

## **GEO-ELECTRICAL STRUCTURE OF RESENDE BASIN, BRAZIL, USING THE TRANSIENT ELECTROMAGNETIC (TEM) METHOD.**

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As part of a multi-disciplinary project for groundwater resources evaluation (Project MODESTHI-PADCTIII-FINEP/UFRJ), a transient electromagnetic (TEM) sounding survey was achieved in the Resende sedimentary Basin, Rio de Janeiro State, Brazil, using a SIROTEM Mk3 system from Geo-Instruments. The area is highly industrialized and some of the TEM data are strongly disturbed by electromagnetic noise of cultural origin. The TEM data were, in a first approach, interpreted with a 1-D ridge regression inversion algorithm. The geo-electric modeling corroborates previous results, presenting depths of the basement varying between some dozens of meters close of the borders and 200-300 m in the depocenters of the basin. The results suggest a basement with relief accentuated inside the basin and they confirm the presence of a structural arch standing along the central area. The geo-electrical topography map proposed for the basement ( $\rho = 150 \text{ ohm-m}$ ) and a residual gravity Bouguer anomaly map obtained for the region are compared. The main structural features of the basin are depicted in both maps. The evident displacement of the western deposition center due to the influence of the alkaline Itatiaia Massif is clearly corrected in the geo-electric topography map. Stratigraphic data of wells available in the surveyed area show a good correlation with resistivity profiles of adjacent stations. A 2-D modeling using the decay times of parallel components of the induced secondary magnetic field is presented. The reduction of the influence of cultural noise in the results is proposed.