



Signals of recent snow-avalanche activity in birch tree-rings from Northern Iceland colluvial cones

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The Fnjóskadalur, Ljósavatnskarð and Dalsmynni valleys, in Northern Iceland, are characterised by an important snow-avalanche activity impacting large colluvial cones. All valleys expose stands of broad-leaved trees, which cover an extensive wooded part along the flanks. The main represented species are *Betula pubescens* trees and shrubs. The objective of the research is to determine past snow-avalanche activity to improve historical record for the last century by applying dendrochronological and vegetative analysis. Trees and shrubs experience damages resulting from the impact of snow and debris, to which they respond in a variety of ways. The dendrochronological approach compares tree rings growth from a reference area beside the snow-avalanche path with the ones from within the snow-avalanche path. For this purpose, increment cores are taken from the up-down axis of the trunks and analysed on a LINTAB measuring table. The dendromorphological analysis maps changes in trunk posture such as tilted or topped trunks, and the position of wounds on the trunks. The combination of these two approaches provides a temporal catalogue of snow-avalanche events and also determines the directions of main fluxes. Therefore, it helps to locate the lateral dispersion of snow avalanches over the cones through time. The results obtained from comparison between the reference growth curve and the snow-avalanche impacted one show a clear difference between impeded tree-ring growth due to climatic factors and snow-avalanche occurrence. Several snow avalanche events are unravelled on the investigated cones during the last century.