

## Temporal changes in MT responses dependent on subsurface environment

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Magnetotelluric(MT) method is one of electromagnetic exploration methods to visualize deep subsurface structures. Recently, discussions on monitoring subsurface environment based on the temporal changes in MT responses are conducted. Generally, MT responses, except the ones above high-resistive zone and at long period, are not biased greatly by source field (Schmucker, 1970). However, given localized source current, the MT responses below 10 s are biased greatly (Hermance and Peltier, 1970; Pirjola, 1992). Therefore, the discussion on the spatial gradients of source field should be discussed for monitoring subsurface environment. In this study, the authors derive the temporal changes in MT responses from the 1-Hz sampling data acquired at Kakioka magnetic observatory during 2000 –2009. K index, inter-station transfer functions, and Multi-Channel Nonnegative Matrix Factorization (Sato and Goto, submitted) are used for evaluating the spatial gradients of geomagnetic time variation and source field. As a result, MT responses are shifting temporally even under the condition that such spatial gradients are same. At the oral presentation, we will discuss the causes of temporal shifting in MT responses, which are considered due on the subsurface environment.

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