

Predictions of the Propagation Saw Test: Comparisons With Other Instability Tests at Skier Tested Slopes

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Several new fracture propagation field tests have been presented in recent years. These are designed to provide specific information about propagation propensity; however, each of the more common test methods are thought to be demonstrating at least part of the propagation process, and recent research has shown that the new propagation tests perform well at predicting skier-triggered avalanches. But which test performs best under which conditions? To address this question we compared the predictive success of the new Propagation Saw Test (PST) with that of the Compression test (CT), the Rutschblock test (RB), and the Yellow Flags structural instability index (YF) on skier-tested slopes that did and did not release avalanches in the Columbia Mountains of British Columbia, Canada. The results show that, for our dataset, the combined success rate of the PST in predicting stable and unstable conditions was the highest of the group, although it also had a much larger proportion of potentially dangerous 'false stable' results than the other tests. The CT, RB, and YF methods tended to overestimate instability, but often made correct predictions where the PST was incorrect. Overall, the tests usually performed better in combination than on their own, as each provided slightly different instability information.