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Interactive comment on “Evolution of a highly dilatant fault zone in the grabens of Canyonlands National Park, Utah/USA – integrating field work, ground penetrating radar and airborne imagery analysis” by M. Kettermann et al.

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Received and published: 29 March 2015

Dear Editor,

I have now read and revised the manuscript by Kettermann et alii on dilatant fault zone and graben formation in Utah, USA. The manuscript is well-written and rightly concise, data and interpretation are sound, and the proposed idea is new. I have only a few comments that may be of help to improve the paper.

(1) the GPR profiles are probably the most important data in this manuscript. I have

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had some difficulties in seeing, reading, and understanding these profiles. The profiles are often too small and the interpretation is too simple. I suggest the authors to work on the graphic representation of these profiles enlarging them or using portion enlargement and greatly enriching the line drawing and interpretation. As they appear in the manuscript, these profiles are not enough compelling for the proposed final model.

(2) Dilatant fault zones are well known structures but not so common. Kettermann et alii rightly provide a series of comparative examples from other settings so to support their model. I totally agree with this method. I suggest the authors to reinforce this comparative method. I was wondering whether Kettermann et alii could add a synoptic figure, where they could show other significant examples similar to their study area. This figure could display images or re-drawing from previous papers. In other words, I am suggesting Kettermann et alii to strengthen a little bit the comparative analysis concerning dilatant fault zones and related graben formation.

(3) Again to make their conclusions more solid and sound, I suggest Kettermann et alii to provide a better «negative» analysis of their data and results. In other words, can their results be interpreted in a different way? Yes/no and why? Why previous models for the same study area should be outpaced by this model?

I hope to see this manuscript published soon on Solid Earth after a minor review as suggested above.

Rome, March 2015

Andrea Billi

Interactive comment on Solid Earth Discuss., 7, 1119, 2015.

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