

Coupled representation of natural-human water systems: Integration of land and hydrological processes into socioeconomic decisions

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Session Description

Sustainable management of natural-human water systems requires integrated modeling approaches to account for interactions between socioeconomic decisions (e.g., production, trade and consumption of food, water and energy), and land and hydrological processes (e.g., vegetation growth, streamflow, nutrients and chemical loads and transport), across a range of temporal and spatial scales. We invite contributions that offer novel modeling approaches for representing feedback processes between and within natural and anthropogenic components of the water system. Potential topics include but not limited to:

- Representing components of water demand, including processes related to agro-hydrological and crop growth, socio-economic, and management practices.
- Representing components of water supply, including hydro-climate (e.g., runoff generation, glacier and snow accumulation-melt, nutrient and chemical load-transport) and human (e.g., water diversion, reservoir operation) processes that determine water availability in time and space.
- Demonstrating virtual water trade discriminating between blue, green, and grey water resources and their renewability, pollutions, and dynamics across scales.
- Coupling natural and anthropogenic drivers of change in human-water systems at local, regional, and global scales, and assessing their vulnerability to changing conditions using both top-down and bottom-up approaches.
- Using system modeling approaches to represent the formation and evolution of trade-offs between natural and socio-economic drivers of water in time and space.
- Including stakeholders in conflict management and development of adaptive strategies in response to current and future stressors.

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Joint Session Partner: CGU, Earth Surface Processes