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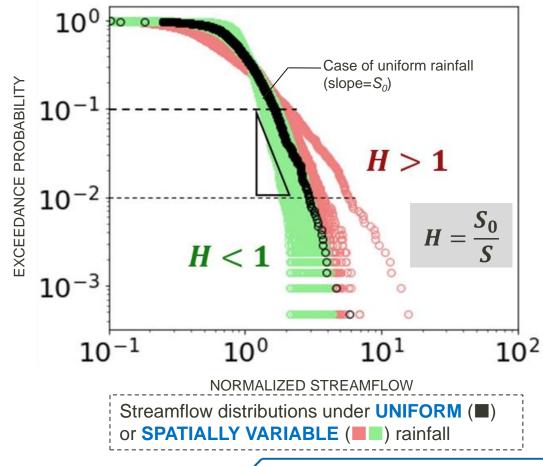
1 | INTRODUCTION

Heavy-tailed streamflow distributions: a non-neglectable chance of occurrence of very large flows and therefore in the possible occurrence of extreme floods.

What is the heavy-tailed distribution?

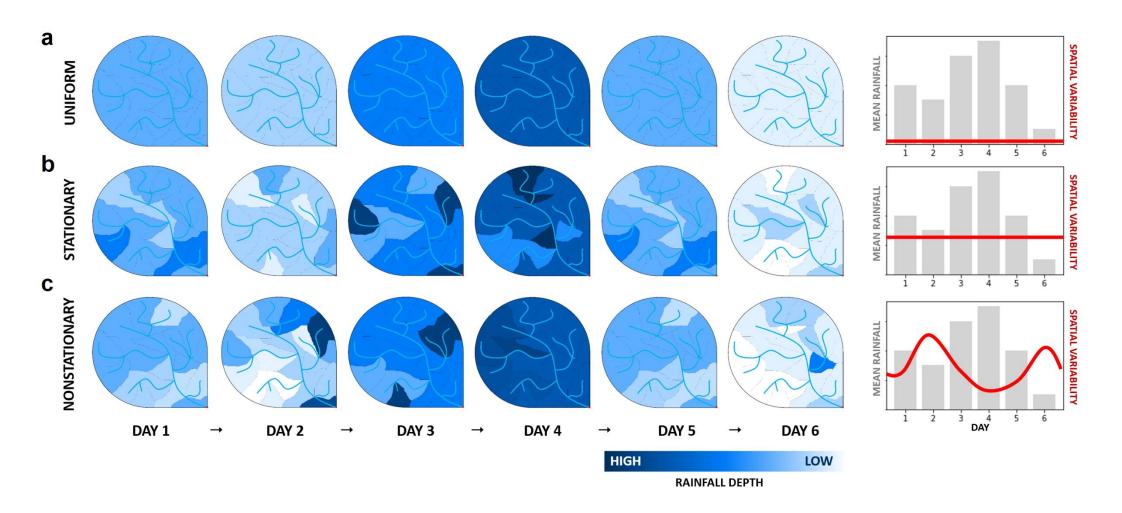
10° **Exceedance Probability Straight Line** 10^{-2} **Heavy Tail** Curve 10^{-3} Streamflow 0 10-1 Streamflow [cm/d]

Relative tail Heaviness

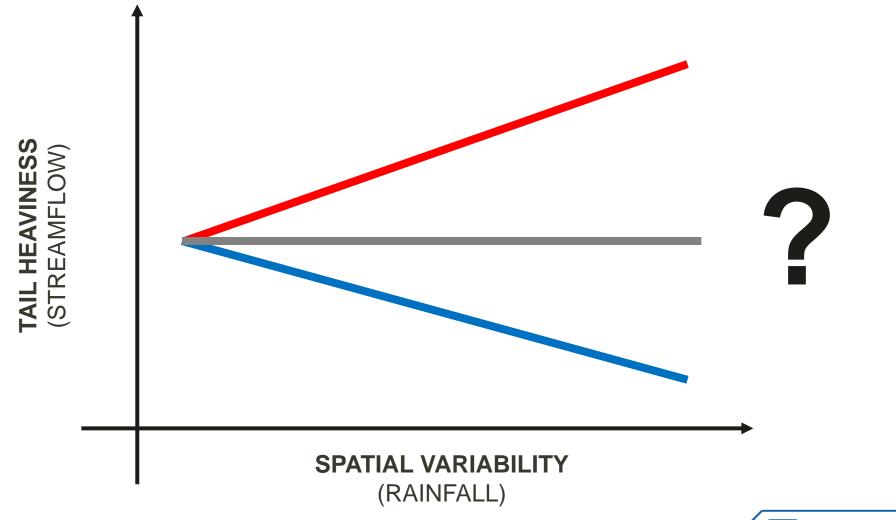


INTRODUCTION

Spatial variability of rainfall: spatial variation of coefficients of rainfall depths

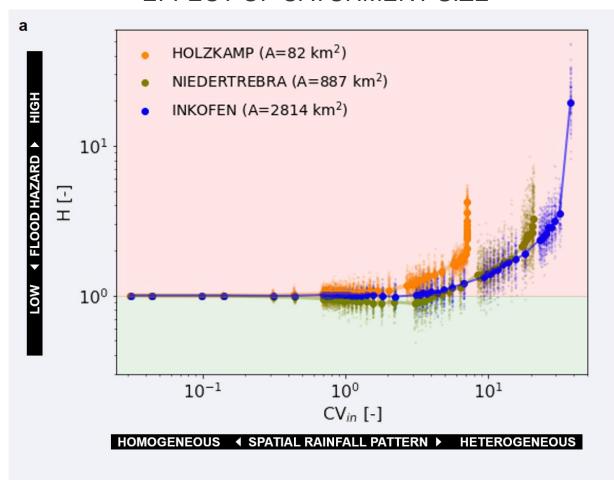


A general question:

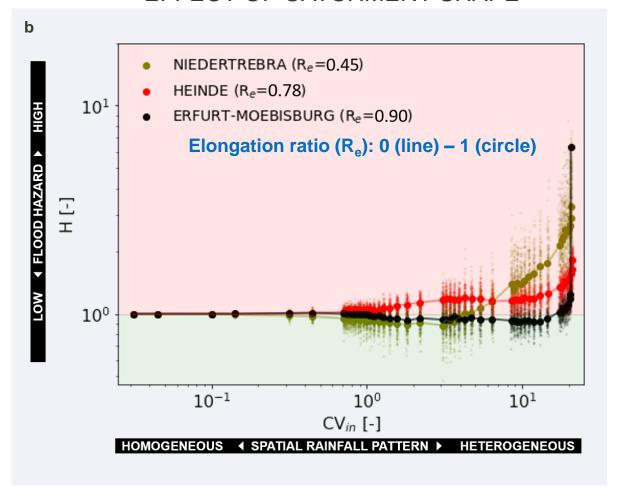


Stationary rainfall variability (synthetic analysis)

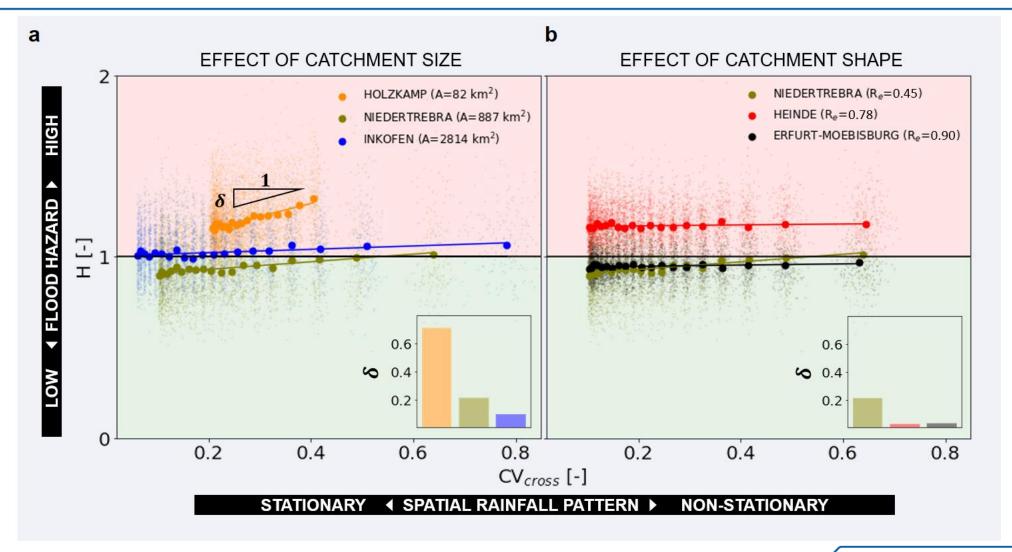
EFFECT OF CATCHMENT SIZE



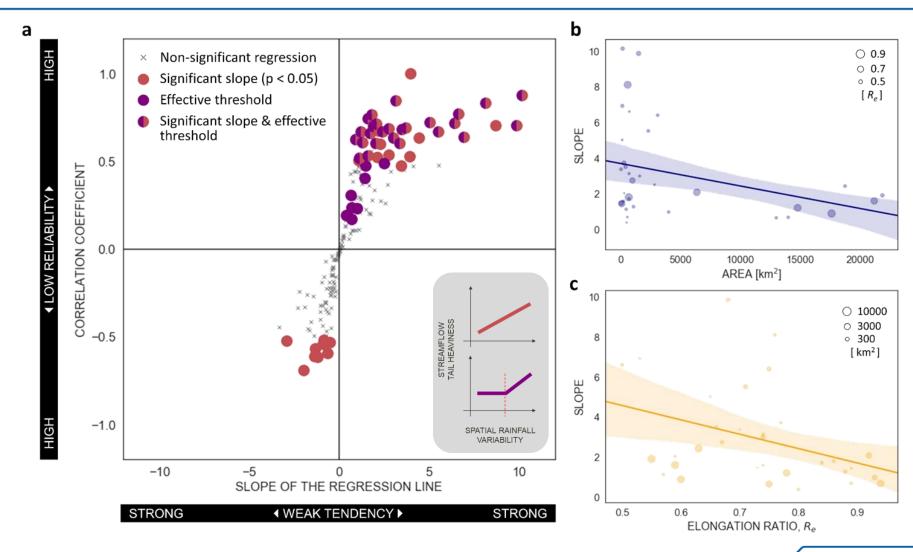
EFFECT OF CATCHMENT SHAPE



Nonstationary rainfall variability (synthetic analysis)



Data validation (175 natural German catchments)



Take home messages

Does the spatial rainfall variability emerge the heavy tails in streamflow distributions?

Yes, but only beyond a certain increase threshold of the spatial rainfall variability.

If it does, what is(are) the role(s)?

Small or elongated catchments are less resilient to increasing spatial variability of rainfall.

Model or data?

The analysis of daily records of rainfall and streamflow for a large set of catchments in Germany proves the transferability of simulations.



THANK YOU FOR YOU ATTENTION

Interesting? Questions? Let's talk more..

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