

Interactive comment on “Dilatant normal faulting in jointed cohesive rocks: a physical model study” by M. Kettermann et al.

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Dear Editor,

I have now revised with much interest the manuscript by Kettermann et alii on dilatant normal faulting in jointed cohesive rocks. I have found this manuscript in a very nice shape. It is well written, clear, and scientifically sound. It addresses (using physical modeling) a classical but still poorly understood problem in brittle structural geology, that is the relationship between normal faulting and pre-existing joints.

Some very interesting observations and conclusions are drawn, such as enhanced jointing in the fault footwall during the early stages of normal faulting (and then migration toward the hangingwall) or enhanced fracture connectivity with larger angles between pre-existing joints and the normal fault. Comparisons with natural examples

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are very appropriate and useful for a better understanding of the problem and results.

One problem I have had is that I was unable to access the data repository to check the supplemental material.

I have very few comments and think that the paper could be published as it is or almost.

I see that the core/synthesis of all the work done is in the diagram of Fig. 10, where a series of features/parameters such as joint connectivity, degree of fault segmentation, etc are graphed against the angle between pre-existing joints and the main (developing) normal fault. From the text (sections 3 and 4) and the figures (Figs 2-5) I cannot well understand how most of these parameters are measured (e.g. joint connectivity) and where the raw data are stored/shown. Is there a synoptic table with all the experiments and related data? Further information about measurements and data will be very important to complete this work, at least in my opinion. I refer to enhanced figures, a synoptic table of data, and more text to better explain data acquisition.

Eventually, I would like to acknowledge that I am not expert of physical/analog experiments, related materials, rheologies, etc. Maybe a reviewer expert in this field could provide important comments on this side of the work.

Sincerely Andrea Billi

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