REVIEWER 1

MAJOR COMMENTS:

1. ***Justification and contribution***: *The manuscript would benefit from a stronger emphasis on the novelty and significance of the work. At present, the motivation and main contributions are not highlighted clearly enough. What specific gap does this study address? What are the main contributions to the field? These points should be explicitly stated in the Introduction and reinforced in the Discussion and Conclusions.*

   Answer:

   Thank you for this relevant suggestion. The paragraph concerning the goal of the study have been reformulated so that the novelty of the work is emphasized in the Introduction, as well as in the Conclusions.

2. ***Broader perspective***: *How does this study contribute to snow depth estimation in a broader context? Could the proposed approach be applied to other regions or datasets? What are the future perspectives for this line of research? Addressing these questions would enhance the impact and relevance of the work.*

   Answer:

   The questions have been addressed at the end of the Conclusions section.

MINOR COMMENTS:

1. *Why not use snow depth (sde) from ERA5-Land directly?*

   Answer:

   Thank you for this very relevant question. At the initial state of research, we asked ourselves the same question. We compared seasonal variability of both fields at every station and it turned out that they are virtually identical. The Pearson's coefficient between them is close to 1 (0,999...) and maximum differences does not exceed 1-2 cm. These results are valid for all types of stations, regardless inclusion into the data assimilation system. Therefore, we believe that the direct snow depth field available in ERA5-Land was calculated in the same way as it was done in our research. Rare differences that occur seem to have purely numerical origin. In a plot below (Fig. 1) you can see an example of seasonal snow depth variability for these two fields. The two lines match each other very closely and there are only a few days with small (<=1 cm) discrepancies.
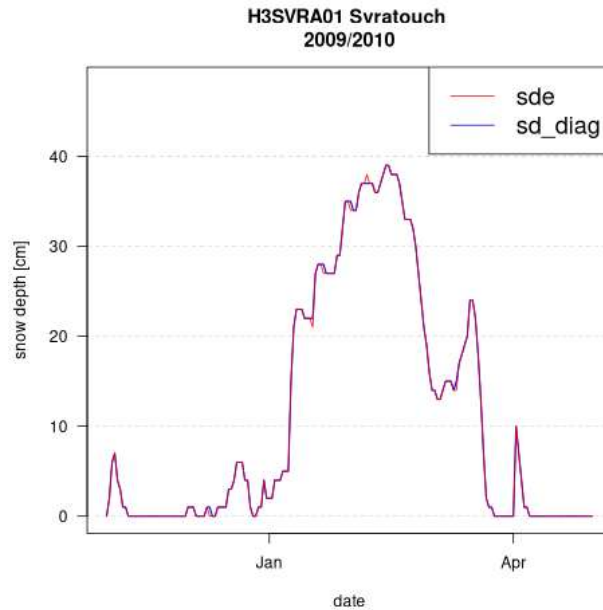
Fig. 1 Snow depth variability represented by direct snow depth field from ERA5-Land (sde) and diagnostic field derived from SWE and snow density (sd_diag) at station Svratouch in the 2009/2010 season.

2. *Consider replacing "interseasonal" with interannual.*

   Answer:
   The suggestion have been incorporated throughout the manuscript.

3. *References are missing in L29–32 and L40.*

   Answer:
   The references have been added.

4. *L11: Consider changing "database" to datasets.*

   Answer:

   The phrase has been modified as suggested.

5. *L19: The phrase "lower-ranked stations" is unclear, as the ranking is explained only later in the Introduction. Consider rephrasing.*

   Answer:
   Thank you for pointing this out. After revision, station ranks are named explicitly (climate and precipitation stations).

6. *L64: Clarify what is meant by "ERA5 regional ... reanalyses."*

   Answer:
   Thank you for this comment, the sentence is indeed unclear. What we meant was "global and regional reanalyses other than ERA5". Th sentence have been rephrased to: "(...) concerning ERA5 as well as other regional and global reanalyses (..)"

7. *L68: Spell out WRF on first use.*

   Answer:

The abbreviation has been expanded.

8. *L76: Spell out ML on first use.*

    Answer:
    The abbreviation has been introduced at the first usage of "machine learning", which is five lines above the indicated issue.

9. *L77: Provide full names for MERRA-2, GLDAS, CMC*

    Answer:
    The abbreviations have been expanded.

10. *L87–88: The sentence "A limited amount of research in this region regard also ML-based bias correction of snow estimation in reanalysis" is difficult to understand. Please reword for clarity.*

    Answer:

    The sentence has been removed due to revision of the paragraph concerning the goals of the study.