

# Three Dimensional Magnetotelluric Modeling around the Nagamachi-Rifu Fault

Bulent Tank<sup>1</sup>, Yasuo Ogawa<sup>1</sup>, Masaaki Mishina<sup>2</sup>, Yoshimori Honkura<sup>1</sup>

1: Tokyo Institute of Technology, 2: Tohoku University

Abstract:

Wideband magnetotelluric (MT) surveys were carried out along several profiles crossing the active reverse Nagamachi-Rifu Fault in northeast Japan. This fault last moved in September 1998 creating a M5 earthquake. In this study, following the dimensionality analysis which includes Groom and Bailey decomposition, phase tensor analysis and geo-electric strike determination, we illustrated the electrical resistivity structure based on modern two and three dimensional inversion techniques. The dimensionality analysis resulted in a geo-electric strike direction (N26E) that is consistent with geological features in the study area. Our inversion results suggest presence of a mid-crustal high conductivity anomaly at the hypocenter where a good correlation between the conductor and seismic low velocity zones can be observed. These features might support fluids involvement in the earthquake generation process.