Dataset Expocode	**08D820191205**
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Dataset	**Funding Info:** Programa Dinamica del Plancton Marino y Cambio Climatico (DiPlaMCC)-INIDEP; Comisión Tecnica Mixta del Frente Maritimo (CTMFM); Pier2Peer-GOA-ON **Initial Submission (yyyymmdd):** 20220103 **Revised Submission (yyyymmdd):**
Campaign/Cruise	**Expocode:** 08D820191205 **Campaign/Cruise Name:** COSTAL **Campaign/Cruise Info:** VA201912 **Platform Type:** **CO2 Instrument Type:** Equilibrator-IR or CRDS or GC **Survey Type:** Research Cruise **Vessel Name:** BIP Victor Angelescu **Vessel Owner:** Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP) **Vessel Code:** 08D8
Coverage	**Start Date (yyyymmdd):** 20191205 **End Date (yyyymmdd):** 20191213 **Westernmost Longitude:** 57.5 W **Easternmost Longitude:** 52.4 W **Northernmost Latitude:** 34.9 S **Southernmost Latitude:** 39.5 S **Port of Call:** Mar del Plata
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 pCO2 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 to the pressure port by a flexible tube
Atmospheric CO2	**Measured/Frequency:** Yes **Intake Location:** ligth 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 fCO2_ATM **Atmospheric CO2 Precision:** ± 0.01 µatm in fCO2_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 CO2 sensing (not required) **Manufacturer:** LI-COR **Model:** 7000 **Measured CO2 Values:** xCO2(dry) **Measurement Frequency:** Every 140 seconds, except during calibration **Aqueous CO2 Accuracy:** ± 2 µatm in fCO2_SW **Aqueous CO2 Precision:** ± 0.01 µatm in fCO2_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 2.74. 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. Located in the Argentinean-Uruguayan Common Fishing Zone (AUCFZ; 34°30'-39°30'S), the #COSTAL# time-series encompass three transects running from the coast (in Spanish COSta) to the shelf-break (in Spanish TALud) where multidisciplinary environmental studies are carried out, aimed to assess changes in the marine environment and plankton communities under a global change scenario. The Joint Technical Commission of the Maritime Front (Comisión Técnica Mixta del Frente Marítimo, CTMFM; http://www.ctmfm.org/) is the intergovernmental Argentinean-Uruguayan body responsible for conducting studies and adopting and coordinating plans and measures for the conservation, preservation and rational exploitation of living resources and the protection of the marine environment of the AUCFZ. At the same time, CTMFM promotes scientific activities for researchers of both countries. As part of these activities, the dataset and the metadata presented here correspond to the December 2019 cruise (VA-12/19), that involved the COSTAL transects.

Citation for this Dataset:
Other References for this Dataset: