

## Application of high density CSAMT exploration for active fault investigation by using multi-channel electromagnetic survey system

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High density CSAMT exploration using the newly developed multi-channel electromagnetic survey system was applied to the study area where active structures may be blind. GeodeEM3D, the survey system can measure six components of electric and magnetic field. Each device allows to establish distributed network by LAN cable of up to 40 EM units. The combination of electric field (E) and magnetic field (H) in one unit can be set variously, such as 4E / 2H, 2E / 3H, 3E / 1H. In addition, it can be used not only for CSAMT using controlled source but also for AMT using natural source. The measurable frequency band is 0.1 Hz to 10 kHz. It is possible to efficiently carry out the high density CSAMT exploration which is capable the small measuring point intervals and dense point distribution. The high-density CSAMT exploration was conducted in the study area where the active structure may be blind (along the Amida River in the vicinity of Yomogita town in the northern part of the Aomoriwan-Seigan fault zone). The length of the measurement line is 4km, the interval of the measurement point is 50m, and the measurement frequency is 0.5Hz to 8192Hz. The geological investigation and the reflection seismic exploration are carried out at this site (Kagohara et al., 2017). The result of resistivity section clearly presents a step with low resistivity zone. Interpretation was made along with the overlapping part with the result of seismic reflection exploration. As a result, we revealed the subsurface structure related to the active fault.

Keywords: Multi-channel electromagnetic survey system, high density CSAMT exploration, seismic reflection exploration, Tsugaru Mountains, subsurface structure, blind thrus