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Conductivity structure beneath the fault segment gap in the Yamasaki fault zone, southwest Japan (2)

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Abstract

The Yamasaki fault zone (YFZ) of southwest Japan is a typical strike-slip fault system consisting of the Nagisen fault, the main strand of YFZ, and the Kusadani fault. The main strand of YFZ extends for over 79km and is divided into northwestern (NW) and southeastern (SE) groups based on their latest seismic activity. The NW group consists of the Ohara, Hijima, Yasutomi and Kuresaka-touge faults, and the SE group consists of the Biwako and Miki faults. The maximum magnitudes of the earthquakes generated by the NW and SE groups are estimated to be 7.7 and 7.3, respectively. Simultaneous activation of both fault groups is also pointed out to be as large as M = ˜8.0 (The Headquarters for Earthquake Research Promotion, 2013).

The subsurface structure beneath the fault segment gap between both groups will be the key information for assessing the possibility of such large earthquake.

To infer the structure, we carried out Audio-frequency Magnetotelluric (AMT) survey at 11 sites along a transect between the NW group and the SE group and showed the two-dimensional resistivity model along the transect based on MT impedances. This model is characterized by three conductive zones. They locate beneath the points where the transect crosses the extension lines of the surface trace of the Yasutomi, Kuresaka-touge, and Biwako fault. We thus concluded that the Yasutomi and Kuresaka-touge faults are extended to southeast and the Biwako fault is extended to northwest further than the recognized terminals of their surface trace.

In this presentation, we show the improved resistivity model which is determined by not only MT impedance but tipper vectors.

Keywords: conductivity structure, active fault, Yamasaki fault system, Magnetotellurics