Special Session S2: Remote sensing frontiers in cryospheric monitoring

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Glaciers are critical indicators of climate change, and their monitoring is essential for understanding water availability and downstream hydrological impacts. Remote sensing has emerged as a powerful tool for glacier observation, offering spatially extensive and temporally consistent data. As glaciers continue to respond to climate change, accurate and innovative monitoring techniques are essential for understanding their dynamics, mass balance, and hydrological significance. This session seeks contributions that leverage remote sensing technologies—including multispectral, thermal, LiDAR, photogrammetry and especially hyperspectral imaging—to study glacier behaviour and surface characteristics.

Particularly encouraged are studies that explore the role of hyperspectral data in characterizing debris cover, including its composition, thickness, and thermal properties. Such insights are crucial for improving melt models and understanding the energy balance of debris-covered glaciers. We welcome methodological advances, case studies from diverse geographic regions, and interdisciplinary approaches that integrate field data, satellite observations, and machine learning. Researchers working on data fusion, automated classification, and open-access tools for glacier monitoring are also encouraged to submit. This session aims to foster collaboration and highlight cutting-edge developments in cryospheric remote sensing.