

## ***Interactive comment on “ISBA-MEB (SURFEX v8.1): model snow evaluation for local-scale forest sites” by Adrien Napoly et al.***

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The legend was hidden, this is now corrected

Fig.2 Which snow density was assumed ? Snow cover fraction is a function of snowdepth (D, m) and not Snow Water equivalent. Please indicate which density is used, or plot snow fraction as function of snow depth.

This is correct: the legend has been adapted to clearly mention that we considered a density of 200 kg m<sup>-3</sup> for the figure.

Line 288: “In order To” : “In order to”

Corrected

C1

Line 367: Defining last day of snow when SND<0.2m and below that for the following two weeks. The mean annual cycle of snow depth in Figure 6 shows that ISBA simulations on average never reach 20cm of snow depth in the OAS site. In years when SND is always < 0.2 how does this identification of last day of snow works in a simulation ? A value of 0.1 seems more reasonable. Would changing from 20 cm to 10 cm change significantly the metrics in Table 5 ?

There is a mistake here, the threshold value used is 2cm and not 20cm as we wrote in the text. We tested higher values (3, 4 and 5 cm) and the results didn't really change the metrics of table 5. We apologize for this confusion and thank the reviewer for spotting this typographical error.

Line 377; “Also, Fig. 5 seems to indicate that the snow density is well modeled since underestimation or overestimation of SND and SWE are consistent for both models.” This is true for OAS and OJP, but the OBS results in year 2 and 3 (Fig 5) indicate a reasonable performance of snow depth but a large underestimation of snow mass in year 2 and over-estimation in year 3 (also OJP in year 3). Could this be related with snow density errors linked with different winter conditions between year 2 and 3?

Indeed, this sentence is less relevant for years 2 and 3 at the OBS site, even if over-estimation and under-estimation between SND and SWE are consistent. We added a sentence to soften the remark. The main goal of this response is essentially to point out that the weakness of the ISBA model or the improvement of the MEB model cannot be linked to a density issue that would come from the snow model. We added a sentence to specify that more data would be necessary to accurately validate the SWE or modeled snow density (line 397).

Fig 7. Missing panel names (a,b,c) which are used in the text (e.g. line 399). The 3rd datetick seems wrong “03/29/2006” should be “03/28/2006” ?

Corrected

C2

Line 437: Suggest to remove “somewhat”

Corrected

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2020-165>, 2020.