



Floods and integrated catchment management

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Floods in 2021: record breaking



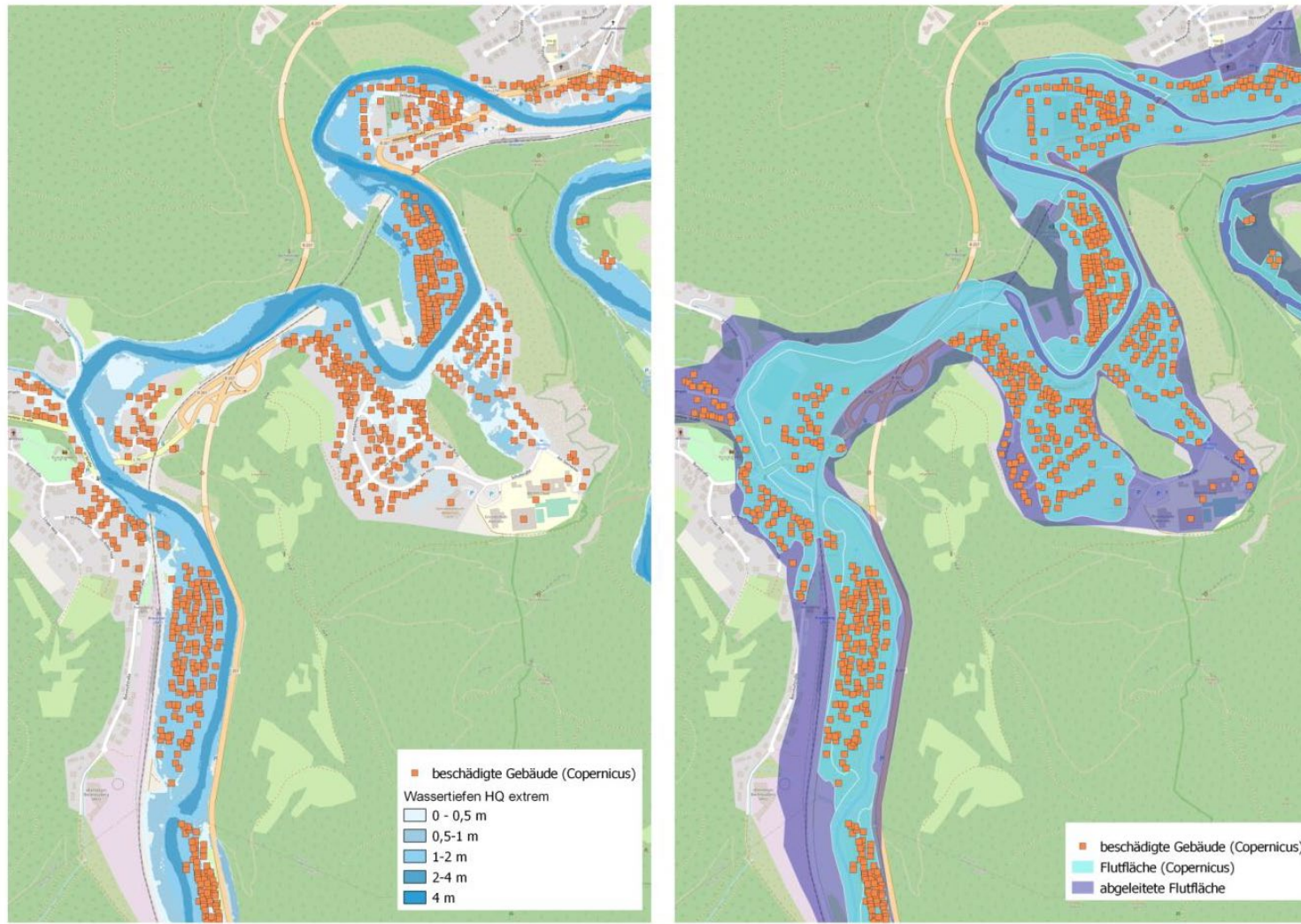
Month in 2021	Location	Fatalities	Economic losses (USD billion)
July	Central-western Europe	227	41
July	China (Henan region)	398	19
	China seasonal flooding (excluding Henan)	103	5.8
November	Canada (southwestern British Columbia)	6	3.4
	India seasonal flooding	729	2.3
December	Malaysia	56	1.4
March	Australia (New South Wales)	2	1.1
	All other flood events	1 059	8.8
	TOTALS	2 580	82

Source: Swiss Re Institute, 2022. Natural catastrophes in 2021: the floodgates are open (online PDF)

We observe 'Improbable' floods

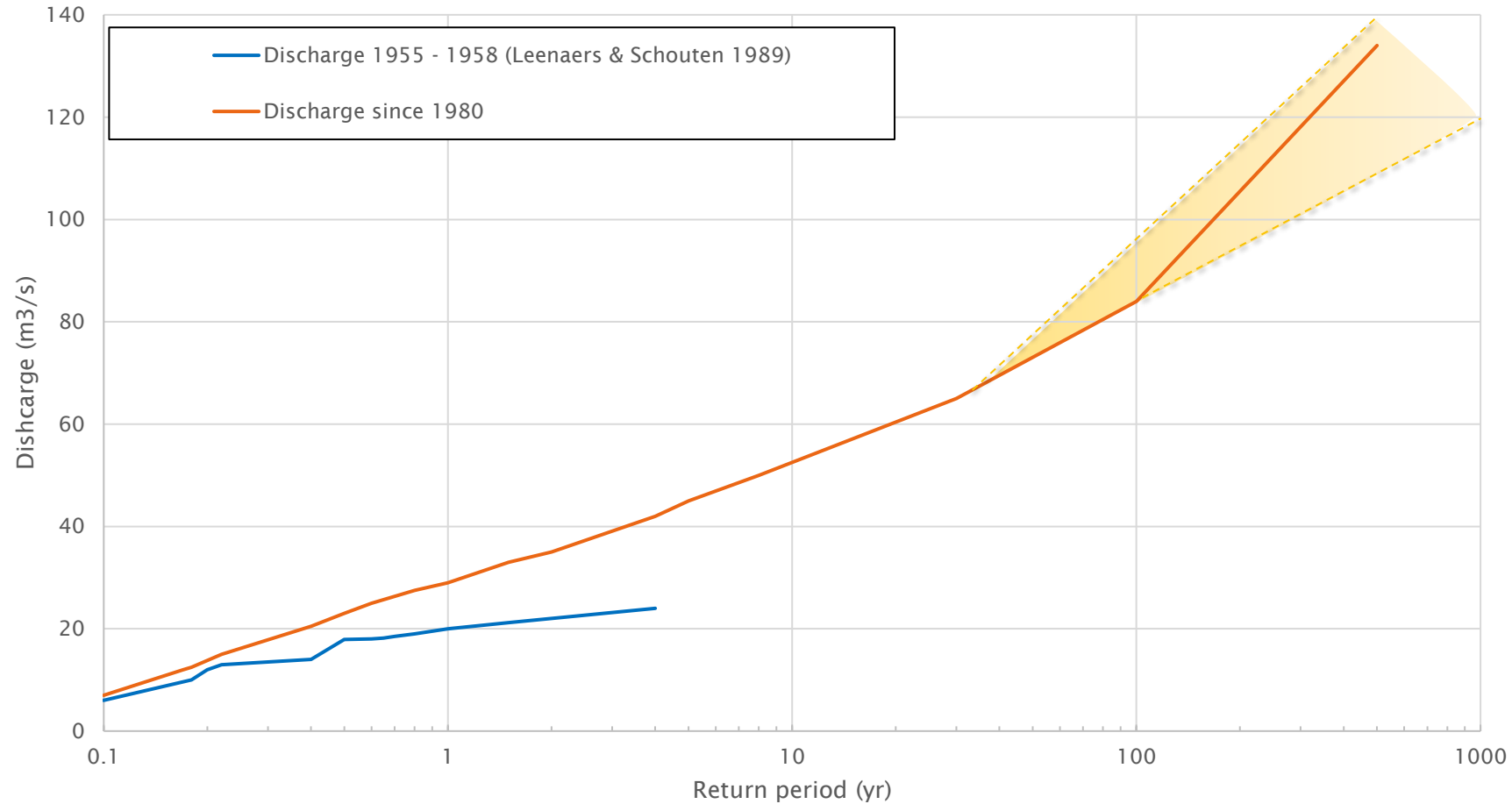


Extreme scenarios in hazard zoning



Source: Thieken et al. 2021, Extreme Hochwasser bleiben trotz integriertem Risikomanagement eine Herausforderung

Geul discharge return periods

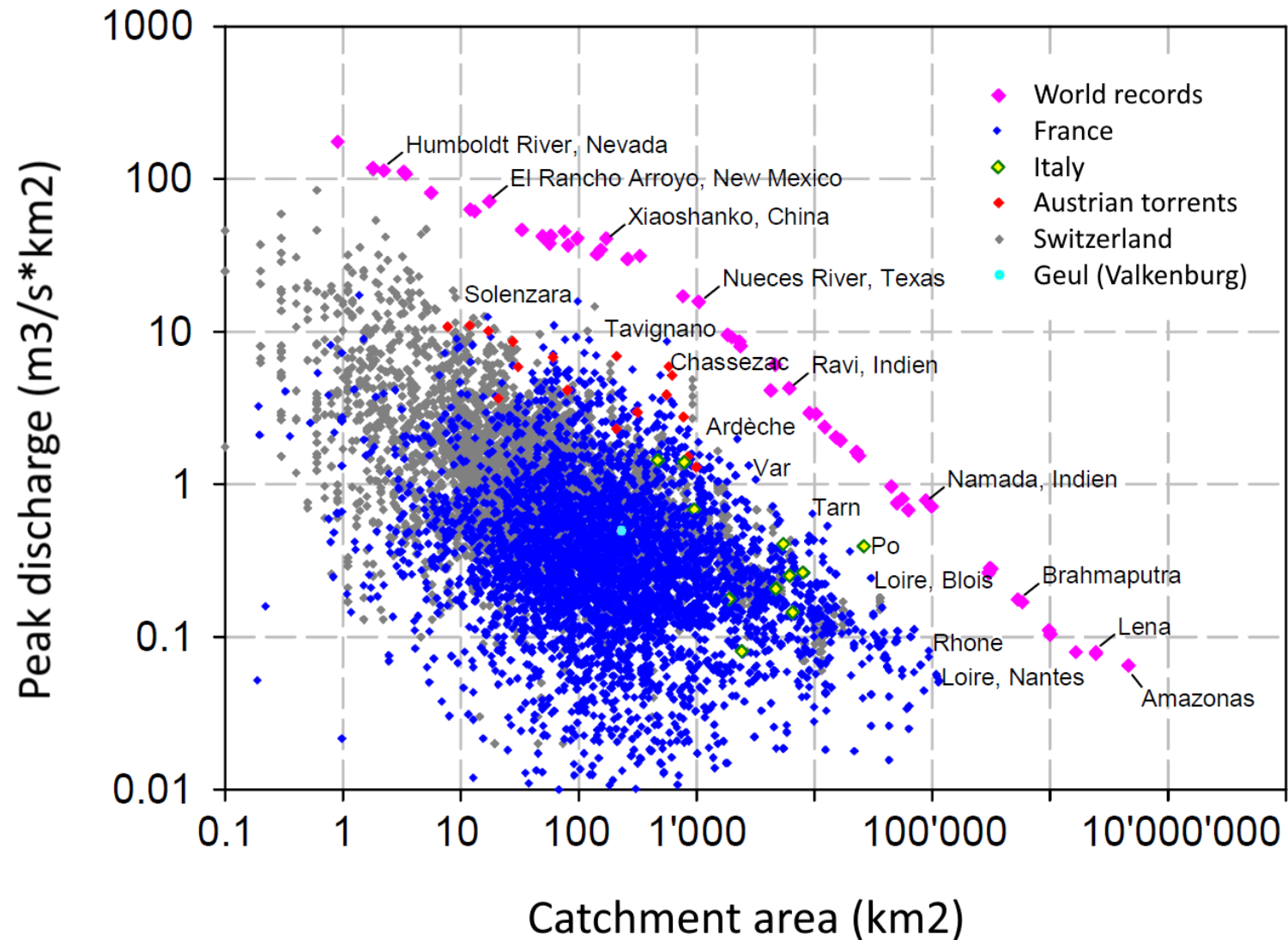


1. Atmosphere
2. Catchment
3. River system

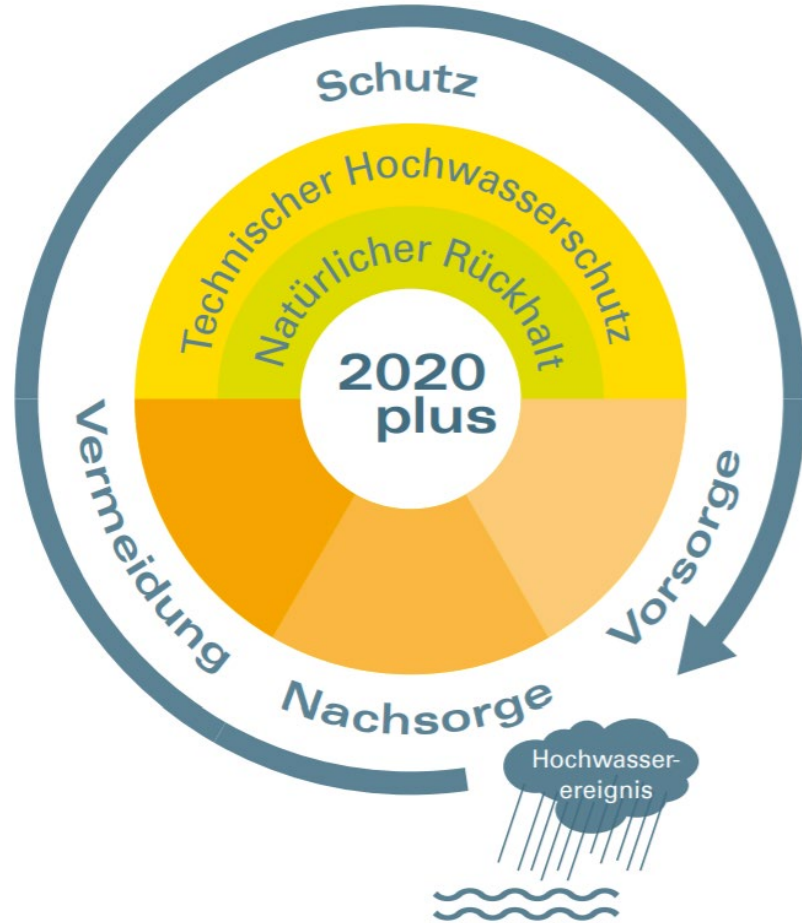
Human influence in catchment



Maximum magnitude of a Geul flood?



How do we see ourselves in the face of flood events



Today's program

Session I - The July 2021 flood events in DE, BE & NL

9:40	Water security challenges in the Netherlands	J. van Brussel (Min. Infrastruct. & Waterstaat, NL)
10:00	Facts and findings on the 2021 floods in NW-Germany	H. Schüttrumpf (RWTH Aachen, DE)
10:30	Coffee break	
11:00	Facts and findings on the 2021 floods in the province of Liège (B)	C. Fallon (Univ, Liège, BE)
11:30	Facts and findings on the 2021 floods in Limburg (NL)	N. Asselman (Deltares, NL)

Lunch (12:00 - 13:30)

Session II - Integrated catchment management for flood risk prevention

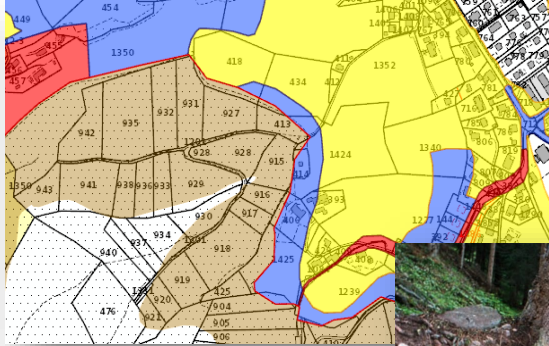
13:30	Examples of nature-based solutions for sediment and flood control and methods for quantifying their impact	M. Schwarz (BFH-HAFL, CH) / P. Raymond (Terraerosion, CA)
13:50	Lessons learned and remaining challenges in flood risk prevention in Switzerland	S. Losey (Fed, Office for the Environment - Hazard prevention, CH)
14:10	Lessons learned from 30 years of erosion research in loess catchments	G. Govers (KU Leuven, BE)
14:30	Coffee break	
15:00	Quantifying and managing bank erosion and driftwood	P. Perona (EPFL, CH)

Session III - Costs and benefits of flood prevention

15:20	Future management of water security in Limburg	J. Reuber (WL, NL)
15:40	Public-private investments for flood risk reduction	G. Bergkamp (ARCOWA, CH)
16:00	wrapping up/ final remarks	

Aperitif (16:15 - 17:15)

Priority of flood protection measures



1. Avoiding hazard zones (risk based spatial planning)



2. Nature-based measures



3. Structural measures



4. Temporal measures

Strategy integrated flood hazard management

