

**The application of stratigraphic and mapping studies in delineation of landslide hazards:  
an example from British Columbia**

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In Canada, large bodies of water inundated areas along plateaus during the last glaciation. During the advance and glacially-oversteepened U-shaped valleys and low-lying retreat of glaciers, drainage was dammed in these areas and

large proglacial water bodies served as sites for the deposition of thick deposits of fine-grained sediments, ranging from clay- to silt-sized.

In British Columbia, coastal regions, estuaries, shallow river systems, and fjords along the Pacific coast were flooded during marine transgression and experienced deposition of glaciomarine clay and silt deposits. The potential for mass movement is highest in coastal areas below 250 m asl (the elevation of maximum sea-level during deglaciation). However, in the interior of the province, thick deposits of proglacial lake sediments have been mapped to elevations as high as 1000 m asl. These deposits are often encountered unexpectedly during road construction and excavation of foundations.

As forestry operations have expanded into more remote areas and mountainous terrain, anthropogenic activities have accelerated slope failures. Nevertheless, areas of high risk to

failure can easily be anticipated and avoided when the surface deposits are studied and the glacial stratigraphy is known. Where these sediments cannot be avoided, the surface deposits should be sampled and examined for mineralogical content and engineering properties. Proglacial lake deposits behave differently when disturbed due to differences in plasticity, stability and activity of the sediment. For example, the magnitude of damage or movement during initial retrogressive failures is commonly much larger in the Southern Interior sediments than those that occur in the Northern Interior clay units. However, long-term damage is significantly greater in Northern Interior clays, where failures tend to retrogress further over time. Variation in size and mode of failure can occur due to other natural factors such as; thickness of deposit, dip of strata, permeability and drainage, engineering properties of underlying units, topographic relief and slope.