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Quantification of meteorological conditions for rockfall triggers in Germany

Katrin M. Nissen et al.

Correspondence to: Katrin Nissen (katrin.nissen@met.fu-berlin.de)

Supporting Figures

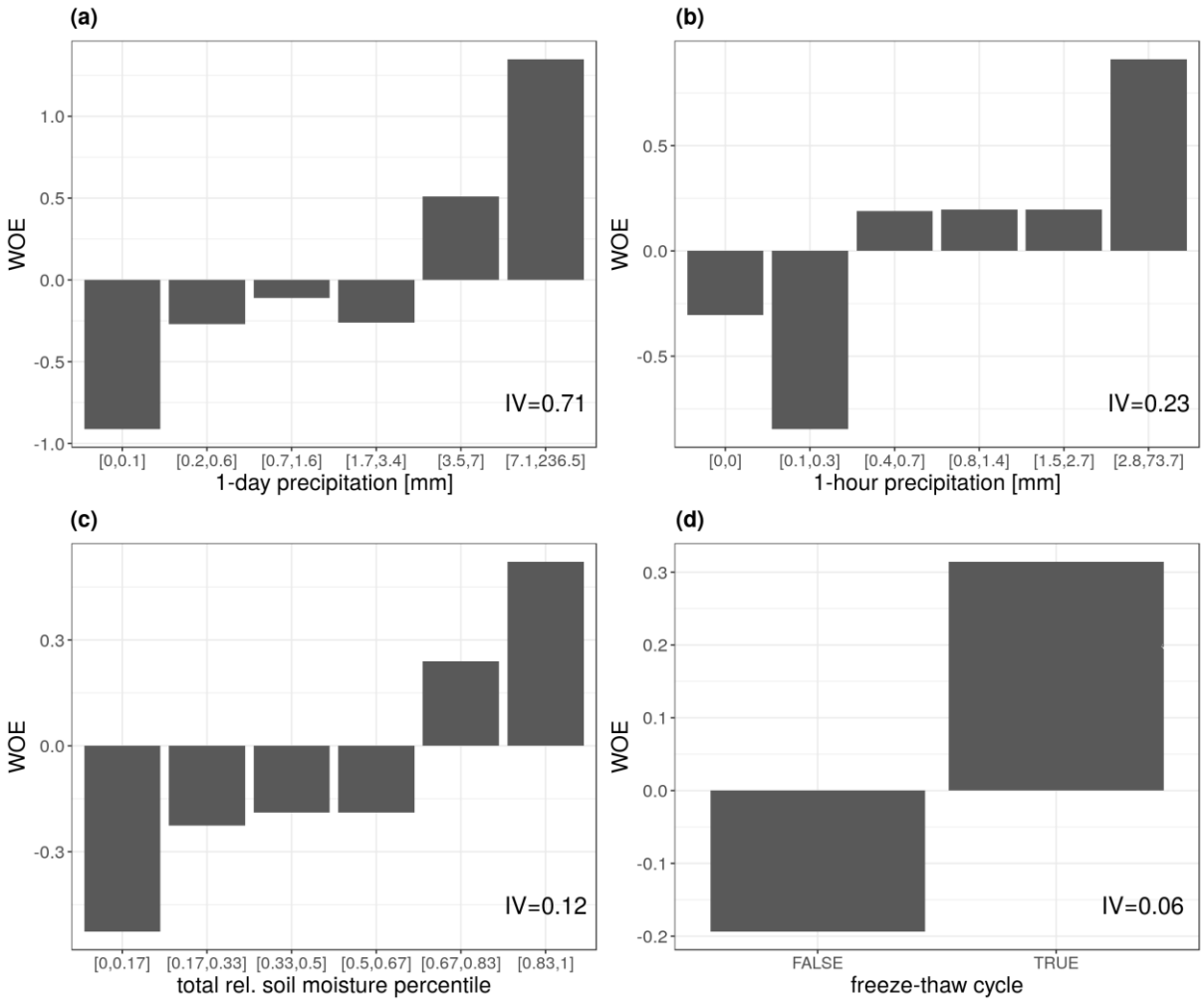

Figure S 1: Weight of evidence (WOE) for a) daily precipitation, b) hourly precipitation, c) percentile of relative simulated soil-moisture content over all layers d) occurrence of a freeze-thaw cycle in the previous 9 days as in Fig. 3 but using only the years common to all meteorological and hydrological time series (19) and the locations of the rockfall events occurring in those years.

For a consistent comparison of the IV values a sensitivity test was performed using only the number of grid boxes, time steps and events covered by all datasets (Fig. S1).

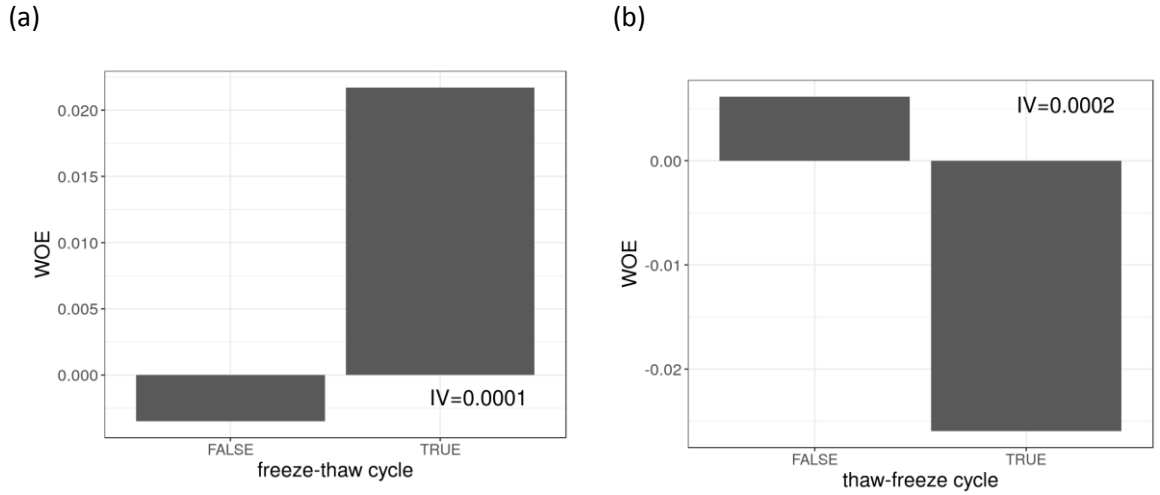

Figure S 2 Weight of evidence for occurrence of a (a) freeze-thaw cycle, (b) thaw-freeze cycle in the previous 2 days.

In order to take into account that the thawing process might take several days, a time span preceding the event was evaluated. Comparing different time spans, it turned out that the IV value associated with a freeze-thaw cycle immediately before the rockfall event (i.e. preceding 2 days) was too low (<0.02) to be considered useful for statistical modelling (Fig. S2a).

Comparing freeze-thawing and thaw-freezing transitions, the findings of D'Amato et al. (2016) can be confirmed that thawing increases rockfall probability while freezing decreases it (Fig. S2).