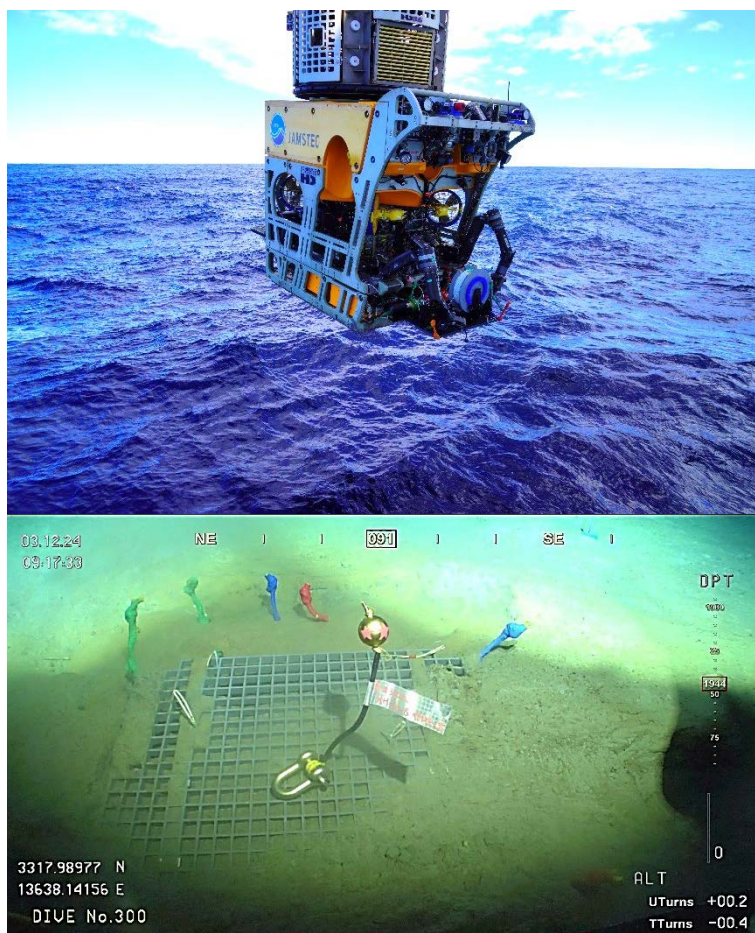




KM24-13 Cruise Report R/V Kaimei & KM-ROV

Real-time ocean bottom crustal movement observation



Kumanonada Sea, Off Kiisuido Strait
Nov. 17th, 2024 – Dec. 4th, 2024

R&D Group for Seafloor Observatory
R&D Center for Earthquake and Tsunami Forecasting
Research Institute for Marine Geodynamics
Japan Agency for Marine-Earth Science and Technology

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1. Cruise Information

Cruise ID:	KM24-13		
Name of vessel:	Kaimei		
Title of cruise:	Real time ocean bottom crustal movement observation		
Chief Scientist:	Affiliation	Duration	
Shuhei Nishida	JAMSTEC	Nov. 17 th – Dec. 4 th	
Boarding Scientist:	Affiliation	Duration	
Takashi YOKOBIKI	JAMSTEC	Nov. 17 th – Dec. 4 th	
Shuhei TSUJI	JAMSTEC	Nov. 17 th – Nov. 26 th	
Makiko SATO	Tohoku University	Nov. 17 th – Nov. 23 th	
Ryo KIMURA	Nippon Marine Enterprises	Nov. 17 th – Nov. 23 th	
Ryo OHYAMA	Nippon Marine Enterprises	Nov. 17 th – Dec. 4 th	
Yohei SUGIMOTO	Nippon Marine Enterprises	Nov. 17 th – Dec. 4 th	
Cruise period:	Nov. 17 th – Dec. 4 th		
Ports of departure / arrival:	JAMSTEC Yokosuka HQ / JAMSTEC Yokosuka HQ		
Research area:	Kumanonada Sea, Off Kiisuido Strait		

2. Research Proposal and Science Party

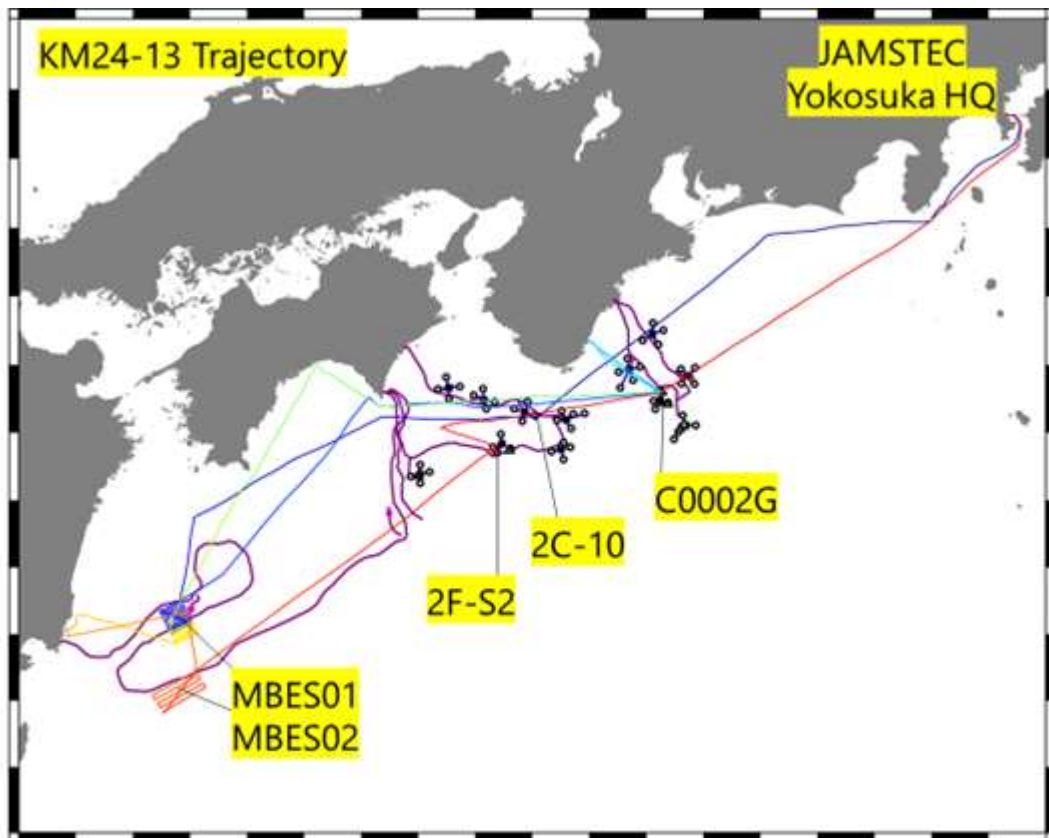
Science Party List:		
	Eiichiro ARAKI	JAMSTEC
	Takashi YOKOBIKI	JAMSTEC
	HiroYuki MATSUMOTO	JAMSTEC
	Shuhei NISHIDA	JAMSTEC
	Yuya MACHIDA	JAMSTEC
	Shuhei TSUJI	JAMSTEC
	Satoru BABA	JAMSTEC
	Takane HORI	JAMSTEC
	Shuichi KODAIRA	JAMSTEC
	Yusaku OHTA	Tohoku University
	Makiko SATO	Tohoku University

3. Activity and Results

This project has been carried out to develop technologies for observing crustal deformation of the seafloor using submarine cable-type observation networks, and to deploy the observation system.

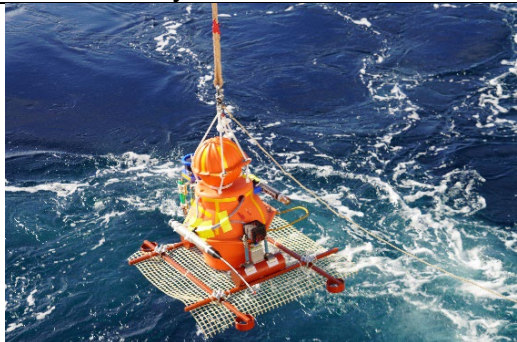
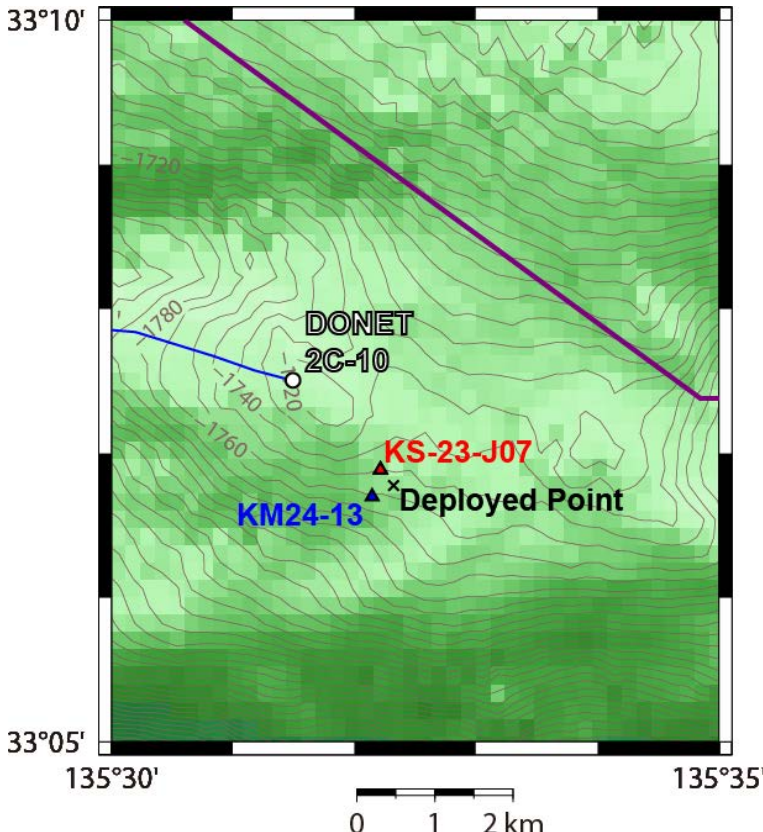
In this cruise, the following activities were carried out.

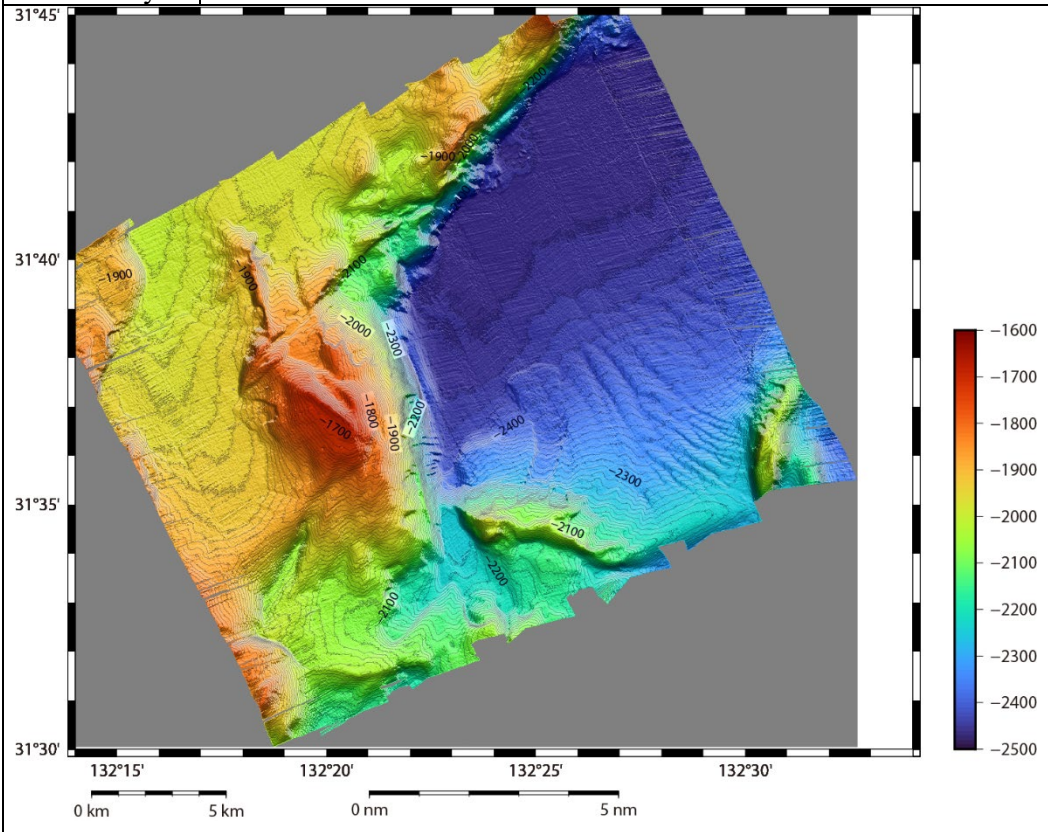
- A) The OBP with self-calibration function were recovered and installed near DONET observatory 2C-10.
- B) An optical fiber strainmeter was installed on the southward of the long-term borehole observation system C0002G and connected to the DONET submarine cable system to start on-line observation.
- C) The bottom pressure sensor was installed at crustal deformation observatory 2F-S2, and connected to DONET submarine cable system to start on-line observation.
- D) A preliminary survey (visual topographic and geological survey) was carried out for the deployment of a crustal movement observatory in the Hyuganada sea at two candidates in the area MBES01. One of the candidate points was not found to disturb the observation. The other candidate site was not suitable for crustal deformation observation because plastic wastes had drifted there.

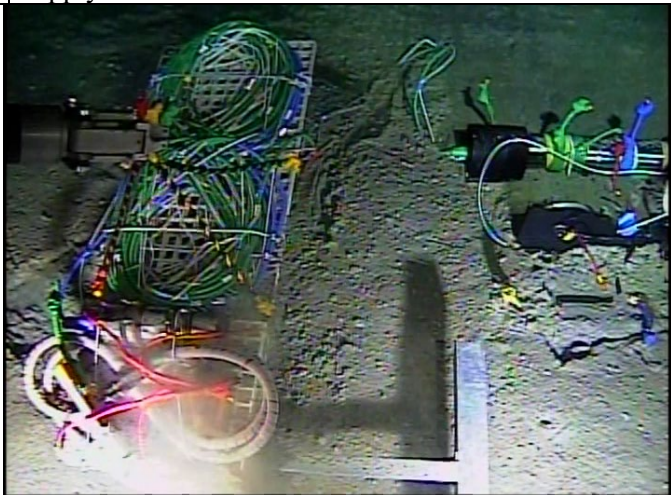
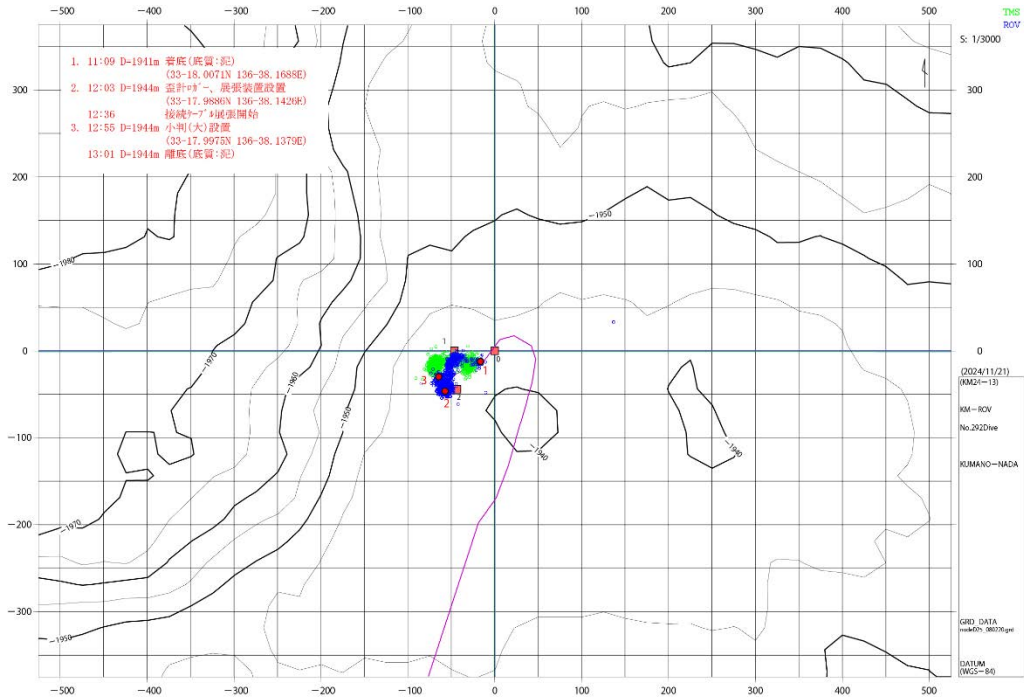


vessel tracks during KM24-13

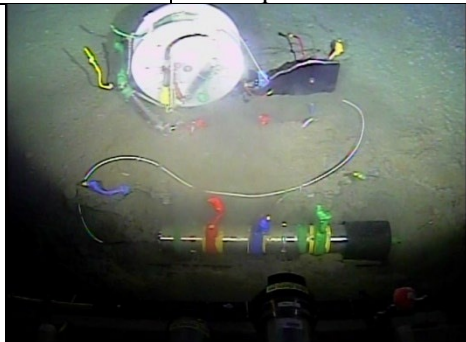
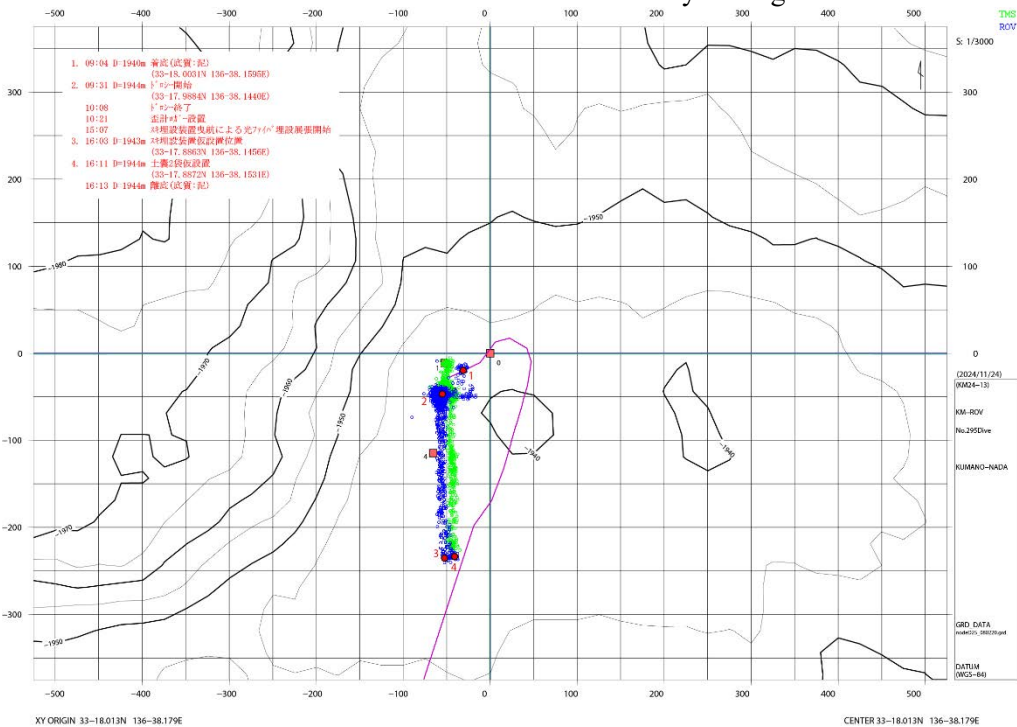
4. Operation & Dive Log

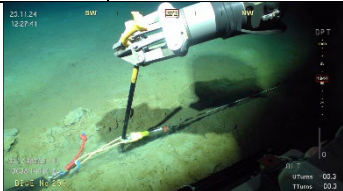
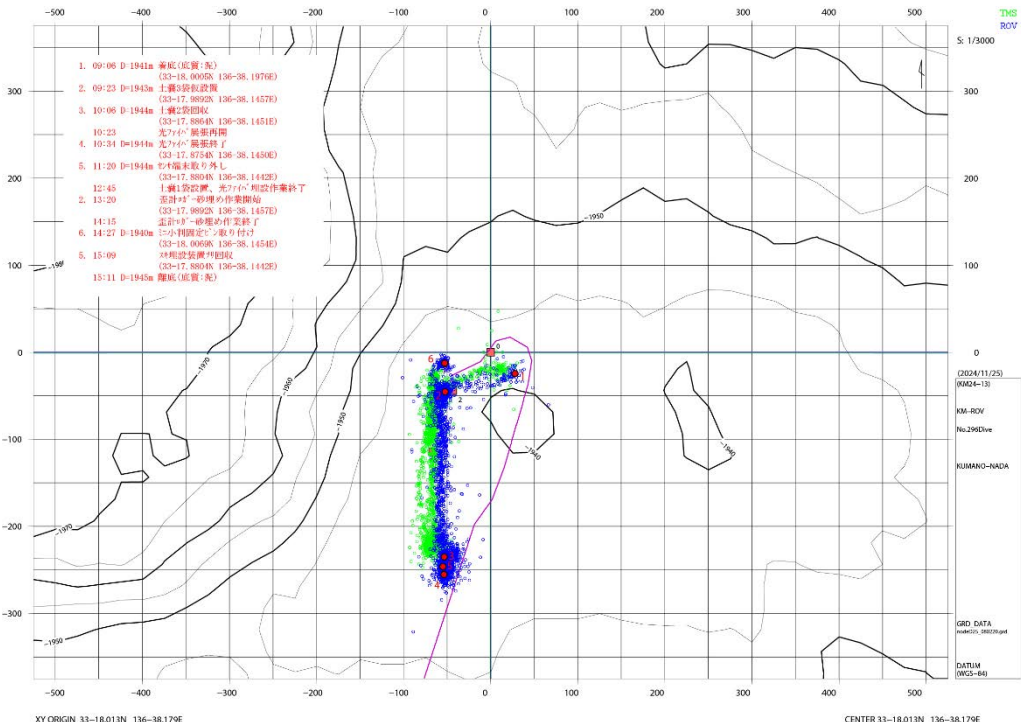
No	Date	Site	Working Time	Latitude	Longitude	Depth
1	2024/11/18	2C-10 OBP	08:30	33-06.8860 N	135-32.2130 E	1,750 m
		KS-23-J07	09:01	33-06.6149 N	135-31.9940 E	-
		2C-10 OBP	09:30	33-06.7773 N	133-32.3247 E	-
		KM24-13	11:47	33-06.6998 N	135-32.1452 E	1,760 m
	Work Summary	The OBP were recovered and the new OBP with self-calibration function installed near DONET observatory 2C-10.				
						
The OBP deployed in KS-23-J07 cruise floated from the seafloor to the surface.		A new OBP was deployed in this cruise KM24-13.ex				
						

No.	Date	Site	Staying Time	Latitude	Longitude	Depth
2	2024/11/18	MBES#01	Nov.18th 06:27	31-44.8774 N	132-25.4141 E	-
			Nov. 19th 06:22	31-44.4220 N	132-24.2774 E	-
	Work Summary	A bathymetric survey was carried out using MBES.				
						

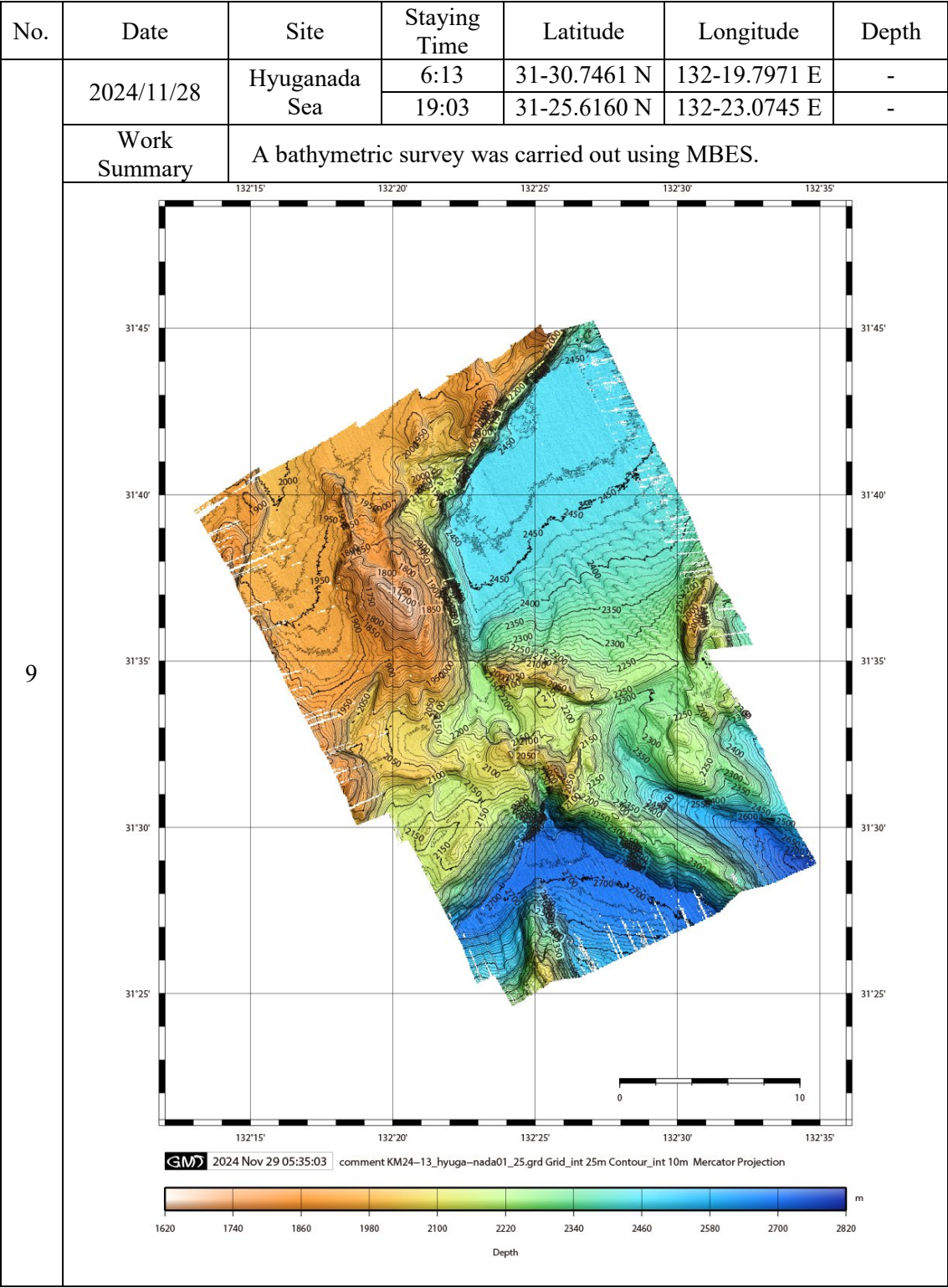
No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
	2024/11/21 KM-ROV292	C0002G	11:09	33-18.0071 N	136-38.1688 E	1941 m
			13:01	33-17.9975 N	136-38.1379 E	1944 m
	Work Summary	The ROV deployed temporarily an optical fiber strainmeter on the southward of the long-term borehole observation system C0002G. And then, the ROV deployed 30 meters of cable for communication & power supply toward C0002G.				
						
3	 1. 11:09 D=1941m 管底(底質:泥) (33-18.0071N 136-38.1688E) 2. 12:03 D=1944m 管中#3-, 展張装置設置 (33-17.9886N 136-38.1426E) 3. 12:36 接続#7-19展張開始 13:01 D=1944m 管底(底質:泥) (33-17.9975N 136-38.1379E) 2024/11/21 (WGS-13) KM-ROV No.292Dive KUMANO-NADA GRID DATA (mode:CH, 3600x1000) DATUM (WGS-84) XY ORIGIN 33-18.013N 136-38.179E CENTER 33-18.013N 136-38.179E					

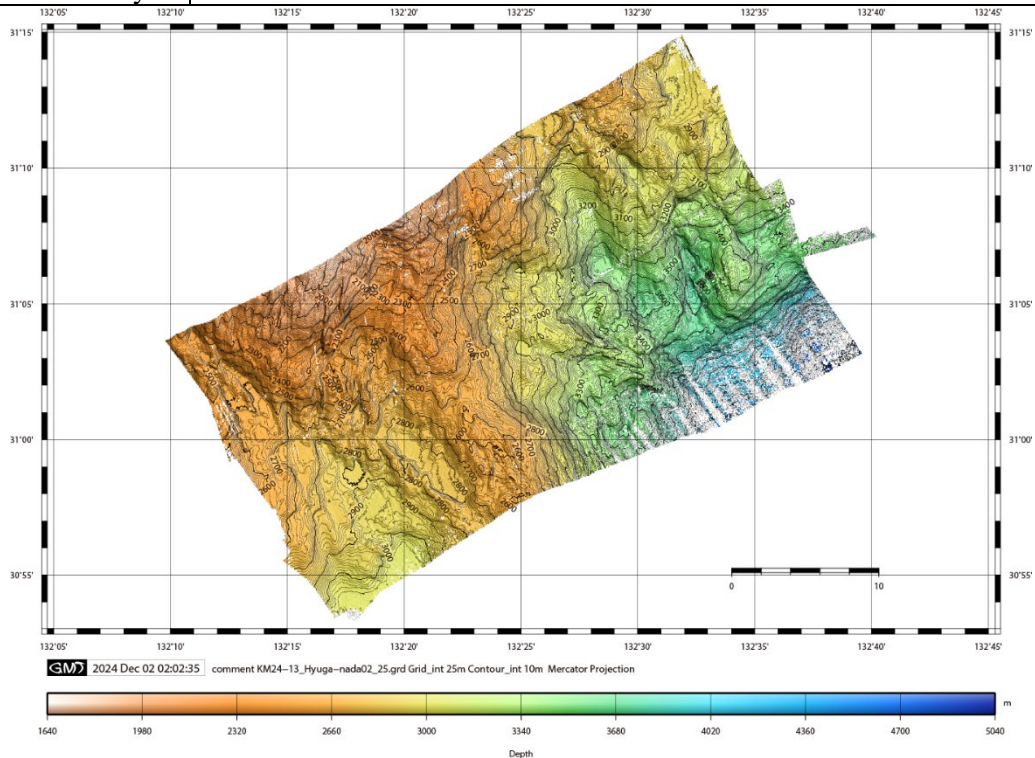
No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
	2024/11/22 KM-ROV293	C0002G	09:09	33-18.0229 N	136-38.1658 E	1941 m
			09:45	33-17.9966 N	136-38.1308 E	1943 m
	Work Summary	The ROV removed a plastic bag that had trapped in an installed instrument in previous dive. After that, the operation was aborted because of communication problems with the ROV.				
22.11.24 09:25:18 SE 150 S DPT 1900 1943 50 75 0 3317.99611 N 13638.13828 E DIVE No.293 ALT 00.6 UTurns -00.6 TTurns +00.6 4 1. 09:09 D-1941m 音底(底質:泥) (33-18.0229N 136-38.1658E) 2. 09:45 D-1943m 離底(底質:泥) (33-17.9966N 136-38.1308E) XY ORIGIN 33-18.013N 136-38.179E CENTER 33-18.013N 136-38.179E S: 1/3000 (2024/11/22) (NM24-13) KM-ROV No.293Dive NUMANO-NADA GRID DATA datum: WGS84 DATUM (WGS-84)						

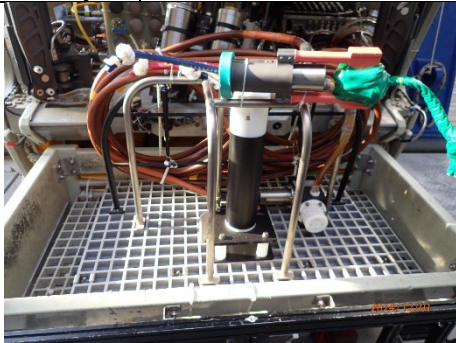
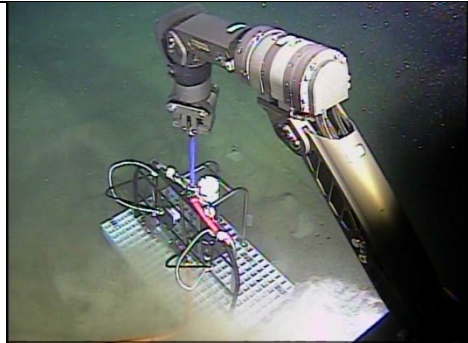
No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
6	2024/11/24 KM-ROV295	C0002G	09:04	33-18.0031 N	136-38.1595 E	1940 m
			16:13	33-17.8872 N	136-38.1531 E	1944 m
	Work Summary	The ROV put the fiber optic strainmeter logger (cylinder hull) into the trench created by removing the sediment, and then laid 185/200 m of fiber optic sensor cable.				
						
Logger was put into the Trench.			Laying optical fiber cables under the sediment by towing drums with cables.			
						

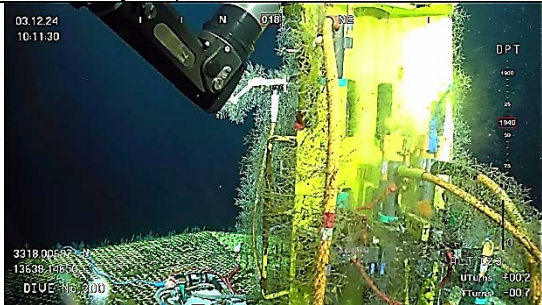
No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
	2024/11/25 KM-ROV296	C0002G	09:06	33-18.0005 N	136-38.1976 E	1941 m
			15:11	33-17.8804 N	136-38.1442 E	1945 m
	Work Summary	After laying the remaining 15 m of optical fiber, the ROV was anchored at the terminal to the seafloor. Then, the strainmeter logger was backfilled with sand.				
   The strainmeter logger was backfilled with sand from several sandbags. The terminal unit of the sensor cable was anchored to the sediment with stakes.						
7						

No.	Dive Number	Site	Staying Time	Latitude	Longitude	Depth
	2024/11/27 KM-ROV297	Hyuganada Sea	09:14	31-35.2645 N	132-19.5266 E	1864 m
	12:50		31-35.3610 N	132-19.6313 E	1860 m	
	Work Summary	In this visual survey of 300m x 4Lines, the seafloor was smooth as shown in the photo throughout the whole area.				
8	27.11.24 09:45:17 3135.25991 N 13219.58418 E DIVE No.297 119 SE DPT 25 50 1863 75 1900 0 ALT 01.0 UTurns TTurns 1. 09:14 D=1864m 船底(船首:底) (31-35.2645N 132-19.5266E) 2. 09:32 D=1864m 船底支持力調査(貫入長:90cmMAX) (31-35.2728N 132-19.5629E) 3. 09:42 1本目調査開始 4. 10:17 D=1870m 1本目調査終了 (31-35.1942N 132-19.7527E) 5. 10:19 船底支持力調査(貫入長:90cmMAX) (31-35.2162N 132-19.7529E) 6. 11:03 D=1863m 2本目調査開始 (31-35.3012N 132-19.6802E) 7. 11:07 船底支持力調査(貫入長:90cmMAX) (31-35.3267N 132-19.6868E) 8. 11:26 D=1859m 3本目調査開始 (31-35.2470N 132-19.7704E) 9. 12:02 船底支持力調査(貫入長:90cmMAX) (31-35.2758N 132-19.7899E) 10. 12:41 D=1800m 4本目調査終了 (31-35.3610N 132-19.6313E) 11. 12:47 船底支持力調査(貫入長:90cmMAX) 12. 12:50 船底(船首:底) XY ORIGIN 31-35.270N 132-19.540E CENTER 31-35.270N 132-19.540E					



No.	Date	Site	Staying Time	Latitude	Longitude	Depth
11	2024/11/30	Hyuganada Sea	Nov.30th 19:47	31-13.2999 N	132-32.7526 E	-
			Dec. 1st 16:35	32-30.6228 N	134-35.8452 E	-
	Work Summary	A bathymetric survey was carried out using MBES.				
						

No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
12	2024/12/02 KM-ROV299	2F-S2	09:27	32-53.7975 N	135-11.0301 E	2305 m
			11:25	32-53.8146 N	135-11.0287 E	2305 m
	Work Summary	The Bottom Pressure Sensor was deployed at 2F-S2 and start on-line observation.				
  1. 09:27 D=2305m 着底(底質:泥) (32-53.7975N 135-11.0301E) 2. 10:25 D=2307m 水圧計接続 (32-53.8146N 135-11.0287E) 3. 10:45 D=2307m 水圧計設置 ホーミング完了(ID10 & ID37) (32-53.8164N 135-11.0403E) 4. 11:25 D=2305m 水圧計接続確認終了 (32-53.8146N 135-11.0287E) 11:25 離底(底質:泥) XY ORIGIN 32-53.785N 135-11.030E CENTER 32-53.802N 135-11.031E (2024/12/02) (09:27-13) KM-ROV No.299Dive NO-SUBDC-CHK 2F-S2 GEO DATA (32-53.7975N 135-11.0301E) DATUM (WGS-84)						

No.	Date Dive Number	Site	Staying Time	Latitude	Longitude	Depth
13	2024/12/03 KM-ROV300	C0002G	09:06	33-18.0183 N	136-38.1727 E	1940 m
			10:34	33-18.0061 N	136-38.1538 E	1943 m
	Work Summary		Unused jumper cable was recovered for reuse in the future.			
03.12.24 10:11:30  3318.0061N 13638.1538E DIVE 300 DPT 1940						

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.

<http://www.godac.jamstec.go.jp/darwin/explain/1/e#report>
E-mail: submit-rv-cruise@jamstec.go.jp