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Application of geophysical techniques for geothermal prospection: a case study of Magadi area, Kenya**Githiri John Gitonga**

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Magadi area is located in the southern part of the Kenyan rift, an active continental rift that is part of the East African Rift system. Thermal manifestations in the form of hot springs in the northern and southern shores of Lake Magadi and high heat flows suggest geothermal potential in the area. Local seismic activity monitored previously around Lake Magadi revealed an earthquake cluster caused by swarm activity in the rift centre at shallow depths. Ground magnetic and gravity investigations were carried out as a follow-up to locate any body at depth with sufficient magnetic susceptibility and density contrast respectively that may represent magmatic intrusions. Corrections were applied to both raw gravity and magnetic data and Bouguer and magnetic contour maps prepared respectively. 2-D gravity and magnetic models of the subsurface structure were generated by forward modelling. A body of density of 3.20gcm^{-3} and susceptibility contrasts 0.0428 SI was modelled on the northern region near little Magadi at a depth of approximately 0.4km . The location of the body coincides with the area where earthquake swarm occurs. Such a body of high density and susceptibility contrasts may consist of hot mantle derived material that may have intruded the crust.

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