



Efficiency of Integrated Geophysical techniques in delineating the extension of Bauxites ore in north Riyadh, Saudi Arabia

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We exploit the integration of Ground Penetrating Radar (GPR) techniques, magnetic gradiometry, resistivity measurements and seismic tomography for the high-resolution non-invasive study for delineating the subsurface Bauxite layer in Zabira locality, north of Riyadh. Integrated GPR, magnetic gradiometry resistivity and seismic refraction are used in the case of high contrast targets and provide an accurate subsurface reconstruction of foundations in sediments. Resistivity pseudo-sections are in particular useful for the areal identification of contacts between soils and foundations while GPR and magnetic gradiometry provide detailed information about location and depth of the structures. Results obtained by GPR, Magnetics and resistivity shows a very good agreement in mapping the bauxite layer depth at range of 5 m to 10 m while the depth obtained by seismic refraction was 10 m to 15 m due to lack of velocity information.