European Drought Observatory for Resilience and Adaptation
EDORA

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European Commission

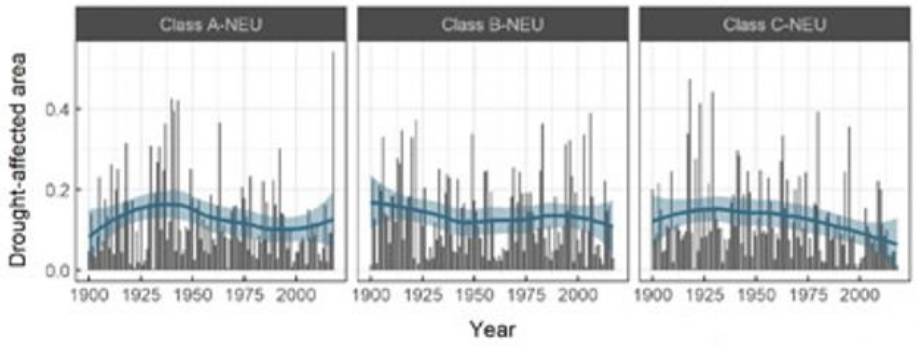
Drought & water quality

Frank Hammerschmidt/dpa via AP

Aerial view of fields with salt upwelling at the surface (California Valley, USA)

Scott Bauer / Public domain

Have droughts increased?

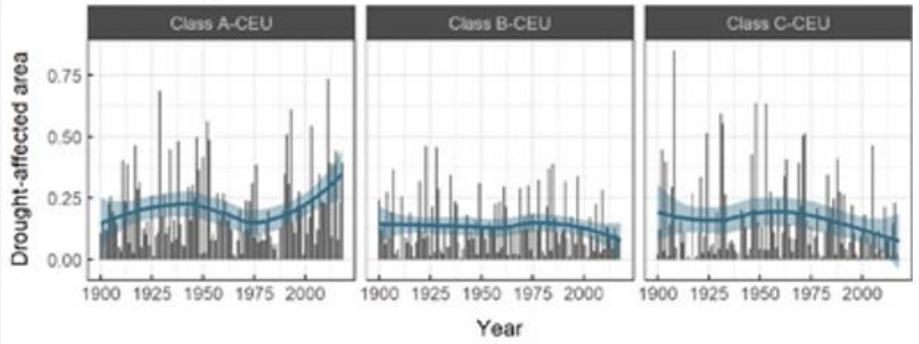


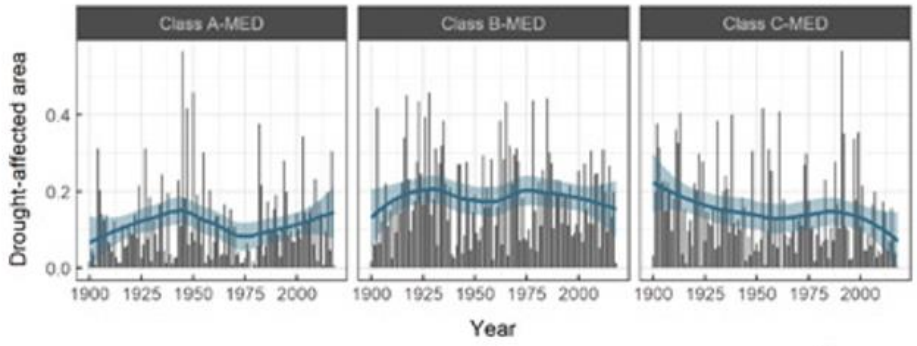
NEU

Droughts are declining in Northern Europe; however, the 2018 event was record breaking.

CEU

Central Europe is the region with the sharpest rise in compound warm season droughts, gradually replacing other drought types.



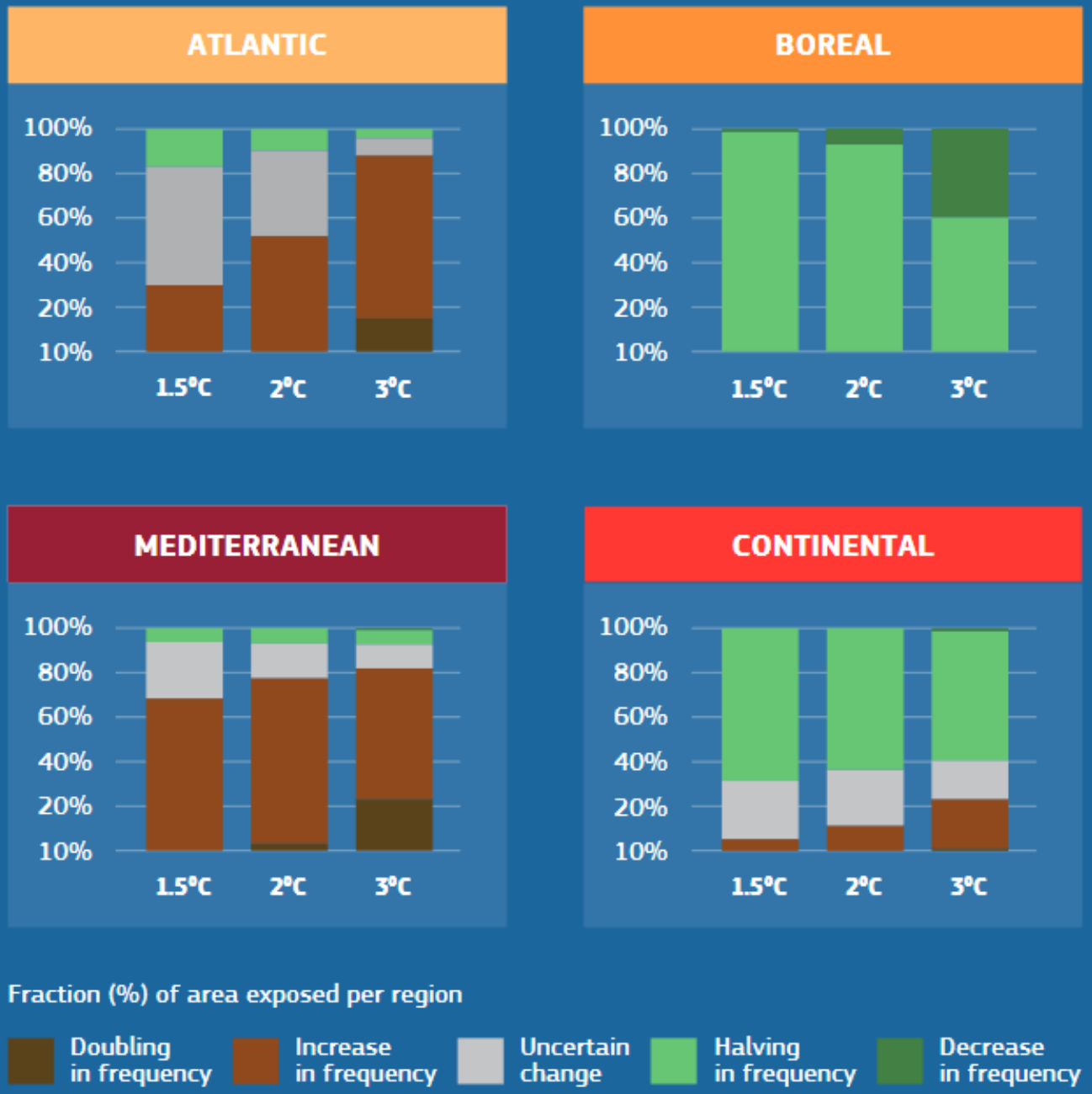


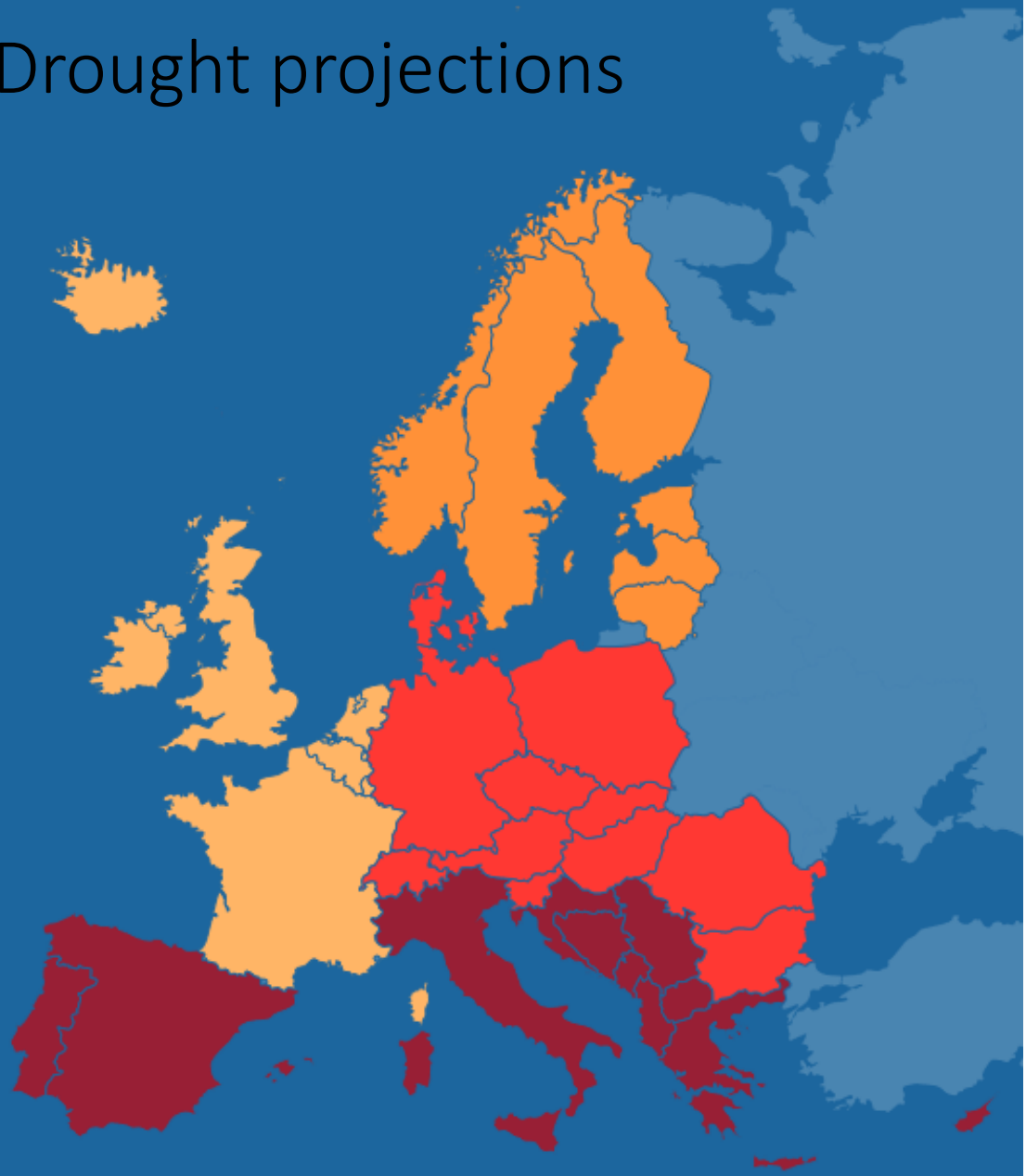
MED

In Mediterranean, warm season droughts have onset in winter and last longer. They are mainly associated with lack of precipitation.

Marlonis et al., 2021

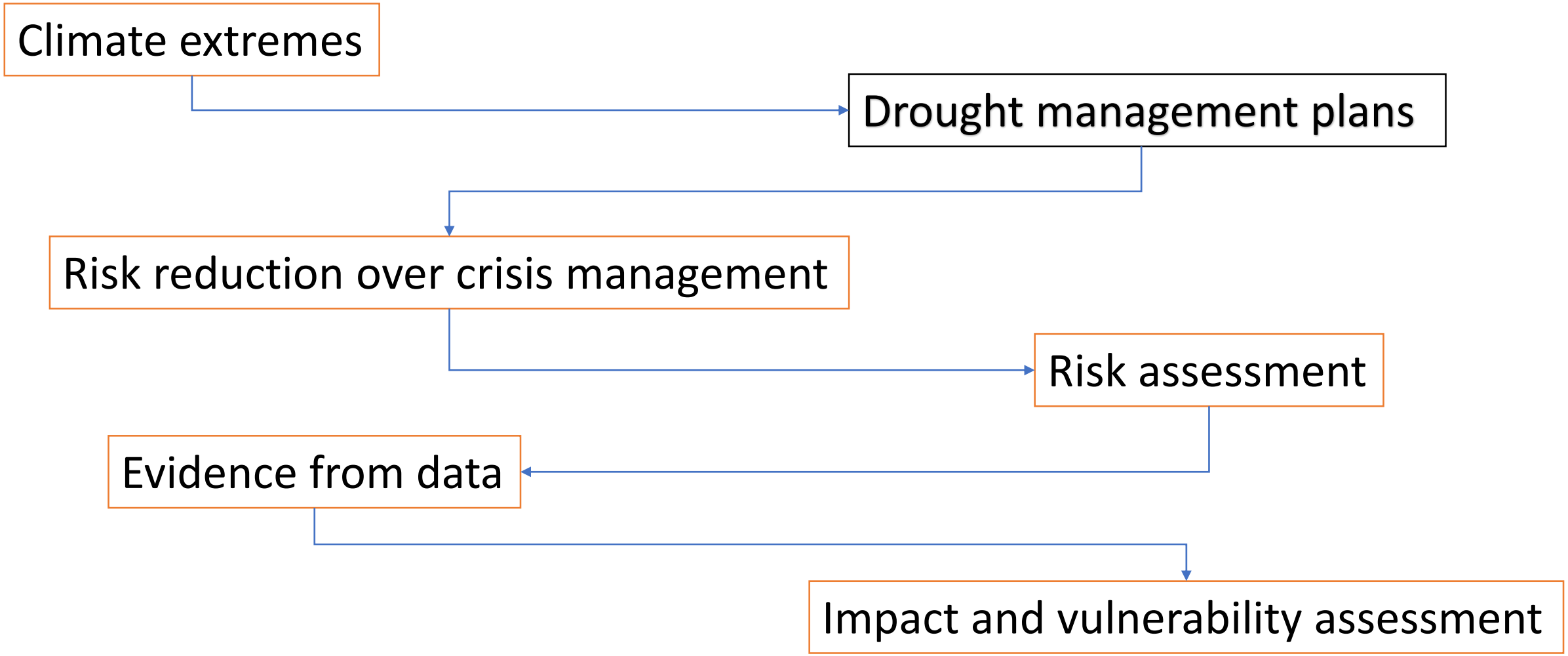
Drought projections





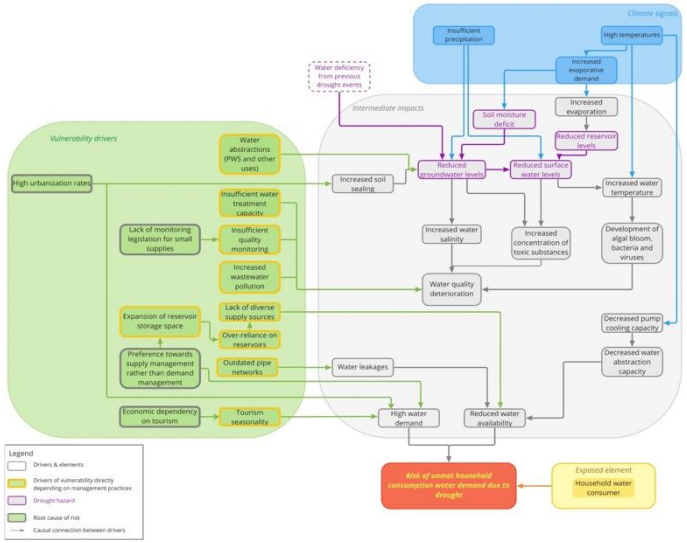
Modified from IPCC

Managing drought risk

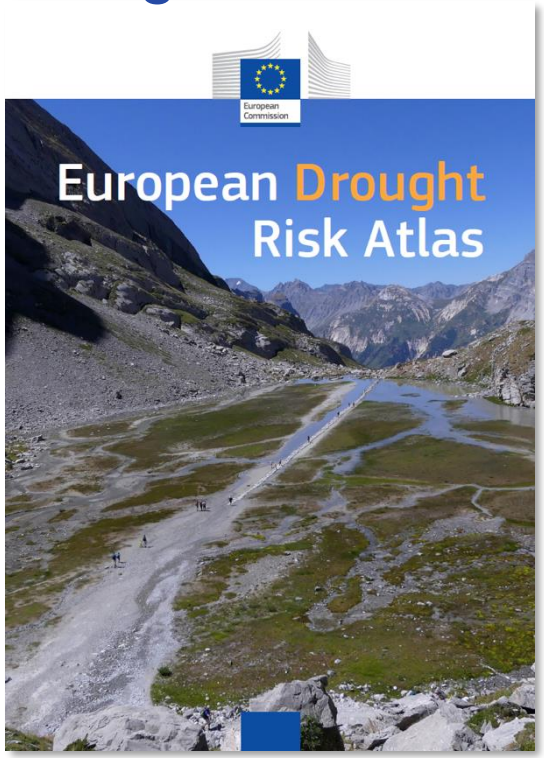


Drought risk atlas

Conceptual models + Impact-based data-driven analysis = European Drought Risk Atlas



MACHINE LEARNING



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cima RESEARCH FOUNDATION

IVM Institute for Environmental Studies

VU

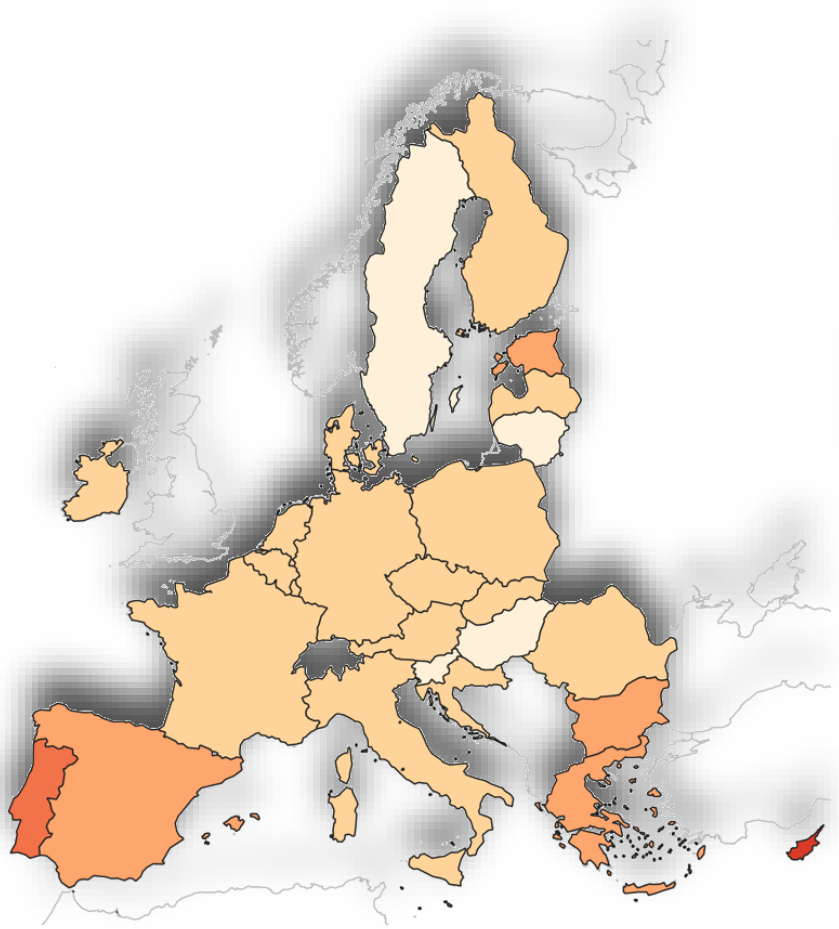
UNI FREIBURG

UNITED NATIONS UNIVERSITY

UNU-EHS Institute for Environment and Human Security

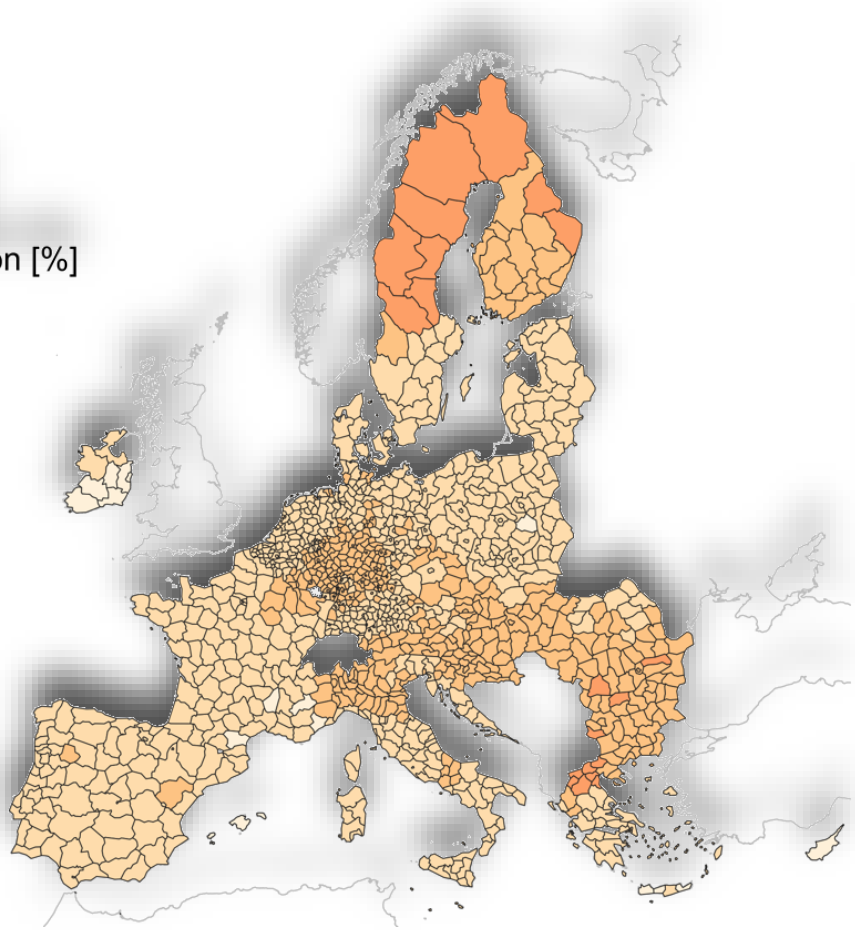
CzechGlobe

Current drought risk



Energy - Hydropower
Average Annual Loss
Reduction in production [%]

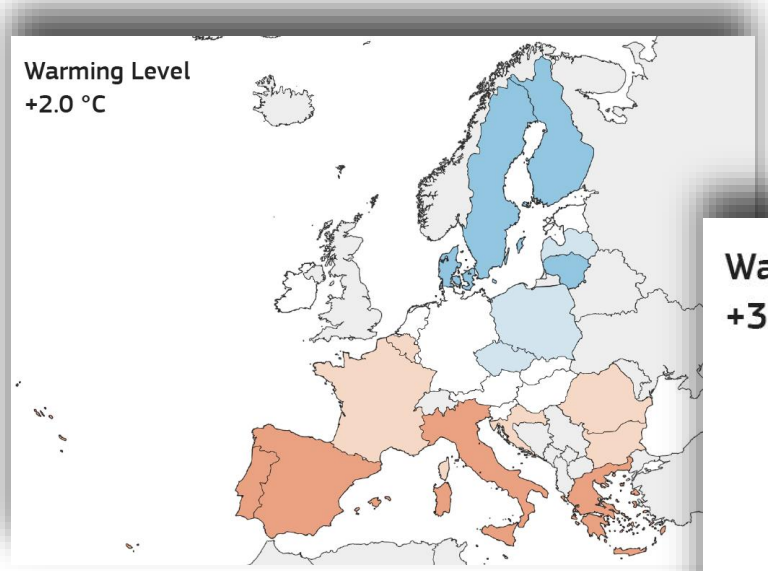
0 - 2.5
2.5 - 5.0
5.0 - 7.5
7.5 - 10.0
10.0 - 12.5
> 12.5

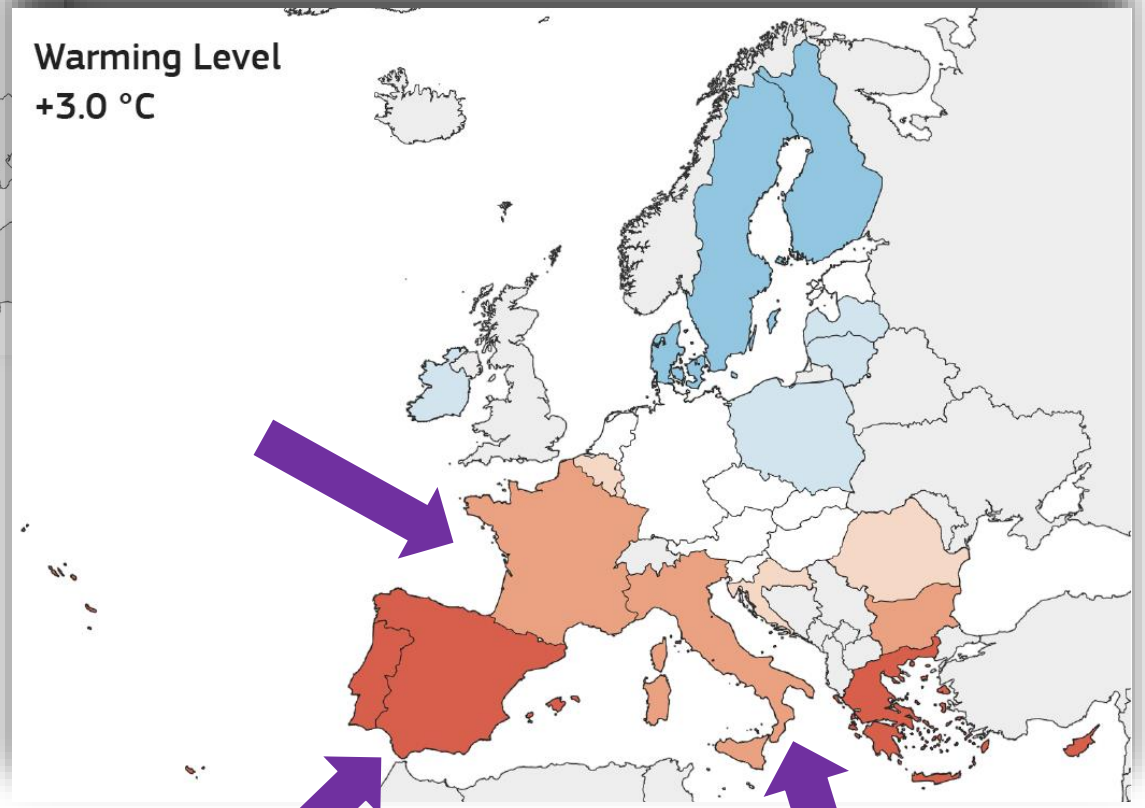


Terrestrial ecosystem
Average Annual Loss
Reduction in
Net Primary Production [%]

0.00 - 1.00
1.00 - 2.00
2.00 - 3.00
3.00 - 4.00
4.00 - 5.00
5.00 - 6.00
6.00 - 7.00
7.00 - 10.00

Hydropower - drought risk

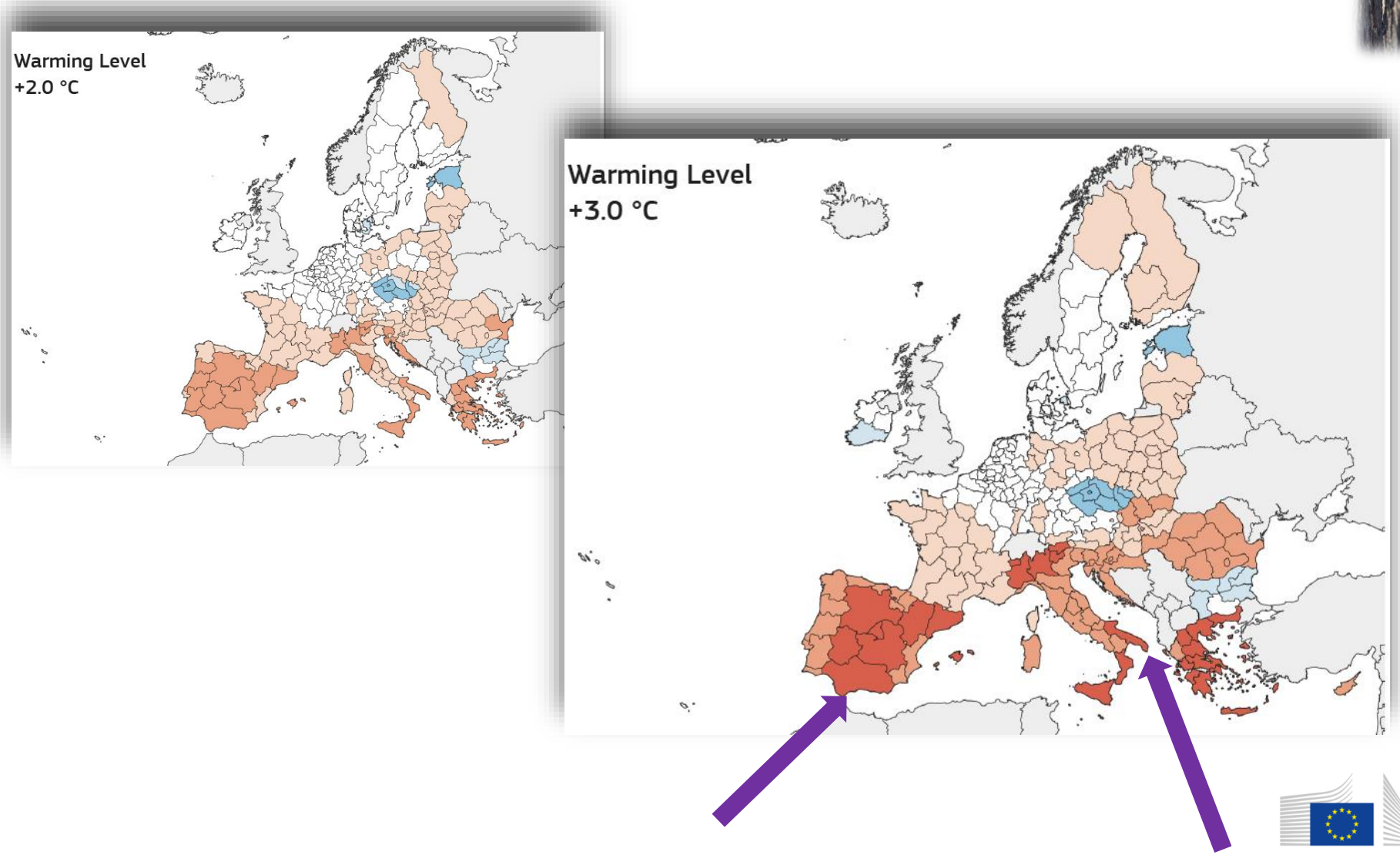




4
3
2
1.5
1.1
0.9
0.75

CL = Current Losses

Public water supply - drought risk



CL = Current Losses

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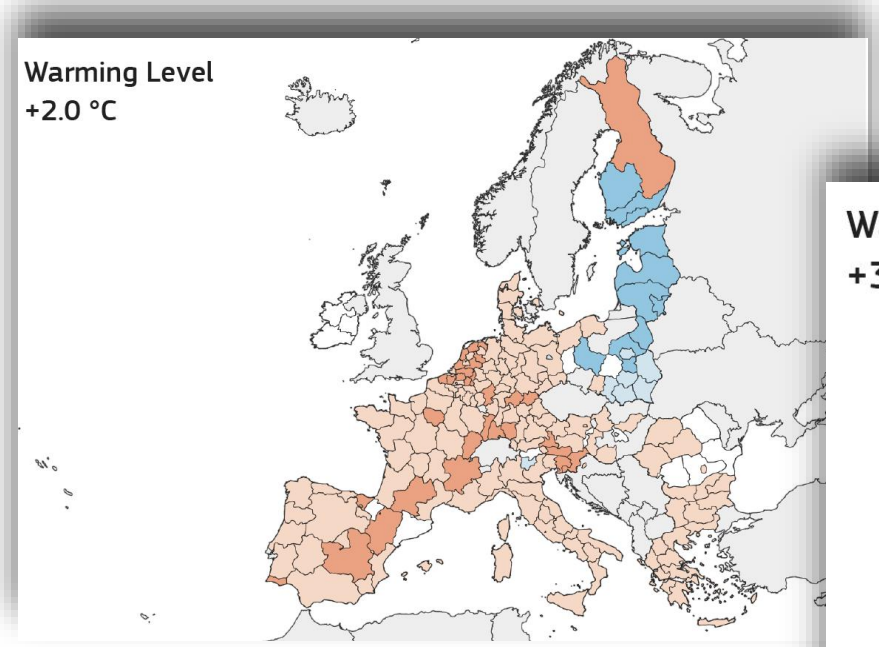
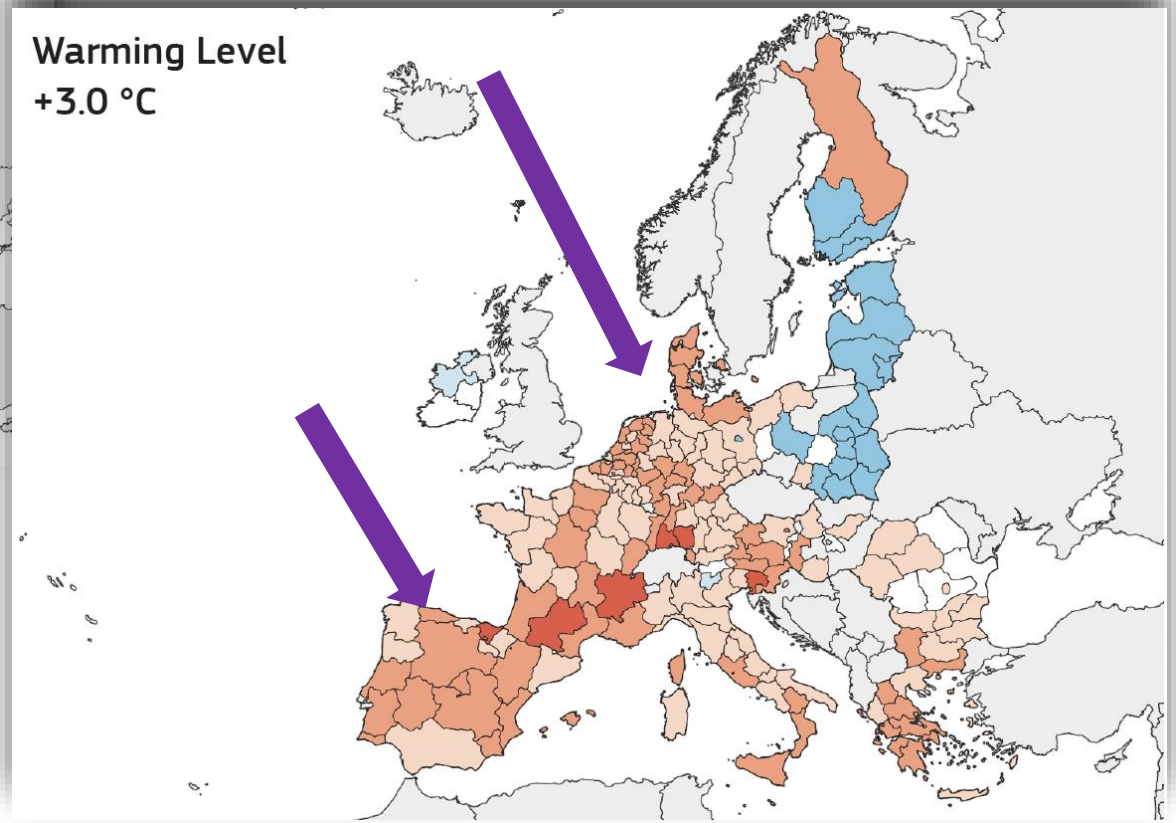
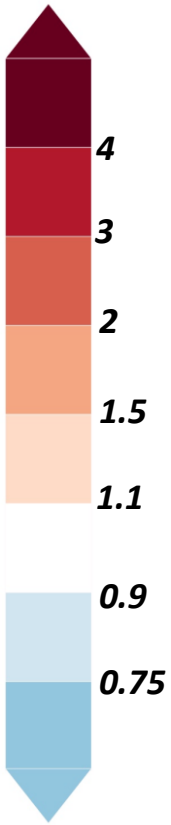
Agriculture (wheat) - drought risk







CL = Current Losses

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→ Search “JRC drought risk atlas”

EU cooperation is essential

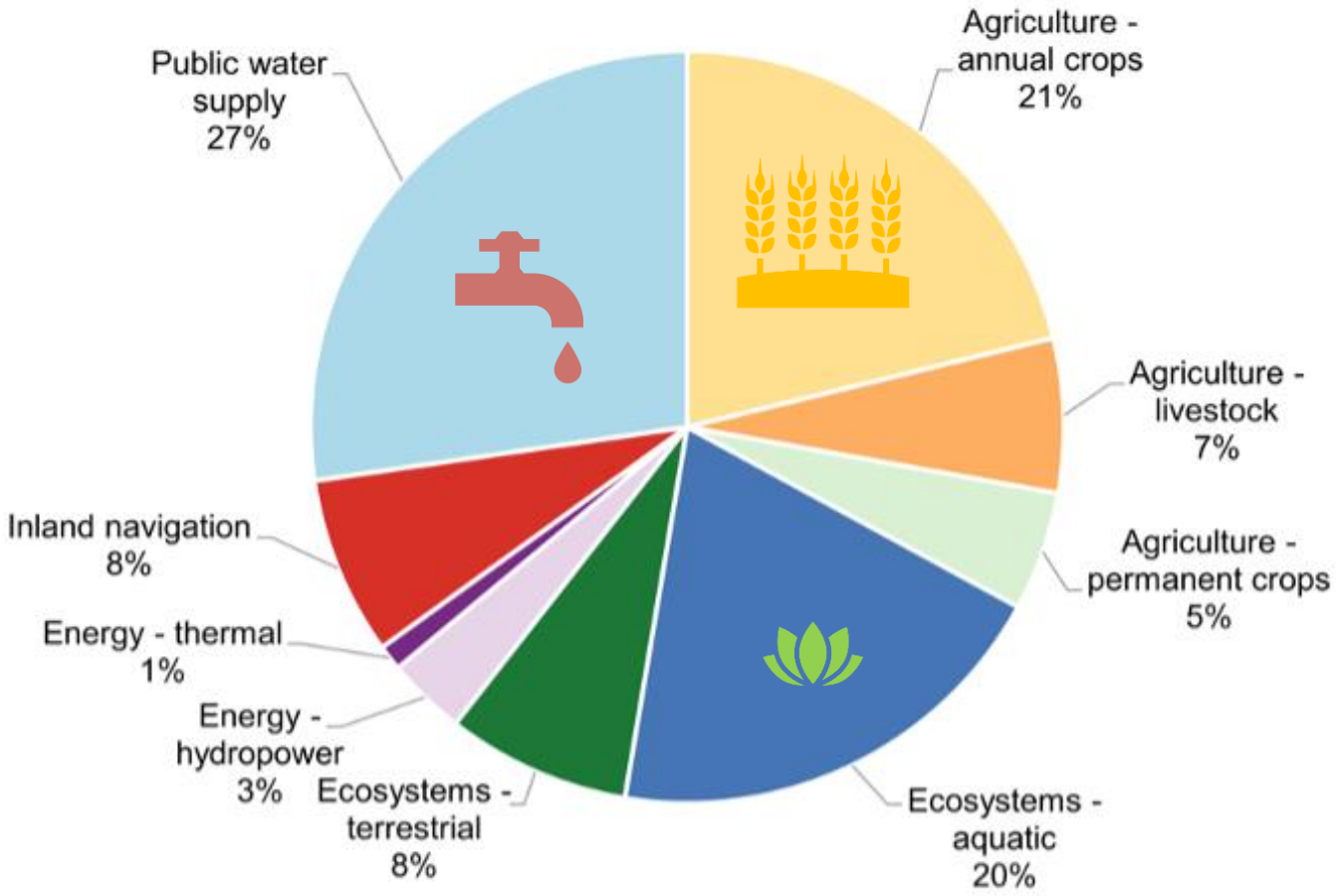
Risk *is sector-dependent*
It ***increases in most of Europe*** *under warming scenario.*
Mitigation & adaptation *are key*

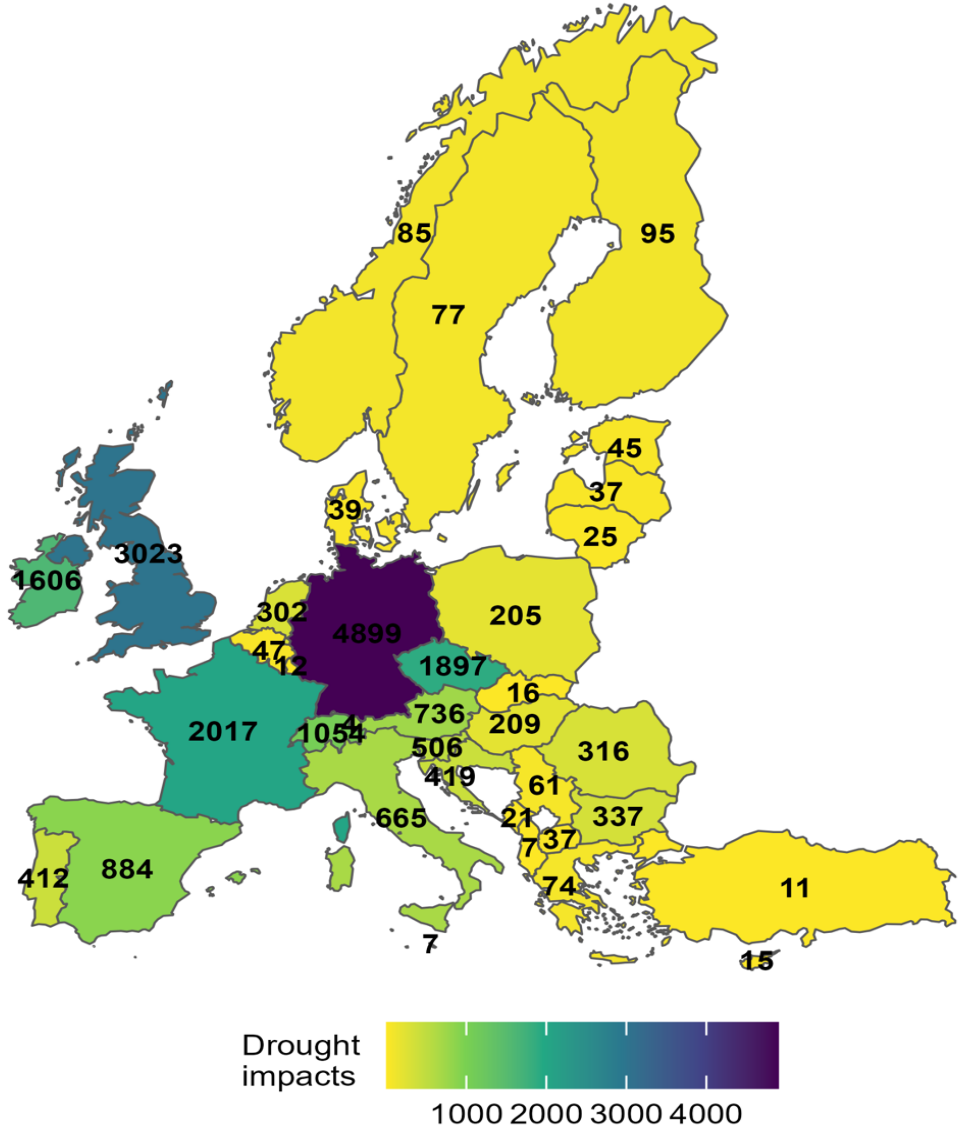
Varying risk scenarios. In some areas of **Northern Europe changes**

Mediterranean
Increase in drought risk in all sectors & ecosystems

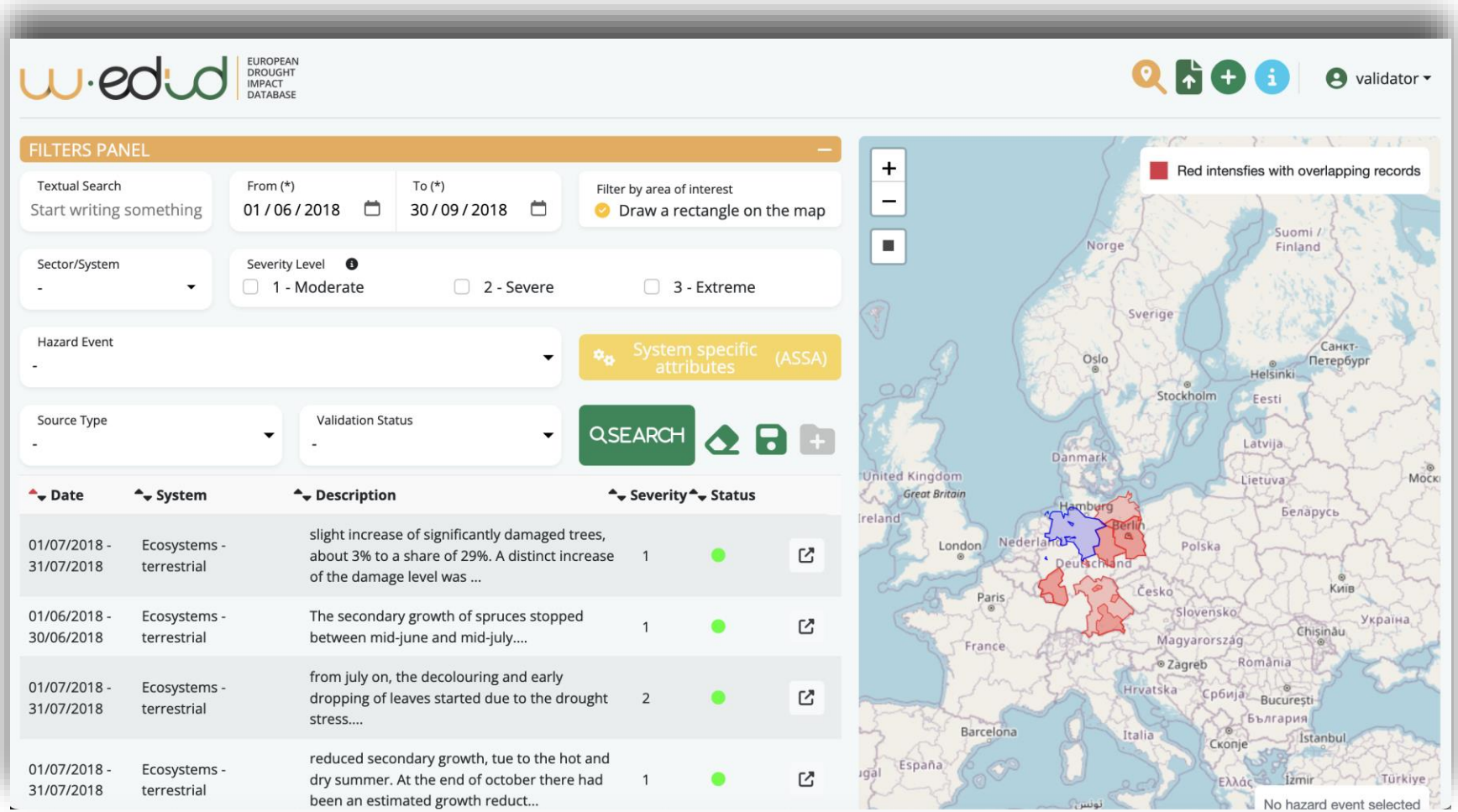
Regional ***HOTSPOTS*** *per sector emerge*

Drought impacts are… not available





Collecting & sharing data on impacts



EDID

http://edid-test.eu

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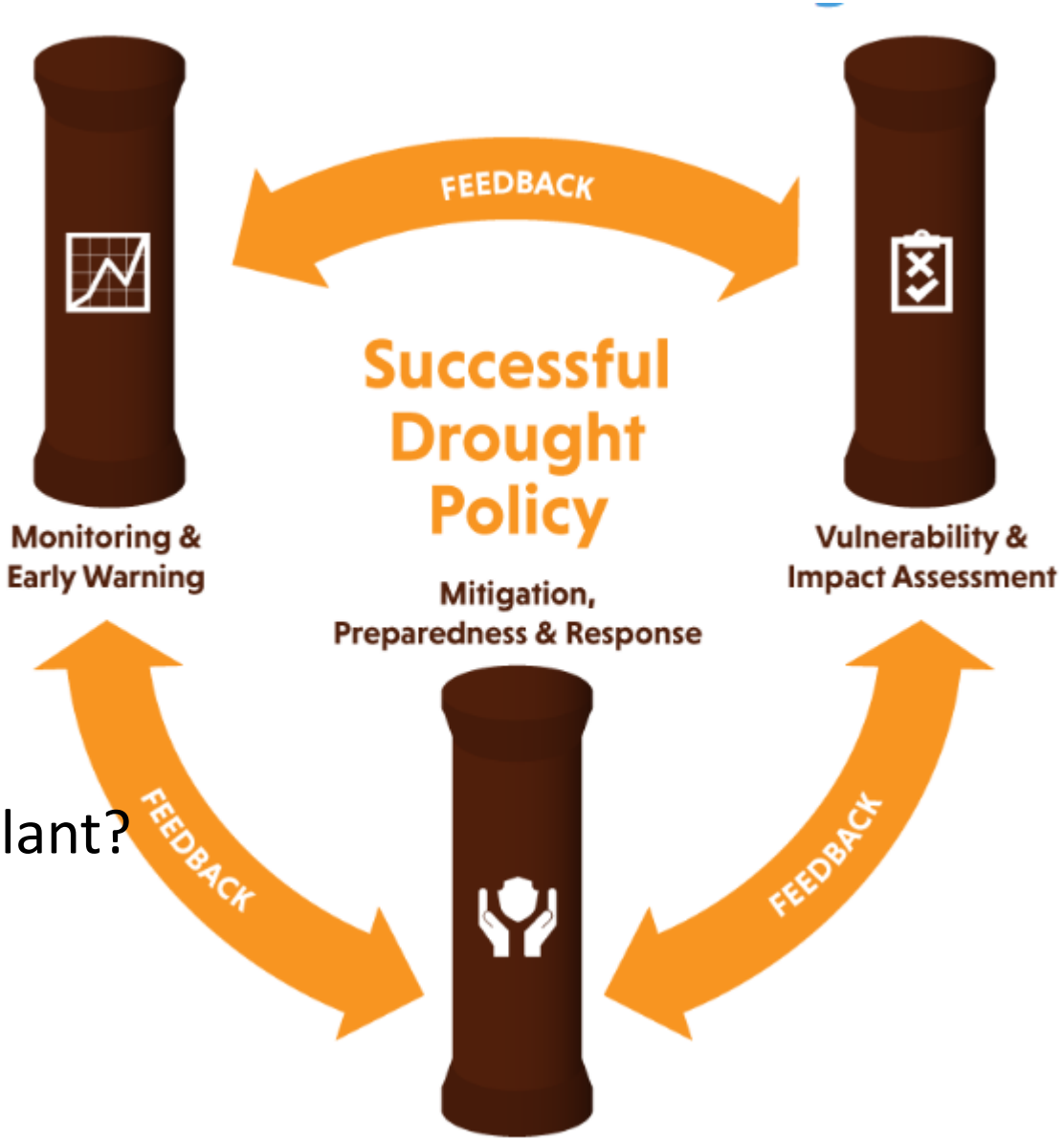
Reducing risk

- Manyfold endeavour (three pillars)
- Evidence based actions need data
- Much more than hazard:

  -> How much water demand?
  -> What investments are made?
  -> What technology to cool that power plant?
  -> What crops are there?
  -> …
  ->..
  ->.



Thank you

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