4A - Open Session on Rock Glaciers

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Rock glaciers are debris landforms generated by the former or current creep of frozen ground (permafrost), where creep refers to the variable combination of both internal deformation and shearing at depth. Their spatial distribution and dynamics are influenced by a combination of factors including topography, lithology, debris supply, internal structure as well as local-to-regional climatic conditions. In recent years, rock glaciers have received growing attention beyond permafrost investigation, involving disciplines such as geomorphology, hydrology, (paleo)climatology, ecology, and engineering. Mountain terrain is very sensitive to climate change. This is evident from observed shifts in mountain permafrost thermal regimes, changing hydrological seasonality, and snowpack variation. Recently, rock glacier velocity has been listed as a new associated parameter to Essential Climate Variable (ECV) permafrost within the Global Climate Observing System (GCOS). Hence, reflecting the importance of rock glaciers as geomorphological indicators to indirectly track the evolution of mountain permafrost in a changing climate. Despite the growing number of studies highlighting the significance of rock glaciers predisposed to cause cascading geohazards from destabilizations, or as key water stores in arid mountain environments, our understanding of the effects of climate-driven permafrost degradation on rock glacier state and evolution is limited. We welcome contributions addressing single rock glaciers, regional inventories, their kinematic or structural characterization and risk assessment, involving for example geophysical surveying, field observations, remote sensing or modelling approaches. We strive to promote discourse outlining novel techniques, monitoring, and multidisciplinary research to enhance our understanding of rock glacier response to a warming climate.

Keywords: Rock Glacier, Mountain Permafrost, Essential Climate Variable (ECV), Permafrost Degradation

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