The Collisional Orogeny in the Scandinavian Caledonides (COSC) project: investigating mountain building through drilling of a Paleozoic orogen.

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The remnants of the Scandinavian Caledonides are comparable in several ways to the present day Himalayan mountain belt. In that frame, the COSC project aims to provide a deeper understanding of orogen dynamics through deep drilling and extensive geophysical data acquisition. The first part of this project, COSC-1, targeted the middle allochthon in the lower Seve Nappe Complex and its associated basal thrust zone near Åre, Sweden. Drilling operations conducted during the summer of 2014 resulted in a 2496 m borehole with an almost fully recovered core sample. Borehole and on-core logging provide an extensive and unique dataset through a continuous 2.5 km section into a high grade thrust sheet. On-going scientific investigations are summarized and include a broad range of topics, from the core microstructure analysis to active fluid flows in-situ. The borehole dataset is also used to constrain high quality geophysics in the area. The second part of the project, COSC-2, is planned to drill through the lower allochthon and the underlying Proterozoic basement in 2017. A site has been selected based on geological and geophysical investigations. Taken together, these drilling campaigns will provide a detailed record through a 5 km composite section in the Scandinavian Caledonides. This section spans from the allochthons to the basement, cutting through major tectonic contacts that are out of reach in present-day mountain belts as the Himalayas.