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Major and minor element concentrations in the ANDRILL MIS core – complex interaction between glacial-climatic and volcanic processes?

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Pore water has been extracted routinely on many ODP cruises around Antarctica and provided valuable insight into diagenetic processes. During the 2006/07 Antarctic field season a 1285 m deep drill core (AND-001B) was recovered from the sea floor of the Mc Murdo sound. Using a titanium pore water squeezer (on loan from ODP) we obtained 28 pore water samples down to a depth of 1076 m. Here we present major and minor element concentrations measured on these 28 samples.

Most notably is the increase in concentrations of all major cations and selected chloride and bromide in the top few hundred meters of the core. The concentration in most major cation and anions exhibit two peaks, one occurring in the top 100 to 200 m and the later one occurring between a depth of 400 and 600 m. Below 600 m concentrations of most elements decrease. Sodium and chloride returning to values close to seawater. Concentrations of fluoride and strontium however increase with depth showing the values two to three times that of initial sweater concentrations in the deepest sample at 1076 m bsf.

Several factors may contribute to this behavior. Glaciers had been expanding and retreating across the McMurdo site. Sediment has been compressed and pore water expelled rising towards the sea floor. In addition the McMurdo sound is a volcanic active area and volcanic processes certainly leaving an imprint on the pore water geochem-

istry.