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Scientific Drilling in Subglacial Environments: Results from Recent Drilling Endeavors and New Drill Development Needs

Urgent scientific questions regarding rate and amount of sea level rise from the Antarctic and Greenland Ice Sheets, and exploration of fundamental subglacial geological and biological aspects of both ice sheets have created demand for drills and drilling technologies for retrieving subglacial rock cores and samples from aqueous subglacial environments. New drilling technologies recently developed for use in subglacial environments have enabled scientific discoveries from bedrock and water-rich environments; in this paper we discuss the scientific goals and drilling outcomes from recent drilling programs for retrieving subglacial rock cores or creating access holes through ice. Scientific goals from recent long-range science planning are presented and the associated need for new drills to enable new science is discussed.

Primary authors: Dr ALBERT, Mary (Dartmouth); Dr TALALAY, Pavel (Jilin University)

Presenter: Dr ALBERT, Mary (Dartmouth)

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