

Interactive comment on “Estimating fractional snow cover from passive microwave brightness temperature data using MODIS snow cover product over North America” by Xiongxin Xiao et al.

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In Sect 3.6 the authors correctly mentioned that different thresholds were used to convert snow depth into binary snow cover in the literature. In particular they referred to our studies (Gascoin et al. 2015; Gascoin et al. 2019) where we reported different optimal threshold values (15 cm and 2 cm). However, it is important to note that these thresholds are not contradictory since they were obtained from products with different spatial resolutions. In the first case, we optimized the snow detection threshold with MODIS snow products (500 m) while in the second case we used the Sentinel-2 Theia

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snow collection (20 m). This threshold difference is consistent with the heterogeneous spatial distribution of the snow cover on the land surface. In other words, the larger the pixel, the deeper the snowpack needs to be, to be detected as "snow-covered" by remote sensing.

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