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How to match accuracy and predictive capability in hydrological model development

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Abstract

Hydrological applications are often unique. Each case study is different from the other, both because of the purpose of the application, and because of the variability of nature. Our tools, including models and diagnostic techniques, are often too rigid to adapt to each new requirement. This paper shows the advantages of a flexible model structure in application to a case study. A variety of model is generated, which are applied to a headwater catchment in Luxembourg. The models are evaluated with an adapted GLUE methodology. This approach has been often criticized for the subjective choices involved in its application, such as the selection of a discriminating threshold to separate 'good' and 'bad' models. We here introduce a flexible threshold which is automatically determined, with the objective of balancing predictive capability and parameter uncertainty.