

# AMT study to detect deeply buried cavities under urban conditions in Sallent (Catalan Potassic Basin)

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## ABSTRACT

L'Estació neighbourhood is known by a subsidence caused by a cavity in a saline formation, located at -160m under the neighbourhood. Many geophysical and geotechnical studies made since the nineties studied this zone to take effective measures and prevent more damages, but the depth of investigation of the methods applied was not deep enough to reach the structure. The contribution of this project is to understand the capacities and limitations of using a natural source method (magnetotellurics, MT) in this area surrounded by noise sources using the forward modelling and synthetic data analysis. This proceeding can help to determine the acquisition and inversion parameters of the field data and increase the possibilities of reaching and detect the target structure. Due to time limitations, it was not possible to perform a deeper analysis of the field data or extend the survey to collect more MT sites to complete the work with real data. However, the synthetic data analysis provided valuable information about the inversion models resolutions according to parameters such as the number and spacing of MT sites or the frequencies affected by the target structure. These results highlight the relevance of performing this sort of synthetic data analysis before the field data acquisition.

**Keywords:** magnetotellurics (MT), passive geophysics, electromagnetic noise, forward modelling.