

## Numerical model of hydrothermal reservoir beneath the Suiyo seamount inferred from heat flow distribution

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During the NT01-08 cruise using R/V Natsushima and submersible Shinkai 6500, we deployed and recovered various monitoring instruments in the hydrothermal area in the Suiyo Seamount, Izu-Bonin arc region.

Heat flow measurements were made across the hydrothermal site along ENE-WSW track. Eleven heat flow data was obtained using a 60-cm geothermal probe (SAHF). Heat flow is anomalously high (higher than  $10 \text{ W/m}^2$ ), and is also higher (ca.  $4 \text{ W/m}^2$ ) on the eastern side, where we identified no hydrothermal activity. On the other hand, heat flow was anomalously low (ca.  $0.2 \text{ W/m}^2$ ) on the western side. Higher heat flow on the eastern side implies the existence of impermeable cap rock below the eastern seafloor. Meanwhile, very low heat flow on the western side is related to strong recharge of sea water into formation.

A numerical simulation of hydrological regime in the Suiyo hydrothermal system was carried out. By setting a cap rock below the eastern part and putting a shallow hydrothermal reservoir ( $T=300^\circ\text{C}$ ) beneath vent area as well as deeper, broad reservoir, the observed heat flow value was reasonably explained.

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