

Cruise ID: 49WB20160612 (SY1605b)

- Investigator:

- Name: Tsuneo Ono
- Organization: National Research Institute for Far Seas Fisheries / Fisheries Research and Education Agency
- Address: 2-12-4 Fukuura, Kanazawa-ku Yokohama 236-8648, Japan
- Phone: +81-45788-7697
- Email: tono@affrc.go.jp

- Dataset Info:

- Dataset ID: 49WB20160524.csv
- Funding Info: Global Environment Research Account for National Institutes by the Ministry of Environment, Japan
- Submission Dates:
 - Initial Submission: 2017/01/14
 - Revised Submission:

- Cruise Info:

- Survey/Experiment Type: Research Cruise
- Survey/Experiment Name: SY1605b
- Cruise ID: 49WB20160524
- Cruise info:
- Section:
- Geographical Coverage:
 - Geographical Region: western North Pacific
- Ports of Call: Yokohama
- Bounds:
 - Westernmost Longitude:
+139.5 Degrees, Minutes,
Seconds: E

- Easternmost Longitude: +151.1
Degrees, Minutes, Seconds: E
- Northernmost Latitude: +41.2
Degrees, Minutes, Seconds: N
- Southernmost Latitude: +34.7
Degrees, Minutes, Seconds: N
- Temporal Coverage:
 - Start Date: 2016/6/15
 - End Date: 2016/6/21
- 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 CO₂ 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.
 - CO₂ Sensor:
 - Measurement Method: NDIR
 - Manufacturer: Li-COR
 - Model: LI-6262
 - Environmental Control:
 - xCO₂ value submitted are corrected for xH₂O by sensor's program
 - Frequency: every 1 min
 - Precision of CO₂water: xCO₂ 1.6 umol/mol
 - Precision of CO₂air:
 - Accuracy of CO₂water: xCO₂ 1.6 umol/mol
 - Accuracy of CO₂air:
 - CO₂ Sensor Calibration:
 - LI-6262 was calibrated at factory on Oct. 2013. CO₂ concentration in standard gas cylinder was calibrated once at purchasing

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

- Manufacture of CO₂ Calibration gases: Nissan Tanaka Co. LTD., 0ppm, 270ppm and 450 ppm
- Method References: Saito et al., A compact seawater pCO₂ measurement system with membrane equilibrator and nondispersive infrared gas analyzer, Deep-Sea Res., 42, 2025-2033, 1995
- CO₂ 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. 2015
 - 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 2016/4/19 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 2015/4/5 at FRA lab., against JMA-calibrated aneroid barometer
- Other comments: It is confirmed that the atmospheric pressure in the ship's lab the

pCO₂ 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: