



## **Chemistry of an Antarctic Subglacial Environment – The role of subglacial geochemical processes in global biogeochemical cycles and quantifying subglacial hydrological processes**

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It is well known that subglacial environments especially the availability of basal water plays an important role for the dynamic of ice sheets. Hydrological processes however are far from being understood as direct observations are hampered through kilometer thick ice. Over the past years, it also has become more and more evident that despite the cold and isolation wet subglacial environments provide a viable habitat for life. Geochemical and biogeochemical processes in the sub ice environment not only can create and release chemical compounds, which can be used as natural tracers helpful in elucidating and quantifying subglacial hydrological processes, subglacial bio/geochemical processes may also play an important role in global geochemical cycles, like the global carbon cycle, or the cycling of iron and fertilization of the oceans.

Here we present the first geochemical measurements of the geochemical composition of basal water and pore water from beneath the West Antarctic Ice Sheet. Our results point towards an oxygen depleted environment in the Upstream C area (Kamb Ice Stream). Geochemical water and sediment also indicate the removal of inorganic carbon potentially constituting a significant flux and release of inorganic carbon across the ice sheet grounding zone into the sub ice shelf cavity.

Our results also point out that subglacial environments are far from being understood and that sample recovery and insitu observations will be crucial for understanding subglacial environments and their role for ice sheet dynamic, the interaction between ice sheets, the underlying lithosphere and the oceans as well as the impact of subglacial processes on global geochemical cycles.