



## **Regionalisation of rainfall-runoff transformation: Understanding catchment similarities using wavelets**

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A spatial transfer of hydrological models from gauged to ungauged catchments is possible under the assumption that similar landscape units produce similar hydrological processes. The objective of the present research is to investigate this assumption and to propose a new approach for the quantification of hydrological landscape similarity. This similarity measure is based on the assumption that different landscapes have different non-linear filtering characteristics during the rainfall-runoff transformation process and that these characteristics can be quantified.

These filtering effects are identified through wavelet analysis. Wavelets enable a quantitative analysis of how certain frequency features of a system input time series are filtered in the system output time series. In the present research, this main property is exploited for the investigation of the filtering characteristics of different landscape units. A similarity measure based on such dynamic characteristics has the main advantage of connecting directly the hydrological response of a catchment or landscape unit to the processes that condition this response. It contributes therefore not only to the modelling of the hydrological response but to its understanding.

It is planned to validate the efficiency of the new approach and the gained insights through a discharge regionalisation study with data sets from Germany and Austria. The first results of this approach will be presented.