

Computing Societal Dynamics in response to climate change

Assessments of socio-economic impacts of climate-induced hazards is usually done by estimating aggregate monetary damages. Yet, it tells little about the actual extent of a catastrophe. It misrepresents the impact on the poor and most vulnerable groups, neglects communities' resilience and ignores that people and societies adapt. Social sciences accumulate substantial knowledge on individual choices, decisions under risk and adaptation behavior. In the absence of aggregation techniques, this empirical data is, however, rarely combined with economic assessments of losses. Agent-based computational models (ABMs) combined with behavioral data have the potential to address this challenge. In this talk I focus on the role of individual decisions (e.g. households) in shaping patterns of risks and in adapting to the changing climate. I discuss how behavioral biases affect people's choices (for example of where to live) and what cumulative impacts these individual choices create collectively, also when amplified by social interactions and institutions. The talk presents an ABM enriched by behavioral data from social surveys. I illustrate how repetitive hazards and socio-economic dynamics drive autonomous retreat, and when this may trigger structural shifts in flood-prone property markets leading to climate gentrification. I finish with sharing how we might extrapolate our current knowledge about behavior under risk to a climate-changed world with intensity of hazards not seen in the living memory of people.