Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)


SEM37-P08 Room:Convention Hall Time:May 22 18:15-19:30

# 3D resistivity structure around a high strain rate zone of the Tohoku back-arc

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The dehydrated fluid from a subducted oceanic plate is estimated to be localized in the crust and the upper mantle in the tectonic zone. To clarify the image and the mechanism of the tectonic zone, our electromagnetic group in the Hizumi project conducted wideband magnetotelluric (MT) surveys in the northeastern margin of Japan sea tectonic zone since 2008. We performed 6 survey lines and 82 sites (CHK line: 11 sites, SKT line: 8 sites, SNJ line: 11 sites, TRK line: 9 sites, GSS line: 16 sites, YNZ line: 27 sites) from east to west in the southwestern part of Tohoku region. We estimated 2D resistivity structures till last year by using a 2D inversion code (Ogawa and Uchida, 1996). The 2D models from TE and TM modes show characteristic conductive part above -5km ASL in the Shonai plane, and beneath -10km ASL at the eastern part of Mt Gassan. However, strike directions estimated from phase tensor analysis (Caldwell et al., 2004) are different in the upper and lower part, and some of induction allows estimated by tipper responses did not imply 2D structure. Therefore, we should evaluate the resistivity structures whether they are plausible or not. In this study, we performed 3D analysis by using the inversion code of WSINV3DMT (Siripunvaraporn and Egbert, 2009). We will discuss the difference of structures between 2D and 3D inversion analysis, and also will discuss the mechanism of the tectonic zone.

Keywords: Magnetotellurics, high strain rate zone, Shonai plane, resistivity structure