

## **Controls on the Ground Thermal Regime in the Ahlmannryggen, Western Dronning Maud Land, Antarctic**

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Research shows that the climate of Antarctica is changing and, it is vital that the change is monitored in order to understand how it will affect global ecosystems. Since the International Polar Year (IPY) 2007-2008, research in permafrost studies has grown. However, there are still existing gaps that impede complete understanding of Antarctic cold environments and landscape processes. Permafrost has been noted as one of the major controlling factors of the terrestrial ecosystem dynamics in Antarctica. However, the understanding of Antarctic permafrost compared with other cryospheric components is limited. This is greatly so considering its evolution, thermal and physical properties, links to pedogenesis, hydrology, geomorphic dynamics and response to global change.

This project aims to provide an understanding and insight to over-arching research that seeks to evaluate the state and status of permafrost and active layer in Dronning Maud Land (DML) through examining short term variations on ground thermal regimes. The main focus is on understanding the influence of synoptic, diurnal and seasonal events on the active layer in the Austral summer. Put precisely, the aim of this research project is to use high frequency data to determine the impact of seasonal, synoptic and diurnal events on ground thermal regimes. Analysis of pre-existing data shows that in summer, diurnal weather events dominate while in winter, synoptic events dominate. As an on-going project, this project aims to understand the effects of short-term variations of ground thermal regimes through establishing seasonal, diurnal and synoptic influences on air and ground thermal regimes; determining the extent to which synoptic data measured at Vesleskarvet (SANAE IV base) can be used regionally to evaluate ground thermal regimes and; determining the extent (depth) of synoptic events on ground thermal regimes.