

The Cryosphere Discuss., community comment CC3
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Comment on tc-2021-354

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Community comment on "Comparison of manual snow water equivalent measurements: seeking the reference for a true SWE value in boreal biome" by Maxime Beaudoin-Galaise and Sylvain Jutras, The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-354-CC3>, 2022

This paper is an up-to-date and intelligent commentary on differences between manual SWE samplers in a regional context. Many papers on comparisons between manual SWE samples and pit methods have been published in journals associated with snow conferences and most of the comparisons have been made at high mountain locations. In this paper, the authors provide an analysis of comparisons that support other studies, and the data is collected at the Foret Montmorency site, an experimental forest in Eastern Canada. Most papers written in science are not completely novel since scientific research is based on the work of other researchers and there is always a need for validation and verification studies. This paper therefore helps to provide ancillary data to support other studies and provides an important test of different manual samplers at a forest site that is not situated in the mountains. The paper is important in a regional context.

I strongly recommend eventual publication after the authors have addressed review comments and added additional information. The paper compares novel snow samplers such as the Hydro-Québec sampler and the Université Laval sampler and is therefore important for characterizing these new devices, particularly at a forested continental site in North America. The title of the paper can be modified to better communicate this idea.

There can be some additional information added to the paper:

- Wavelet or fractal scaling mathematics can be added to the paper to quantify differences between devices. This would nicely complement the statistics presented by the authors.
- Snow pit sampling is always a subjective process since it is performed by human beings. The authors should indicate in a revision how this subjectivity influenced the study and how the height of snow measurements have uncertainty. Some additional information can also be provided on the regional characteristics of the snowpack. The paper therefore provides a test quantifying this subjectivity.
- Also, it is not possible to individually sample snow layers that have a width < 5 cm, and this should be clearly indicated in the paper, along with a discussion on the sampling practice. I believe that the snowpit was sampled in a continuous fashion, but the

current draft of the paper does not clearly communicate this sampling practice.

- Additional information should be added to the paper on how the results are important in a regional context.
- Some additional clarification should be added related to sampling procedures and the use of formulae.

I believe that the study is novel in a regional context and therefore contributes to the literature. The paper is an excellent fit for The Cryosphere journal and without hesitation, I would cite a revised version of the paper in a future review paper written on snow and snowpack processes. I ask the editors to consider the eventual publication of this paper after the authors have addressed some comments. I think that the authors should submit a major revision, but the paper is a valuable contribution to the literature and provides novel data in a regional context.

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