



Kaimei Cruise Report KM20-01

Development of continuous real-time observation system for
crustal deformation

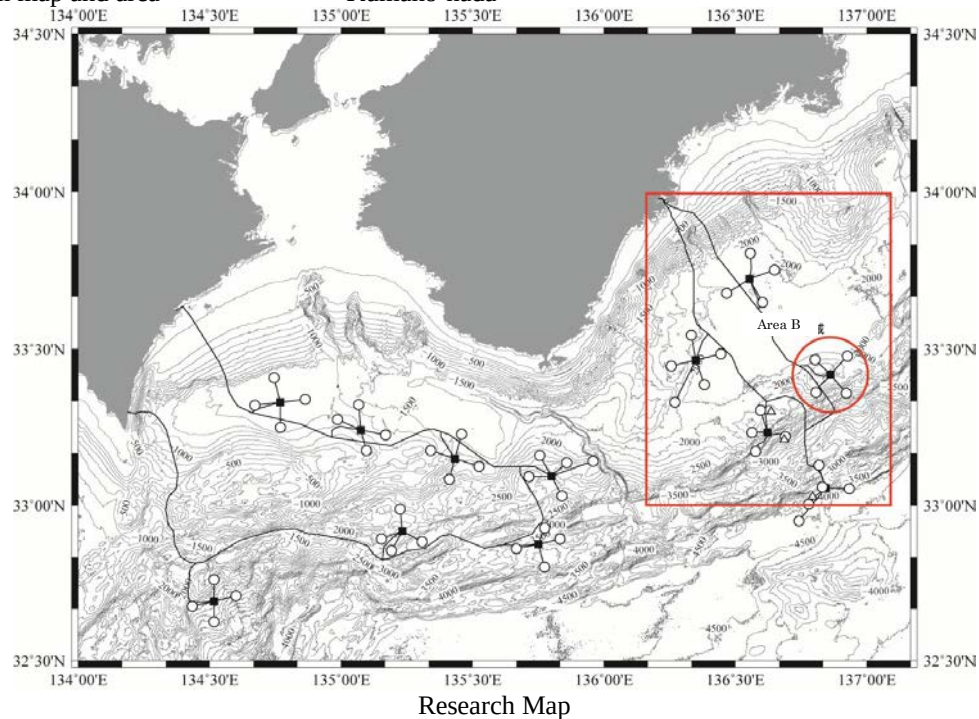
Kumano-nada

2-10 February 2020

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

1. Cruise Information

- Cruise ID KM20-01
- Name of vessel R/V Kaimei
- Title of cruise Development of continuous real-time observation system for crustal deformation
- Chief Scientist [Affiliation] Takashi YOKOBIKI [JAMSTEC]
- Cruise period 2 February 2020 – 10 February 2020
- Ports of departure / call / arrival JAMSTEC Yokosuka – JAMSTEC Yokosuka
- Research map and area Kumano-nada



Research Map

2. Research Proposal and Science Party

- Title of proposal: Development of continuous real-time observation system for crustal deformation
- Representative of Science Party
 - Shuichi KODAIRA [JAMSTEC]
 - Takashi YOKOBIKI [JAMSTEC]
 - Toshinori KIMURA [JAMSTEC]
 - Matthew James Cook [JAMSTEC]
 - Toshikatsu NASU [NME]
 - Akie SUZUKI [NME]
- Science Party

3. Research/Development Activities

3.1 BMS#11 on 3 February 2020: Abort the dive.

In this dive, Large Diameter Drilling operation was planned to install the tiltmeter into the seabed. But the dive was aborted due to the mechanical trouble was occurred in the pre-check sequence. It was found that the maximum water flow was too small to drill.

3.2 BMS#12 on 4 February 2020: Large Diameter Drilling operation.

Drilling operation was conducted to construct the borehole for the tiltmeter. The BMS landed at 33-23.332N 136-53.727E where the depth is 1,883m. The BMS started drilling operation at 11:21 using the customized drilling tools. When the drilling depth was 10.268m, the one of the hydraulic hoses was burst and the Oil Reservoir Level of the BMS became less than 60 %. So, we decided to abort the drilling.

3.3 KM-ROV#108 on 7 February 2020: Mortar placement

In this dive, the Mortar placement was carried out on the seabed in the mortar site where is approximately 300m away the borehole BMS#12. At first, KM-ROV landed at point-1 in Fig.3-1 and put on a marker on the seabed to identify the placement position. The hose was paid out at 9:30 and the mortar was placed at 10:02 by opening the cable-end-valve. After all mortar was pumped out at altitude 6m, the hose was cut and laid on the seabed. We checked the mortar placement area and confirmed that it was placed as expected. Miniature transponder ID:30 was put on near the mortar area and KM-ROV moved to borehole BMS #12. Miniature transponder ID:55 was put on near the borehole BMS#12 at point-2 in Fig.3-4. KM-ROV leaved at 11:22.

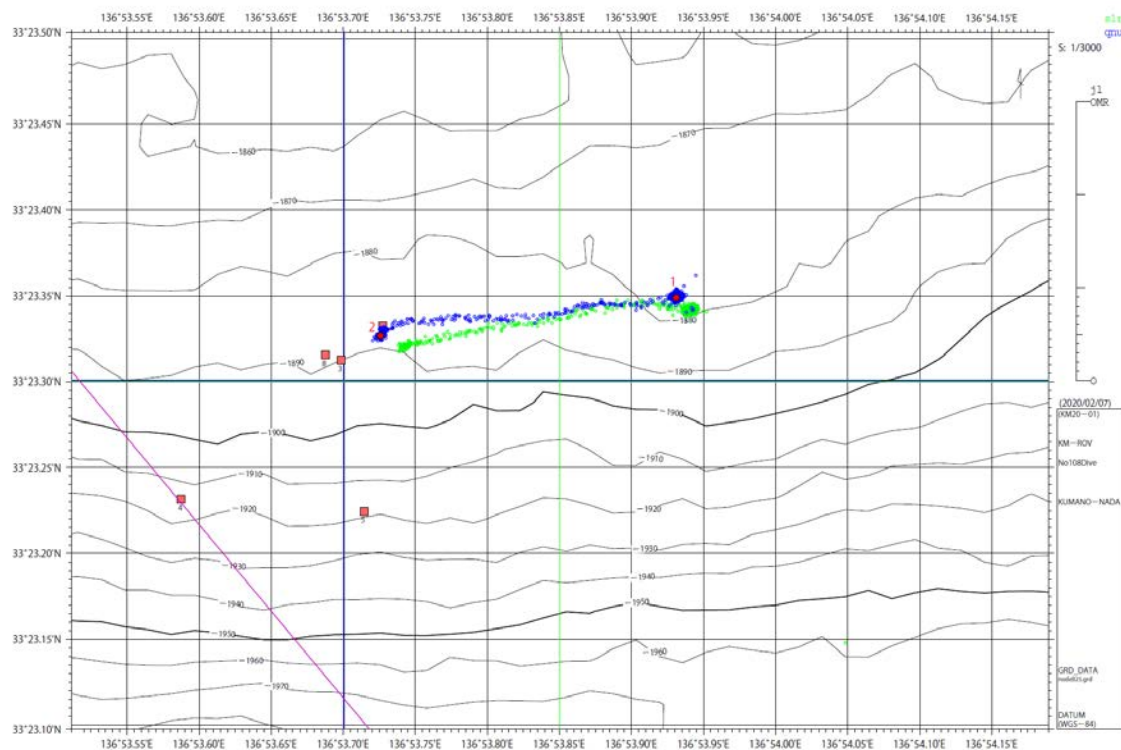


Fig.3-1 Trace line of KM-ROV Dive#108

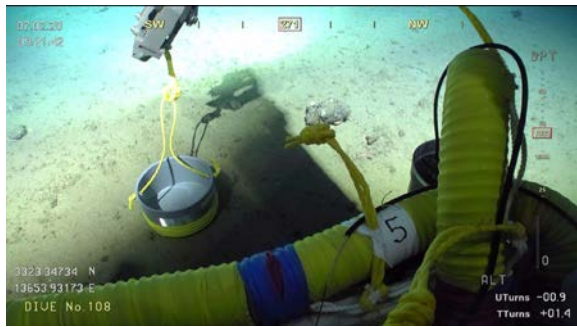


Fig. 3-2 mortar marker

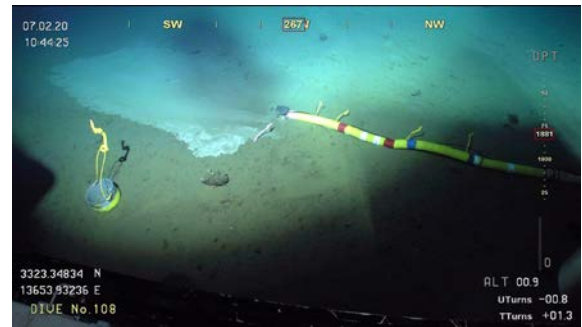


Fig. 3-3 Mortar placement area

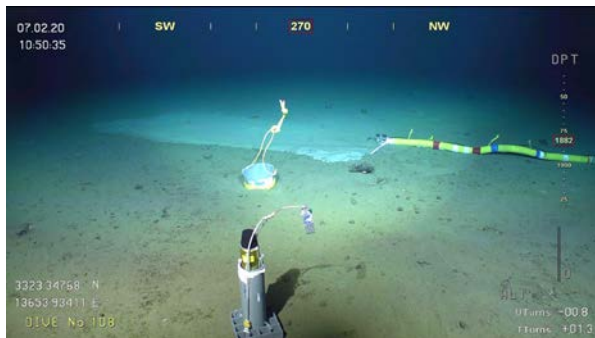


Fig.3-4 Miniature transponder ID:30



Fig. 3-5 Borehole BMS#12

3.4 KM-ROV#109 on 8 February 2020: confirm the next drilling point.

We had to point the next drilling area due to the large diameter drilling was quit in this cruise. KM-ROV landed at point-1 in Fig.3-6 and pick up the mortar marker, and she moved to point-3 in Fig.3.6 where is borehole BMS#12. In the point-3, we checked the cuttings of the borehole. After that, KM-ROV moved to point-4 and recovered the miniature transponder ID:65 that was the one of the identify the borehole BMS#7. She moved from point-4 to point-7 to check the seabed. In the point-5 and point-6, we found the bumps on the seabed and the other area was flat and sandy. KM-ROV rise up at 11:14.

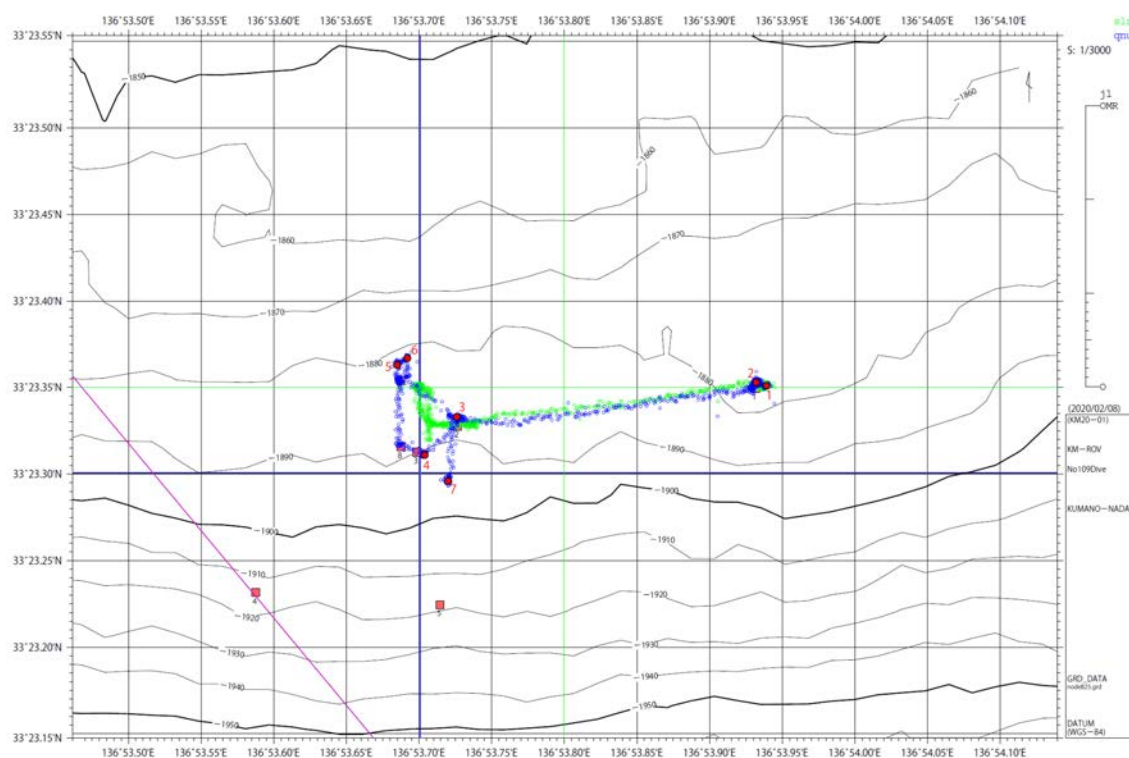


Fig.3-6 Trace line of KM-ROV Dive#109



Fig. 3-7 Cuttings of borehole BMS#12



Fig. 3-8 Recovered miniature transponder ID:65

4. 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.

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