



Estimating predictive hydrological uncertainty by dressing a probabilistic post-processing approach; a comparison with application to a tropical catchment

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A hydrologic post-processor is an approach to deal with uncertainties from imperfect hydrologic model outputs propagated from all upstream sources. It works by establishing a statistical relationship between observations and forecasts. Two statistical post-processing approaches for the estimation of predictive hydrological uncertainty are compared. We propose a Bayesian post-processing approach based on nonparametric estimation of copula function for dependence modelling. The assessment is done by comparing results from the new nonparametric copula method with these of a well-known meta-Gaussian distribution; the techniques are applied to the Citarum catchment (West Java, Indonesia). Deterministic and probabilistic verification frameworks are used in order to evaluate the outputs from the proposed approach. Results show that both techniques are successful in producing reliable forecasts. The two predictive QQ plots approaches are similar; however, the copula method is generally more reliable than the meta-Gaussian method, although the latter is sharper. To sum up, the nonparametric copula method represents a valid approach for predictive uncertainty estimation of hydrological forecasts.