An enhanced blend of SVM and Cascade methods for short-term rainfall forecasting

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ABSTRACT

A more reliable flood forecasting could benefit from higher-resolution rainfall forecasts as inputs. However, the prediction lead time of the operational rainfall forecasting models will substantially diminish while sub-hourly (e.g., 5-min) rainfall forecasting is required. A method that integrates the SVM (Support Vector Machine) and Cascade-based downscaling techniques is therefore developed in this work to carry out high-resolution (5-min) precipitation forecasting with longer lead time (45-60 minutes). The 5-min raingauge observations from Coimbra (Portugal) are employed to assess the proposed methodology. A comparison with the conventional SVM is also conducted to study the possible benefit of using the proposed methodology to carry out short-term rainfall forecasting.

KEYWORDS

Support vector machine, cascade, log-Poisson, rainfall forecasting, downscaling