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Shinsei-Maru + Hyper Dolphin 4500
KS-18-J06

Observation Project on wide area variation of ocean floor for building national resilience for development of continuous real time ocean bottom crustal deformation observation technique and Long Term Borehole Monitoring System

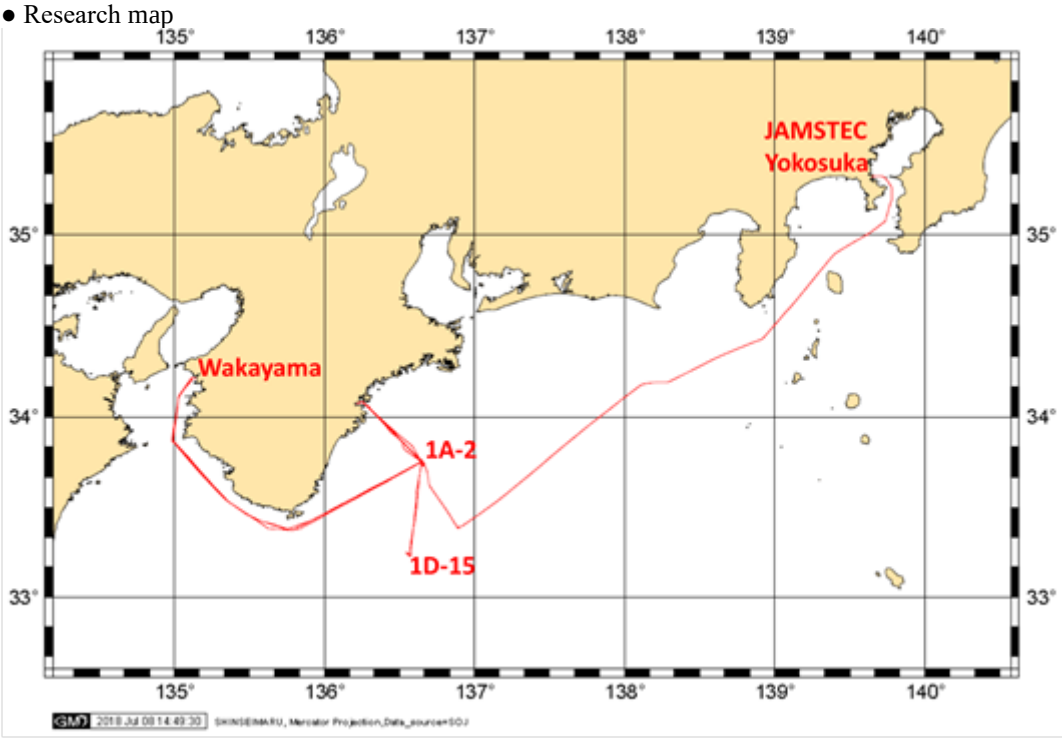
Off Kii Suido & Kumano-nada

Jun. 23rd, 2018 - Jul. 8th, 2018

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

1. Cruise Information

● Cruise ID: KS-18-J06
● Name of vessel: Shinsei-maru
● Title of cruise: Observation Project on wide area variation of ocean floor for building national resilience for development of continuous real time ocean bottom crustal deformation observation technique and Long Term Borehole Monitoring System
● Chief Scientist [Affiliation]: Shuhei Nishida [JAMSTEC]
● Cruise period: June 23rd, 2018 - July 8th, 2018
● Ports of departure / call / arrival: Wakayama/Wakayama/JAMSTEC Yokosuka
● Research area: off Kii-suido, Kumano-nada
● Research map



2. Research Proposal

JAMSTEC has been implementing the " Observation Project on wide area variation of ocean floor for building national resilience" since FY2007 in order to achieve the national mission of toughening the national land, securing people's safety and security.
In this project, (1) development and deployment of ocean bottom crustal deformation observation technology based on the submarine cabled observation and monitoring system for earthquake and tsunami (DONET), using a pressure gauge, an inclinometer, a long-term in-hole observation device installed in a borehole of "CHIKYU" deployed in the Nankai Trough.
(2)Possible to cause Nankai Trough segment areas and tsunami earthquakes that are important for inter laboratory evaluation using "Kaimei" wide-range research vessel with state-of-the-art three-dimensional seismic survey system High-precision wide area survey of seabed active faults in the sea-side Japan trench outer rise area, etc. ③ Develop and evaluate more realistic simulation and transition prediction methods incorporating the new survey and observation results obtained in ① and ② I am doing it. By doing this, we will advance the precision of the occurrence prediction of the huge earthquake (evaluation of urgency, estimation of occurrence scale / distribution). Also, we will try to improve the precision of immediate tsunami flood prediction by accurately estimating the seismogenic region, its scale and the source of the tsunami immediately after the earthquake. Through these efforts, we aim to realize disaster prevention and disaster reduction.

3. Activities and Results

① Activities

The purpose of this cruise is the real time sea floor observation for crustal deformation based on submarine cabled monitoring system for the earthquake and tsunami (DONET) deployed in the Nankai Trough using pressure gauges, inclinometers and borehole observation system.

- evaluation of in-situ calibration　pressure gauge of DONET using the mobile pressure calibrator and the installation of benchmark to be observation platform
- valve operation for calibrating pressure gauge of C0006 observation
- Soil mechanics survey to select observation point construction candidate points for installation of crustal deformation sensor by BMS.

② Results

- In this cruise, the benchmarks for measurement of mobile pressure calibrator deployed at 1A-2 and 1D-15 shown in Figure 3-1.

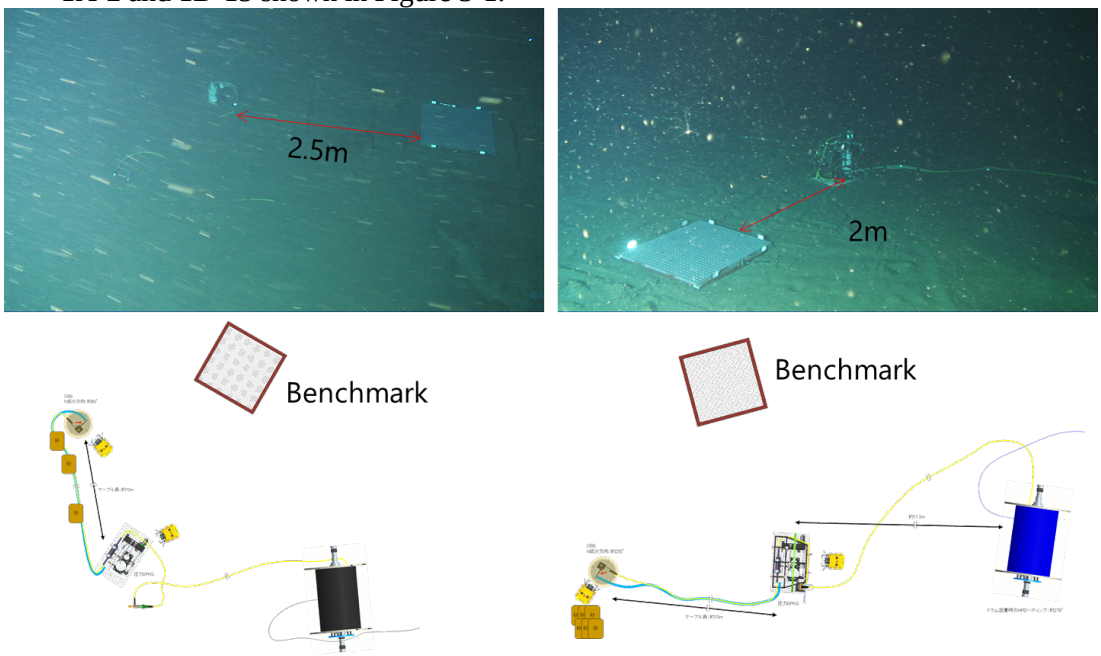


Fig. 3-1 Layout of Benchmarks

- The points for operating the BMS was selected by soil mechanics survey near the observatory 1B-6 shown in Fig.3-2.

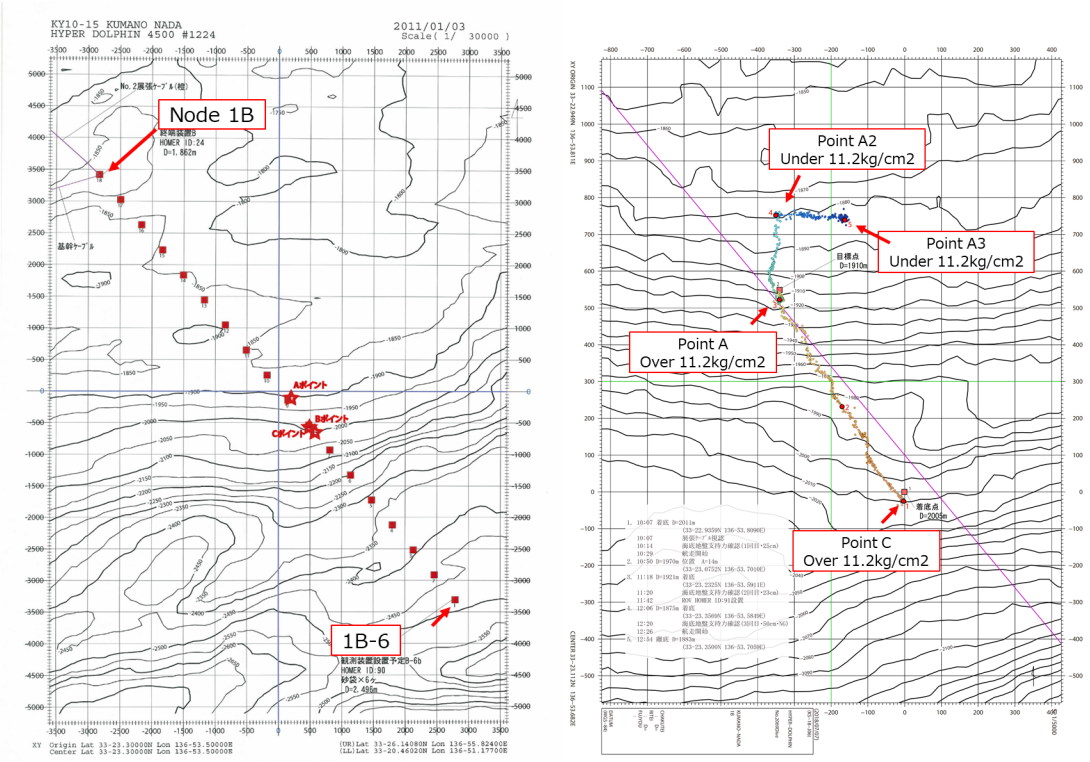


Fig.3-2 Results of soil mechanics survey

○ 4. HPD Dive Log

Table 1 Dive Summary

No.	Dive Num. Date	Dive Point	Arrival Time Departure Time	Latitude Latitude	Longitude Longitude	Depth Depth	Work
01	HPD#2065 2018/06/26	1A-2	09:59	33-45.1433N	136-38.9859E	2,010m	Deploy a Benchmark near the pressure sensing system at 1A-2
			10:36	33-45.1415N	136-38.9327E	2,010m	
02	HPD#2067 2018/06/28	1D-15	15:45	33-14.0260N	136-33.7838E	1,906m	Deploy a Benchmark near the pressure sensing system at 1D-15
			16:24	33-13.9849N	136-33.7883E	1,906m	
03	HPD#2068 2018/07/02	1A-2	12:33	33-45.1399N	136-38.9937E	2,010m	Confirm the handing of mobile pressure calibrator using ROV.
			12:44	33-45.1399N	136-38.9937E	2,010m	
04	HPD#2069 2018/07/07	DONET 1B-6	10:07	33-22.9359N	136-53.8090E	2,011m	Measure a soil mechanics of sediment
			12:54	33-23.3500N	136-53.7059E	1,883m	

● 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.
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