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Data Article

Data on morphotectonic indices of Dashtekhak district, Iran



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ABSTRACT

Morphotectonic indices by representing the longer period of time than recorded earthquake data, are useful in evaluating the tectonic activity of a region. Dashtekhak area is located in Kerman province of Iran, where one of the most active faults, Kouhbanan strike slip fault, passes through. This data article provides a precise level data on mountain fronts and valleys of Dashtekhak region that is fundamental for morphotectonic investigations of the relationship among geomorphology and tectonic activity. This data is valuable in the field of geology and geography. Mountain fronts and valleys data is more relevant in the field of tectonics and geomorphology. It helps to evaluate a region from the viewpoint of tectonic activity. The data which are presented for 31 mountain fronts and 61 valleys, is taken by processing of remotely sensed Landsat satellite data, photogeology of areal photographs, measuring on topographic maps and controlled by field checking. This data is useful for calculating of some morphotectonic indices such as sinuosity of mountain fronts (s_{mf}), mountain front faceting percentage (Facet%), the ratio of valley floor width to valley height (V_f) and the valley ratio (V).

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Specifications Table

Subject area	<i>Geology</i>
More specific subject area	<i>Tectonics, Morphotectonics, Tectonic geomorphology</i>
Type of data	<i>Table</i>
How data was acquired	<i>Survey, Topographic maps, Photogeology, Field checking</i>
Data format	<i>Raw, analyzed</i>
Experimental factors	<i>Geometry of Mountain fronts and valleys</i>
Experimental features	<i>Mountain fronts and valleys</i>
Data source location	<i>Dashtekhak, Zarand, Iran. Latitude: 56°,19' to 56°,48' N & Longitude: 30°,46' to 31°,14' E</i>
Data accessibility	<i>Data is available with this article.</i>

Value of the data

- The data provides a vivid vision about activity stage of Dashtekhak area.
- It helps to explain the impact of Kouhbanan fault segments on the activity of the area.
- Data can be utilized for quantitative analysis in the field of tectonic geomorphology and morphotectonics.
- Other researchers may utilize the data for their research work and further investigation.

1. Data

The data presented here describes the morphometric characteristic of 31 mountain fronts and 61 valleys of Dashtekhak district. Data is given in table form. The data is prepared on the basis of field work and laboratory analysis.

2. Experimental design, materials and methods

Morphotectonic investigation is an effective tool to enable us to detect and distinguish the procedures that occur on the landforms. Erosion and tectonic movements leave their imprints as a morphological components which their measurement is the best approach to relate the landforms with the neotectonic evolution of the area [1,2].

In order to achieve the most accurate data, the analysis was undertaken on topographic maps in 1:10,000 scale. Landsat Satellite images and 1:50,000 scale aerial photographs beside advantages of google earth software are used to locate and measure precisely the mountain fronts and valleys geomorphic specifications. The analysis comprised the calculation of morphotectonic indices (S_{mf} , Facet%, V_f , V) for 31 mountain fronts and 61 valleys, according to the mathematical relationships which are presented on Tables 1–5.

The sinuosity and faceting of mountain fronts are useful morphotectonic indices that reflect the balance between erosional and tectonic forces. So that, if the tectonic activity decreases, erosion process begins to form the sinusoidal mountain fronts which turns more irregular over time. For S_{mf} the closer the data to 1.0 is thought to be a tectonically highly active mountain front while the higher values belong to less active regions. For Facet% index, large percentages reflect high level of tectonic activity in the mountain fronts. Therefore, the mountain fronts influenced by active uplifting are almost straight and their S_{mf} indices roughly equal 1 and Facet% around 100%. V_f and V are valuable

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