

The Cryosphere Discuss., referee comment RC1
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Comment on tc-2021-172

Anonymous Referee #1

Referee comment on "Brief communication: Evaluation of the snow cover detection in the Copernicus High Resolution Snow & Ice Monitoring Service" by Zacharie Barrou Dumont et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-172-RC1>, 2021

The authors evaluated the performance of the snow cover detection for the Sentinel-2-derived High Resolution Snow and Ice (HRSI) product using in situ snow depth data covering 36 countries across Europe. The results show good agreement between HRSI product and in situ dataset with an enough accuracy of 94%. In addition, the dependences of the accuracy on land cover types, tree cover density, and elevation were revealed separately, which is beneficial for the users of the HRSI product. I recommend this brief communication be accepted for publication in TC with some minor revisions:

1. L84: In the section of the Metrics, the definition of the (overall) accuracy $((TP+TN)/(TP+FP+FN+TN))$ should also be added.
2. L104: "the number of false negatives is highest in December while the accuracy increases every month from January to April." It is interesting, but 1) "the data" means the data of Finland and Norway ? or the data of all the European countries studied ? 2) What is the cause of the behavior of FN? If possible, please add the figure for the data by month to this report.
3. L108: In the study of Gascoin et al. (2019) the occurrence of false snow detection (i.e., FP) in some large clouds was identified as an issue to be addressed in a future release. However, the FP evaluated in this study seems not to be large compared with FN as shown in Fig. 2. Does this mean that the cloud detection using the MAJA software were improved to eliminate large icy clouds? Or originally the performance of the MAJA is good enough to eliminate icy clouds? The authors may address this issue in the text.