



GLOBAL WORKSHOP
ON BUILDING CLIMATE - RESILIENCE THROUGH
IMPROVING WATER MANAGEMENT AND SANITATION
AT NATIONAL AND TRANSBOUNDARY LEVELS

29 - 31 March 2021, hybrid
Palais des Nations, Geneva and online

Title: Climate Risk Informed decision analysis for Water and Health

Speaker: Ad Jeuken (Deltares)



Follow us:

@UNECE_Water
#WaterConvention



Water Convention/
Protocol on Water&Health



UNECEWater

Content

1. Rationale
2. CRIDA
3. An example
4. Way forward

1. Rationale

Climate resilience

- When faced with increased variability
 - Urgent: floods & droughts
 - Longer term trends
- Infrastructure remains functional
- Services continue
 - Recover quickly when confronted with hazards
- Health risks do not increase

1. Rationale

- **Water and sanitation**
 - Sustainable water supply
 - Safe sanitation
 - Water-borne diseases
- **Health infrastructure**
 - Safety
 - Power, water, sanitation
 - Access, supplies
- **Other impacts...**
 - Vector-borne disease



- **Climate change:**
 - Runoff, overflows
 - Increased exposure
 - longevity, transmission potential
 - Need for water storage

1. Rationale

Climate-induced change	Water related hazard	Sensitive elements of WASH
Decrease in net precipitation	Drought	Reduction in raw water supplies, reduced flow in rivers, lower groundwater levels, less dilution/increased concentration of pollutants in water, challenge to hygiene practices
Increase in precipitation and/or storms	Riverine flooding and/or local urban flooding	Pollution of wells, inundation of wells, inaccessibility of water sources, flooding of latrines, physical damages to infrastructure, landslides around water sources, sedimentation and hygiene behaviors, and water borne diseases
Sea levels rise and storm surge	Coastal zone flooding and saltwater intrusion into freshwater aquifers, or river mouths	Reduction in availability of drinking water, with high impacts on quality
Increase in temperature	Heatwaves	Damage to infrastructure, increase in pathogens in water leading to increased risk of disease
Increase in temperature	Melting and thawing of glaciers, snow, sea ice and frozen ground	Seasonality of riverine flows affected leading to a reduction in water availability in summer
Compound climate effect: increase in temperature and decrease in net precipitation	Growing water stress	Imbalance between the naturally renewable water supply and (growing) water demand due to higher evapotranspiration (for e.g. irrigated agriculture and nature) introduce significant trade-offs among water users

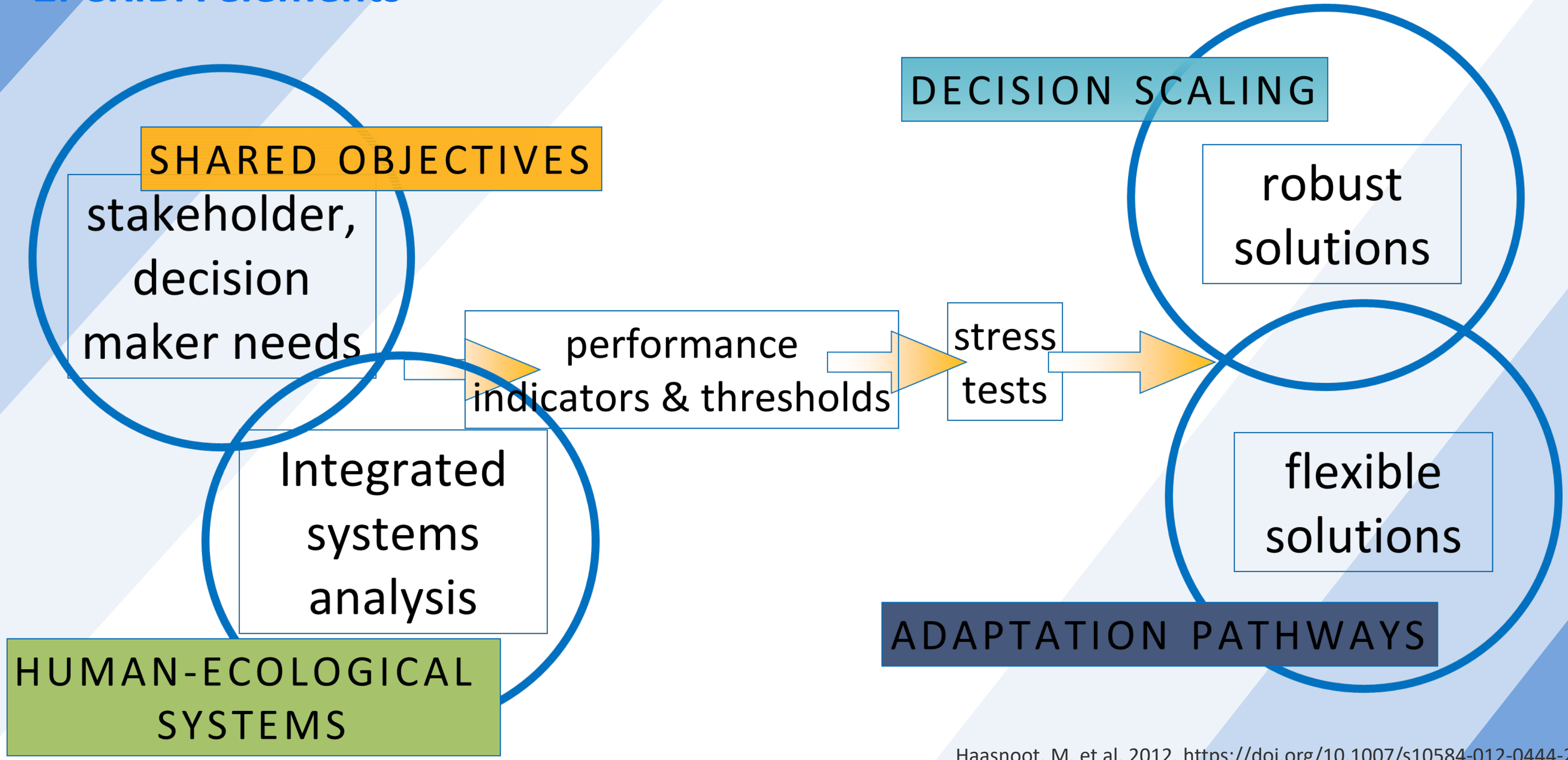
Source: Adapted from GWP and UNICEF (2017)

2. CRIDA

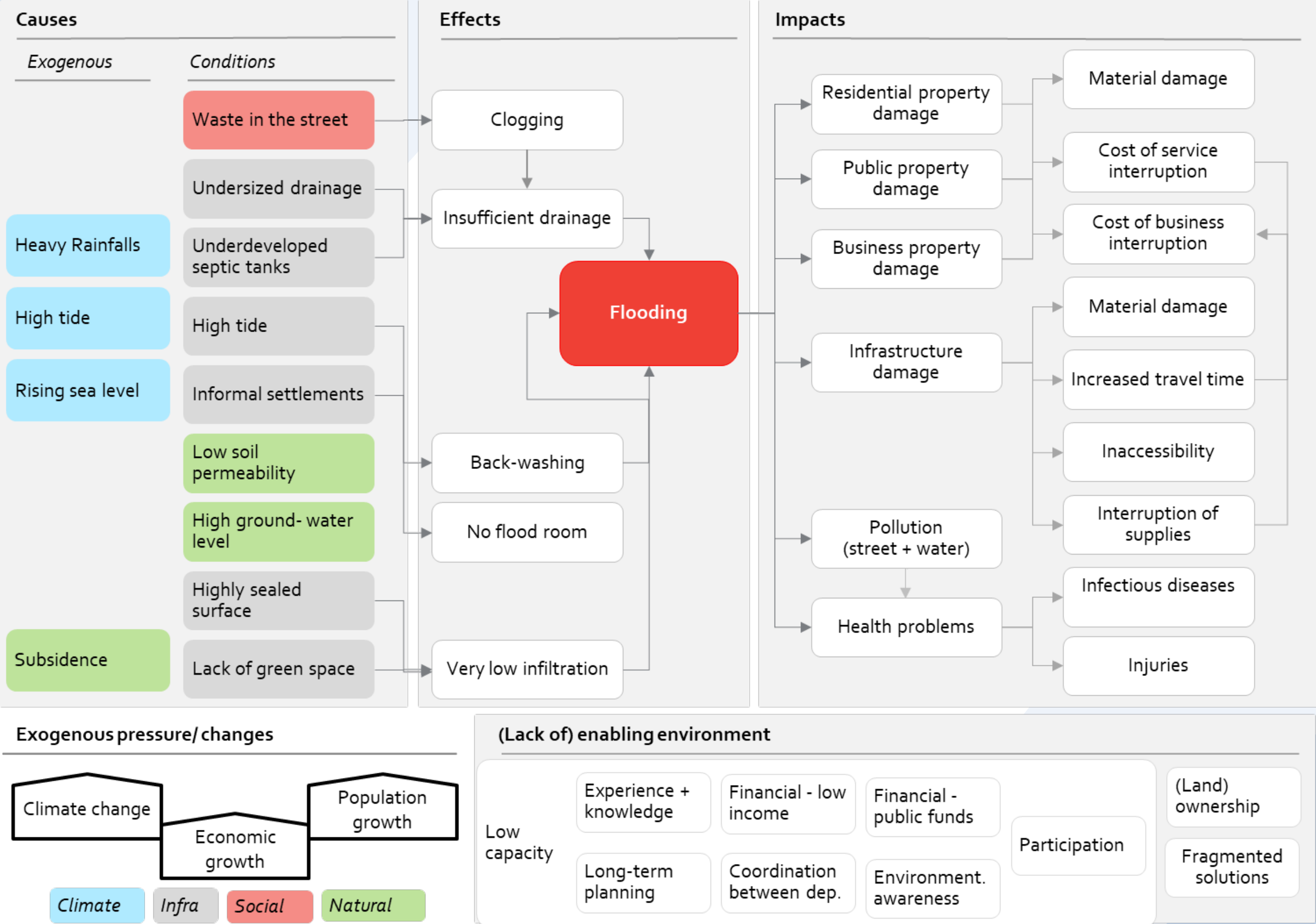
Climate Risk Informed Decision Analysis

- To support decision making under uncertainties
- Structured stepwise planning approach
- Start from tolerance levels for failure and ask:
 - At what level of change will it start to hurt (situation to avoid)?
 - How plausible is this situation in the future?
 - Build resilience to avoid this situation
- Involve stakeholders from an early stage

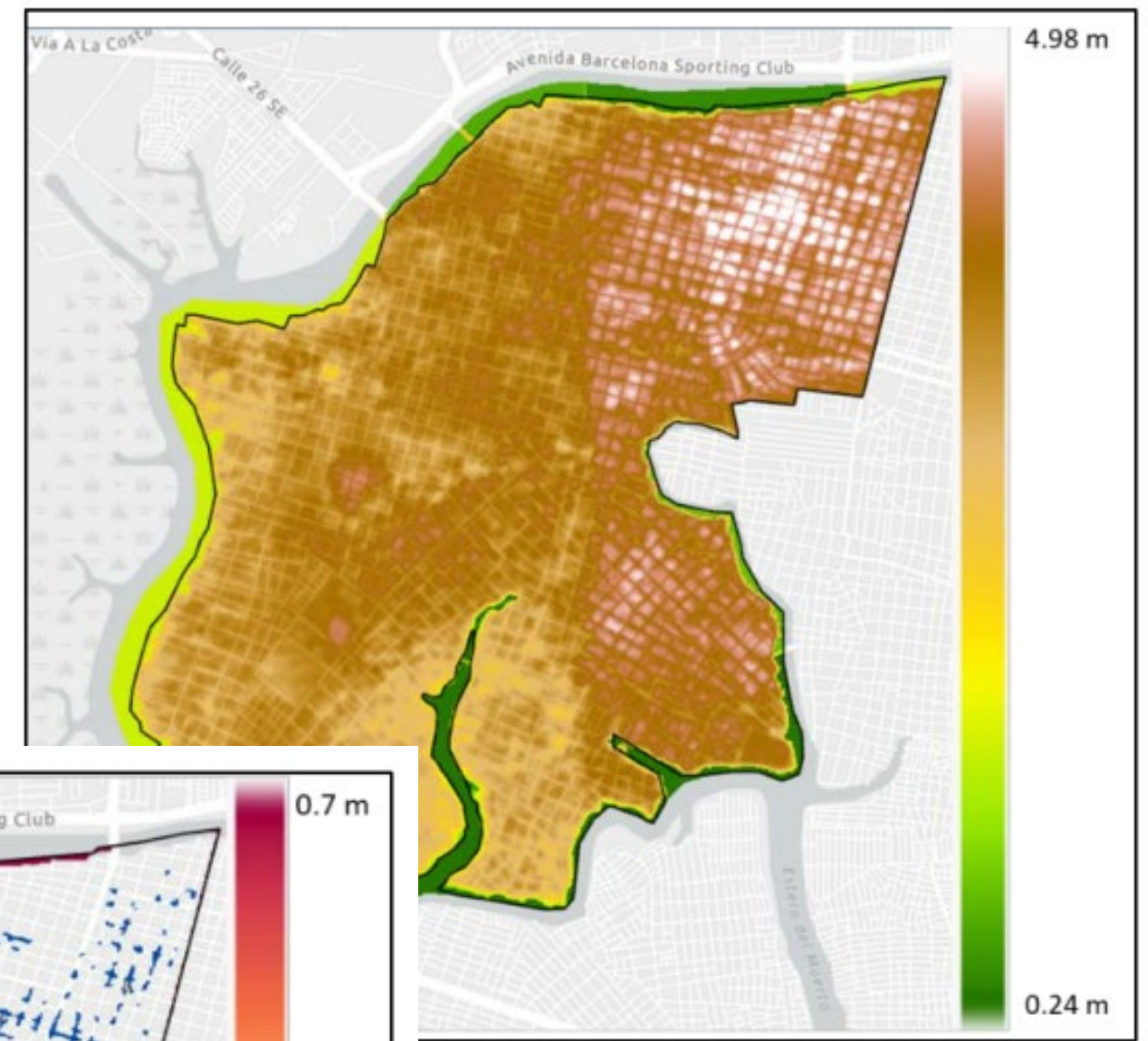
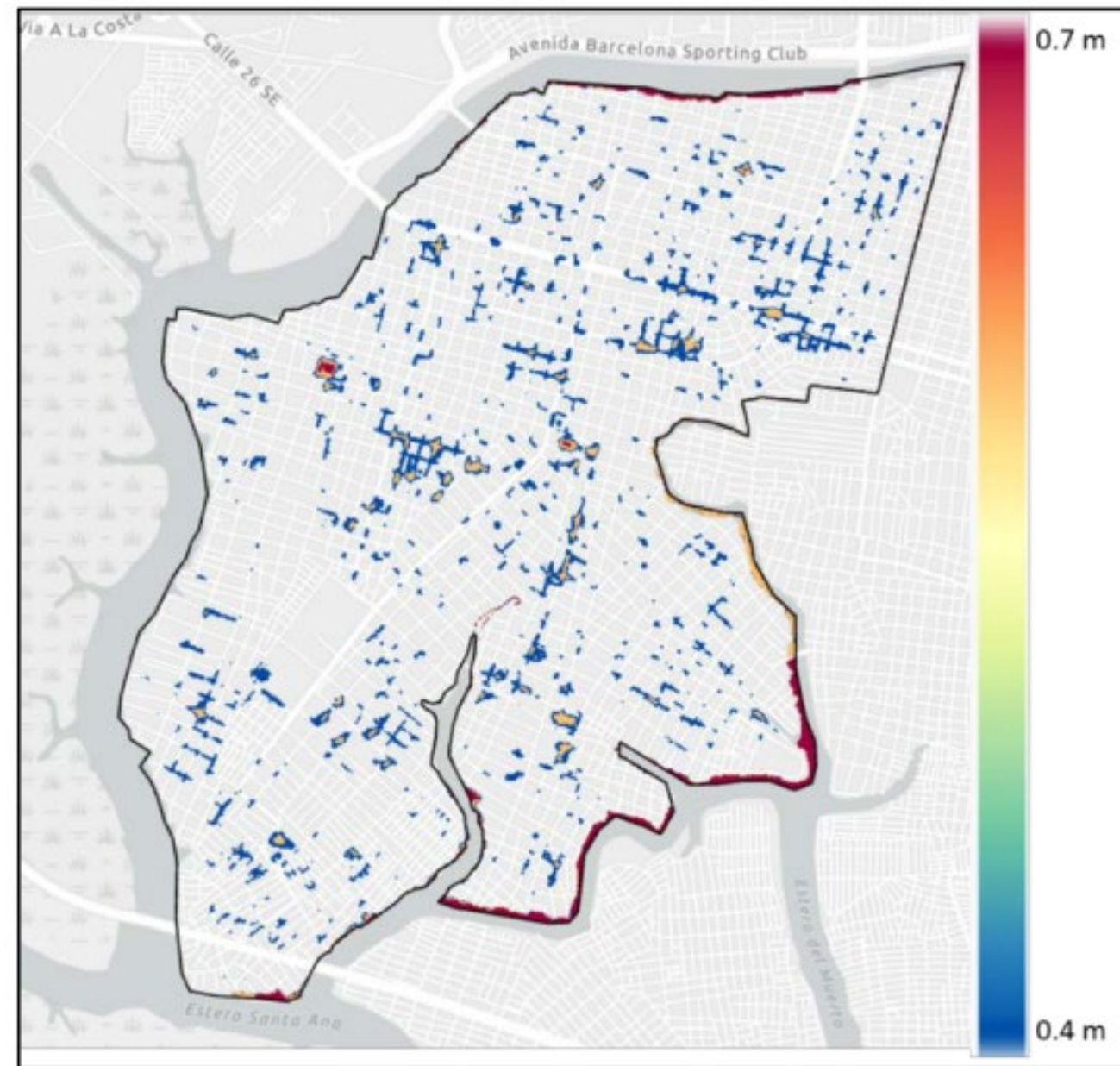
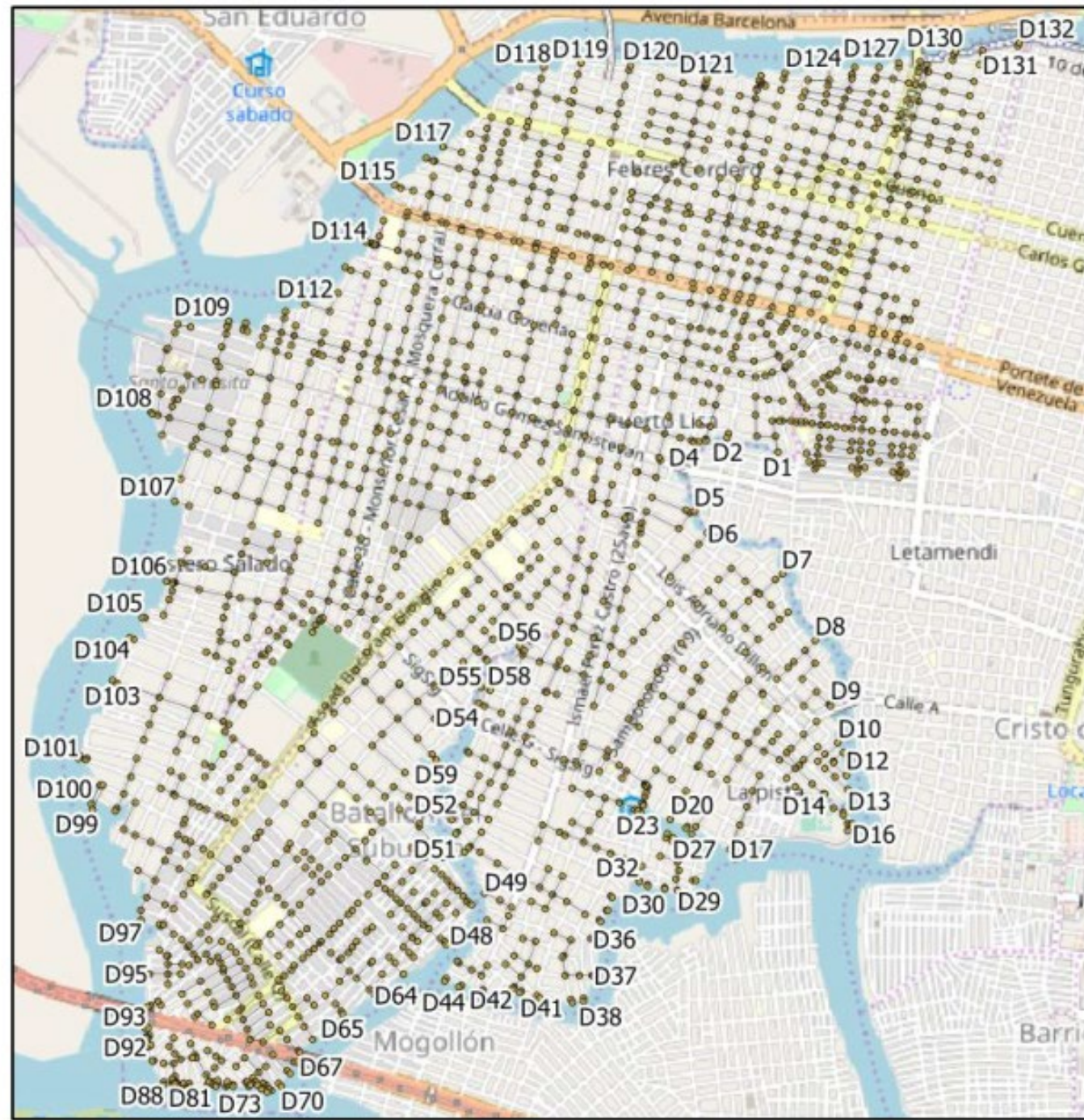
2. CRIDA elements



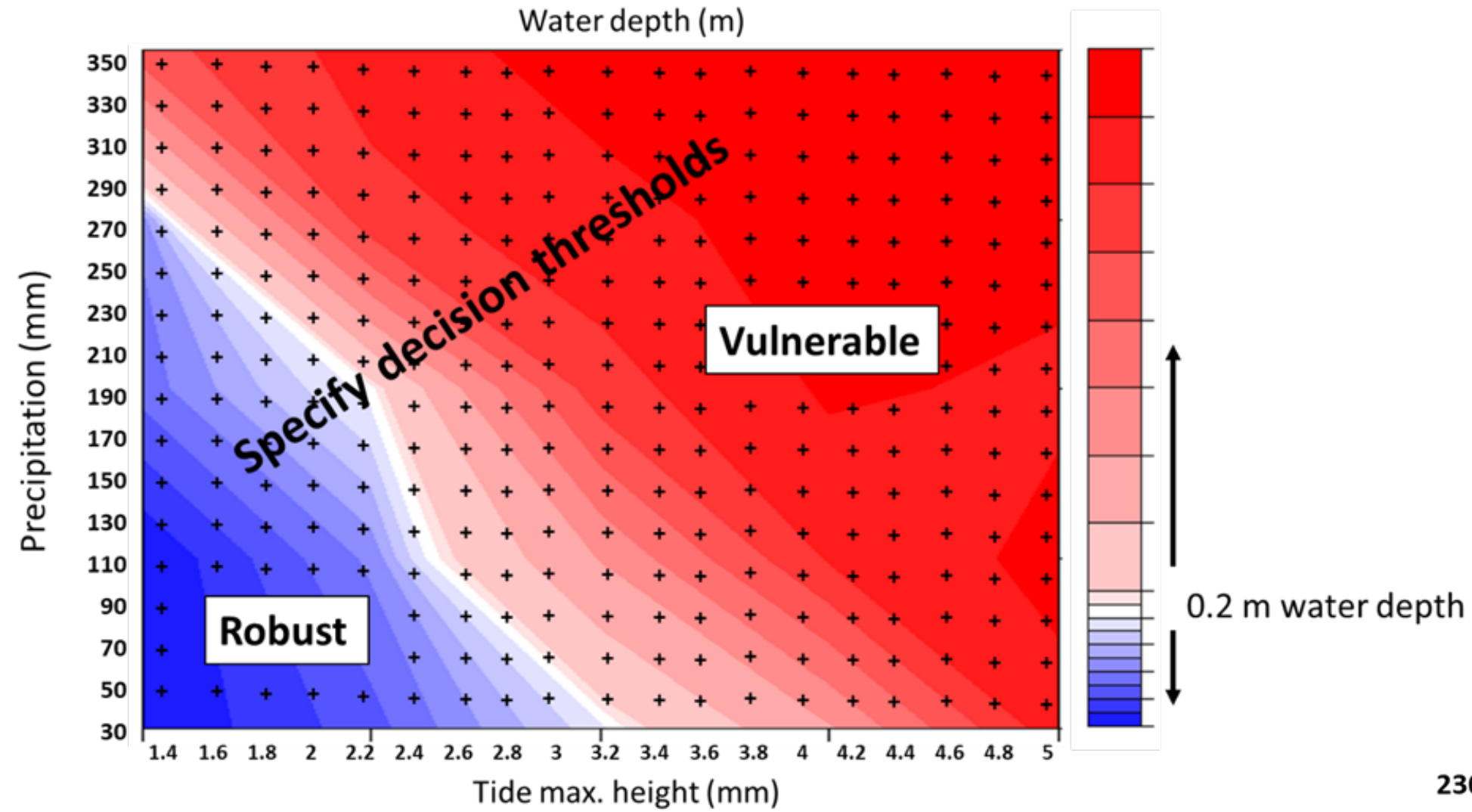
3. An example application (urban drainage system)



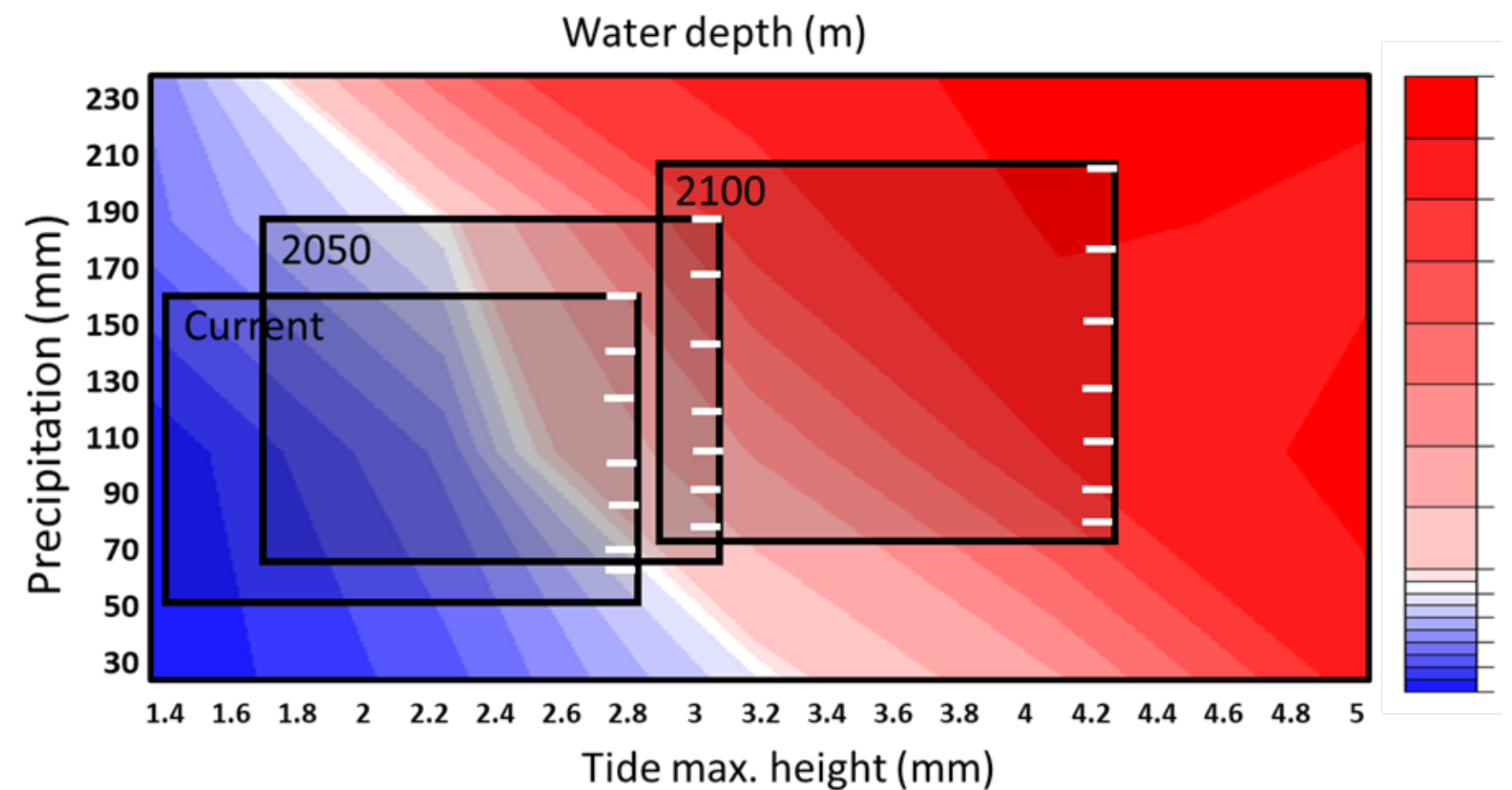
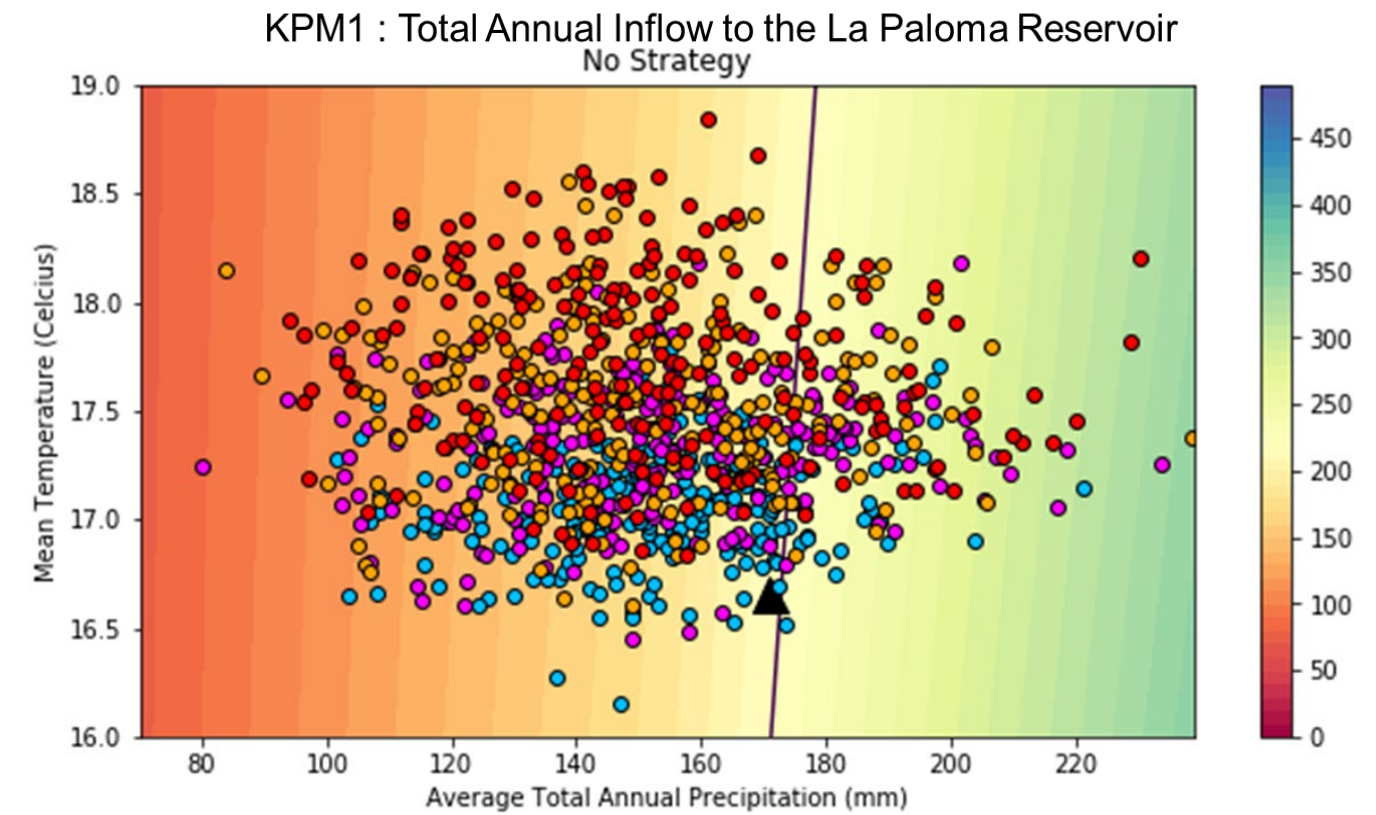
The system model SOBEK1D drainage system model + 2D Dflow



3) Stress Test – using decision scaling approach

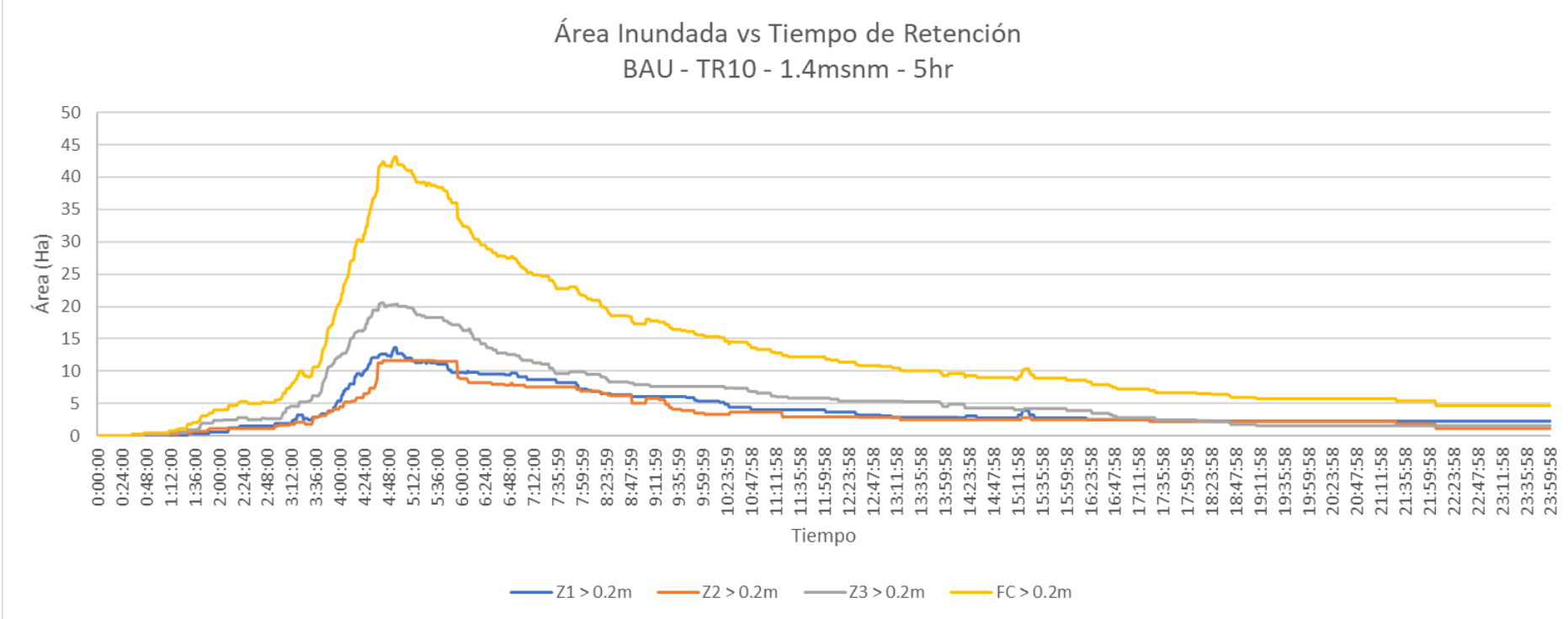
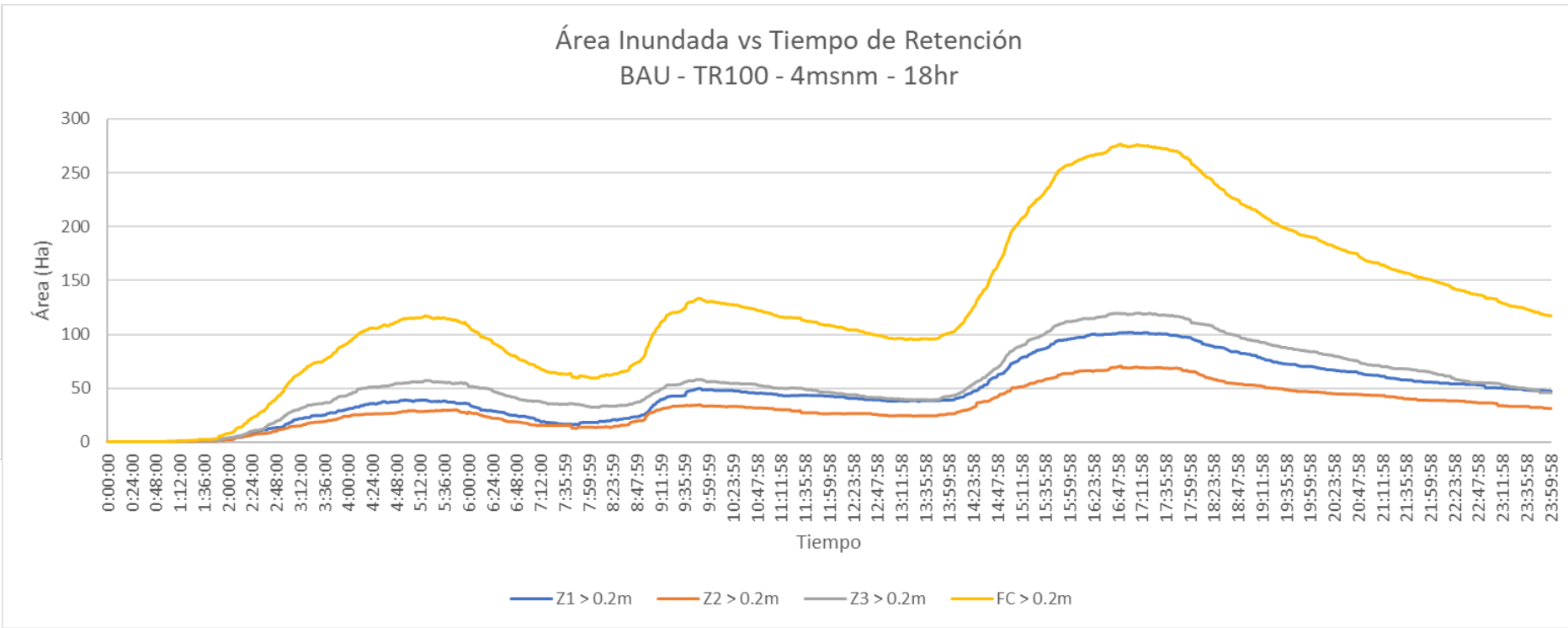
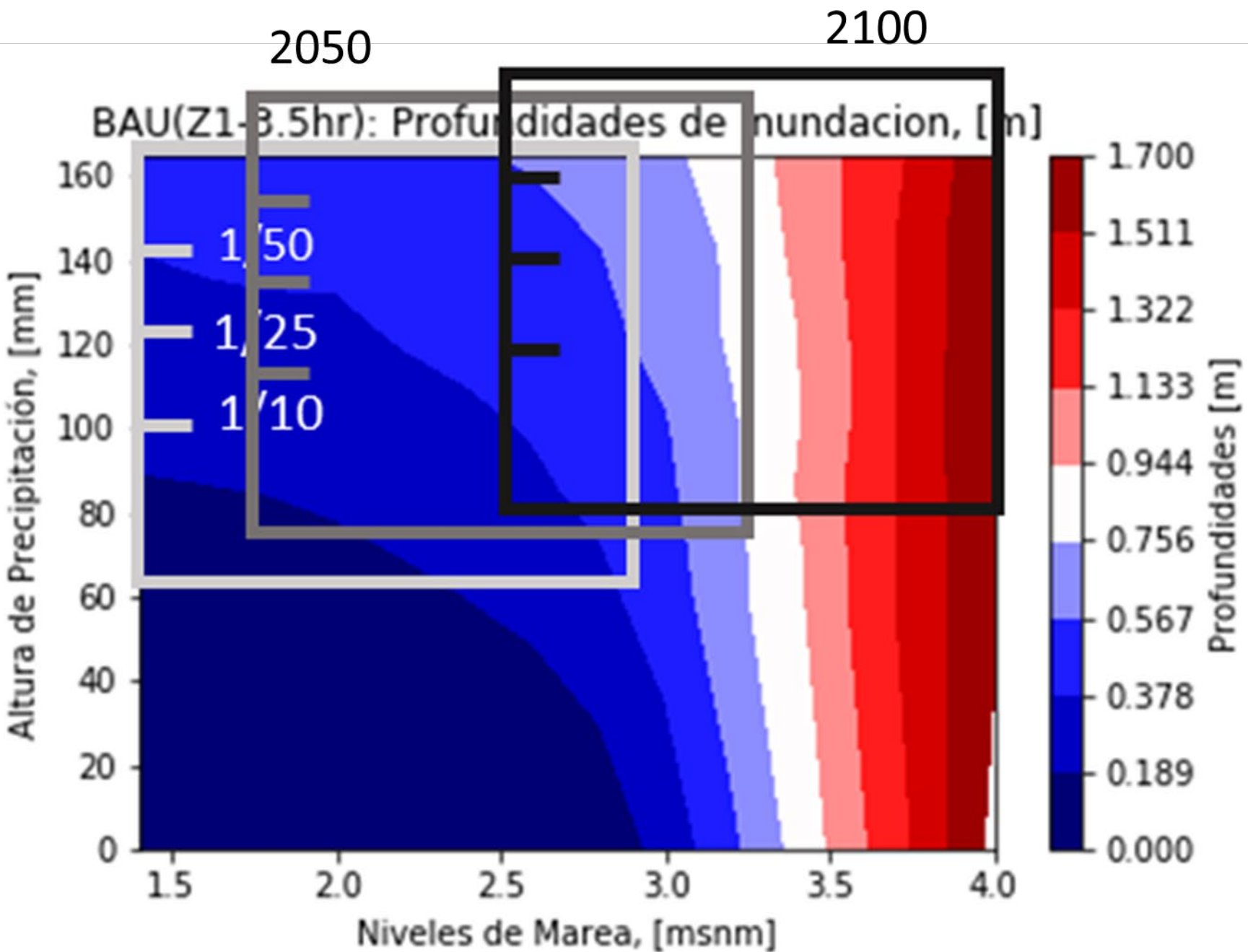


- Event-based
- Plausible shifts based on climate projections and science



Flood development:

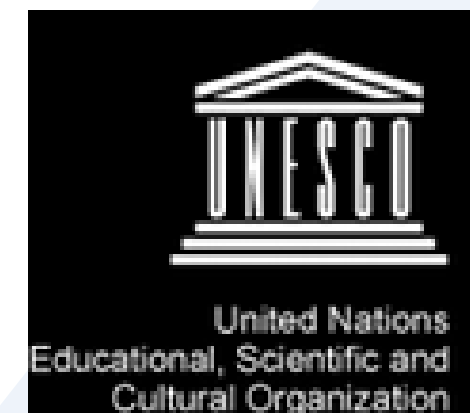
- under increasing precipitation and tidal levels
- over time



4. Way forward

- Seeking water and health pilot applications: currently exploring a possible pilot for western Finland
- CRIDA webinar and conference
- Pilots starting for Africa
- Regular (online) training courses – in 2021 a Spanish language training will be given

<https://en.unesco.org/crida>





Thank you!

More information in the book

[https://agwaguide.org/about/CRIDA/
ad.jeuken@deltares.nl](https://agwaguide.org/about/CRIDA/ad.jeuken@deltares.nl)

Climate Risk Informed
Decision Analysis (CRIDA)

Collaborative Water Resources
Planning for an Uncertain Future

