

Cruise Summary

1. **Cruise number/ship name** : KY08-03/Kaiyo
2. **Title of the cruise** : Survey cruises for development of oceanfloor network system for earthquakes and tsunamis
Representative of scientific proposal/affiliation/proposal number : Yoshiyuki Kaneda/JAMSTEC/J08-19
3. **Chief Scientist/affiliation** : Leg1 Hiroyuki Matsumoto/JAMSTEC
Leg2 Atsushi Sakuma/JAMSTEC
Leg3 Eiichiro Araki/JAMSTEC
4. **Onboard Scientists**: Shin'ichiro Kamiya, Sho Kaneko, Akira So, Tamami Ueno, Hiroyuki Hayashi, Ei Hatakeyama, Naohito Mori, Toru Kodera, Tetsushi Maki
5. **Investigation Area** : Off Kumano
6. **Period of the cruise** : 2008/04/04-2008/05/07

Background and summary of the research

Since 2006, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has started to develop a new dense network system by using sub-marine cable off Kii-peninsula, where the last mega-thrust earthquake named Tonankai earthquake was took place in 1944. The Headquarters for Earthquake Research Promotion in the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has estimated that the probability of the next Tonankai earthquake is 60 to 70 % in the next 30 years, because the recurrent interval of the plate boundary earthquake is approximately 100 to 150 years there. Thus, the offshore seismic monitoring system for the forthcoming Tonankai earthquake is urgently needed to mitigate future disasters form the earthquake and resulting tsunami.

We conducted KY08-03 cruise by using R/V Kaiyo for approximately one month as the first survey of this fiscal year. Following the desktop study, we carried out route and site survey in the Kumano Trough, where the network system will be deployed next year. 34 line in total both along the backbone and the link cables are visually surveyed by Deep Tow camera system. Surveys along the link cable have been finished, except for seven survey lines. Among them left in the present survey, we consider that we don't need to do further survey in particular the Kumano Trough, because its topography is very flat and the bottom is covered by deep sediment. All of link cable route including detoured route we surveyed in the present survey are possible to deploy thin and long cable. As for the backbone cable, we focused on the cable route passing through the northern edge of the Kumano Trough and the transition of the cable type near the Nankai Trough (see Fig. 1). Although some steep cliffs have been found along the backbone cable route in the northern edge of the Kumano Trough, we could find new route detouring cliffs by the end of the survey. Visual surveys of power supply route in the areas B and D, however, still remains.

During the camera survey in D area, Deep Tow system was captured by something in the deep sea. The cutter attached above Deep Tow vehicle was also broken. We tried to remove the obstacle in the deep sea by five dives as done in YK07-E02 cruise. We could remove nothing at all in the present cruise.

During the KY08-03 cruise, we carried out installation of the benchmark in addition to the route survey (see

Fig. 2). We have improved sediment catcher system of the benchmark from the originals employed in KR07-15 cruise. We tried to deploy the benchmark in areas A and B. Because surface sediment in area B is harder than that in area A, the benchmark could not be deployed under the bottom in area B. In this cruise, we deployed one benchmark in area A, i.e., the central Kumano Trough. We realize that we need to improve benchmarks itself in the future. We will deploy the seismic sensor unit inside the benchmark deployed this by using ROV Hyper Dolphin survey in this September.

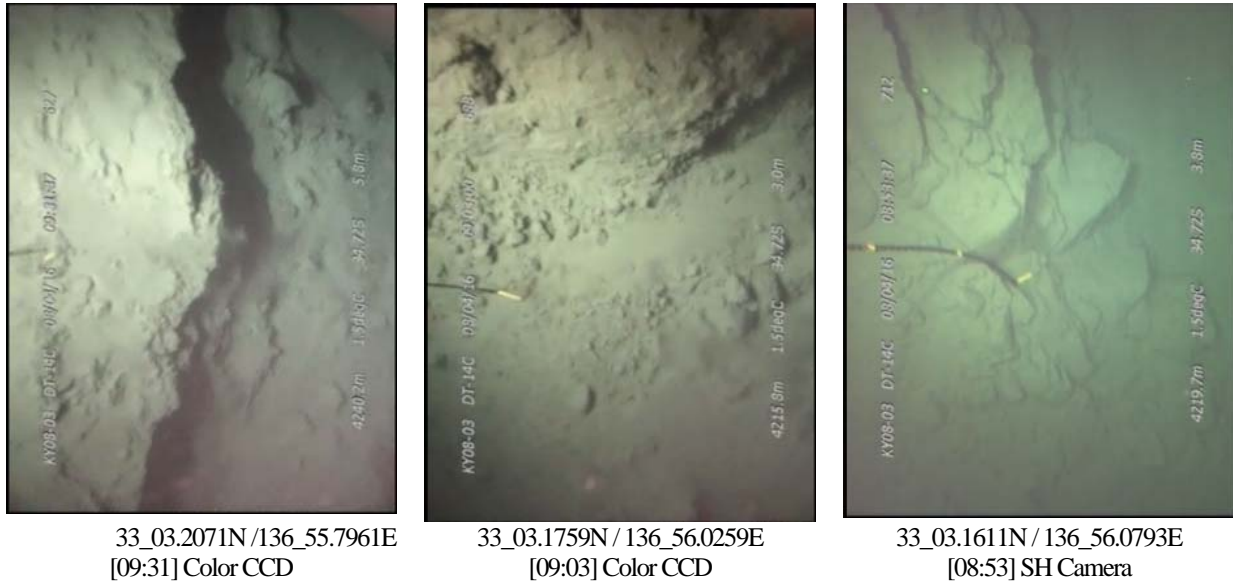


Fig. 1 Examples of bottom visual survey results near the Nankai Trough.

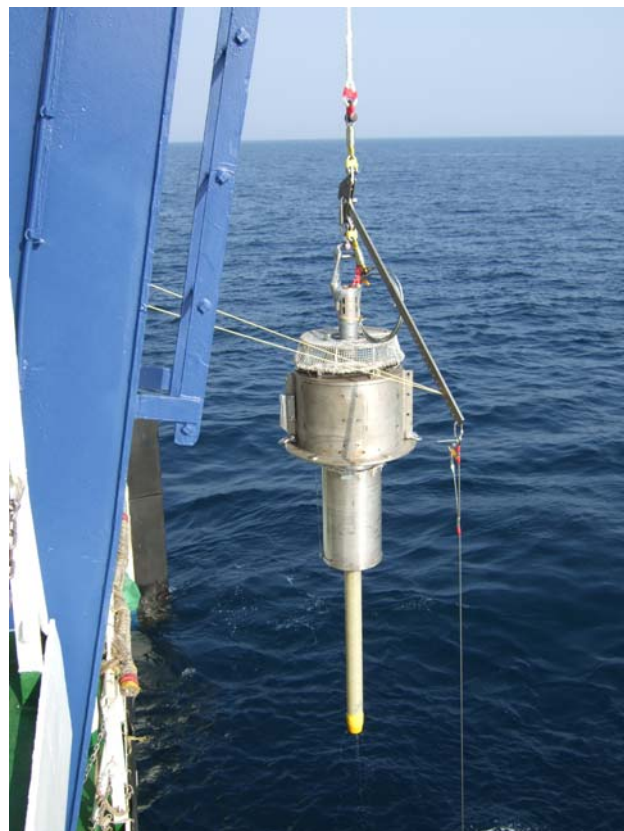


Fig. 2 Benchmark system being installed from R/V Kaiyo.