

## The 8th International Ice Drill Symposium



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# ROV-mountable underwater thermal corer: General concept

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Ice freezing and thawing process beneath the Antarctic ice shelves is related to climate changing and studies of ice layers at the ice shelves bottom will facilitate further analysis of the interactions between the ice sheet and the ocean. Upwards thermal coring mechanism for using beneath ice shelves equipped with underwater automatically operated system is proposed. The formation mechanism of the bottom ice layers will be deduced by simulating deep ocean environment conditions and comparing them with the real ice structure. Sampling of the bottom part of ice shelves will enable scientists to make extensive measurements of the physical characteristics of different ice layers. The numerical simulation of ice drilling process has been carried out to study the influence of drilling load, power, ice properties, material and structure of drill bit on the drilling speed and borehole/core structure that allows to optimize the technological drilling parameters. The simulation results of the influence of various parameters on the drilling speed and ice core quality is planned to verify by the testing of upwards thermal coring drill.

**Primary authors:** Dr YANG , Yang (Polar Research Center, Jilin University); Prof. TALALAY, Pavel (Polar Research Center, Jilin University); Mr LIU, An (Polar Research Center, Jilin University); Mr WANG, Liang (Polar Research Center, Jilin University); Mr LI, Yazhou (Polar Research Center, Jilin University); Mr LI, Xiao (Polar Research Center, Jilin University)

**Presenter:** Dr YANG , Yang (Polar Research Center, Jilin University)

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