

Interactive comment on “Graffiti for science – Erosion painting reveals spatially variable erosivity of sediment-laden flows” by A. R. Beer et al.

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Received and published: 20 June 2016

This is a welcome addition to the literature on erosion in bedrock channels. One of the primary contributions of the paper is the presentation of field-based evidence that supports several hypotheses of bedrock channel erosion. The field observations presented here support at least three existing hypotheses on bedrock erosion processes: 1) bedrock erosion rates are highly variable depending on the in-channel orientation of bedrock surfaces; 2) lateral bedrock erosion via tools is focused at the base of the channel wall; 3) suspended sediment is capable of bedrock erosion.

Field-based evidence of a substantial cross-channel gradient in sediment concentration during high, erosive channel flows is a valuable contribution to the literature. As such,

I would like to see this explored in a little more detail (to the extent possible) perhaps by providing basic hydraulic conditions within and upstream of the gorge that might be driving this apparent concentration gradient.

As a proof-of-concept study, I would have liked to see a more detailed discussion of the methodology. The authors briefly mention some of the potential pitfalls of the method in the discussion section but do not really address how these pitfalls can be avoided. Maybe the authors have indeed provided the necessary level of detail for a proof-of-concept study, perhaps the editor has a better feeling for the detailed required for such a study.

In light of the comment above, it might be prudent to focus a little less on the proof-of-concept idea, particularly in the abstract and introduction sections, and more on the qualitative field-based evidence which lends support to several existing hypotheses. Again, I think perhaps the most exciting thing here is that you have FIELD-BASED evidence of patterns of bedrock erosion.

More detail of the field site would help the reader put the findings in context. Estimate of hydraulic conditions, grain size and mobility, primary lithology of channel boundaries. . .

Line-by-line comments submitted as a supplemental document using the Adobe comment tool within the manuscript.

Please also note the supplement to this comment:

<http://www.earth-surf-dynam-discuss.net/esurf-2016-27/esurf-2016-27-RC3-supplement.pdf>

Interactive comment on Earth Surf. Dynam. Discuss., doi:10.5194/esurf-2016-27, 2016.

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Discussion paper

