

Increasing flood resilience in the Jucar River Basin District

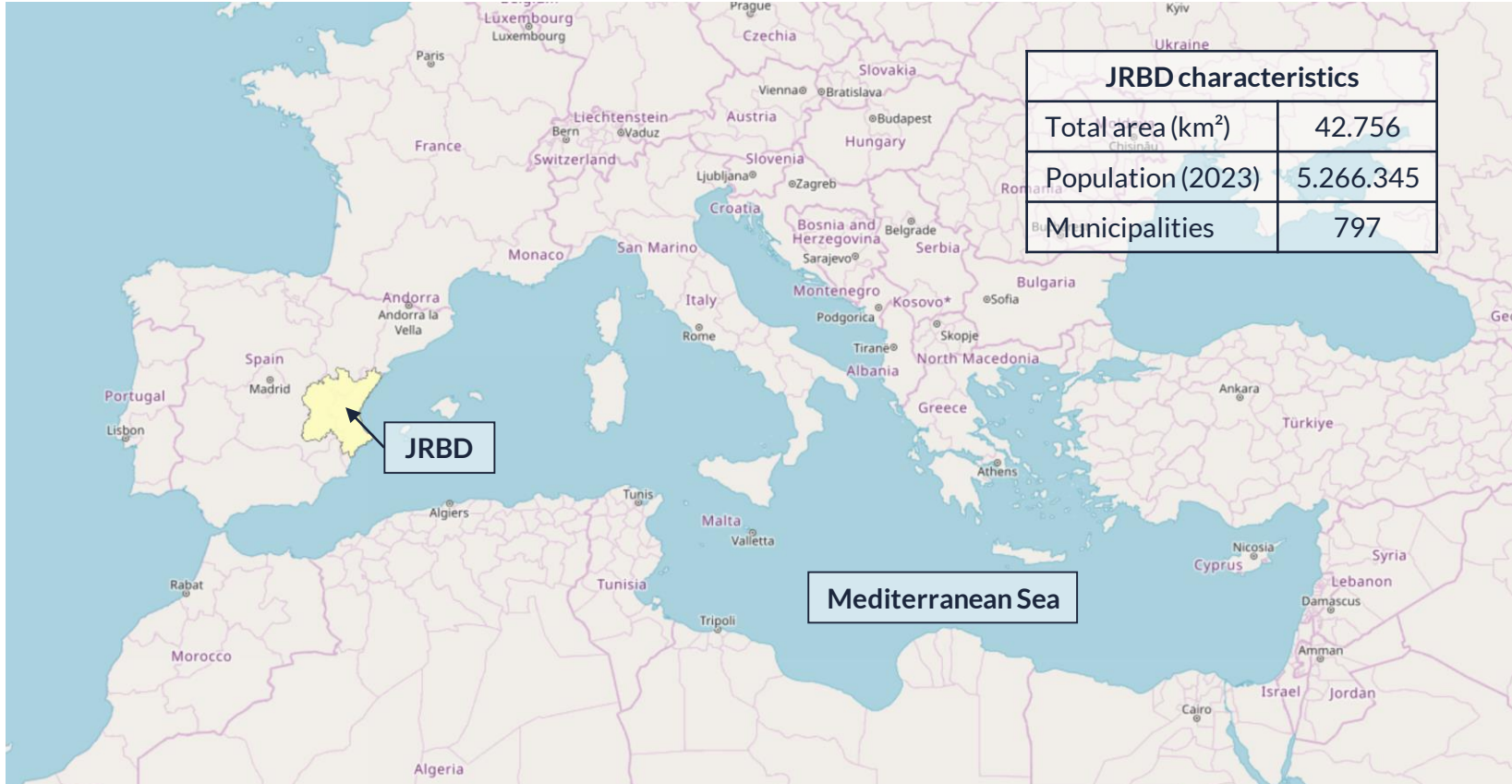
EURO-INBO International Conference in Parma (2025)

Clara Estrela Segrelles, Jucar River Basin Authority (Spain)





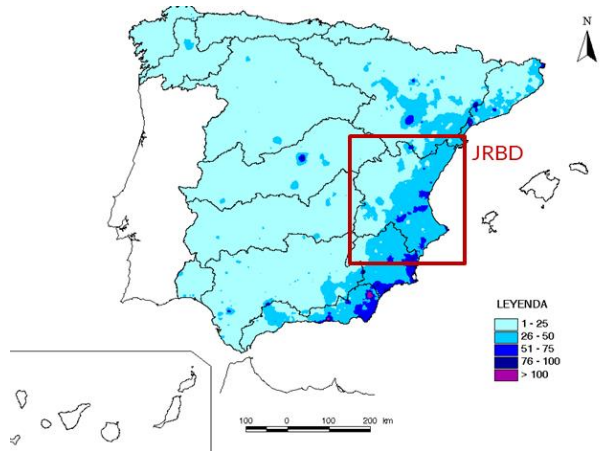
Jucar River Basin District



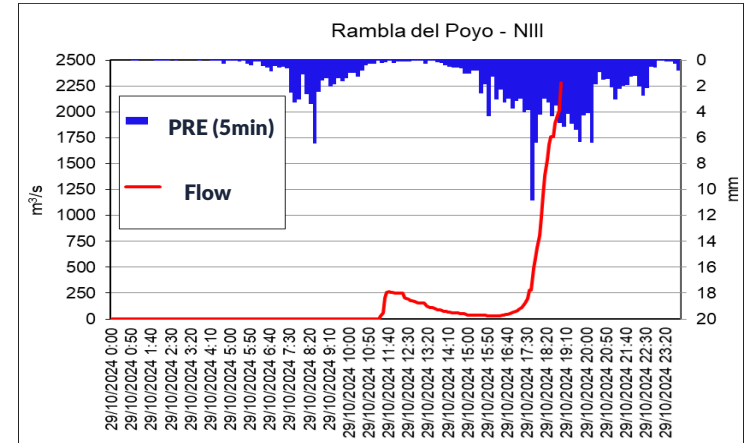


Floods in the Jucar River Basin District

- Maximum daily P greater than annual mean P in some Mediterranean areas.
- Disproportion between ordinary and extraordinary flood flows.
- Intense rainfall over a short period of time can cause flash floods → Short time to react.



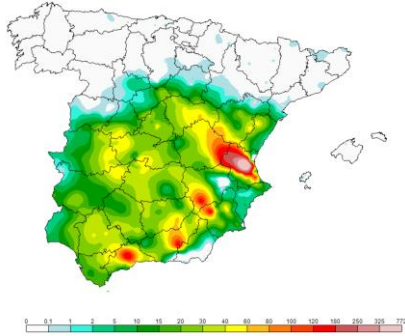
Ratio (%) between daily maximum P and annual mean P



Hyetograph and hydrograph in Poyo Ravine



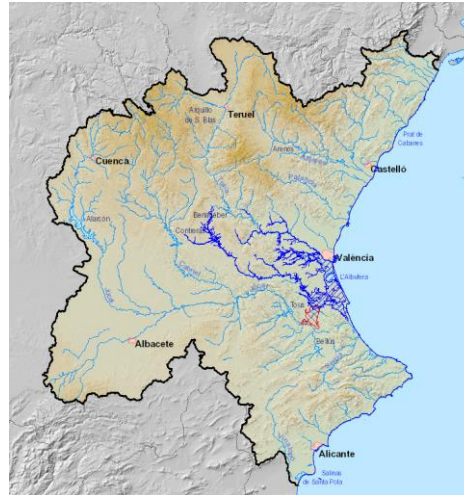
2024 october 29th episode



Rainfall on 29 October in Spain (mm). Source data: AEMET



Chiva



Flooded area (400 km²)



Flood levels greater than 2 – 3 m in height

- Very high flow velocities in the headwaters of river basins
- Urbanization and linear infrastructures have significantly affected the development of flooding
- Major changes in river morphology
- Sediments play an important role
- 18 billion euros economic impact and 235 casualties



How can we reduce flood risk?

RISK = EXPOSURE x VULNERABILITY x HAZARD



**URBAN SETTLEMENT
LIMITATIONS IN
FLOOD AREAS**



**IMPROVE
INFORMATION AND
INCREASE SOCIAL
AWARENESS**



**INFRASTRUCTURE
AND NATURE BASED
SOLUTION ACTIONS**

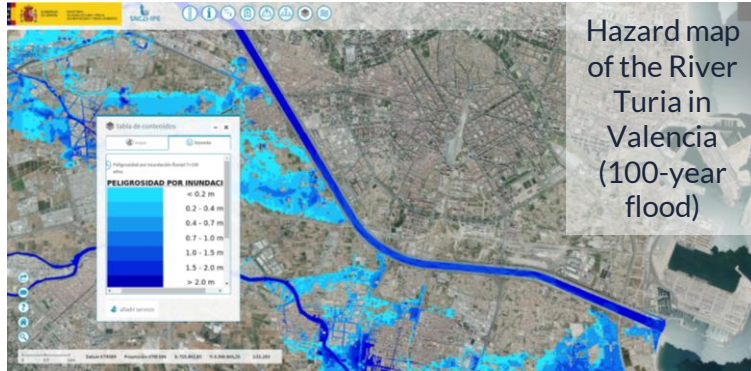
ZERO RISK DOES NOT EXIST



Vulnerability reduction

Increase knowledge and preparedness

Review of flood hazard and risk mapping
and include sediments and vehicles
accumulation and transport in modelling



Hazard map
of the River
Turia in
Valencia
(100-year
flood)



Vehicles



Other elements

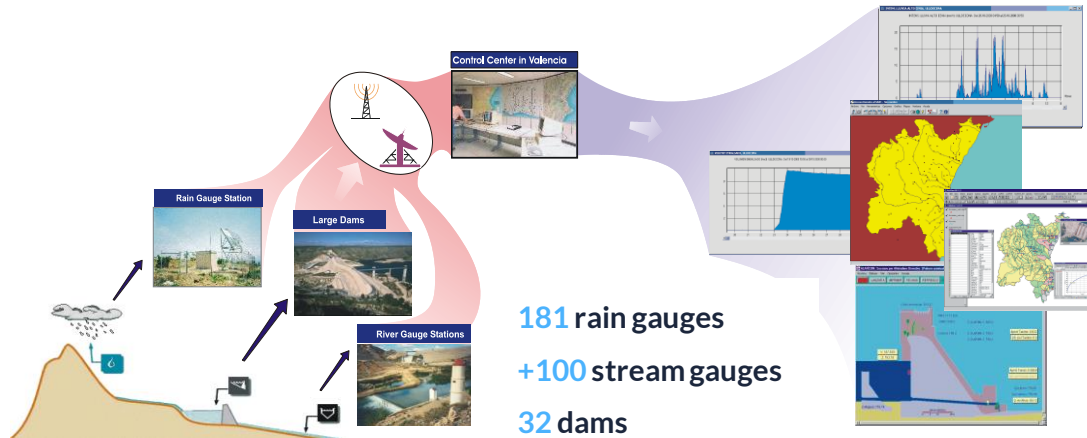


Erosion



Vulnerability reduction

Automatic Hydrological Information System (SAIH)



Real-time hydro-meteorological and hydraulic data information system

River basins with low response time:
weather forecasting and PRE

Monitoring:

- Technological improvement and increase in the number of radars.
- Increase the number of hydro-meteorological sensors
- New sensors: webcam

Forecasting (meteorological and hydrological models)

Warnings according to basin characteristics



PROGRAMME OF THE
EUROPEAN UNION



Rapid mapping / EFAS

COPERNICUS EMERGENCY MANAGEMENT SERVICE



On-Demand Mapping



Wildfires



Floods

EFAS / GLOFAS



Droughts



Exposure Mapping



Map viewer



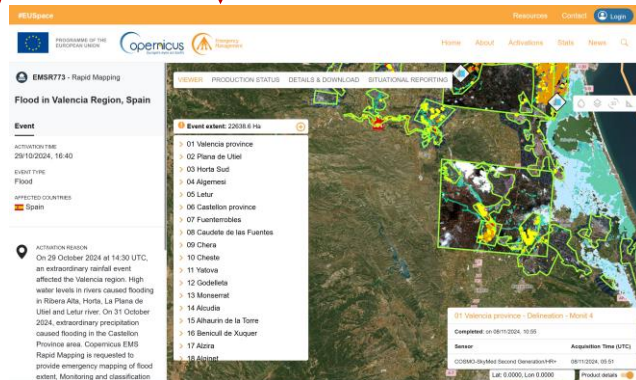
Data Access



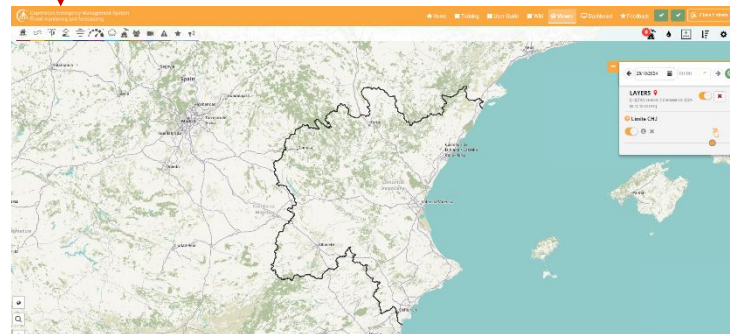
Training



Get in touch with
us



EMSR773 Situational Reporting

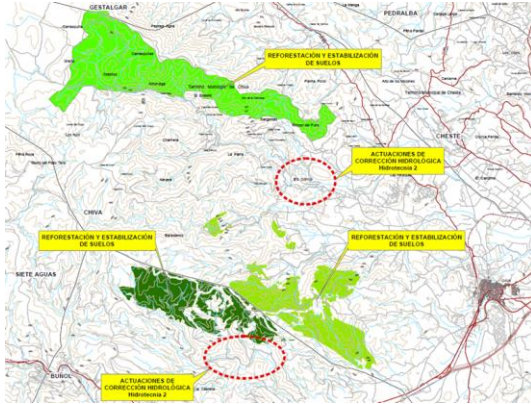




Hazard reduction: the importance of nature based solutions

Hydrological restoration and reforestation

Headwaters of river basins



Creation of controlled floodplain areas



Making room for the river



Compensation methods for affected landowners, other than expropriation



Conclusion

- Measures to reduce risk must address exposure, vulnerability, and hazard, being aware that zero risk does not exist.
- Review of flood hazard and risk mapping including new variables.
- Early warning systems must take into account the specificities of basins with short hydrological response times. The importance of weather forecasting and rainfall data.
- The implementation of nature-based solutions requires compensation mechanisms.
- Raising risk awareness among citizens is essential.



Thank you

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