



## SESSIONS EUCOP6\_ 2023

**Session title:** Recent advances in modelling permafrost dynamics, interactions, and feedbacks across scales

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**Summary:** Quantifying permafrost thaw and its far-reaching impacts is a major challenge in polar and climate research. As a widespread subsurface phenomenon, instrumented monitoring of permafrost conditions is challenging and direct observation through remote sensing is often very limited. Mathematical and physics-based models are therefore an important tool to assess the current state of permafrost and to investigate its interactions with the climate in the past, present, and future. In this session, we invite contributions that highlight recent developments and trends related to the modelling of the dynamics, interactions, and feedbacks involving permafrost. We are particularly inviting contributions addressing improved modelling of the thermal regime, thaw processes, permafrost hydrology, ground ice dynamics, mass transport, and how these processes are affected by and interact with surface conditions such as snow, drainage, or vegetation covers, and, to a larger extent, with the atmosphere, and the overall climate system. We aim to cover a broad range of spatiotemporal scales, from the site to the catchment and global scales, as well as high-latitude, high-altitude, and subsea permafrost. Approaches towards bridging these spatial and temporal scales are of particular interest. We also invite contributions aiming at the exploitation of observational data such as remote sensing and field measurements within numerical models, for example through data assimilation, scientific machine learning, or other statistical modelling techniques.