



## THE EFFECT OF SPATIAL VARIABILITY ON SNOW AVALANCHE FORMATION

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Snow avalanche formation is due to a failure process in a weak layer or at a weak interface overlaid by a cohesive slab. It is supposed that by accumulating damage to the bonded granular structure a local failure forms that can grow to a critical length, at which rapid brittle fractures spread through the weak layer, causing fractures at the perimeter of the slab and eventually avalanche release. Variation of snowpack properties affects the slab release process at several scales. We compare our measurements at the slope scale with previous studies. Weak layers relevant for dry-snow slab avalanche formation are typically through-going with spatial structure of the order of several meters. We conclude that any variation at the scale lower than about the critical length for fast propagating fractures will prevent avalanche formation. Whereas, to be critical, weak layers, or weaker parts of a weak layer, need to have an extent of several meters in cross and down slope direction. These types of more or less continuous weak layers will more easily be found by snowpack stability tests.