

POSTDOCTORAL RESEARCH PROGRAM
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
Cincinnati, Ohio

Project: NRMRL/LRPCD-2006-02

Distributed Hydrologic and Water Quality Modeling For Watershed Management

A postdoctoral research project is available at the U.S. Environmental Protection Agency (EPA) National Risk Management Research Laboratory (NRMRL) in Cincinnati, Ohio. The appointment will be in NRMRL's Land Remediation and Pollution Control Division (LRPCD). Research will be in the area of application of hydrologic/water quality models for watershed management and development of methods for the estimation of model predictive uncertainty. Research could include application, development/modification of hydrologic and water quality models to investigate the role of wetlands in water quality trading and impact of land use changes on water quality and sustainability water resources management in mixed-land use watersheds; development of probabilistic/stochastic methods to quantify model predictive uncertainty; and implementing efficient optimization algorithms such as Genetic Algorithms (GA) to distributed models for cost-effective placement of Best Management Practices (BMPs) in watersheds.

Opportunities are also available for the participant to be involved in a lesser capacity in research projects to numerical and analytical modeling of nutrients cycling and contaminant transport and fate at the sediment-water interface, and groundwater-surface interactions in wetlands and floodplains. The individual will assist in model development, coding, and applications to real data.

The applicant must show evidence of demonstrated novel contributions in numerical/analytical modeling of hydrologic phenomena, model-processes development and/or application of new approaches and techniques for application of distributed models to watershed management. The participant will carry out research responsibilities in both leading and supportive capacities, disseminate projects findings in national meetings, and publish in leading peer-reviewed journals.

This project requires exceptional background in computational hydrology and water quality modeling. Experience in the application of Geographical Information Systems (GIS) and watershed-scale, distributed hydrologic models (e.g., KINEROS-2, WMS-GSSHA, SWAT, AGNPS, etc.) is essential. Experience with FORTRAN and C/C⁺⁺ programming languages, and the use of one of the mathematical platforms (MATLAB, Mathcad, Mathematica) is highly desirable.

Applicants should have received a doctoral degree in civil, environmental engineering, hydrology or a closely related field within three years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date.

The participant will be selected based on academic records, recommendations, research interests, compatibility of background and interests with research programs and projects at NRMRL/LRPCD, and the availability of funds, staff, programs, and equipment.

The appointment is full time for one year in Cincinnati, Ohio, and may be renewed for up to two additional years upon recommendation of NRMRL/LRPCD and subject to availability of funds.

The participant will receive a monthly stipend between \$5,000 and \$5,400 depending on experience. The participant must show proof of health and medical insurance. Limited inbound travel and moving expenses may be reimbursed according to established policies. The participant does not become an EPA employee.

The mentor for this project is Dr. Mohamed Hantush. He can be contacted at (513) 569-7089 or at hantush.mohamad@epa.gov.

The Postdoctoral Research Program for NRMRL is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # NRMRL/LRPCD-2006-02 when calling or writing for information.*** For additional information and application materials contact: Postdoctoral Research Program/NRMRL, Attn: Betty Bowling, Science and Engineering Education - MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117, Phone: (865) 576-8503 FAX: (865) 241-5219 e-mail: betty.bowling@ornl.gov.

An application can be found at www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf