

Lessons learnt from flash floods in Valencia, 2024

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hon Vice-President
ICOLD



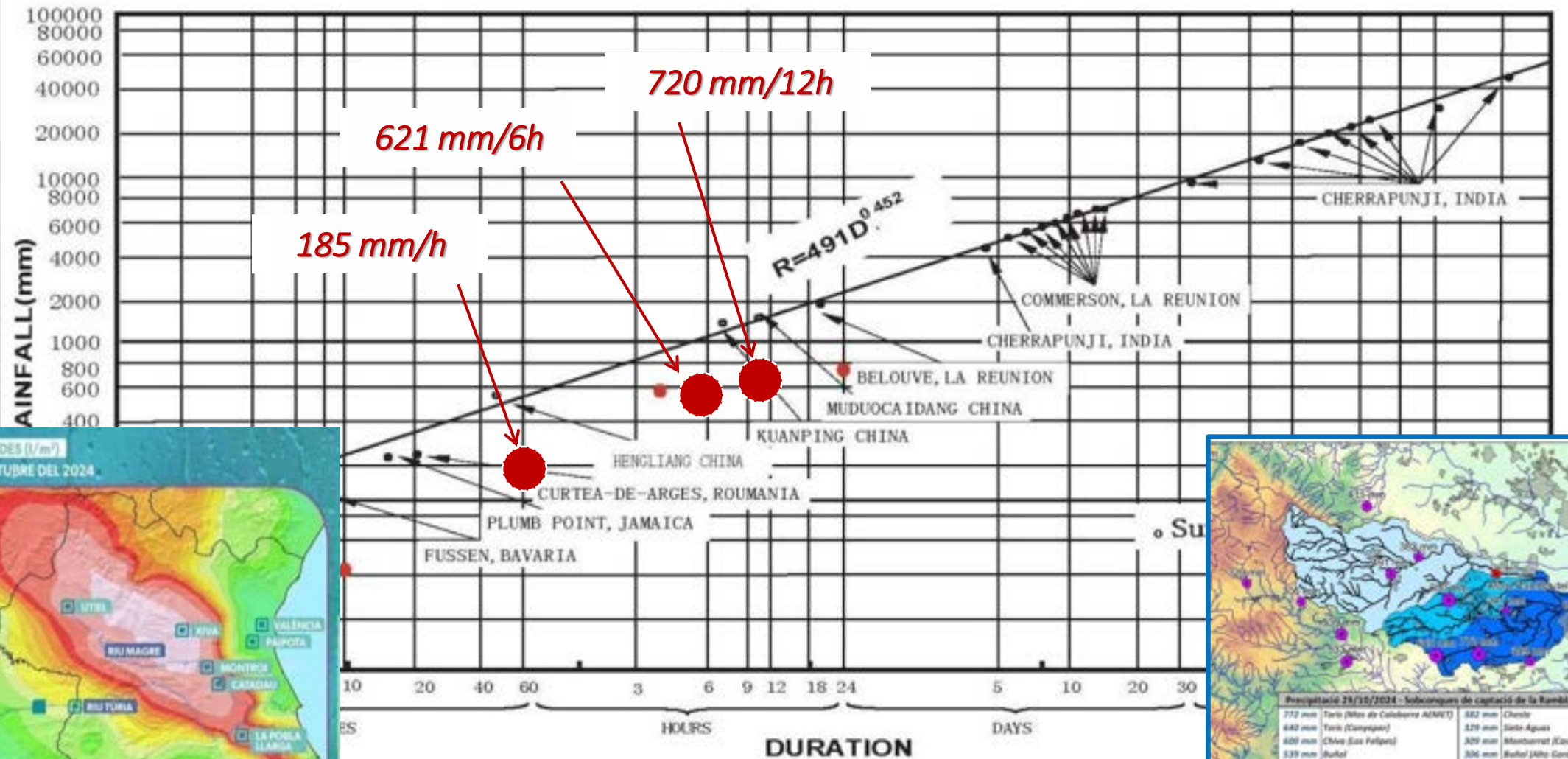
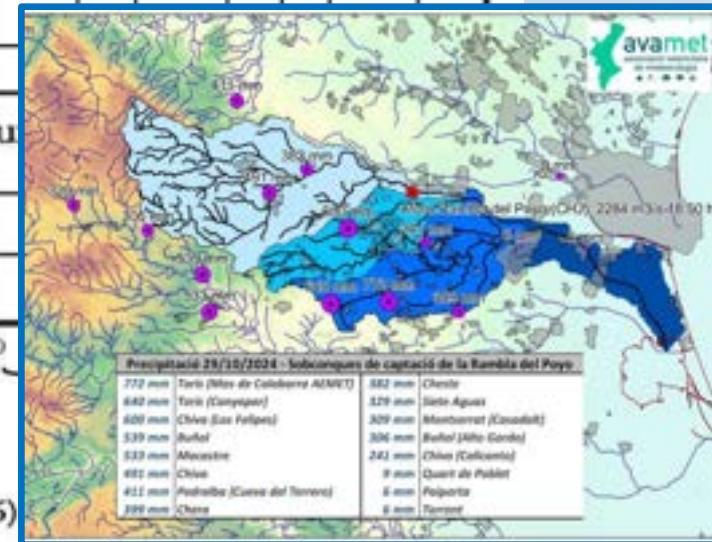
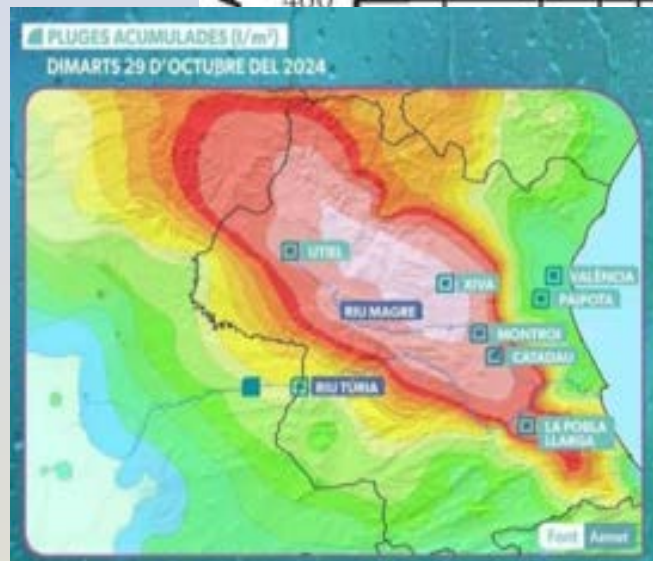
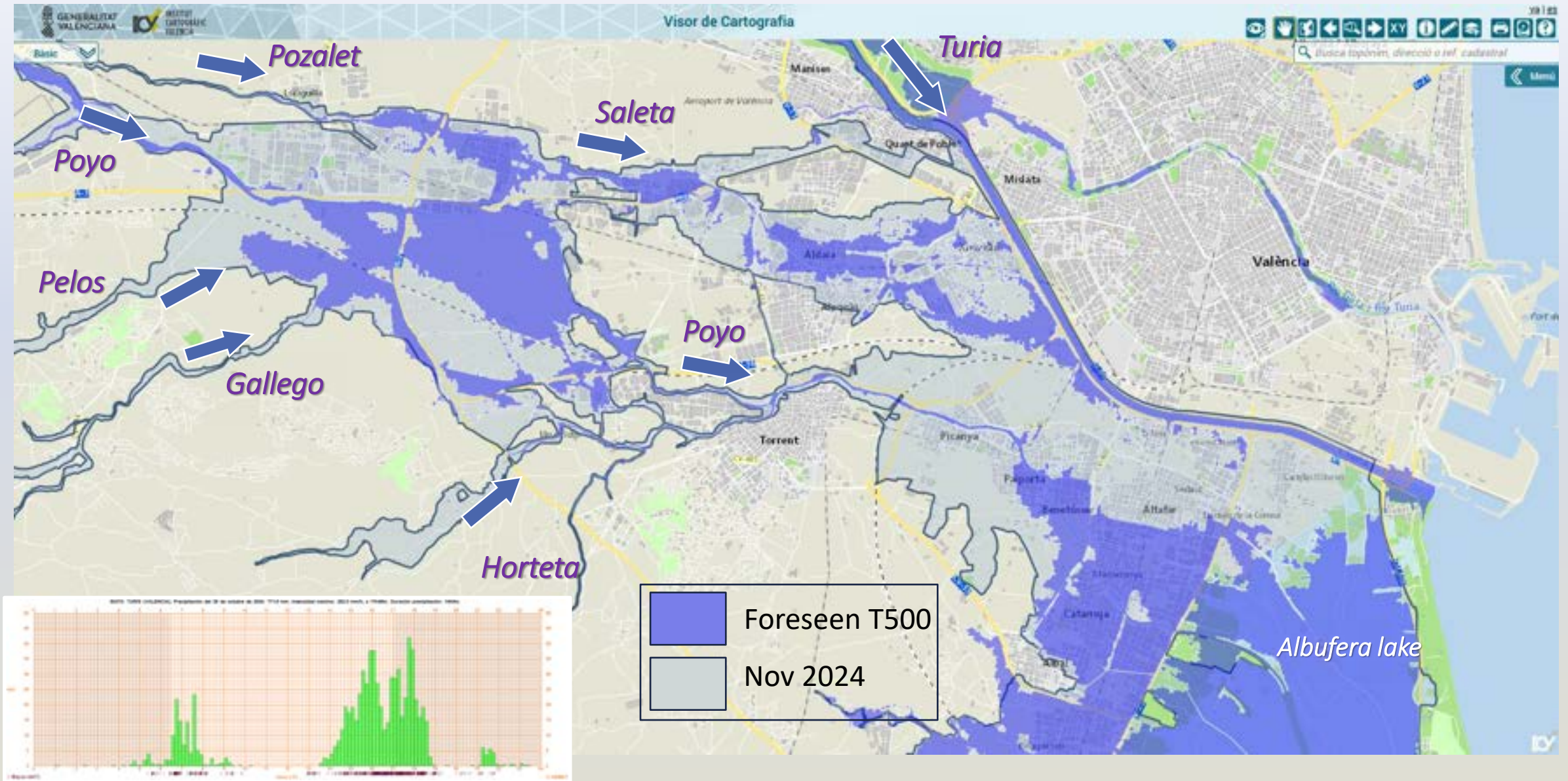
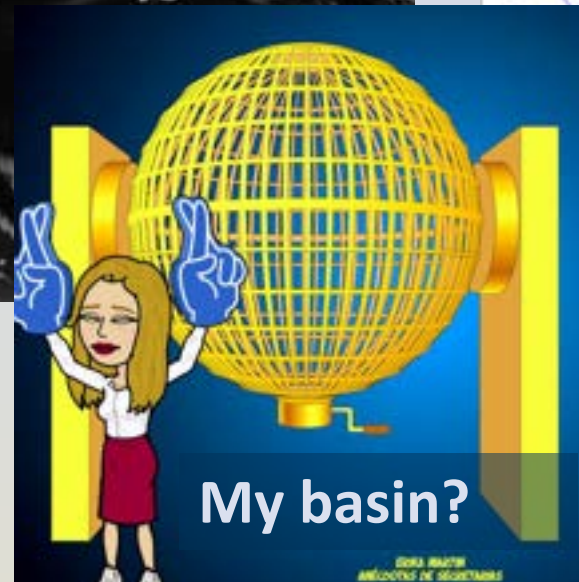
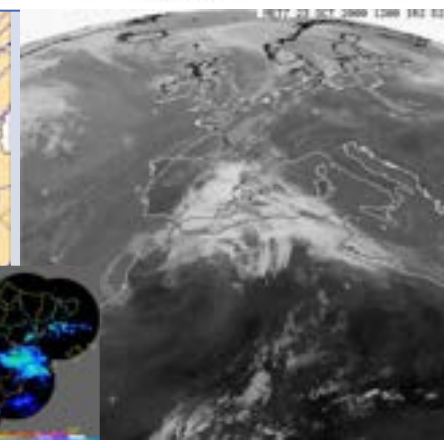
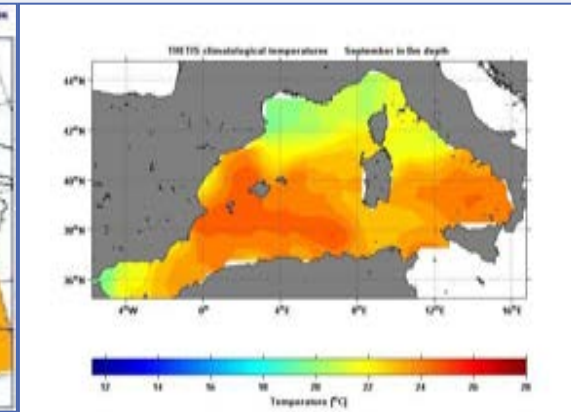
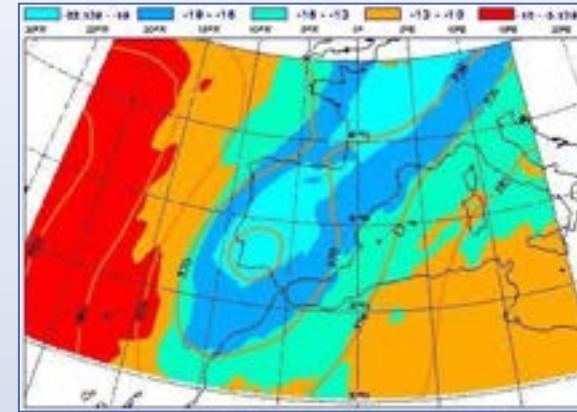
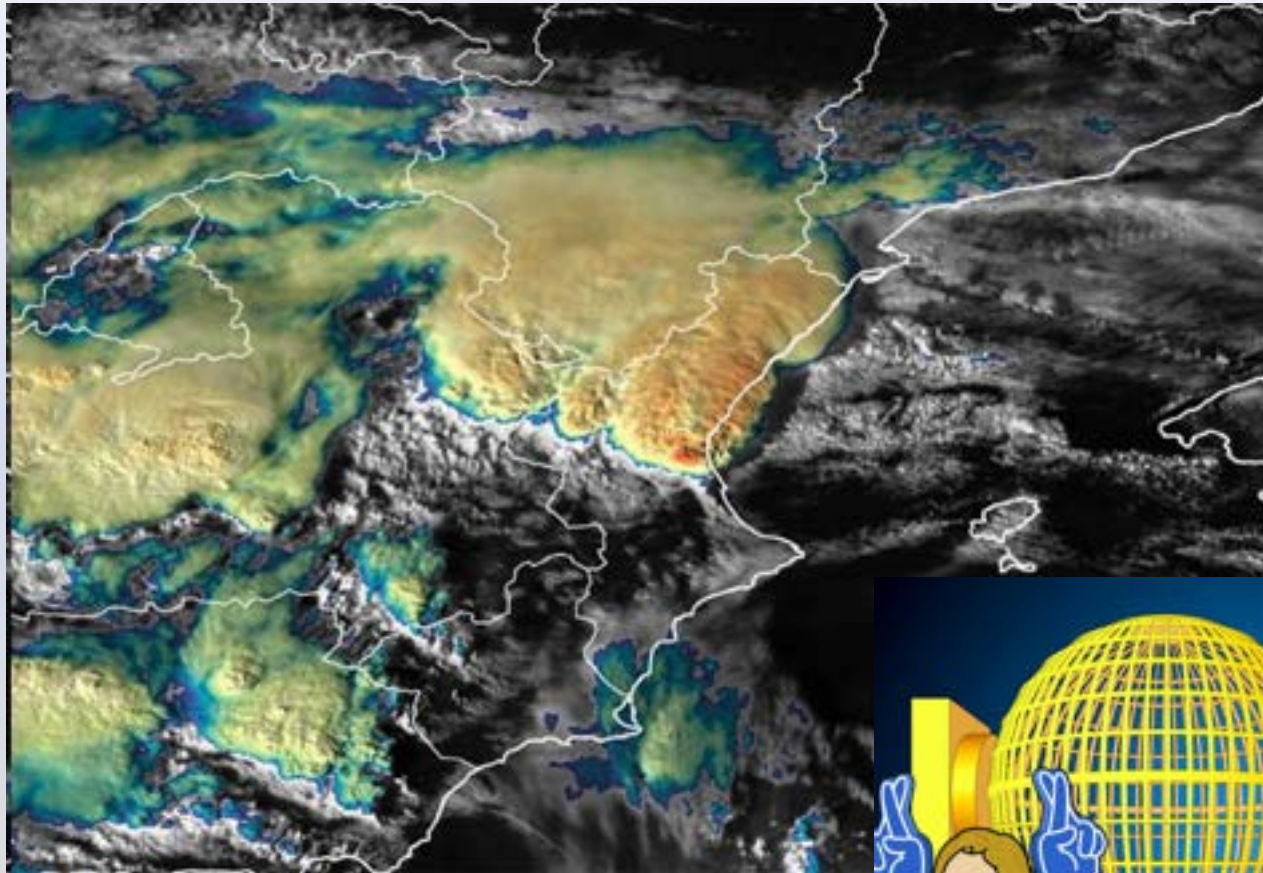


Figure A.2.1. World's greatest known point rainfalls (Wang G. and others, 2006)







the worst combination of factors

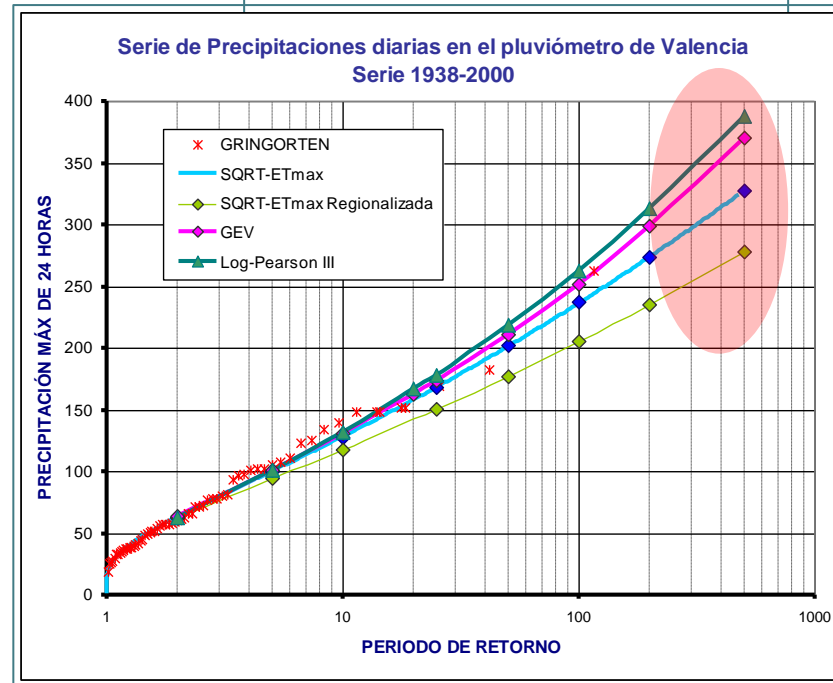
- ✓ Worst location of the low pressure
 - ✓ Strong wind from SE to NW
 - ✓ High temperature of the sea
 - ✓ High altitudes near the sea
- ✓ Isolate Depression at High Levels

Parametric distribution functions

1. GEV
2. Gumbel
3. Log Pearson II
4. SQRT-ET max



Old fashion ?



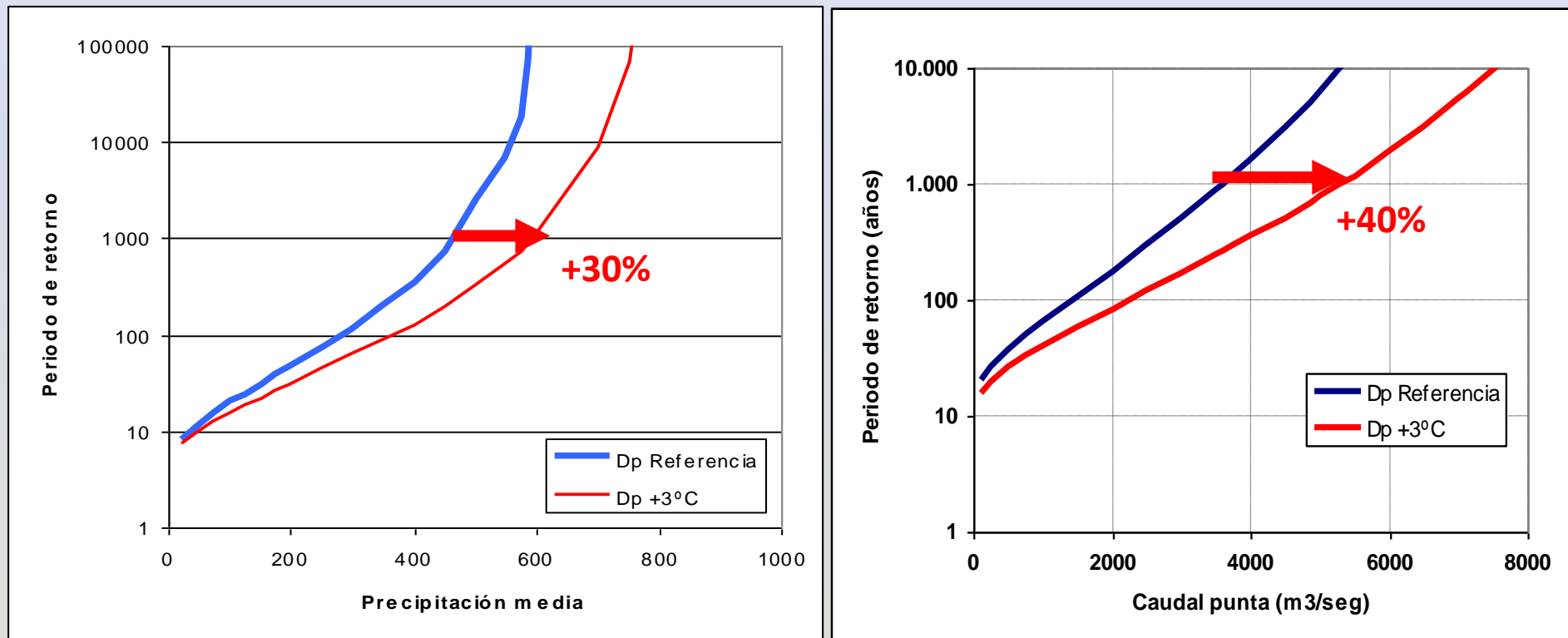
Daniel storm
Derna, Lybia, 2023

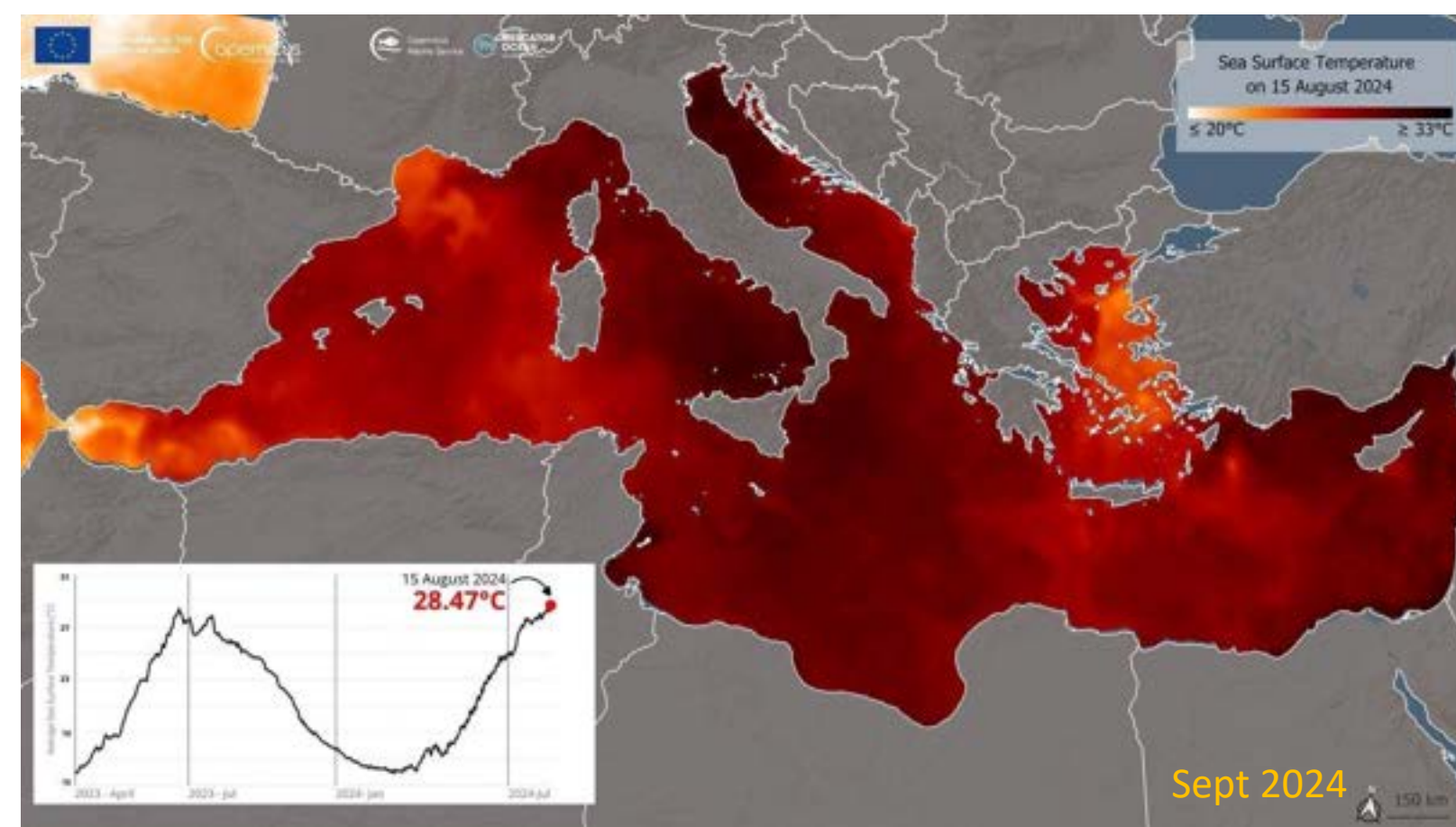


1 -Reviewing methodologies in hydrology is a must

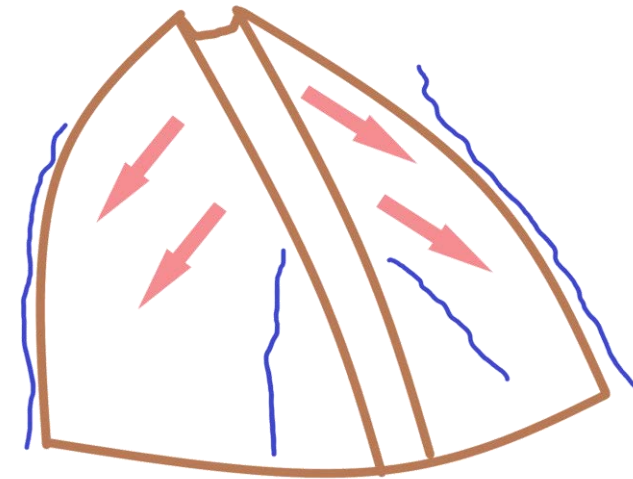
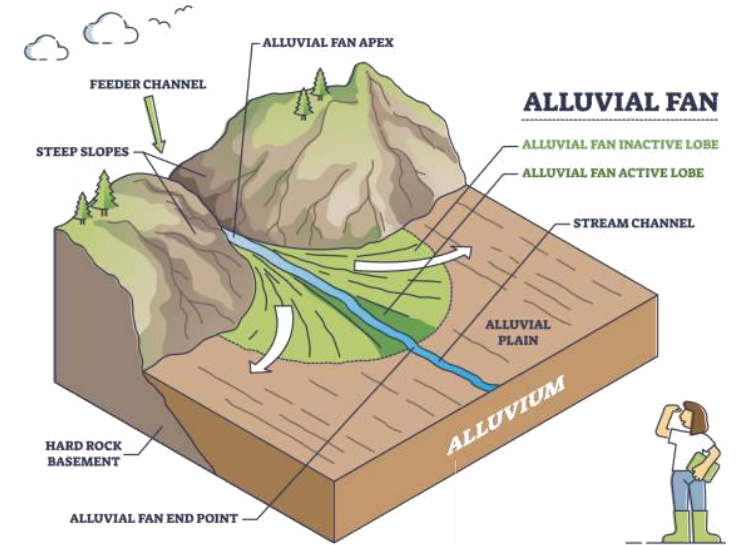
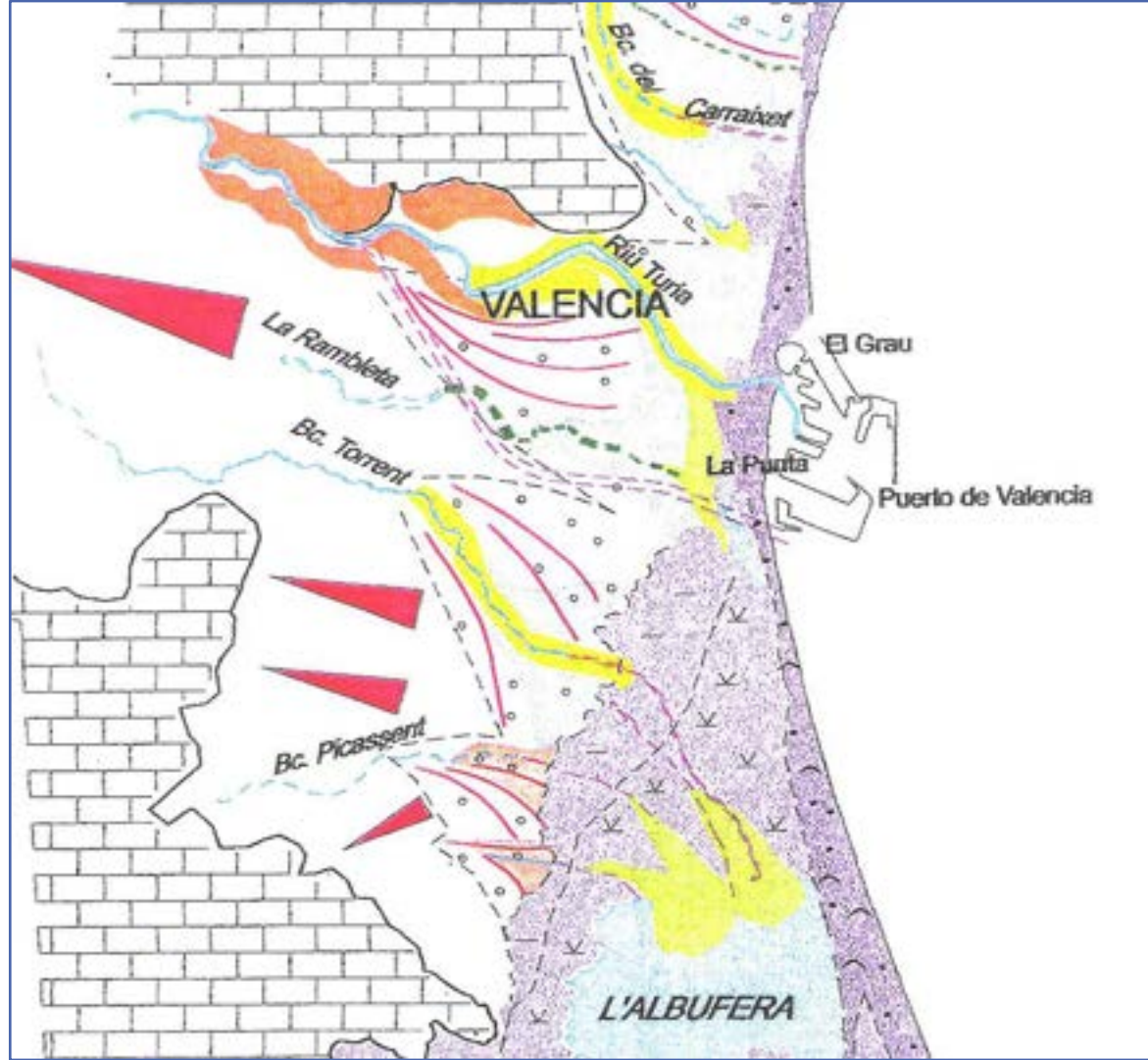
Effects of Climate Change

Remaining equal to the rest of the factors we can, by modifying the scale factor of the Beta function of rainfall distribution, evaluate the probability function of the expected dew in the basin at a different expected dew point.





2 – CC is and will be getting worse



3 – Be aware where are we settled

Land management

Despite policies aimed at reducing risk, potential flood damage is increasing (active and human) due to an usual fatal flaw in policy: the land behind the levees is no longer considered an official "floodplain" (very common)

Hazard creeping



New Orleans 1927

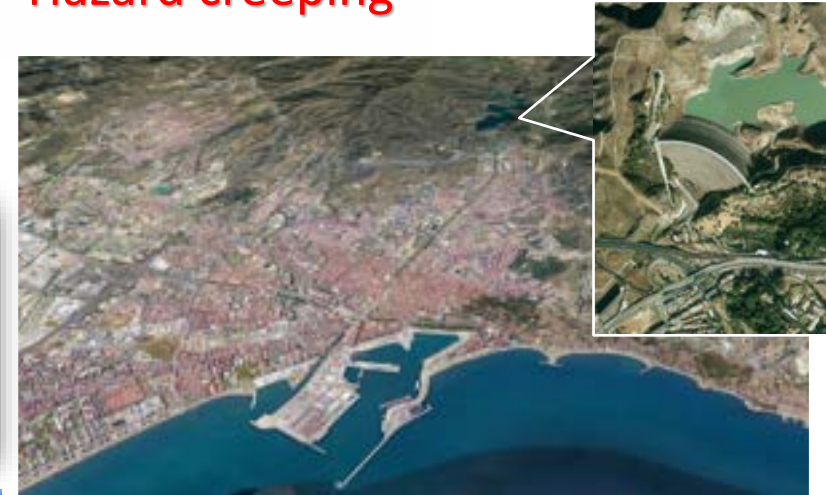
NOAA photo library



New Orleans 2005



Valencia 1970-2024



Málaga 2018

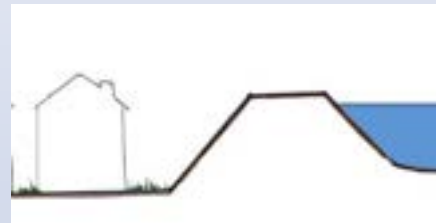
4 - Blind hazard creeping vs development under non-zero risk



Experience



Trust in structures



Media



Misunderstanding terminology

"100-year flood?"

Trust in administration



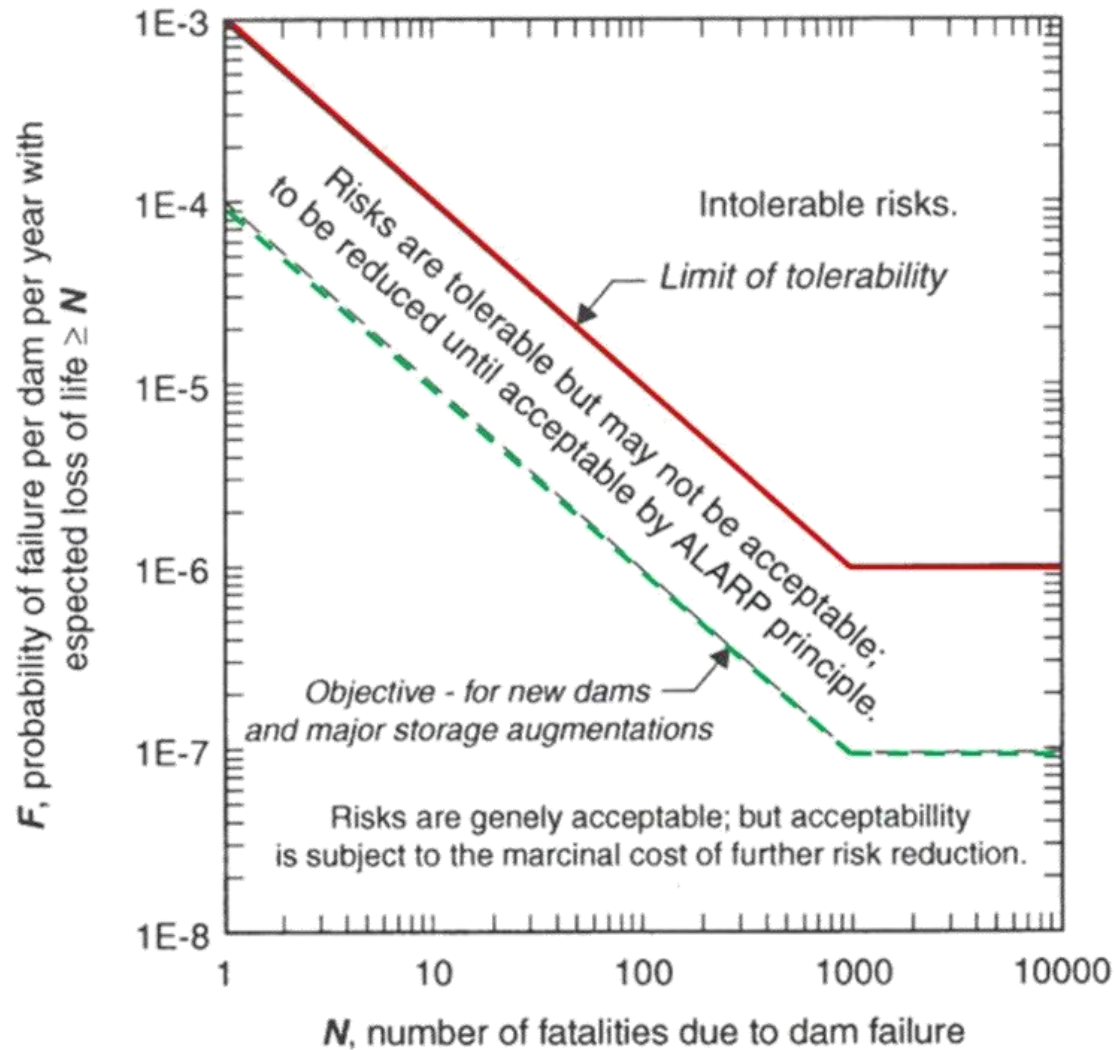
Benefits



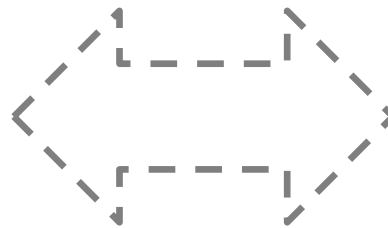
Denial



Factors influencing risk perception and awareness



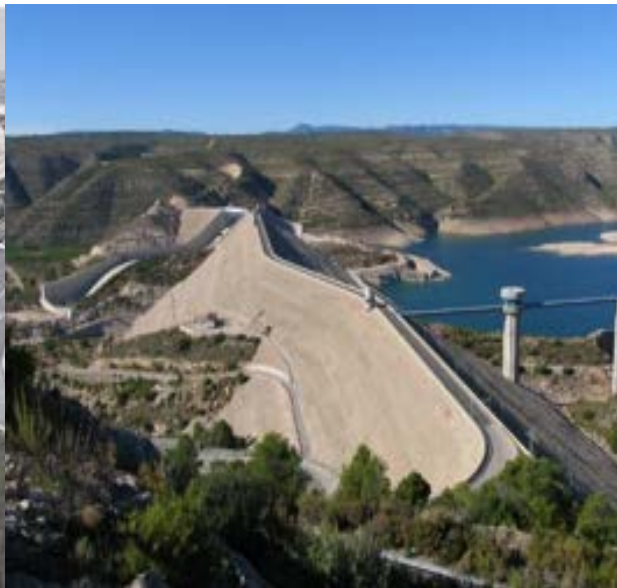
- Now it's on the table
- Zero-resit does not exist (and it is no longer demandee)



5 –Reconsider acceptable risk, but by whom ?

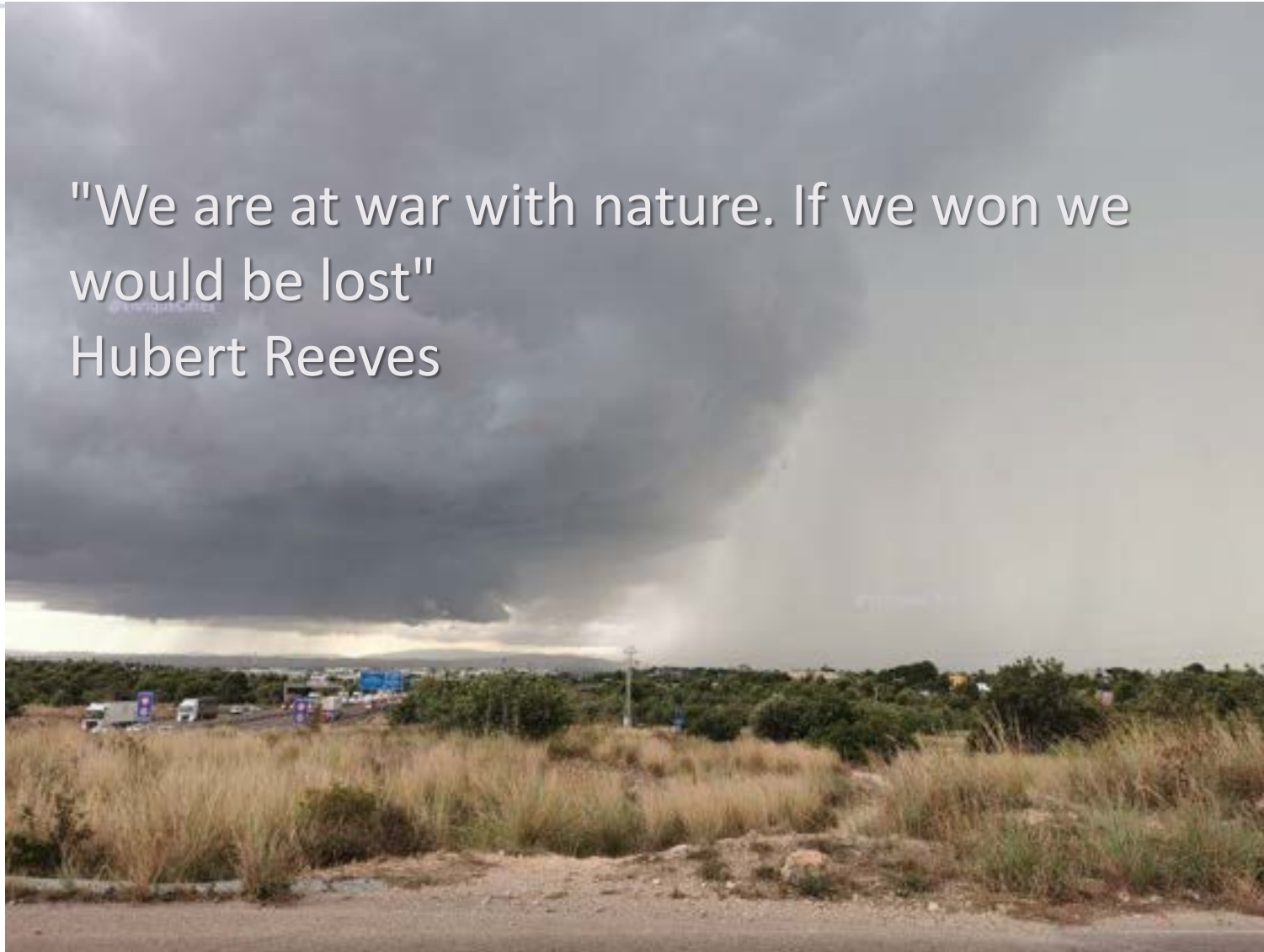


Flood protection plans after 1957 & 1982



6 - Non structural measures have to be better implemented

"We are at war with nature. If we won we
would be lost"
Hubert Reeves



7 - We need the complicity of nature



ICOLD'S World declaration on Dams and Energy Transition and CC adaptation

2024 年 9 月 24-25 日 湖北 宜昌

September 24~25, 2024 Yichang, China

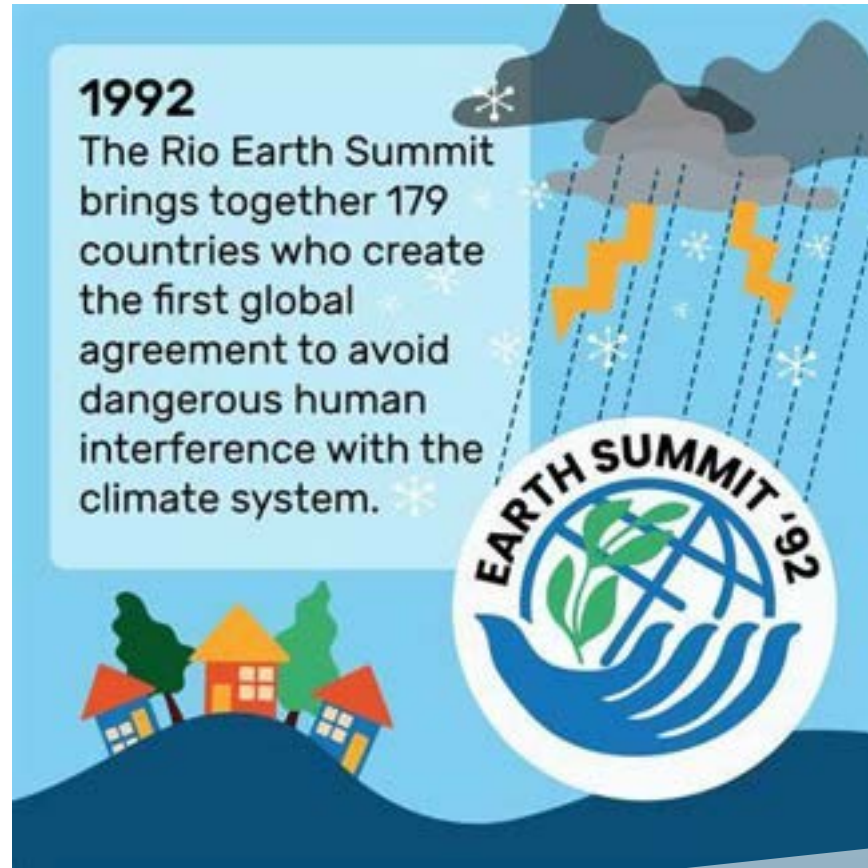
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World Declaration on the Role of Dams for Energy Transition and Climate Change Adaptation



8 - Investing in prevention is much less than the cost of the catastrophe



- RIO 1992
- RIO +10
- RIO +20
- RIO + 30 ??

OLD BUT WORTH TO BE REMINDED

9 - Public participation implies opportunities for success

Let's stop working for society and start working with society
(G.Mazza & E. Cifres, Manifesto EURCOLD 2019, B149)



10 - An opportunity to rebuild under a resilient model

SUMMARY of LESSONS LEARNT

- 1 -Reviewing methodologies in hydrology is a must**
- 2 – CC is and will be getting worse**
- 3 - Be aware where are we settled**
- 4 - Blind hazard creeping vs development under non-zero risk**
- 5 –Reconsider acceptable risk, but by whom?**
- 6 - Non structural measures have to be better implemented**
- 7 - We need the complicity of nature**
- 8 - Investing in prevention is much less than the cost of the catastrophe**
- 9 - Public participation implies opportunities for success**
- 10 - An opportunity to rebuild under a resilient model**



A new paradigm to be adopted



Four pillars are key for a good flood management

1. Good and **safe infrastructures** reducing probabilities of inundation
2. Flood risk **mapping**, real time information and **early warning** systems provide complementary actions to improve resilience.
3. Well informed **land management** and achieving less hazard creeping is a must. Land planning decision makers have to be involved as key stakeholders.
4. Education and **public awareness** on flood risks. Emergency and civil protection efficiency is based on population participation

Working in parallel on all tools for reducing expected damages should inspire comprehensive solutions.



Thank you for your attention and thank you, young volunteers!

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