

Cruise Summary

1. Cruise Information

- 1) Cruise ID, Name of Vessel: NT10-08, R/V Natsushima
- 2) Title of the Cruise: “Hyper-Dolphin” Research Dive, Deep-sea Research, FY2010.
- 3) Chief Scientist: Koji INOUE, Atmosphere and Ocean Research Institute (AORI), The University of Tokyo.
- 4) Representatives of the Science Parties, and Titles of Proposals
 - Koji INOUE, AORI, The University of Tokyo
Elucidation of the mechanism and evolutionary history of the adaptation system to toxic sulfides
 - Takao YOSHIDA, JAMSTEC
The carbonic anhydrase is important factor for symbiosis
 - Masashi YAMAGUCHI, Chiba University
Ultrastructure and evolution of deep-sea microorganisms having mitochondria and incomplete nuclear envelope
- 5) Cruise Period: May 11, 2010 to May 18, 2010
- 6) Ports of Call: from Yokosuka (JAMSTEC) to Yokosuka (JAMSTEC)
 - Change of Scientists on May 13 and May 16 at Yokosuka (JAMSTEC)
- 7) Research Area: Myojin Knoll, Izu-Ogasawara Area and Off Hatsushima Island, Sagami Bay
- 8) Research Map: (Fig. 1)

2. Overview of Observation

Three groups participated to this research cruise. The purposes are as follows:

Inoue Group: Studies on the amino acids by which hydrothermal vent-specific invertebrates take up sulfide into the cell avoiding its toxicity.

Yoshida Group: Studies on the role of carbonic anhydrase in the symbiosis of thiotrophic bacteria and invertebrates in the chemosynthetic ecosystem.

Yamaguchi Group: Studies on the evolutionary process from prokaryotes to eukaryotes by analyzing the microorganisms inhabiting hydrothermal vents.

During the cruise, mussels, clams, and polychaetes were collected at hydrothermal vents at Myojin Knoll, and cold seeps at Off Hatsushima. Fixation and biochemical analyses were performed on board on some of the samples. Other samples were kept alive and brought back to AORI, JAMSTEC, and Enoshima Aquarium for rearing experiments. Detailed analyses of genes, amino acids, enzymes, and ultrastructure will be performed after the cruise.

The weather during the cruise was mostly stormy, and thus we could have only one day for the research at Myojin Knoll although we made enormous efforts, with Natsushima crew and Hyper-Dolphin Operation Team, to complete all the missions by modifying the schedule flexibly. Fortunately, we could obtain most of the samples requested by the scientists, by giving top priority to sample collection at well-known sites. However, we regret that we could not have enough time for in situ observation of the vent area and for wide survey of unknown area.

NT10-08 Nav Track

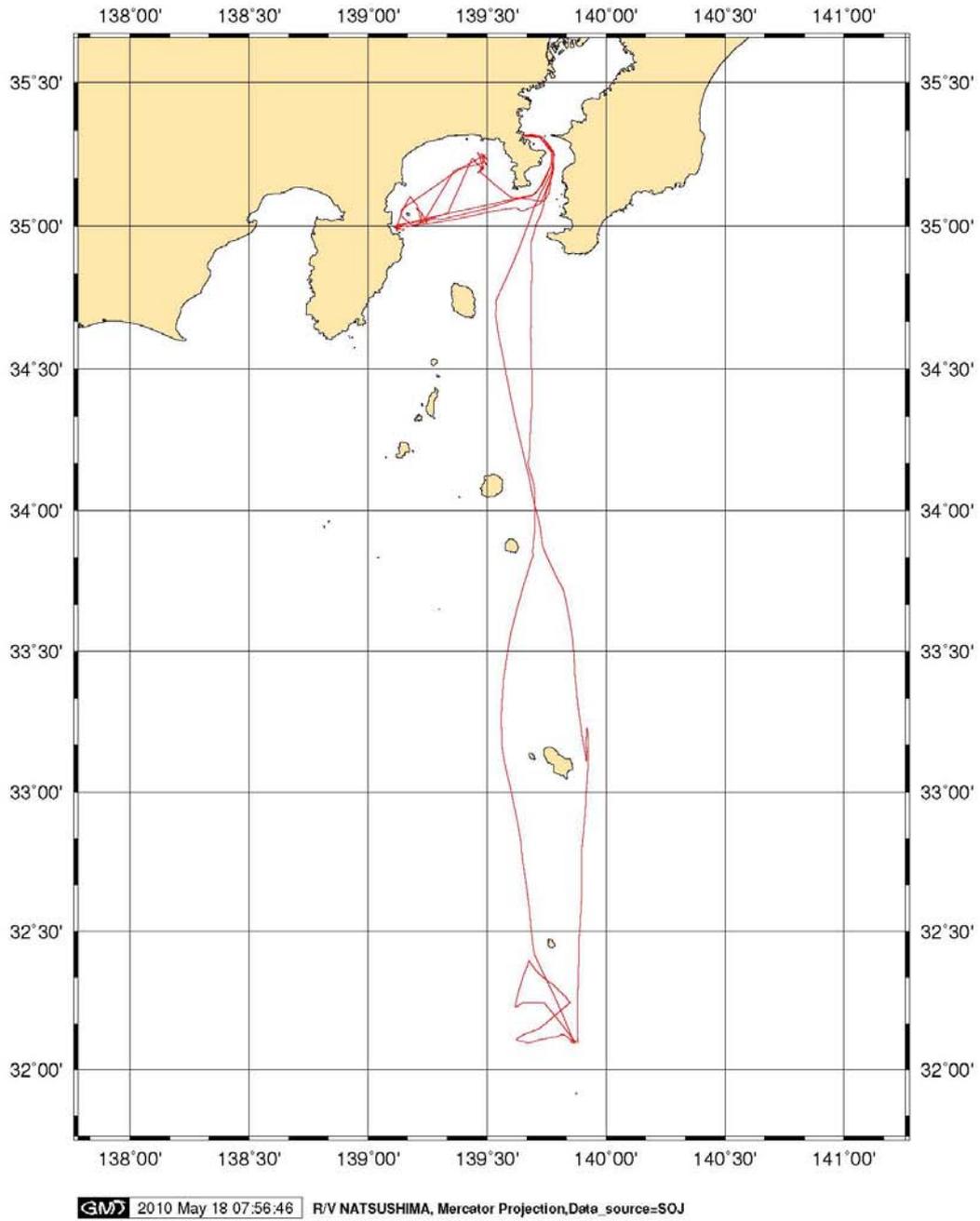


Fig. 1 The track chart of the R/V Natsushima research cruise NT10-08.