

## UNIQUE CHALLENGES OF DRILLING OLD, SHALLOW ICE AT ALLAN HILLS

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The Center for Oldest Ice Exploration (COLDEX) is one of the U.S. National Science Foundation's (NSF) current, predominant scientific programs in Antarctica, and their recent work involves ice core drilling in very old and shallow (<200 m) ice, often entrained with silt and rocks. The silt and rocks quickly dull cutters, with the rocks also causing downhole hammering as the drill cuts through them. The old ice adds its own challenges, as it is composed of large (>25 mm) ice crystals requiring significant cutting force, and there are rapid and large changes in ice fabric slope. It is uncommon to recover ice cores from even 100 m depth without significant fracturing and wafering. Environmentally, all of this occurs in an area with average 37 kph winds, thus tent setup and robustness have a large impact on the success of the season. This presentation will discuss the challenges and success IDP has had drilling this challenging ice and working in this harsh environment.

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