

Cruise ID: 49WB20170522 (SY1706)

- Investigator:

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- Dataset Info:

- Dataset ID: 49WB20170522.csv
- Funding Info: Global Environment Research Account for National Institutes by the Ministry of Environment, Japan
- Submission Dates:
  - Initial Submission: 2018/05/22
  - Revised Submission:

- Cruise Info:

- Survey/Experiment Type: Research Cruise
- Survey/Experiment Name: SY1706
- Cruise ID: 49WB20170522
- Cruise info:
- Section:
- Geographical Coverage:
  - Geographical Region: western North Pacific
- Ports of Call: Yokohama
- Bounds:
  - Westernmost Longitude:  
+141.3 Degrees, Minutes,  
Seconds: E

- Easternmost Longitude: +158.3  
Degrees, Minutes, Seconds: E
- Northernmost Latitude: +40.6  
Degrees, Minutes, Seconds: N
- Southernmost Latitude: +35.8  
Degrees, Minutes, Seconds: N
- Temporal Coverage:
  - Start Date: 2017/5/23
  - End Date: 2017/6/17
- Vessel:
  - Vessel Name: Soyo-maru
  - Vessel ID: 49WB
  - Country: Japan
  - Vessel Owner: Fisheries Research and Education Agency
- Variables Info:
  - Variable:
    - Variable Name: XCO2\_EQ
    - Description of Variable: umol/mol
    - Variable Name: XH2O\_EQ
    - Description of Variable: mmol/mol
    - Variable Name: EQ\_Press
    - Description of Variable: hPa
    - Variable Name: EQ\_Temp
    - Description of Variable: deg C
    - Variable Name: SST
    - Description of Variable: deg C
    - Variable Name: SSS
    - Description of Variable: no unit
    - Variable Name: Air\_Press
    - Description of Variable: hPa
- Method Description:

- Sampling and Equilibrator Design:
  - Depth of sea water intake: 5m
  - Location of sea water intake: Bottom of ship
  - Equilibrator type: menbrane equilibrator
  - Equilibrator volume: 0.4 L
  - Water\_Flow\_Rate: 2.0 L/min
  - Headspace\_Gas\_Flow\_Rate: 100 ml/min
  - Vented: No
  - Drying method for CO<sub>2</sub> in water:
    - electronic dehumidifier DH109C
  - Additional information:
- System Design:
  - Measurement Method: automated version of Saito et al. [1995]
  - Manufacturer of Calibration Gas: Nissan-Tanaka Co. Ltd.
  - CO<sub>2</sub> Sensor:
    - Measurement Method: NDIR
    - Manufacturer: Li-COR
    - Model: LI-6262
    - Environmental Control:
      - xCO<sub>2</sub> value submitted are corrected for xH<sub>2</sub>O by sensor's program
    - Frequency: every 1 min
    - Precision of CO<sub>2</sub>water: xCO<sub>2</sub> 1.6 umol/mol
    - Precision of CO<sub>2</sub>air:
    - Accuracy of CO<sub>2</sub>water: xCO<sub>2</sub> 1.6 umol/mol
    - Accuracy of CO<sub>2</sub>air:
    - CO<sub>2</sub> Sensor Calibration:
      - LI-6262 was calibrated at factory on Oct. 2013. CO<sub>2</sub> concentration in standard gas cylinder was calibrated once at purchasing

against NIES standard gas cylinder, which are traceable to WMO scale

- Manufacture of CO<sub>2</sub> Calibration gases: Nissan Tanaka Co. LTD., 0ppm, 270ppm and 450 ppm
- Method References: Saito et al., A compact seawater pCO<sub>2</sub> measurement system with membrane equilibrator and nondispersive infrared gas analyzer, Deep-Sea Res., 42, 2025-2033, 1995
- CO<sub>2</sub> in Marine Air:
  - Measurement:
  - Location and Hight:
  - Sea surface Temperature:
    - Location: bottom of ship, just after the bottom seawater intake
    - Manufacturer: JFE Advantec.
    - Model: ACT-RS
    - Accuracy: 0.02 deg C
    - Precision: 0.02 deg C
    - Calibration: last calibrated at factory on Sept. 2016
  - Other comments:
- Sea surface Salinity:
  - Location: branched just in front of water intake of equilibrator
  - Manufacturer: Sea-Bird
  - Model: SBE45
  - Accuracy: 0.005
  - Precision: 0.003
  - Calibration: last calibrated on Sept. 2011 in manufacture factory

- Other comments:
- Equilibrator Temperature:
  - Location: midst of equilibrator vessel
  - Manufacturer: Rikagaku-kogyo Inc.
  - Model: platinum resistance thermometer sensor, grade Pt100
  - Accuracy: 0.15 deg C
  - Precision: 0.15 deg C
  - Calibration: last calibrated on 2017/3/12 at FRA lab., against JMA standard scale mercury thermometer
- Other comments:
- Equilibrator Pressure:
  - Location: just after air outlet from equilibrator
  - Manufacturer:
  - Model: water gauge
  - Accuracy: 2mmH2O
  - Precision: 2mmH2O
  - Calibration: calibrated at factory on Oct. 2013
- Other comments:
- Atmosphere Pressure:
  - Location: just right side of equilibrator
  - Manufacturer: T&D Co. LTD.
  - Model: TR-73U
  - Accuracy: 0.15hPa
  - Precision: 0.15hPa
  - Calibration: last calibrated on 2016/12/20 at FRA lab., against JMA-calibrated aneroid barometer
- Other comments: It is confirmed that the atmospheric pressure in the ship's lab the

pCO<sub>2</sub> system is settled is same as that of open air.

- Other sensors:
- Manufacturer:
- Model:
- Resolution:
- Uncertainty:
- Calibration:
- Other comments:
- Accuracy Info:
- Method References:
  - Method References:
  - Data Set References:
  - Additional Information:
  - Citation:
  - Measurement of Calibration Report:
  - Measurement Type: underway measurement underway  
data underway measurements
  - Metadata Source: