Postdoctoral Researcher in Water Sustainability and Climate: Water, land use and climate change in an urbanizing agricultural region

A two-year postdoctoral researcher position is available with the **Water Sustainability and Climate (WSC)** research group at the **University of Wisconsin-Madison** as part of a five-year project funded by the National Science Foundation. The position will be co-supervised by Drs. Chris Kucharik and Steve Loheide. This position is focused on using an agroecosystem model (Agro-IBIS) coupled to a groundwater flow model (MODFLOW) to investigate the impacts of changing land use, land cover and climate on hydrology and other related ecosystem services of the Yahara Watershed in southern Wisconsin. Therefore, this position requires strong background in ecohydrology, with preference to those with previous experience in groundwater flow modeling and modeling the connections between groundwater and land surface processes. The scientific goals of this two-year postdoctoral position are: (1) complete development and calibration of the newly developed Agro-IBIS-MODFLOW (AIM) model for the Yahara Watershed, and (2) use this new modeling approach to examine the impacts of changing climate and land use/cover on flows of water, N, and P through the watershed using a series of integrated scenarios that portray several pathways of change out to the year 2070.

Applicants should have strong natural science training with a prior Ph.D. degree in hydrology, civil and environmental engineering, environmental fluid mechanics, geology, water resources management, or related field. Additional background in water quality and quantity, agriculture, and/or land use change desired. Previous numerical modeling experience with groundwater modeling tools such as MODFLOW, COMSOL, ParFlow and/or HydroGeoSphere and the ability to conduct interdisciplinary research is required; experience with MATLAB, FORTRAN, ArcGIS and spatial analysis is strongly desired. Strong GPA, GRE scores, and oral and written communication skills are required.

The postdoc will work closely with an interdisciplinary team spanning social, ecological, and hydrologic scientists. The project involves six faculty, two full-time staff members, and numerous graduate and undergraduate students. The overarching question of our work is: How will ecosystem services related to freshwater vary and how can they be sustained in regional watersheds as climate, land use and land cover, land management, the built environment and human demands change? The geographic setting for this project is the Yahara Watershed, an urbanizing agricultural watershed in southern Wisconsin, containing the city of Madison. Here and elsewhere, human needs for freshwater are growing as changes in climate, landscapes, the built environment and institutions alter water flows and quality in sometimes unpredictable ways. These changes affect ecosystem services related to freshwater, such as flows of freshwater for domestic, agricultural, industrial, recreational and other uses; regulation of floods; water quality; and aspects of human health. To strengthen conceptual frameworks and improve predictive capacity, this interdisciplinary project integrates biophysical and social-economic aspects of regional water systems. The position will also benefit from connections with the North Temperate Lakes – Long Term Ecological Research site and network.

The 2-year **Postdoctoral Research position** will begin in late spring or summer 2014. Review of applications will begin March 14, 2014 and continue until an applicant is selected. To apply, email to Dr. Chris Kucharik (kucharik@wisc.edu) the following in a **single** PDF document: cover letter, CV with undergraduate/graduate GPA and GRE scores, and unofficial undergraduate/graduate transcripts.

Dr. Chris Kucharik
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http://wsc.limnology.wisc.edu/
http://www.sage.wisc.edu/people/kucharik/kucharik.html