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Comment

Interactive comment on “Microscale strain partitioning? Differential quartz lattice preferred orientation development in micaceous phyllite, Hindu Kush, northwestern Pakistan” by K. P. Larson et al.

K. P. Larson et al.

kyle.larson@ubc.ca

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We appreciate the continued interaction with Dr. Wilson and apologise for not making the revised version of the MS visible for all. We have now attached a revised version of the study as a supplement to this comment.

Below we respond to Dr. Wilson’s comments and suggestions. As a note for potential readers of this discussion, the reviewer’s comments refer to line numbers in an early version of the manuscript that was sent out for review and not the version of the

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manuscript published online for discussion.

Abstract Upon a second revisit, we agree that the last sentence can be deleted.

Lines 28-32: We appreciate the further clarification of the reviewer's viewpoint on the inclusion of these references. In light of this we have heeded their suggestion and removed them. We have also added a reference to Sander's work as suggested.

Line 34: Kile 2009 is now cited related to u-stage techniques.

Methods –

We have now included more information about the specifics of the instrument used to allow readers familiar with such devices to make informed interpretations about the data produced.

With regard to instrument verification/calibration – we have a set of thin sections cut at various angles through a quartz rod (as described by the reviewer). These were used to verify the data output from the instrument used for the analyses in this paper. We agree that the broad distribution of such reference sections would be extremely useful for interlab comparison.

Lines 147-148: We understand the reviewer's concerns about the presentation of the bulk data and the potential for such data to be dominated by larger grains (though the bulk fabric appears to be dominated by the smallest, most abundant grain size population). We, however, maintain that presentation of the bulk fabric is important to one of the goals of this paper, which is to highlight the importance of spatially referenced, hand-picked fabrics that may be overwhelmed if one simply uses a non-discriminant bulk-style analysis. Discussion of [c] slip is presented in the context of both the bulk and handpicked matrix grain fabrics.

Lines 167-169: The specimen is located between the Tirich Mir and Reshun faults, both of which have early, top-to-the-southeast movement across them. (They have been reactivated more recently as strike-slip faults.) The shear sense observed within

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the specimen is compatible with that movement. It seems reasonable to conclude that it is related rather than the cause of some other additional process. That being said, the focus of this study is not on the structure/tectonics of the region, but of thin-section scale changes. Broader discussion of the regional implications requires the analysis of more specimens and is beyond the scope of this paper.

Lines 170-186: This section is re-written in the version of the manuscript published as a discussion paper online. We have removed reference to the bulk pattern here and focused on the hand-picked fabric from the matrix grains.

Lines 194-205: As stated previously we feel as though a brief explanation of deformation temperatures is helpful for the reader. We do, however, agree with the the suggestion of combining this section with the next section.

Lines 215-244: This section is modified in the of the manuscript published as a discussion paper online from the earlier version that was somehow sent out for review. We recognize that there is likely to be strain parting between the various mineral phases within the specimen analysed, however, we discuss strain only from the quartz lens. Presumably the quartz within that lens would react similarly to imposed stresses, such that they would record the stresses they were subjected to. While the stresses recorded may not be reflective of the stresses the entire specimen was subjected to it would be a record of the stresses within the quartz lens and have bearing on the development of the crystallographic fabrics recorded therein.

Discussion –

As mentioned in our previous reply, the discussion was significantly changed between initial submission and the version published online as a discussion article. Unfortunately, only the earlier, now modified, version was sent out for review. Many of the reviewer's comments have been addressed in the updated version. We don't see any compelling reason to combine the discussion with the conclusions. Not doing so allows us to separate speculation from better-constrained interpretations. Reference

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to Lister and Paterson has been removed.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/6/C1100/2014/sed-6-C1100-2014-supplement.pdf>

Interactive comment on Solid Earth Discuss., 6, 2735, 2014.

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