Possibility of submarine acoustic survey used by a deep sea AUV(Autonomous Underwater Vehicle)

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To investigate the submarine fault or submarine landslide, it is important to collect bathymetric data and bottom material information. Survey vessel equiped a multi narrow beam echo sounder (MNBES), a side scan sonar (SSS) and subbottom profiler (SBP) are usually used over wide area. Sonar data with high frequency is effective for detailed survey, however acoustical attenuation is very serious problem. The autonomous underwater vehicle (AUV) has the advantage of getting closer to the sea floor as compared with a survey from the vessel for high resolution survey with high frequency singal. ROV and deep-towed system are able to carry out the detailed survey near the sea floor. However its ability is limited by the wire cable motion and ship's motion. The other advantage of AUV is to be able to controll vehicle's attitude.

JAMSTEC has developed a 3000m class AUV 'URASHIMA' since 1988, MNBES, SSS and SBP have been equipped in 2006. We has carried out the test survey using 'URASHIMA', and enough quality data could be collected around off Hatsushima Island and the Kumano trough. Mosaic images were constructed by obtained SSS data, and shows the distinctive surface structure. In off Hatsushima Island, SSS mosaic images show some irregular patches around the mudflow area. These are interpreted as debris generated with earthquakes. Sub-bottom profiles could detect very clear sedimentary layer and some fault structures. We will discuss the possibility of the detailed survey by a AUV.