universität freiburg

Kolloquium - Boden, Wasser, Luft

09. Januar 2025, 16 ct - 18 Uhr
Hörsaal 1199, KG I, Platz der Universität 3

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A Fresh Start for Flood Estimation in Ungauged Catchments

How can we improve our estimates of flood flows for river locations without flow measurements? Hydrologists and engineers use flood estimation for ungauged catchments to inform proposals for new developments near rivers, to improve understanding of river ecosystems, and to support flood hazard mapping.

In this talk I will briefly review the performance of existing flood estimation methods in ungauged catchments, point out several possible approaches to improving this performance, and then focus on a new event-scale derived distribution method. Although the new method is generic, it requires local data and process understanding, and so my examples will come from the UK. The main purpose of the talk is to share an idea for bringing catchment-scale process understanding into flood estimation.

The essence of the method is that river flood hydrographs have two essential features: the runoff volume, and the temporal spread of that runoff. As hydrologists, we have some understanding of the causes of both phenomena, and we can combine this with regional data to develop probability distributions for both, which can then be combined to inform us about the probability distribution of the peak flow in each event. I will give some examples of the progress we have made in several aspects of the problem, how these results can be linked together, and which parts of the problem remain unresolved.

Veranstaltet von den Professuren für
Hydrologie, Umweltmeteorologie, Bodenökologie und Umwelthydrosysteme und Biochemische Systemmodellierung
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