

Airborne Lidar and Machine Learning Reveal Decreased Snow Depth in Burned Forests

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Review round: 2

Reviewer 1:

The authors have done a commendable job of strengthening their analysis to address my initial concerns. Specifically, the masking of basin areas to only include pixels with >10% forest cover at the start of the study period satisfactorily addresses my concern about large alpine regions devoid of trees. Additionally, the splitting of train/test data into 1 km blocks greatly strengthens my confidence in the modeling. The presentation has been similarly updated throughout. The process interpretations and aspect/elevation dependencies are interesting and sufficiently discussed with appropriate caveats. Overall, I am quite impressed with the authors' improvements and recommend that it should be published essentially as-is.

Thanks for your thoughtful feedback. We agree that the manuscript has been much improved, and appreciate your contributions.

I do have two very minor edits:

Line 174: "given average recovery time" suggest adding "snowpack" or "albedo" to this phrase since the total landscape ecosystem recovery time is certainly >> 5 years after fire.

Good catch. We added “for post-fire snow depth” on Line 174.

Line 399: "0.0.05 m" suspected typo with extra 0.

Good catch. We removed the extra 0.

Reviewer 2:

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Koshkin and Marshall

Review of egosphere-2025-4081 # 2

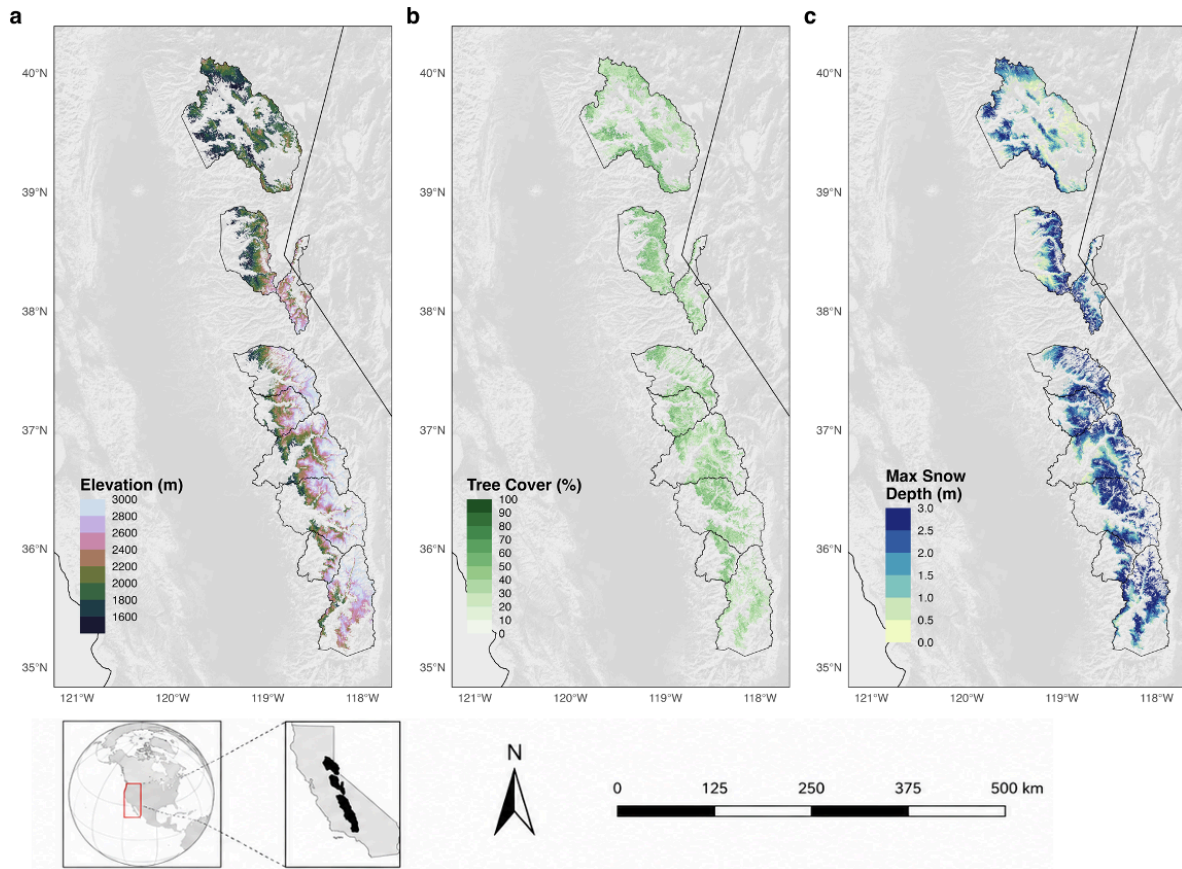
Overall Comments:

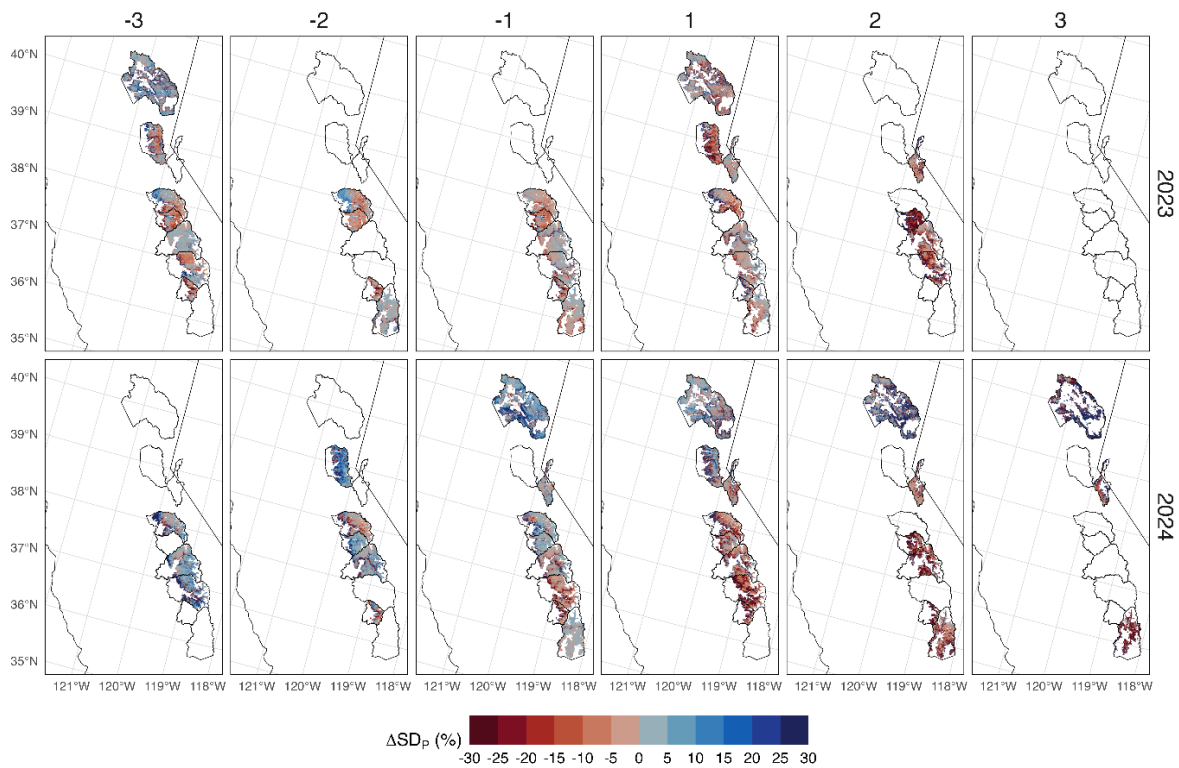
I am overall satisfied by the modifications brought by the authors following my comments. I believe it should be accepted for publication after the small improvements suggested here. I would only insist on the readability of the maps (Figure 1, Figure 4 and S4). I think that they do not match the quality usually found in The Cryosphere, for instance in recently published article (among many others) : Fig. 1 in Alexopoulos et al. (2026) or Fig. 1 in Davis et al. (2026). I acknowledge that the study site here is not the easiest to map in a compact way but there must be a way. At the moment, north arrow, scales, lat-lon or UTM grids are missing. And above all, a large majority of the figure is white, which means without information. It prevents the reader to investigate by itself the results and do not highlight the high level of details provided by this method (50 m resolution). Maybe zoom on each basin individually in subplots or select a few basins or a single year and let the complete figure in supplement. Tilting more the north direction would also allow more compaction and reduced space between the maps. Check what is the maximal size of figure allowed by The Cryosphere to make most of it.

Alexopoulos et al. (2026) <https://tc.copernicus.org/articles/20/2209/2026/>

Davis et al. (2026) <https://tc.copernicus.org/articles/20/2735/2026/>

Thank you for the comments on the figures and for providing some suggestions. We updated Figures 1, 4, and S4 to be more in line with the quality of the journal. Figures 1 and 4 are reproduced here for convenience. All figures are updated in the pdf of the manuscript.





Minor comments

Abstract: « 44% of accumulation-season acquisitions and 83 % » These numbers should be in the results section as well.

We added a sentence on Line 238-239 that reads, “Across all 114 acquisitions, 44 % of accumulation acquisitions had a lower basin-wide average predicted snow depth in burned than unburned conditions, compared to 83 % during melt”

- Besides, I had the impression that post-fire snow depth is increased during accumulation (L233 « 3.2 Post-fire snow depth changes increase during accumulation and decrease during melt » ; L237 « Across all 115 acquisitions, 68 % of accumulation acquisitions had a higher basin- wide average predicted snow depth in burned than unburned conditions, compared to 31% during melt. »). This is not well conveyed in this sentence. I would also mention the gradual increase in relative impact (Fig. 3a).

Line 237 was replaced by the statistics from the abstract. Hopefully, this clarifies that during the accumulation season, burned areas had higher snow depth compared to unburned areas, while the trends were reversed in the ablation season. We also added the clause, “with more gradual

increases compared to the ablation season” on line 242 to indicate the magnitude of change between accumulation and ablation.

L128 « 114 ASO flights » 115 in the abstract and results. I see that it was corrected in the tracked- changes version. Ensure consistency in the final submitted article.

Thanks for pointing this out. This was changed to 114 in the abstract and results.

Figure 1: What are the grey lines ? Having background layer would help, even a flat single color for the ocean and land. Please also add an inset showing where the study site is in the World or at least in North America.

An inset map of California was added, along with a north arrow, scale bar, basemap, and lat/lon labels to improve the readability and location of these maps, as reproduced in response to the first comment above.

Figure 2 Boxplot and median color are not contrasted. It is hard to see. Use white lines for median or light boxplots color.

Boxplot colors were changed to lighter colors for more contrast.

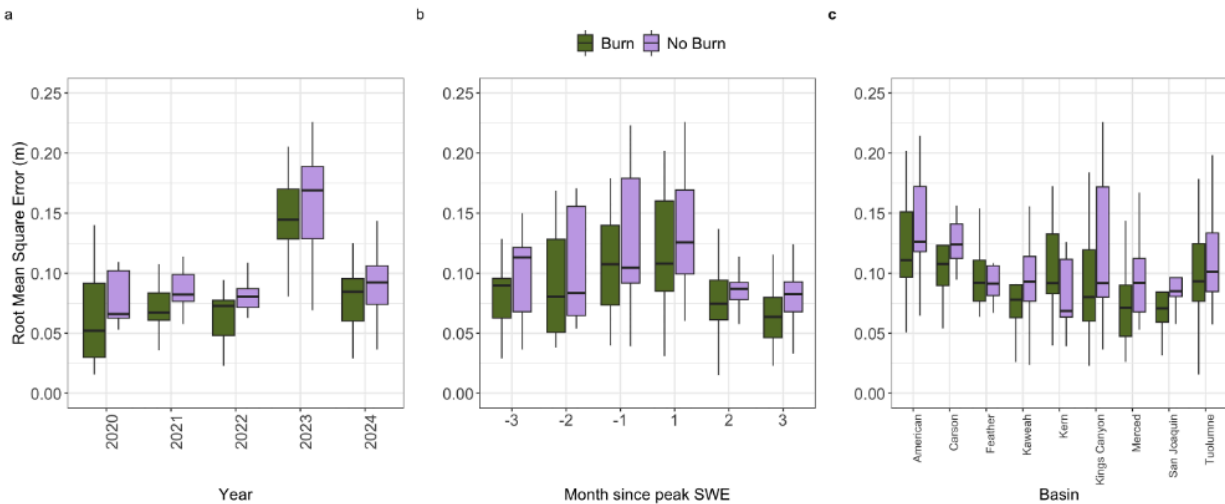
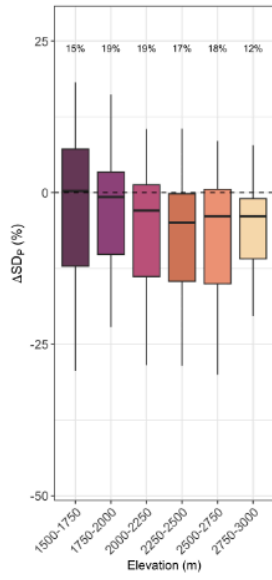


Figure 5 The horizontal grid line got lost in the review process.

Gridded lines were added back into the figure.

a**b**