Monthly Hydrological Model Evaluation through Mapping the Hydrological Pattern to Information Space

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Conceptual and stochastic monthly hydrological models have been widely used for climatic change impact exploration and long-range stream flow forecast. With disparate philosophies and different but insufficient inputs, most of the existing models are capable of generating satisfying outputs, which reveals a relatively robust idiosyncrasy of hydrological pattern over monthly time scale. This research uses the *epistemic-aleatory uncertainties evaluation framework* to examine the information source sink terms and flows of 6 conceptual monthly water balance models and a seasonal autoregressive stochastic hydrologic model over 19 basins in Jiangxi Province, China and the experiment basins of MOPEX project. By using the *stream* technique of Lisp, we constructed two programming paradigms into which the models mentioned above could be fitted. We focus on detecting and explaining the best achievable predictive performances and data-revealed insufficient of the models in each paradigm, especially the hydrological meaning of the iteration variables of these models. Finally, we make an attempt to compare and connect these two paradigms against the backdrop of algorithmic information theory to help us form a better understanding of monthly hydrological pattern.