

High resolution seafloor survey of mud volcanoes in the Kumano Trough by AUV Urashima

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<http://ofgs.ori.u-tokyo.ac.jp/~ofgs/ashi/ashi-j.html>

A large number of knolls with 1 to 2 km in diameter and a height of 100 to 150 m are developed in the forearc basin, Kumano Trough. It is interpreted that unconsolidated mud intruded upward due to a density inversion and high pore pressure, and formed knolls on the basin floor. We conducted the survey using the AUV Urashima at the area 50km off Shingu in 2006 and obtained fine structures formed by mud eruptions using a sidescan sonar.

Sidescan sonar images were obtained using IZANAGI and WADATSUMI systems. Peculiar reflectivity observed at each mud volcano is interpreted to depend on thicknesses of hemipelagic sediments and/or contents of clasts. Thicknesses of cover sediments on mud volcanoes are consistent with seafloor reflectivities.

Sidescan sonar images obtained by this study using Urashima show much better resolution than the images by previous studies. Small mounds at the summit of the mud volcano and rugged concentric circles east of it were observed by ROV NSS and submersible Shinkai 6500. The corresponding structures were also imaged by our survey using Urashima. It has been difficult to compare between meter-scale structures observed by dive surveys and swath images. Urashima sidescan sonar image provide us with chances of comparative study between landtruths and remote sensings.