Response to the Editor's Request

Manuscript ID: **egusphere-2025-978**

Title: ***Evaluating the Utility of Sentinel-1 in a Data Assimilation System for Estimating Snow Depth in a Mountainous Basin***

Authors: **Bareera Nadeem Mirza et al.**

Dear Editor,

Thank you for your guidance and the opportunity to revise our manuscript. We have carefully addressed all reviewer comments as outlined in our response letters. Some of the major revisions include:

- Testing the particle filter with both constant and dynamic error against the particle batch smoother (PBS). PBS outperformed, and therefore we retained it; results are provided in the Supplement.
- Improving Figures (e.g., Figure 4) and adding a comparison of Lidar with Sentinel-1.
- Enhancing time series figures to display posterior distributions.
- Incorporating an additional certainty-aware metric (CRPSS).
- Justifying the selection of study locations.
- Adding model-only results to the Supplement.
- Correcting minor typographical errors and refining the text for clarity.

We believe these revisions improve the manuscript substantially and hope it is now ready for further evaluation.

With best regards,

Bareera Nadeem Mirza