

Cruise ID: 49WA20160511 (WK1605)

- Investigator(s):

- Name: Akira Kuwata
- Organization: Tohoku National Fisheries Research
Institute / Fisheries Research and Education Agency
- Address: 3-27-5 Shinhamacho, Shiogama 985-0001,
Japan
- Phone: +81-22365-9929
- Email: akuwata@affrc.go.jp

- Investigator #2:

- Name: Kazuaki Tadokoro
- Organization: Tohoku National Fisheries Research
Institute/ Fisheries Research and Education Agency
- Address: 3-27-5 Shinhamacho, Shiogama 985-0001,
Japan
- Phone: +81-22365-9913
- Email: den@affrc.go.jp

- Dataset Info:

- Dataset ID: 49WA20160511.csv
- Funding Info: Global Environment Research Account for
National Institutes by the Ministry of Environment,
Japan
- Submission Dates:
 - Initial Submission: 2017/1/14
 - Revised Submission:

- Cruise Info:

- Survey/Experiment Type: Research Cruise
- Survey/Experiment Name: WK1605
- Cruise ID: 49WA20160511
- Section:
- Geographical Coverage:

- Geographical Region: western North Pacific
- Ports of Call: Shiogama
- Bounds:
 - Westernmost Longitude:
 - +141.2 Degrees, Minutes, Seconds: E
 - Easternmost Longitude:
 - +147.3 Degrees, Minutes, Seconds: E
 - Northernmost Latitude: +43.2 Degrees, Minutes, Seconds: N
 - Southernmost Latitude:
 - +37.8 Degrees, Minutes, Seconds: N
- Temporal Coverage:
 - Start Date: 2016/5/11
 - End Date: 2016/5/23
- Vessel:
 - Vessel Name: Wakataka-maru
 - Vessel ID: 49WA
 - 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_PRE
 - Description of Variable: hPa
 - Variable Name: EQ_TMP

- Description of Variable: deg C
- Variable Name: SST
- Description of Variable: deg C
- Variable Name: SSS
- Description of Variable: no unit
- Variable Name: ATM_PRE
- 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 Feb. 2012. 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 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 Height:
- 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 on 2015/02/16 at FRA lab., against JMO standard scale mercury thermometer
- 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 Jan. 2012 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 2015/12/9 at FRA lab., against JMO standard scale mercury thermometer
 - Other comments:
- Equilibrator Pressure:
 - Location: just after air outlet from equilibrator
 - Manufacturer: Nagano Keiki
 - Model: GC30 Digital Differential Pressure Gauge
 - Accuracy: 0.1 hPa
 - Precision: 0.1 hPa
 - Calibration: last calibrated on 2015/12/9 at FRA lab., against Water pressure Gauge
 - 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 Nov.25 2011 at
FRA lab. against JMA-calibrated aneroid
barometer
- Other comments: pCO₂ system is settled in
CTD room and open to atmosphere
- 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: