

Assessing meteorological conditions for glide-snow avalanches

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Predicting the timing of the release of glide-snow avalanches is currently one of the trickiest issues for operational avalanche warning services as well as for avalanche research. While the prerequisite for glide-snow avalanches, namely a moist interface between the snow-cover and the ground, is well known, estimating the timing for glide-snow avalanche release, which can range between immediately to weeks after the opening of a glide-crack, remains a challenge. Our final goal is to provide suitable estimators for glide-snow avalanche release to be used by avalanche warning services. In this study we analyzed data from the Planneralm skiing area in Styria, Austria. The Planneralm is well equipped with a variety of stations and sensors, providing meteorological data, snowpack data, as well as optical monitoring of glide cracks and glide-snow avalanche release for a period of five winter seasons. The focus of the analysis is to identify meteorological conditions and snowpack properties triggering the occurrence of glide-crack opening and particularly glide-snow avalanche release. Consistent with previous studies, the results indicate a significant relation between daily maximum air temperature and avalanche release, as well as a distinct diurnal cycle with maximum release probability in the early afternoon. The results indicate that moderately high temperatures are a necessary, but not sufficient condition for glide snow avalanche activity in the study region. However, still most of the warm days are “non-avalanche days” and further work is needed to better understand glide-snow avalanche risk on warm days.