



## Measures of catchment similarity

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Similarity of catchments is often defined on the basis of discharge series. Similarity measures are formulated using dependence measures (such as correlation or empirical copula based variables) relating these series. A major drawback of these approaches is that they can only detect similarity for catchments with the same weather. Further as weather of different time periods is different one would consider the same catchment as dissimilar to itself. The goal of this contribution is to introduce different similarity measures which reflect functional similarity (transformation of precipitation to discharge) and filter out the effects of weather. The alternative similarity measures are defined using:

- Flow duration curves
- Recession curve behaviour
- Bivariate copulas between antecedent precipitation and discharge
- Boundary curves of the response dynamics

These measures enable the calculation of the self similarity of catchments, providing them reasonable limits and an objective evaluation.

The methodology is applied to a large set of US catchments. The usefulness of the similarity measures is tested for the hydrological model HYMOD.