Elucidation of crustal fluid distribution in NE Japan backarc active zone by wideband MT observation

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Fluids play an important role in magmatism, metamorphism and crustal deformation processes that cause volcanic and seismic activity. In the subduction zone, it is considered that a large amount of fluids is released into the mantle by dehydration of the subducted oceanic plate, but it remains well unconstrained where fluids migrate and accumulate and how the corresponding distribution of volcanic activity takes place. Tohoku Japan is one of the most geophysically observed subduction zones, but there are many unknown points in the fluid distribution in the crust, in the forearc and backarc. Ogawa et al. (2001) is one of the crustal fluid studies in the Tohoku-Japan backarc. They performed two-dimensional resistivity modeling of the northeastern backarc active zone, and detected low resistivity zone in the mid-crust, which was considered as fluid distribution. They found that the earthquake hypocenters cluster at the edges of the mid-crustal conductors.

In our present study, we re-analyzed the data of Ogawa et al (2001) by three-dimensional modeling using the full tensor impedances. We also included forarc data which are located in the eastern extension of the dataset.