

Interactive comment on “Structural expression of a fading rift front, a case study from the Oligo-Miocene Irbid rift of northwest Arabia” by Reli Wald et al.

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We are very thankful for this productive interactive comment of anonymous referee #1. Indeed an important aspect of this manuscript is the sequence of events depicted from the sedimentary and facies architecture. Hence, we are content that we managed to deliver the story clearly.

In regard with the above corrections/clarifications we did the following: (1) We added coordinates to figures 1, 12, 13. We would like to mention that figure 13b is based on a numerical model of McClay and Bonora (2001) that according to our analysis fits the Galilee (northern Israel, Irbid rift northwestern front) case. (2) Figure 1, “Judea”:

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The Judea label is neither a group nor formation in Figure 1. It denotes a geographical region where the Judea Group type section was defined. In order to clarify this issue, we modified the label to “Judean Hills”. (3) True. The second stage of basin subsidence ends at roughly 5 Ma, while the Dead Sea stress field persists into the Plio-Pliocene. Evidence for activity on segments of the Carmel-Gilboa fault system, off the plate boundary is dealt with in the PhD thesis and in a future publication. However, we think that modification of the manuscript title will not serve its contribution to the scientific community. Changing the current “Oligo-Miocene” to “Cenozoic” for example, is too vague and does not focus on the evolutionary stage of the rifting.

The ending paragraphs of the manuscript include a new “closure”, to clarify that segments of the fading rift still show life signs in terms of earthquakes and vertical offsets. These last gasps of activity are shown in figure 13 by reversal of fault movement sense and uplifted high blocks that remain high as yet. The youngest evolution stages of the study area are firstly mentioned in the introduction, Chapter 1.1, lines 5-11. In the Results chapter it is dealt with in lines 19-21 of chapter 3.2.1 and shown by vertical offsets of late Miocene-Pliocene units in Figure 11. Finally, in the Discussion chapter the Plio-Pleistocene evolution is further exemplified in a larger geodynamic frame. It is presented by lines 7-26 in chapter 4.1.2, that lead the reader to understand that after the relief has been filled by sediments of the second stage of basin subsidence, the basins had been cut through by Plio-Pleistocene shear, part of which prevails to date. Structural relations between the declining Irbid rift and the emergence of Dead Sea fault dominance are shown in Figures 12, 13 and leave the reader with a sense of closure. Following Referee #1’s advice, we added a few sentences at the end of chapter 4.4, lines 21-27. However, since we intend to focus on the Plio-Pleistocene shear in a future publication, we only wrap-up the story by hinting to it in the closing sentences of the Conclusion chapter.

Kind regards, Reli Wald on behalf of the authors

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Please also note the supplement to this comment:
<https://www.solid-earth-discuss.net/se-2018-91/se-2018-91-AC1-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2018-91>, 2018.