



Session title: Remote sensing of Disturbances in Permafrost Regions

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Summary: Permafrost is warming at a global scale. Patterns of landscape reorganization in response to disturbances such as permafrost thaw and degradation have become widespread across northern ecosystems; which may profoundly impact indigenous Arctic communities and infrastructure. These dynamic permafrost disturbance processes vary dramatically on the landscape spanning gradients of space (i.e., local-to-regional) and time (i.e., abrupt-to-gradual). Hence, to understand present and future pathways of permafrost mediated landscape reorganization, remote sensing observations and targeted assessments spanning varying temporal and spatial scales are necessary and can bridge the gap between field observations and modelling efforts. The variety of available remote sensing sensors, datasets covering spatio-temporal scales and emerging processing possibilities make it a relevant research field. A growing array of active and passive sensors and techniques can characterize surficial landscape changes and associated subsurface properties and dynamics. This session aims to solicit novel remote sensing applications covering dynamic disturbance processes in permafrost landscapes. We welcome studies that use air- to spaceborne observations that span scales of time (short to long-term) and space (local to circumpolar), and include aspects of computational scalability, big data processing, time-series analysis, machine and deep learning, Unmanned Aerial Systems, or field-based modelling applications. We are particularly interested in studies focusing on permafrost landscape disturbances such as wildfire, thermokarst, thaw slumps, active-layer detachment slides, thermal erosion, coastal processes, surface water dynamics, or any other dynamic periglacial process.