

European Drought Observatory for Resilience and Adaptation EDORA

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European Commission Joint Research Centre - E.1 Drought Team

Drought & water quality



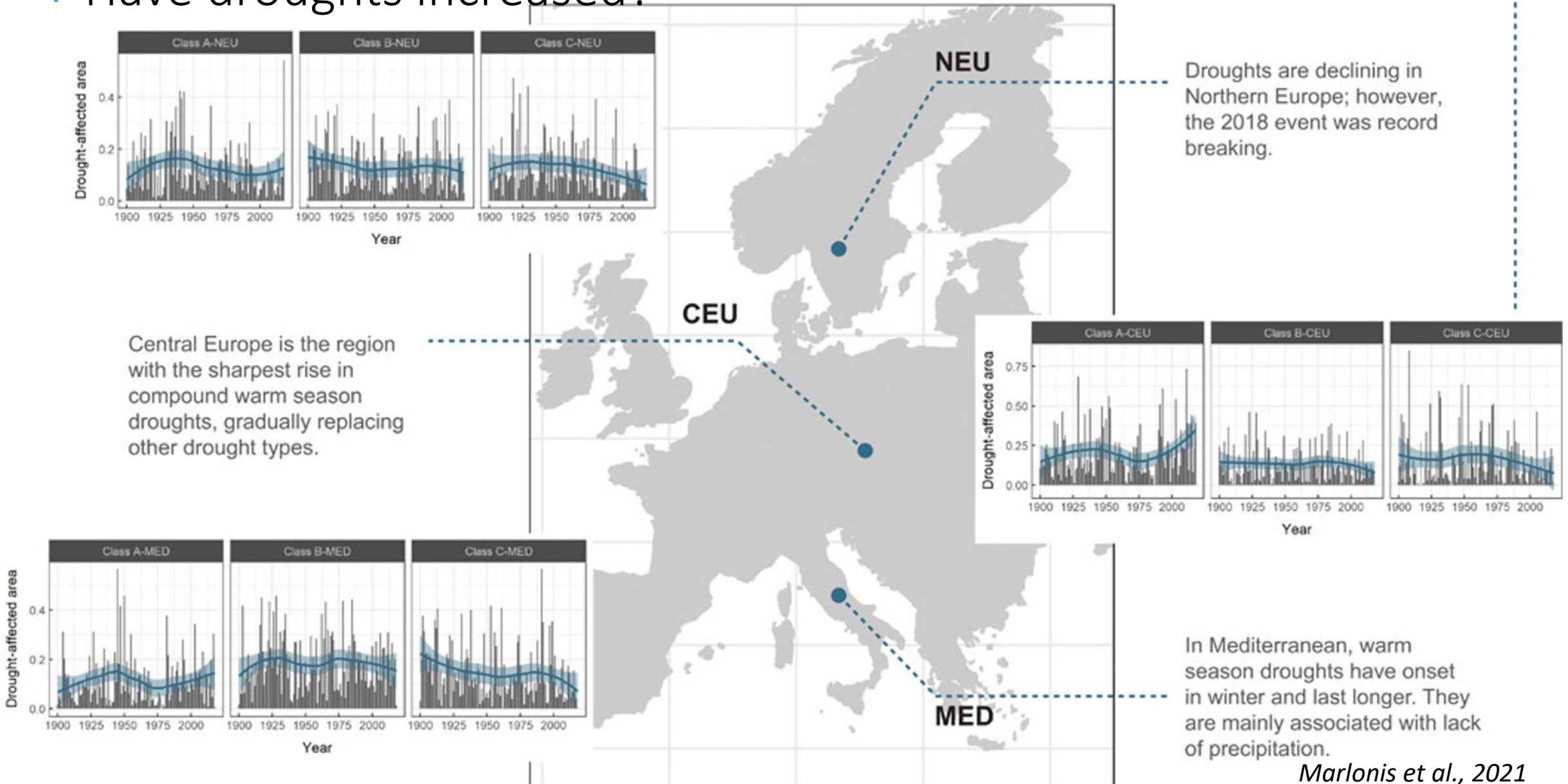
*Aerial view of fields with
salt upwelling at the surface
(California Valley, USA)*



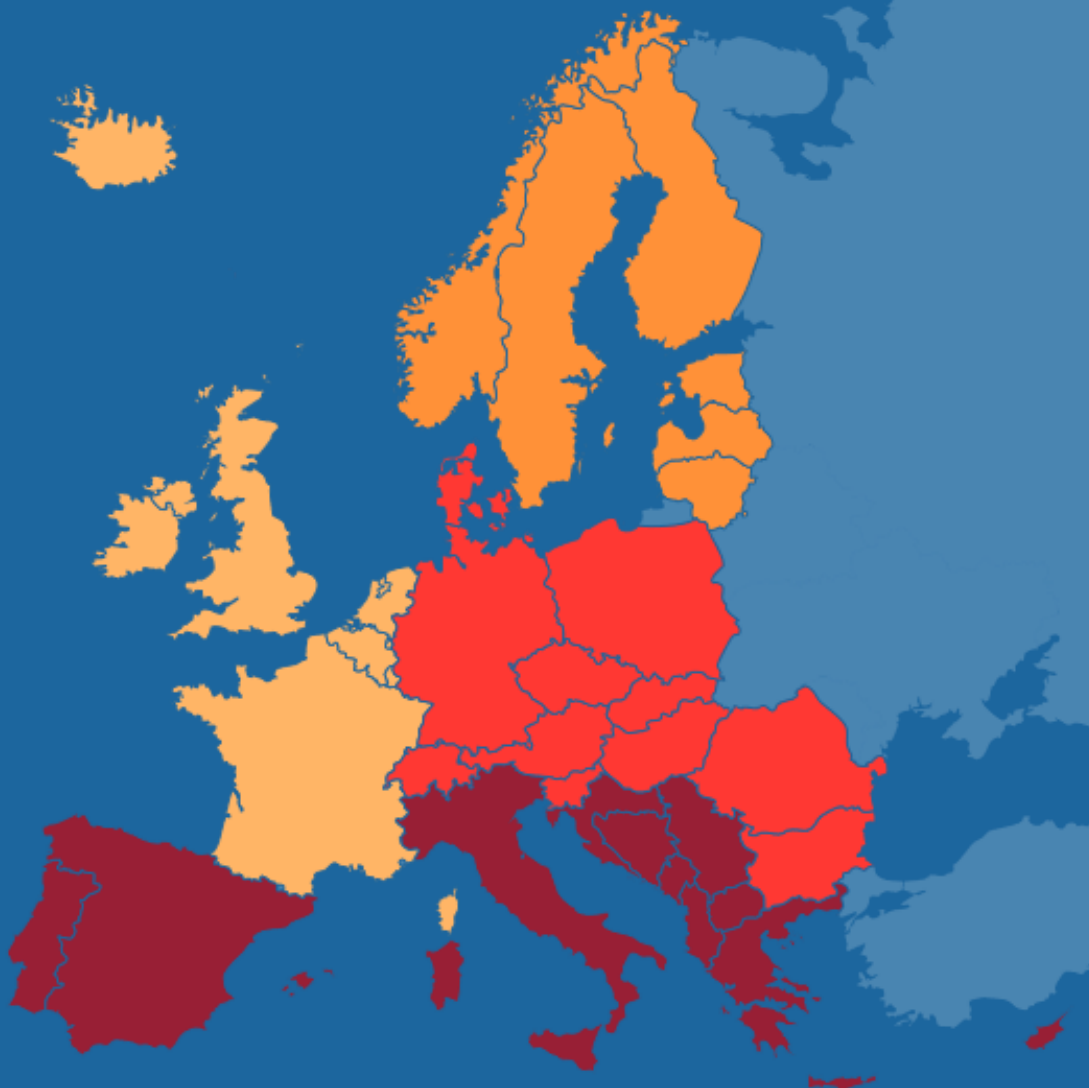
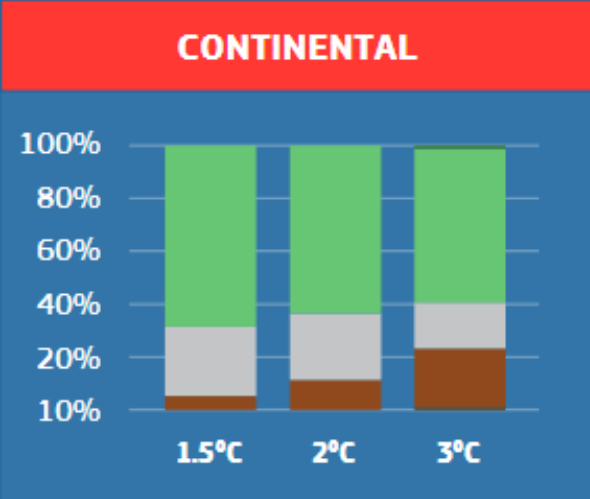
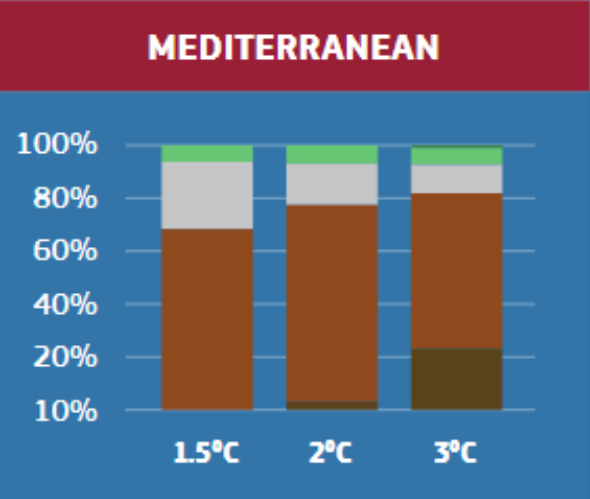
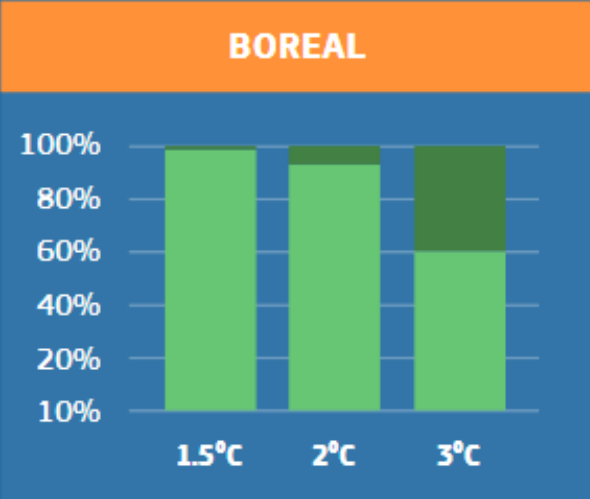
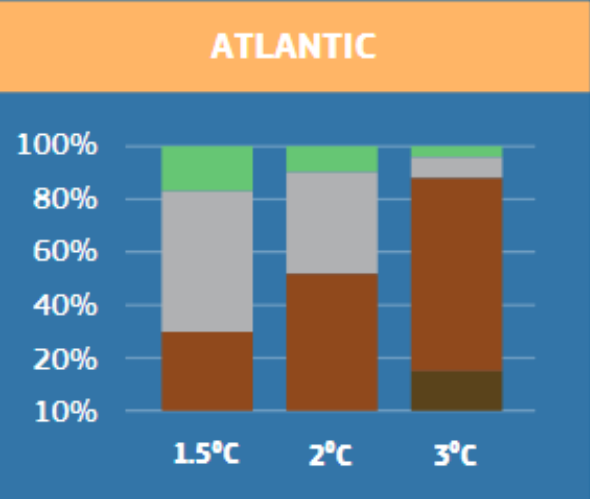
Frank Hammerschmidt/dpa via AP

Scott Bauer / Public domain

Have droughts increased?



Drought projections



Fraction (%) of area exposed per region

- Doubling in frequency
- Increase in frequency
- Uncertain change
- Halving in frequency
- Decrease in frequency

Modified from IPCC

Managing drought risk

Climate extremes

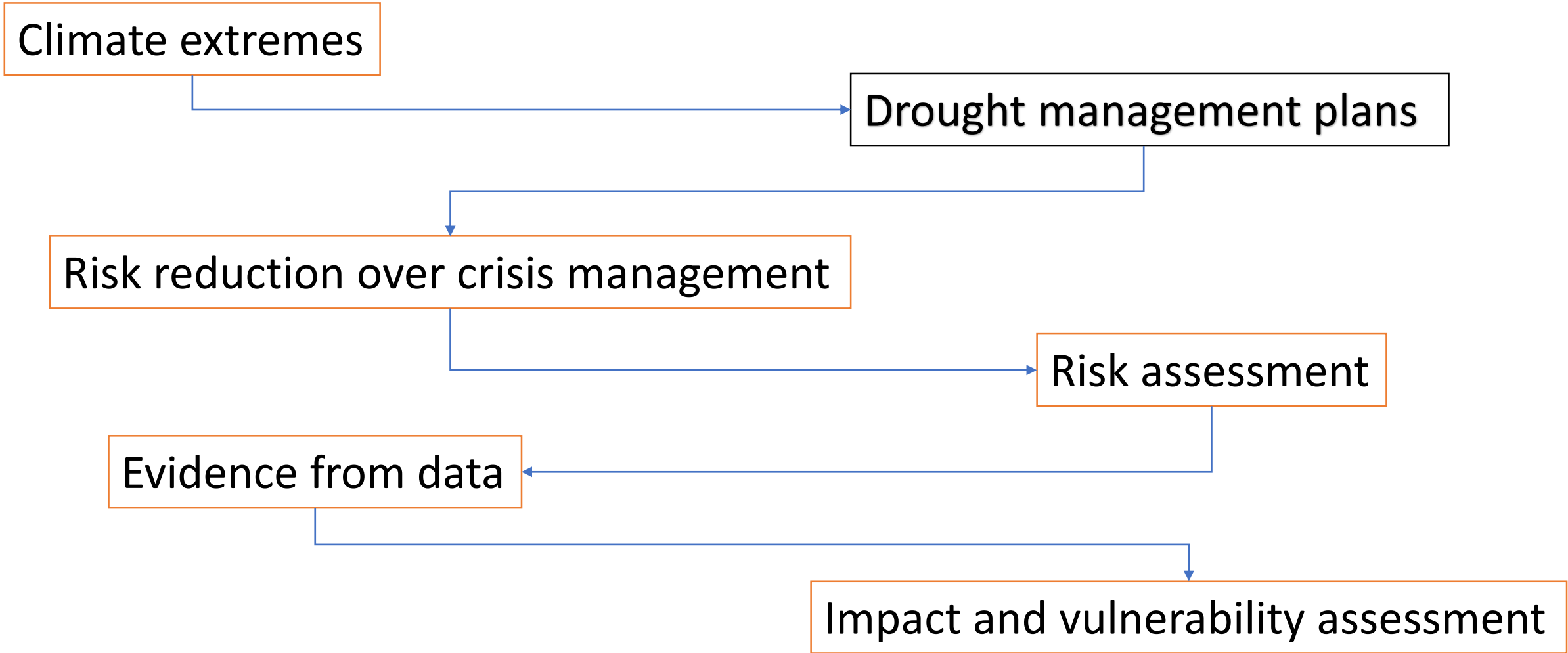
Drought management plans

Risk reduction over crisis management

Risk assessment

Evidence from data

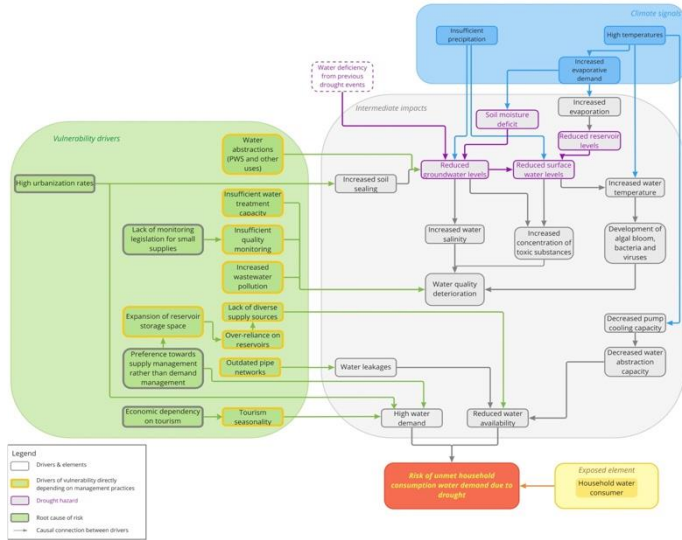
Impact and vulnerability assessment



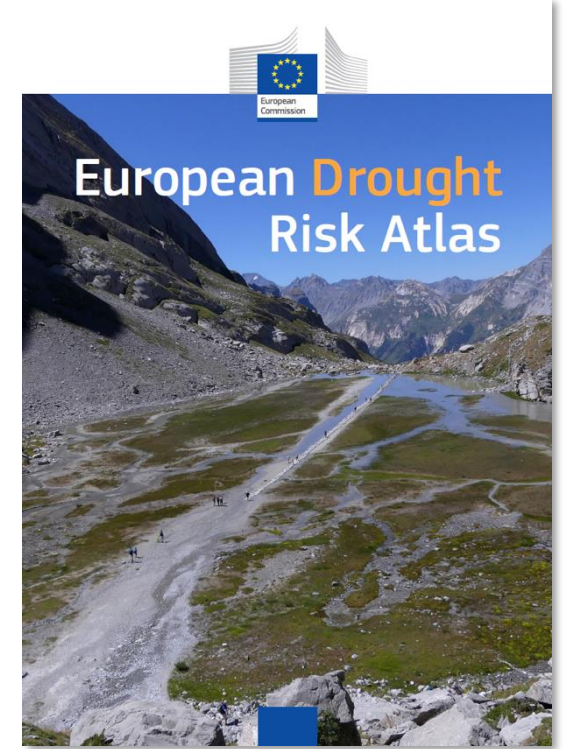
Drought risk atlas

Conceptual models +

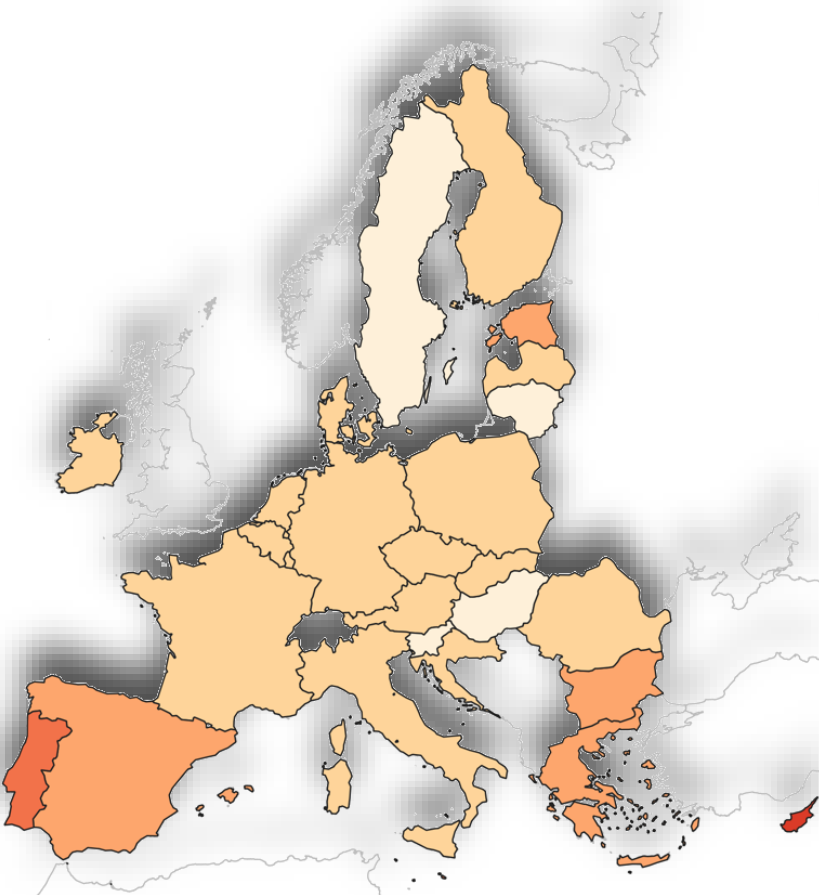
Impact-based data-driven analysis = European Drought Risk Atlas



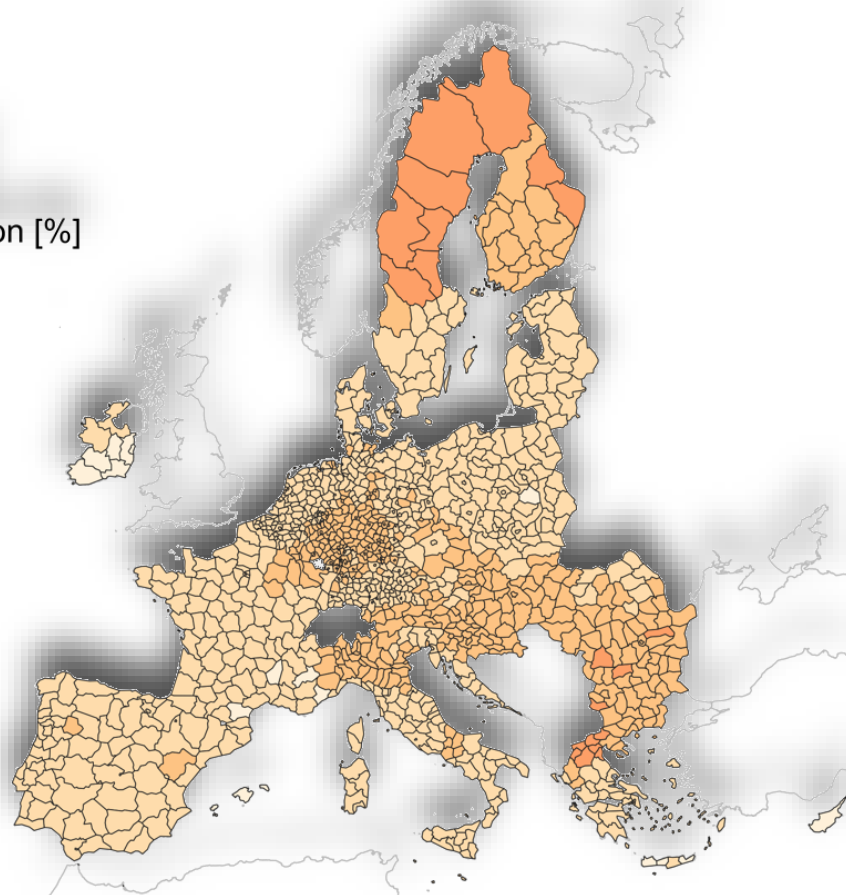
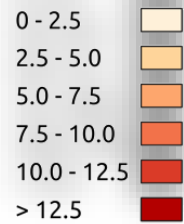
MACHINE LEARNING



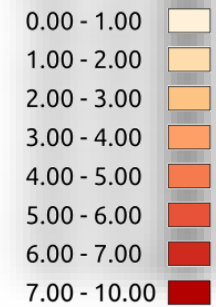
Current drought risk



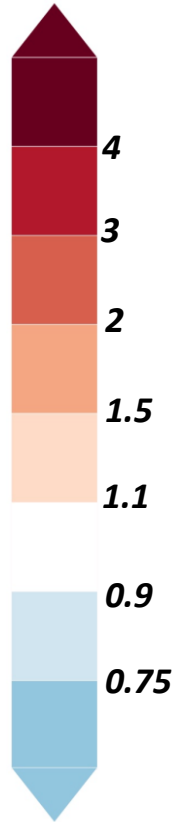
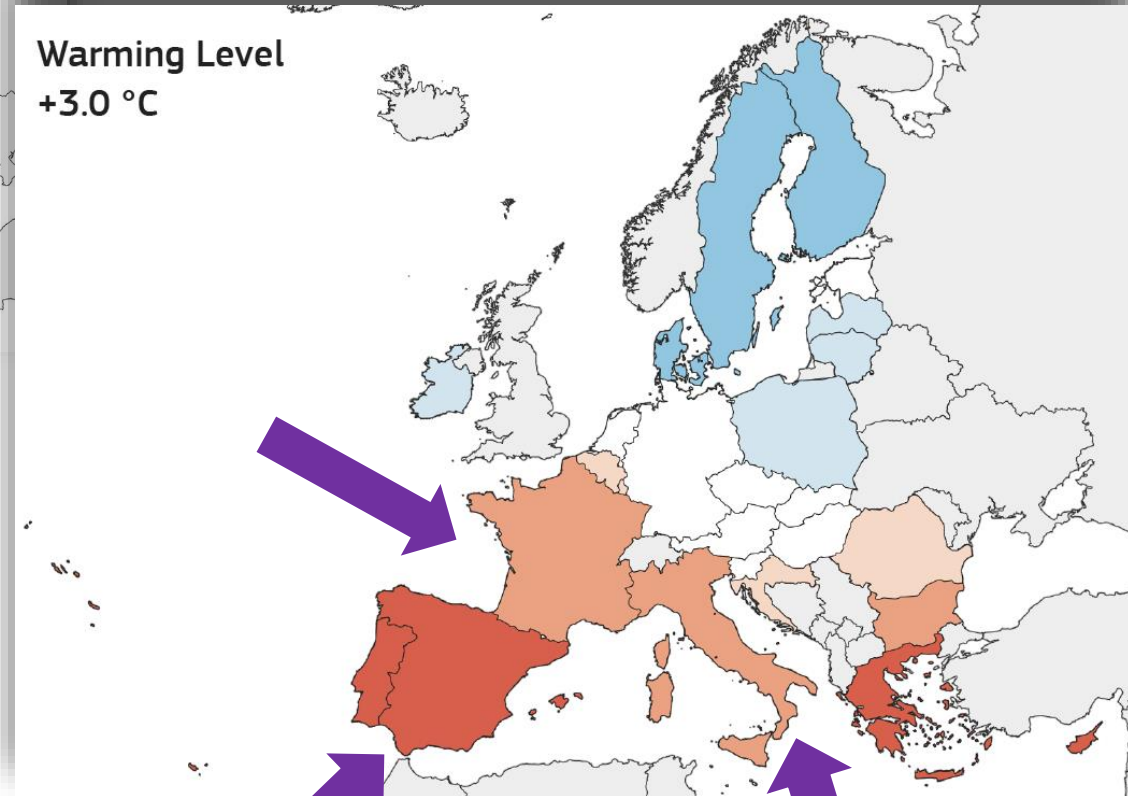
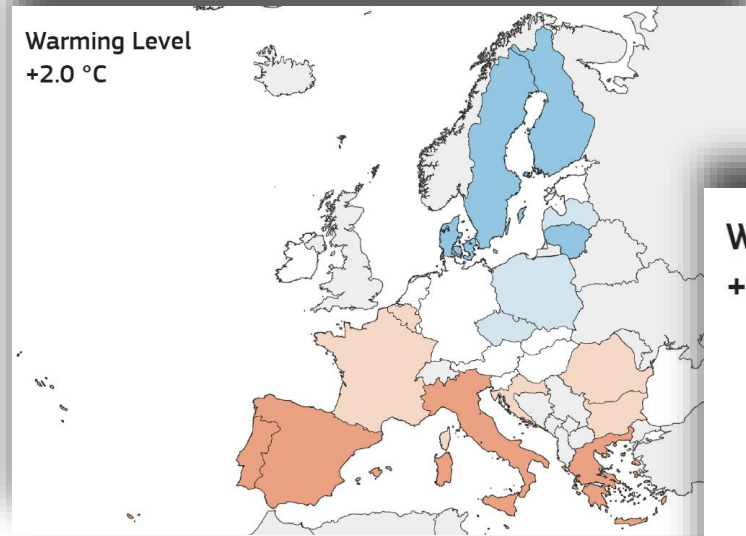
Energy - Hydropower
Average Annual Loss
Reduction in production [%]



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

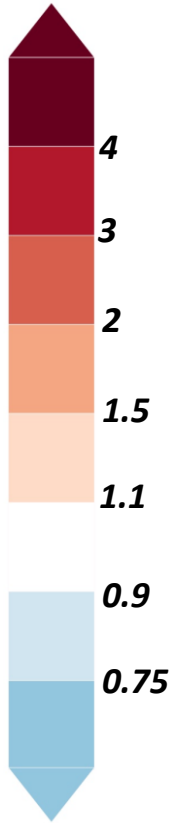


Hydropower - drought risk

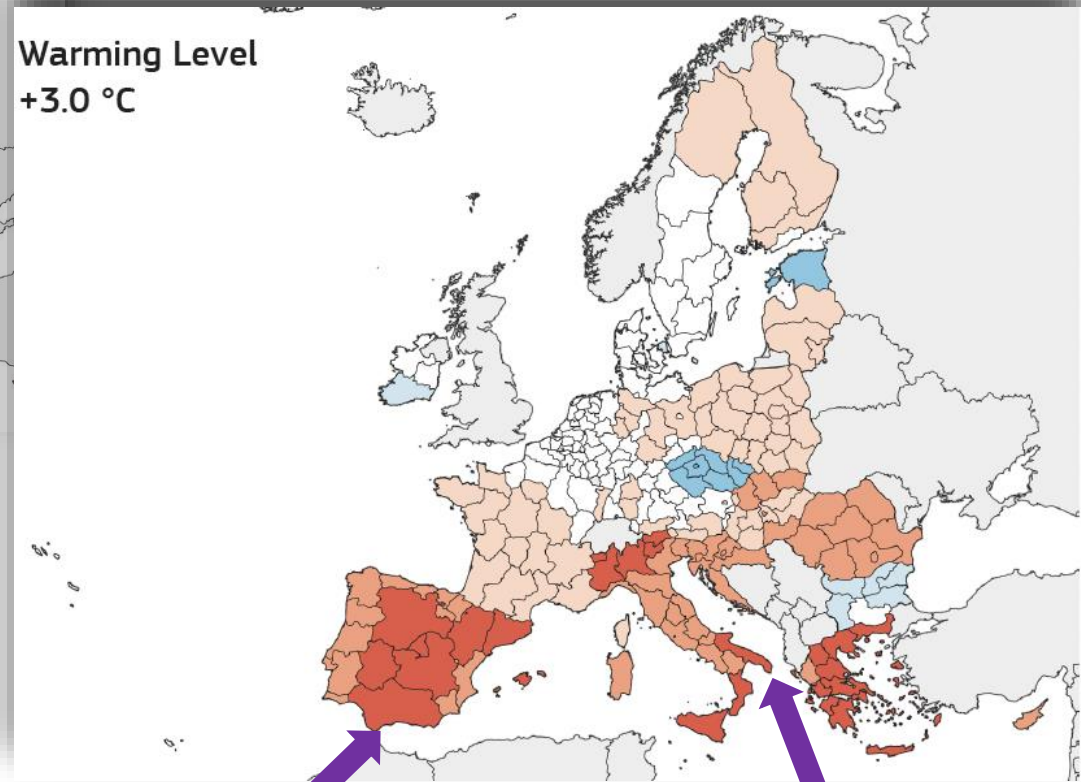
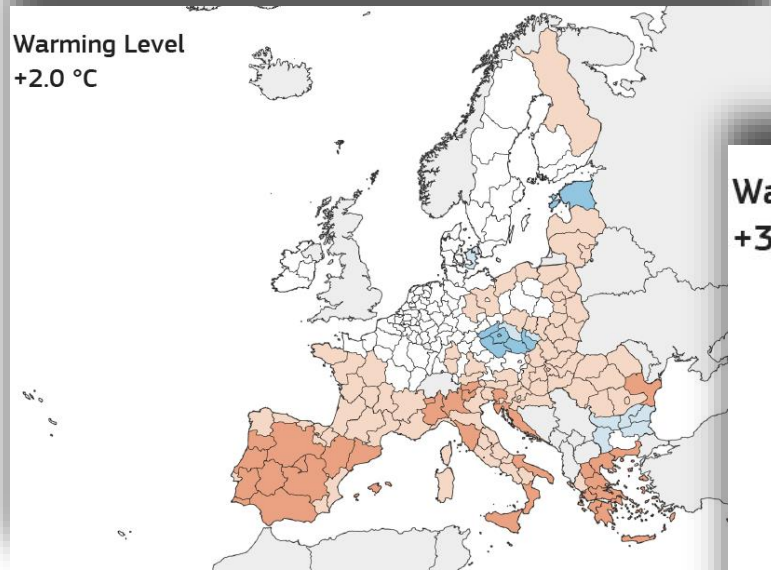


CL = Current Losses

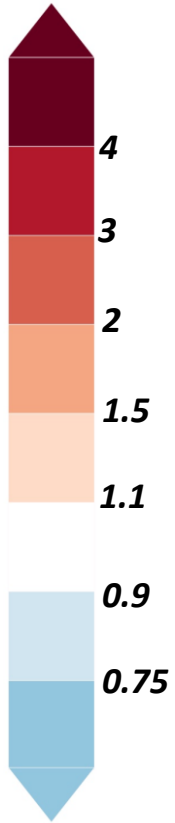
Public water supply - drought risk



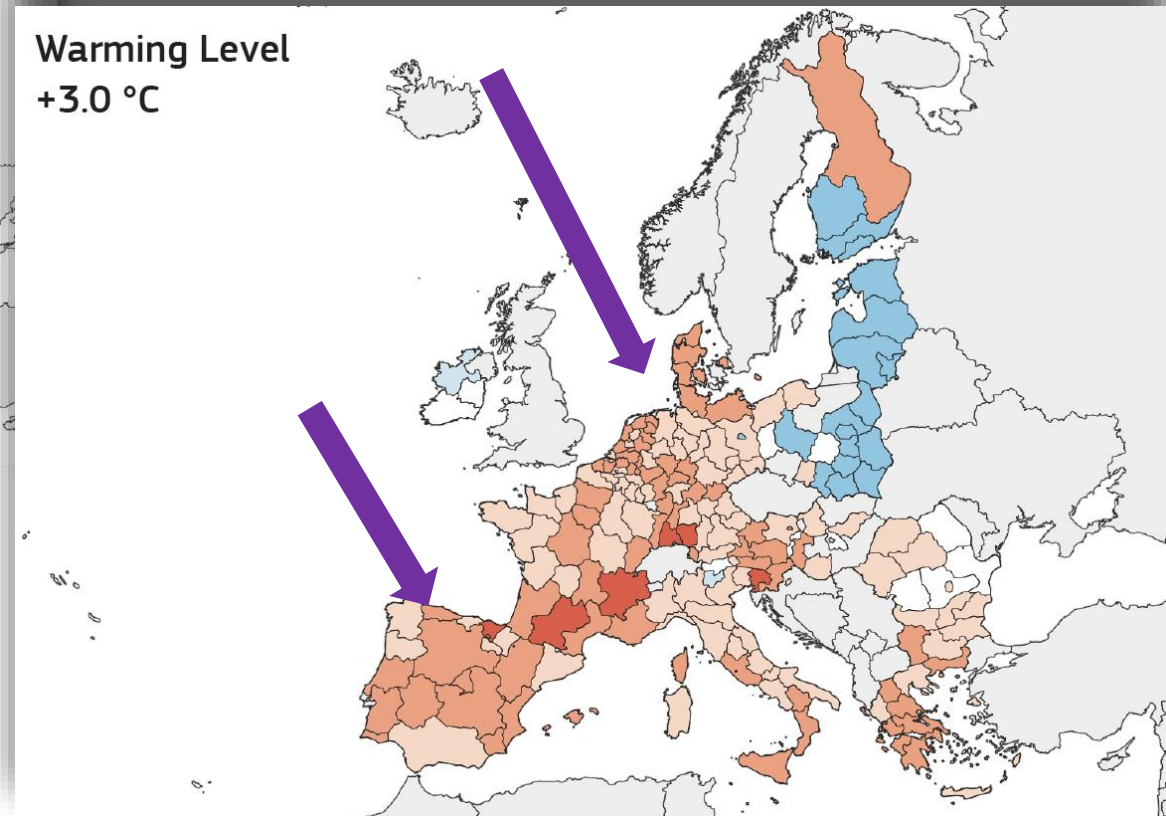
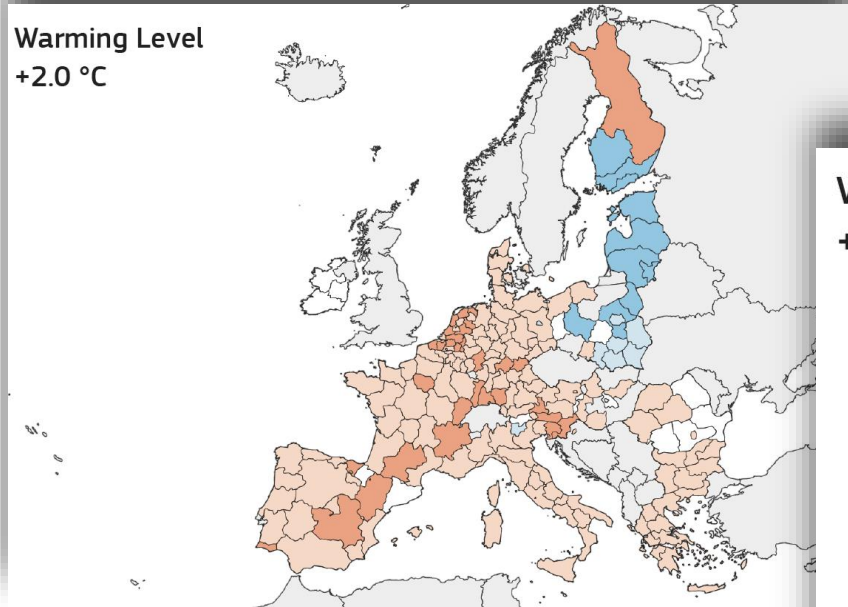
CL = Current Losses



Agriculture (wheat) - drought risk



CL = Current Losses



→ 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*

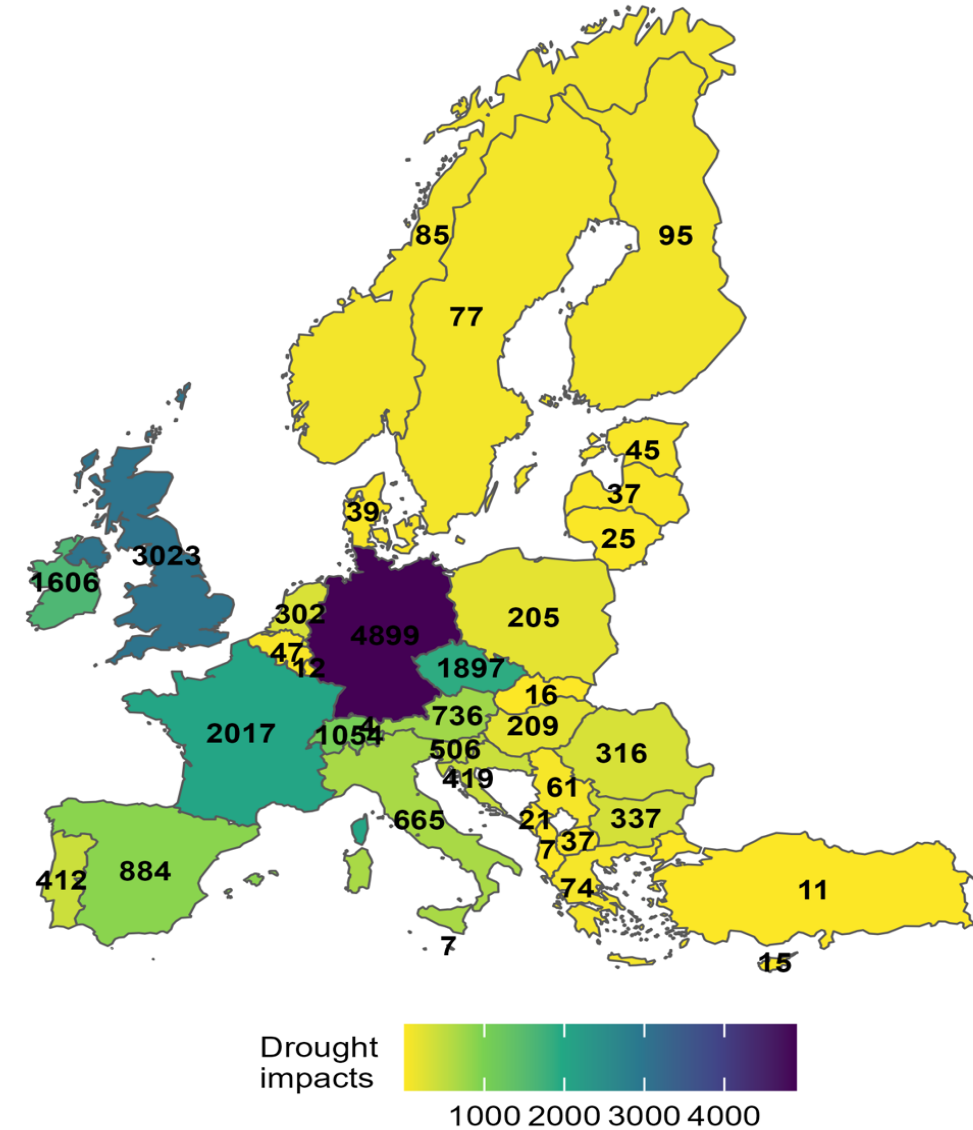
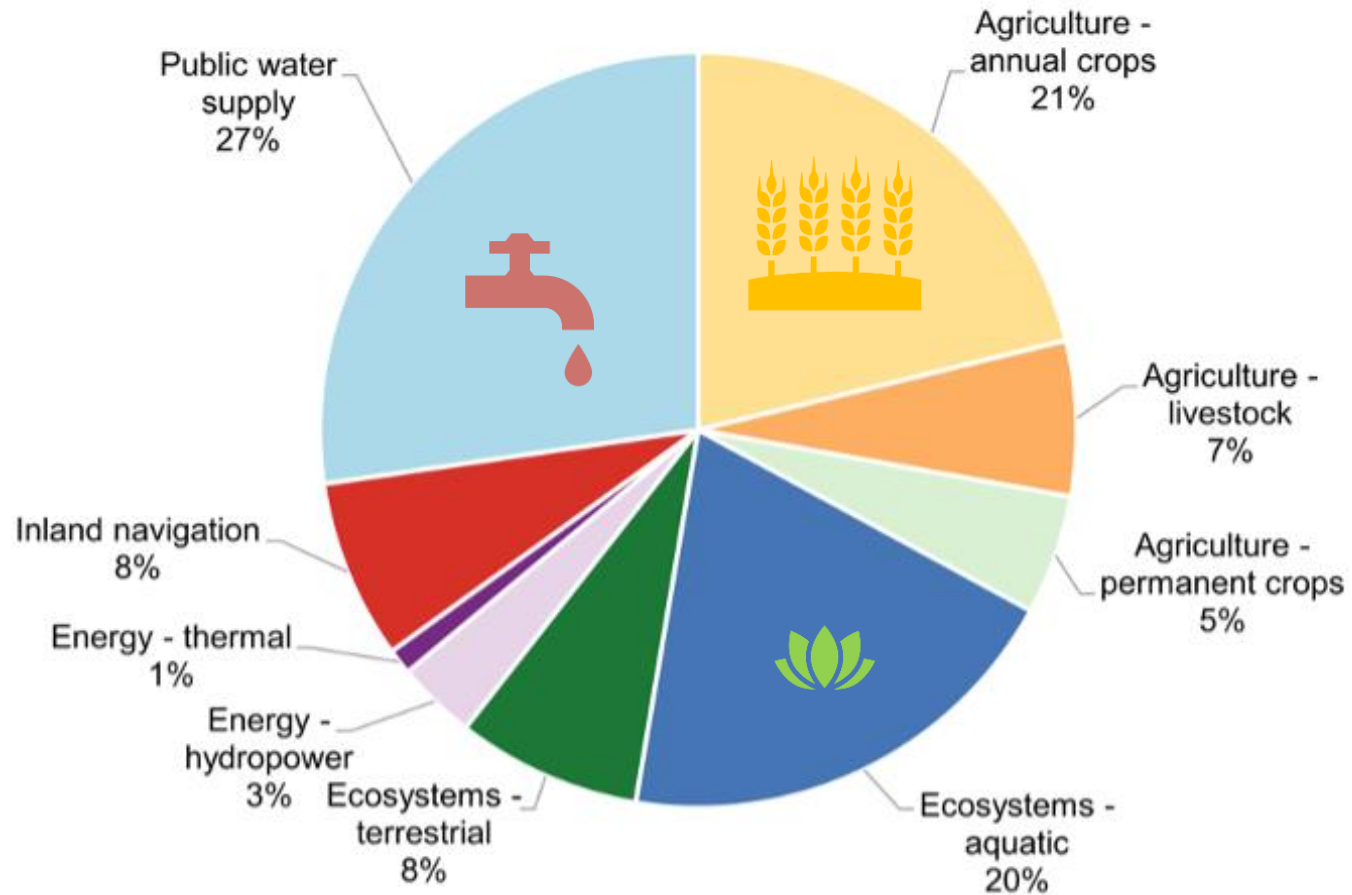
Varying risk scenarios. In some
areas of **Northern Europe changes**



Mediterranean
*Increase in drought risk in all
sectors & ecosystems*

*Regional **HOTSPOTS**
per sector emerge*

Drought impacts are... not available



Collecting & sharing data on impacts

Filters Panel:

- Textual Search: Start writing something
- From (*): 01/06/2018
- To (*): 30/09/2018
- Filter by area of interest: Draw a rectangle on the map
- Sector/System: -
- Severity Level: 1 - Moderate, 2 - Severe, 3 - Extreme
- Hazard Event: -
- Source Type: -
- Validation Status: -
- System specific attributes (ASSA)
- QSEARCH

Date	System	Description	Severity	Status
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	slight increase of significantly damaged trees, about 3% to a share of 29%. A distinct increase of the damage level was ...	1	●
01/06/2018 - 30/06/2018	Ecosystems - terrestrial	The secondary growth of spruces stopped between mid-june and mid-july....	1	●
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	from july on, the decolouring and early dropping of leaves started due to the drought stress....	2	●
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	reduced secondary growth, tue to the hot and dry summer. At the end of october there had been an estimated growth reduct...	1	●

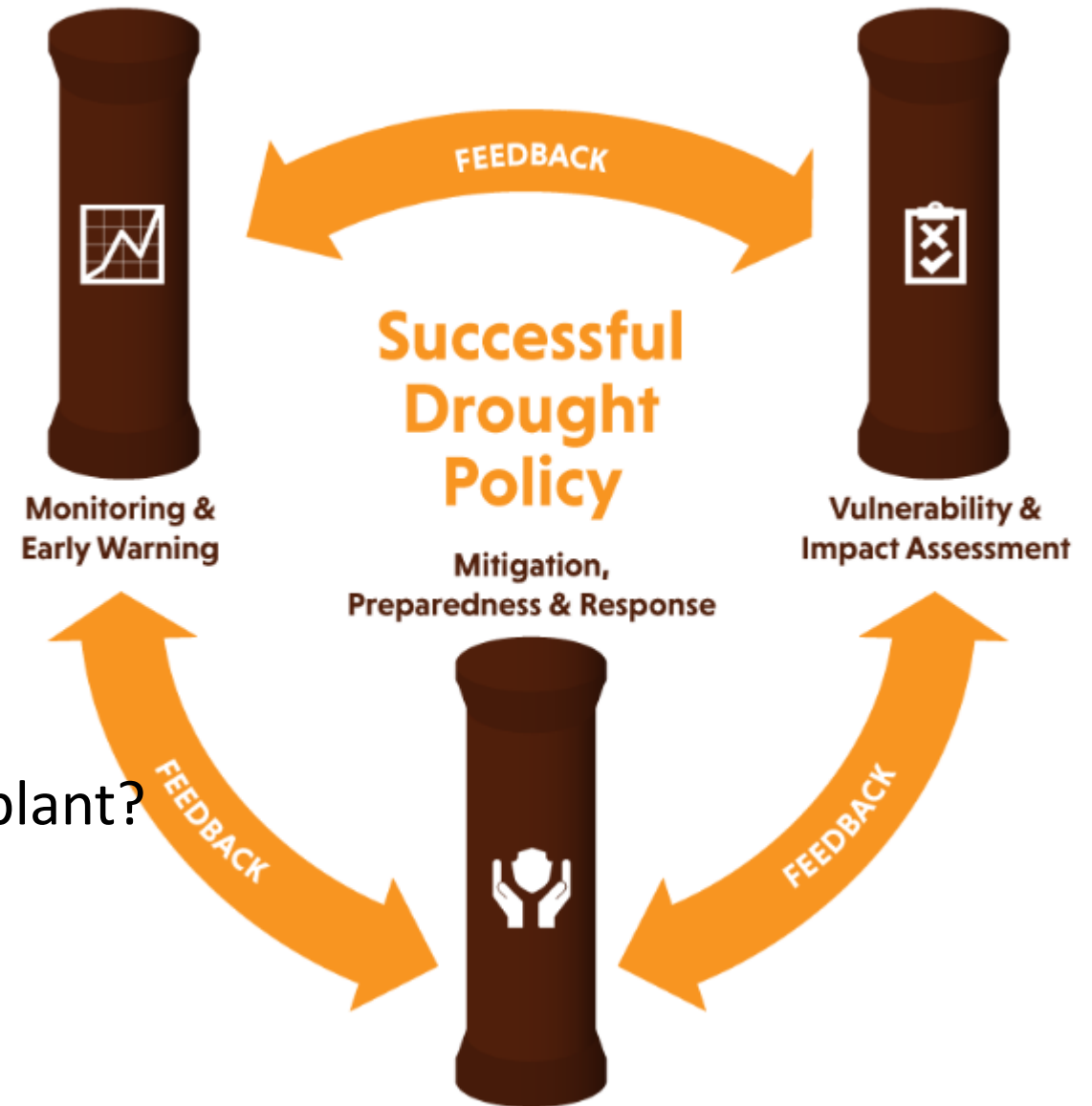
Map: Europe map showing impact locations. Legend: Red intensifies with overlapping records. No hazard event selected.

EDID

<http://edid-test.eu>

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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