

Snow accumulation inferred from a GPR survey around the Southeastern Dome, Greenland Ice Sheet

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Accurate quantification of the accumulation rate and understanding of accumulation processes are important for understanding the mass changes of the Greenland ice sheet. By using a ground-penetrating radar (GPR), we observed the internal reflection horizons around the Southeastern Dome (SE-Dome) of the Greenland ice sheet to reconstruct spatio-temporal changes in snow accumulation. The observation was performed during a shallow ice core drilling campaign between May and June 2021 (Iizuka *et al.*, 2021), which enables us to compare the GPR-derived firn structure with ice core density, dates, and refreezing layers. Numerous internal reflection horizons were observed, which were related to the ice core stratigraphy (Fig.1). For example, strong reflections can be seen at depths around 20 m and 40 m, which are similar depths of reported the thickest refreezing layers at 17 m and 38 m depths (Kawakami *et al.*, accepted). We plan to delineate the internal reflection horizons in all GPR profiles and present the accumulation rate around the SE-Dome at the conference.

References

- [1] Iizuka, Y. *et al.* (2021): Ice Core Drilling and the Related Observations at SE-Dome site, southeastern Greenland Ice Sheet. *Bulletin of Glaciological Research*, **39**, 1-12.

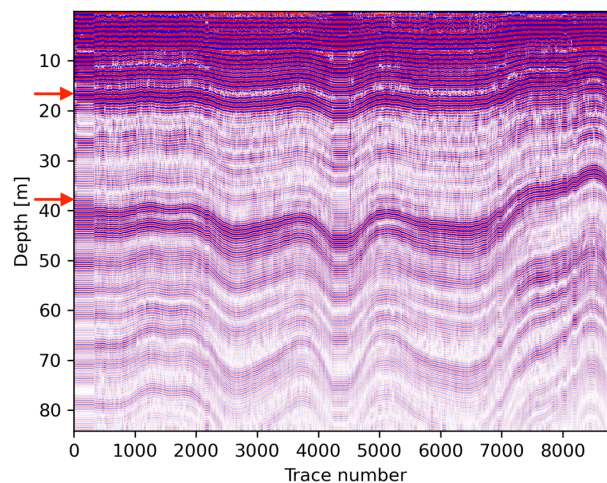


Fig.1 Spatial distribution of internal reflection horizons obtained by GPR from SE II to SE I. The depth was calculated using the propagation speed of electromagnetic waves within firn based on firn density. The red arrows in the figure indicate the depths of 17 m and 38 m, where the thick refreezing layers were found.