



Midterm-workshop of ClimateWater 26-28 May, Bratislava, Slovakia



WP 4.6 Research needs (identified so far) in drinking water supply

**Monica Garnier, Aziz Abouabdillah, Ons Oueslati,
Antonio Lo Porto**

Water Research Institute-National Research Council
(IRSA-CNR)



➤ Research needs on climate change

- **Improve Climate Change modeling to reduce uncertainties:**
- The frequency and intensity of convective storms leading to extreme weather events cannot be forecasted accurately with current simulations.
- The sensitivity of change in water runoff to the change in temperature is significant therefore the accuracy of models should be increased, especially, if adaptation strategy and planning would be based on model projections.
- Continued improvements are required in the understanding and modeling of hydrological processes at local and global scales.
- **Improve Earth observation and monitoring.**



➤ Research needs on climate change

- **Quantitative knowledge on impacts of climate change**
- The melting of continental ice (glaciers, ice caps and ice sheets), change in ecosystems are some examples of impacts that should be more studied.



Research needs in water supply

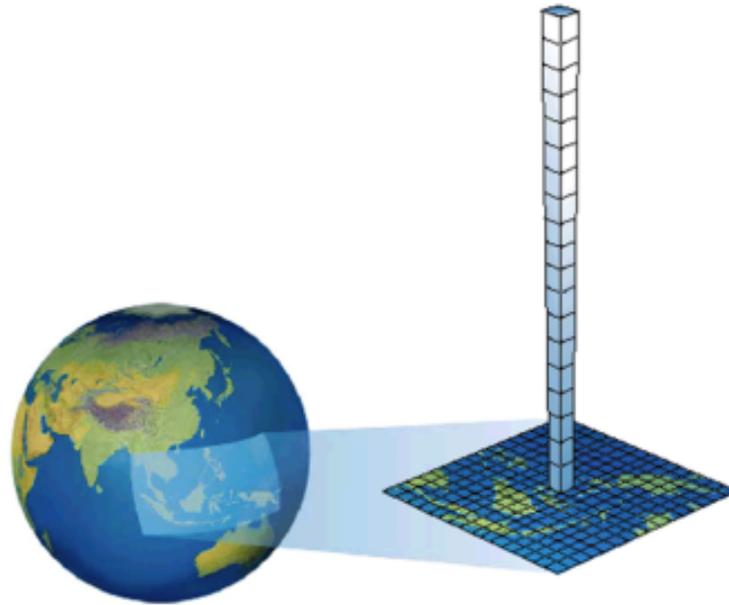
CLIMATE CHANGE COPENHAGEN 2009
Global Risks, Challenges & Decisions 10 - 12 March



- It is asserted that while knowledge about climate, water and vulnerability, continues to increase, **research is needed** aimed at reliably identify **'hot spot' areas** (special geographical areas containing either human populations or ecosystems **highly vulnerable** to impacts of climate change).

➤ Research needs in water supply

- Research efforts should be devoted to improve long term weather forecasts and regional climate change models.





Research needs in water supply

To prevent

Or to minimize the occurrence of conflicts

To allow

Sound water allocation among different water users

To identify

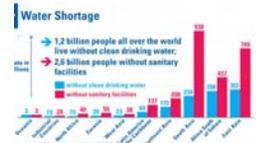
management strategies

To forecast

location, intensity and duration

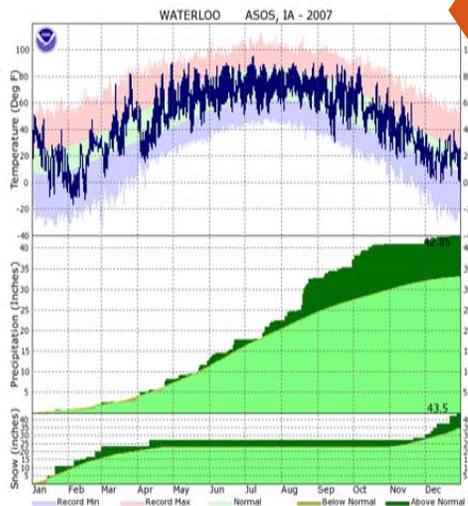
Improvements in the ability to

detect water shortages



Research needs in water supply

Variation in temperature & precipitation



Human intervention: land use change, reservoirs



Impact studies

Research needs

Another important research field consists in the identification of means or procedures that allow to distinguish between the changes in the **hydrologic cycle** those due to climate change from those due to human intervention and their interactions.

➤ Research needs in water supply

- Limited research has also been identified on the influence of the climate change upon future household **water demand**, which might, in turn, influence water supply.



➤ Research needs in water supply

- Research is also needed for the issuing of European guidelines to assist the sustainability of water reuse.



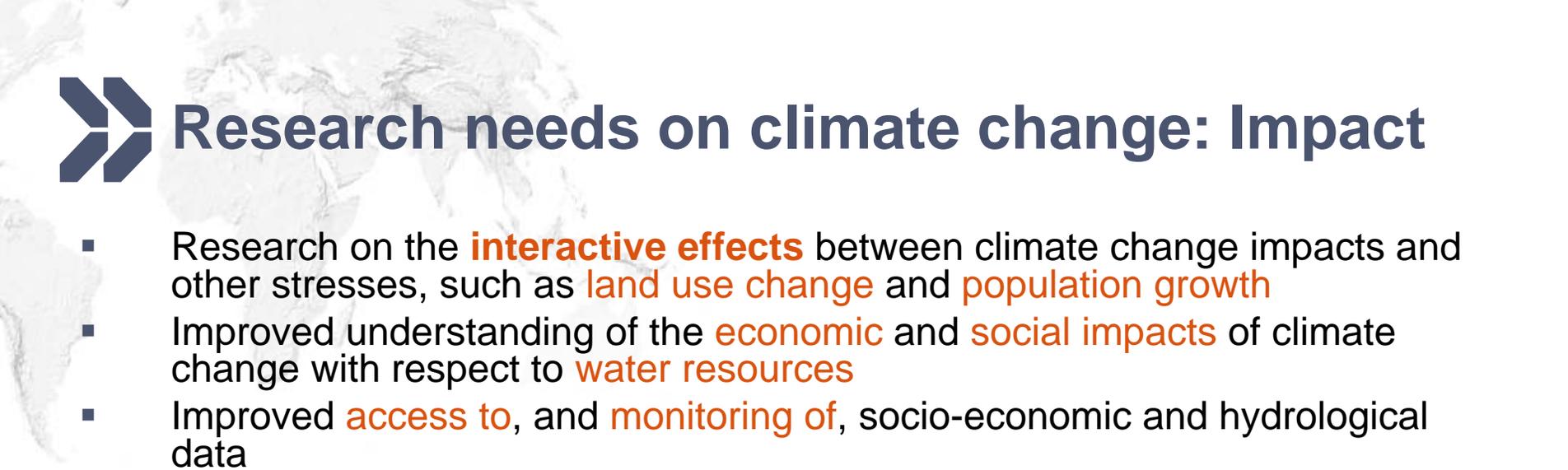
Thank You !



Climate
≈ **water**

Bridging the gap between adaptation strategies of climate change impacts and European water policies





➤ Research needs on climate change: Impact

- Research on the **interactive effects** between climate change impacts and other stresses, such as **land use change** and **population growth**
- Improved understanding of the **economic** and **social impacts** of climate change with respect to **water resources**
- Improved **access to**, and **monitoring of**, socio-economic and hydrological data
- More integrative studies, which look at the **ecological controls** and **human influence** on the **vulnerability** of water to climate change.
- Studies that focus on understanding and defining **critical thresholds** in water resource systems, rather than on the impacts of changes in mean conditions
- Research on the vulnerability of **groundwater** to climate change and improved **groundwater monitoring**



Research needs on climate change: Adaptation

1. Integrative studies of **water resources planning**, which address the role and influence of water **managers** on adaptive capacity
2. Understanding of the current capacity of water management structures and institutions to deal with projected climate change, and the social, economic and environmental **costs and benefits** of future adaptations
3. With respect to adaptation via water pricing and policy/legislation, better understanding of the **environmental justice** and **equity consequences**, and mechanisms to assess the impacts of water transfers on third parties

➤ Research needs on climate change

- A primary goal of impacts and adaptation research is to reduce vulnerability to climate change and, as such, there is a need for studies that **focus** on the **regions** and **systems** considered to be **most vulnerable**



➤ Research needs on climate change

