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Discussions

Interactive comment on "A temperature- and stress-controlled failure criterion for ice-filled permafrost rock joints" *by* Philipp Mamot et al.

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Many thanks for infiting me to review this interesting paper. It is a very well-written paper and I am finding the approach to apply Accoustic Emissions for ice-filled fractures particularly interesting. I also had a chance to see Lukas Arenson's comments, many of which are raising the same concerns I had on the paper. In these cases I did not repeat Arenson's comments. However, there are a few additional issues I would like to raise: 1. I understand why the samples were prepared using sandpaper to create repeatable surfaces, however I have concerns that this method may not replicate conditions in natural rock joints. Natural joints usually have surfaces where both amplitude and wavelength of asperities are much greater than those used in presented experiments. The relationship of infill thickness to asperity amplitude has

a strong effect on rock joints filled with soil material, it is likely that it will also have an effect on rock joints filled with soil. 2. I also do not think that results obtained on limestone samples should be applied to silicate rocks without further experiments on such rock types. 3. The model presented in Fig.10 (B1 and C1) may be too simplified, as the reduction in overlying material not only reduces the normal stress on the joint (stabilising forces), it also reduces the shear stress (destabilising forces). I therefore recommend that the authors should carry out some model calculations with commercially available software. 4. I have added some more comments and minor language corrections in the attached document. I am looking forward to seeing your revised version of this paper. Kind regards, Friederike Gunzel

Please also note the supplement to this comment:
https://www.the-cryosphere-discuss.net/tc-2018-57/tc-2018-57-RC2-supplement.pdf

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