

## Sulfur Isotope Compositions of Sulfides and Sulfates at the Suiyo Seamount

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Sulfur isotope analyses were performed on sulfides and sulfates in the drilled core materials from the Suiyo submarine volcano, Japan. The total ranges of sulfur isotope compositions are +1 to +6 per mil for sulfides and +13 to +21 per mil for sulfates. Regional differences are found in sulfur isotope compositions between the eastern and central areas: (1) sulfur isotope compositions of sulfates are homogeneous (+19 to 21 per mil) in the eastern drill sections, but heterogeneous (+13 to +20 per mil) in the central area; and (2) sulfur isotope compositions of sulfides are heavier (2 to 6 per mil) in the central region compared to the eastern area (1 to 3 per mil).

These regional differences indicate that: (3) oxidation of hydrothermal H<sub>2</sub>S, resulting in production of sulfate, is more vigorous in the subvent zone at the central region compared to the eastern region; and (4) temperatures of subvent hydrothermal fluids are generally lower in the eastern region compared to the central region. The oxidation of H<sub>2</sub>S is caused by the mixing of oxic seawater and reduced hydrothermal fluids, and this mixing process may control the redox boundary in the subvent zones. Those processes are recorded in the drill core samples from the Suiyo hydrothermal field.