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From catchment similarity to hydrological similarity: a review of the difficulties hindering the regionalization of hydrological models

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In this presentation, our aim is to give an overview of the difficulties hindering the regionalization of hydrological models.

We start with the notion of similarity, and we give several non-hydrological examples to illustrate how apparent similarity differs from behavioral similarity. Apparent similarity is defined on the basis of observable catchment properties, while behavioural similarity can only be judged through the use of hydrological models. The fact that the hydrological similarity requires some kind of a model is not necessarily a good thing, this is why we show here first that hydrological models usually agree with each other concerning the similarity of catchments.

The two notions are generally assumed - for practical matters - to be identical (i.e. catchments having apparently similar physical characteristics are assumed to have a similar hydrological behaviour), although we know that this is an oversimplification. We wish to discuss here the reasons why the two concepts do not overlap, as well as the consequences for regionalization when we simplify the reality and assume the identity of both concepts.

Last, recognizing the fact that there is still a long way to go on the path of hydrological regionalization, and that we do not now what the solution will be, we discuss how alternative schemes could be tested and validated in the form of a specific crash-test.