



DEPARTMENT OF
**Civil and
Environmental Engineering**
UNIVERSITY OF WISCONSIN-MADISON

Seminar Announcement

Dr. Megan Konar, Assistant Professor

Civil and Environmental Engineering, University of Illinois at Urbana-Champaign

Thursday March 1, 3:30-4:45 pm

2305 Engineering Hall

Mini-Talk #1: High-Resolution Water Footprints of Production of the United States

The United States is the largest producer of goods and services in the world. Rainfall, surface water supplies, and groundwater aquifers represent a fundamental input to economic production. Despite the importance of water resources to economic activity, we do not have consistent information on water use for specific locations and economic sectors. A national, spatially-detailed database of water use by sector would provide insight into US utilization and dependence on water resources for economic production. To this end, we calculate the water footprint of over 500 food, energy, mining, services, and manufacturing industries and goods produced in the US. To do this, we employ a data intensive approach that integrates water footprint and input-output techniques into a novel methodological framework. This approach enables us to present the most detailed and comprehensive water footprint analysis of any country to date. This study broadly contributes to our understanding of water in the US economy, enables supply chain managers to assess direct and indirect water dependencies, and provides opportunities to reduce water use through benchmarking. In fact, we find that 94% of US industries could reduce their total water footprint more by sourcing from more water-efficient suppliers in their supply chain than they could by converting their own operations to be more water-efficient.

Mini-Talk #2: Global Distribution of Major Crops from 1961 to 2014

Current global cropland datasets are limited in crop specificity and temporal resolution. Time series maps of crop specific agricultural areas would enable us to better understand changes in global agricultural geography. To this end, we develop a global gridded dataset of crop specific agricultural areas from 1961-2014. To do this, we downscale national cropland information through the development of a Probabilistic Cropland Allocation Model (PCAM). Our methodology relies upon gridded Global Agro-Ecological Zones (GAEZ) maps, the History Database of the Global Environment (HYDE), and crop calendars from Sacks et al (2010). We estimate crop-specific agricultural areas for a 0.5 degree spatial grid and annual time scale for all major crops. We validate our global estimates for the year 2000 with Monfreda et al (2008) and our time series estimates within the United States using census data at the county spatial resolution. Our results shed light on how the global agricultural geography of major crops has changed over the past half century.

About the speaker:

Megan Konar is an assistant professor in the Department of Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign. Prof. Konar's research focuses on the intersection of water, food, and trade. Her research is interdisciplinary and draws from hydrology, environmental science, and economics.