High resolution bathymetric survey off Kozu and Niijima Islands by R/V Yokosuka YK00-12 cruise and simulation model

Wonn Soh[1], Hideaki Machiyama[2], Yu'suke Kubo[1], Gou Fujie[1], Eiichiro Araki[1], Hidekazu Tokuyama[3], Toshihiro Ike[4], Susumu Umino[5], Yukihoro Kato[6], Fujio Yamamoto[7]

[1] JAMSTEC, [2] Deep Sea Res. Dept., JAMSTEC, [3] ORI, Univ. Tokyo, [4] Earth & Planetary Sci,Univ Tokyo, [5] Dept. Bio. and Geosci., Shizuoka Univ., [6] Hydrographic Dept. of Japan, [7] OHTI

For better understanding of the behavior of the magma migration causing the crustal movement around Kozu and Niijima Islands, high resolution bathymetric survey was perfored using a deep towing high frequency side scan sonar, WADATSUMI. Significant fractures are identified on the continental slope at the northwestern margin of a seismic distribution during the last summer. Such phenomenon is not recognized at any other place between the Kozu and Niijima Islands. It suggests that magma intrusion along the seismic zone terminated around the fractured zone where the strain is significantly accumulated. Further we present new simulation model that integrates the crustal movement in the sea floor, the ground truth and tectonic implication of the southern Zenisu thrust.

To date simulation models are proposed to elucidate seismicity and crustal movements which took places in the last summer, 2000 and around Kozu and Niijima Islands, northern part of the Izu Bonin Ridge. However, the models are still ambiguous because those did not consider crustal movement in the sea floor where the significant amount of strain is most likely accumulated. To better understand the behavior of the magma migration caused the crustal movement, we performed high resolution bathymetric survey using a deep towing high frequency side scan sonar (WADATSUMI installed in ORI, Univ. Tokyo). Significant fractures are identified on the continental slope on the northwestern margin of a seismic distribution when occurred during the last summer, whereas such bathymetric phenomenon is not recognized at any other place including the continental shelf between the Kozu and Niijima Islands. It suggests that magma intrusion along the seismic zone terminated around the fractures where the strain is significantly accumulated. Further we present new simulation model taking into account the ground truth and tectonic implication of the southern Zenisu thrust.