

Meteorological and environmental observations from three glide avalanche cycles and the resulting hazard management technique

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Glide avalanches are a significant hazard that threatens people and property in many snowy climates. They are hard to control, poorly understood, and extremely challenging to forecast. This paper presents meteorological and environmental data associated with three glide avalanche cycles. It also discusses hazard reduction techniques from an operational perspective and provides possible explanations why previous attempts to artificially trigger glide avalanches rarely succeed. During Southeast Alaska's winter of 09/10, we witnessed three glide avalanche cycles with over 35 total avalanches. During those cycles we collected data on snowpack, precipitation, temperature, relative humidity, sky coverage and streamflow, as well as slope aspect, elevation, steepness, shape and ground cover. We also recorded visual snow surface observations leading to the transition of some of the glide cracks to avalanches. Although glide avalanche activity is clearly somehow related to atmospheric events, we found no direct correlation between meteorological data and avalanche occurrences. However, we did find a rough correlation between snowpack, terrain and avalanche time distribution in two out of the three cycles. Our lack of reliable forecasting and control tools for glide avalanches implies that limiting the potential destructive size of glide avalanches throughout the entire winter may be the most effective approach to managing the hazard for some operations.