RUTGERS ENERGY INSTITUTE

Energy Policy Seminar Series

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Friday, April 28, 2017, 10:45AM
Alampi Room, Marine & Coastal Sciences

Management across Margins: Opportunities to Optimize Water in the United States through Integrated Modeling

Bio: James Rising is a postdoctoral fellow at the Energy and Resources Group at UC Berkeley. He studies the feedback between environmental and human systems, focusing on climate change and the water-energy-food nexus. Dr. Rising is a broadly interdisciplinary researcher, drawing on analytical approaches from multiple fields and developing computational models to understand integrated global challenges. He previously taught within MIT's Experimental Study Group and at Franklin W. Olin College of Engineering. Until recently, he worked as a software developer, working with over a dozen companies on audio and video processing, social networks, and artificial intelligence projects.

Abstract: Water is critical for economic growth and security, food and energy production, industrial and urban activities, and environmental services. The United States is currently burdened with aging water infrastructure, while the future of water supply and demands are being shaped by a changing climate and a transitioning energy system. Planning for water in the United States requires a national perspective and an understanding of the connections and trade-offs across basins and sectors. We have developed a new, spatial and multi-sectoral optimization model of water, energy, and food systems for the United States, as a foundation for a broad range of studies. The model, AWASH, includes a detailed representation of surface and groundwater resources, urban and industrial demands, and the production, distribution, and consumption of major crops. This presentation will describe the model and some of the opportunities it supports for better managing these integrated systems. Focusing on farmer costs and production, we compare the opportunities for effectively using water resources across four "margins", where decisions can be better optimized by removing system barriers. We look at how narrowly defined spatial management and regionally-specific policies stop water from getting to the right places. We look at how the inability to buffer water resources over time can undermine getting water at the right time. We look at how decisions around water supply are better made conjunctively across surface and groundwater. And we look at how decisions of crops and their irrigation demand can produce new landscapes. We are looking for new collaborations to help develop the model and apply it to important questions.

—Coffee/tea will be served prior to the lecture—

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