

Category

CR Cryosphere

Session Number

CR-3

Session Title

Cryosphere-Hydrosphere interactions: The water cycle at the three Poles

Session Description

Seasonal snow, glaciers, ice caps, and permafrost play a key role in the dynamics of the Earth system both in the Polar regions and at high altitudes: Both the vegetation and the hydrological cycle are strongly controlled by, and interact with, seasonal snow; melt from glaciers and ice caps can be an important freshwater resource; and permafrost significantly affects landscape morphology and runoff processes.

In this session, we welcome contributions on the Polar and non-polar cryosphere, with a particular focus on local- and regional-scale interactions between the cryosphere and the hydrosphere. Topics to be addressed include but are not limited to (1) the quantification of past, present, and future contribution of snow- and ice melt to water resources, (2) the numerical representation of cryospheric components and processes in local- and regional-scale glacio-hydrological models, (3) the estimation of water reserves stored in glaciers, permafrost, and snow, (4) the quantification of both solid and liquid precipitation at high latitudes and high altitudes, and (5) the dynamics of the high-altitude and Polar water cycle.

The session does not have a particular geographical focus, but aims at providing a wide-ranging overview on recent developments in the understanding of hydrosphere-cryosphere interactions in Polar and mountainous environments.

Keywords: Polar and mountain cryosphere, glaciology, hydrology, snow and permafrost, modeling

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