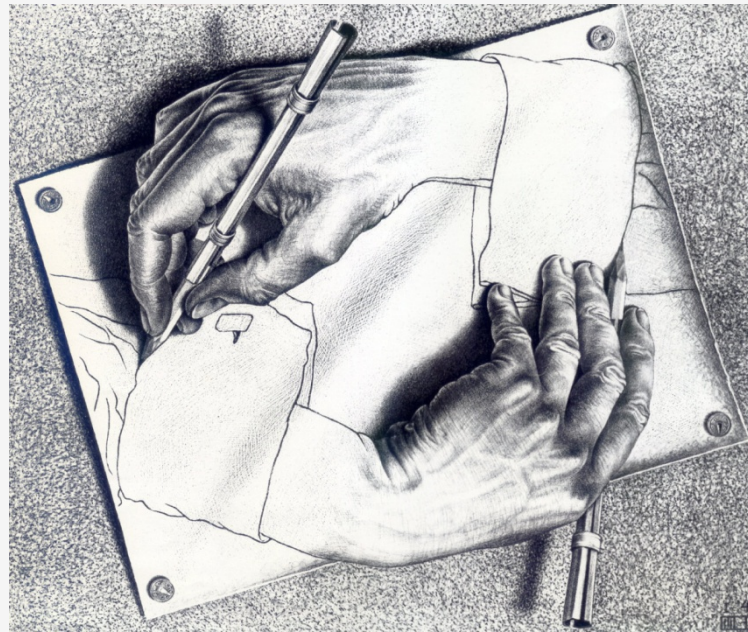




# FLOODS AND SOCIETIES: WHO SHAPES WHOM?



*"Drawing Hands" by Escher (1948)*



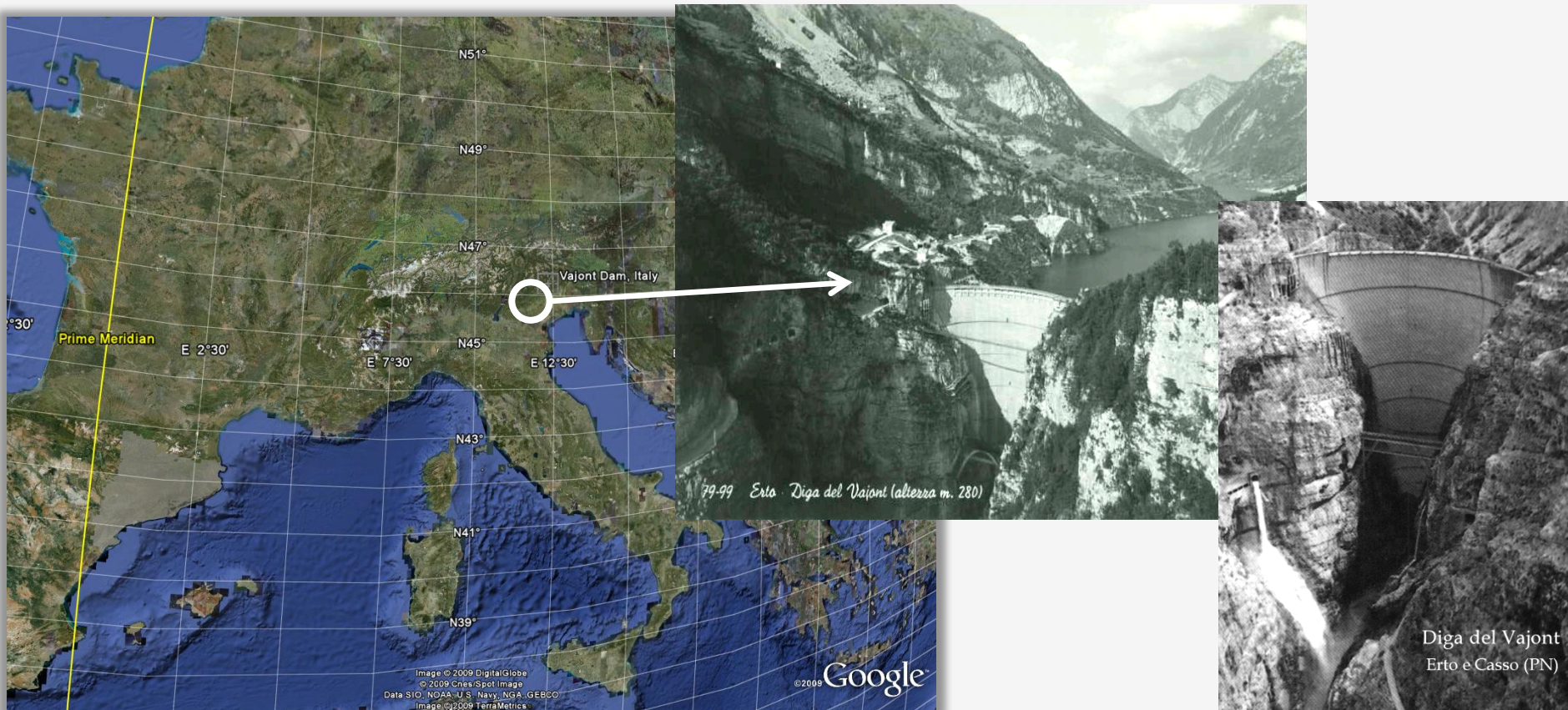
**WE (HUMANS) ARE UNFAIR**

# History



# History

- Early 1960s, Italy
- Construction of the Vajont Dam (280m)



# Vajont dam disaster

- 9 October 1963 at 22:39
- Giant wave raised by a landslide into this “brand new” hydroelectric reservoir
- The wave affected five towns, killing 1918 people

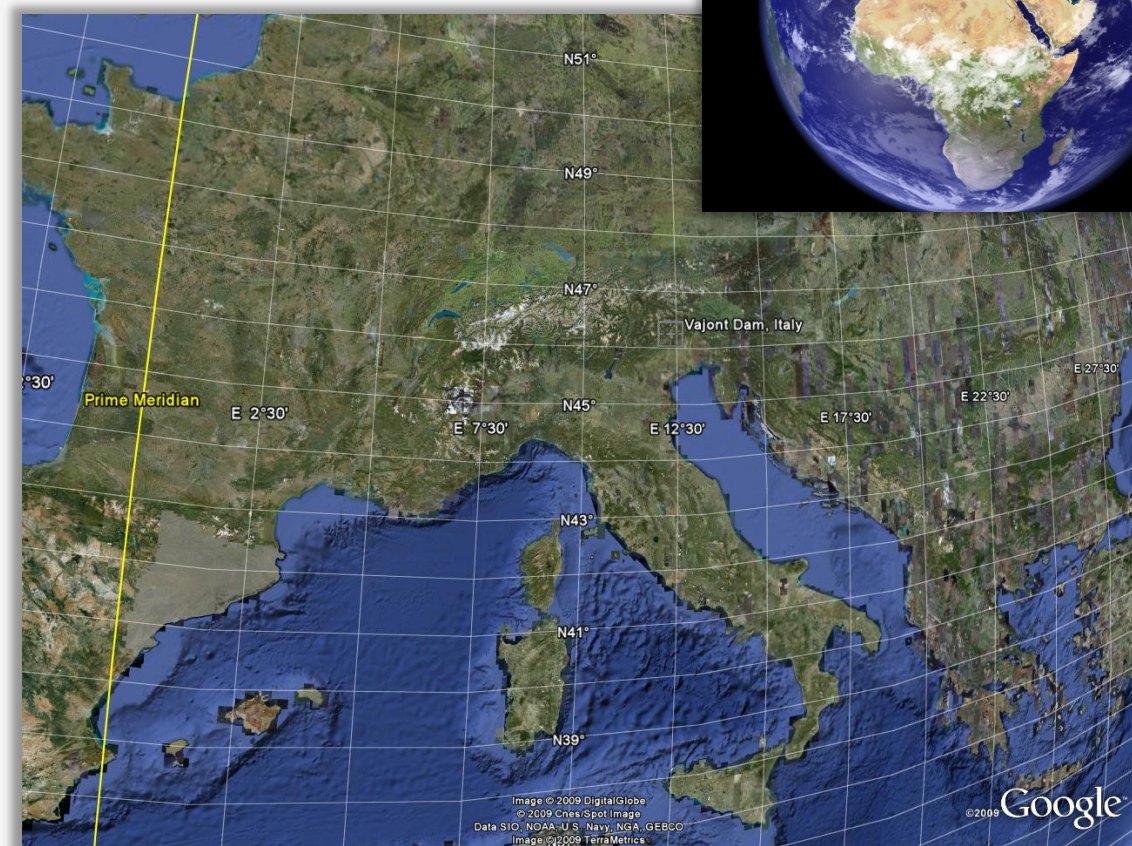
*Longarone (BEFORE 9 October 1963)*



*Longarone (AFTER 9 October 1963)*

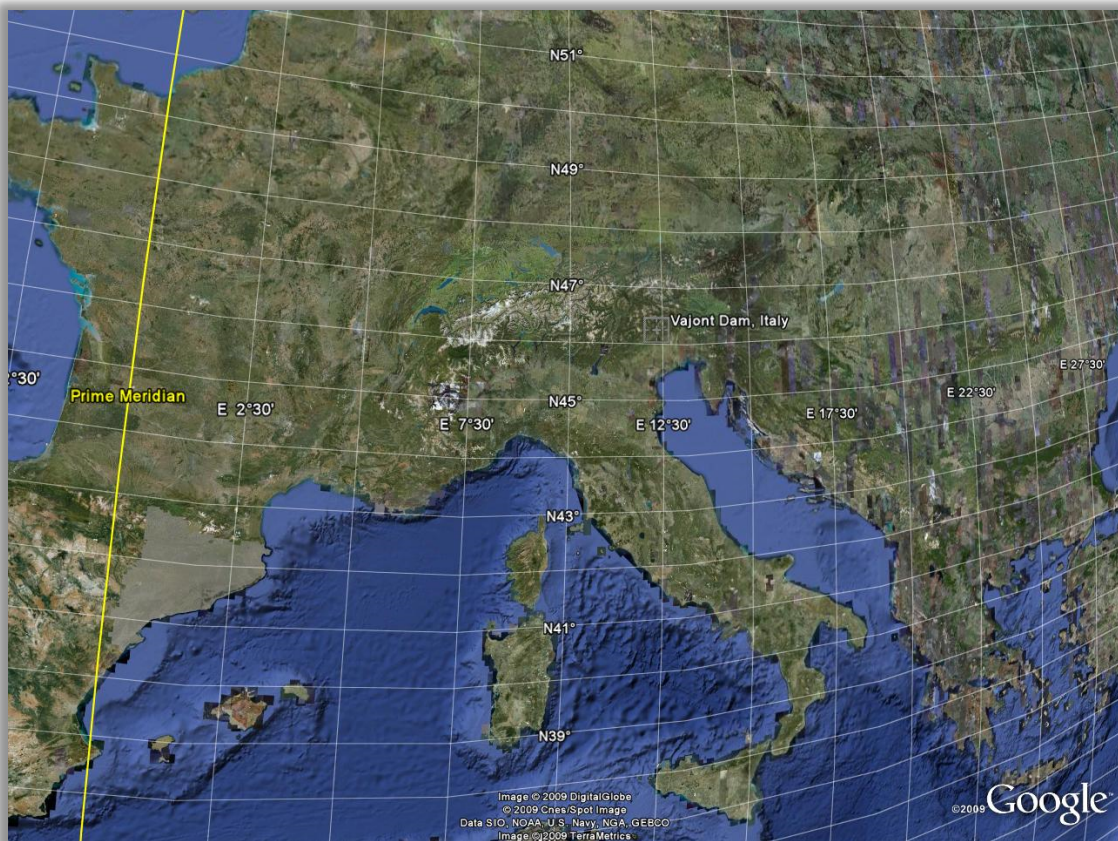


# An alternative story (a dream?)



# An alternative story (a dream?)

- Late 1950s, Italy
- Roberto Camorani, Minister of Public Works



# An alternative story (a dream?)

- Following the advices of some concerned geologists, Camorani did NOT authorize the Vajont dam construction
- The Vajont dam disaster did NOT happen

*Longarone (BEFORE 9 October 1963)*



*Longarone (AFTER 9 October 1963)*






# An alternative story (a dream?)

- Would the strictness of Roberto Camorani be appreciated?
- Would he be rewarded for avoiding the Vajont disaster?
- Would History actually remember him?



*\*DISCLAIMER: Roberto Camorani is a fictious name.*

*The picture of this presentation is of Friedrich August von Hayek, economist and philosopher (Nobel Price, 1974)*



“everybody knows that you need more prevention than treatment, but few reward acts of prevention”

*N.N. Taleb (2007)*

A horizontal bar at the top of the page, consisting of a light blue segment on the left and a dark blue segment on the right.

**PREVENTION IS INVISIBLE**

# KULTURisk

## Knowledge-based approach to develop a Culture of Risk Prevention

*Instrument:* EC FP7, Collaborative project

*Duration:* 36 months

*Start Date:* January 2011

*Consortium:* 11 partners from 6 countries

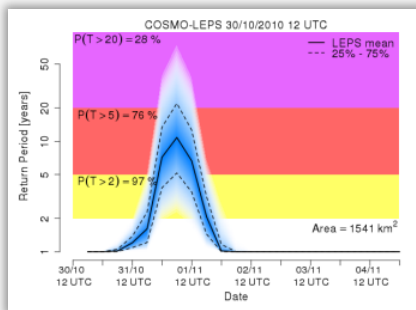
*Project Coordinator:* Giuliano Di Baldassarre, UNESCO-IHE Delft



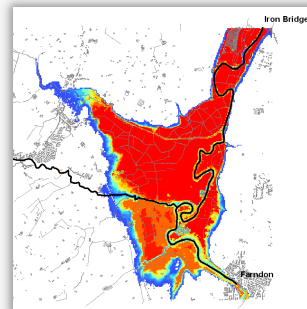
# Risk prevention measures

- **Risk prevention** as sensible investment
- Costs of preventive measures less than the costs of post-event recovery (**focus on floods**)

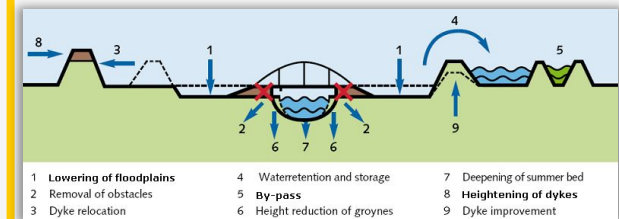
## Early Warning and Preparedness



## Mapping, Planning, Risk Transfer



## Structural Measures



We can't always stop rivers flooding, but we can warn you in advance.

Severe  
Flood  
Warning



Risk Communication  
Dialogue with Stakeholders

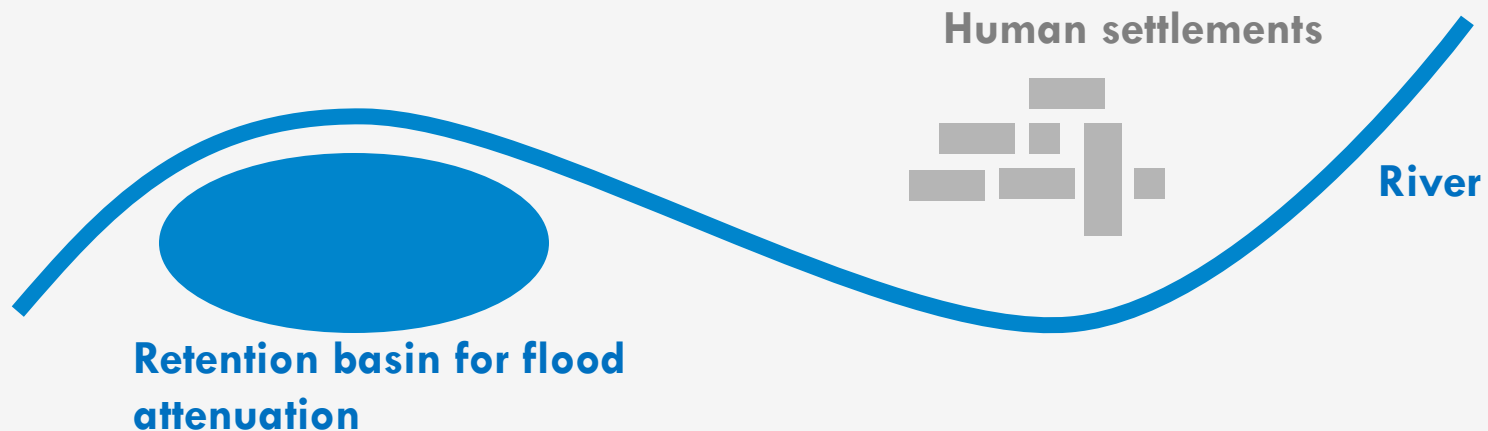


# Floods and societies (hydrological sciences)

## **Evaluating risk prevention requires the use of models**

To assess how prevention measures reduce the frequency and severity of floods

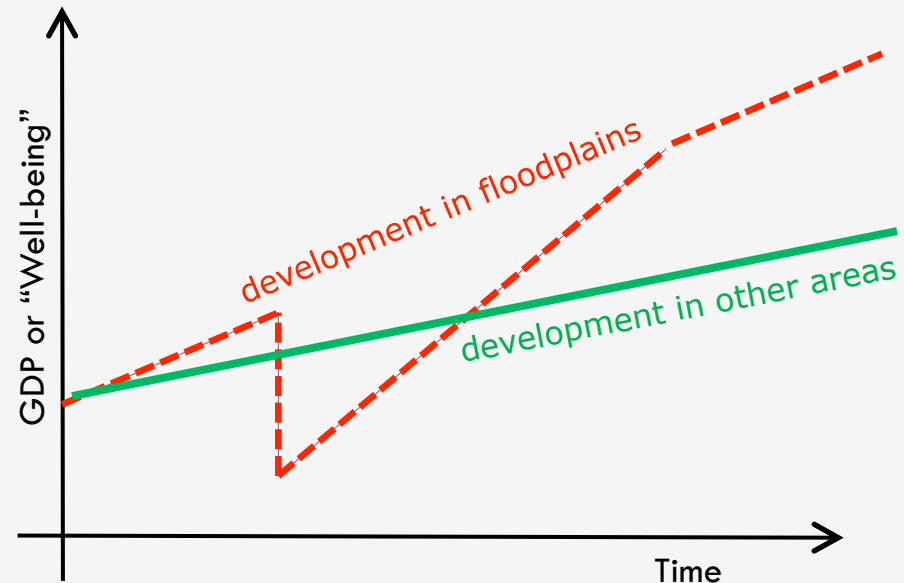
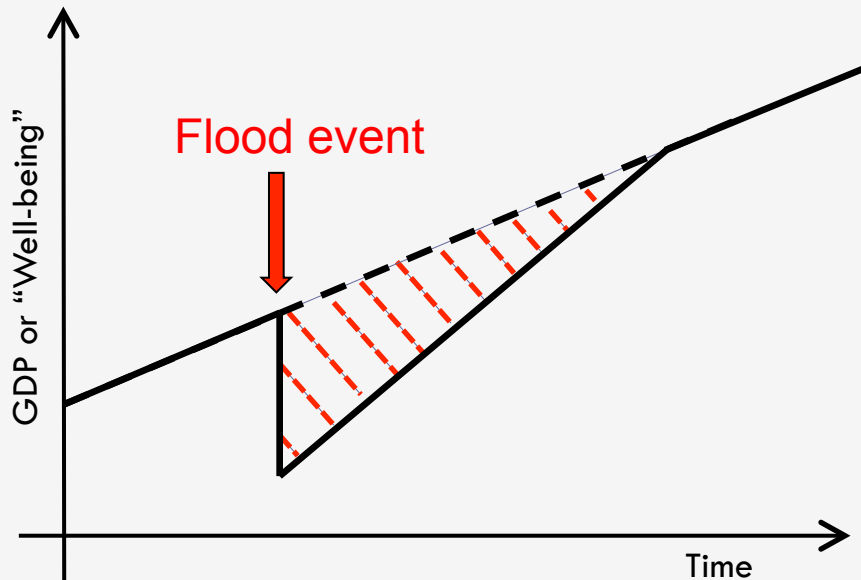
*Example: retention basins to attenuate floods*



# Societies and floods (social sciences)

The frequency and severity of floods in turn shape patterns of human settlements and land-use

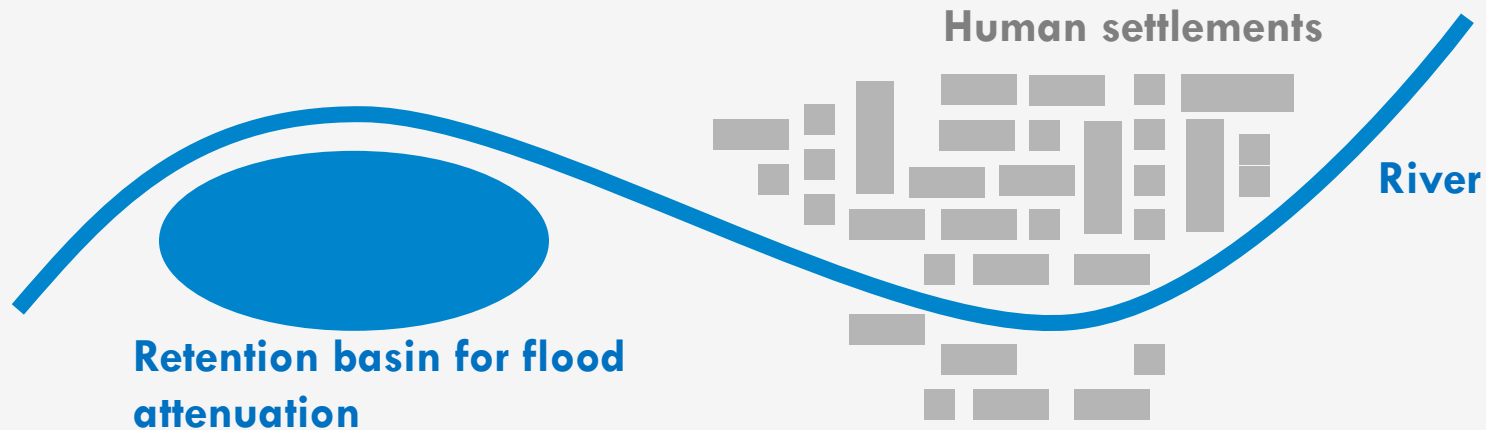
*Example: the occurrences of floods determine if urban development in floodplains is desirable or not (Green et al., CONHAZ, 2011)*



# Floods and societies: who shapes whom?

Example: retention basins to attenuate floods

- Reduce the frequency of flooding
- Increase of (formal and informal) human settlements



**Flood Risk = Probability X Consequences**

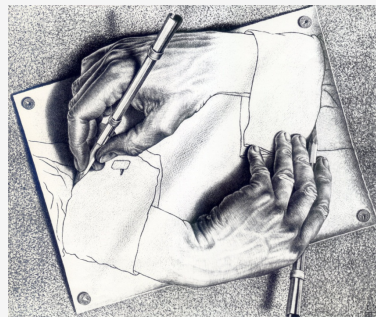
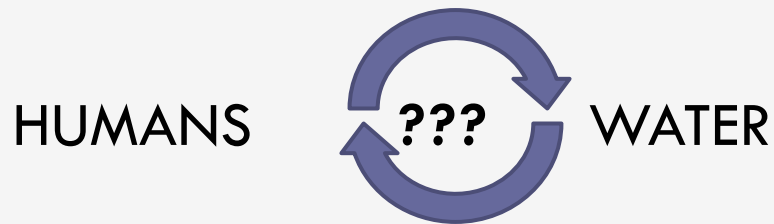


# Floodplains as human-water systems

Need to understand how societies influence the frequency of floods, while (at the same time) the frequency of floods shapes societies, which (in turn) alter future floodplain dynamics...

Human and water systems are deeply intertwined

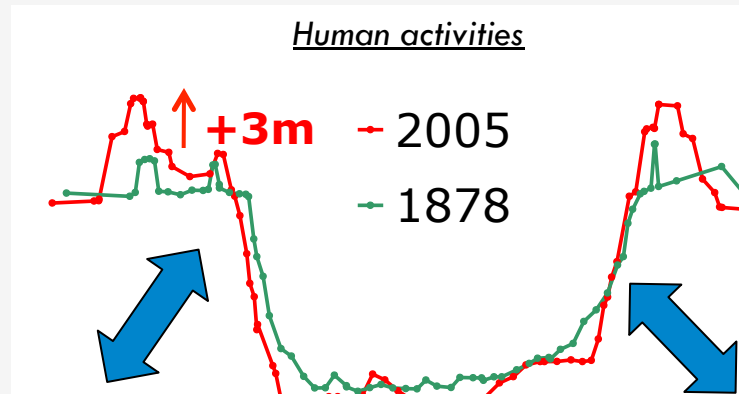
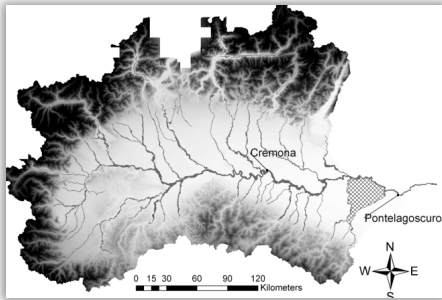
Interactions and feedback loops are poorly understood



"Drawing Hands" by Escher (1948)

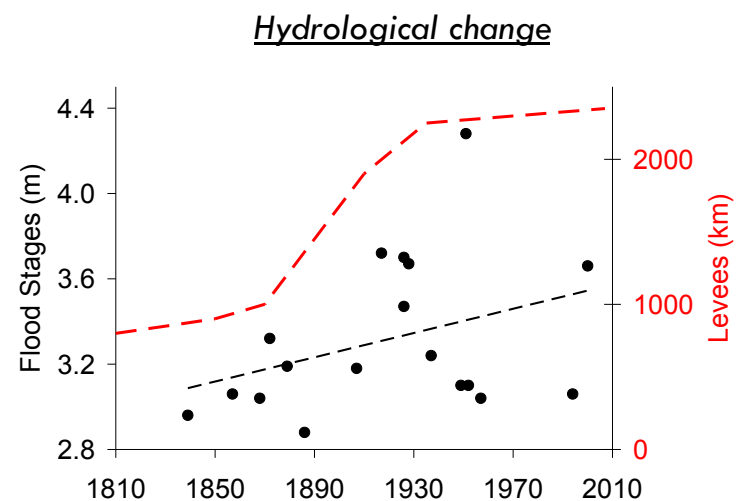
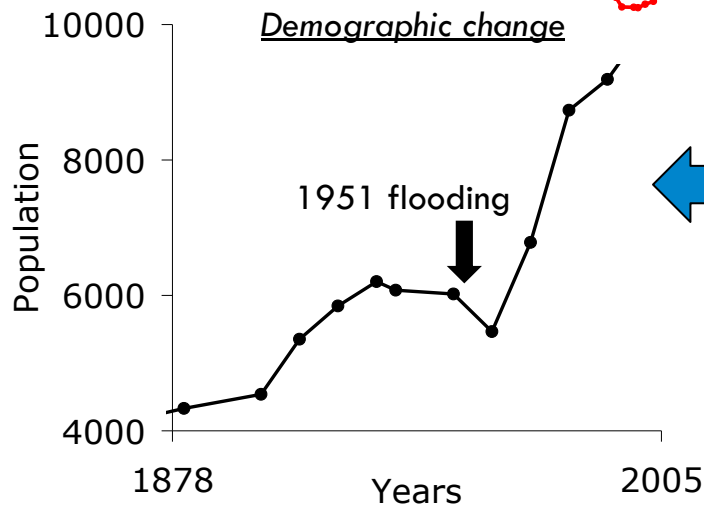
# Floodplains as human-water systems

Example: Levee building and heightening on the River Po (Italy)

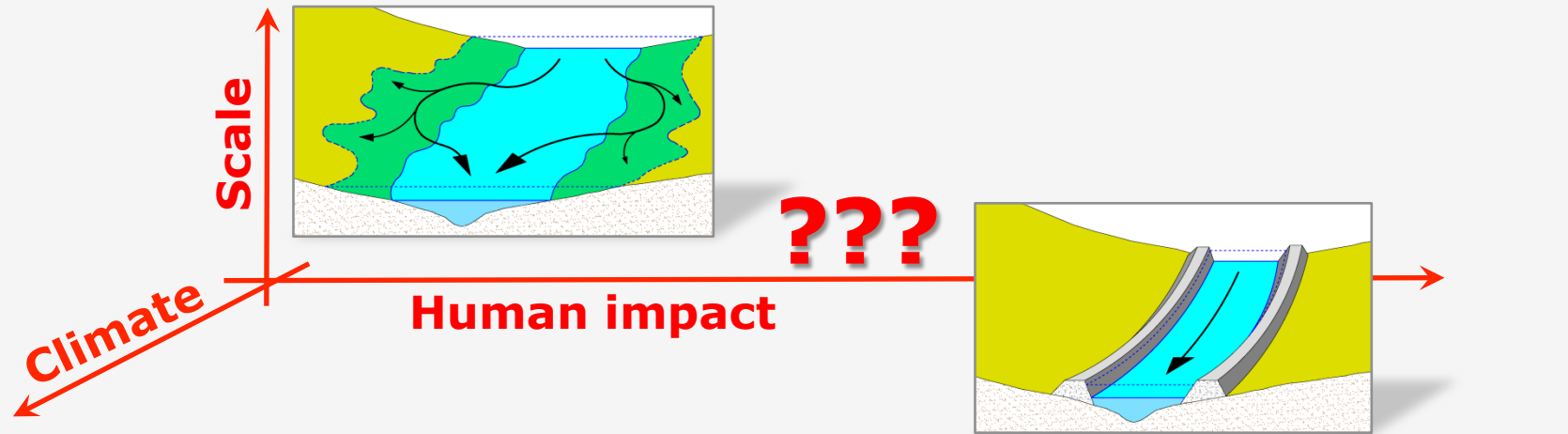


“Levee effect”

Increasing flood magnitude



# Understanding the behavior of floodplains



Large, undisturbed floodplain

Tropical climate  
Complex natural processes  
Regularly flooded

People tend to “live with floods”

Smaller, human-altered floodplain

Temperate climate  
Constrained by structures  
Rarely flooded

People tend to “fight floods”

**Understanding > Better Predictions > Flood Risk Prevention**

**“More effective prevention strategies would not only save tens of billions of dollars, but hundreds of thousands of lives as well.**

Funds currently spent on intervention and relief could be devoted to enhance equitable and sustainable development instead, which would further reduce the risk of wars and disaster.

**Building a culture of prevention is not easy, however.**

While the cost of prevention has to be paid in the present, its benefits lie in the distant future. Moreover, the **benefits are not tangible; they are wars and disasters that do not happen.”**

*(Kofi Annan, Facing the Humanitarian Challenge:  
Towards a Culture of Prevention, WSSD 2002)*

