



## **Modeling Hydrological Extremes in the Anthropocene**

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Hydrological studies have investigated human impacts on hydrological extremes, i.e. droughts and floods, while social studies have explored human responses and adaptation to them. Yet, there is still little understanding about the dynamics resulting from two-way feedbacks, i.e. both impacts and responses. Traditional risk assessment methods therefore fail to assess future dynamics, and thus risk reduction strategies built on these methods can lead to unintended consequences in the medium-long term.

Here we review the dynamics resulting from the reciprocal links between society and hydrological extremes, and describe initial efforts to model floods and droughts in the Anthropocene. In particular, we first discuss the need for a novel approach to explicitly account for human interactions with both hydrological extremes, and then present a stylized model simulating the reciprocal effects between droughts, floods and reservoir operation rules. Unprecedented opportunities offered by the growing availability of global data and worldwide archives to uncover the mutual shaping of hydrological extremes and society across places and scales are also discussed.