Floods in the European Union and the Middle East and North Africa region: impacts, characteristics and perception

FutureMed Workshop – 29.09.2025

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In collaboration with Andries-Jan de Vries[1], Caroline Roberts[1], and Daniela Domeisen[1,2]

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Research

Floods have significant impacts worldwide

- Human and economic consequences
- Occurring regardless of the wealth of the country

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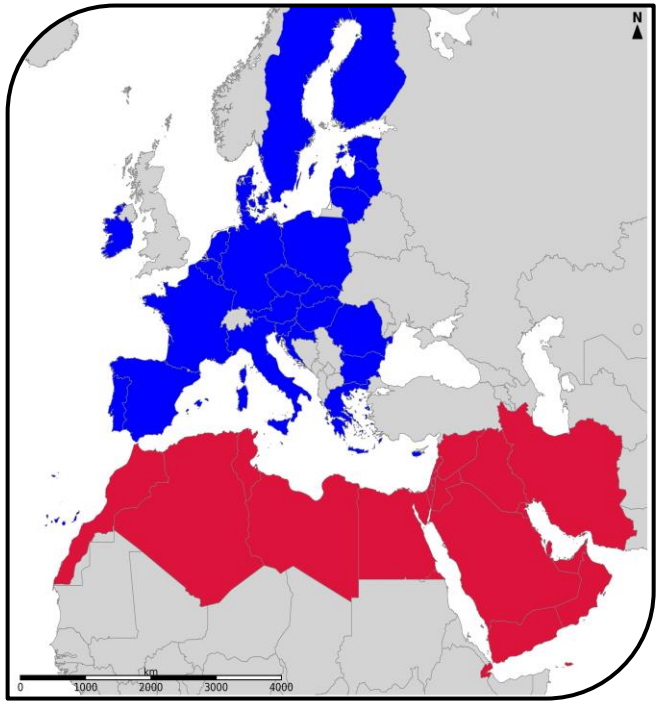
On the EU and the MENA region

- Similar in terms of number of inhabitants, but major socio-economic and climatic differences

Data source: Al Saud (2022) ; EU (n.d.).
Country borders: Natural Earth (2025)



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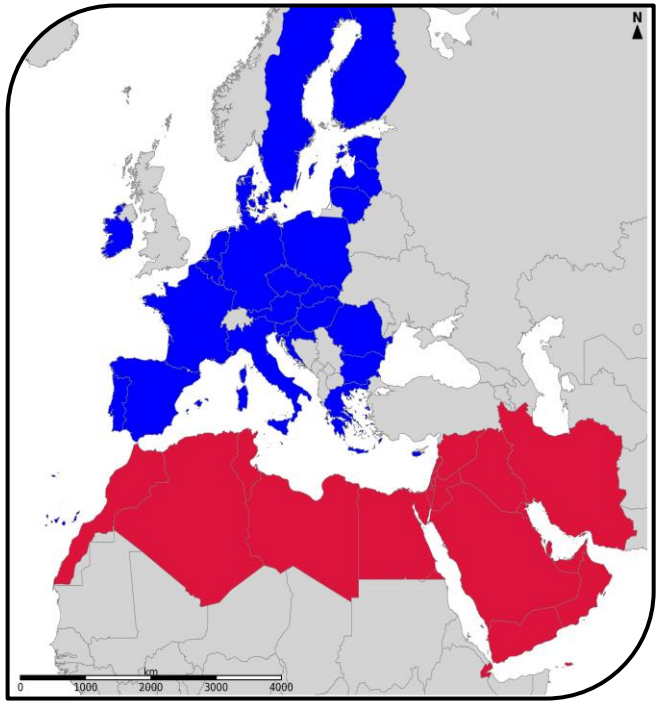
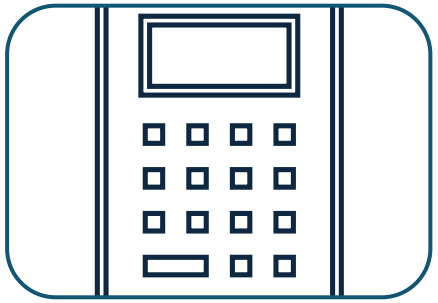


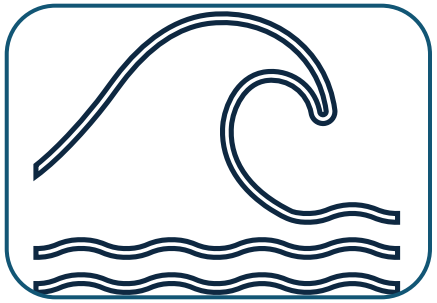
Main goals:

- Quantify flood consequences and characteristics in the EU and the MENA region, based on recorded disaster impacts
- Compare these to the public perception of natural disasters using survey data

Research axes

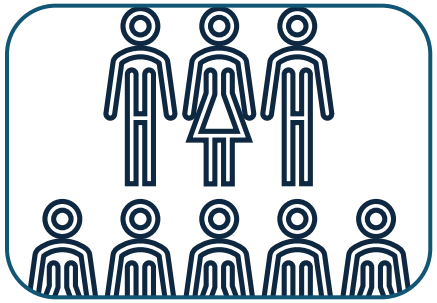


Quantifiable flood impacts

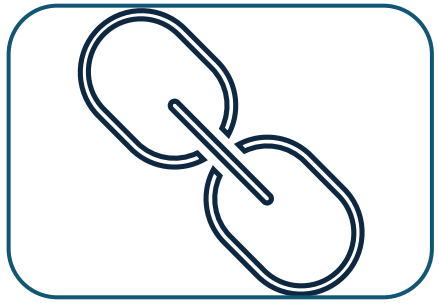


Seasonality of the flood onset

Comparison with impacts from other natural disasters

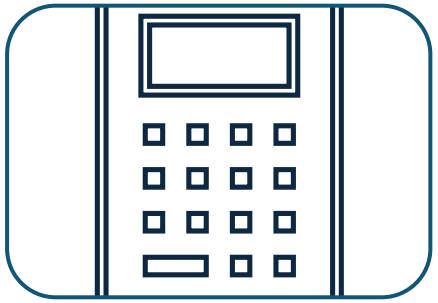


Public perception of flood risks in the EU



Correspondence between perception and recorded consequences

Data used



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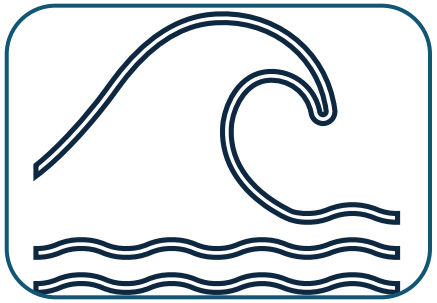

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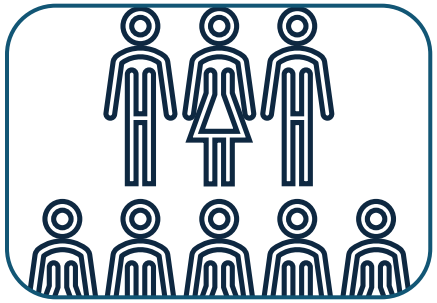

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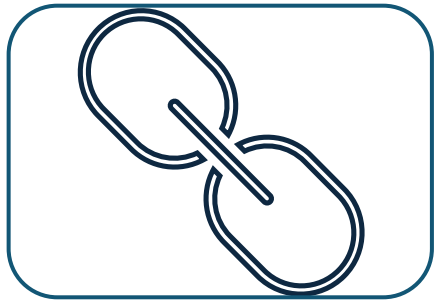

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- 2000-2023

- Number of events
- Number of economic losses
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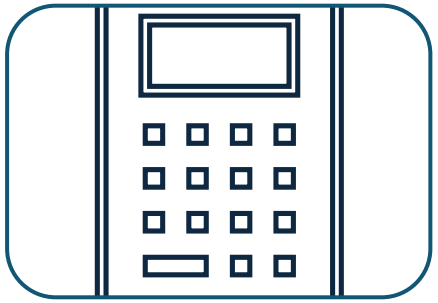

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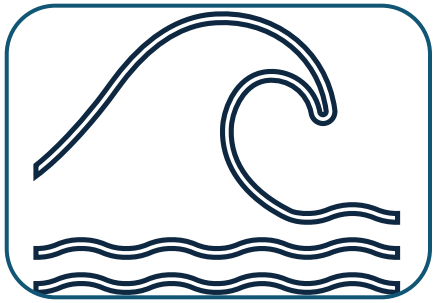

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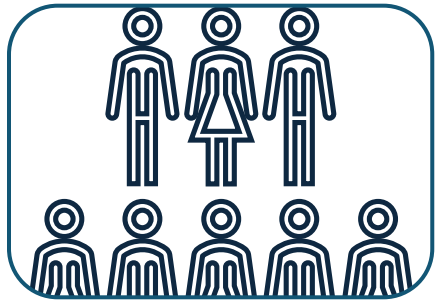

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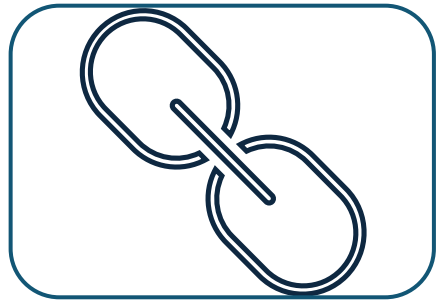

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- National exposure
- Personal exposure
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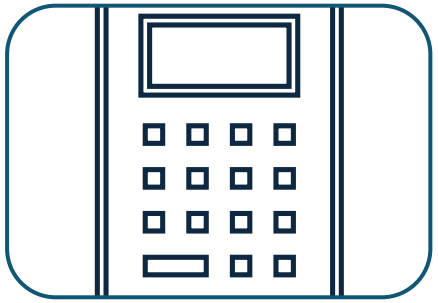

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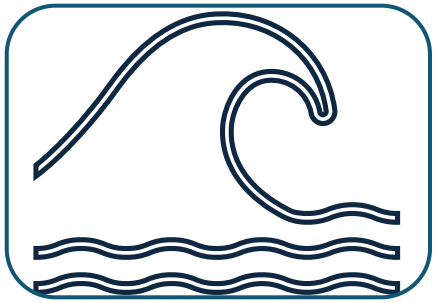

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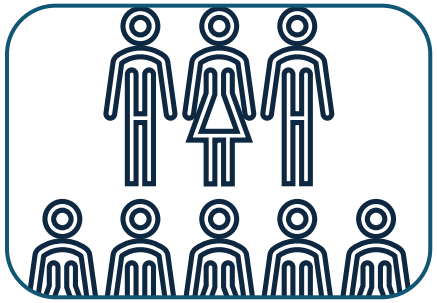

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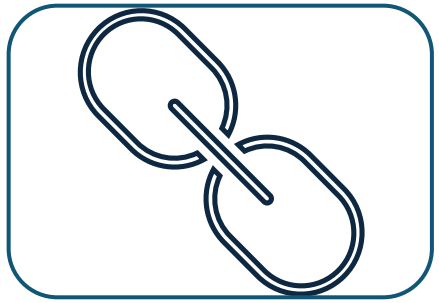

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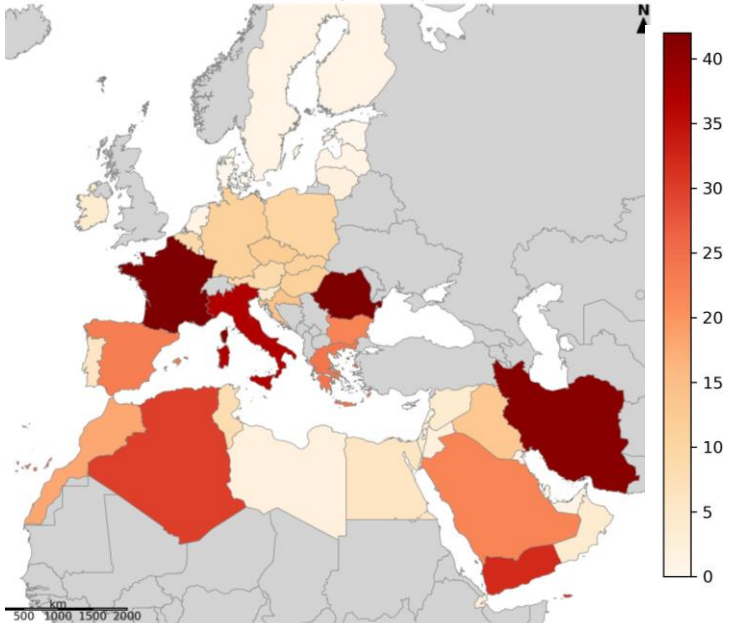
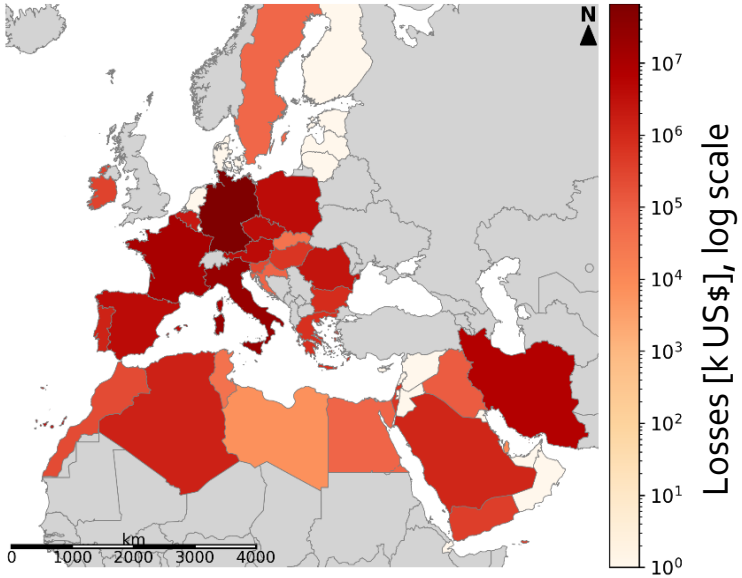
Both EM-DAT and Special Eurobarometer SP547

MAIN RESULTS

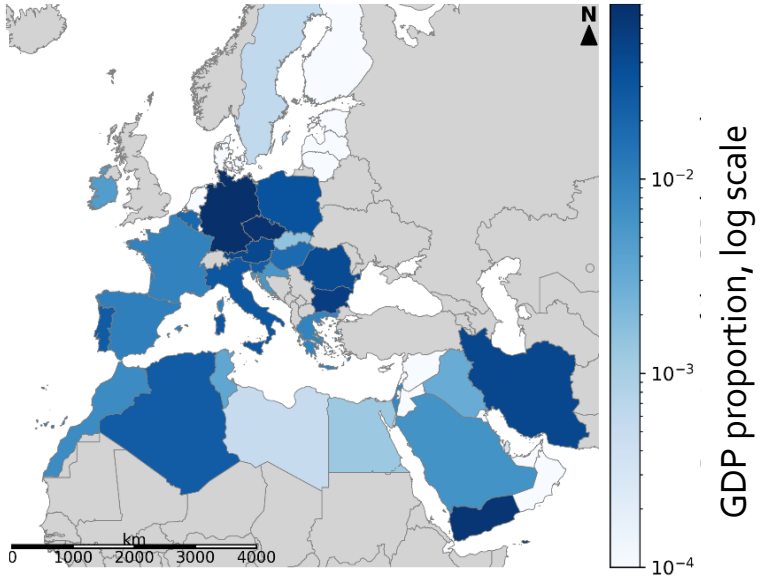
Number of flood events



Economic losses



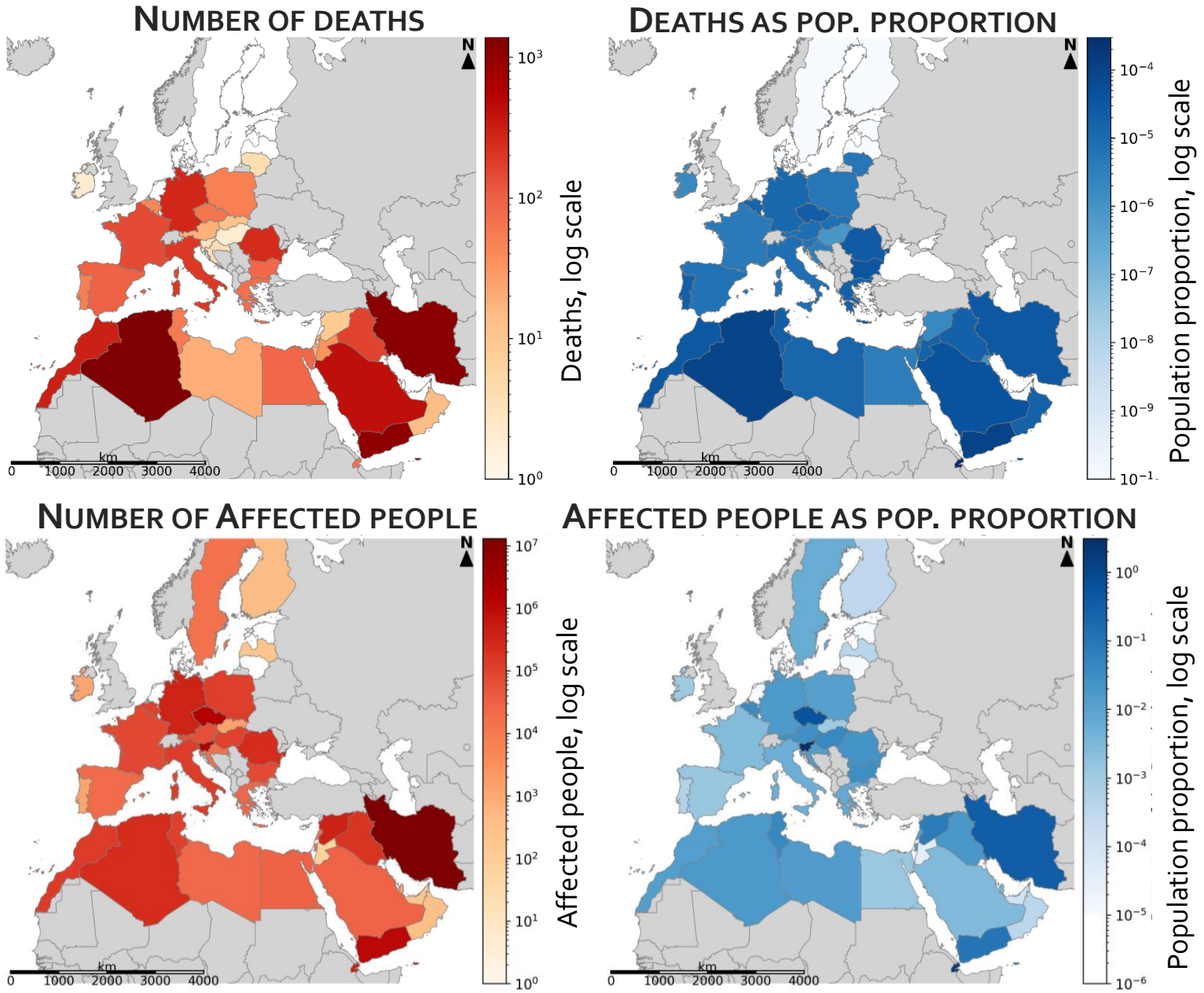
Losses as GDP proportion



1) More flood events in the EU than in the MENA region

2) Larger economic impacts in the EU

Data sources: CRED (2025), World Bank Group (2025).
Country borders: Natural Earth (2025)



LARGER HUMAN IMPACTS IN THE MENA REGION

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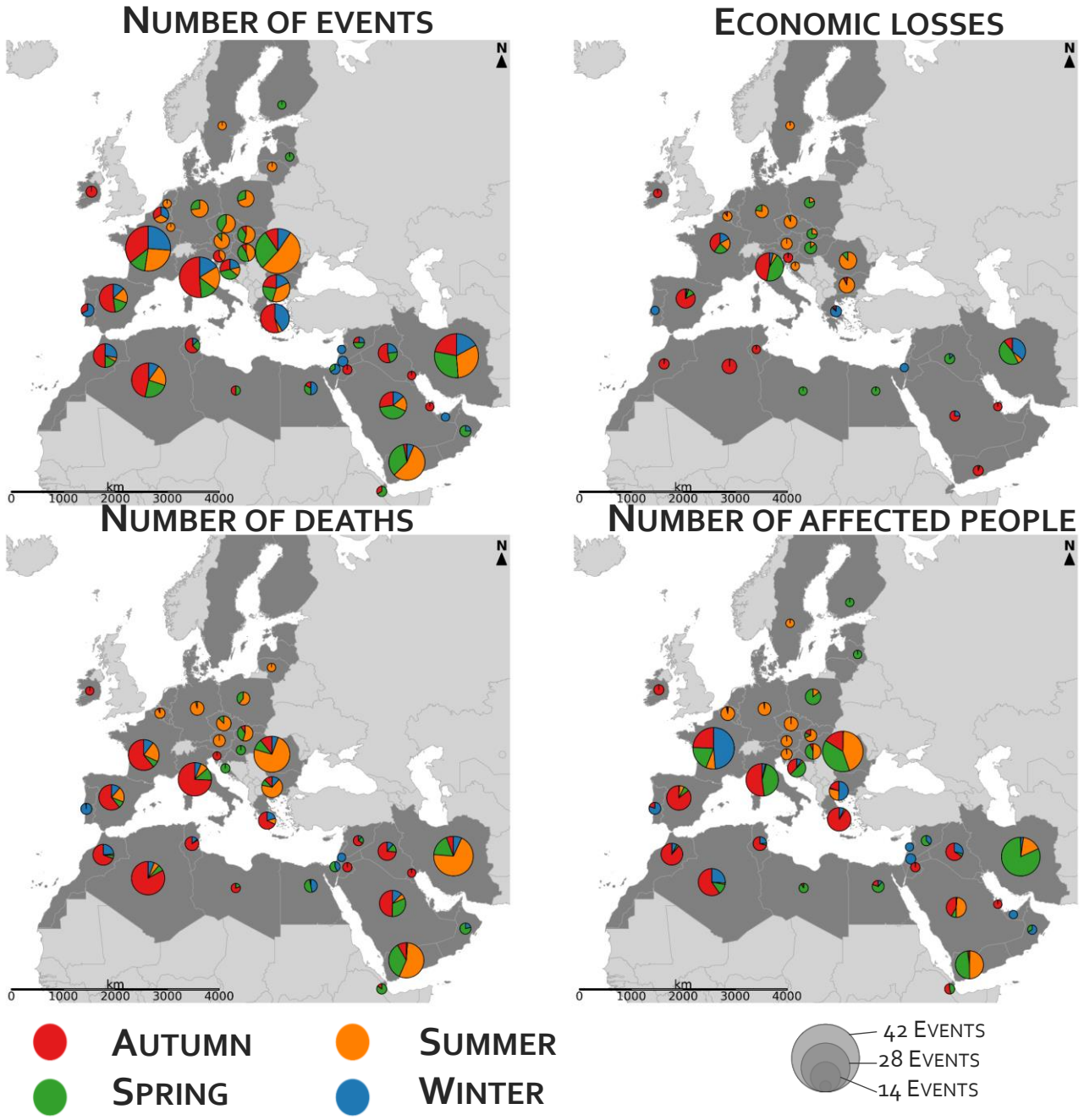

Autumn in Western Mediterranean

Winter in Eastern Mediterranean

Seasonal patterns in flood impacts

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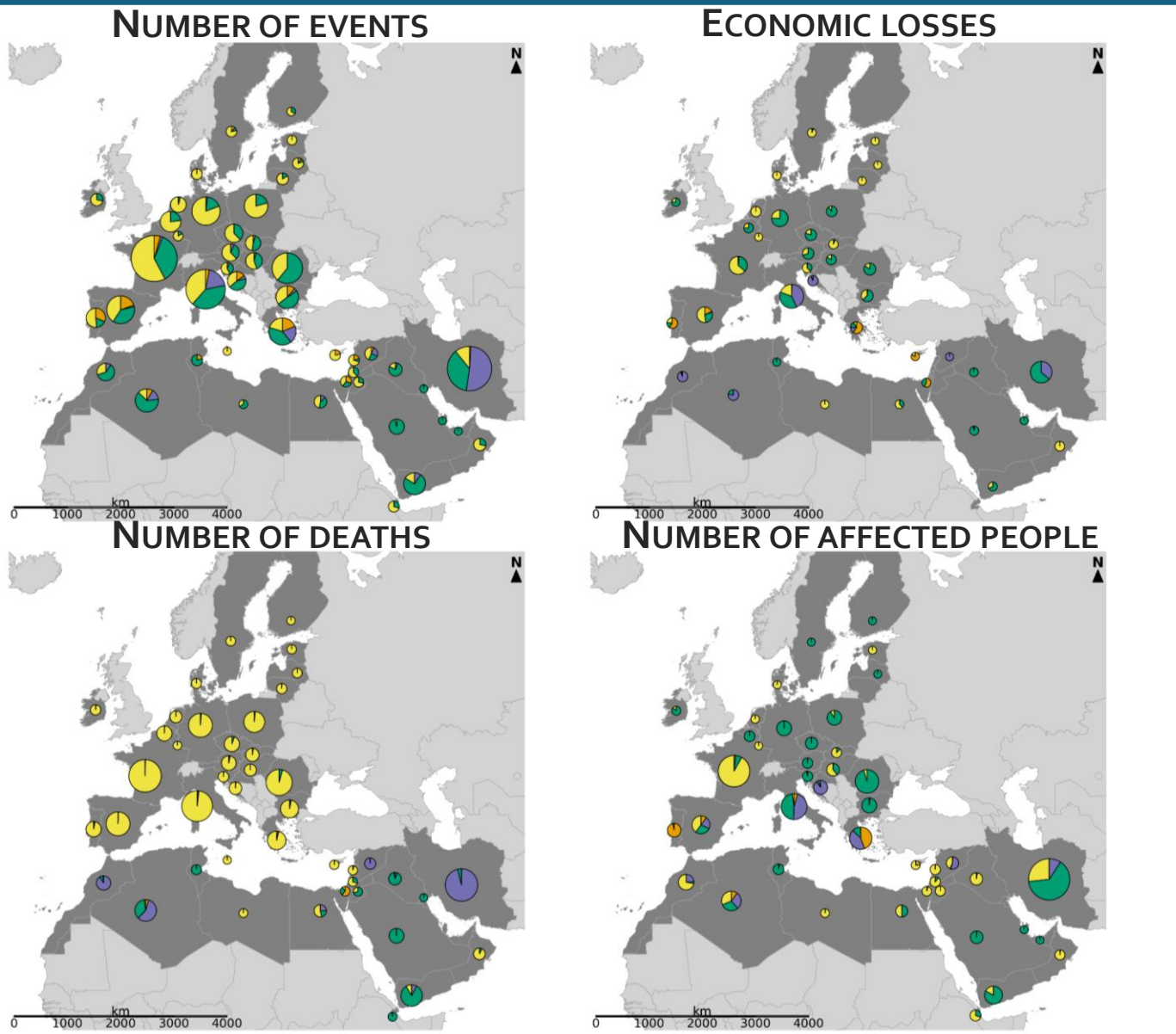
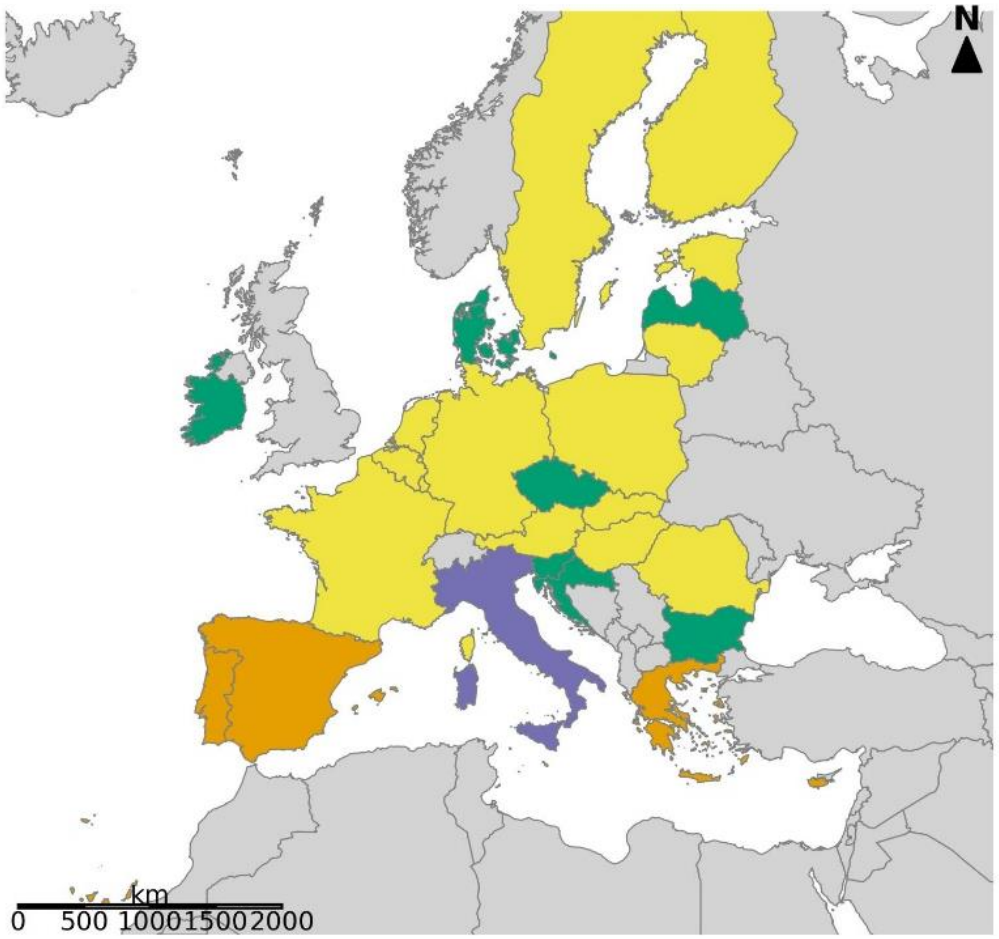


Many flood events all around the Mediterranean

Floods have major impacts in the Arabian Peninsula

Data source: CRED (2025).
Country borders: Natural Earth (2025)

National exposure



- Extreme weather event
- Flood
- Geological disaster
- Wildfire, forest fires

Extreme weather events: first in the public perception

Floods: second

Data source: European Commission (2024).
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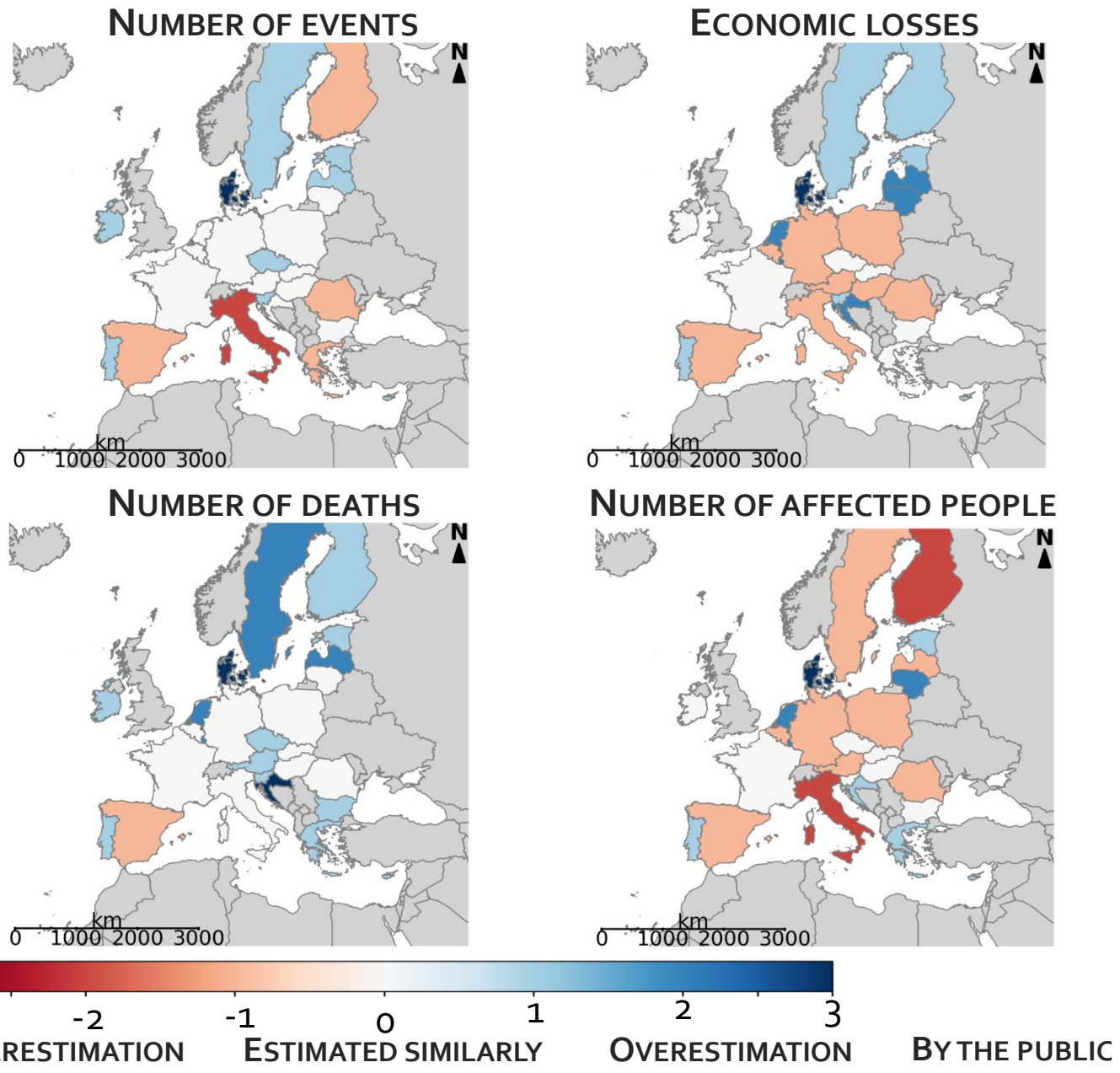
Comparison between public perception and recorded impacts

NATIONAL EXPOSURE



Mostly underestimation of floods by the public in Southern EU

Underestimation of floods when looking at the economic losses and the number of affected people

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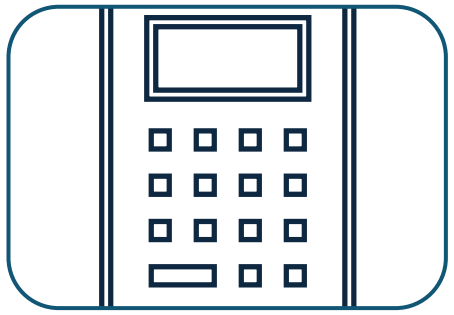

Quantifiable flood impacts

- More **floods** and economic **losses** in the **EU**

- More **human** impacts in the **MENA** region

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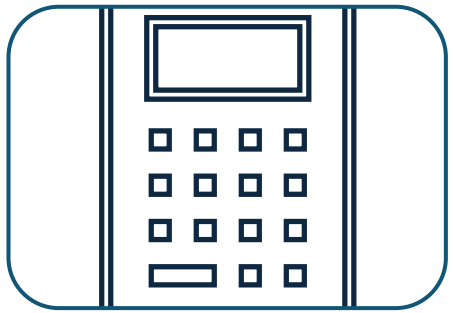

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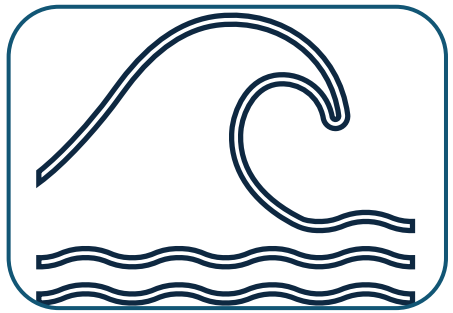

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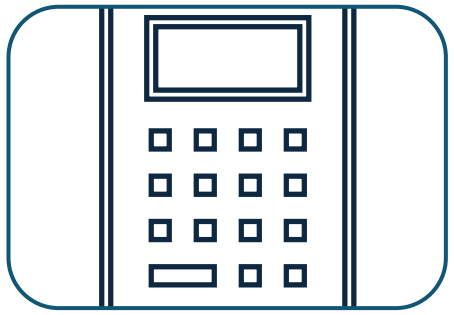

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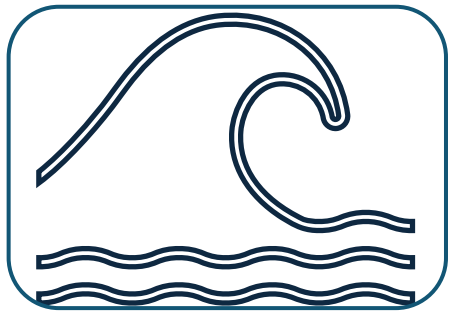

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Comparison with impacts from other natural disasters

- Major flood impacts in the **Arabian Peninsula**

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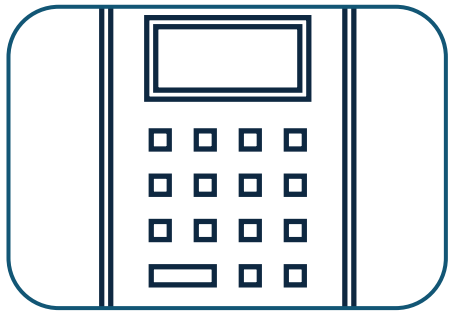

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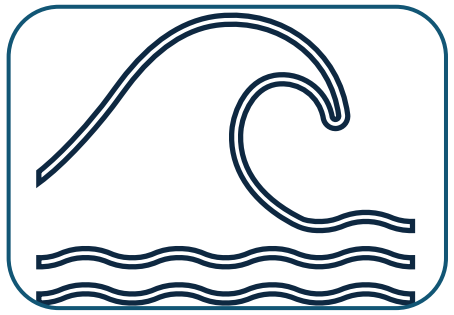

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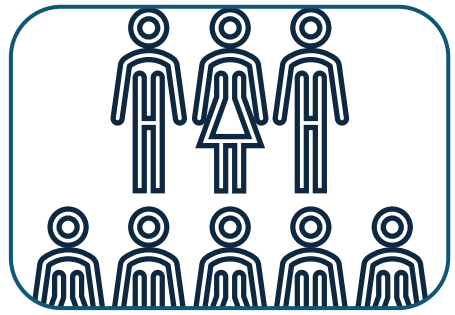

Public perception of flood risks in the EU

- **Awareness** of flood risk, but **focus** is put more on **extreme weather events**

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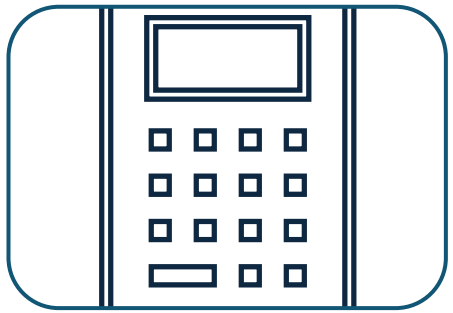

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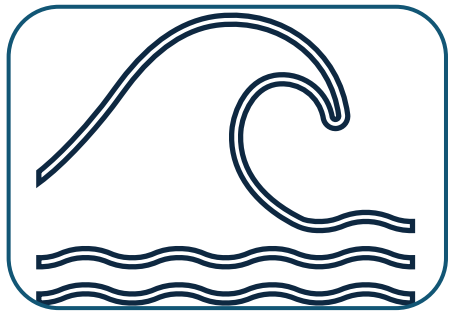

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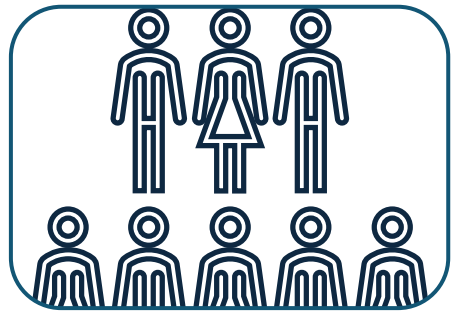

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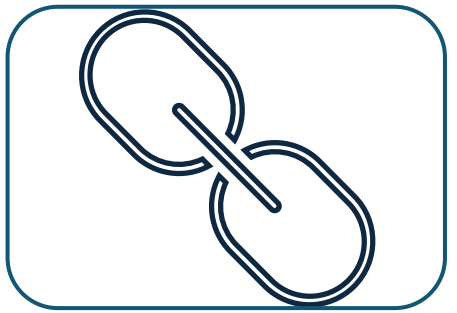


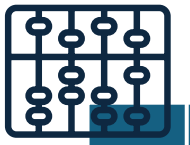
Correspondence between perception and recorded consequences

- **Underestimation** by the public in **Southern** EU
- **Underestimation** by the public for economic **losses** and **affected people**

Limitations

Data Coverage

- No comparable survey for the MENA



Data Quantity

- Only one database source
- Only one survey focusing on natural disasters

Data Quality

- Use of only existing survey
- Methods of gathering information in EM-DAT
- EM-DAT inclusion criteria
- Classification of events in the database

Improvements in flood research are still needed

Especially in arid and semi-arid countries

Major data gaps to fill in

Public perception **surveys,** especially in the **MENA** region

Combination of public perception and registered impacts

THANK YOU FOR YOUR ATTENTION

Any questions?

References

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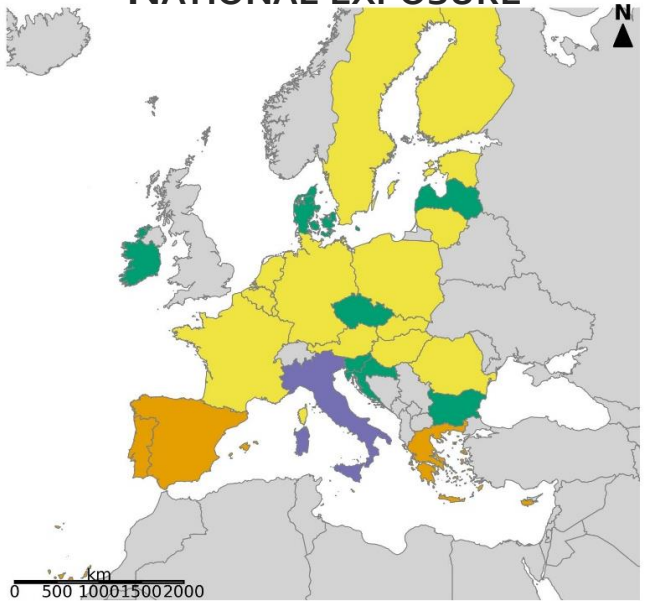
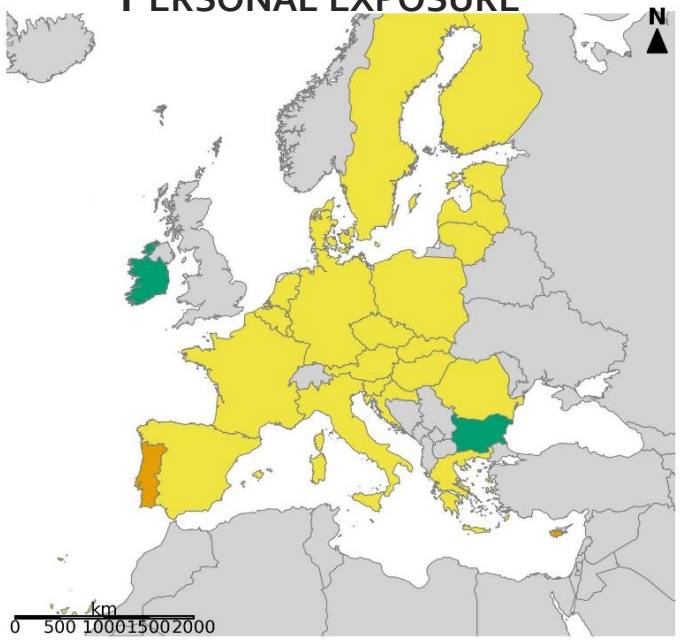
National exposure



Personal exposure



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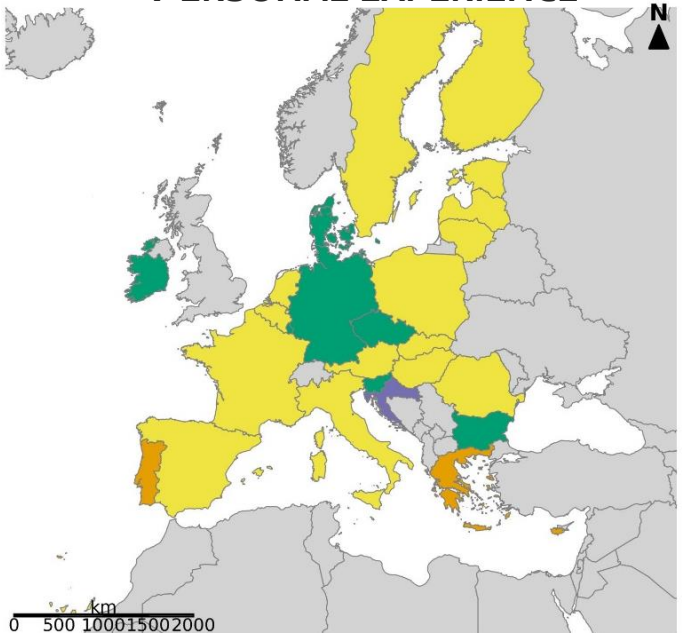

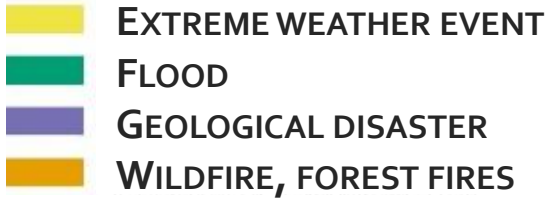

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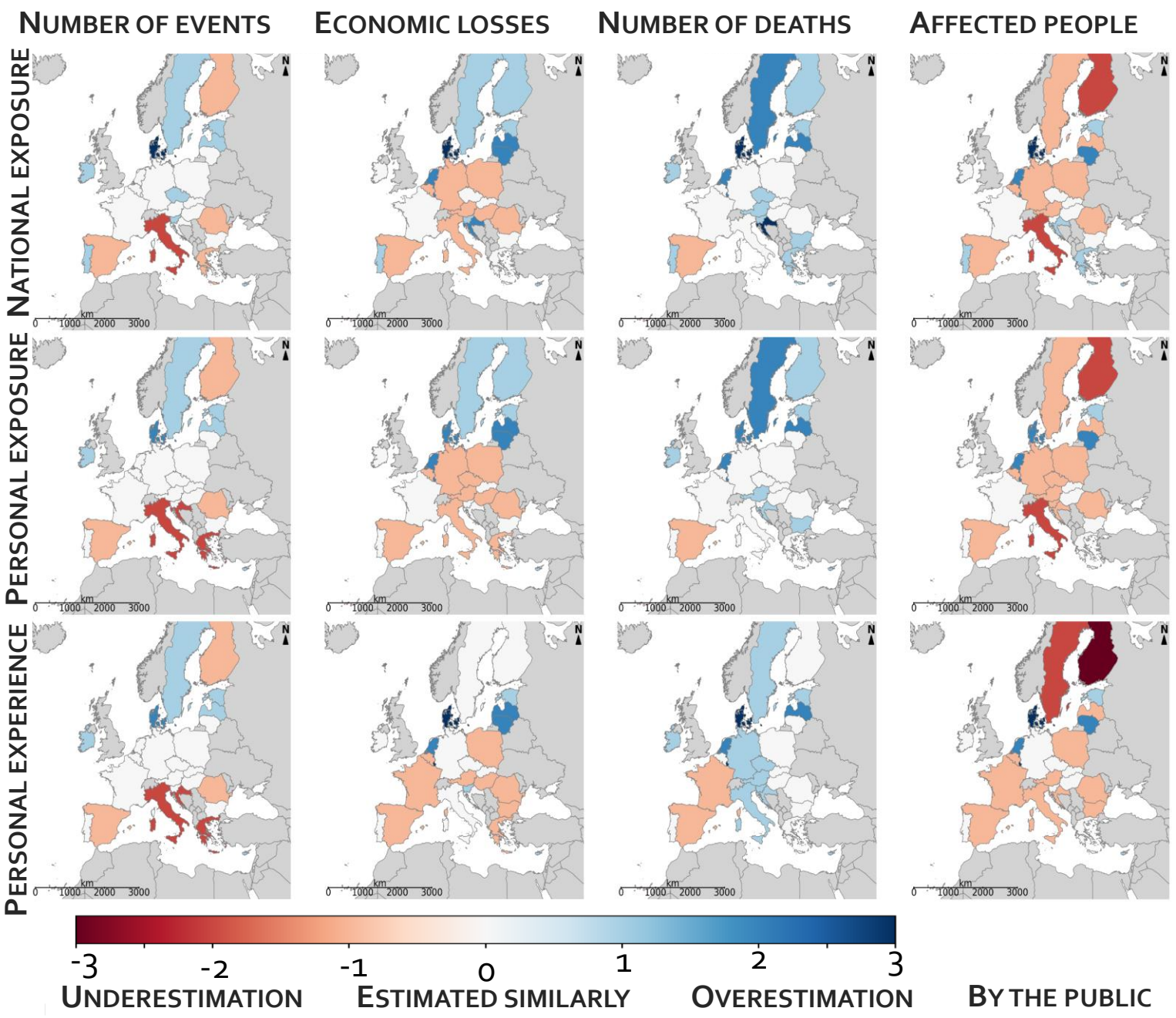

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