

A research plan for Submarine landslides and their influence to the benthic environment associated with the Hinagu fault zone in Yatsushiro Sea, off Kumamoto

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The 2016 Kumamoto Earthquake was sourced from a part of active faults of the Futagawa-Hinagu fault zones. The southern part of the Hinagu fault zone (Yatsushiro-sea segment) consists of submarine active faults in the Yatsushiro sea, off west Kyushu. We present a planned sampling project in the Yatsushiro sea by a research vessel for evaluating earthquake-induced submarine landslides/mass movements and associated tsunami potential and influence to the benthic environment.

Many active faults trending NNE-SSW to NE-SW off Ashikita to off Izumi are reported based on the subseafloor structural study using a high resolution multichannel seismic reflection (Kagohara et al., 2011). Submarine active faults in the northern part of the Yatsushiro-sea segment show apparent displacement of right lateral slip and are ascribed to activity of twice in Holocene.

Sediments in the Minamaba bay in the southern Yatsushiro sea contain mercury originated in the industrial pollution in 1950s. Tomiyasu et al. (2014) reported an irregular decrease or increase in mercury concentration in the surface sediments out of the data obtained in 2002~2010, which implies a possibility of secondary mass movement (redeposition).

In our project, we plan to conduct sampling of sediments in the area where the submarine active faults develops in the southern Yatsushiro sea, integrated analysis of geology, analytical chemistry and ocean biology for the purpose of the evaluation of submarine landslides and benthic environmental dynamics. To complete the above objectives, the Yatsushiro sea is the most suitable and opportune target because of the Kumamoto earthquake and the existence of a felicitous tracer of mercury. The probability of earthquake occurrence of the Yatsushiro-sea segment within 30 years was evaluated as 0-16% (Headquarters for Earthquake Research Promotion, 2013), which was the highest value among the Futagawa-Hinagu fault zones. Nevertheless, the 2016 Kumamoto earthquake occurred in the other segments, leading to tensed occasion in the Yatsushiro sea area and requiring urgent investigation. By examining the record and frequency of submarine landslides, we are capable of evaluating risks of tsunami, burial of benthic marine products and transfer of mercury-contained sediments associated with the future earthquakes in the Yatsushiro sea.

Keywords: submarine landslide, 2016 Kumamoto earthquake, mercury, Yatsushiro sea, Minamata bay