

For Using Data

Data Policy	JAMSTEC
Principal Investigator	Data Management Office
Use Constraints	See Terms and Conditions about constrain of use.
Data Citation	See Terms and Conditions about data citation.

Quality

DMO-Processed

Instrument

Multi-narrow beam echo sounder (MR14-03 -)

**Overview**

The data provided here are the bathymetric data obtained from the multibeam echo sounder system (MBES) . The system transmits the shape echo sounder beam from the transmitter and receives the beam reflected from the seabed using the hydrophone. The water depth is calculated from the travel time of the beam between the transmitter and the receiver. Having many transmitters make fan beams across the keel, this system can obtain a lot of bathymetric data on a wide angle at once. The travel time of the beam (from the transmitter to the seabed and from the seabed to the receiver) is corrected using the vertical profile of the sound velocity obtained from the in-situ observations (see section Sound velocity profile correction) . The raw data with the low reliability such as the noise are removed using the software (see section Data processing) .

Measurement System

Manufacturer :	Elac
Type :	SeaBeam3012
Frequency :	12 kHz
Swath angle :	max 150 degree
Beam angle :	2.0 * 1.6 degree
Beam number :	301
Range :	50 m - 11,000 m
Accuracy (Depth) :	less than depth [m] * 1 %

Sound velocity profile correction

In the survey area, the sound velocity profile correction is made using the XBT data acquired during the cruise. On the other hand, in the transit area, e.g., from the survey area to the port, where we do not conduct the XBT observations, the data are corrected using the historical XBT and XCTD data or the Argo float data.

Data processing

Following raw data with the low reliability are removed using the processing software "CARIS HIPS and SIPS Version 11.4" of Teledyne Technologies Inc. Processed data is interpolated onto 100m grid data, and output as ascii data.

- Navigation error data
- The Data exceeded the "Range" in the Measurement system section
- The Data with swath angle exceeded 60 degrees
- Spike noise data (If both of slopes calculated from the evaluated beam and prior/post one on the same swath are exceeded 15 degrees.)
- The Bottom lost data due to the sea state etc.
- The data with high possibility of noise judged by Sonar Noise Classifier on CARIS Mira AI* (processing parameters are changed depending on the noise level, water depth, etc.)

The data quality is different in the survey and transit area because of the difference of the temperature data for the sound velocity profile correction. Therefore, we open the survey and transit area data separately. The rule of the file name is as follows.

File name :

- Survey area data : XXXX.dat
- Transit area data : XXXX_t.dat

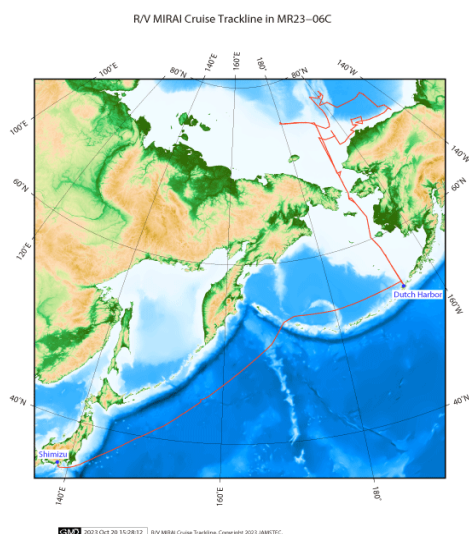
XXXX indicates cruise ID, "_t" indicates the transit area data.

* <https://www.teledynecaris.com/en/products/caris-mira-ai/>

Note

- 1) Geodetic system : WGS84.
- 2) The tide is not corrected.
- 3) If you would like the raw data set, please contact DMO at "dmo@jamstec.go.jp".

Related Information



MR23-06C

Ship Name:

MIRAI

Period:

2023/08/25 - 2023/10/04

Chief Scientist:

Amane Fujiwara (JAMSTEC)

Proposal:

Arctic Expedition for Environmental Studies
Observational study of the Arctic environmental changes: Pacific-Arctic interaction, biogeochemical transport, mixing and marine ecosystem

Quantification of the microplastic inventory in the waters of the western Arctic Ocean and microplastic influx from the Pacific Ocean

Changes in clouds and aerosols over the ice-free Arctic Ocean

Possibility of the expanding distribution in plankton and fishes associated with sea ice reduction in the Pacific sector of the Arctic Ocean

Observation of air-sea-wave-ice interaction over the Pacific Arctic region

Investigating the physical and ecophysiological basis of fall phytoplankton blooms in the Chukchi and Beaufort seas

Nitrogen Fixation in a Changing Arctic Ocean An Overlooked Source of Nitrogen

Exploring microplankton interactions and their functional roles in a changing Arctic

Determining the contribution of siphonophores to mesopelagic backscatter in the Arctic

Better understanding of climate-driven changes of biogeochemical dynamics in the western Arctic Ocean via R/V Mirai 2023 Cruise A perspective of stable carbon isotope

Temporal variations of the carbonate chemical components the Arctic Ocean within summertime

Observation of water vapor isotopic ratios

Observation of atmospheric greenhouse gases and related species in the North Pacific region

Format Description for Bathymetry XYZ

No.	Column	Content	Format	Unit	Remarks
1	1 - 11	Longitude	f11.6	degree	+ : Eastern hemisphere - : Western hemisphere
2	13 - 22	Latitude	f10.5	degree	+ : Northern hemisphere - : Southern hemisphere
3	24 - 31	Depth	f9.3	m	
4	32 - 33	Terminator	a2		[CR][LF]