

Global landcover change and water resources

Award Year:

2018

Principal Investigator:

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Associated Program:

[Postdoctoral Fellowship Program 2018](#) [1]

Human transformation of Earth's land surface to meet the requirements for food, water, and shelter has a profound impact on hydrological processes and ecological health. Climate change, with increases in precipitation and runoff, can exacerbate the water quality/quantity problem. Strategized landcover planning and allocation of natural infrastructures may alleviate the combined impacts of climate change, population growth, and economic development. This project will first investigate the historic influences on water resources from landcover change within the socio-ecohydrologic data infrastructures at SESYNC and WRI, which include data that characterize social and environmental dimensions of food, energy, and water systems. The research product will be visualized through interactive maps that will allow decision-makers to explore the impacts on water resources over time. Secondly, feasible landcover adaptation scenarios will be evaluated for different future climate models. A global water simulation model will be developed through synthesis of existing data, drawing on the relation between water quality/quantity and conversion of landcover, and will serve as a predictive basis for projecting the impacts on water resources for future landcover and climate conditions. A number of adaptive management scenarios with natural infrastructure implementation will be evaluated using this model to identify sustainable management strategies that are effective in safeguarding water resources from future change in Earth's land surface and climate. The simulation outputs will be demonstrated through interactive maps. The proposed work will advance our understanding and communication of human-environment system vulnerability and provide a strategic framework for sustainably managing water resources in the future.

Associated SESYNC Researcher(s):

[scho](#) [2]

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