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Interactive comment on "A model for French-press experiments of dry snow compaction" *by* Colin R. Meyer et al.

Anonymous Referee #2

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This paper applies a theory developed by Hewitt et al to describe the squeezing out of fluid from a sold matrix to a problem which is not exactly similar, namely the compression of dry snow. The difference lies in the fact that the fluid in Hewitt's analysis is incompressible but the moist air in snow is not. The authors need to convince the reader that Hewitt's theory can be applied. Given that it can, the parameters derived by fitting the theory to experimental data are a useful first step in deriving a densification law for snow. The paper would be greatly improved if the author's followed the nomenclature established by Hewitt, rather than making somewhat perverse changes which lead to confusion when the two papers are compared. Given that Hewitt has given a very clear and complete derivation of the theory I am not sure that it needs to be repeated in this paper. It might be be better to have more

discussion of the results of the modelling and their implications for snow densification in general. The paper is mostly well-written and the diagrams adequate but there are a host of minor errors and omissions which I have noted on the draft version attached. Given that these can be sorted out the paper will make an interesting addition to the literature on snow densification and is well worth publishing. Please also note the supplement to this comment: https://www.the-cryosphere-discuss.net/tc-2019-253/tc-2019-253-RC1- supplement.pdf Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2019-253, 2019.

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