

Dataset Expocode	74EQ20171115
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Dataset	Funding Info: UK-NERC COMICS (ref #: NE/M020762/1) Initial Submission (yyyymmdd): 20190121 Revised Submission (yyyymmdd):
Campaign/Cruise	Expocode: 74EQ20171115 Campaign/Cruise Name: DY086 Campaign/Cruise Info: UK-NERC Porcupine Abyssal Plane (PAP) Platform Type: CO2 Instrument Type: Equilibrator-IR or CRDS or GC Survey Type: Research Cruise Vessel Name: Discovery Vessel Owner: UK-Natural Environment Research Council Vessel Code: 74EQ
Coverage	Start Date (yyyymmdd): 20171115 End Date (yyyymmdd): 20171217 Westernmost Longitude: 50.20080185 W Easternmost Longitude: 35.43145752 W Northernmost Latitude: 52.40229034 S Southernmost Latitude: 56.64622498 S Port of Call: Port Stanley (UK)
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: Atmospheric fugacity of CO2 (wet)

Variable

Name: xCO2atm_dry[umol/mol]

Unit: micro-mol/mol

Description: Atmospheric CO2 mixing ratio

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 by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre (www.bodc.ac.uk)

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 by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre (www.bodc.ac.uk)

Comments:

**Atmospheric
Pressure**

Location: Met-platform on foremast, 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 by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre (www.bodc.ac.uk)

Comments:

Atmospheric CO2

Measured/Frequency: yes, circa every 20 minutes

Intake Location: Met-platform on foremast, 18 m asl

Drying Method: Peltier drier to < 20% humidity

Atmospheric CO2 Accuracy: <2 micro-atm fCO2

Atmospheric CO2 Precision: <0.5 micro-atm fCO2

**Aqueous CO2
Equilibrator Design**

System Manufacturer: Dartcom-PML LivepCO2

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
Measurement Frequency: Every 20 minutes
Aqueous CO2 Accuracy: <2 micro-atm fCO2
Aqueous CO2 Precision: <0.5 micro-atm fCO2
Sensor Calibrations: Sensor calibration during deployment using 3 gas standards (BOC Gases Ltd. : 380.0,468.39,276.24 ppmv CO2 in synthetic air). These are referenced pre- and post-deployment against NOAA CCL standards 251.6, 347.2 and 448.8 ppmv CO2.
Calibration of Calibration Gases: Ship
Number Non-Zero Gas Standards: 3
Calibration Gases:
BOC gases Ltd. 380.0,468.39,276.24 ppmv CO2 in synthetic air. These are referenced pre- and post-deployment against NOAA CCL standards 251.6, 347.2 and 448.8 ppmv CO2.
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
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: