

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2022-89

Giacomo Bertoldi (Referee)

Referee comment on "Snowmelt Characterization from Optical and Synthetic Aperture Radar Observations in the Lajoie Basin, British Columbia" by Sara E. Darychuk et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2022-89-RC2>, 2022

The paper applies the recent approach proposed by Marin et. al. 2020 to estimate snowmelt timing using Sentinel-1 radar backscattering to a mountainous, partially forested catchment. It shows promising results, especially for not too steep areas. The quality of the analysis is good and convincing.

I have only minor comments.

1. Introduction. Please define in a more precise way the paper's aims and formulate clear research questions.
2. Section 4.2 snow disappearance times. Since Landsat has a low overpass time and images are often cloud covered, please better quantify the errors and uncertainties in days for the snow disappearance time. c
3. Section 5.2 Sensitivity - L233 - "the least accurate approximation in 2019" - please quantify in numbers, variance ...
4. L255 - besides slope, does the accuracy of results change also with the aspect?
5. Paragraph at line 315 - Interesting! Maybe an additional Figure can support this!
6. L324 - What do you mean by Data Fusion? Please explain better!

