# Remote reference MT and AMT survey in Jeju Island, Korea

# Toshihiro Uchida[1]

[1] AIST

Jeju Island, located in southern Korea, was formed by intensive Quaternary volcanic activities. The highest point, 1950 m asl., is Mt. Hanla at the center of the island. There are numerous young volcanic cones distributed in the entire island. Korea Institute of Geoscience and Mineral Resources (KIGAM) and AIST jointly conducted MT and AMT surveys in 2004 and 2005 in order to investigate the geological structure and groundwater/geothermal resources in the island. We set four survey lines that crossed the island: two in a north-south direction and the other two in an east-west direction. MT measurement in Korea is often very difficult because strong artificial electromagnetic noises are observed in the entire country. We therefore applied the remote reference processing to both AMT and MT data, by setting remote sites in Kyushu as well as in Jeju Island. We also utilized the stationary MT data obtained at Mizusawa and Wakuya in Tohoku by GSI, which are approximately 1500 km away form Jeju. The remote reference analysis of MT data revealed that the reference with a site in Jeju Island is not sufficient to remove the noises. The reference with Kyushu provided the best results for MT. The reference with Mizusawa and Wakuya also indicated good quality results, however they were worse than that by the Kyushu remote data. For AMT, reference processing with a site in Jeju Island is better at high frequencies (above 100 Hz). The reference with Kyushu also works for AMT data except the high frequency band. Preliminary 2D inversion models indicated that the body of the island consists of high-resistivity lava formations. However, we have also recognized that thick low-resistivity Tertiary sedimentary layers are widely distributed below the volcanic body of the island at a depth greater than approximately -100 m sea level.