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Mountain permafrost, glacier thinning, and slope stability – a perspective from British Columbia (and Alaska)

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The association of landslides with thinning glaciers and mapped, or measured, mountain permafrost is increasing. Glacier thinning debuttresses slopes and promotes joint expansion. It is relatively easy to map. Permafrost, a thermal condition, is generally not visually detectible, and is difficult to map. Much mountain permafrost may have been overlooked in hazard analysis. Identifying, and characterizing mountain permafrost, and its influence on slope instability is crucial for hazard and risk analysis in mountainous terrain. Rock falls in mountains can be the initial event in process chains. They can transform into rock avalanches, debris flows or dam burst floods, travelling many kilometres, placing infrastructure and settlements at risk.