

General comment:

The paper is well written and addresses a timely topic. Temporally coherent, per-pixel daily maps of snow depth enable an accurate characterization of snow conditions, which is essential for water resource monitoring, avalanche hazard forecasting, and broader socioeconomic applications. I recommend publication of this article, provided that the following minor suggestions are addressed.

Detailed comments:

- **Lines 66–67:** “...beyond direct measurements.”
It would be helpful to provide the reader with a general overview of the most widely used approaches, including both empirical and machine learning-based methods.
- **Chapter 2:**
The contrasting characteristics of the two basins are not entirely clear. For readers unfamiliar with these areas, additional information on their topographical and meteorological differences (or similarities) would be beneficial.
- **Lines 131–132:**
How were the seasonal phases defined? Were they based on mean or median values?
- **Chapter 3.3.3:**
What was the rationale for not applying downscaling and bias correction to ERA5-Land data? Do you expect the proposed strategy to perform well at higher spatial resolutions?
- **Chapter 4:** “...dynamical daily meteorological data.”
Please clarify what specific data are being referred to here. While they may have been mentioned earlier, the connection is not clearly explained.
- **Lines 302–303:**
How were the synthetic snow depth maps generated?
- **Lines 322–323:**
Is the use of a single site and one winter season sufficient to robustly evaluate the algorithm? Was the sample size sufficiently diverse and representative?
- **Lines 391 and 405:** “...with low bias...”
Please quantify the bias.
- **Lines 465–466:**
It would be helpful to explicitly define “Tair fwd5” and “snowdepth lag5.”

Discussion:

In the context of climate change scenarios, do you consider the proposed strategy to be robust and reliable? Would modifications be necessary under changing climatic conditions, and if so, how?

References:

Some claims would benefit from more up-to-date and appropriate references:

- Lines 48–49: “...over larger domains”
- Lines 50–51: “...of sparse ground networks”
- Line 68: Please cite the Random Forest algorithm
- Line 80: “...to sustain frequent airborne surveys”
- Line 308: Please cite the Scikit-learn library
- Line 332: “...one-way analysis of variance (ANOVA)”
- Line 692: More recent references should be considered

Typos and formatting issues:

- Line 73: Remove extra spacing
- Line 77: “...resources management.Moreover...” add missing space
- Lines 103–104: Formatting issues; consider properly citing the URL
- Lines 116–117: Formatting issues; consider properly citing the URL
- Line 232: Additional punctuation may improve readability
- Line 406: Missing full stop