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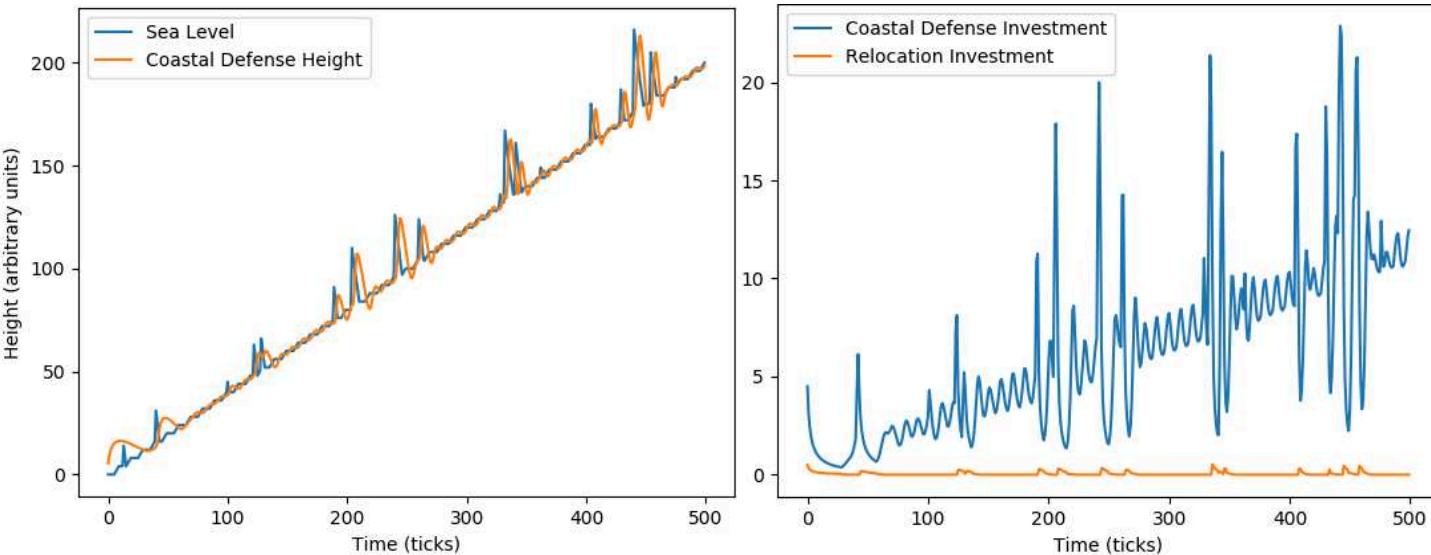
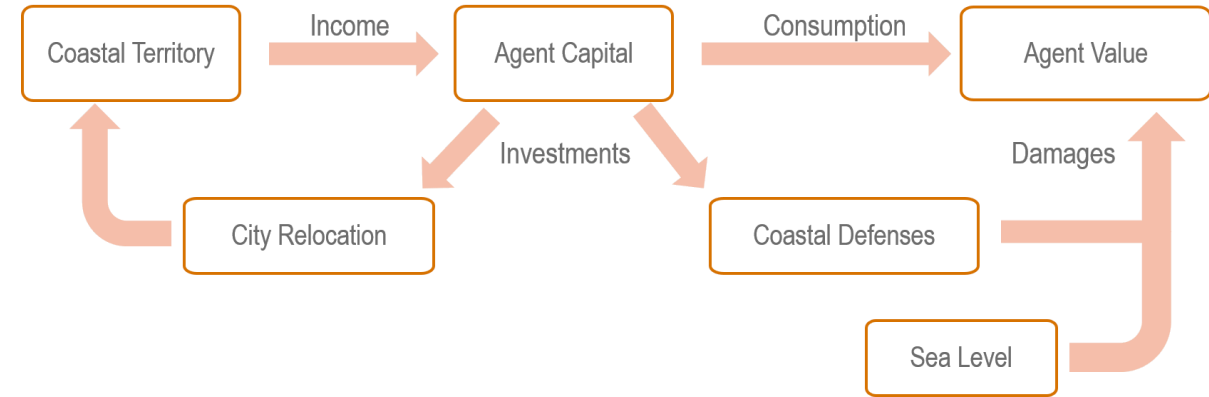
Agent Adaptation in an Urban Coastal Scenario: Applying the VIABLE Framework

Shubhankar Sengupta¹, Jürgen Scheffran², Dmitry V. Kovalevsky¹

1) Climate Service Center Germany (GERICS), Helmholtz-Zentrum Geesthacht

2) Research Group Climate Change and Security (CLISEC), Institute of Geography, Center for Earth System Research and Sustainability (CEN), Universität Hamburg

- We utilize agent-based modelling, an approach involving autonomous decision-making agents.
- The VIABLE framework simulates agents in a bounded environment moving towards increasing target values with limited capabilities and resources. This framework is applied to an 'urban planner' agent in a coastal city.
- The city faces potential damages from sea level rise and related hazards.
- The agent's value function is tied to consumption of the resources generated by the city, balanced against the damages it faces from climate hazards.



- These resources can alternatively be invested into adaptation actions that can reduce these damages:
 - Developing coastal defenses, that when sufficient, minimize damages from sea level rise, but depreciate over time
 - Relocating vulnerable territories of the city inland
- Randomized climate shocks are introduced as extreme sea level events, which increase in frequency & severity with time, further pushing the agent towards adaptation actions.
- Our results (sample simulation to the left) show the agent being highly reactive: resources are prioritized primarily for consumption; adaptation actions are only taken when damages are incurred. When adaptation does take place, coastal defense development is highly preferred.