

Marine electromagnetic observations around a slow earthquake region in the western Nankai trough

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Slow earthquakes have been believed to relate to fraction of pore fluid around plate boundary. Thus, imaging of electrical resistivity (conductivity) distribution is essential to understand slow earthquakes. However, many of SSE areas are distributed beneath the ocean, we need marine electromagnetic (EM) observations. In this presentation, we report preliminary results of marine EM observations in the western part of Nankai Trough (off Miyazaki prefecture and off western Kochi prefecture, Japan) where SSEs, VLF events and regular earthquakes (e.g. 1968 off-Hyuga earthquake, M7.5) are known. We deployed eight ocean bottom electro-magnetometers (OBEMs) and recovered seven of them between 2017 and 2018. In addition to EM fields, two OBEMs measure absolute pressure to detect short period crustal deformations caused by SSE. We estimated high quality magnetotelluric responses based on Chave and Thomson (2004). However, the responses show strong three-dimensionality of resistivity distribution and strong coast effect (e.g. Key and Constable, 2011). They indicate that we need to apply three-dimensional imaging techniques for seafloor magnetotelluric data.

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