Detecting Epikarst with GPR: A Case Study from New Asphaltic Road Construction, Western Plateau, Assiut, Egypt.

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Abstract:

Ground-penetrating radar (GPR) has been applied in variety of studies including: groundwater investigations, identification of buried hazardous wastes, soils mapping, as well as engineering and geo-technical investigations. In the present study GPR was applied to determine the subsurface epikarst features during the construction of the asphaltic road in the north-western part (western plateau) of Assiut governorate, Egypt. GPR prospecting was done in all areas where a slope was cut into the limestone bedrock. All the 2D radargrams were constructed in raster with 3 meters between a single GPR profiles. This three-meters spacing was determined as the optimal value in which only a minimal resolution-price tradeoff was made. The gathered results were tested and compared to experiment reflections were calibrated. Karst limestone foundation bedrock treatments have been used in several worldwide projects and include engineering fill, engineering fill and geosynthetic materials, concrete filling and cement grout low pressure injection. Key words: GPR, 2D radar gram, Epikarst, limestone, geo-technical, Assiut,

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