



How permafrost degradation can affect the dynamics of landslides: two case studies in northern Iceland

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Permafrost degradation can severely affect slope stability in periglacial environments. However, its role in conditioning mass movements in Iceland, and in particular landslides involving loose deposits, is not well constrained. Landslides are a direct threat to many towns in Iceland, and triggering factors of these hazardous events include heavy precipitation, rapid snowmelt, seismic activity and permafrost thaw (e.g., Sæmundsson et al., 2003; Sæmundsson et al., in press).

Here, we present two case studies of landslides induced by degrading permafrost in Iceland, whose source materials comprised ice-cemented talus deposits. We describe and quantify the morphometric characteristics of these landslides, which reveal different dynamic processes, and how the thawing of ground ice could have affected their emplacement. As degrading permafrost is predicted to increasingly affect mountain regions in the future, improving our knowledge on this type of landslides is important, as they could be a further source of risk for local population in Iceland and other mountainous periglacial areas.

References:

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- Sæmundsson, Þ., Morino, C., Helgason, J.K., Conway, S.J., Pétursson, H.G.. The triggering factors of the Móafellshyrna debris slide in northern Iceland: intense precipitation, earthquake activity and thawing of mountain permafrost. *Sci. Total Environ.* in press.