



## **Uncertainty quantification in flood risk assessment**

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Uncertainty is inherent to flood risk assessments because of the complexity of the human-water system, which is characterised by nonlinearities and interdependencies, because of limited knowledge about system properties and because of cognitive biases in human perception and decision-making. On top of the uncertainty associated with the assessment of the existing risk to extreme events, additional uncertainty arises because of temporal changes in the system due to climate change, modifications of the environment, population growth and the associated increase in assets.

Novel risk assessment concepts are needed that take into account all these sources of uncertainty. They should be based on the understanding of how flood extremes are generated and how they change over time. They should also account for the dynamics of risk perception of decision makers and population in the floodplains. In this talk we discuss these novel risk assessment concepts through examples from Flood Frequency Hydrology, Socio-Hydrology and Predictions Under Change.

We believe that uncertainty quantification in flood risk assessment should lead to a robust approach of integrated flood risk management aiming at enhancing resilience rather than searching for optimal defense strategies.