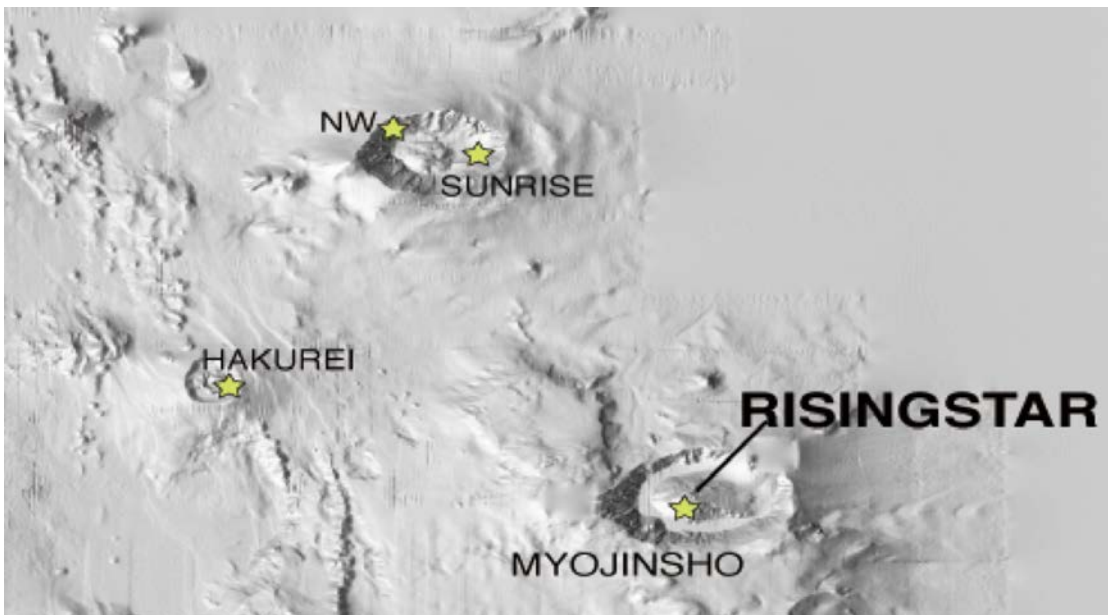


Cruise Summary

1. Cruise Information

- Cruise ID NT11-10 Leg1
- Name of vessel: Natsushima
- Title of the cruise: Cruise NT 11-10 (Leg 1) on Myojinsho Caldera, Izu-Ogasawara Arc, Japan
- Chief scientist [Affiliation]: Kokichi Iizasa [University of Tokyo]
- Representative of the Science Party [Affiliation]: Kokichi Iizasa [University of Tokyo]
- Title of proposal:
- Cruise period: June.28, 2011-July.2, 2011
- Ports of call: Yokosuka - Futami
- Research area: Myojinsho, Izu-Ogasawara arc
- Research map: The RisingStar hydrothermal vent field in the Myojinsho caldera



2. Overview of the Observation

- Overview of the observation

Cruise by ROV Hyper-Dolphin has been carried out at the RisingStar hydrothermal vent field of Myojinsho caldera. The purposes of this cruise are to delineate the hydrothermal active area, to collect black smoker particles, to study chemical characteristics of hydrothermal fluids and ambient seawater around black smoker chimneys, and to grasp the distribution and species of hydrothermal biota in the hydrothermal field.

(1) Geosciences

The objective of this group is to grasp the distribution and mode of occurrence of chimneys and collect particles of black smokers jetting from chimneys.

There occur many chimneys on the steep slope of central cone in the caldera at the water depth ranging from 995 m to 786 m. Active chimneys in the field are spouting black smokes at the maximum temperature of 304 °C. They are mineralogically composed of major sphalerite, and medium chalcopyrite and barite.

Black smokers were sampled at a small chimney less than 50 cm high and the flank of a tall chimney more than 10 m high. They contain much black particles of sphalerite and some chalcopyrite with hydrogen sulfide smell.

(2) Water Chemistry

The purpose of this study is to evaluate circulation of chemical components in hydrothermal fluid at the Myojinsho caldera.

We used these instruments: H2S-10 (an on-line type electrochemical hydrogen sulfide sensor, Kochi university), an on-line type temperature recorder (Okayama University) and KOTETSU (a stand-alone type water sampler: 150ml, Kyusyu University)

The sampling was conducted twice. First operation was carried out at the depth of 852 m from clear smoker, and second was at the depth of 846 m from black smoker.

Water samples will be analyzed in Kochi University.

(3) Biodiversity of vent-species

Main objective of this cruise was to evaluate biodiversity of vent-species in the Myojinsho caldera.

During the dive, fauna in the Myojinsho caldera was observed and recorded with the CCD and high-vision cameras. And several vent species were collected using the Slurp-gun.

Another objective of this cruise was sampling of Alvinocaris shrimp for morphological and genetic analysis.