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Hydrologic similarity, comparative hydrology and hydrologic extremes

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Recent years have brought a renewed focus on the issue of hydrologic similarity. What makes two catchments similar and what can we do with this understanding? The reason for this issue being so important lies at least partially in the need for generalization of results in a scientific field, which is limited through the large heterogeneity in our environment. The issue of hydrologic similarity is of course as old as hydrology itself, however, we believe that taking stock is needed from time to time to guide comparative hydrology efforts that have the potential to bring structure into the field of catchment hydrology. Apart from that, catchment similarity is the rational behind any attempt of predicting streamflow at ungauged basins, and a better understanding and definition of hydrologic similarity will enhance our ability to estimate water resources in absence of stream gauges. In this talk we focus on signatures of hydrologic extremes, i.e. flood and low flow characteristics of streamflow. Can similarity concepts relate catchment behavior under both high and low flow extremes? In how far do our understanding and our predictive capability regarding hydrologic extremes benefit from a holistic few of individual catchments, and from a comparative analysis between catchment? We will review different studies and present a meta analysis to highlight the proven and the potential benefit of taking a broader view.