

Instructions

Flood & climate-induced risks: learning from experiences from Europe and beyond.

Keynote Flood Summit 7-7-2022

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Director Delta Futures lab

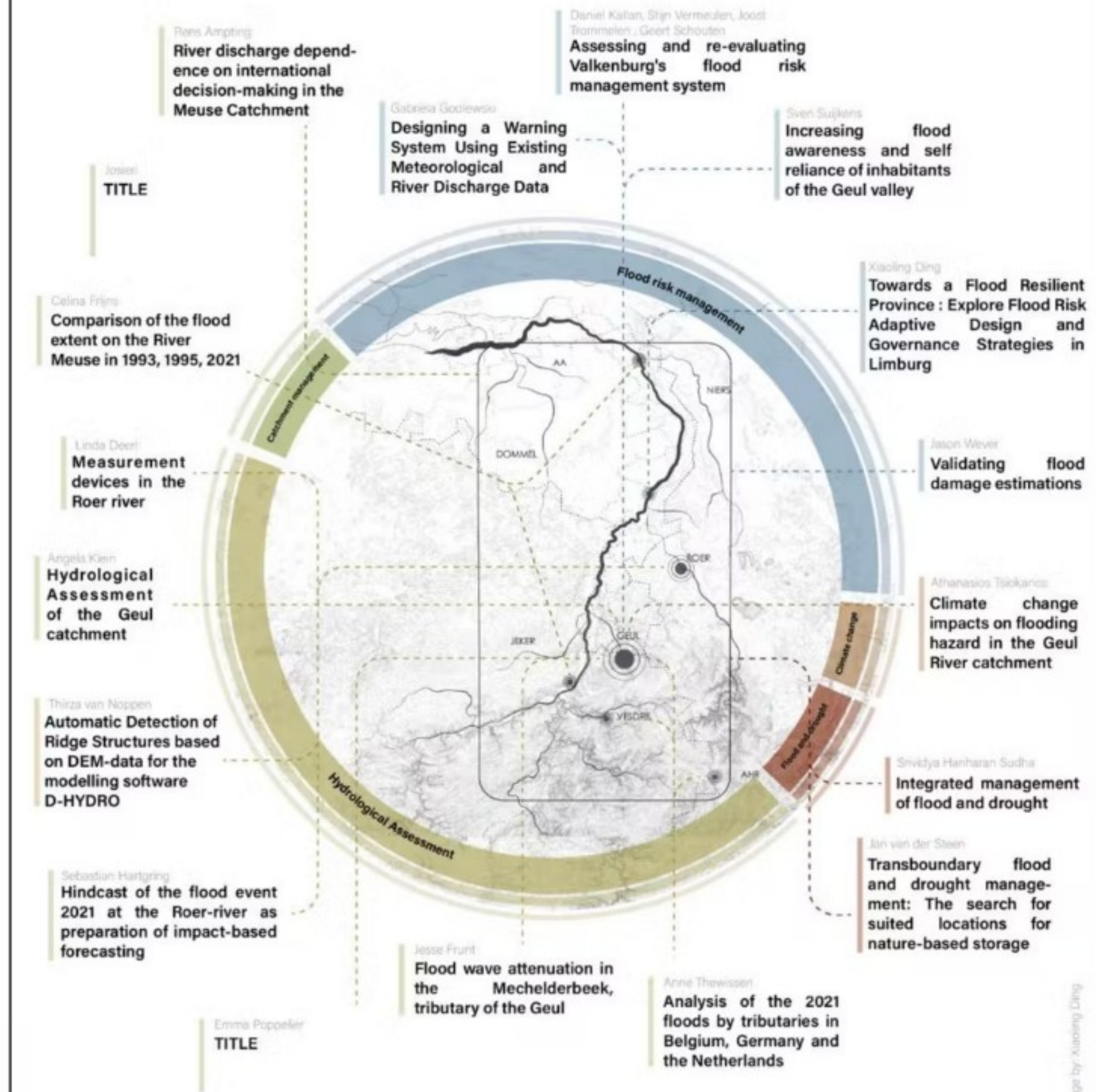
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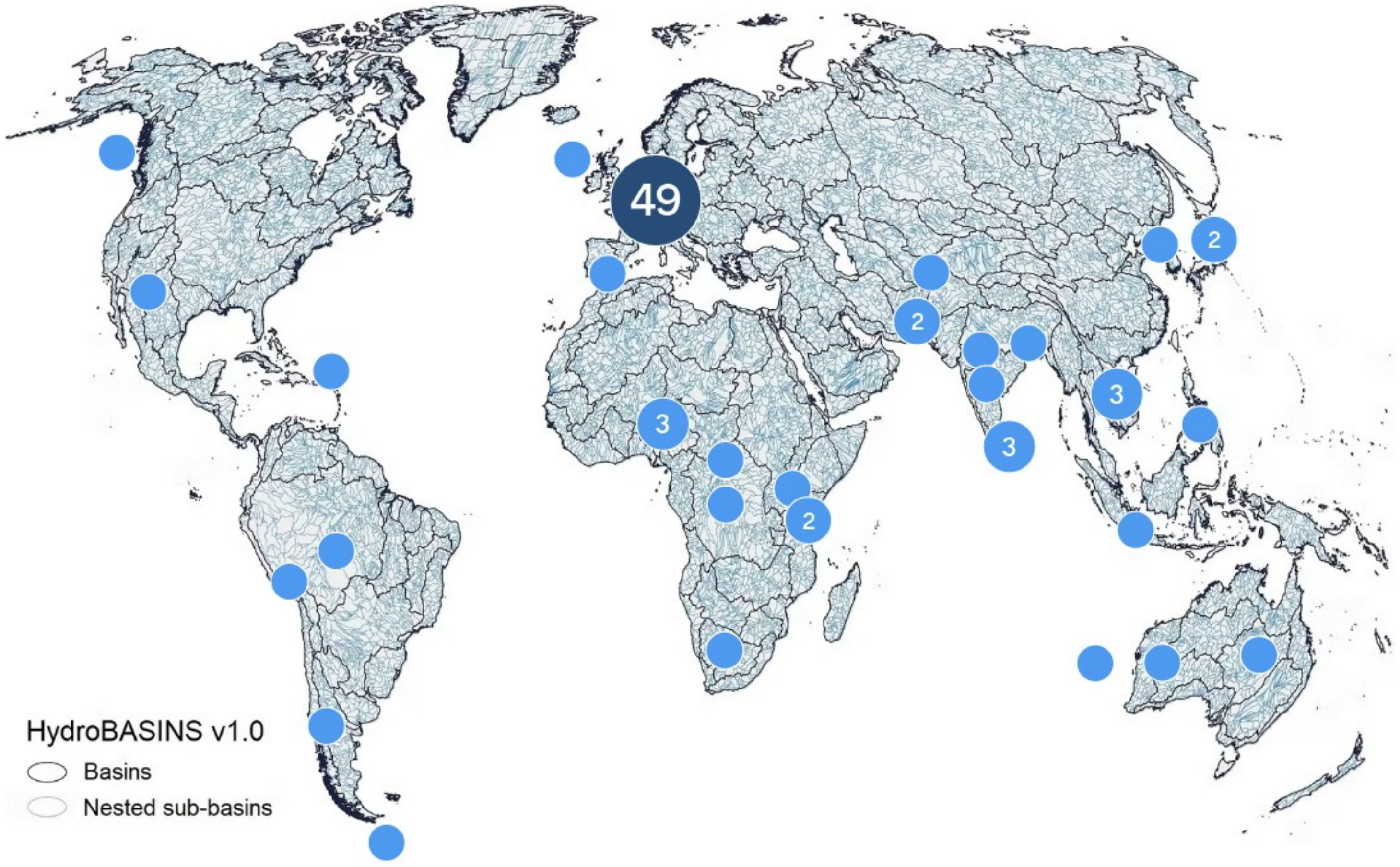
<https://www.tudelft.nl/dfl-limburg-2021>

Limburg 2021 - Research Projects

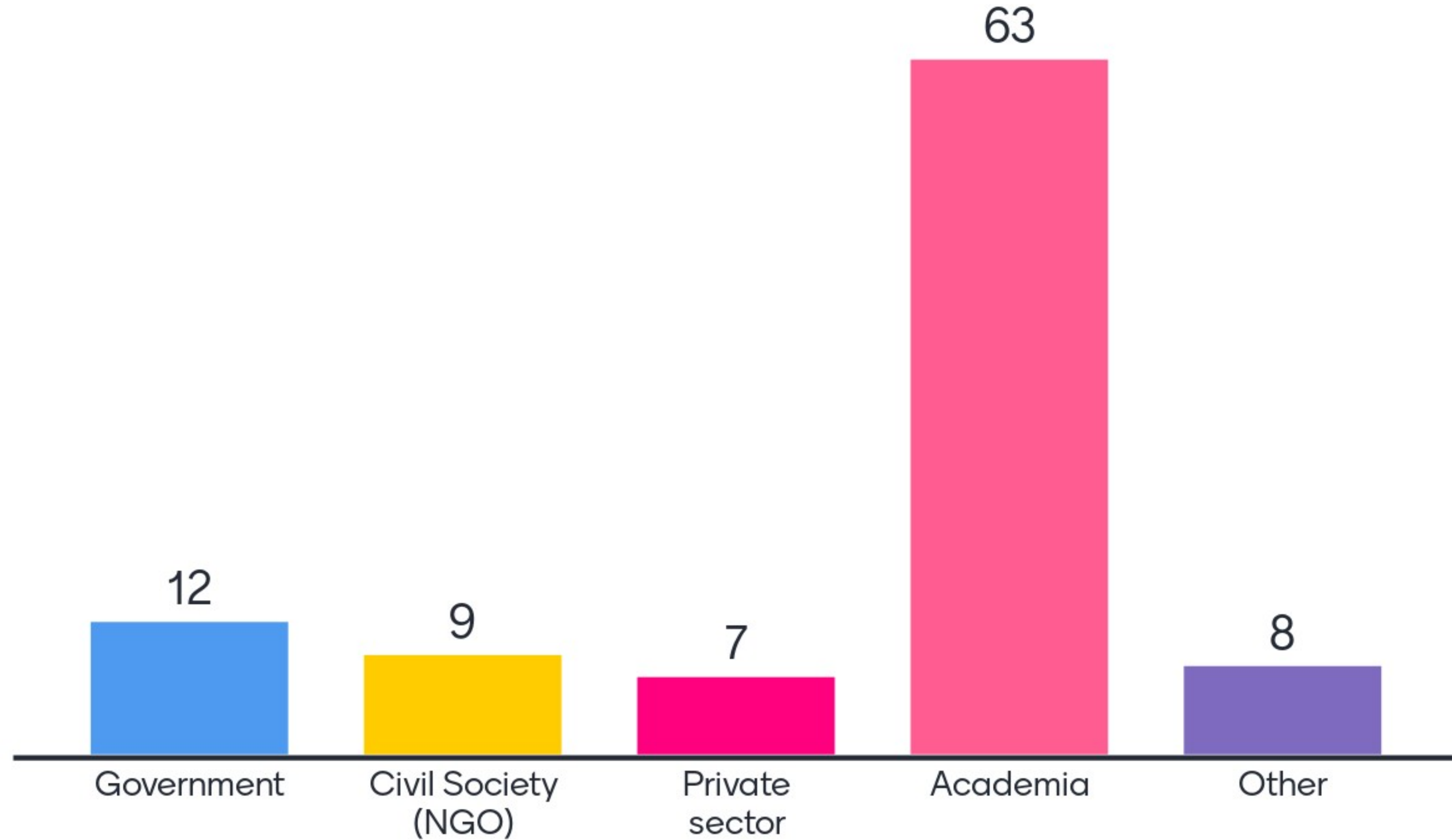
In July 2021, large areas in Western Europe were hit by extreme rainfall. For example, in the Geul catchment, maximum precipitation amounts of up to 180 mm were recorded. The Waterboard of Limburg estimated that the damage was around 1.8 billion euros in the Netherlands, while the total international damage is more than tenfold that amount. The thematic working group Limburg 2021 of the Delta Futures Lab in Delft works on a variety of research topics to add to the knowledge about the event and to investigate how such large damages can be avoided in case of future events. These investigations include topics on flood risk management, climate change, flood damage estimates, hydrological assessments of several areas, and a comparison of the effects of this flood to the effects of historic events.



Which basin are you working in (most intensively)?



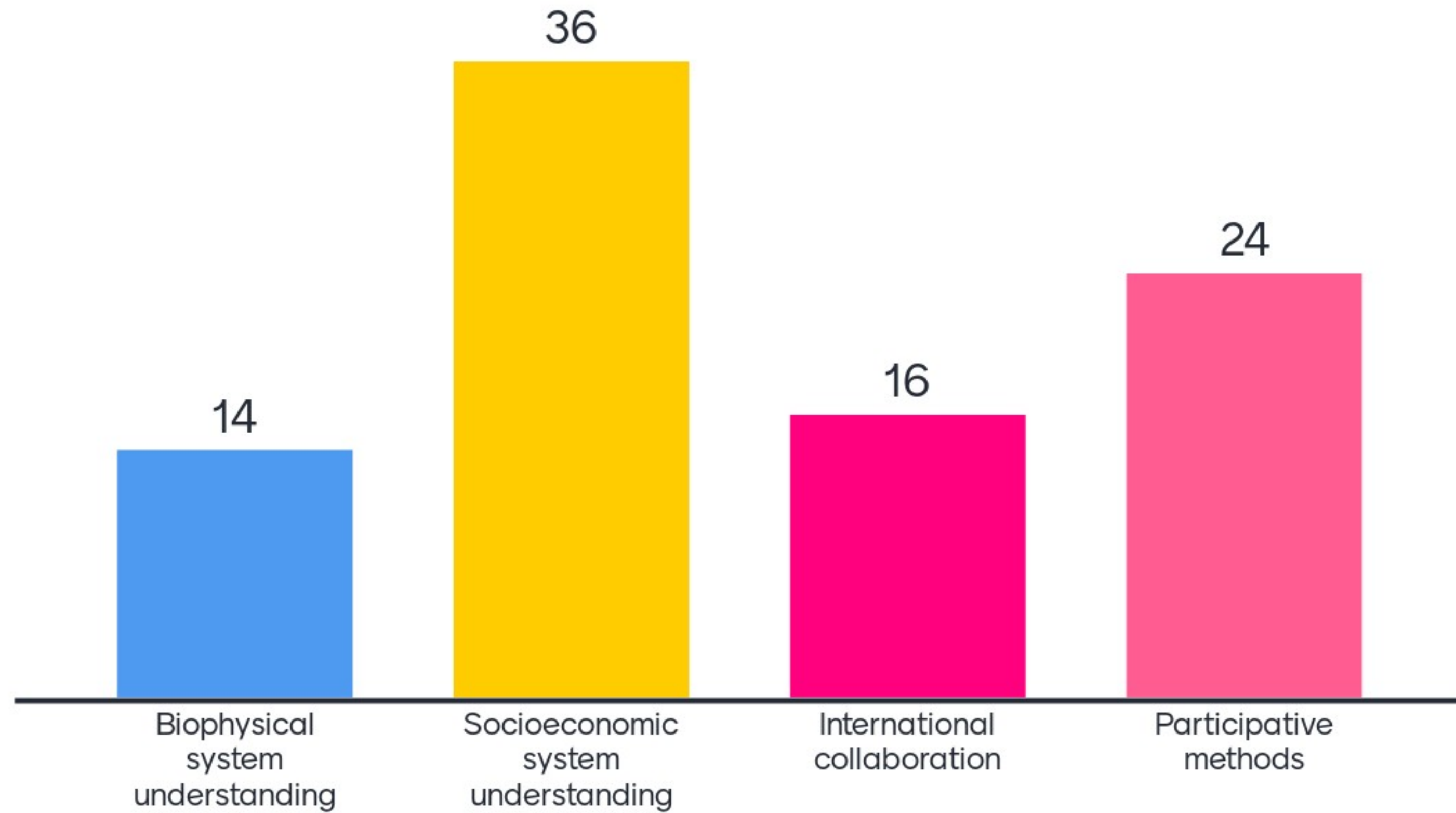
In which sector is your (main) occupation?



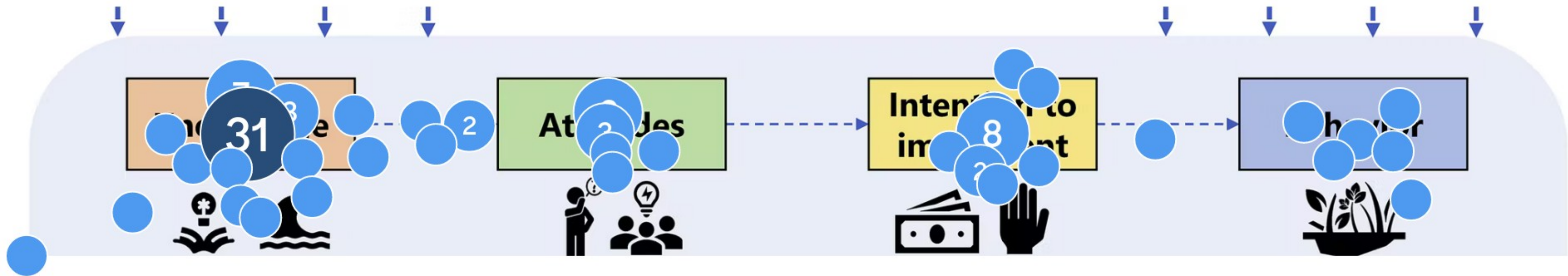
Discuss with someone in the audience (you do not know yet)

- What was the most important thing you **learnt** about floods over the last year?
- What was your most important **contribution** to flood resilience over the last year?

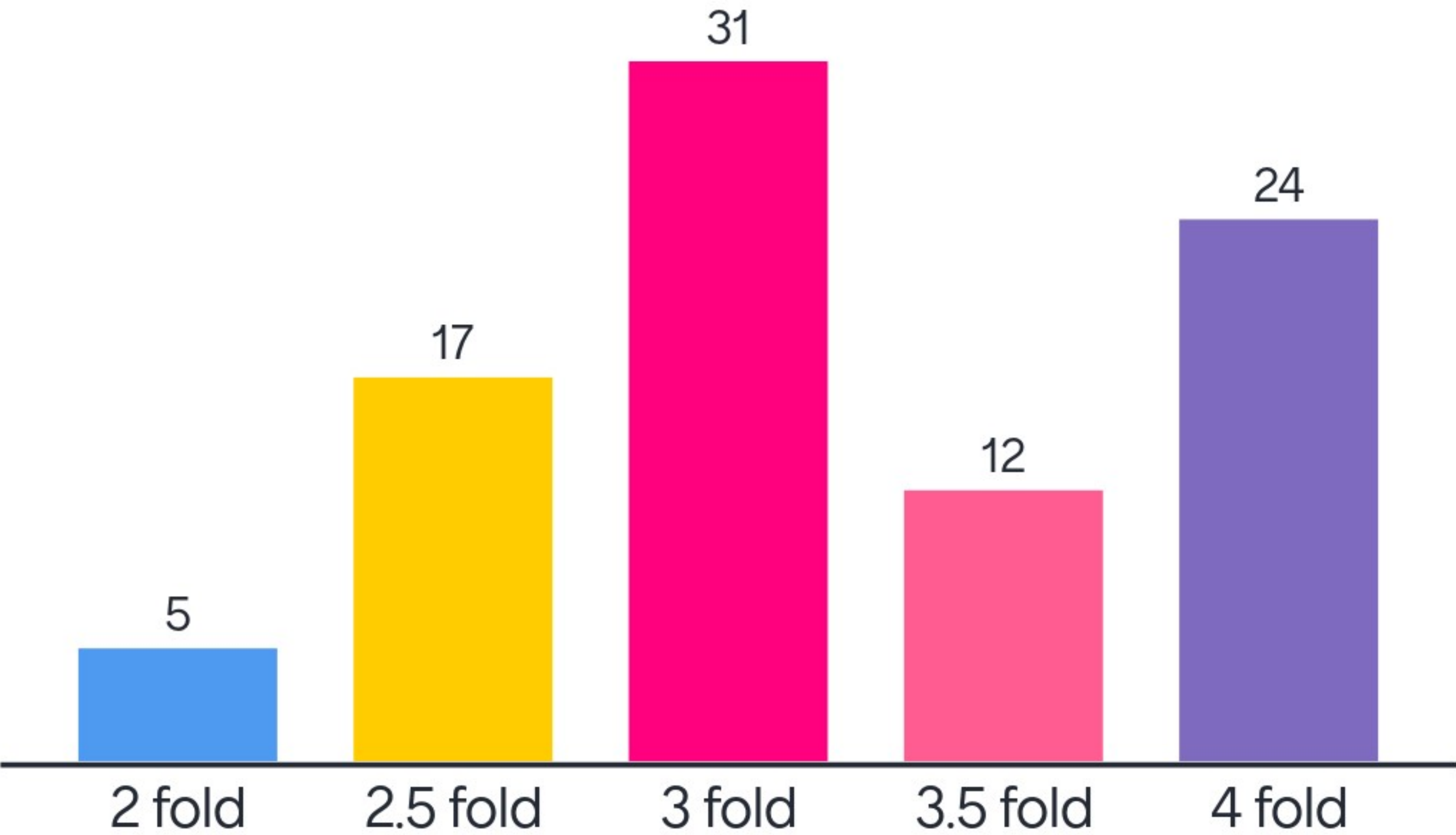
My most important lesson learnt best falls in the category.....



My contribution best falls in the category....



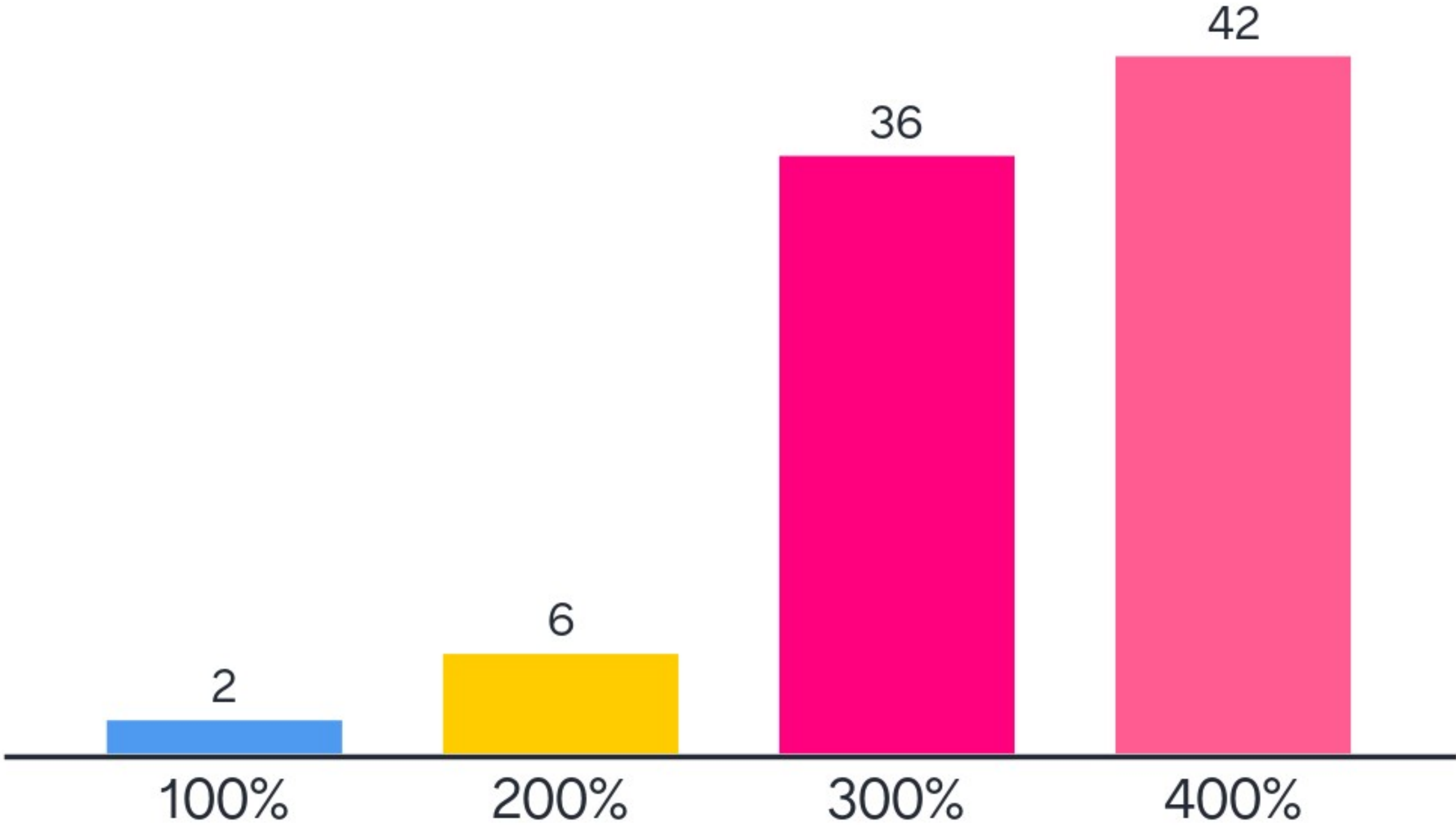
How much have floods increased over the period 1985-2015?



IPCC Sixth Assessment Report:

- “During 1985–2015 floods have increased **4-fold** and **2.5-fold** in the tropics and northern mid latitudes, respectively“
- “Between 1970 to 2019, 44% of all disasters, and 31% of all economic losses were **flood-related.**”
- “Between 43 1970 to 2019, 7% of all disaster events worldwide were **drought-related.** Yet, they contributed to 34% of 44 disaster-related deaths, mostly in Africa.”

How much will the cost of damage and people affected by pluvial and riverine flooding increase above 3 degrees global warming level?

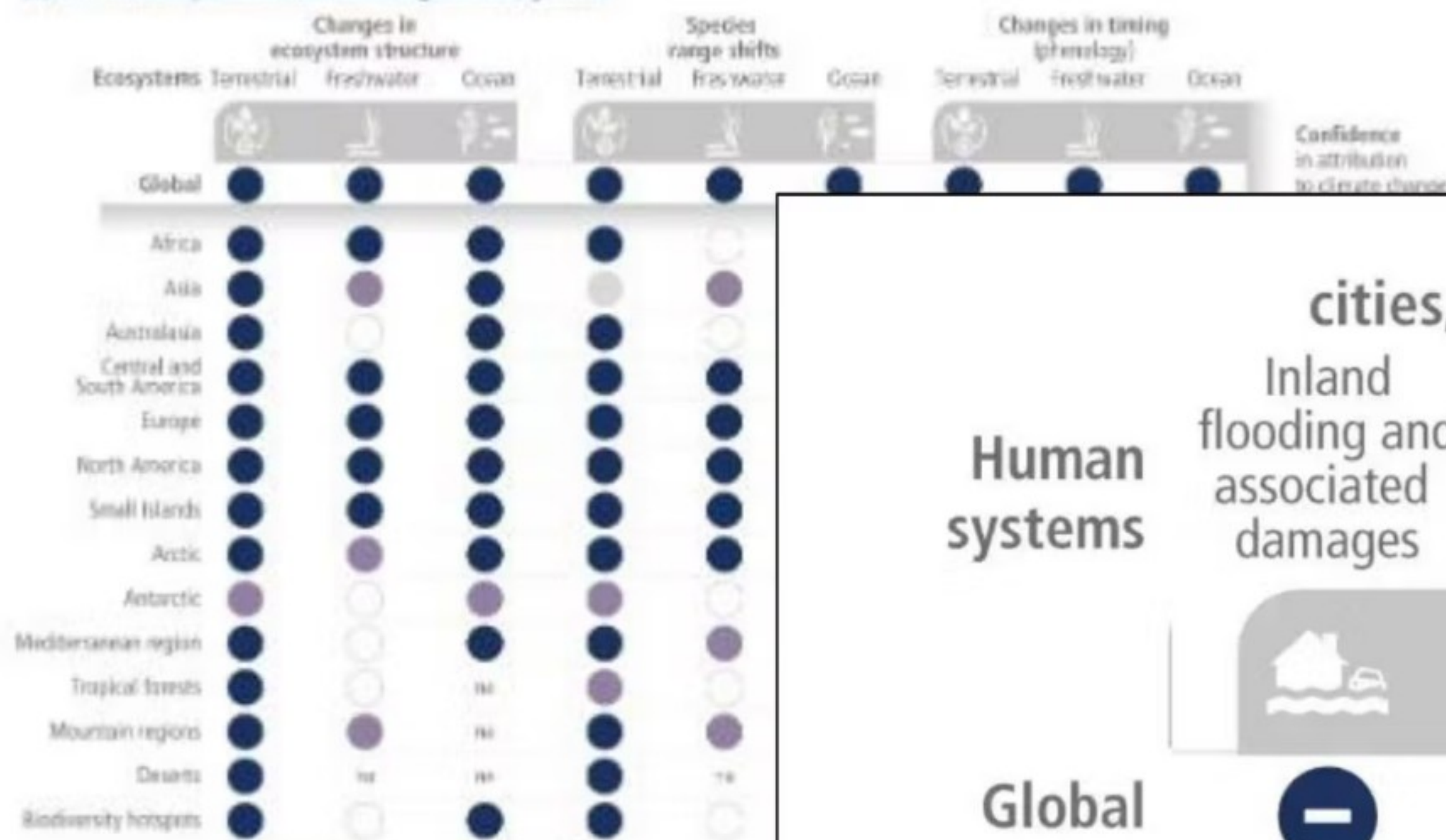


IPCC Sixth Assessment Report:

- “In Europe, above 3°C global warming level, **cost of damage and people** affected by precipitation and river flooding may **double**.”
- “Projected increase in heavy rainfall events at all levels of warming in many regions in Africa will cause increasing exposure to pluvial and riverine flooding (high confidence), with expected **human displacement** increasing **200%** for 1.6°C and **600%** for 2.6°C.”
- “A 1.5°C increase would result in an increase of 100–200% in the **population affected by floods** in Colombia, Brazil and Argentina, **300%** in Ecuador and **400%** in Peru.”

Impacts of climate change are observed in many ecosystems and human systems worldwide

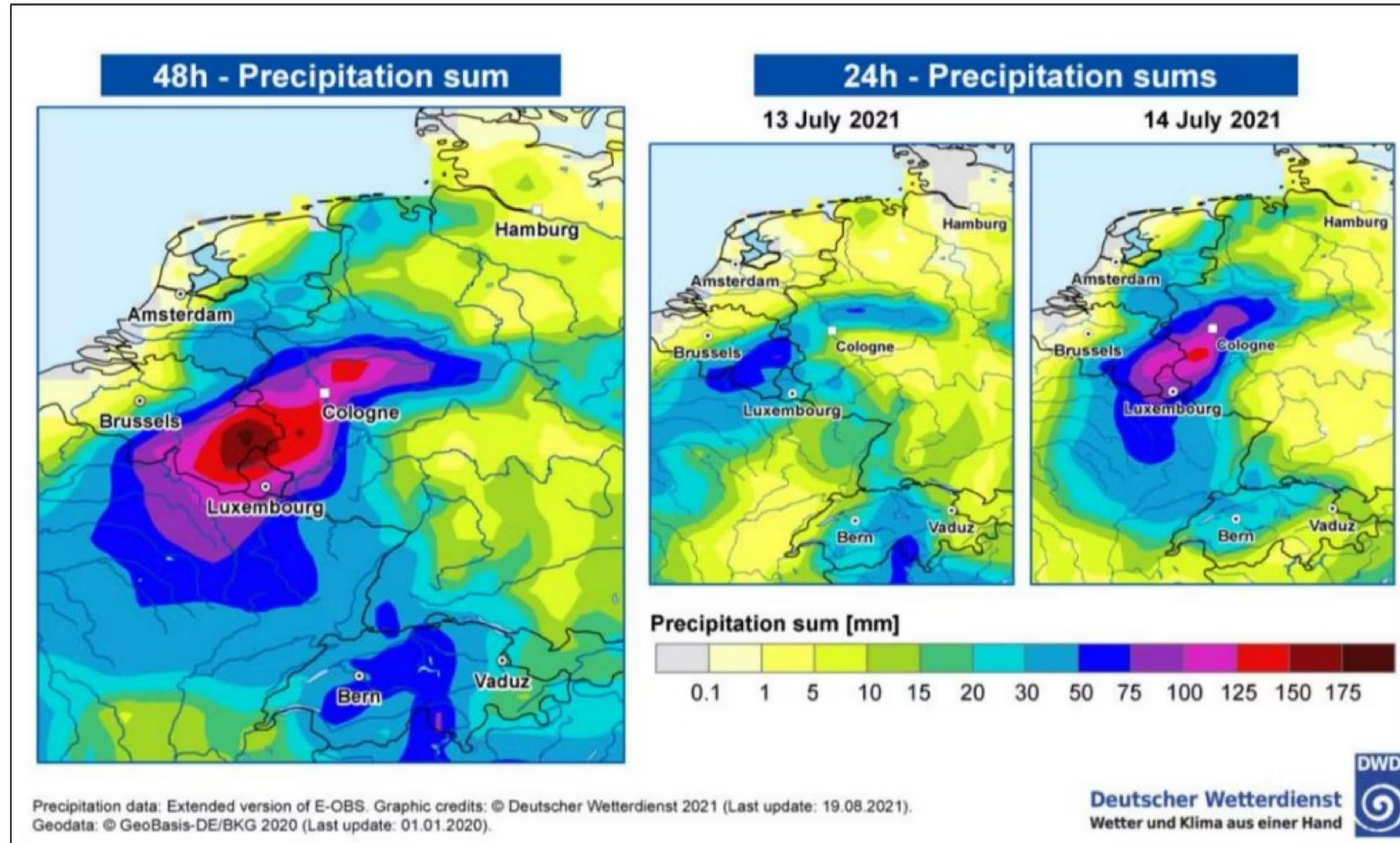
(a) Observed impacts of climate change on ecosystems

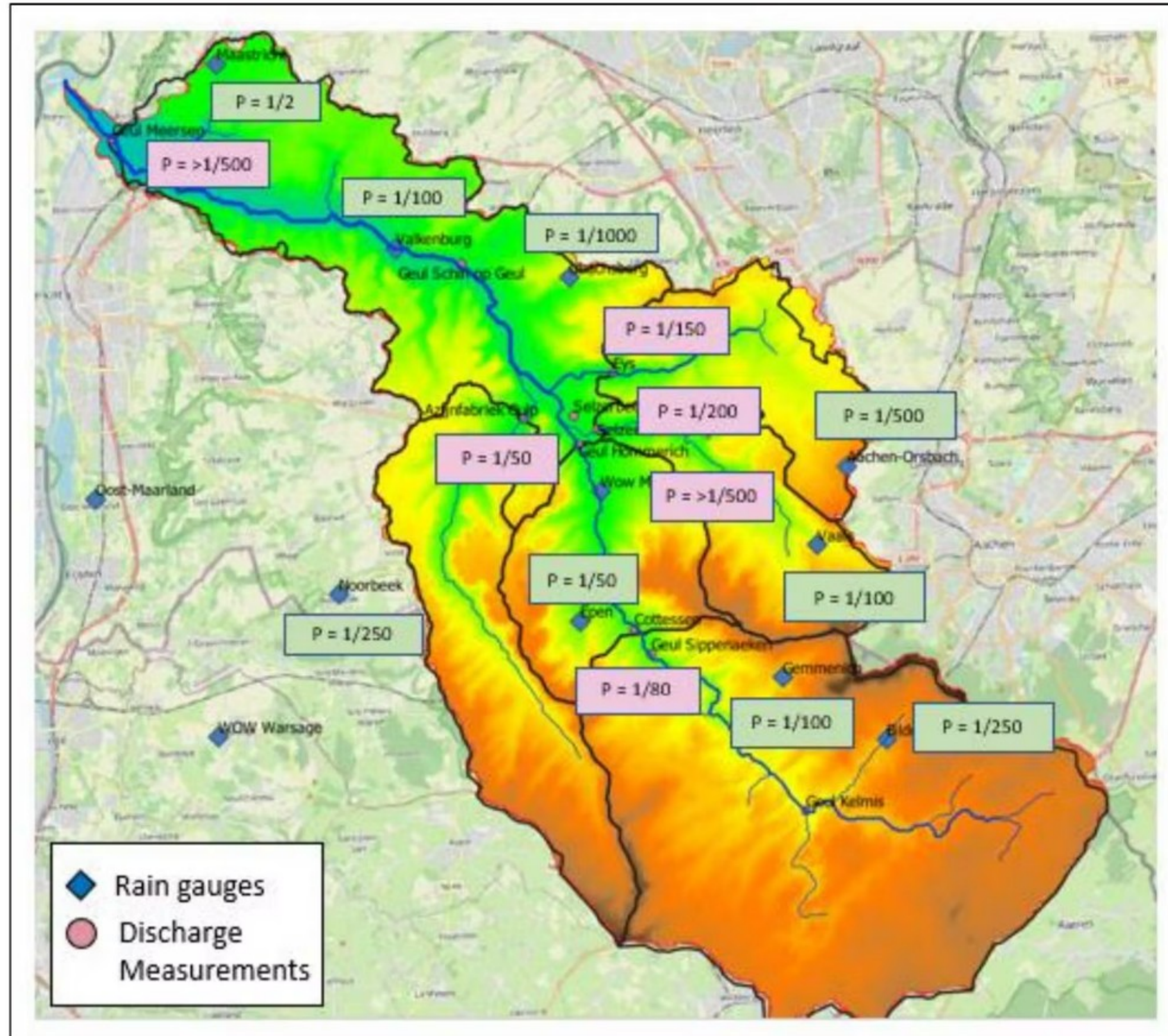


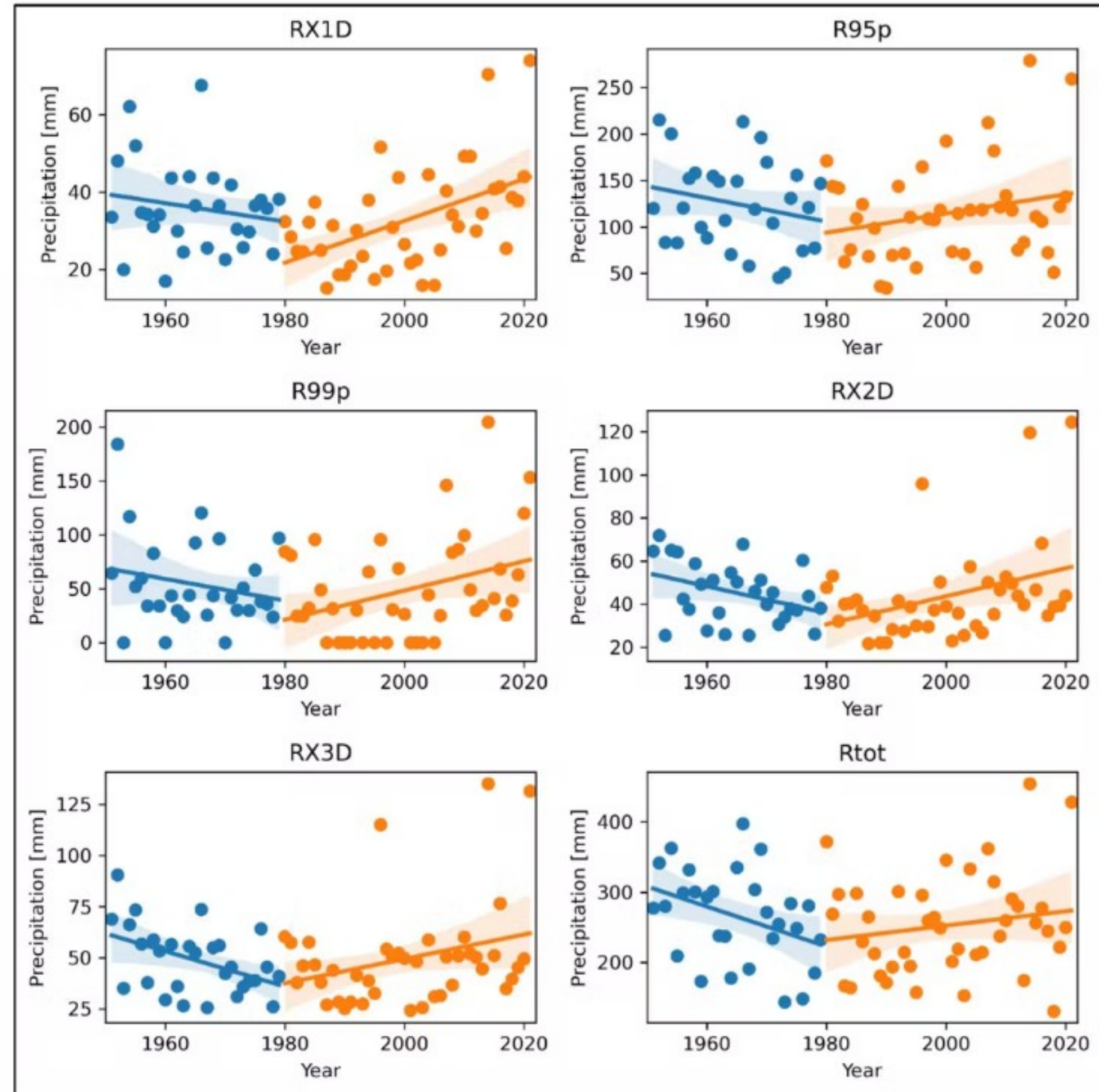
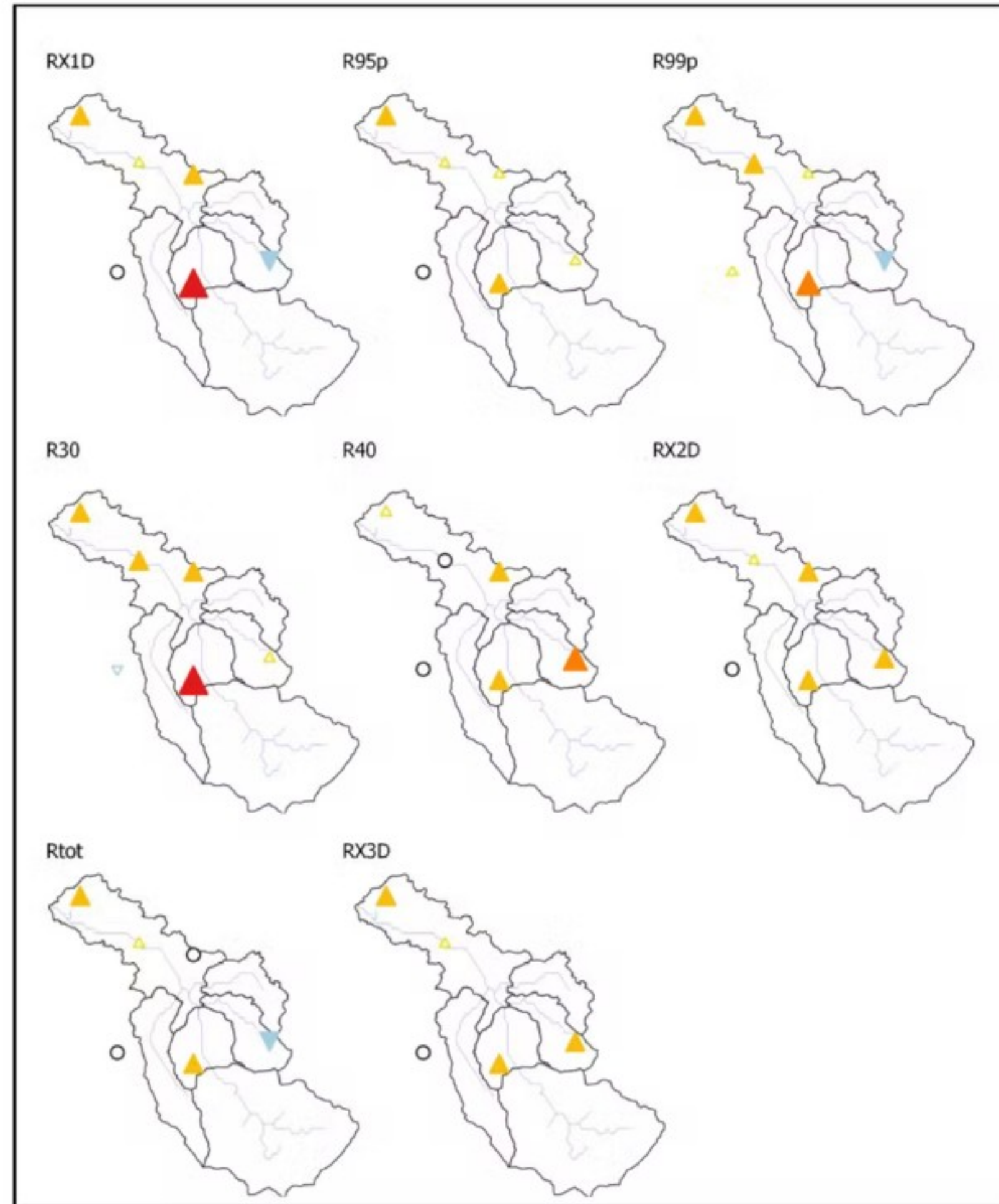
(b) Observed impacts of climate change on human systems



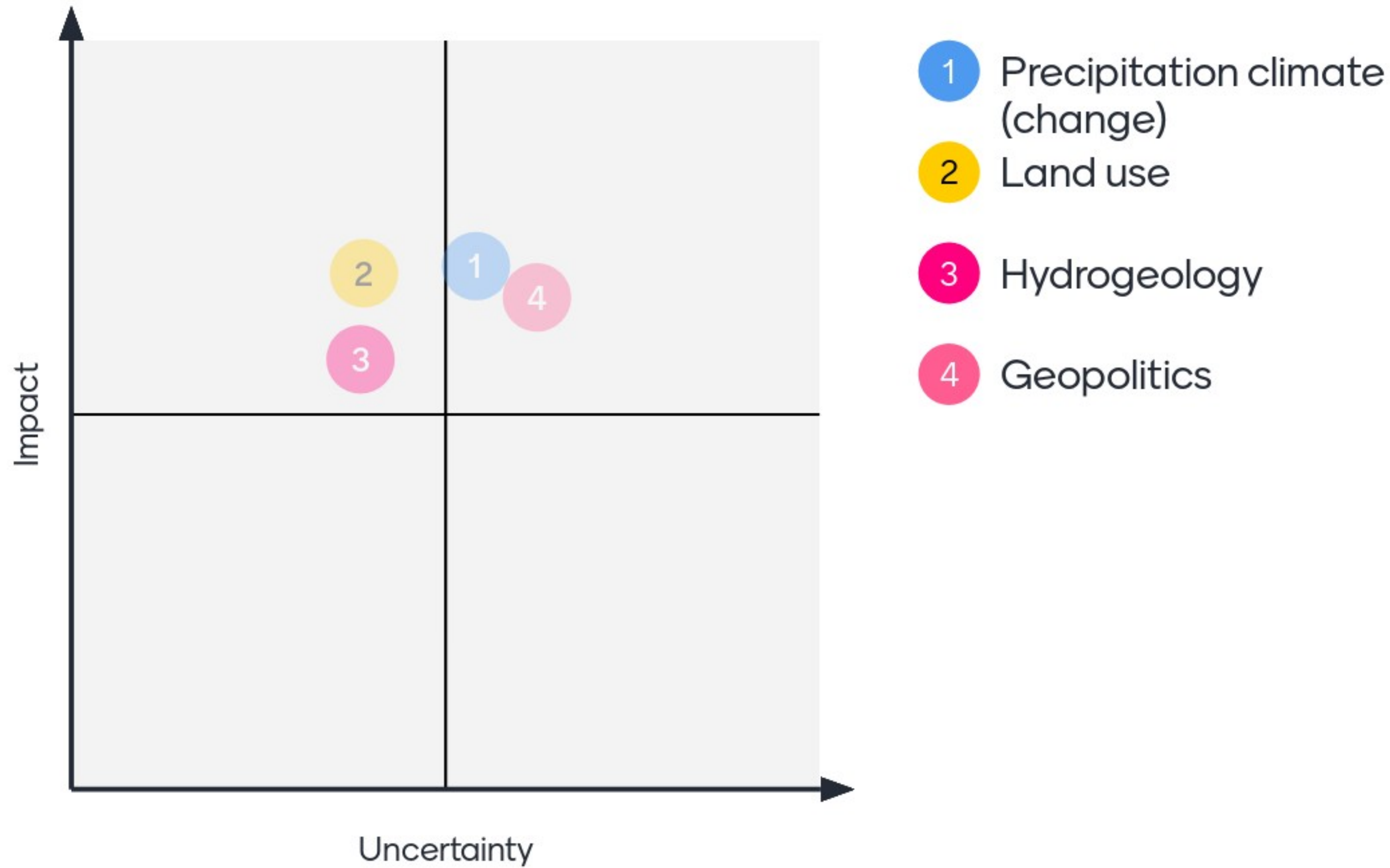
From global to this region

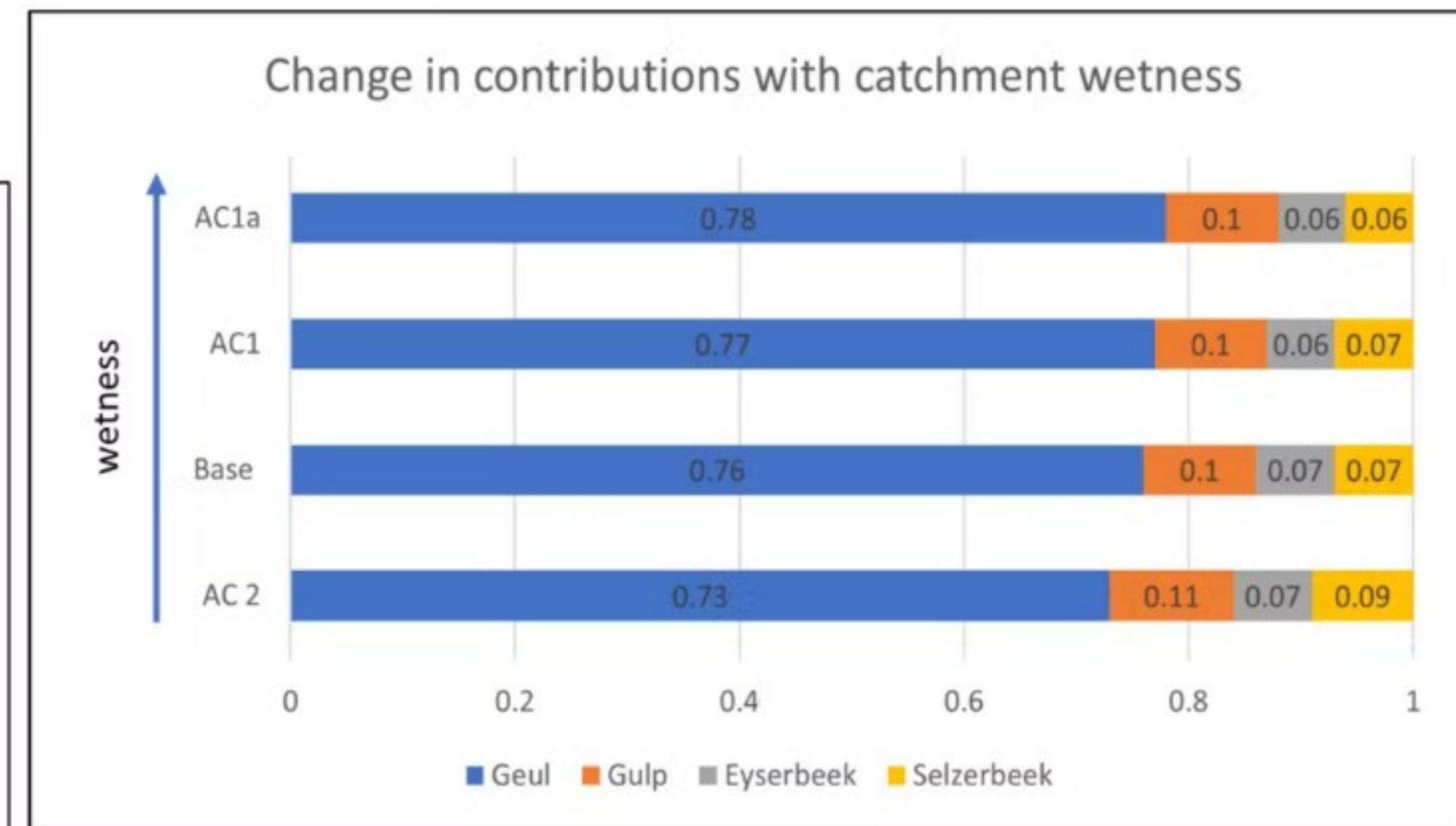
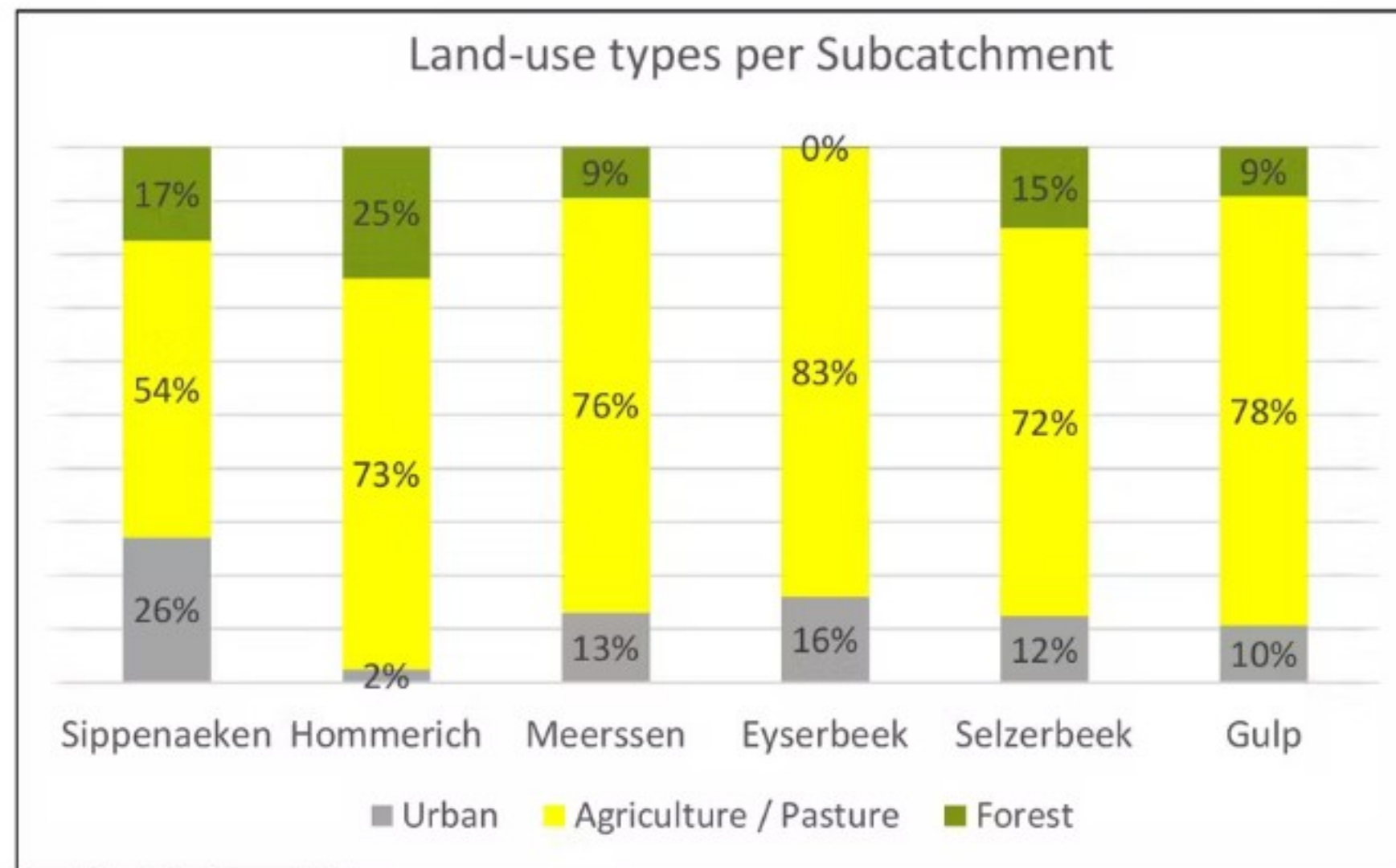
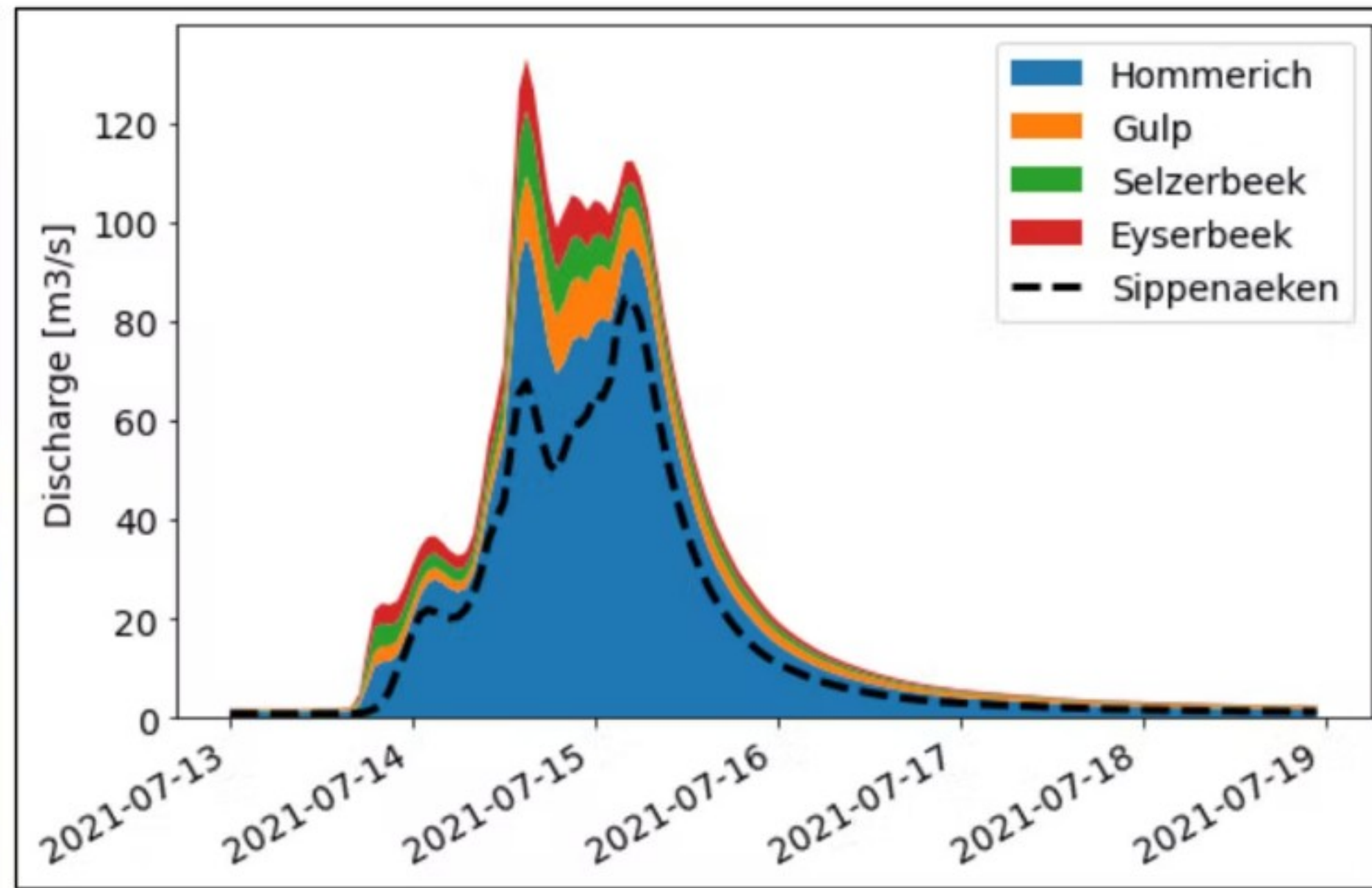
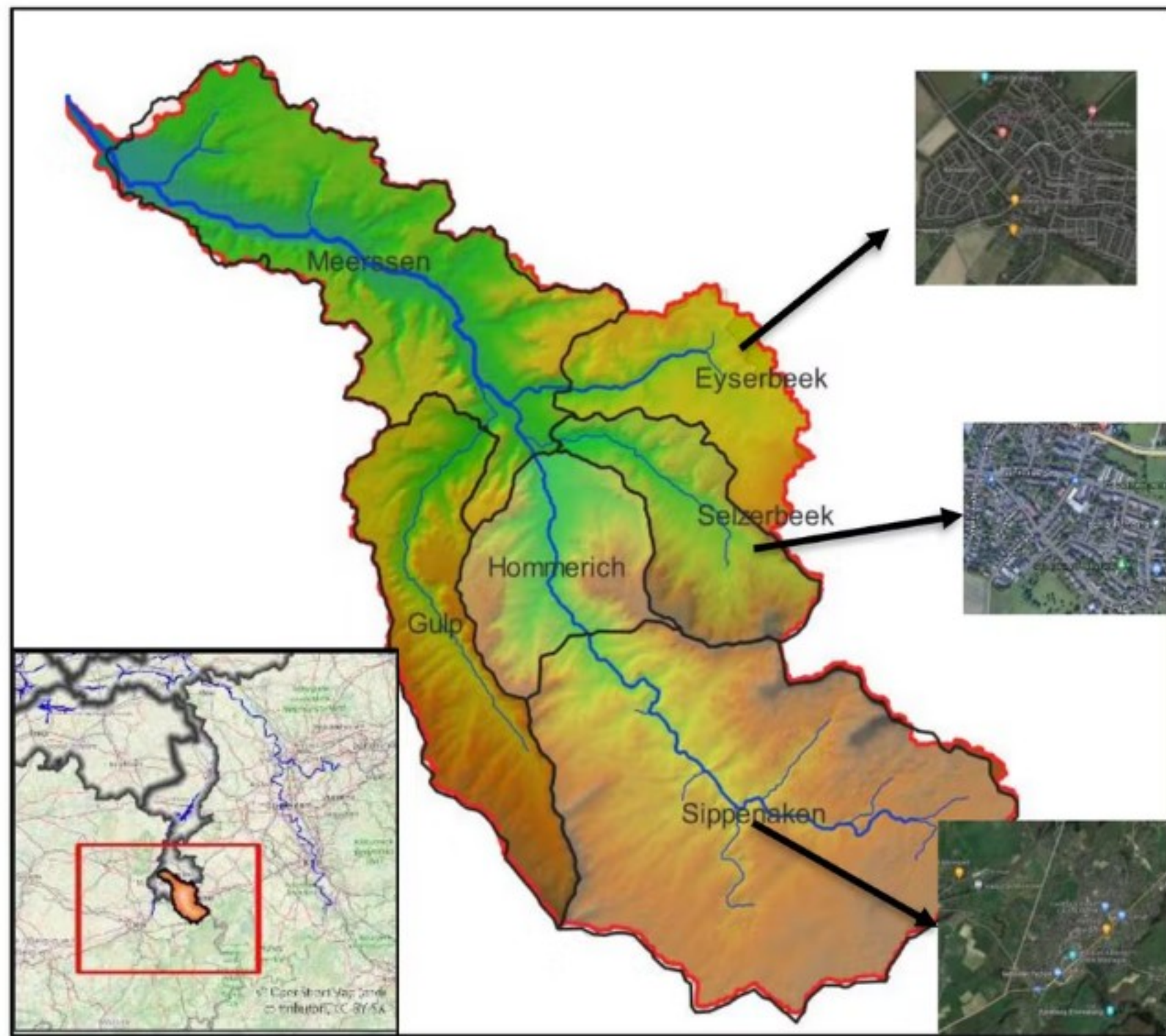


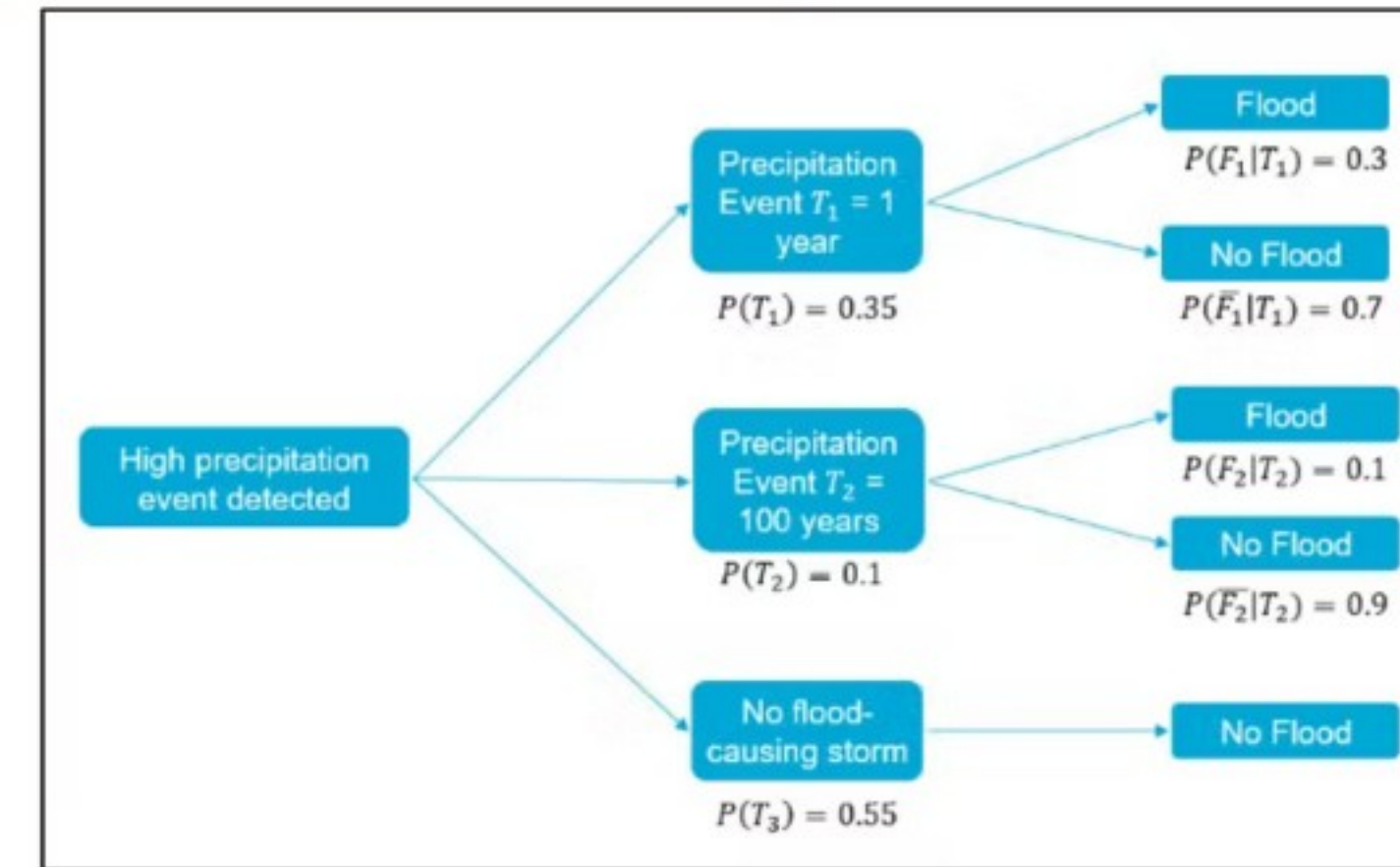
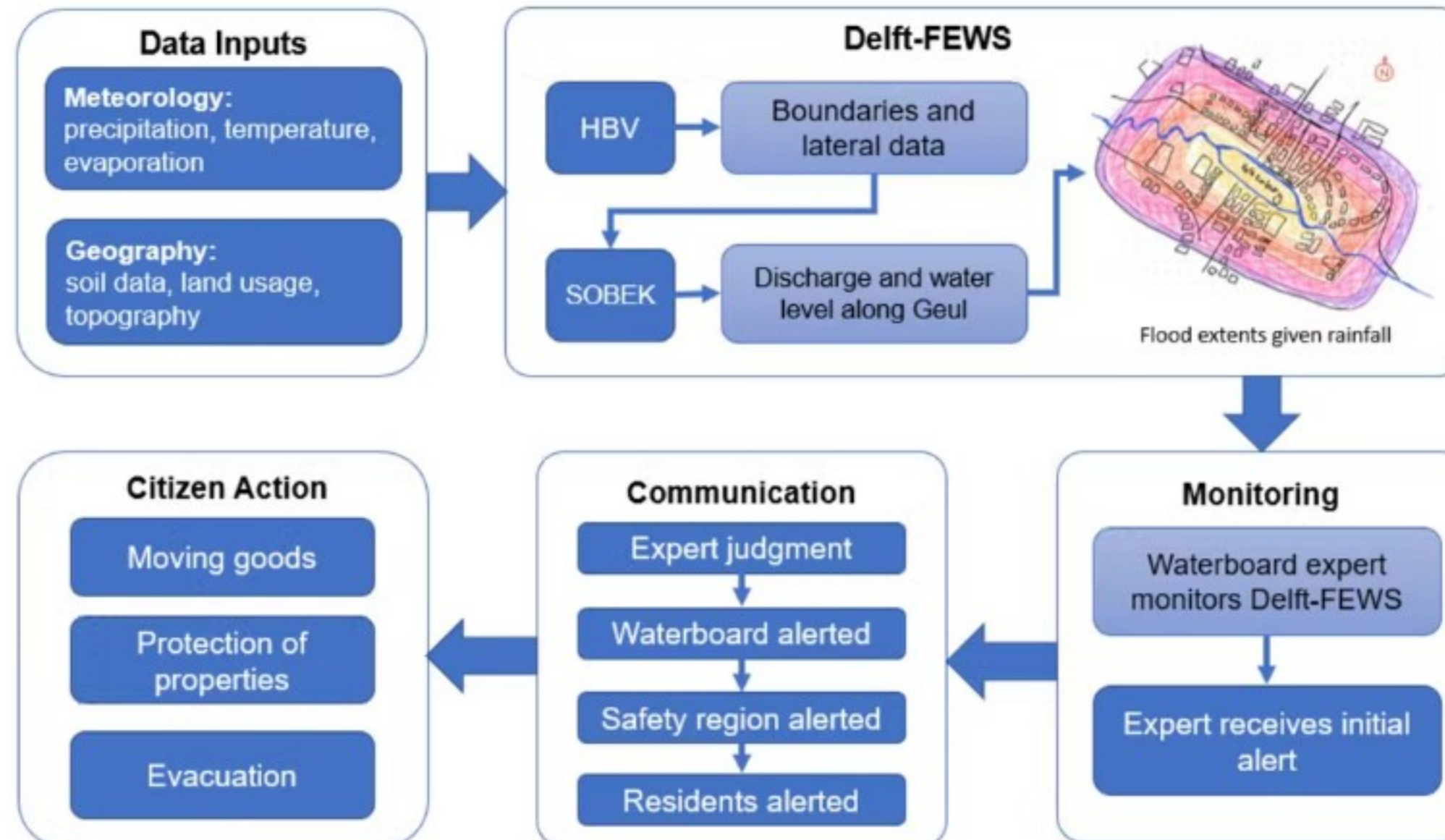
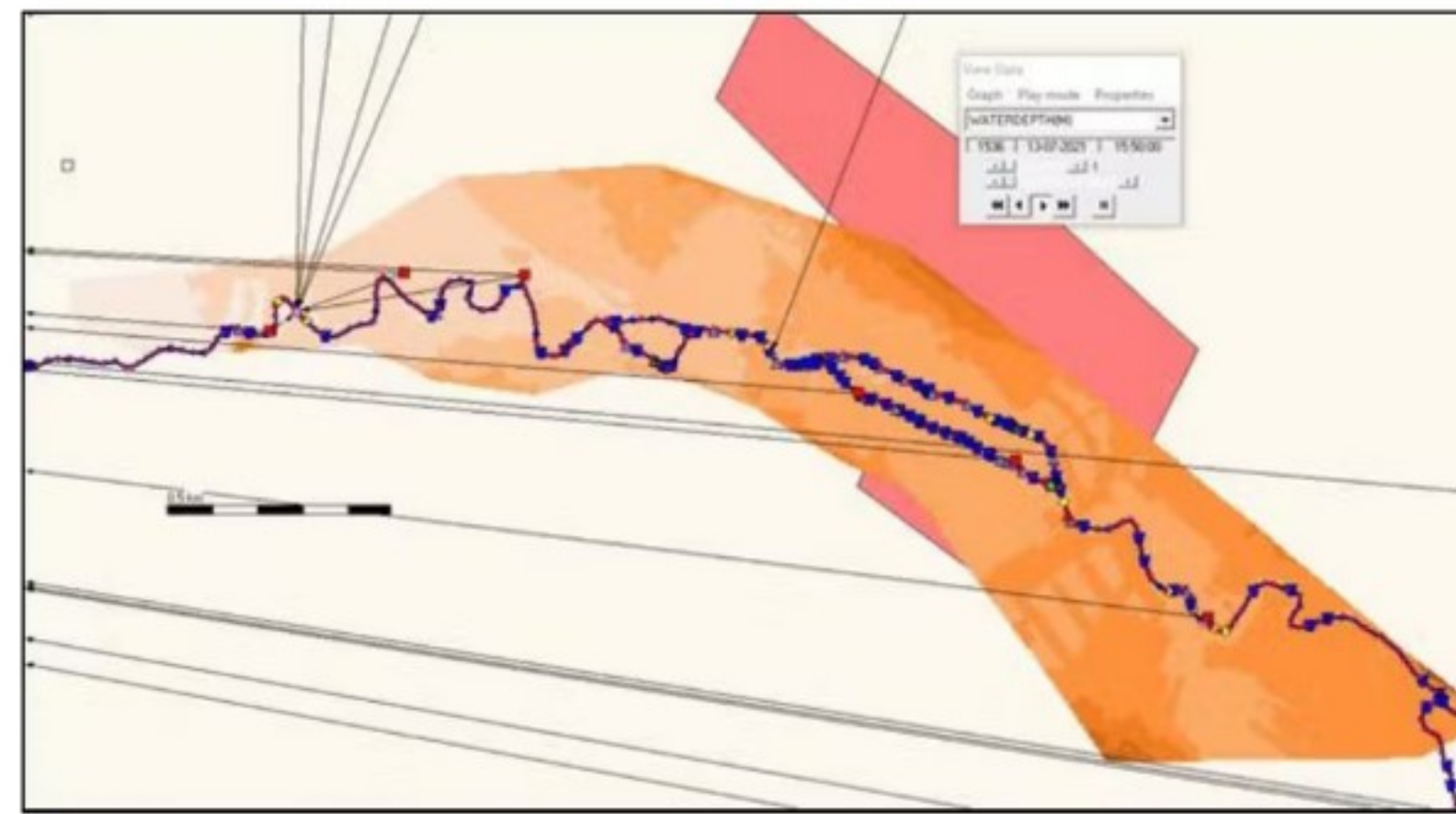
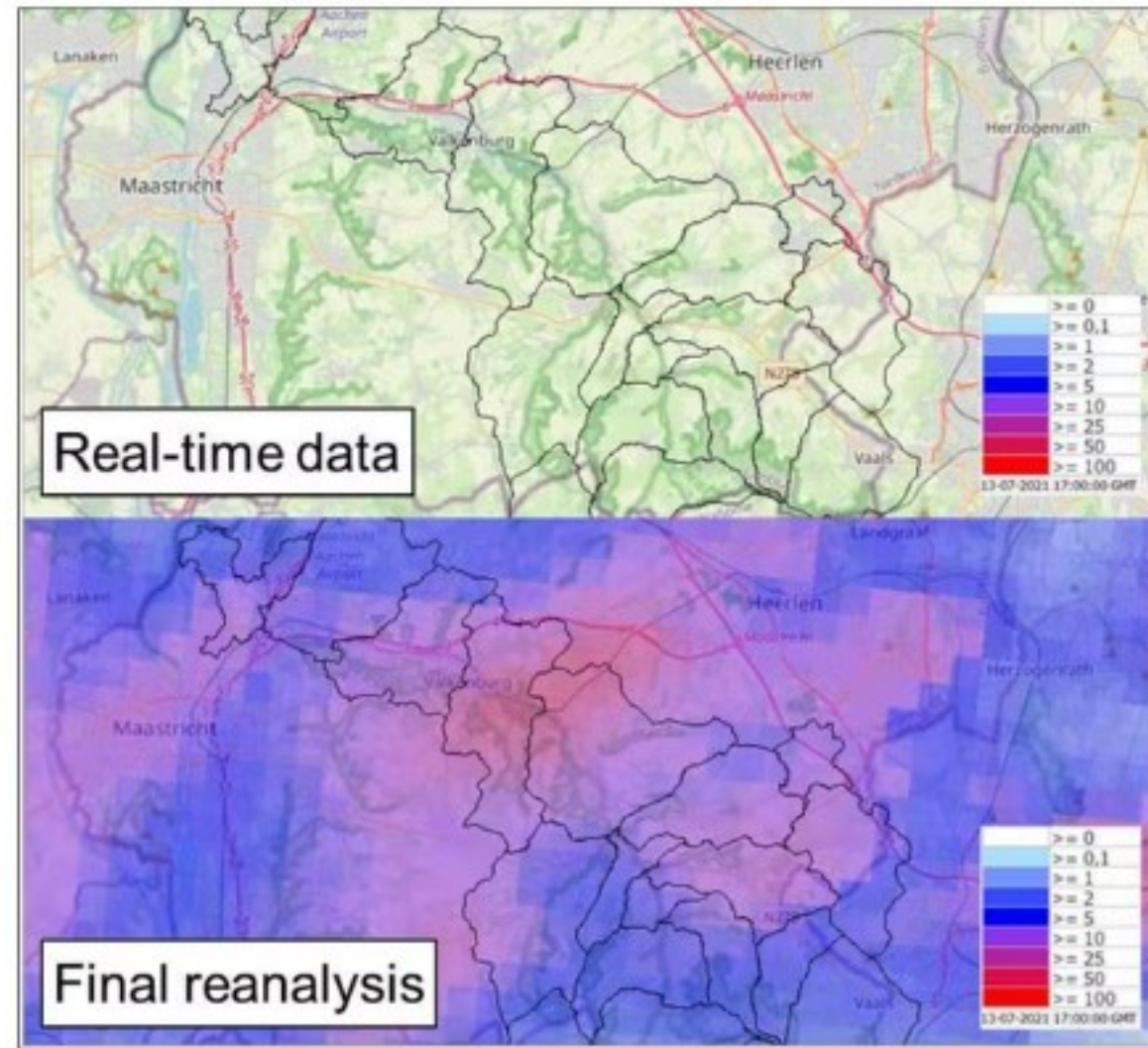




What are the most important drivers of future (present till 2050) flood risk?

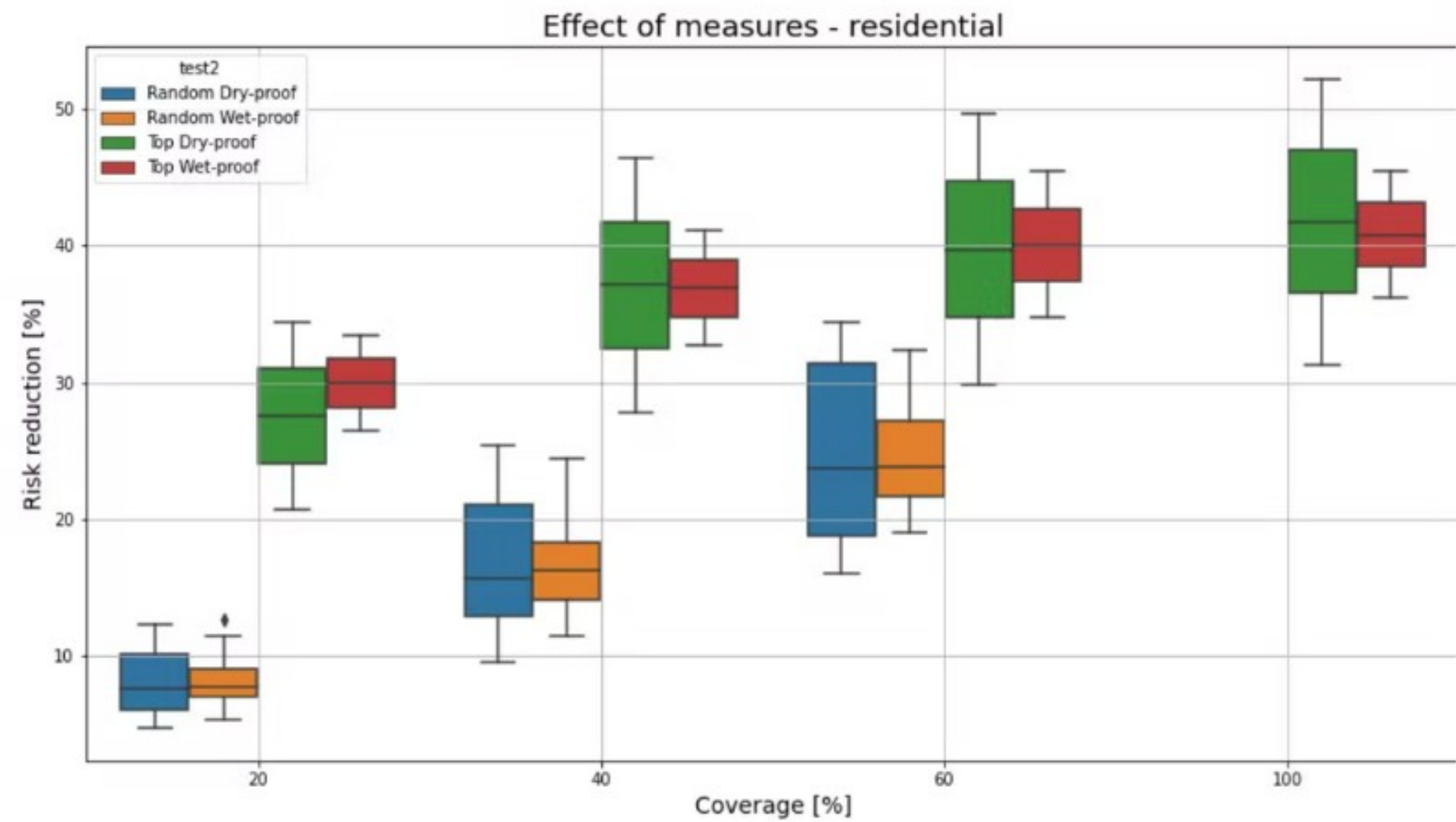








Land use category	EAD (Million €)
Urban areas	1.35
Family home (content)	0.86
Commercial: Shops	0.78
Commercial: Industry	0.59
Agriculture	0.51
Extensive recreation	0.44
Ground floor apartments (construction)	0.40
Sewage treatment plant	0.38
Ground floor apartments (content)	0.31
Transportation	0.24

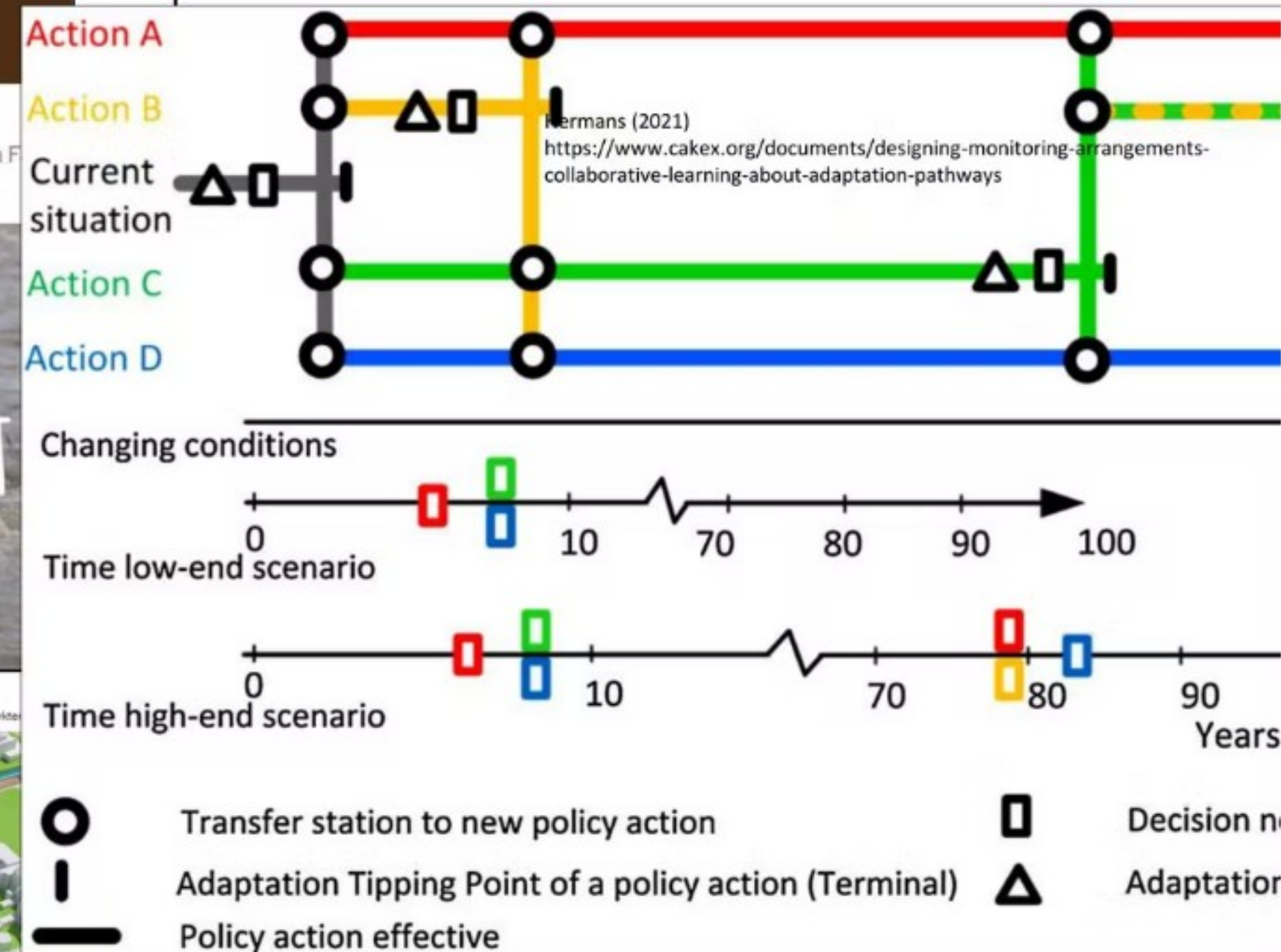




Rapport: natuur Geuldal voorkwam ergere overstromingen in Limburg

NIEUWS ECONOMIE ANP PERSBUREAU 21 JUN 2022 OM 10:13UUR

De natuur in het Limburgse Geuldal heeft tijdens de zware overstromingen van vorige zomer gefunctioneerd als een 'klimaatbuffer' en ergere voorkomen. Tot die conclusie komen onderzoekers van



Courtesy Jan van der Steen, Rosalie Middendorp, Josien Groot and others

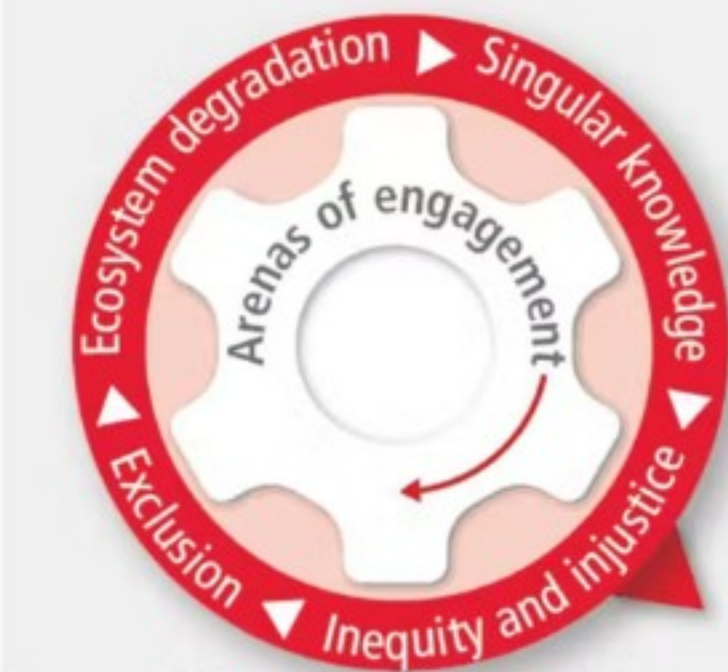
There is a rapidly narrowing window of opportunity to enable climate resilient development

(a) Societal choices about adaptation, mitigation and sustainable development made in arenas of engagement

Dimensions that enable actions towards higher climate resilient development

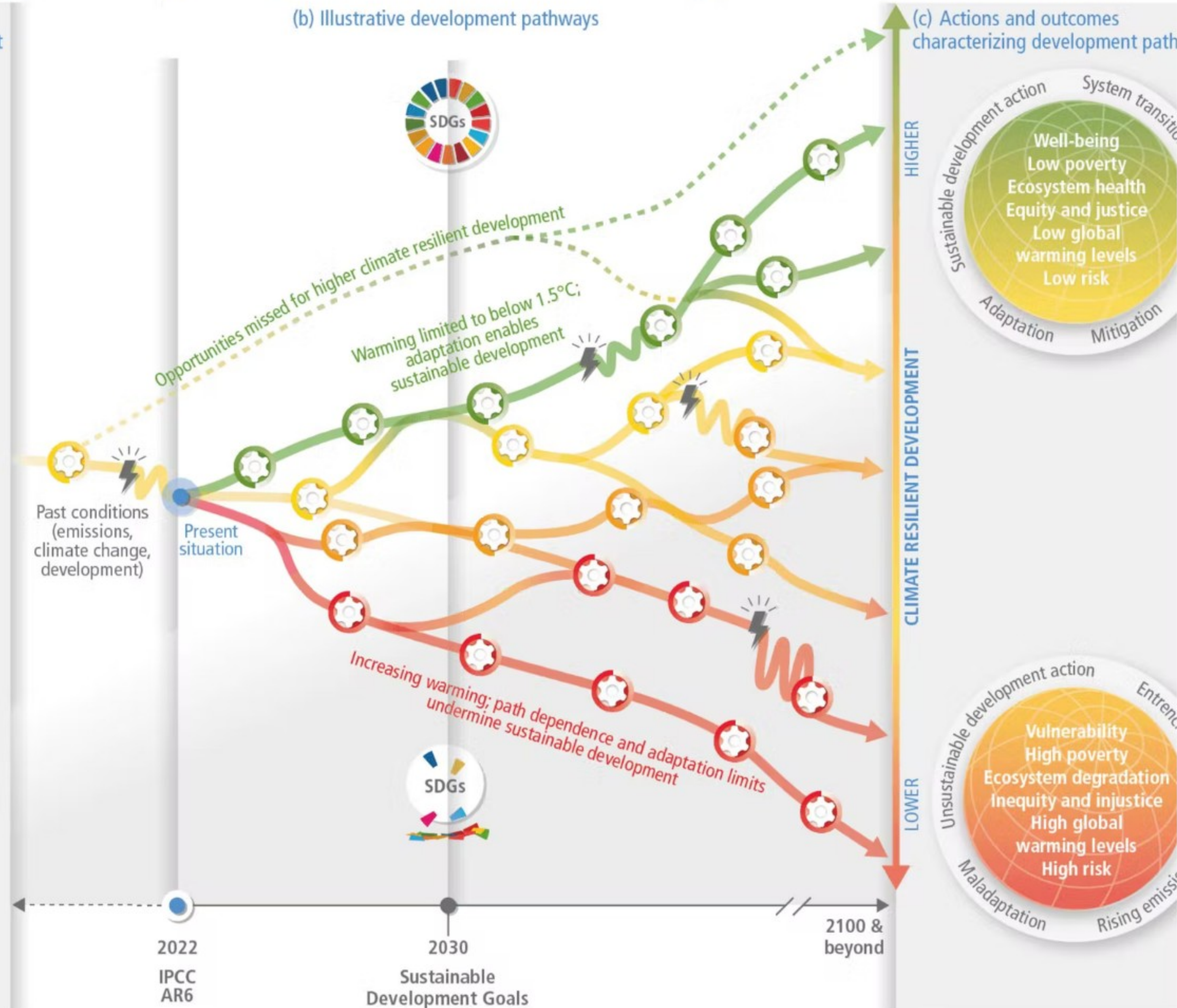


Arenas of engagement:
Community
Socio-cultural
Political
Ecological
Knowledge + technology
Economic + financial



Dimensions that result in actions towards lower climate resilient development

(b) Illustrative development pathways



(c) Actions and outcomes characterizing development path



Discuss with someone in the audience (you do not know yet)

- What would you like to learn about/contribute to flood resilience in the coming 2 days/year/5 years?
- Who do you need for that? Who can you meet at this Flood Summit?
- What activities would you have to organize for that?

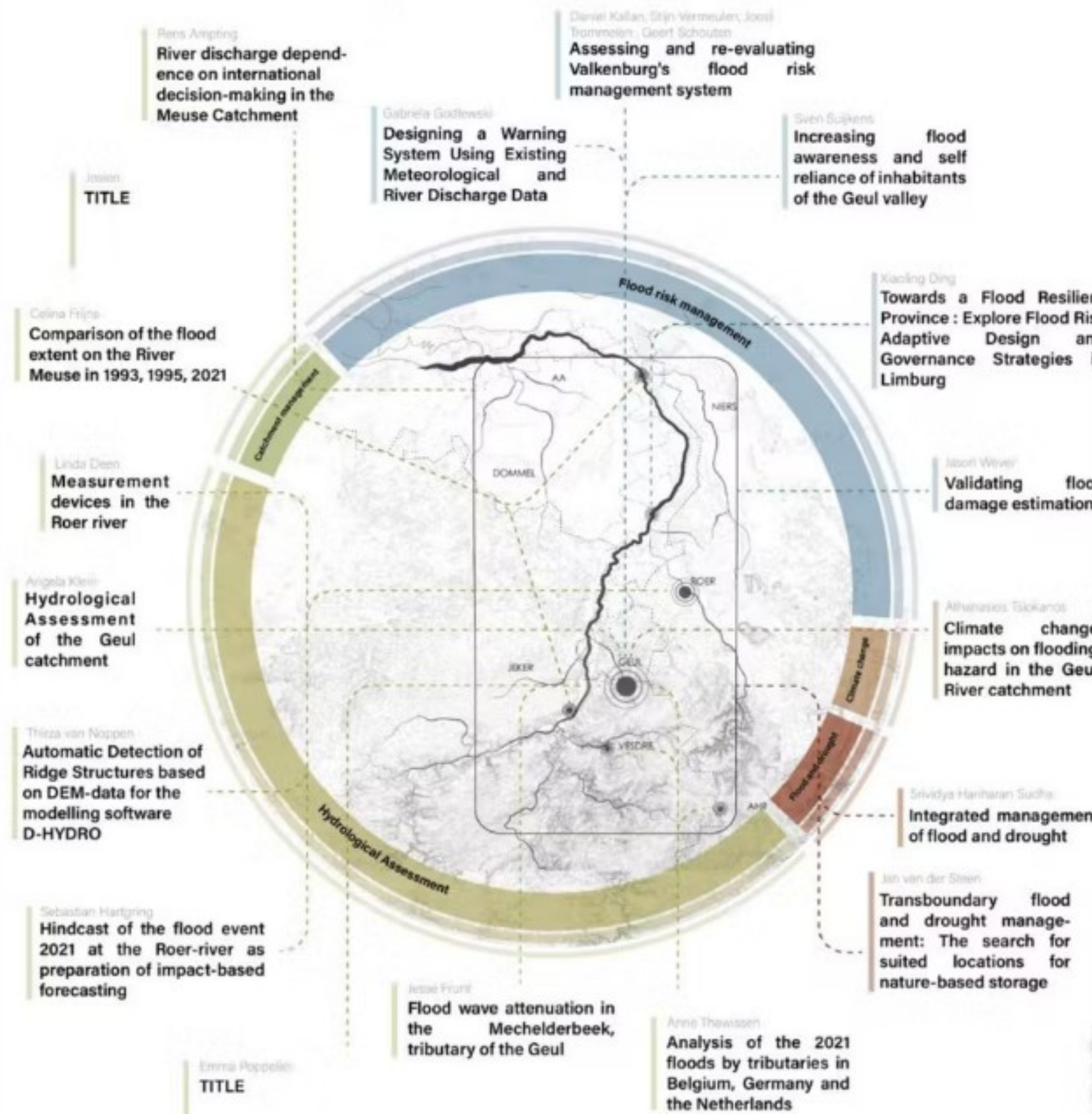
My request for collaboration

- Problems for critical students and co-supervision
- Students and staff from other (applied/international) universities and other disciplines for the Delta Futures lab thematic working groups
- Partners to develop field monitoring and test sites (including vocational education)
- Imaginative power of creative sector
-



Limburg 2021- Research Projects

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