

5th International Conference on Polar & Alpine Microbiology, Big Sky, MT, USA, 2013

Biogeochemical characteristics of sub-Ross Ice Shelf waters near McMurdo Sound, Antarctica

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The McMurdo Ice Shelf lies off of the Victoria Coast of Antarctica, and comprises the northwest corner of the Ross Ice Shelf. The underlying water is mainly sourced from McMurdo Sound via a channel to the Ross Sea. In December 2012, we penetrated the McMurdo Ice Shelf (56 m) with a hot water drill. Water samples were collected with Niskin bottles deployed to 30 m and 850 m below the ice water interface and an *in situ* water filtration unit deployed to 850 m was used to collect samples for DNA extraction. Physical characteristics of the water column (depth=917 mbsl) were profiled with a CTD. Samples from both depths contained $\sim 10^5$ cells mL⁻¹ and 2 – 3 ug chl-*a* L⁻¹. DNA was successfully extracted from the 850 m sample for microbial community characterization. DOC concentrations were greater at 30 m than at 850 m, but heterotrophic activity was higher at 850 m than at 30 m, while dark incorporation of ¹⁴C-bicarbonate was similar at both depths. Fluorescence analysis of dissolved organic matter revealed DOM of mainly microbial origin, consistent with expected limited allochthonous inputs to the ice-shelf cavity. These data provide new insights into an under-sampled oceanic environment.

Funding provided by NSF-OPP grant 0838933.