Geophysical Research Abstracts
Vol. 21, EGU2019-7840-1, 2019
EGU General Assembly 2019

GPR in archeological prospection: A case study of Republic square in Belgrade

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In this paper results of a successful application of GPR technology to determine the exact location, dimensions and geometry of sub-surface archeological remains of a fortification object are presented. The object is the gate in the Square of Republic in Belgrade. Investigation was done as part of ongoing construction works in the Square, which also involve rearranging traffic control, expanding the pedestrian zone, arranging the surface layer as well as the recognition and marking of existing archeological elements that were of historical importance.
Location for data acquisition was defined based on accessible and relevant historical documents and information. Scanning was done using GPR antennas of 200 and 400MHz central frequency. Acquired radargrams were then used to create two 3D models. The layout of the profiles was identical in both cases, therefore the models could be compared. If the geometry of the remains of the gate could be noticed in both models on the same position and depth, then it was possible to define the geometry, dimensions and layout of the columns and other elements of the construction. Further construction works on the location confirmed the analysis results.
Obtained results showed high applicability of GPR technology as non-destructive technique in archeological survey of sub-surface structures. It provides good planning, estimation of the amount of work and reconstruction possibilities of public surfaces that may contain archeological sites.