

Interactive comment on “Has erosion globally increased? Long-term erosion rates as a function of climate derived from the impact crater inventory” by Stefan Hergarten and Thomas Kenkmann

J. Braun (Editor)

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The two reviewers agree that the material contained in this manuscript is of great interest to the surface dynamics community because it proposes a new approach to investigate how erosion efficiency may have evolved through the recent geological past. Both reviewers, however, caution the authors that (1) they should be more explicit in giving robust estimates of the uncertainty attached to their estimate of how erosion rate has potentially changed over the past few tens of millions of years, and (2) they should better describe and justify a number of hypotheses made to reach their con-

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clusion (preferential erodibility of craters, vegetation cover, motion of continents across latitudinal climatic zones, global change or redistribution of relief due to Quaternary glaciations, etc.) . There is also a need to better explain the approach and its statistical robustness (small number statistics, temporal vs spatial bias, effect of hiatuses, ...) as, on the one hand, both reviewers appear to stumble on the same logical steps in the authors' arguments while, on the other hand, the authors argue that their approach is valid.

The authors acknowledge that both reviewers have performed a thorough and very constructive review of their manuscript. I fully concur with those statements. In view of the response given by the authors to the reviewers comments and arguments, I believe it is appropriate (and desirable) that the authors prepare a revised version of their manuscript. It should aim principally at improving the description of the method, the assumptions on which it is built and the uncertainty on the estimate of erosion rate evolution it provides. I also urge the authors to take into account all reviewers comments and suggestions to improve their manuscript for clarity and completeness, and, in doing so, enhance its potential impact.

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