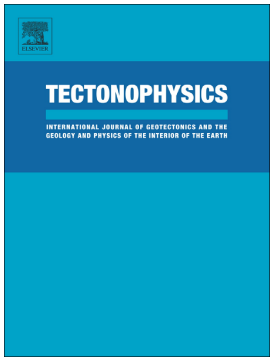

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Basement structure of the United Arab Emirates derived from an analysis of regional gravity and aeromagnetic database

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ABSTRACT

Gravity and aeromagnetic data covering the whole territory of the United Arab Emirates (UAE) have been used to evaluate both shallow and deep geological structures, in particular the depth to basement since it is not imaged by seismic data anywhere within the UAE. Thus, the aim has been to map the basement so that its structure can help to assess its control on the distribution of hydrocarbons within the UAE. Power spectrum analysis reveals gravity and magnetic signatures to have some similarities, in having two main density/susceptibility interfaces widely separated in depth such that regional-residual anomaly separation could effectively be undertaken. The upper density/susceptibility interface occurs at a depth of about 1.5 km while the deeper interface varies in depth throughout the UAE. For gravity, this deeper interface is assumed to be due to the combined effect of lateral changes in density structures within the sediments and in depth of basement while for magnetics it is assumed the sediments have negligible susceptibility and the anomalies unrelated to the volcanic/magmatic bodies result from only changes in depth to basement. The power