

# ***Interactive comment on* “Structure and kinematics of an extensional growth fold, Hadahid Fault System, Suez Rift, Egypt” by Christopher A.-L. Jackson et al.**

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This paper presents the results of field mapping of a well exposed growth fold, developed above a normal fault. Growth folds commonly develop ahead of the tip of a propagating normal fault and are a key feature in the development of normal fault zones, however their importance is only beginning to be recognised and detailed studies of these structures are reasonably rare. This paper is an important addition to the literature on these structures. I found it an interesting article and believe it would fit well in SE. In general the paper is well written and is of an appropriate length.

I have some specific comments which I believe would improve the manuscript.

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Line 23: the term “partly breached monoclines” is used several times throughout the paper but is not defined anywhere, I’m not entirely sure what the authors mean by this.

Line 45: “Depicted” I think this would read better with a different word here maybe “seen to be”

Lines 39-44 add Ferrill et al. 2012, & 2007 and Ferrill and Morris 2008

Line 158: “fault-fold (segments)” this term needs to be defined?

Lines 176-178: “provides strong evidence for a northward decrease in displacement” could you provide some details of the size of this decrease and give some details on the split between discrete and continuous displacement along the fault?

Lines 294-305: The Hadahid Fault Segment, The orientation of this fault segment is substantially different to the other segments on the fault, it also appears to have a much higher total throws than the segments either side of it, Even allowing for a reasonable displacement gradient. (i.e. the total throw on the Nubian sandstone seems to be alot higher in the sections in Figs. 4 and 14), how is the displacement being conserved here? is the displacement distributed across a number of structures or folds on the other segments?

Lines 393-394: “indicates that the structure propagated north-westwards”, is it possible that this is a geometric effect, rather than a propagation effect? Is there any indication of any variation in throw on any of the other major fault systems in the area?

Figures:

Fig. 1. I think it would be good to highlight the edges of the monoclines on the structures shown in this diagram, just to make the geometries a little bit clearer.

Fig. 2. I find this figure a little confusing, The outline of the main map is not shown in the inset, the outline of the study area is shown in the inset but not on the main map, it would make more sense to me to put the outline of fig 3 in the main map, and the

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outline of the main map in the inset. I'd also highlight the location of the section in fig 2 (b) on the main map, and indicate what portion of this section crosses the main map. The two maps use different colour schemes, but only one is shown for the entire figure?

Fig. 3. (a) and (b) show the same area, I'd make them the same shape, I'd also show the location of the maps in figs 6, 8, 10, 12, 14 and 18 on this figure I think it would make it easier to follow the flow of the paper.

Fig. 20. I guess some hidden layer ended up being unhidden somewhere along the line with this figure, but I think in get the main points, what I think is the final figure is looks ok!

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