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The potential application of statistical post processing techniques on landslide early warning system

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With the increase of frequency and intensity of heavy precipitation in the future, rainfall triggered landslides (RTL) can be one of the major threat to human life and property security. Early warning systems of natural hazards are one of the most effective measure for reducing disaster losses and risks. However, the forecast of RTL in near-real-time (NRT) is extremely difficult since the quality of NRT precipitation data is relatively poor. Quantile regression forest (QRF), a state-of-the-art statistical postprocessing method, has been proved to reduce the difference existing between NRT satellite precipitation estimates and ground-based rainfall data. When predicted rainfall maps are put side by side with raw NRT satellite product, the pattern of the first matches much more closely the locations where landslide events have been mapped in a test site in North-Eastern Turkey. This leave an optimistic perspective on the application of statistical postprocessing techniques in the field of weather science and in general for natural hazard assessment. Ideally, by correcting the continuous information in space and time provided by satellite rainfall estimates, one could create a new operational tool for landslide early warning system, not bound to the financial and deployment requirement typical of rain gauge and terrestrial radar stations.