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Comparison of different simulation models to estimate the runout of alpine debris flows.

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The quantitative estimation of principal debris flow parameters, such as event magnitude, runout length, and deposition area is an important task for an effective hazard assessment. Often the magnitude of a channelized debris flow is characterized by the potential debris volume, mean flow velocity, peak discharge, and runout distance. Here the term runout refers to the depositional part of a debris flow event, providing information on the areas potentially covered by debris-flow deposits. During the last years several runout prediction methods have been proposed, either based on empirical-statistical or dynamical simulations to assess the flow behaviour during the depositional phase and the depositional pattern. Due to improved event documentations, more published data on debris-flow events, and more detailed digital elevation models, more comprehensive studies are possible. In this study, a comparison of different 2D runout prediction models is made. Runout estimates, applicability, additional information given by the tested models as well as necessary input parameters are presented and discussed for selected debris flow events in the European Alps.