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| <b>Dataset Expocode</b> | <b>74EQ20190625</b>  |
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| <b>Dataset</b>          | <b>Funding Info:</b> UK Natural Environment Research Council - Atlantic Meridional Transect<br><b>Initial Submission (yyyymmdd):</b> 20200109<br><b>Revised Submission (yyyymmdd):</b>   |
| <b>Campaign/Cruise</b>  | <b>Expocode:</b> 74EQ20190625<br><b>Campaign/Cruise Name:</b> DY103(PAP 2019)<br><b>Campaign/Cruise Info:</b> PAP 2019 (UK-NERC)<br><b>Platform Type:</b><br><b>CO2 Instrument Type:</b> Equilibrator-IR or CRDS or GC<br><b>Survey Type:</b> Research Cruise<br><b>Vessel Name:</b> Discovery<br><b>Vessel Owner:</b> UK-Natural Environment Research Council<br><b>Vessel Code:</b> 74EQ |
| <b>Coverage</b>         | <b>Start Date (yyyymmdd):</b> 20190625<br><b>End Date (yyyymmdd):</b> 20190709<br><b>Westernmost Longitude:</b> 17.0192 W<br><b>Easternmost Longitude:</b> 4.091 W<br><b>Northernmost Latitude:</b> 51.5371 N<br><b>Southernmost Latitude:</b> 48.6215 N   |
| <b>Variable</b>         | <b>Name:</b> xCO2_equ[umol/mol]<br><b>Unit:</b> micro-mol/mol<br><b>Description:</b> CO2 mixing ratio measured at Tequ (wet)   |
| <b>Variable</b>         | <b>Name:</b> Patm [hPa]<br><b>Unit:</b> hecta-Pascal<br><b>Description:</b> Atmospheric Pressure   |
| <b>Variable</b>         | <b>Name:</b> Tequ [deg.C]<br><b>Unit:</b> degrees Celsius<br><b>Description:</b> Temperature in Equilibrator   |
| <b>Variable</b>         | <b>Name:</b> SST [deg.C]<br><b>Unit:</b> degrees Celsius<br><b>Description:</b> Sea Surface Temperature (at intake depth=6m)   |

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| <b>Variable</b>                | <b>Name:</b> Sal<br><b>Unit:</b> unitless or PSU<br><b>Description:</b> Salinity   |
| <b>Variable</b>                | <b>Name:</b> pCO2_sw[uatm]<br><b>Unit:</b> micro-atm<br><b>Description:</b> Seawater partial pressure of CO2 at SST (wet)  |
| <b>Variable</b>                | <b>Name:</b> pCO2_atm[uatm]<br><b>Unit:</b> micro-atm<br><b>Description:</b> Atmospheric partial pressure of CO2 (wet)   |
| <b>Variable</b>                | <b>Name:</b> fCO2_sw[uatm]<br><b>Unit:</b> micro-atm<br><b>Description:</b> Seawater fugacity of CO2 at SST (wet)  |
| <b>Variable</b>                | <b>Name:</b> fCO2_atm[uatm]<br><b>Unit:</b> micro-atm<br><b>Description:</b>   |
| <b>Variable</b>                | <b>Name:</b> xCO2atm_dry[umol/mol]<br><b>Unit:</b> micro-mol/mol<br><b>Description:</b>  |
| <b>Variable</b>                | <b>Name:</b> Pequ [hPa]<br><b>Unit:</b> hecta-Pascal<br><b>Description:</b> Equilibration Pressure   |
| <b>Sea Surface Temperature</b> | <b>Location:</b> Adjacent to intake at 6 m depth<br><b>Manufacturer:</b> SeaBird Electronics<br><b>Model:</b> SBE45<br><b>Accuracy:</b> 0.001 (°C if units not given)<br><b>Precision:</b> 0.001 (°C if units not given)<br><b>Calibration:</b> Recorded by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre ( <a href="http://www.bodc.ac.uk">www.bodc.ac.uk</a> )<br><b>Comments:</b>  |
| <b>Sea Surface Salinity</b>    | <b>Location:</b> Adjacent to intake at 6 m depth<br><b>Manufacturer:</b> SeaBird Electronics<br><b>Model:</b> SBE45<br><b>Accuracy:</b> 0.002<br><b>Precision:</b> 0.002<br><b>Calibration:</b> Recorded by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre ( <a href="http://www.bodc.ac.uk">www.bodc.ac.uk</a> )<br><b>Comments:</b>  |
| <b>Atmospheric Pressure</b>    | <b>Location:</b> Met-platform on foremast, 18 m asl<br><b>Normalized to Sea Level:</b> yes<br><b>Manufacturer:</b> Vaisala<br><b>Model:</b> PTB110 barometer<br><b>Accuracy:</b> 1 hPa (hPa if units not given)<br><b>Precision:</b> 1 hPa (hPa if units not given)<br><b>Calibration:</b> Recorded by National Marine Facilities Sea Systems and kept by British Oceanographic Data Centre ( <a href="http://www.bodc.ac.uk">www.bodc.ac.uk</a> )<br><b>Comments:</b> |
| <b>Atmospheric CO2</b>         | <b>Measured/Frequency:</b> yes, circa every 20 minutes<br><b>Intake Location:</b> Met-platform on foremast, 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 11 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. : 468.39,374.56,257.65 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. 468.39,374.56,257.65 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 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:**