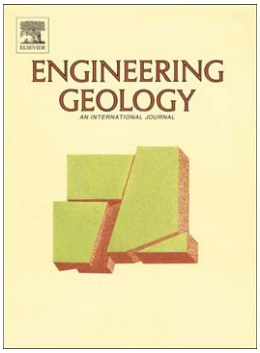

Three dimensional characterization of complex mantled karst structures. Decision making and engineering solutions applied to a road overlying evaporite rocks in the Ebro Basin (Spain)

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Title: *"Three dimensional characterization of complex mantled karst structures. Decision making and engineering solutions applied to a road overlying evaporite rocks in the Ebro Basin (Spain)"*

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Abstract

At mantle/cover evaporite karst settings, evidences of surficial subsidence are usually strongly dependent on geomechanical properties and spatial inhomogeneities within the cover series. In infrastructures assets, affected by karst processes, the evaluation of mitigation or engineering solutions requires a 3D reconstruction of the underground, karst-affected materials. Analysis and surveillance are also required to avoid deterioration of natural conditions and the migration or the increase in rate of karst features. In the central Ebro Basin, fluvial deposits cover soluble salts (mainly gypsum) located below the regional water table. Variations of geomechanical parameters of the cover, mainly related to carbonate crusts, and the contemporaneous sedimentation of fluvial deposits during karst activity can complicate the characterization of affected volumes. In this work, an integrated analysis including the available information, 3D characterization by means of GPR and three boreholes in a peri-