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D 会場 ：9/25　 PM2 （15:45-18:15）
16:00〜16:15

#渡部　熙 [1), 上嶋　誠 [1), 山口　覚 [2), 臼井　嘉哉 [1), 村上　英記 [3), 小河　勉 [1), 大志万　直人 [4), 吉村　令慧 [4), 相澤　広記 [5), 塩﨑　一郎 [6), 笠谷　貴史 [7)
(1 東大地震研,(2 大阪市大院・理・地球,(3 高知大,(4 京大・防災研,(5 九大地震火山センター,(6 鳥取大院,(7 海洋研究開発機構

The 3-D electrical conductivity structure modelling of the Network-MT observation dataset in the Kii Peninsula, southwestern Japan

#Akira Watanabe[1)],Makoto Uyeshima[1)],Satoru Yamaguchi[2)],Yoshiya Usui[1)],Hideki Murakami[3)],Tsutomu OGAWA[1)],Naoto Oshiman[4)],Ryokei Yoshimura[4)],Koki Aizawa[5)],Ichiro shiozaki[6)],Kasaya Takafumi[7)]
(1Earthquake Research Institute,The University of Tokyo,(2Graduate school of Science, Osaka City University,(3Kochi University,(4Disaster Prevention Research Institute, Kyoto University,(5Institute of Seismology and Volcanology, Faculty of Sciences, Kyushu University,(6Graduate school of Science, Tottori University,(7JAMSTEC

The Kii Peninsula in the forearc region of southwest Japan has distinct structural and tectonic features characterized by the subducting Philippine Sea slab, high seismicity in the crust, Deep Low-frequency Tremors (DLTs), high surface heat flow, and high-temperature hot springs. Therefore, various geophysical surveys have been carried out on the Peninsula, including electromagnetic surveys. Some conventional MT surveys (NEDO 1994; Fuji-ta et al., 1997; Umeda et al., 2003; Kinoshita et al., 2018) and the Network-MT (NMT) survey (Yamaguchi et al., 2009) have been performed. The NMT method (Uyeshima et al., 2001; Uyeshima, 2007) is characterized by employing a commercial telephone network to measure voltage differences with long dipole lengths ranging from 10 to several tens of kilometers. This method has three advantages; the first is wide spatial coverage (e.g., covering almost the entire Kii Peninsula), the second is a wide-period range, especially for the longer period (from 10 s to 50000 s), and the third is better quality data in terms of high S/N ratio and less susceptibility to static effects. Yamaguchi et al. (2009) deployed the NMT survey at 55 nets throughout the Kii Peninsula. One net consists of 3-5 channels with 4-6 electrodes, and we measured respective voltage differences at 10 s intervals for 50-400 days. Magnetic fields were also measured at three stations in the survey area. Using this data, Yamaguchi et al. (2009) showed a 2-D resistivity structure along a line crossing the central part of the Kii Peninsula. However, a 3-D model analysis is necessary to reveal the regional and deep structure of this region because the coastline and bathymetry are 3-D, and the strike of the igneous rocks (the Kumano acidic rocks) is not concordant with the direction of the subducting Philippine Sea slab. Prior to determining the final 3-D model, we reanalyzed whole NMT data obtained by Yamaguchi et al. (2009) using the BIRRP code (Chave and Thomson, 2004) and calculated the first 3-D electrical resistivity structure model using the Network-MT datasets. In this inversion analysis, the FEMTIC inversion code (Usui, 2015; Usui et al., 2017; Usui, 2020) was used. In this presentation, we show a resultant resistivity structure and compare it with the spatial distribution of the NMT response functions and other geophysical models.