Firn/ice temperature and conductivity observed in the accumulation area of Qaanaaq Ice Cap, northwestern Greenland

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The warming rate in the Arctic region is higher than the global mean, resulting in substantial loss of ice mass from the Greenland ice sheet and ice caps (e.g., Slater *et al*., 2021). Meltwater on the glaciers became more abundant due to the melting of the glaciers and frequent rainfall events. These meltwaters have multiple importance to understanding surface mass balance, glacier runoff, and ice dynamics. To better understand the importance of the meltwater in the glaciers in Greenland, we observed firn and ice temperature and conductivity in the accumulation area of Qaanaaq Ice Cap at the elevation of 968 m a.s.l. between July 19, 2022, and August 4, 2023 (Fig. 1). We introduce our preliminary results of the observations and discuss the influences of the meltwater on surface mass balance, meltwater runoff, and ice dynamics of Qaanaaq Glacier.

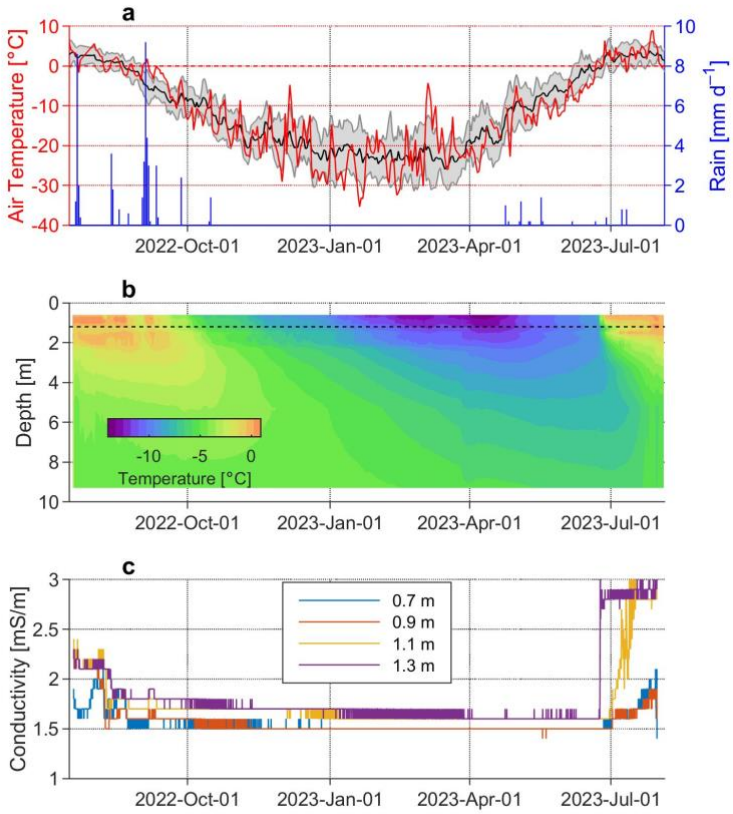

Figure 1. (a) Air temperature at SIGMA-B site (Aoki *et al*., 2014) and hourly rainfall at Qaanaaq. (b) Color codes indicate firn and ice temperatures. The black line indicates the boundary between firn and ice. (c) Dielectronic conductivity was observed within the firn layer at four different depths.

References

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