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Heterogeneity in Continental Crustal Derived from the Gravity Data: An example from Kutch India (an intraplate seismic region)

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The area of Kuch is having complex tectonic history and came recently into lime light after the disaster earthquake of 26th January 2001 (Mb= 7.7). The Bouguer gravity data of the area is analyzed by using the scaling spectral method to understand the complex behavior of the continental crust. The scaling spectral method gives the depth values of density interfaces as well as scaling exponents. The scaling exponent provides the information about the density distribution, which may be a useful to understand the homogeneity and heterogeneity in the area. Nine profiles have been selected in the area. The scaling exponent shows that the lower crustal region is more homogenous than the shallower one. The value of scaling exponent indicates more heterogeneity in the area of epicenter. This study leads us in understanding the heterogeneous behavior of the crust in the backdrop of ancient thermal process and orogeny. It is suggested that this inference of heterogeneity may be used in quantifying the hazard estimation in some form for the Kutch region.