

CC1: 'Comment on egusphere-2025-978', Gabriëlle De Lannoy, 11 Apr 2025

Great research! Just a small note that earlier Sentinel-1 DA work did not assimilate retrievals past February: Giroto et al., 2024 (Sci Tot En); Brangers et al., 2024 (WRR); De Lannoy et al., 2024 (JAMES).

Author's Reply: Thank you very much for your thoughtful comment and for highlighting these important references. We appreciate the clarification regarding the temporal limitations in earlier Sentinel-1 data assimilation studies, including Giroto et al. (2024), Brangers et al. (2024), and De Lannoy et al. (2024). We will revise the manuscript to accurately reflect this and ensure that these key studies are properly cited.

For the ablation period, the empirical Sentinel-1 SD retrievals are not reliable.

Author's Reply: We agree that Sentinel-1 snow depth retrievals are generally less reliable during the ablation period. In our study, we report error metrics separately for accumulation and ablation seasons to reflect these seasonal differences in performance. Despite observational limitations, the data assimilation system can propagate prior information to improve estimates through the melt season with few reliable early-season-to-late-season observations. We will clarify this distinction in the revised text.