

Interactive  
Comment

***Interactive comment on “Short Communication:  
Earth is (mostly) flat, but mountains dominate  
global denudation: apportionment of the  
continental mass flux over millennial time scales,  
revisited” by J. K. Willenbring et al.***

**Anonymous Referee #4**

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The paper “Earth is (mostly) flat, but mountains dominate global denudation: Apportionment of the continental mass flux over millennial time scales, revisited” by J.K. Willenbring, A.T. Codilean, K.L. Ferrier, B. McElroy, and J.W. Kirchner reminds a paper with somehow a similar title, but different conclusions (“Earth is (mostly) flat: Apportionment of the flux of continental sediment over millennial time scales” by Jane K. Willenbring, Alexandru T. Codilean and Brandon McElroy, published last year in *Geology*). The present paper is an attempt to correct the *Geology* paper, with two new authors (that were the authors of the News and Views published in *Nature* last year about Wil-

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lenbrig's Geology paper). It is now an information widely shared in our community, the paper published at Geology is to a vast extent wrong and misleading, because of conceptual and technical mistakes.

Indeed. the paper under review at Esurf correct most of the mistake identified in the original Geology paper, especially the DEM resolution issues and downscaling, and interestingly, this lead to the opposite conclusion than the original paper. Now, the sediment flux out of the mountain (~10% of the land surface) account for ~half of the global sediment flux. This is a crucial finding in earth surface dynamics, because it provides new information on how the erosion behaves with slope, and how tectonics and erosion are interrelated. At the opposite of other reviewers and comments to the Geology paper, I do think that trying to model a vast database with a single variable (here slope), despite countless environment and sampling biases is worthy. Now the paper. It is written as a list of the error written in the Geology paper and how it has been corrected in the new paper. It is not possible to read this paper without reading the Geology paper in the same time, and this is not convenient, to say the less. More important, if the new paper is doing a great job at correcting the Geology paper, the Geology paper remains published, even if the authors, the editors and most of the scientists active in earth surface dynamics know that it is wrong. This is why I will not write a proper review of the paper. To say short, it is now valid from a scientific viewpoint. To this extent, I somehow disagree with the other reviewers, and I do think that Willenbring's work on the topic should be published, but published in a "clean" fashion. Publishing a self-corrigendum in another journal the year after is not "clean", I believe. Consequently, I think that the Geology paper should be withdrawn from the GSA database, and replaced with one truthful paper (published wherever, in Geology or Esurf). I am aware that such suggestion is beyond the reviewer's task, and may sound very offending to the authors and editors.

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Interactive comment on Earth Surf. Dynam. Discuss., 2, 1, 2014.

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