Conductivity structure of the Atera fault in the southern area of the main part of the Atera fault zone

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Many inland earthquakes (e.g. 2016Kumamoto Earthquake, 2000Tottoriken-seibu Earthquake, 1995Hyogoken Nanbu Earthquake) were occurred along active faults in Japan. Revealing subsurface structure is essential to assess the probability and severity of future earthquakes along active faults.
We made an Audio-frequency Magnetotelluric (AMT) survey to reveal conductive structure of the Atera fault of the Atera fault zone. It is the highly active (2-4m/1000yrs.) left-lateral active fault zone in central Japan
An AMT survey was undertaken at 19 stations along a transect of 2 km laid across the Atera faults in October and November 2019.
We estimated MT impedances according to the remote reference processing procedure (Gamble et al., 1978), then they were subjected to dimensionality analysis using the phase tensor method (Caldwell et al., 2004; Bibby et al., 2005). The result shows that resistivity structure is two-dimensional, and its strike is N30°W-S30°E. Two-dimensional resistivity model (ATR model) along the transect was determined using the two-dimensional magnetotelluric inversion code (Ogawa and Uchida, 1996).
The ATR model is characterized by two-conductive zones; one is near-vertical conductive zone below the surface fault trace, and another is shallow one to the NE of the surface fault trace at a depth of ~600m.
In this presentation, first, we checked accuracy of the ATR model by comparing with the borehole data, then determined the location and shape of the subsurface fault plane by taking into the results of the elastic wave survey.

Keywords: Conductivity structure, Atera fault, Inland earthquake

