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Zoom meeting A ：11/3 AM1 (9:00-10:30)
09:15-09:30

Three-dimensional combined inversion scheme of the wideband-magnetotelluric method and the Network-MT method

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I developed a three-dimensional combined inversion scheme of the wideband-magnetotelluric method and the Network-MT method, using the edge-based finite element method. When using the wideband-magnetotelluric method, it is sometimes difficult to obtain accurate long-period data especially in noisy areas, resulting in lower sensitivity to deep subsurface structures. In addition, observed data of the wideband-magnetotelluric method can be affected by small near-surface heterogeneities of the electrical resistivity because the electric potential differences measured by dipoles with relatively small length (typically from several tens of meters to hundreds of meters). With the Network-MT method, in which metallic telephone cables several kilometers in length are used to measure electric potential differences, above two problems are alleviated owing to long observation duration and long electrode spacings. The Network-MT method, however, has a disadvantage that it has a lower resolution to the shallow fine structure because it is often difficult short-period data, typically of periods shorter than 10 s. The combined inversion of the wideband-magnetotelluric method and the Network-MT method has a potential to estimate subsurface electrical resistivity structure from the shallow part to the deep part because it comprises the advantages of the two methods and makes up for each other's disadvantages. In this presentation, I show the algorithm of the developed combined inversion scheme and the results of the verifications using the synthetic models.