# Electrical resistivity structure beneath Gomura fault zone(Go-seihou fault, Gomura fault, Chuzenji Fault)

*Akira Mimura[1], Satoru Yamaguchi[1], Shin Kuramitsu[1], Ko Kozakai[2], Haeng-Yoong Kim[1], Hideki Murakami[3], Shigehiro Katoh[4]

1. Graduate School of Science, Osaka City University, 2. Faculty of Science, Osaka City University, 3. Research and Education Faculty, Kochi University, 4. Hyogo Museum of Nature and Human Activities

The Gomura fault zone is located in the Tango Peninsula, Koto, Japan, and consists of the Go-seihou fault, the Gomura fault and the Chuzenji fault. They run closely (within 3km) and nearly parallel to each other. These faults have different features in fault activity (e.g., mean slip rate, cumulative displacement). The Go-seihou fault shows no clear displacement at the surface. The last faulting event of the Gomura fault is 1927 Kita-Tango earthquakes, while that of the Chuzenji fault is estimated to be about 10 thousand years ago. Cumulative displacement of the Chuzenji fault is about twice larger than the Gomura fault.
Clear electrical resistivity variation is expected to be identifiable in the vicinity of an active fault as a result of enriched and interconnected fluid (meteoric waters and/or groundwater) in fractures and/or uneven fluid distribution across the fault because of impeded cross-fault fluid flow. It is expected that special extent and resistivity contrast to surrounding area. It is interesting to reveal relationship among width of conductive zone and futures of the fault in fault activity.
Aiming to clarify the above relationship, we made an Audio frequency Magnetotelluric (AMT) survey at 25 sites including 12 sites by Ouchi (2014) along the transect (7km) across the surface trace of the Gomura fault zone. We established the two-dimensional resistivity model (GCH model) along the transect.
The GCH model is characterized by six conductive zone (C1 –C6). Region C1 is shallow and sub-horizontal layer. We interpret the layer is caused by meteoric water and/or groundwater included in the highly weathered granite layer on a fresh granite layer by comparing our model and the electrical logging data at the 1300m borehole near our survey line. Region C3 and C4 are located beneath the Gomura and Chuzenji faults, respectively. Former region is wider than latter region. We can say these regions are caused by fluid in the damage zones formed by fault movement. It is interesting that no conductive region is detected beneath the Go-seihou fault.

Keywords: The Gomura Fault, electrical resistivity structure, Damage zone