

The 8th International Ice Drill Symposium



Contribution ID: 69

Type: Oral

The development of the RADIX rapid access drilling system

Tuesday 1 October 2019 16:20 (20 minutes)

Rapid drilling of an access hole in ice sheets can complement the prospection of potential deep drilling sites and serve to locally explore an ice sheet. RADIX is a rapid access system for an access hole of 20 mm diameter optimized for minimal resources and logistics demand. It is based on a coiled drilling system. The drilled ice cuttings are available for analysis. The drilling speed is about 10 mm/s, resulting in less than 4 days of continuous drilling for a 3000 m hole. We present the experience of a 4-year testing phase and the current system as will be deployed to Little Dome C, Antarctica.

A battery operated 15-mm diameter downhole sonde has been designed and constructed for logging. Hole inclination, azimuth, temperature and dust content of the surrounding ice are transmitted to the surface through an optical fiber cable.

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Session Classification: Session 4