

## Hydrothermal system beneath Iheya-north hydrothermal site, mid-Okinawa Trough - Preliminary results from KY8-01 cruise-

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The Okinawa Trough is known as being in the incipient rifting stage of the backarc continental crust. Along the axis of the trough, present volcanisms are accompanied by vigorous hydrothermal activities. The Iheya-north hydrothermal field, ~100NM NW of the Okinawa Island, is one of the most active sites, venting high-temperature black smokers and biological communities. Bathymetry, seismic, and diving surveys have been made in this area. However, regional-scale hydrothermal circulation system was not clearly defined due to lack of heat flow data and systematic sampling around the hydrothermal area. Also, characteristics of the volcanism, which affects remain unknown. An intensive survey with core sampling and heat flow measurements were carried out during the KY08-01 cruise using R/V KAIKO of JAMSTEC. Over 50 temperature measurements, some of which included simultaneous core sampling, were carried out.

As with the results reported from previous surveys, we found that heat flow gradually decreases eastward of hydrothermal area, but remains higher than 0.2 W/m<sup>2</sup> until it encounters the eastern rim of somewhat cylindrical knoll complex. To its east where a thick sediment fills up the volcanic gap, heat flow is extremely low, lower than 0.02 W/m<sup>2</sup>, even one order of magnitude lower than in the trough floor (ca. 0.1 W/m<sup>2</sup>). We believe this sediment layer serves as a cold water reservoir, dynamically maintained ultimately by the magmatic heat below hydrothermal area.

Within the hydrothermal area we detected two isothermal intervals ~1m below seafloor (15degC and 25 degC). Similar temperature profile was obtained in this area, and we speculate that these are a near-surface hydrothermal reservoir, capped with a thick layer of impermeable pumice or hydrothermally-altered sediments.