

Dataset Expocode	642B20131228
Primary Contact	Name: Steve Jones Organization: University of Exeter Address: College of Life and Environmental Sciences, Department of Geography, Hatherly Laboratories, Prince of Wales Road, Exeter, UK, EX4 4PS Phone: Email: s.d.jones@exeter.ac.uk
Investigator	Name: Schuster, Dr. Ute Organization: University of Exeter Address: College of Life and Environmental Sciences Department of Geography Hatherly Laboratories Prince of Wales Road Exeter UK EX4 4PS Phone: +44 (0)1392 723701 Email: u.schuster@exeter.ac.uk
Investigator	Name: Jones, Dr. Steve D. Organization: University of Exeter Address: College of Life and Environmental Sciences Department of Geography Hatherly Laboratories Prince of Wales Road Exeter UK EX4 4PS Phone: Email: s.d.jones@exeter.ac.uk
Investigator	Name: Watson, Prof. Andrew J. Organization: University of Exeter Address: College of Life and Environmental Sciences Department of Geography Hatherly Laboratories Prince of Wales Road Exeter UK EX4 4PS Phone: Email: andrew.watson@exeter.ac.uk
Dataset	Funding Info: Initial Submission (yyyymmdd): 20150629 Revised Submission (yyyymmdd): 20151120
Campaign/Cruise	Expocode: 642B20131228 Campaign/Cruise Name: BS077C Campaign/Cruise Info: UK-Caribbean Platform Type: CO2 Instrument Type: Equilibrator-IR or CRDS or GC Survey Type: VOS Line Vessel Name: Benguela Stream Vessel Owner: Seatrade Reefers, The Netherlands Vessel Code: 642B
Coverage	Start Date (yyyymmdd): 20131228 End Date (yyyymmdd): 20140105 Westernmost Longitude: 71.951 W Easternmost Longitude: 5.4963 W Northernmost Latitude: 49.709 N Southernmost Latitude: 19.87 N Port of Call: Manzanillo, Dominican Republic Port of Call: Portsmouth, UK
Variable	Name: pCO2 in Sea Water (Wet) Unit: uatm Description: pCO2 in Sea Water (Wet) at SST

Variable	Name: pCO ₂ in Air (wet) Unit: uatm Description: pCO ₂ in Air (wet) at SST
Variable	Name: xCO ₂ in Sea Water (dry) Unit: ppm Description: xCO ₂ in Sea Water (dry) at Tequ
Variable	Name: xCO ₂ in Air (Dry) Unit: ppm Description: xCO ₂ in Air (Dry) at Tequ
Variable	Name: fCO ₂ in Sea Water Unit: uatm Description: fCO ₂ in Sea Water at SST
Sea Surface Temperature	Location: Sea chest in engine room, -5m Manufacturer: Aanderaa Model: T-4050 Accuracy: 0.03 (°C if units not given) Precision: 0.01 (°C if units not given) Calibration: Versus ice on ???; - SPEC HEET Comments:
Sea Surface Salinity	Location: Sea chest in engine room, -5m Manufacturer: Aanderaa Model: C-3919B Accuracy: 0.0018 Precision: 0.002 Calibration: Versus discrete samples from throughout voyage, analysed at NOC, UK Comments: Measures conductivity, salinity is calculated from it.
Atmospheric Pressure	Location: Navigation Bridge, 35m Normalized to Sea Level: yes Manufacturer: Model: Accuracy: (hPa if units not given) Precision: (hPa if units not given) Calibration: Performed by MET Office every 6 months Comments:
Atmospheric CO₂	Measured/Frequency: Yes, every 2 hours Intake Location: Monkey Island, 40m Drying Method: Atmospheric CO₂ Accuracy: 1 Atmospheric CO₂ Precision: 0.1
Aqueous CO₂ Equilibrator Design	System Manufacturer: Intake Depth: -5 Intake Location: Sea chest Equilibration Type: Percolating Equilibrator Volume (L): 4 Headspace Gas Flow Rate (ml/min): 100 Equilibrator Water Flow Rate (L/min): 4 Equilibrator Vented: Yes

Equilibration Comments:**Drying Method:** Condenser, partial**Measurement Method:** IR**Method details:** Non-dispersal Infrared**Manufacturer:** Licor**Model:** LI7000**Measured CO2 Values:** xCO2(dry)**Measurement Frequency:** Every 60 seconds except during calibration routines**Aqueous CO2 Accuracy:** 1**Aqueous CO2 Precision:** 0.1**Sensor Calibrations:** During deployment, every 90 minutes, by 0, 250, 350 and 450 ppm CO2 gas standards**Calibration of Calibration Gases:** Ship**Number Non-Zero Gas Standards:** 3**Calibration Gases:**

NOAA Gas Standards installed 20130428

0B05: 0

45B32: 489.94

35B34: 365.33

25B32: 259.43

Comparison to Other CO2 Analyses:**Comments:** LiCor pressure calibrated against sea level pressure.**Method Reference:**Cooper, D. J., Watson, A. J., & Ling, R. D. (1998). Variation of pCO₂ along a North Atlantic shipping route (U.K. to the Caribbean): A year of automated observations. *Marine Chemistry*, 60, 147–164. [http://doi.org/10.1016/S0304-4203\(97\)00082-0](http://doi.org/10.1016/S0304-4203(97)00082-0)Schuster, U., & Watson, A. J. (2007). A variable and decreasing sink for atmospheric CO₂ in the North Atlantic. *Journal of Geophysical Research*, 112(C11). <http://doi.org/10.1029/2006JC003941>Watson, A. J., Schuster, U., Bakker, D. C. E., Bates, N. R., Corbière, A., González-Dávila, M., ... Wanninkhof, R. H. (2009). Tracking the variable North Atlantic sink for atmospheric CO₂. *Science*, 326(5958), 1391–1393. <http://doi.org/10.1126/science.1177394>Pierrot, D., Neill, C., Sullivan, K. F., Castle, R., Wanninkhof, R. H., Lüger, H., ... Cosca, C. E. (2009). Recommendations for autonomous underway pCO₂ measuring systems and data-reduction routines. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56, 512–522. <http://doi.org/10.1016/j.dsr2.2008.12.005>**Aqueous CO2
Sensor Details****Equilibrator
Temperature Sensor****Location:** Sensor inside equilibrator**Manufacturer:** Aanderaa**Model:** PT2000**Accuracy:** 0.04 (°C if units not given)**Precision:** 0.04 (°C if units not given)**Calibration:** Every 28 days, versus ice and against Aanderaa SST sensor**Comments:****Equilibrator
Pressure Sensor****Location:** On the equilibrator**Manufacturer:** Omega**Model:** Barometreic pressure transducer, PX2760-600A5V**Accuracy:** 0.1 (hPa if units not given)**Precision:** 0.1 (hPa if units not given)**Calibration:** Every 28 days against LiCor

Comments:**Other Sensor****Description:** Oxygen**Manufacturer:** Aanderaa**Model:** Optode 3835**Accuracy:** <1 um**Precision:** <8 um or 5%, whichever is greater**Calibration:** None**Comments:****Additional
Information****Suggested QC flag from Data Provider:** NA**Additional Comments:****Citation for this Dataset:**

UK-Caribbean line

Other References for this Dataset:

In preparation