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An ice borehole ROV – a new tool for subglacial researchExample

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Subglacial environments play a key role for the dynamic and evolution of ice sheets and hold important information about paleo ice sheet evolution. Yet Subglacial environments are widely unexplored territories hidden by kilometers of ice. While influencing locally ice sheet behavior through complicated feedback mechanism and the interaction of the ice sheets with ocean in the sub ice shelf cavity, subglacial environments also influence global ocean circulation and climate evolution world wide.

Here we present a new tool for gaining a better understanding of these processes by allowing the study of hydrological and sedimentary processes and records in the sub ice shelf cavity and subglacial lakes. The NIU ice borehole ROV is equipped with a live stream videa and multi beam sea floor imaging system, high resolution acoustic bottom profiler, oceanographic instrumentation, including CTD, and acoustic Doppler current meter, as well as sampling capabilities for sediment, ice, water and biological specimen. With its 2 and 3 km long tethers the vehicle provides live stream imagery and data to the command center at the surface. Using its auto-tracking system the vehicle can also operate in an autonomous mode, conducting preprogrammed surveys with a minimum of technical operating personnel.