

Geological structure of offshore southward Ishigaki-jima Island estimated from seismic reflection survey

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National Institute of Advanced Industrial Science and Technology (AIST) conducted the marine geological survey around the Ishigaki-jima Island, Ryukyu Islands using R/V Hakurei (JOGMEC) in July 2017. This cruise deployed high-resolution Multi-Channel Seismic (MCS) reflection, parametric subbottom profiler (SBP), Multi-Beam Echo Sounder (MBES) swath bathymetry, gravity survey, seafloor magnetic survey, and submarine sampling using ROV. This presentation shows the geological structure around the Ishigaki-jima Island based on MCS profiles and MBES bathymetric data.

Two remarkable unconformities are recognized in the sedimentary layer offshore Ishigaki-jima Island. On the boundary of remarkable unconformities, the sedimentary layer is divided into three layers. In the offshore eastward Ishigaki-jima Island, southwestward-dipping normal fault is recognized at the NW-SE trending geomorphic lineament. This normal fault is considered to be the transverse fault. In the offshore southward Ishigaki-jima Island, topographic highs exist at multiple places on the forearc slope. These internal structures show an upward convex arch structure. Thus, it is thought that topographic highs are bathymetric expression of anticline structure. In addition, seaward-dipping reverse faults is identified in the northern rim of topographic highs. Therefore, it is considered that topographic highs composed of the anticline structure was formed along with the activity of the seaward-dipping reverse faults. In this presentation, we discuss the tectonics in offshore southward Ishigaki-jima Island from the distribution of topographic highs and seaward-dipping faults.

Keywords: Ryukyu Arc, Ishigaki-jima Island, Seismic reflection survey, Multi-Beam Echo Sounder (MBES) swath bathymetry survey