

Geological structure north offshore Ishigaki-Jima estimated from seismic reflection survey

*Ayanori Misawa¹, Seishiro Furuyama^{2,1}, Masahiko Sato^{3,1}, Jih-Shin Chang¹, Takahiko Inoue¹, Kohsaku Arai¹

1. Geological Survey of Japan, AIST, 2. Tokyo University of Marine Science and Technology, 3. The University of Tokyo

Geological Survey of Japan (GSJ), AIST conducted the marine geological survey cruise around the Ishigaki-Jima, Ryukyu Islands using R/V Hakurei (Japan Oil, Gas and Metals National Corporation) in August 2018. This cruise deployed high-resolution Multi-Channel Seismic (MCS) reflection, Multi-Beam Echo Sounder (MBES) swath bathymetry, gravity observation, and magnetic field observation. This presentation shows the geological structure around the Ishigaki-Jima based on MCS profiles, MBES swath bathymetry, gravity anomaly, and magnetic anomaly data.

Two remarkable unconformities are recognized in the sedimentary sequence offshore northward Ishigaki-Jima, separating the sedimentary sequence in the slope region into three layers. In the offshore northward Ishigaki-Jima, northwestward-dipping normal faults are recognized at the NE-SW trending geomorphic lineament. Developments of normal faults suggest the involvement of the extensional stress associated with the back-arc lifting of the Okinawa Trough. Since one remarkable unconformity is recognized in the sedimentary sequence in the Okinawa Trough, separating the sedimentary sequence into two layers. West of the Ishigaki Knolls, many of ENE-WSW trending normal faults are recognized. These normal faults are appearing clearly on the seafloor and are identified as ENE-WSW trending lineaments. Along with the development of normal faults, the depression-like morphology is formed from the Ishigaki Knolls to westward in the Okinawa Trough. We consider that the depression-like morphology bounding the ENE-WSW trending normal faults are the most recent structural feature. In this presentation, we will show the latest results of 2018 survey cruise and discuss the origin of the depression-like morphology.

Keywords: Ryukyu Arc, Ishigaki-Jima, Okinawa Trough, Normal fault, submarine volcano