

## Mapping observation of hydrothermal plume by using in-situ chemical sensors.

# Kiminori Shitashima[1]; Yoshiaki Maeda[2]

[1] CRIEPI; [2] CERES

Deep-sea hydrothermal systems play an important role as a significant source and/or sink of chemicals in the ocean. The mapping and long-term monitoring of the chemical parameters in hydrothermal plumes by using in-situ chemical sensors are the most efficient methods for trying to understand hydrothermal discharge.

Dissolution of CO<sub>2</sub> during ascent of CO<sub>2</sub> droplet and diffusion of low pH seawater were observed at the Hatoma Knoll in the Okinawa Trough. Mapping survey (400m X 400m, 3 layers) of low pH distribution was performed on the natural CO<sub>2</sub> venting area by the grid navigation of the ROV that installed a pH/pCO<sub>2</sub> sensor. The in-situ pH mapping revealed that the discharged liquid CO<sub>2</sub> does not cause widespread pH depression in the ambient environment. At the NW Eifuku submarine volcano in the Mariana Trough, the low pH plume derived from hydrothermal liquid CO<sub>2</sub> was detected in 100m high and 200m wide area above the summit of the volcano. Several chemical sensors installed AUV was applied for mapping survey of CO<sub>2</sub> gas bubbles at the Wakamiko Caldera in the Kagoshima Bay. The result of mapping survey showed only localized pH depression below 120m depth.