

Slope Scale Spatial Variability Across Time and Space: Comparison of Results From Continental and Maritime Climates

Jordy Hendrikx¹ Karl Birkeland²

1 National Institute of Water and Atmospheric Research (NIWA), Christchurch, New Zealand; 2 USDA Forest Service National Avalanche Center, Bozeman, MT, USA

Understanding the spatial variability of the snowpack is a crucial step to improve accuracy in field data collection and avalanche forecasting. While there has already been a large volume of literature assessing the spatial variability of the snowpack, inconsistent sampling designs make comparing results difficult. This work uses an overlapping 10 by 10 m grid to collect Extended Column (ECT), Compression (CT) and Stuffblock (SB) test data at the slope scale across a range of environmental settings and climatic regimes in Montana and New Zealand. The overlapping grid methodology standardizes data collection between our sites, as well as allowing for repeat data collection on the same slope, thereby providing a new method for attempting to assess changes in spatial variability over time. Preliminary results suggest that the spatial variability of fracture propagation and fracture initiation may increase over time, and that the spatial variability of the fracture propagation propensity may be related to the processes causing the instability. As we collect more data, these results will provide further insight into the problem of snow pit location and representivity, both in terms of space and time.