

Cruise ID: 49WA20160628 (WK1606s)

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- Dataset Info:

- Dataset ID: 49WA20160628.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: WK1606s
- Cruise ID: 49WA20160628
- Section:

- Geographical Coverage:
  - Geographical Region: Japan coast
  - (Sendai Bay)
- Ports of Call: Shiogama
- Bounds:
  - Westernmost Longitude:
    - +141.9 Degrees, Minutes,
    - Seconds: E
  - Easternmost Longitude:
    - +141.8 Degrees, Minutes,
    - Seconds: E
  - Northernmost Latitude: +38.3
    - Degrees, Minutes, Seconds: N
  - Southernmost Latitude:
    - +37.6 Degrees, Minutes,
    - Seconds: N
- Temporal Coverage:
  - Start Date: 2016/6/28
  - End Date: 2016/7/1
- 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 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 Feb. 2012. 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 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 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: pCO<sub>2</sub> 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: