3次元CSEM逆解析法による海底熱水鉱床イメージング

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Imaging of SMS deposits using an inversion algorithm for 3-D marine CSEM survey data

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Hydrothermal circulation of sea-water through permeable ocean crust leads to formation of seafloor massive sulfide (SMS) deposits, which have potential for mining. Controlled-source electromagnetic (CSEM) surveys can be used to map SMS deposits due to the low resistivity features compared to surrounding sediments. 2D inversion algorithms of CSEM surveys have been used for imaging of SMS deposits. However, 2D inversion often images artefacts for SMS deposits because the deposits have 3D structures. We have developed a 3D CSEM inversion algorithm to image resistivity structures of the deposits. By applying the inversion algorithm to synthetic and real data, we found the 3D CSEM inversion algorithm is useful for mapping resistivity structures of SMS deposits.