

MIS003-P01

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Bathymetric survey in the source region of the earthquake occurred in Suruga Bay on 11 August, 2009

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An earthquake occurred in Suruga Bay on 11 August, 2009 generated moderate tsunami which was recorded at tide stations around Suruga Bay. Since the finite fault models which had been estimated from seismic or crustal deformation data could not simulate the observed tsunami waveforms, there is a possibility of occurrence of submarine slide, which is cause to generate additional tsunami during the earthquake. Multi-narrow beam bathymetric survey accordingly was carried out using JAMSTEC's research vessel NATSUSHIMA over the earthquake source region. From the bathymetric chart, we identified a scarp in an area about 5km off Yaizu city which is oriented in NE-SW direction, approximately 4km in length and 5m in height. Seafloor bathymetry was sounded in the same region in 2004 and 2006 by NATSUSHIMA. However, the scarp found in the 2009 survey cannot be seen in the 2004 and 2006 data. We think that the scarp was newly created by the earthquake shaking. There is another evidence of submarine slide in a seafloor valley located in SE direction at 500m from the scarp. The seafloor material about 2km along the valley was scraped out 3 to 5m in depth. The removed material was deposited in downward area. A remotely operated vehicle, HYPER DOLPHIN, furthermore conducted seafloor visual observation. HYPER DOLPHIN found that the seafloor sediment was largely disturbed in the submarine slide area.

We finally reached to a conclusion that the submarine slide occurred during the 2009 Suruga earthquake. Submarine slide occasionally generates unexpected tsunami. But the nature of submarine slide and its tsunami generation mechanism are still open question. We would need to investigate the submarine slide by also seismic, sedimentary, and geochemical analysis.

Keywords: submarine slide, bathymetric survey, earthquake, tsunami