

## **SALT DOME OVERHANG DETECTABILITY STUDY FOR MARINE MAGNETOTELLURIC METHOD**

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We present a study on the detectability of the presence of a salt dome overhang in a shallow water marine environment, using the frequency domain magnetotelluric (MT) method. The target is a 60 km long salt wall structure 50 m below the sea floor with a water depth of only 2 m, typical for the Wadden Sea (North Sea). We use three-dimensional (3D) frequency domain integral equation forward modelling code *x3d* to compare electromagnetic responses for the salt structure with and without overhang. This comparison shows that the MT method is sensitive to the presence of an overhang. To further confirm this result we also present the results of the 3D MT inversion of data simulated for the salt wall with overhang along three profiles across the structure. We use the inversion code *x3di*, based on a limited memory quasi-Newton optimization method. The shape of the salt structure is recovered relatively well, clearly showing the presence of the overhang. However, the resistivity of the salt is overestimated as resistive structures are typically less well resolved. These results are promising and suggest that MT method can be used to help to identify targets for hydrocarbon exploration.

magnetotellurics, forward modelling, inversion

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