



**Session title:** Water in Mountain Permafrost Environments

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**Summary:** Climate change affects the quantity and quality of mountain freshwaters. In glacierized and glacier-free areas, surface waters have been experiencing a rapid change of physical and chemical conditions, including runoff modifications, and shifts in water temperature and solute content due to degrading permafrost. Altered thermal conditions of the subsurface may affect water pathways, resulting in modified hydrological regimes associated with changes to recharge/discharge, or release of water from melting ground-ice. Numerical models seeking to predict effects of future warming must account for the complexity of mountain terrains, bringing a heterogeneous distribution of permafrost and ground-ice, unique from polar permafrost zones. Observed changes associated with permafrost degradation include solutes increase (including nutrients, ions and heavy metals) in mountain waters, with potential effects on aquatic ecology. Yet, ice-rich landforms such as intact rock glaciers, are emerging as potential climate refugia because the slow loss of their subsurface ice enables the persistence of cold habitats and related biodiversity. In this session, we encourage presentations about the physical hydrology and hydroecology of mountain headwaters that are influenced by degrading permafrost. Suggested topics include: observed and predicted changes to hydrology and hydrochemistry in mountain watersheds with degrading permafrost, numerical modelling of these systems under ongoing climate change, biodiversity and adaptations of ecological communities dwelling in these particular and rapidly shifting aquatic habitats.