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Interactive comment on "On the mechanical behaviour of a low angle normal fault: the Altotiberina fault (Northern Apennines, Italy) system case study" *by* Luigi Vadacca et al.

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Dear Antonio,

thanks for your comments. I agree that 2D simulations can be considered an intermediate step versus the better understanding of the mechanical behavior of the Altotiberina fault. Nevertheless, as showed by Vadacca et al. (2014), current GPS data show little sensitivity to 3D features like fault topography. That is why we are working to create the opportunity to install additional GPS stations; probably the only way to provide fundamental progresses based on novel simulations considering 3D geological proprieties. However, for the aim of this work, that is to understand the "main" mechanical behavior of the ATF, 2D simulations can be considered exhaustive. This is also because there

are not large along-strike geometrical variations of the ATF plane (at least considering large distances), that could affect the orientation of the intermediate stress tensor.

Concerning your second question, the 4b model is devoted to verify the presence of layers of the fault zone with a different mechanical behavior as hypothesized by Chiaraluce et al (2014).

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