

## How do AMT response functions vary by the different magnetic reference data? - An example of the Biwako Fault -

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The Yamasaki Fault System of southwest Japan is a typical left-lateral strike-slip fault system that extends for over 80 km striking ~ N60W-S60E. The northwestern part of the system consists of the Ohara, Hijima, Yasutomi, and Kuresakatouge Faults and the southeastern part consists of the Biwako and Miki Faults. The Earthquake Research Committee of Japan evaluated the probability of earthquake occurrence upon major active faults in Japan, estimating the probability of earthquakes of a given magnitude occurring in the following 30 years. For the southeastern part of the Yamasaki Fault System (Biwakou and Miki Faults), the committee estimated a maximum probability of 5% for an earthquake with a magnitude of ~7.3; this places the system in the high group of earthquake occurrence probability. For the northwestern part of the system (the Ohara, Hijima, Yasutomi, and Kuresakatouge Faults), the maximum probability of a magnitude ~7.7 event is 1%, corresponding to the slightly high group of earthquake occurrence probability (Earthquake Research Committee, 2010). Many electric or electromagnetic surveys have been carried out along the Yamasaki Fault System, but many of them were made at the northwestern part of the fault system, probably because severe artificial electromagnetic noises are expected around the southeastern part of the fault system.

The remote-reference method (Gamble et al., 1987) is one of a powerful tool to obtain accurate Magnetotelluric (MT) response functions even in a noisy condition when a good magnetic reference data are obtained. Audio-frequency magnetotelluric (AMT) survey was made at 7 sites along a profile which is laid across the Biwako fault with two magnetic reference sites; one site is ~15 km and another site is ~300 km far from the observation sites around the Biwako Fault in order to estimate how AMT response functions vary by the different magnetic reference data.

In this paper, we will show the 'best' AMT response function after estimating the variation of them with the different remote reference points, then we will propose the two-dimensional resistivity structure beneath the Biwako Fault.

**Keywords:** Yamasaki Fault System, Biwako Fault, Audio-Frequency Magnetotelluric, resistivity structure, remote-reference method, active fault