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The Application of Morphometric Indices for Neotectonic Study of Iran

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The application of morphometric indices for neotectonic studies in large scale, is leading to obtain of accurate results. Indices that used in this study were such as: asymmetry factor, stream-gradient index, drainage density, elongation ratio, and relief ratio. In this research, the whole of Iran was studied that from geographical position side it is placed in northern latitude of 25 up to 39 degree and eastern longitude of 44 up to 63 degree. This study was unique from the point of aim and work scale in Iran, and review of literature showed that most of applied indices in this research have been used only in Hydrogeology course in the world. This study at first, started with digitizing the topographic maps and creates DEM in the scale of 1/250000 and the limit's definition for 660 subsidiary drainage basin and the selection of 900 stream from diverse kinds of orders. Indices, calculated in the base of DEM with regarding to special definition of them. All of these stages have done with using of some software such as: Arc View GIS, Arc Map and Maple. With the aim of analyzing crude data; mentioned indices were implied for preparing contour maps. Investigating of findings and their correlation with the trend of tectonic liniments, revealed that morphometric indices in neotectonic studies of region (with the aim of detection of relative intensity of tectonic processes and comparison of tectonically potential in large scale) had some advantages like applicability and high pace. There was Relative correlation between linear trends of anomaly with trends of tectonic liniments, and also correlation maps and charts with the natural geographic map in the whole scale of country. These observations showed the influence of fault's operation on formation of morphologic landscapes. Therefore it's clear; negative and positive anomalies that obtained for each index, distinguished relative intensity of tectonic activity in the different regions of Iran.