# Magnetotelluric imaging of Itoigawa-Shizuoka Tectonic Line(2)

# Yasuo Ogawa[1], Yoshimori Honkura[2], Shinichi Takakura[3]

[1] TITECH, VFRC, [2] Earth and Planetary Sci., Tokyo Institute of Technology, [3] Geological Survey of Japan / AIST

http://131.112.25.6/ogawa/index-j.htm

We investigated the deep crustal resistivity structure across Itoigawa-Shizuoka Tectonic Line (ISTL), one of the most disastrous active intraplate faults in Japan, by use of wide-band magnetotelluric (MT) method. The major objective is to electrically image the deep crustal conductor with reference to the possible enhanced porosity at the root of the active fault, which triggers the generation of major earthquakes. The 58 MT stations in total were aligned perpendicular to the ISTL for three profiles perpendicular to the tectonic strike. The measured electric and magnetic signals were contaminated by the DC railways. We used simultaneous measurements at the remote site in Kagoshima (900km away) by use of GPS in order to alleviate the cultural noise. Two-dimensional modelings were carried out for the three profiles in transverse magnetic (TM) mode where electric currents flow in N60W-N120E directions. The preliminary model showed good correlation with the surface geology. In particular, we found a thick (~6km) conductor to the east of ISTL which corresponds to the heavily folded sedimentary layer. This conductor thickens in the north profile. The Japan Alps to the west of the ISTL is characterized by the resistive upper crust, where the pre-Tertiary rocks crop out. The Japan Alps is underlain by a conductor below 20km depth, which is consistent with the low seismic velocity anomaly. Most important feature is the conductor in the mid-crust directly under the active folding area to the east of the ISTL. This feature is more clearly seen in the northern profile and may imply a localized zone of fluids because of the enhanced porosity in a shear zone.