

R003-04

D会場 : 9/25 PM1 (13:45-15:30)

14:30~14:45

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Development of 3-D joint inversion code for MT and CSEM data sets for both land and ocean survey situations

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There have been increasing opportunities to use controlled-source electromagnetic (CSEM) data together with conventional MT data, to accurately infer subsurface resistivity structures. I have developed a 3-D joint inversion code that simultaneously handles MT data sets and CSEM data sets. The forward part is designed using the edge-based finite element method for unstructured tetrahedral meshes, while the inversion part consists of the Gauss-Newton approach with a cooling strategy (e.g., Kordy et al., 2016). Since the forward part of CSEM is applicable to any source distribution of source electric dipole, the developed code deals not only with conventional CSEM like ACTIVE (Utada et al., 2007) but also with tide-generated magnetic variation (Nakaya et al., 2022, SGEPPS). In the presentation, I will report the details of the developed joint inversion code and its applications to the case of Aso volcano, where ACTIVE (Utada et al., 2007) is intermittently operated, as well as AMT surveys (Kanda et al. 2019). I will also discuss its application to the case of the Lau basin, where tidally-induced magnetic field data provide sensitivity to the upper mantle resistivity (Nakaya et al., 2022, SGEPPS).