



Shinsei-maru Cruise Report KS-23-J06C

DONET maintenance

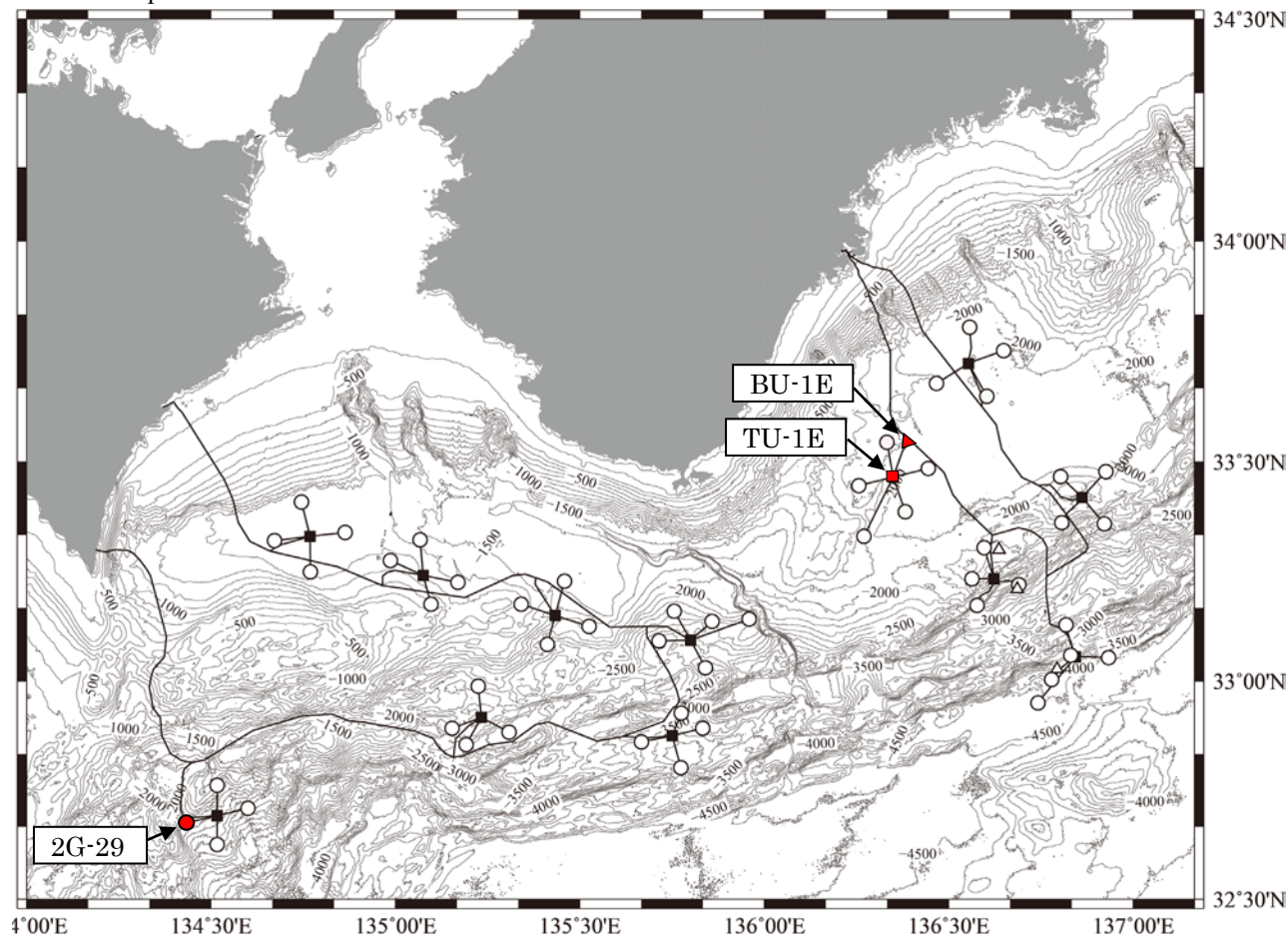
Kumano-nada
Off Kii-channel

May. 17, 2023- May. 26, 2023

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

1. Cruise Information

- Cruise ID KS-23-J06C
- Name of vessel R/V Shinsei-maru
- Title of cruise DONET Maintenance
- Chief Scientist [Affiliation] Takashi YOKOBIKI [JAMSTEC]
- Cruise period 17-May. 2023 – 26 May. 2023
- Ports of departure / arrival JAMSTEC Yokosuka – Wakayama port
- Research map



ODONET observatory Δ Long term borehole Monitoring System

Observatory No.	Latitude	Longitude	Depth [m]
TU-1E	33-27.899°N	136-20.979°E	1,984
BU-1E	33-31.956°N	136-22.928°E	2,010
2G-29	32-40.514°N	134-26.004°E	2,141

2. Research Proposal and Science Party

- Title of proposal DONET Maintenance
- Representative of Science Party Takane HORI [JAMSTEC]
- Science Party (List) Takashi YOKOBIKI [JAMSTEC]
Takeshi KATAYAMA [JAMSTEC]
Masayuki TOIZUMI [NME]
Masanori MURAKAMI [NME]
Yousuke KAWAMURA [NME]

3. Dive summary

3.1 DIVE#2208 on 22 May 2023: Inspection of Termination Unit 1E.

In this dive, the visual inspection of Termination Unit 1E (TU-1E) was conducted. The ROV Hyper Dolphin started dive at 13:28 and arrived at TU-1E at 14:47. The overall main body of TU-1E was covered in patina, and by using a small camera through the maintenance hole, it was conformed that the high-voltage type bulkhead connector was also covered in patina. The visual inspection was ended at 15:28. Miniature transponders ID 31 and ID 70 were collected, and The ROV lefted seafloor at 15:34.



Photo 3.1-1 Termination Unit 1E



Photo 3.1-2 Checking the bulkhead connector.



Photo 3.1-3 High-voltage bulkhead connector

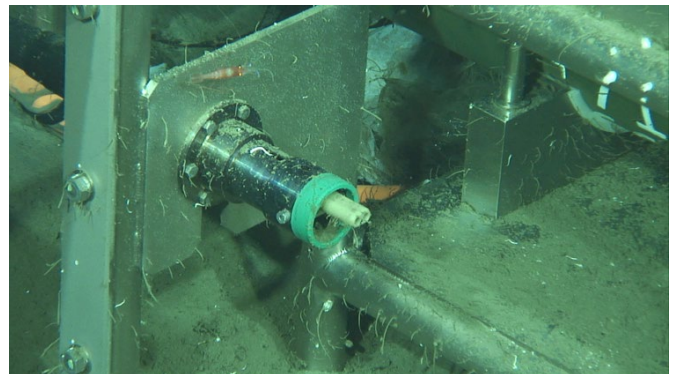


Photo 3.1-4 Damaged Underwater mateable connector

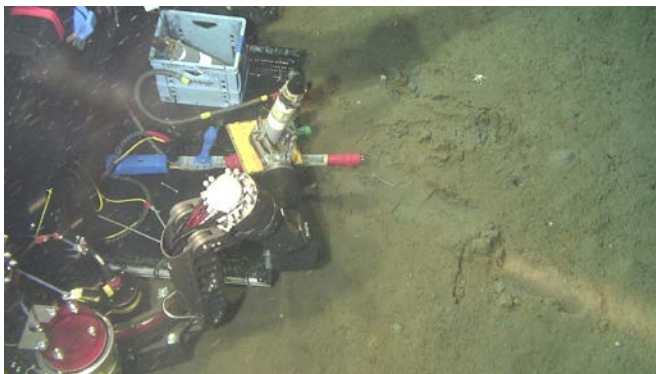


Photo 3.1-4 Recovered miniature transponder.

3.2 DIVE#2209 on 23 May 2023: Inspection of Termination Unit 1E.

The visual inspection of TU-1E was carried out from different angle than the one in Dive#2208. The ROV started dive at 8:33, and landed on seafloor at 9:41. At First, we attempted to check the high-voltage bulkhead connector through the other maintenance hole, but we gave up on the inspection because debris, including rope, had accumulated near the maintenance hole. Next, the ROV landed around the TU and conducted the inspection of the main body. At last, we checked both side of the submarine cable, the ROV leaved the seafloor at 12:20.



Photo 3.2-1 Debris near the maintenance hole



Photo 3.2-2 Main body of TU-1E (Offshore side)

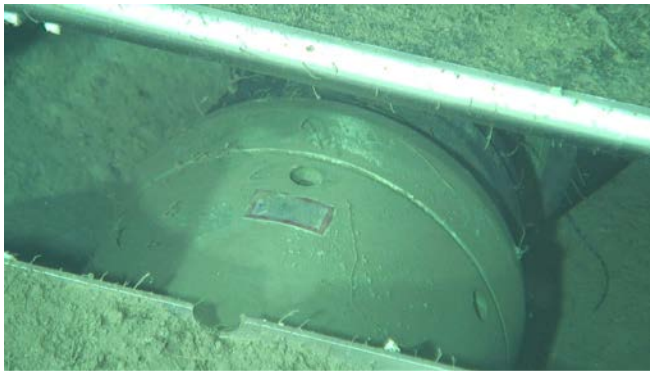


Photo 3.2-3 Main body of TU-1E (Land side).

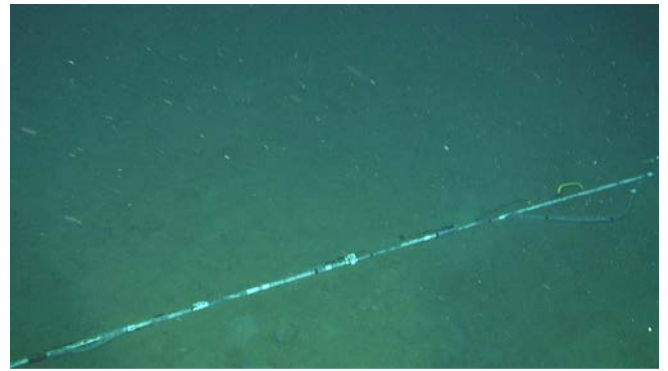


Photo 3.2-4 Submarine cable near TU-1E (Land side)

3.3 Dive#2210 on 24 May 2023: Inspection of Branching Unit 1E

The visual inspection of Branching Unit 1E (BU-1E) was conducted to check the submarine cable near the BU-1E. The ROV started dive at 8:27, and landed on seafloor at 9:45. We found two branch side cable at 10:33, and the ROV moved along the cable to find the BU-1E at 10:40. The position of BU-1E is as follows.

Lat. 33-31.9482N Long. 136-22.9070E Depth:2,007m

Total 150m long laid cable was checked and we confirmed that the cable was laid normally except brunch side of looped cable.



Photo 3.3-1 Branch cable



Photo 3.3-2 BU-1E

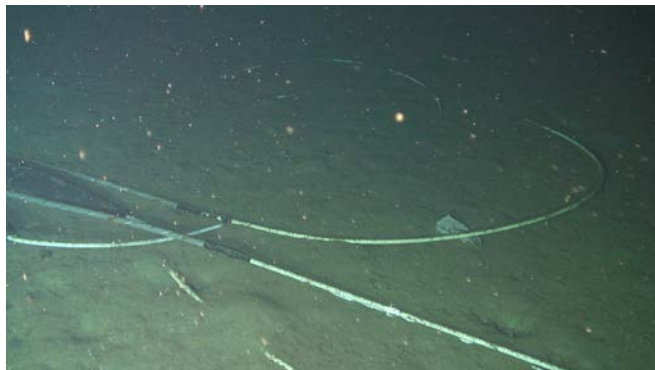


Photo 3.3-3 Looped cable at brunch side



Photo 3.3-4 Universal Joint (branch cable)

3.4 Dive#2211 on 25 May 2023: DONET Sensor unit recovery at the Observatory Site 2G-29.

In this dive, the DONET Sensor unit that consists of the ground motion sensing system and the pressure sensor package was recovered due to the trouble in the wide band seismometer. The pressure sensor package is linking with the ground motion sensing system by a cable, and the extension cable from the science node and the cable from the battery equipment connected to the pressure sensor package by using underwater mateable connectors (UMC). After landing on the seafloor, the ground motion sensing system was pulled out from the caisson and then the connectors for extension cable and the battery equipment were pulled out. After that, the rope for recovery was hooked on the ground motion sensing system and the pressure sensor package respectively. Lastly, the ROV Hyper-Dolphin left the seafloor at 15:20.

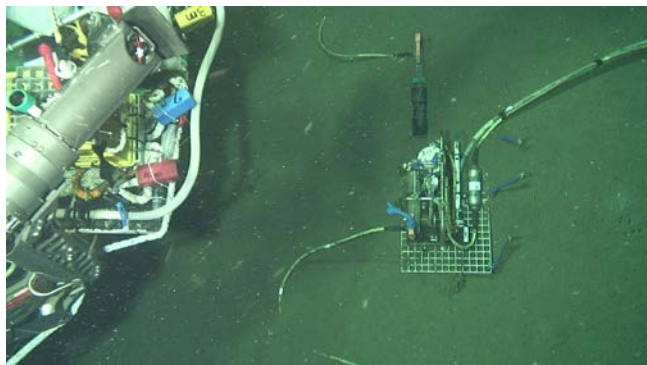


Photo 3.4-1 Pressure sensor package

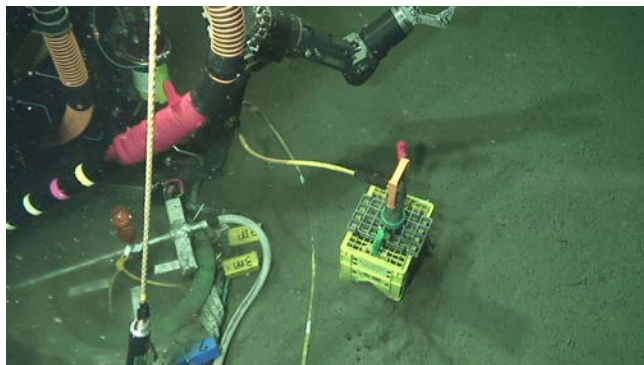


Photo 3.4-2 UMC (Extension cable)

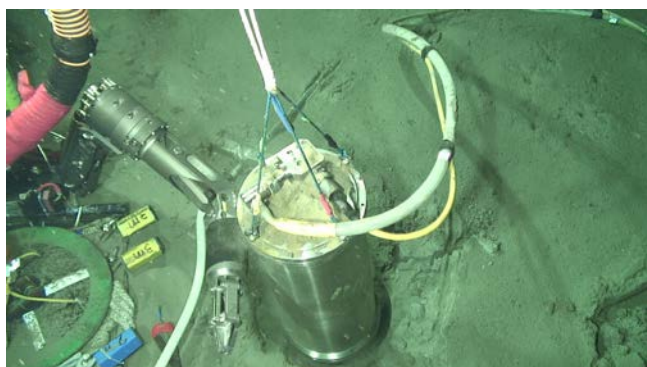


Photo 3.4-3 ground motion sensing system

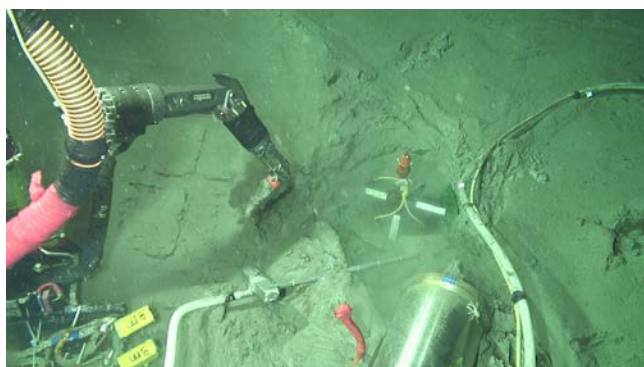


Photo 3.4-4 Put the lid on the hole

4. Notice on Using

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