Effective noise reduction of magnetotelluric data observed in the Boso Peninsula

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We carried out the MT survey in the Boso area, Japan during 2014-2016. However, because of the existence of thick sedimentary layer and the artificial noises caused by DC-driven trains, factories, etc, the influence of noise is quite high. Even if the most popular non-commercial robust processing code BIRRP, (Bounded Influence Remote Reference Processing, Chave et al. 1987) still gives erroneous results. To presume realistic resistivity structure in the Boso Peninsula, it is also necessary to remove the artificial noises in the time domain and improve the signal/noise ratio in the time domain by using the Multichannel Singular Spectrum Analysis (MSSA). In this study, we applied all methods to the observed MT data and investigated the performance. We found the application of MSSA to the magnetotelluric data provided better estimate MT transfer functions.

Keywords: Multichannel Singular Spectrum Analysis (MSSA), noise reduction, magnetotelluric

