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NECKLACE: A circum-Antarctic dataset of basal melt

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Ocean-driven melt at the base of floating ice shelves is a major mass loss process from the Antarctic ice sheet, and a key component in accurately predicting its contribution to future sea level rise. Observations of basal melt are important tools for testing and improving models of ice shelf-ocean interaction. While many of these observations come from satellite methods, field observations of melt are valuable for validating satellite-derived data products, and to provide higher-temporal resolution timeseries of melt.

The NECKLACE project aims to collate field measurements of ice shelf melt to create a standardised data product that can be used by glaciologists, oceanographers, and ice sheet modellers for testing and validation. Field measurements of melt can use a range of techniques, including range finding from under-ice moorings and surface radar instruments, but the most commonly used instrument in recent years is the Autonomous phase-sensitive Radio Echo Sounder (ApRES) due to its low cost and ease of deployment. The project will combine data contributions from multiple international teams to create a continent-wide, open-access database of timeseries of basal melt rates. The initial dataset will contain contributions from over 40 sites on 12 ice shelves. Beyond the collation of existing data, the project team also aims promote the collection of new field data by providing assistance with equipment procurement, set-up, and data processing. We hope that this data product can provide the basis for an ongoing monitoring network observing basal melt around Antarctica.