

Interactive comment on “Abutting faults: a case study of the evolution of strain at Courthouse branch point, Moab Fault, Utah” by Heijn van Gent and Janos L. Urai

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We thank the reviewer for his extensive review, and many helpful comments. We have implemented, most, of the changes suggested and address some of his points in detail below. In other cases we clarified our arguments. The reviewer has made his concerns into three main sections, which we will address below:

Point 1a) “amount of structural data presented” The reviewer is correct in stating that the measured data point represents the vast majority of measurable slip planes in this outcrop. Some slip planes were simply of too low a quality to measure, or were in positions (on cliffs, in cavities) where measurements were not possible. We will adopt

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the text to reflect this.

Point 1b) “the completion of the structural map in Fig. 3a with the real fault strands (not only straight isolated lines) and the arrows indicating fault kinematics” We thank the reviewer for this comment. Indeed, the map as it stands now represents more a sketch than a map. The maps published by Johannsen et al (2005), however are excellent and we will redraft the map to incorporate the faults published here.

Point 1c) “more clear evidence (photos) of crosscutting relationships between the different fault sets should be provided (at least for the 3 groups which constrain the evolutionary model in 3 steps). “ We have based our work extensively on Johannsen et al. (2005). When working this outcrop we often confirmed their observations, but felt that from a structural mapping/cross cutting study of Johannsen et al (2005) was of such high quality we would not be able to add much. As a result, these cross-cutting relationships were not the focus of our work in this this study. One example of a crosscutting relationship is in attached Figure 1, taken along a scanline of photo’s perpendicular to the main fault (scale is in inches). Main fault Segment A is several meters to the left edge of the image and the set of deformation bands of set 3&4 (highlighted in blue) is off-set by the set highlighted in red (from set 5-6-7). We will make it more clear in the text that mapping cross-cutting relations was not the focus of this work, and that we rely on the excellent observations of Johannsen et al. (2005).

2) “Figure quality” All comments here are justified and we will make these changes prior to submitting the final version.

3) “Typos and text modifications” We have implemented all these changes (or slightly modified the text where needed to make the point more clearly). We want to thank the reviewer for including the scanned document, that was very useful!

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-137>, 2019.

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Fig. 1. Cross-cutting relations between two bundles in deformation band set 3&4 (blue) and set 5,6 & 7 (red). Scale is in inches

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