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MIRAI “Cruise Report”
MR24-03

Performance confirmation test

Off the cost of Shikoku, Kumano-nada, Off the east cost of Aogashima, Izu-Ogasawara Trench, Around the Izu Islands, Suruga Bay

May,10,2024-May,16,2024

Japan Agency for Marine-Earth Science and Technology
(JAMSTEC)

1. Cruise Information

● Cruise ID: MR24-03
● Name of vessel: MIRAI
● Title of cruise: Performance confirmation test.
● Chief Scientist [Affiliation]: Junya ISHIWATA[JAMSTEC]
● Cruise period: May 10, 2024 – May 16,2024
● Ports of departure / call / arrival: Nagasaki/ Shimizu
● Research area: Off the cost of Shikoku, Kumano-nada, Off the east cost of Aogashima, Izu-Ogasawara Trench, Around the Izu Islands, Suruga Bay
● Research map

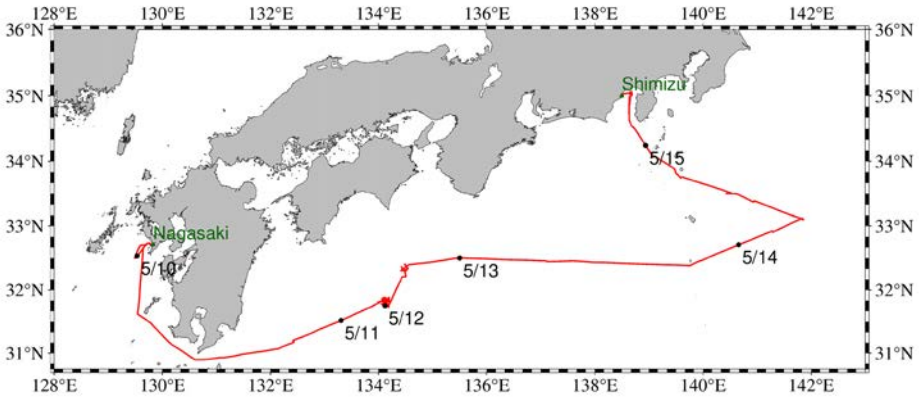

Fig.1 Total ship track during MR24-03.

2. Research Proposal and Science Party

● Title of proposal
1. Performance confirmation test of “MIRAI”.
2. Field test of a onboard lidar retrieving both water vapor and wind.

● Representative of Science Party [Affiliation]
1. Performance confirmation test of “MIRAI”.
Junya ISHIWATA[JAMSTEC]
2. Field test of a onboard lidar retrieving both water vapor and wind.
Masaki KATSUMATA [JAMSTEC]

● Science Party (List) [Affiliation, assignment etc.]
Junya ISHIWATA [JAMSTEC]
Lena MAEDA [JAMSTEC]
Masaki KATSUMATA [JAMSTEC]
Tetsu SAKAI [Meteorological Research Institute]
Kenya YANO [Mitsubishi Electric Corporation]
Takushi YOSHIDA [Nippon Marine Engineering]
Hiroaki KAWAHARA [Amariko Co.,Ltd.]
Masanobu YANAGITANI [JAMSTEC] (non-embarkation)
Satoshi YOSHIDA [Meteorological Research Institute] (non-embarkation)

3. Research/Development Activities

The following performance confirmation test an additional assignment test are conducted.
ADCP, XBT/XCTD, MBES, SBP, ANS, Gravity meter, Cesium magnetometer, Shipboard three components magnetometer, Doppler RADAR, Radiosonde, Meteorological oceanographic observational equipment, SOAR, Ceilometer, Satellite data receiving system, Radio navigation system, Shipboard data management system, CTD winch, Towing winch, Piston Corerer winch.
CTD water sampling system (36-hanger), total carbonic acid measuring device

and total carbonic acid continuous measuring device for surface seawater, alkalinity measuring device, salinity measuring device, dissolved oxygen measuring device, nutrient analysis device, fluorescence photometer, spectrophotometer, System Biological Microscope, freezer, continuous measuring device for surface seawater, continuous measuring device for CO2 in air seawater, Core Camera, Soft X-ray Camera, Multi Sensor Core Logger, spectrophotometer, refrigerator, low-temperature freezers, ultra-low-temperature freezers, dryers, electric muffle furnaces, clean drafts, clean benches, draft chambers, clean rooms.
An additional assignment (JS24-1085) was carried out.

4. Cruise Log

Date and time are represented in JST.

May 10.2024	
08:40	Departure at Mitsubishi Shipbuilding Co. Ltd (Koyagi/Nakasaki) for engine trial.
09:37	Start the engine trial.
15:40	Finish the engine trial. Departed to the first test area, Shikoku-Oki1.
May 11.2024	
08:30	Launch radiosonde for the additional assignment.
09:00	Meeting with crew.
13:15	Evacuation drill.
14:18	Arriva; at the area.
14:24	Launch radiosonde for the additional assignment.
14:42	Deploy cesium magnetometer and start towing.
15:48-01:22	"Figure-8 and Cross letter turns" for measuring ship's magnetization, Cesium magnetometer and roll bias measurement of MBES. Cross line run for measuring ship's magnetization.
May 12.2024	
06:00	Recover cesium magnetometer.
08:10-11:10	CTD winch Free Fall (4,800m).
08:30	Launch radiosonde for the additional assignment.
12:40-16:27	CTD cast and water sampling between 4,700m depth and surface.
16:36	Departure to the test area Shikoku-Oki2.
19:30	Arriva; at the area.
19:36	Start of pitch and heading bias measurement of MBES.
May 13.2024	
01:57	Finish MBES test.
02:00	Depart to the next test area Kumano-nada.
05:00	Arriva; at the area.
08:20-10:23	Piston corerer winch Free fall (3,000m). ANS test (Deployment of a transponder with terminal of Piston corerer).
10:48-11:35	Towing winch Free fall (1,000m).
12:09-14:08	Depth sounding precision test of MBES.
14:12	Departure to the next test area Off the east cost of Aogashima.
20:30	Launch radiosonde for the additional assignment.
23:36	Start the Doppler RADAR test.
May 14.2024	
08:24	Arrival at the area.
08:05-08:35	MBES WCI test around the area.
08:30	Launch radiosonde.
08:36	Departure to the next test area Izu-Ogasawara Trench.
14:30	Launch radiosonde.
16:30	Arrival at the area.

16:42-20:27	CTD winch free fall (6,100m).
18:23	Launch radiosonde for the additional assignment.
20:30	Start sailing to the next test area Around the Izu Islands.
20:36-23:11	Noise measurement of MBES and ADCP.
23:30	Stop Doppler radar.

May 15.2024

01:59	Launch radiosonde for the additional assignment.
03:30	Arrival at the area.
03:30-04:36	Confirmation of maximum depth of ADCP.
04:36	Departure to the last area Suruga Bay.
08:31	Launch radiosonde for the additional assignment.
10:58	Launch radiosonde for the additional assignment.
15:00	Arrival at the area.
15:11-16:54	Run along the common observation line.

May 16,2024

09:15	Arrival at Shimizu port.

5. Notice on Using

This cruise report is a preliminary documentation as of the end of cruise.
This report is not necessarily corrected even if there is any inaccurate description (i.e. taxonomic classifications). This report is subject to be revised without notice. Some data on this report may be raw or unprocessed. If you are going to use or refer the data on this report, it is recommended to ask the Chief Scientist for latest status.
Users of information on this report are requested to submit Publication Report to JAMSTEC.

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