

Looking to the Future: Predictions of Climate Change Effects on Avalanches by North American Practitioners

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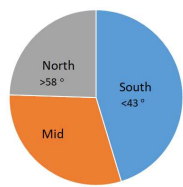
Introduction

"It's tough to make predictions, especially about the future." Danish proverb repeated by Yogi Berra

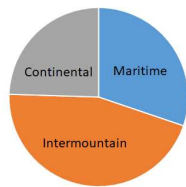
Meteorological data provide a well-defined record of historic climates and climatic trends. Snow avalanche activity, in contrast, has complex contributing factors and is not readily assessed in relation to climate change. Research on climate change effects on avalanche activity is limited, and conclusions vary by region and over time. If current climate warming trends persist or accelerate, the implications for snow avalanche activity could be significant for snow safety professionals, affecting industry, commerce, recreation, transportation and housing.

We surveyed 240 avalanche professionals in the USA and Canada to collect their observations and predictions on the influence of climate change on avalanches.

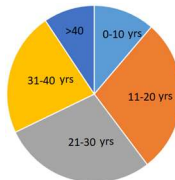
Participant Demographics



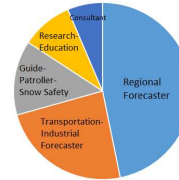
Latitude



Climate



Experience



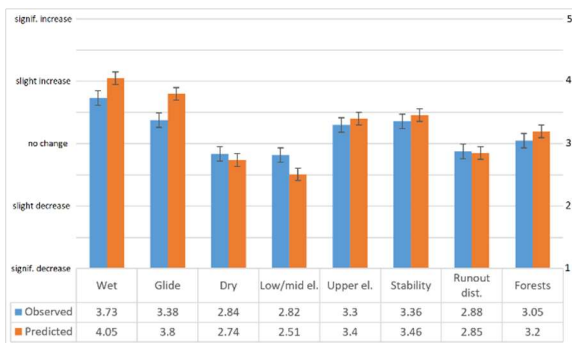
Occupation

Numeric Coding

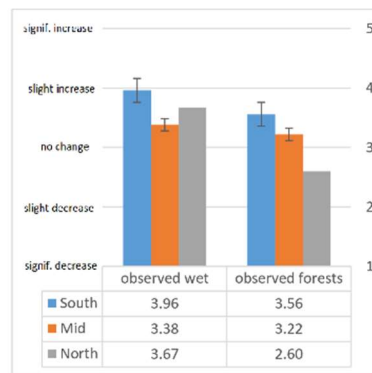
1	2	3	4	5
significant decrease	slight decrease	No change	slight increase	significant increase

Sample size: n = 53 (22% response rate)

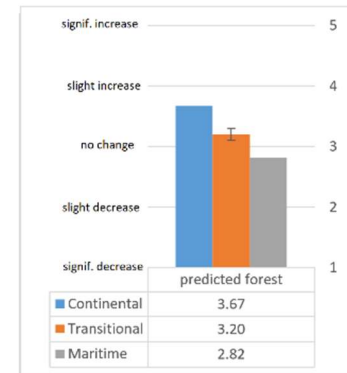
Findings



Observed and Predicted Changes – all groups



Latitude Observed Effects

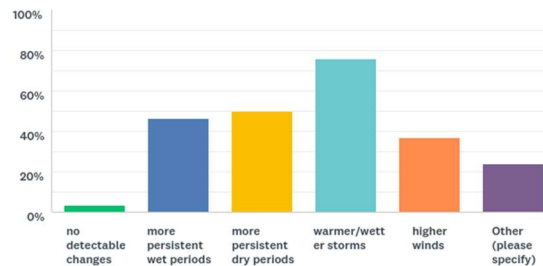


Predicted Changes by Climate Type

See extended abstract for statistical analyses of findings

Summary

- Increases in wet and glide avalanches have been observed and are predicted.
- Increases in upper elevation avalanches have been observed and are predicted.
- Overall increased in snowpack stability/structure have been observed and are predicted.
- Wetter and warmer storms have been observed and are predicted.
- Decreases are predicted in dry and low-mid elevation avalanches
- Forest effects might vary with latitude with increases at southern and decreases at northern latitudes.



Observed Changes in Atmospheric Patterns

