

This session combines two related Track Sessions into a single "ENV mini-conference."

**Integrated modeling of sustainable food, energy, and water systems
from regional to global scales (organizer: Elena Irwin, The Ohio State University)**

Description:

Linkages among food, energy and water systems, including competition for land, impacts from climate change, and dependencies on trade, imply a complex set of interactions that make it challenging to assess the trade-offs of alternative policies or emerging technologies. Environmental economists are increasingly teaming with other scientists to pursue interdisciplinary research to develop new integrated models of economic and environmental systems that can be used for quantifying these trade-offs and assessing welfare and sustainability outcomes. This session features research from four interdisciplinary projects funded in recent years by NSF's Innovations at the Nexus of Food Energy and Water (INFEWS) program that address various FEWS challenges arising from these linkages, including land use, water quality, groundwater stress, agricultural production, and ecosystem impacts. We also highlight some of the challenges and lessons learned for economists engaged in this type of interdisciplinary work.

Presentations:

- "Integrated modeling of agricultural wastewater systems, watershed hydrology and agricultural management practices for managing nonpoint source nutrient pollution in the U.S. Midwest"
Ben Gramig [presenter], Seojeong Oh, Kevin Wallington, Sundar Noroula, Gregory Mclsaac, Roland Cusick, Ankita Juneja, Vigay Singh, Shaobin Li, Ximing Cai
- "A dynamic regional economic model to evaluate impacts of deglobalizing forces on food, energy and water systems and the sustainability of the Great Lakes region"
Yongyang Cai [presenter], Ziqian Gong, Ziyu Guo, Elena Irwin, Alan Randall, Ian Sheldon
- "Assessing the global consequences of local sustainability solutions in the FEW systems "
Iman Haqiqi [presenter], Uris Baldos, Thomas Hertel, Jing Liu
- "The role of innovation to ensure sustainable food, energy, and water supplies in intensively cultivated regions of the northern Corn Belt region"
Jeff Peterson [presenter], Lucia R. Levers, Brent Dalzell
- "Challenges and opportunities of interdisciplinary research on food, energy, water systems "
Elena Irwin [presenter]

Targeting Efforts to Reduce Gulf Hypoxia: The Role for Innovative Policies, Technologies and Social Cost Estimates (organizer: Madhu Khanna, University of Illinois)

Description:

In spite of significant regulation and conservation spending, hypoxia in the Gulf of Mexico has continued to grow. This session will explore the effectiveness of a wide range of policy designs, conservation programs and emerging technologies in reducing hypoxia. Estimates of social benefits of improving water quality in the region will inform how much and where effort should be targeted to reduce nutrient run-off.

Presentations:

- The social cost of water pollution in the Mississippi River Basin
Catherine Kling [presenter]
- Discerning a signal from the noise: how do USDA conservation programs impact nitrogen and phosphorus in our waterways?
Ben Gramig [presenter], Shanxia Sun, Michael Delgado, Hsin-Chieh Hsieh
- Using multi-scale analysis to inform nutrient pollution management
Thomas Hertel [presenter], James Shortle, Danielle Grogan, Justin Johnson
- The end of attrition? The effect of remote sensing on statistical power for program evaluation
Collin Weigel [presenter], Linda Prokopy, Paul Ferraro, Sheila Reddy
- Harnessing emerging technologies to reduce Gulf hypoxia
Madhu Khanna [presenter]