

Seminar

Mountain glaciers in the climate system: Global and regional perspectives on the past, present and future of the alpine cryosphere

Thursday 19 December 2024 – 4,30 pm Arduino Classroom

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Several of the most important societal challenges of the 21st century are connected to the accelerating retreat of mountain glaciers in a globally warming atmosphere. Meltwater from glaciers and ice caps is one of the largest contributors to present and future sea-level rise. The gradual disappearance of permanent ice in arid and semi-arid world regions will cause communities in these areas to face increasing probability of water shortages and vulnerability to drought events. And rising temperatures may contribute to a higher frequency or magnitude of natural hazards such as glacial lake outburst floods or ice avalanches. With the urgent need to respond to these challenges, knowledge of past glacier fluctuations is becoming increasingly relevant. In this seminar, we will first discuss some basic physical properties of glacier-climate relationships and then examine how the responses of glaciers to past climatic changes can be reconstructed from geological evidence. How can we use geomorphological mapping to infer the extent of past glaciations? How can we date glacial sediments and landforms and construct reliable chronologies of ice advance and retreat? And how do glacier fluctuations reflect changes in atmospheric circulation over time? Using examples from current research projects at the Department of Geosciences and its partner institutions we will explore these questions and discuss the role of the geoscientist in addressing them.