



## Monitoring Permafrost Conditions & Processes

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### 12B - Exploring the Roles of Ground Ice on Permafrost Dynamics

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Ground ice is one of the main components of permafrost and is often present in excess of the soil's porosity. It is a critical parameter in the permafrost thermal regime due to (1) its high thermal conductivity and latent heat of fusion; (2) dictating thaw settlement potential and therefore thermokarst processes; (3) affecting geotechnical properties to build infrastructure; (4) is an important characteristic to reconstruct climatic conditions and sediment deposition; and (5) plays a central role in periglacial landscape evolution in general. Despite its significance, means of measuring and mapping ground ice accurately remain limited, and its impacts on permafrost landscape dynamics are understudied. With predictions pointing to a warmer, wetter/drier Arctic, it is becoming increasingly important to have a good characterization of ground ice distribution as well as of the processes relating to ground ice formation and melting to better understand the areas that will be most affected.

This session invites speakers to address subjects pertaining (but not limited) to: (1) ground ice characterization (e.g., cryostratigraphic description of the ice, vertical ice distribution, microtomodensitometry (CT-scan)); (2) distribution and detection techniques of ground ice using geophysics (e.g., ERT, GPR, seismic), satellite/airborne remote sensing (e.g., multispectral imagery, LiDAR, UAV), and permafrost drilling and coring; (3) the biogeochemical properties of ground ice (e.g., DOC, major ions, isotopes, etc.) and their impacts on permafrost aggradation/degradation and hydrology; (4) the thermal properties of ground ice and its impact on the permafrost thermal regime; and (5) thermokarst processes (e.g., ground ice related mass movements) and how they affect landscape evolution.

**Keywords:** Ground Ice, Cryostratigraphy, Thermokarst, Thermal Regime

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