

MIRAI MR12-E03 Atmospheric carbon dioxide (CO₂), methane (CH₄), and carbon monoxide (CO)

Last Modified: 2015-04-30

[ReadMe](#) [Observation Data](#)

Cruise ID: [MR12-E03](#)

Atmospheric carbon dioxide (CO₂), methane (CH₄), and carbon monoxide (CO) : Processed (PI)

Data Policy: [JAMSTEC](#)

Observation Items:

Science Keywords:

Data Information

The sample air was drawn from an air intake located at the front of the starboard upper deck by using a diaphragm pump, and was introduced into a thermoelectric dehumidifier and a Nafion® tube dryer to reduce the dew point of the sample air to less than -20°C. The dried sample air was introduced into the WS-CRDS analyzer to detect the atmospheric CO₂, CH₄, and CO. The CO₂, CH₄, and CO mixing ratios were determined against NIES's original standard scales: the NIES09 CO₂ (Machida et al., 2011), the NIES94 CH₄ (Terao et al, 2011), and the NIES09 CO (Katsumata et al, 2011), respectively. The standard deviations (1σ) of the average output signals for the standard gases were about 0.02 ppm for CO₂, 0.3 ppb for CH₄, and 0.9 ppb for CO.

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR12-E03_all.pdf

For Using Data

Principal Investigator

Yasunori Tohjima (National Institute for Environmental Studies, Center for Global Environmental Research)

Use Constraints

See [Terms and Conditions](#) about constrain of use.

Data Citation

See [Terms and Conditions](#) about data citation.

Instrument

Instrument:

Wave-scanned cavity ring down spectroscopy analyzer (model G-2401, Picarro)

Instrument Information:

For the atmospheric CO₂, CH₄ and CO measurements, a wave-scanned cavity ring down spectroscopy (WS-CRDS) analyzer (model G-2401, Picarro Inc., USA) was used. The WS-CRDS analyzer detects absorption lines at 1603, 1651, and 1567 nm for ¹²C¹⁶O₂, ¹²CH₄, and ¹²C¹⁸O, respectively, which are all major isotopologues for the individual species. The WS-CRDS analyzer was calibrated against 3 standard gases every 24 hours. Note that the apparent error in the CO₂ mixing ratio caused by the differences in the isotopic compositions between the ambient air and the standard gases are corrected based on the equations given by Nara et al. (2012).



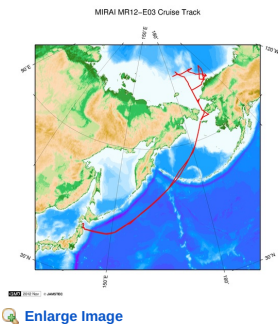
Sample

Air

Data Format

Comma-delimited text data. Observation items are sampling time (UTC), latitude, longitude, hourly average of CO₂ mixing ratio (ppm), standard deviation, number of data (1-minute average), hourly average of CH₄ mixing ratio (ppb), standard deviation, number of data (1-minute average), hourly average of CO mixing ratio (ppb), standard deviation, and number of data (1-minute average).

Related Information



MR12-E03

Ship Name: MIRAI

Period: 2012-09-03 - 2012-10-17

Chief Scientist: Takashi Kikuchi (JAMSTEC)

Project Name: [Arctic Ocean Climate System Reaserch]

Proposal ▶ Ecosystem studies on the Arctic Ocean declining sea ice

Title:

Update History

| | |
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| 2015-04-30 | An observation data was registerd. |
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NATSUSHIMA

KAIYO

YOKOSUKA

MIRAI

KAIREI

CHIKYU

KAIMEI

SHINSEI MARU

HAKUHO MARU

Information of the Submersibles

KAIKO

SHINKAI 2000

SHINKAI 6500

DEEP TOW

HYPER-DOLPHIN

URASHIMA

YOKOSUKA DEEP TOW

6K Camera DEEP TOW

6K Sonar DEEP TOW

KM-ROV

POWER GRAB SAMPLER

(SHELL)

POWER GRAB SAMPLER

(CLOW)

BMS

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:

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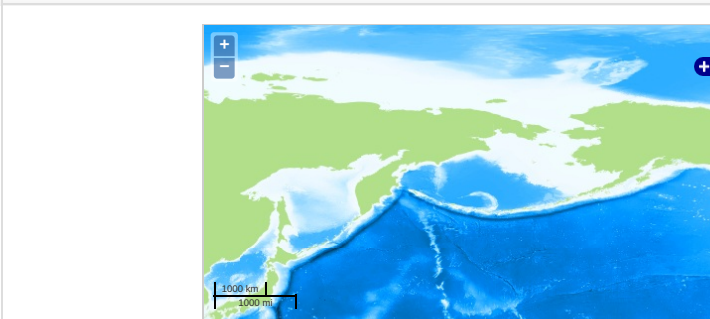
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Data Policy: [JAMSTEC](#)

Observation Items:

Science Keywords:

Observation Map



... Observation Line ... Navigation ... Observation, Dive Point, Hole

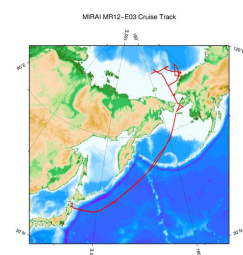
Data List

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File names

☐ Mirai_CRDS_hourly.txt

Related Information



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MR12-E03

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