

Estimating extreme avalanche runout for the Lizard Range, Fernie, British Columbia, Canada

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Identifying the extreme avalanche runout is an important part of public safety for development in mountainous areas. Extreme avalanche runout is typically estimated using a combination of historical and vegetation records as well as statistical and dynamic models. The two main types of statistical models ($\alpha - \beta$ and Runout Ratio) are based on predicting runout past the β -point, which is generally defined as the point where the slope angle first decreases to 10° while descending the slope. Statistical models are commonly used for avalanche hazard mapping in Canada; however, the existing models cover broad geographical areas and may not accurately predict runout in some development areas. Located in southeastern British Columbia, the Lizard Range is a sub-range of the Canadian Rocky Mountains. Numerous recreational and residential developments are located in this area including the City of Fernie. Likely because of the heavy snowfall in this area, residential development in mountainous terrain in this area is intense. Possibly due to the heavy snowfall in this area, the existing statistical models for the Canadian Rocky Mountains tend to underestimate extreme avalanche runout for this area when compared to field evidence of extreme runout. Using a data set of 28 avalanche paths with vertical drops greater than 350 m, we use the existing Canadian statistical models to show how these models underestimate extreme avalanche runout for the Lizard Range.