

## ***Interactive comment on “Relative tectonic activity classification in Kermanshah area, west Iran” by M. Arian and Z. Aram***

**Anonymous Referee #5**

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The paper “Relative tectonic activity classification in Kermanshah area, west Iran” by M. Arian and Z. Aram uses geomorphic indices to infer the relative tectonic activity in part of the high Zagros thrust belt. The study provides a rigorous analysis of the geomorphological features yet the results do not provide any solid information for better understanding the local tectonic activity in the area. Overall, the results in this from cannot be used for future studies in the region.

General comments:

- The term “relative tectonic activity” is rather ambiguous and does not provide any concrete idea in terms of plate tectonics. No quantitative results are obtained. For this reason, the results have minimal use for future studies in the region.

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- The entire area is a “crush zone” that is expected to show a single type of tectonic activity (e.g., uplift). Given the scale of the study area, I would rather expect a single outcome (e.g. uplift rate) representing the tectonic activity of the area. However, the map in Figure 10 shows local patches of so-called high and low tectonic activity zones. The authors must support these conclusions from the view of plate tectonics, or by some other mechanisms.

- Section 3 indicates that different indices are sensitive to different types of activities in different weights, e.g. SL and Vf being most sensitive to uplift. However, the authors intentionally combine different indices to get a single relative tectonic activity index (Iat). In my opinion, combining all indices to get a rather ambiguous “relative tectonic activity” index obscure some useful information that can be used in further studies.

- Determination of the classes is a vital part of this study yet no explicit discussion is given on the class definitions. How were three classes defined for each index, and how were these indices combined to get the four classes of relative tectonic activity index (Figure 10). Section 4, states that “the average of six measured geomorphic indices. . .”; how this averaging was made? At this point, Figure 10 is difficult to interpret from a tectonic point of view.

- The language of the manuscript is at disturbingly low-level (poor wording, wrong use of tenses, wrong sentence structures, numerous typos, etc.), and needs to be completely re-written.

Specific comments:

- The title may include some words about the method used (e.g., geomorphic indices)

- Section 3 includes a textbook content; it must be included in Section 4 in a concise manner.

- Somewhere in the beginning, a schematic figure showing morphologic features for the definitions of the indices may be useful.

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- Page 2101 Line 10: What kind of equilibrium is assumed? Can this be justified? Also a reference is needed for this statement.
- Page 2012 Line 13: Resolution of the DEM used may be provided.
- Page 2107 Line 2-4: No reference to 3 subdivisions in the figures. This part may be removed from the text if they are not necessary.
- Figure 1, the specific study area may be outlined on map on the left.
- Figure 10: larger fonts may be used for the names of structural features.
- Figures 11-13: structural features may be outlined on field pictures by drawing color lines.

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Interactive comment on Solid Earth Discuss., 6, 2097, 2014.