We thank Reviewer 1 for their positive and constructive feedback, which helped improve our manuscript. All their comments will be addressed according to this reply. Reviewer comments are in *blue cursive text*. Changes or updates to the manuscript as a response to a comment are in **bold text.**

Main minor comments

- In section 2.2, a description of how SCF is derived in the OSHD simulations is missing, making it hard to fully understand and assess the relevance of the evaluation carried out in Section 3.1

Thank you for pointing this out. We have added the following sentences at the end of Section 2.2 to address this comment. Further details on snow cover fraction parameterizations are outlined in Mott et al. (2023).

"For open areas, the snow cover fraction (SCF) is defined using the algorithm by Helbig et al. (2021). The SCF of forested areas is parameterized from snow depth using a hyperbolic tangent model (Essery, 2015)."

- The approach and results are not sufficiently discussed with respect to a previous publication that imo contributed to prepare the grounds for the present study and drew relevant conclusions for large spatial scales, namely Lundquist et al., 2013 (whom the authors cite). Reference and an assessment of difference/progress beyond this work should be made in the discussion.

To address this comment, we revise L438-440:

"**Subsequently, Mazzotti et al. (2023) were able to link these differences to ablation from early-season insolation on south-facing slopes in the absence of topographic shading. By considering additional topography-driven processes and including detailed canopy structure information, both aforementioned studies advanced the conceptual framework of Lundquist et al. (2013), who focused on the comparison of forested vs. non-forested conditions at the site scale. Here, our results demonstrate that the combined effects of these processes, initially investigated at the scale of individual trees, also affect snow distribution dynamics at much coarser spatial scales and over large extents.**"

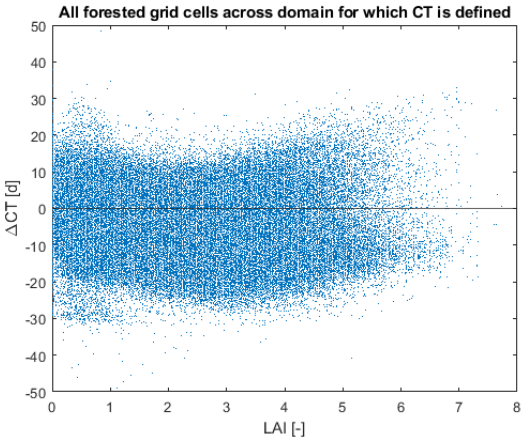
Specific comments

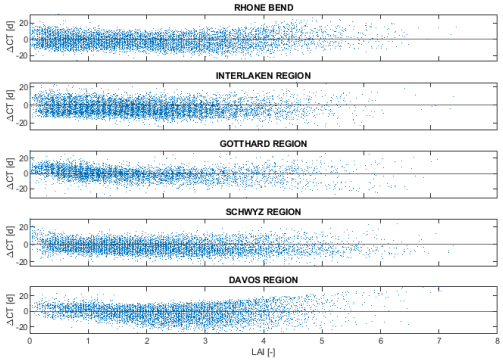
L 259 : it should de 13th April and not 14th April

Good catch. Corrected to "**April 13th**"

L 364-366 : « In contrast, forests on north-facing slopes advanced CT by up to two weeks, which also applied more generally above 1850 m in all regions, regardless of aspect. Could the fact that forest is likely sparser above 1850 m, play a role in explaining this? If relevant, the effect of canopy density could be a bit more discussed with respect to this result.

We find no clear correlation between sparser forests, here expressed as a f(LAI), and differences in CT, neither across the whole domain nor for the five focus regions individually; i.e., negative or positive CT occur approx. equally at low LAI < 2:





L 400-403 : « Here, it is likely the difference in accumulation that drives the overall effect of forests on snow persistence ». I think the affirmation is a bit stronger than what the observation tells, and maybe a reformulation could be appropriate, like « Here, the difference in accumulation likely has an important contribution to the overall effect of forests on snow persistence ».

Given that in north-facing slopes the melt rates in the open generally exceed those in the forests (c.f. Fig. 10, C1-C3), it has to be the difference in accumulation that drives the overall effect (which is snow persists longer in the open). We therefore think that our statement is adequate.

L 458 : I think Fig 6 is meant instead of Fig 5

Indeed. Corrected to "**Fig. 6**".

L 525 : « Even 15 years ago, modeling studies were already instrumental in forming today's understanding of how snow dynamics are affected by the presence of forest cover in mountainous topography » The formulation is weird and maybe a reformulation should be attempted.

We reformulated this sentence addressing corresponding comments of both reviewers 1 and 2:

Throughout the past decades, modeling studies have played an important role in shaping today's understanding of both specific forest snow processes (e.g., Pomeroy et al., 1998) and how process interactions in montane forests modulate the subcanopy snow cover (e.g., Pomeroy et al., 2012; Strasser et al., 2011).

L 533 : suggestion to replace « extra » by additional

Changed as suggested

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