

Cruise Summary

1. Cruise Information

1. 1 Cruise number : NT09-10 Leg.1
1. 2 Ship name : Natsushima
1. 3 Title of the cruise: Nansei Island Trench
1. 4 Chief Scientist : Yoshihisa SHIRAYAMA
[Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University]
1. 5 Representative of research groups and research titles
 - 1.5.1 Yoshihisa SHIRAYAMA
[Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University]
“Analyses of food web structure of the deep-sea benthic community associated with sunken wood”
 - 1.5.2 Yoshihiro FUJIWARA
[Institute of biogeosciences
Japan Agency for Marine-Earth Science and Technology]
“The role of reduced environment developed on biological substances in the evolution of chemosynthetic symbiosis ecosystem”
1. 6 Cruise period: July 8, 2009 to July 16, 2009 (9 days)
1. 7 Departure: Ishigaki Port; Arrival: Naha Port
1. 8 Research Area: Nansei Island Trench
1. 9 Research Map

Several dives of Hyper Dolphin were planned originally from 275 to 3000 m (Fig. 1), but due to weather condition, only one dive (dive 1031) was realized at a depth of 275 m.

The detailed dive track of Dive 1031 is shown in Fig. 2. The details of events at each observation points of dive 1031 are listed in Table 1.

In addition to the dive of Hyper Dolphin, we set vertebrae of whale (3 pieces in one set), thighbones of pig and cow (2 sets), and three pieces of conifer were set on the sea floor by free fall from the ship at 24° 45.0030' N 125° 45.0163' E at a depth of 510m.

2. Overview of observation

2. 1 Purpose and background

This cruise was done under collaboration of two research proposals. Recently, strong

attention have been paid on the role of whale bone and/or sunken wood widely distributed in the deep sea as the stepping stone that facilitates adaptation and distribution of hydrothermal vent benthic community that develops in the reduced environment. Experimental approaches were taken to investigate the role of sunken woods and whale bone in this aspect that during NT08-12 cruise (June 23 to July 4, 2008), at 6 different water depths ranging from 275 m to 4950 m, in the area of Nansei Island Trench, the research group of Kyoto University placed three sets of oak wood and coconut enclosed in a mesh net, whereas the group of JAMSTEC placed three pieces of wood log and whale bone nearby.

The major purpose of this cruise was to recover one of three materials placed one year before and observe the succession of faunae associated with these materials that may help creating reduced environment in the deep sea.

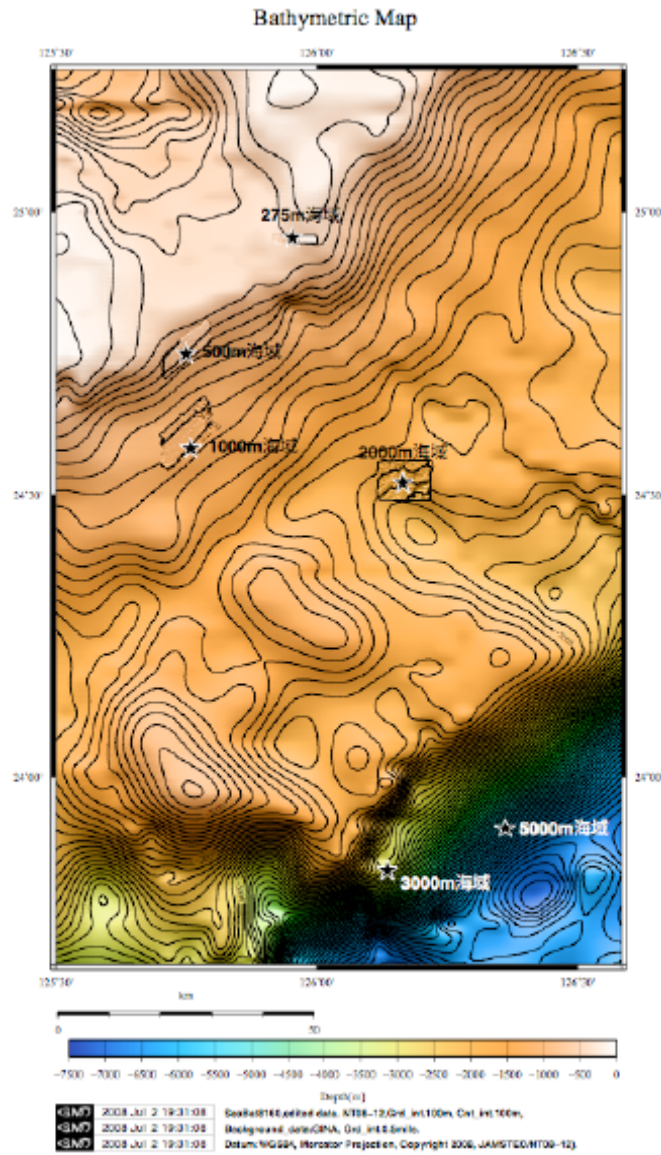


Figure 1: Map of Research Area.

Table 1: The list of actions taken at each event points during dive 1031.

Point No.	Time	Depth (m)	Description of actions
1	08:32	270	Touch the bottom
2	08:39	275	Found whale bones and woods set before
3	08:47	275	Plankton sampling #1
	08:52	275	Niskin water sampling #1
	08:58	275	Plankton sampling #2
	09:10	275	New pig bone was set
	09:11	275	Wood (L-13) retrieved

	09:29	275	MBARI sediment core (blue) sampled
	09:32	275	Sterile sediment sample (red) collected
	09:38	275	Plankton sampling #3
	09:51	275	Wood sample (Oak and coconuts:TP03) retrieved
	10:06	275	MBARI sediment core (green) sampled
	10:13	275	Sterile sediment sample (blue) collected
	10:16	275	Left from the bottom

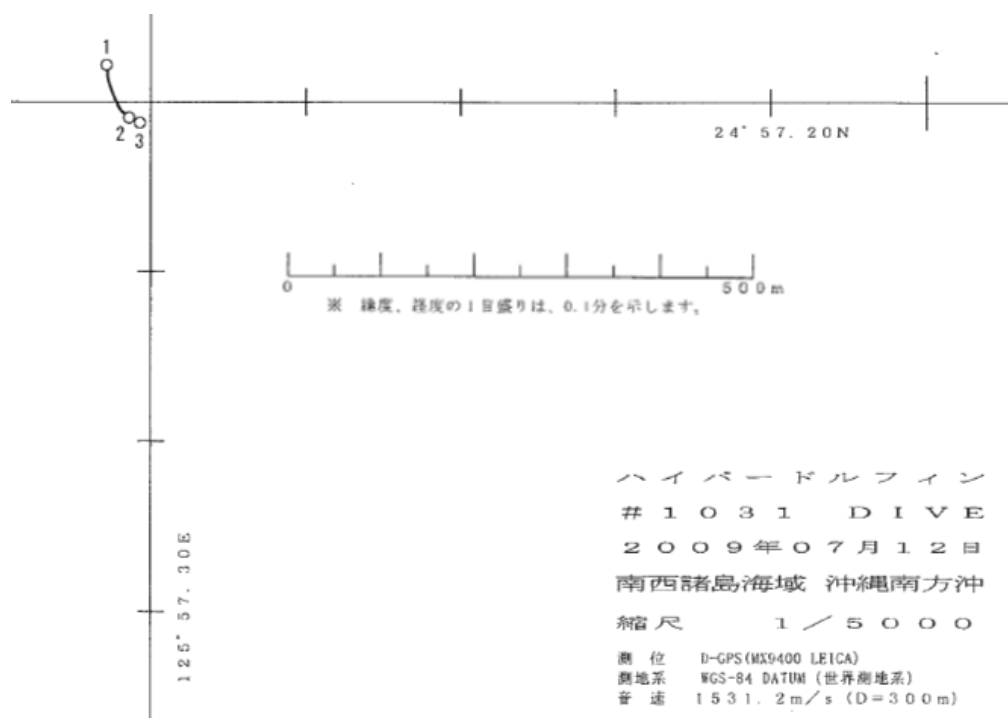


Fig. 2: Cruise track of Dive 1031.

2.2 Major activities

During this cruise, one dive (#1031) of Hyper Dolphin was carried out in the area close to Miyako Island at 24° 57.2N 125° 57.3E, where the water dept was 275 m.

2.3 Methods

Wood materials placed one year before using ROV Hyper Dolphin were successfully retrieved. Samples were separately stored in sample boxes, and brought back on deck individually.

Sediment cores were sampled using MBARI and Sterile corer. Plankton around the sampling area was collected using canister pump. One sampling near bottom sea water using a NISKIN water sampler was successful.

In addition to retrieval of oak wood, we placed a piece of cedar because it is softer than oak and maybe success process is faster.

2.4 Results

Many organisms have bored into the wood probably due to high activities of life at rather shallow water depth (275 m: Fig. 3). In addition, the surface of wood was blackened, and many sessile polychaetes were found on the surface of the wood (Fig. 4).



Figure 3. Inside of wood log retrieved during dive 1031.



Fig. 4 : Surface of wood log retrieved in dive 1031.