

## MIRAI MR08-05 Phytoplankton Biomass

Last Modified: 2012-10-26

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Cruise ID: [MR08-05](#)

Phytoplankton Biomass: Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Cell number and cell size of phytoplankton, and their composition

Science Keywords:

BIOSPHERE > AQUATIC ECOSYSTEMS > PLANKTON > PHYTOPLANKTON

### Cruise Report

[http://www.godac.jamstec.go.jp/catalog/data/doc\\_catalog/media/MR08-05\\_all.pdf](http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR08-05_all.pdf)

#### For Using Data

##### Principal Investigator

Kazuhiko Matsumoto (JAMSTEC)

##### Use Constraints

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

##### Data Citation

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

### Instrument

Instrument:

Absorption spectro-photometer



### Overview

Phytoplankton biomass data by Flow cytometry during MR08-05 cruise were obtained by the following methods. Water sampling, filtration, and devices and standard materials for analysis for this method are outlined below. For further information, please see Cruise Report.

#### Outline of water sampling, filtration and analysis

- 1) Vertical sampling: Niskin
- 2) Surface sampling: Bucket
- 3) Sampling layer: 8
- 4) Filter and filtration: Nuclepore filter 3µm pore size
- 5) Sample fixed: Glutaraldehyde(1%)
- 6) Store condition : dark at 4degC
- 7) Stored time : within 24 hours
- 8) Analysis place: R/V MIRAI
- 9) Analysis device: Flow cytometry system

#### About Flow cytometry system and its utilization in MIRAI

Flow cytometry system measures forward light scatter (FS) and fluorescence from cells in a sample fluid (i.e., sheath liquid and sample materials) at the same time, by irradiating lights from equipped xenon arc lamp as illumination source at the center of the flow cell of the sample fluid.

Phytoplankton cell number and cell size are estimated by the FS signals.

The emitted fluorescence signals are divided by 565-605nm and >615nm, by which phytoplankton is classified.

Consequently, cell number and cell size of phytoplankton and their composition in the ocean are estimated.

Measurement principle of Flow cytometer is as below:

Flow system: makes flow of the cells by using sheath fluid. Optical detection system: measures FS and emitted fluorescence from cells by irradiating lights at the center of the flow cell of the sample fluid. Electric pulse processing system: evaluates a detected electric pulse by a circuit. Data processing system: makes various histograms and analyzes data.

#### Specifications of Flow cytometry system

Manufacturer: Bio-Rad Laboratories Inc.

Instruments type: BRYTE HS system

Light source : 75W Xenon arc lamp

Excitation wavelength : 350-650nm

Detector : high-performance PMT (Photo multiplier tube)

Analyzed volume : 75µL

Flow rate : 10µLmin-1

Sheath fluid: Milli-Q water

Filter block : B2 (excitation filter)

and OR1 (fluorescence separator)

B2 : Excitation filter 390-490nm

Beam-splitter 510nm

Emission filter 515-720nm

OR1 : Emission filter1 565-605nm (orange)

Beam-splitter 600nm

Emission filter2 >615nm (red)

#### Data processing

Device control and processing soft : WinBryte

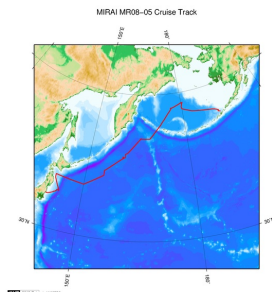
#### Reference material

Standard beads (Polysciences Inc.) 2.764μm

#### Reference

Kazuhiro Matsumoto, Ken Furuya and Takeshi Kawano. (2004)  
Association of picophytoplankton distribution with ENSO events  
in the equatorial Pacific between 145°E and 160°W. Deep-Sea Res. I 51(2004) 1851-1871.

#### Related Information



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#### MR08-05

Ship Name: MIRAI  
Period: 2008-10-11 - 2008-11-07  
Chief Scientist: Makio Honda (JAMSTEC)  
Project Name: [Station K2, Station KNOT]  
Proposal ▶ The study of ecosystem and materials' cycle in the North Pacific  
Title:

#### Update History

Update Date	Update Content
2012-10-26	An observation data was registered.

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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

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Dive ID:

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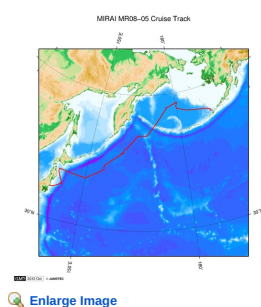
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### Phytoplankton Biomass Data Sheet Format

Format information describes column no., column heading mnemonic and comments of phytoplankton biomass data sheet by Flow cytometry in MR08-05.  
Missing value is presented by -999.

Column No.	Column Heading Mnemonic	Comments
1	CruiseID	CruiseID
2	STNNBR	Station number (refer to CTD cast table of cruise report)
3	CASTNO	Cast number (refer to CTD cast table of cruise report)
4	UTC Date	CTD start UTC date (refer to CTD cast table of cruise report)
5	UTC Time	CTD start UTC time (refer to CTD cast table of cruise report)
6	Latitude	CTD start position Latitude north degree (refer to CTD cast table of cruise report)
7	Longitude	CTD start position Longitude east degree (refer to CTD cast table of cruise report)
8	BTLNBR	Bottle identification number
9	BTLNBR_FLAG_W	Bottle quality flag (for explanation see Quality flags)
10	CTD Depth	CTD Depth (m)
11	CTD PRS	CTD Pressure (dbar)
12	CTDPRS_FLAG_W	CTD Pressure flag (for explanation see Quality flags)
13	Synechococcus	Cell count (×1000 cells/ml)
14	Picoeukaryotes-1	Cell count (×1000 cells/ml)
15	Picoeukaryotes-2	Cell count (×1000 cells/ml)
16	Picoeukaryotes-3	Cell count (×1000 cells/ml)
17	Remarks	Station name

### Related Information



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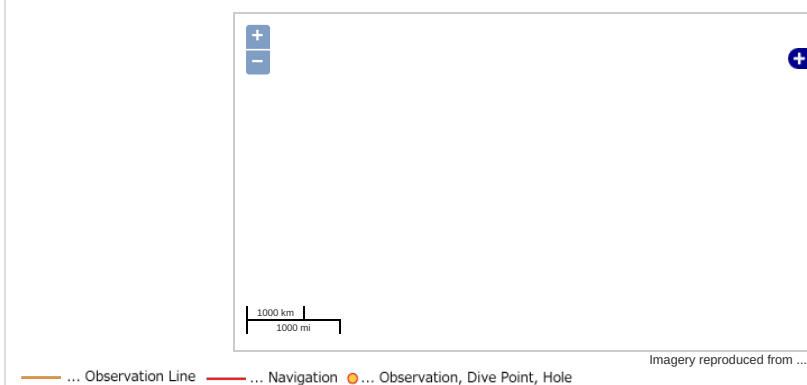
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### Observation Map

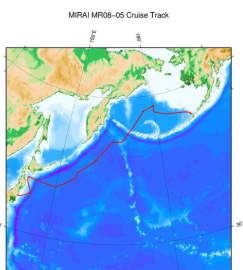


### Data List

File names

☐ MR08-05\_FC.csv

### Related Information



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