt
Description: Sea surface salinity on Practical Salinity Scale (o/oo)

Variable **Name:** fCO₂_SW@SST_uatm
Unit: µatm
Description: Fugacity of CO₂ in sea water at SST and 100% humidity (µatm)

Variable **Name:** fCO₂_ATM_interpolated_uatm
Unit: µatm
Description: Fugacity of CO₂ in air corresponding to the interpolated xCO₂ at SST and 100% humidity (µatm)

Variable **Name:** dfCO₂_uatm
Unit: µatm
Description: Sea water fCO₂ minus interpolated air fCO₂ (µatm)

Variable **Name:** WOCE_QC_FLAG
Unit: None
Description: Quality control flag for fCO₂ values (2=good, 3=questionable)

Variable **Name:** QC_SUBFLAG
Unit: None
Description: Quality control subflag for fCO₂ values, provides explanation when QC flag=3

Sea Surface Temperature **Location:** In the machine room, about 1.5 m after the intake which is directly through the ship's hull, before the SW pump.
Manufacturer: Seabird, Inc.
Model: SBE 38
Accuracy: 0.001 (°C if units not given)
Precision: 0.0003 (°C if units not given)
Calibration: Factory calibration
Comments: Manufacturer's Resolution is taken as Precision.

Sea Surface Salinity	Location: Near the pCO ₂ System. Manufacturer: Seabird Model: SBE 45 Accuracy: ± 0.005 o/oo Precision: 0.0002 o/oo Calibration: Factory calibration Comments: Manufacturer's Resolution is taken as Precision.
Atmospheric Pressure	Location: It is located on the bridge visor, on the bow Normalized to Sea Level: Yes Manufacturer: Vaisala Model: PTB210A1A1B Accuracy: 0.25 (hPa if units not given) Precision: 0.01 (hPa if units not given) Calibration: march 2017 Comments: Located in the Deck box inside a room conected o the pressure port by a flexible tube
Atmospheric CO2	Measured/Frequency: Yes Intake Location: lighth mast at the bow on the starboard side Drying Method: Gas stream passes through a thermoelectric condenser (~5 °C) and then through a Perma Pure (Nafion) dryer before reaching the analyzer (90% dry). Atmospheric CO2 Accuracy: ± 0.5 µatm in fCO ₂ _ATM Atmospheric CO2 Precision: ± 0.01 µatm in fCO ₂ _ATM
Aqueous CO2 Equilibrator Design	System Manufacturer: Intake Depth: 5 meters Intake Location: Bow Equilibration Type: Spray head above dynamic pool Equilibrator Volume (L): 0.95 L (0.4 L water, 0.55 L headspace) Headspace Gas Flow Rate (ml/min): 70 - 150 ml/min Equilibrator Water Flow Rate (L/min): 1.5 - 2.0 L/min Equilibrator Vented: Yes Equilibration Comments: Primary equilibrator is vented through a secondary equilibrator. Drying Method: Gas stream passes through a thermoelectric condenser (~5 °C) and then through a Perma Pure (Nafion) dryer before reaching the analyzer (90% dry).
Aqueous CO2 Sensor Details	Measurement Method: IR Method details: details of CO ₂ sensing (not required) Manufacturer: LI-COR Model: 7000 Measured CO2 Values: xCO ₂ (dry) Measurement Frequency: Every 140 seconds, except during calibration Aqueous CO2 Accuracy: ± 2 µatm in fCO ₂ _SW Aqueous CO2 Precision: ± 0.01 µatm in fCO ₂ _SW Sensor Calibrations: Calibration of Calibration Gases: The analyzer is calibrated every 5 hours with field standards that in turn were calibrated with primary standards that are directly traceable to the WMO X2007 scale. The zero gas is ultra-high purity air. Number Non-Zero Gas Standards: 3 Calibration Gases:

Std 1: EKZTPF4, 0.00 ppm, owned by INIDEP, used every ~4.5 hours.
Std 2: LL125773, 206.61 ppm, owned by INIDEP, used every ~4.5 hours.
Std 3: LL125769, 409.49 ppm, owned by INIDEP, used every ~4.5 hours.
Std 4: LL125772, 610.87 ppm, owned by INIDEP, used every ~4.5 hours.

Comparison to Other CO2 Analyses:

Comments:

Method Reference:

Pierrot, D., C. Neil, K. Sullivan, R. Castle, R. Wanninkhof, H. Lueger, T. Johannessen, A. Olsen, R. A. Feely, and C. E. Cosca (2009), Recommendations for autonomous underway pCO₂ measuring systems and data reduction routines, Deep-Sea Res II, 56, 512-522.

**Equilibrator
Temperature Sensor**

Location: Inserted into equilibrator ~5 cm below water level

Manufacturer: Hart

Model: 1523

Accuracy: 0.015 (°C if units not given)

Precision: 0.001 (°C if units not given)

Calibration: Factory calibration

Comments: Resolution is taken as Precision.

**Equilibrator
Pressure Sensor**

Location: Attached to equilibrator headspace. The differential pressure reading from Setra 239, which is attached to the equilibrator headspace, is added to the pressure reading from the LICOR analyzer, which is measured by an external Setra 270 connected to the exit of the analyzer.

Manufacturer: Setra

Model: 270

Accuracy: 0.15 (hPa if units not given)

Precision: 0.015 (hPa if units not given)

Calibration: Factory calibration

Comments: Manufacturer's Resolution is taken as Precision.

**Additional
Information**

Suggested QC flag from Data Provider: NA

Additional Comments: The analytical system operated well during this cruise. Time offset calculated to be 2.50. That value was used. Full unprocessed data files from analytical instrument including flow information and TSG data at time of sampling can be obtained upon request to INIDEP. This dataset contribute to LAOCA network

Citation for this Dataset:

Other References for this Dataset: