

## ***Interactive comment on “Hierarchical creep cavity formation in an ultramylonite and implications for phase mixing” by James Gilgannon et al.***

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Dear editors and authors,

This study provides detailed documentation of the distribution of micro-cavities in a quartzo-feldspathic ultramylonite from the Redbank Shear zone (Australia). Based on interesting observations, the authors highlight different processes of creep cavitation that may account for strain-induced phase mixing in natural rocks, which is a *sine qua non* condition to highly reduce grain size and promote intense strain localization. I found the paper very well written, up-to-date and focusing on processes that need to be properly understood regarding their fundamental implications. Although some parts of the manuscript need to be completed and reorganized, the results are convincing

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and the discussion is coherent, giving rise to a significant advance in this field of research. I therefore strongly recommend this paper to be published, provided that my comments/concerns (in appended .pdf) are addressed by the authors.

With my Best Regards

Jacques Précigout

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2017-96/se-2017-96-RC1-supplement.pdf>

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Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2017-96>, 2017.

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