Dataset Expocode	**74JC20191125**
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Dataset	**Funding Info:** UK Natural Environment Research Council - ORCHESTRA **Initial Submission (yyyymmdd):** 20210115 **Revised Submission (yyyymmdd):**
Campaign/Cruise	**Expocode:** 74JC20191125 **Campaign/Cruise Name:** JR19001 (ORCHESTRA) **Campaign/Cruise Info:** JR19001 **Platform Type:** **CO2 Instrument Type:** Equilibrator-IR or CRDS or GC **Survey Type:** Research Cruise **Vessel Name:** James Clark Ross **Vessel Owner:** UK-Natural Environment Research Council **Vessel Code:** 74JC
Coverage	**Start Date (yyyymmdd):** 20191125 **End Date (yyyymmdd):** 20191220 **Westernmost Longitude:** 58.4753 W **Easternmost Longitude:** 36.4324 W **Northernmost Latitude:** 51.9413 S **Southernmost Latitude:** 58.4868 S
Variable	**Name:** xCO2_equ[umol/mol] **Unit:** micro-mol/mol **Description:** CO2 mixing ratio measured at Tequ (wet)
Variable	**Name:** Patm [hPa] **Unit:** hecta-Pascal **Description:** Atmospheric Pressure
Variable	**Name:** Tequ [deg.C] **Unit:** degrees Celsius **Description:** Temperature in Equilibrator
Variable	**Name:** SST [deg.C] **Unit:** degrees Celsius **Description:** Sea Surface Temperature (at intake depth=6m)
Variable	**Name:** Sal

	Unit: unitless or PSU **Description:** Salinity
Variable	**Name:** pCO2_sw[uatm] **Unit:** micro-atm **Description:** Seawater partial pressure of CO2 at SST (wet)
Variable	**Name:** pCO2_atm[uatm] **Unit:** micro-atm **Description:** Atmospheric partial pressure of CO2 (wet)
Variable	**Name:** fCO2_sw[uatm] **Unit:** micro-atm **Description:** Seawater fugacity of CO2 at SST (wet)
Variable	**Name:** fCO2_atm[uatm] **Unit:** micro-atm **Description:**
Variable	**Name:** xCO2atm_dry[umol/mol] **Unit:** micro-mol/mol **Description:**
Variable	**Name:** Pequ [hPa] **Unit:** hecta-Pascal **Description:** Equilibration Pressure
Sea Surface Temperature	**Location:** Adjacent to intake at 6 m depth **Manufacturer:** SeaBird Electronics **Model:** SBE45 **Accuracy:** 0.001 (°C if units not given) **Precision:** 0.001 (°C if units not given) **Calibration:** Recorded and kept by British Antarctic Survey Polar Data Centre (https://www.bas.ac.uk/team/business-teams/information-services/polar-data-centre/) **Comments:**
Sea Surface Salinity	**Location:** Adjacent to intake at 6 m depth **Manufacturer:** SeaBird Electronics **Model:** SBE45 **Accuracy:** 0.002 **Precision:** 0.002 **Calibration:** Recorded and kept by British Antarctic Survey Polar Data Centre (https://www.bas.ac.uk/team/business-teams/information-services/polar-data-centre/) **Comments:**
Atmospheric Pressure	**Location:** Met-platform on deck above bridge, 18 m asl **Normalized to Sea Level:** yes **Manufacturer:** Vaisala **Model:** PTB110 barometer **Accuracy:** 1 hPa (hPa if units not given) **Precision:** 1 hPa (hPa if units not given) **Calibration:** Recorded and kept by British Antarctic Survey Polar Data Centre (https://www.bas.ac.uk/team/business-teams/information-services/polar-data-centre/) **Comments:**

Atmospheric CO2

Measured/Frequency: yes, circa every 20 minutes
Intake Location: Met-platform on deck above bridge, 18 m asl
Drying Method:
Atmospheric CO2 Accuracy: <2 micro-atm fCO2
Atmospheric CO2 Precision: <0.1 micro-atm fCO2

Aqueous CO2 Equilibrator Design

System Manufacturer:
Intake Depth: 6 m
Intake Location: Hull
Equilibration Type: Headspace (vented)
Equilibrator Volume (L): 2.5
Headspace Gas Flow Rate (ml/min): 200
Equilibrator Water Flow Rate (L/min): 1.6
Equilibrator Vented: Yes
Equilibration Comments:
Drying Method: Peltier drier to <20% humidity

Aqueous CO2 Sensor Details

Measurement Method: IR
Method details: Non Dispersive IR Sensor
Manufacturer: LICOR
Model: LI-840
Measured CO2 Values: xCO2 dry(wet)
Measurement Frequency: Every 5 minutes
Aqueous CO2 Accuracy: <2 micro-atm fCO2
Aqueous CO2 Precision: <0.1 micro-atm fCO2
Sensor Calibrations: Sensor calibration during deployment using 3 gas standards (BOC gases Ltd., 259.96,376.66,474.21 ppmv CO2 in synthetic air. These are calibrated in lab against NOAA standards (nos:CA07398,CA07305,CB08944) with WMO X2007 certification).
Calibration of Calibration Gases: Ship
Number Non-Zero Gas Standards: 3
Calibration Gases:
BOC gases Ltd., 259.96,376.66,474.21 ppmv CO2 in synthetic air. These are calibrated in lab against NOAA standards (nos:CA07398,CA07305,CB08944) with WMO X2007 certification
Comparison to Other CO2 Analyses:
Comments:
Method Reference:
Ribas-Ribas et al. 2014. Intercomparison of carbonate chemistry measurements on a cruise in northwestern European shelf seas. Biogeosciences. 11: 4339-4355

Equilibrator Temperature Sensor

Location: Platinum Resistance Thermocouple (PT100) in equilibrator
Manufacturer: Pico-Technology
Model: PT100 Class B
Accuracy: 0.01 (°C if units not given)
Precision: 0.01 (°C if units not given)
Calibration: Calibrated prior to cruise (ice-point)
Comments:

Equilibrator Pressure Sensor

Location: In line with equilibrator
Manufacturer: Druck Gmbh
Model: PTX7517-3257
Accuracy: 0.1 (hPa if units not given)
Precision: 0.1 (hPa if units not given)

Calibration: Calibrated annually
Comments:

Additional Information

Suggested QC flag from Data Provider: NA
Additional Comments:
Citation for this Dataset:
Other References for this Dataset: