GROUND-BASED ULTRA WIDEBAND DUAL-POLARIZED RADAR SOUNDING OF GREENLAND ICE SHEETS

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ABSTRACT

Ice sounding using radar systems has been an efficient way to map polar ice layers and help scientists to understand ice stream dynamics over a large area. To sound the bottom most layers and map the ice bed topography of 3-km thick Greenland ice sheets, we developed a 180 – 340 MHz ultrawide band (UWB) dual-polarized ice sounding radar and it was deployed as a part of the East Greenland Ice-core Project (EGRIP) in summer 2019. The radar is configured as a 12-channel multiple-in-multiple-out (MIMO) system. A dual-polarized tightly coupled antenna array is designed for the radar system. The radar design, antenna performance and the data collected in the field will be discussed in the paper.