

***Interactive comment on* “Control of pre-existing fabric in fracture formation, reactivation and vein emplacement under variable fluid pressure conditions: An example from Archean Greenstone belt, India” by Sreyashi Bhowmick and Tridib Kumar Mondal**

Roger Soliva (Editor)

roger.soliva@gm.univ-montp2.fr

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Dear authors,

We have now received two comments on your manuscript. Both reviewers did careful screening of the paper and interesting complementary comments. I wish to thank you for the significant work yet done on the comments from reviewer 1. I recommend now revisions and clarifications of the manuscript with respect to the additional comments,

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including reviewer 2 and my suggestions, before the manuscript can be considered for publication. The 3 main points to be considered now are synthesised below:

1 - Better define the BTS (Brazilian) in the text, which will help to explain how to derive the minimum Pf and your reasoning. Then clarify your reasoning for the estimation of minimum Pf.

2 - Consider revision on the estimations of Pf values as suggested by reviewer 2. Give stronger justifications and clear constraints on the definition of the subsets of points to derive both Pf end members, and especially the minimum one. Better explain in the text how you statistically define a cluster and the points to be considered in all your selections. Do you use a criteria from the Birgham distribution ? If there is no clear justification, please restrain your conclusions or be more nuanced with respect to the strength of the method and data used. I also suggest to include the new figure of your first revision (about the others clusters) into the manuscript.

3 – Fault valve. I consider your revision, especially the new photograph suggesting crack seal with two episodes. Please, better introduce and discuss the new proofs of fault valve mechanism both in the introduction and your result section. Also include the photographs into the new version of the manuscript (not as a supplementary material) and if possible, replace the close view with another photograph showing better evidences of more cycles into a same vein (here we can really see two episodes). It could be more convincing for the fault valve behaviour. I think to see more convincing cases with multiple adjacent branches in the part (a) of you new figure.

In addition, I also recommend you to answer the specific points mentioned below :

- Revise the sense of shear marked with all the arrows in the 3 bloc diagrams of Figure 10b, c and d, which are kinematically inconsistent with the wing cracks drawn. Also better align the yellow arrow with the T criteria in the riedel plane analysis.

- Provide more justification in the discussion about the deformation mechanism related

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to the magnetic fabric. Can we interpret the magnetic fabric as non coaxial (simple shear) or multi episodic deformation (2 poles on the stereogram), and then having a shortening oblique to the foliation ?

- Consider the comments I annotated in the pdf attached.

I look forward receiving your revisions and go forward in the process of publication.

Best regards, Roger Soliva

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2020-30/se-2020-30-EC2-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2020-30>, 2020.

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