KR09-15 Cruise Summary

Cruise number and ship name

KR09-15"KAIREI", *RV KAIREI*

Title of research proposal

"Study on geological record of seismogenic faulting in Kumano Trough subduction zone"

Chief scientist & representative of science party

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Shipboard scientific party

Toshiya Kanamatsu	(IFREE, JAMSTEC)
Arito Sakaguchi	(IFREE, JAMSTEC)
Hiroki Hayashi	(Shimane University)
Narumi Hiraishi	(Fukada Geological Institute)
Takayuki Tomiyama	(Kochi core institute, JAMSTEC)
Shinichi Hosoya	(Nippon Marine Enterprises, Ltd.)
Yutaka Matsuura	(Marine Works Japan, Ltd.)
Akira Soh	(Marine Works Japan, Ltd.)
Ei Hatakeyama	(Marine Works Japan, Ltd.)
Shouhei Taketomo	(Marine Works Japan, Ltd.)
Yuji Fuwa	(Marine Works Japan, Ltd.)

Cruise Period and Port call

October 22nd – October 25th, 2009

Wakayama-Shimotsu Port, Wakayama City – JAMSTEC pier, Yokosuka.

Research area (Fig. 1)

Kumano Trough (water depth : 2000m−3400 m): Area surrounded with lines connected with the following points.

33°30'N 136°42'E, 33°15'N 136°48'E,

33°09’N 136°48’E, 33°09’N 136°40’E,
33°18’N 136°28’E, 33°30’N 136°25’E.

Overview of Cruise

Objectives:

The decollement and Mega-Splay faults are developing in the Kumano Trough area. Identification of a fault which caused a earthquake, and observation of its behavior are essential for understanding the seismozenic zone earthquake. Tsunami inversion and strong motion analyses are possible approaches to define these phenomena, but those methods do not strictly define the fault. For example, it is not clear that which fault: Decollement or Mega-Splay, was activated in the 1944 Tonankai earthquake. But because fairly high energy must have been released during the earthquake, an extraordinary geological phenomenon should take place near the sea bottom. The results of NanTroSEIZE stage 1A, and researches advanced to the project documented key records to understand fault behaviors in the mega-splay area, and the fore-arc basin. In order to confirm these evidences, a series of surface sediments collections was designed.

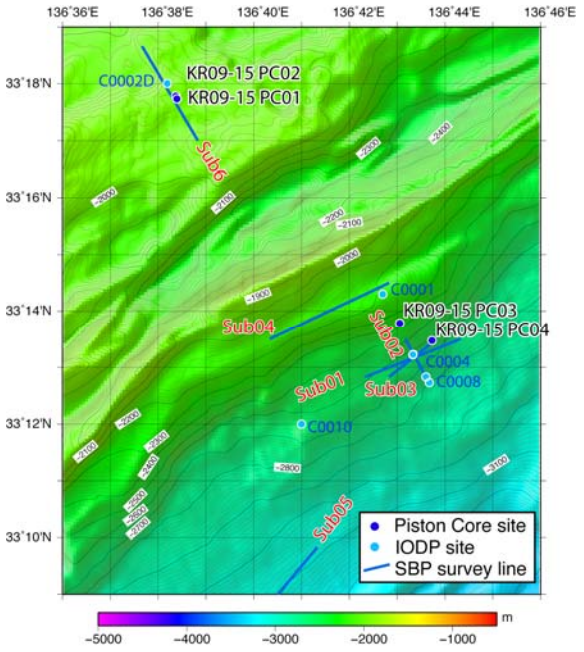

Fig.1 Piston coring point & SBP

Achievement:

During “KR09-15” piston coring, and sub-bottom acoustic profiling were conducted (**Fig.1**). Although 3 days were originally planed for this research, it was shorten to 1.5 days due to high sea condition caused by typhoon No. 20.

In spite of that situation 4 piston coring and 6 sub-bottom profiling were completed. No visual description of cored sediment was carried out onboard. Only microfossil (planktonic foraminifer) observation in top and bottom of cores was conducted. Sub bottom profile images were acquired from the fore-arc basin area, and the splay fault area in the landward slope. These shallow structures were interpreted onboard. Post-cruise core measurements: scanogram

imaging of whole round sections, scanning core surface of archive sections, description of archive sections, discrete sampling from working sections were carried out in Kochi Core Center during 24 - 27th November, 2009.

Acknowledgements

We are grateful to Captain Tanaka and the crew of the R/V KAIREI for their professional and outstanding efforts to make this scientific cruise successful in spite of bad weather. We also thank ship management divisions of JAMSTEC for their helpful support while organizing the cruise.