

Crystalline Basement Map of the Resende Basin: A Contribution to Groundwater Investigation Using Gravimetry

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As part of the Project MODESTHI started in September, 1998, under the sponsorship of Brazilian federal agencies (PADCT-III, FINEP) , a gravity survey was performed, having in view the establishment of the structural framework and the basement map of the Resende Basin. A total of 195 gravity stations were determined, in an approximately regular 2 km x 2 km grid. For positioning and elevation determination of those points it was carried out a geodetic GPS survey,

A map of residual Bouguer anomaly was generated, that shows direct correlation with the main structures and lithologies in the region. NE-SW and N-S faults, can be found in the gravimetric signal. The alkaline massif of Itatiaia, the pre-Brazilian crystalline gneiss, the gneiss of Paraíba do Sul group, as well as the basin sediments are identified in the map.

A tridimensional inversion based on a model of contiguous prisms was performed. The results, obtained in an iterative process, gave rise to the crystalline basement map. This map shows a sedimentary layer up to 550 meters thick and is coherent in comparison with existent drill holes.

Based on the results obtained, a new site for investigation with drill holes is indicated, having in view to find groundwater in Resende Basin.