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A concept for a new hot water-based, smart soft-coiled tubing drill system for interdisciplinary study of subglacial environments beneath ice sheets.

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Subglacial Environments have become a very interesting and important topic for ice dynamics and the assessment of ice sheet stability, ocean circulation processes as well as the role of subglacial environments in global geochemical cycles and as habitat for life in a truly extreme environment. A number of workshops have addressed the scientific rationale for accessing and sampling subglacial water, sediment and rock. The diversity of proposed subglacial research requires the development of a complex integrated multidisciplinary Earth's system science approach, integrating oceanography, glaciology, geology and biology. It had taken decades of hard and enduring work to prepare for today's technological challenges to accomplish these tasks. Since the first initial proposal of using coiled tubing technology for fast access drilling in 2000 and the FASTDRILL workshop in 2002, much research has been done to propose the development of a new hot water-based, smart soft-coiled tubing drill system, which could full fill many of the requirements set by the proposed research and the desire to minimize the environmental impact and preserve subglacial environments as unique and mainly undisturbed ecosystem for future generations.

Here we present the concept of a new hot water-based, smart soft-coiled tubing drill system. We would like to request community input to improve the concepts presented.