# Unsaturated Zone Interest Group News

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## Articles

### USGS Humid-Region Recharge Studies Underway

[summarized from e-mail communications by Norm Grannemann, Ground-Water Resources Program director]

The U.S. Geological Survey (USGS) Ground-Water Resources Program received 48 proposals in response to a request for proposals to evaluate the temporal and spatial variability in ground-water recharge, issued in June 2002. Ground-water recharge to surficial aquifers from precipitation or infiltration from surface-water bodies was of primary interest for this call for proposals. The following six proposals were selected:

*1. Evaluating Recharge Parameter Sensitivities in the Deep Percolation Model and the Precipitation-Runoff Modeling System*

Figure 1. Installation of soil moisture probes at the Bemidji crude-oil spill site in Minnesota. Data from these probes are being used to estimate recharge based on the zero-flux plane method.

**In this issue...**

Articles 1
News & Updates 2
Publications & Websites of Interest 3

*--Matt Ely; Washington District.*

*2. Temporal and Spatial Variability in Ground-Water Recharge in the Upper Mississippi Basin, Minnesota*

*--Geoff Delin; Minnesota District. (Fig. 1.)*

*3. Spatial and Seasonal Variability of Recharge in Shallow Coastal Plain Aquifers, North Carolina*

*--Tim Spruill; North Carolina District.*

*4. Comparison of Methods for Estimating Ground-Water Recharge and Conceptual Modeling of Ground-Water Accretion Behavior at the USDA-ARS East Mahantango Creek Watershed in East-Central Pennsylvania*

*-- Dennis Risser; Pennsylvania District. (Fig. 2.)*

*5. Spatial Variability of Ground-Water Recharge in Selected Principal Aquifers of the Eastern United States*

*--Tom Nolan; A collaboration of the NAWQA Program and GWRP.*

*6. Spatial and Temporal Shallow Recharge Rates in Wisconsin.*

Figure 2. Zero-tension lysimeters, 0.76 m diameter and 1 or 2 m deep, at the Masser Recharge Site, Pennsylvania, operated by USDA-ARS. Water percolating out of each lysimeter is collected and automatically weighed at 30-minute intervals. Downward fluxes computed from these data are interpreted as recharge-rate estimates.

*--Randy Hunt; Wisconsin District.*

Ground-water recharge is a critical part of the water budget, yet it is difficult to quantify. Regional evaluations of the Nation's ground-water resources are a principal part of the mission of the Ground-Water Resources Program. Accurate and consistent estimates of recharge are needed to support regional studies of ground water undertaken as part of the National Water Quality Assessment (NAWQA) and State Cooperative Water Programs. Research also is needed to improve the understanding and linkage between physical processes controlling recharge and regional recharge estimates. Although the USGS and others have been conducting research on various site-specific and regional methods of estimating recharge, the goal of straightforward regional application has yet to be achieved in many cases.

The USGS must continue to develop and test methods that quantify recharge at scales ranging from local to regional. The need for GIS systems and mapping capability to describe the spatial and temporal variability of recharge also remains a priority. Improved knowledge of this variability is needed to help regional and local water managers protect aquifers under the stresses imposed by expanding urbanization or drought. For these types of applications, recharge maps need to provide sufficient detail on recharge to account for local variations in soil, land use and land cover, topography, precipitation, and drainage. To produce maps of the requisite detail, there is a need for research that allows determinations of recharge from local, site-specific case studies to be "scaled-up" to regional aquifers.

## News & Updates

### Planning for This Year's National UZIG Meeting

Later summer or fall, possibly October 2003, is possible for the next UZIG meeting. Expectations from the last meeting (Idaho Falls, July 2001) were that we would have the next meeting two years later, which means soon. Sites have been suggested in New Mexico, Colorado, Washington, and elsewhere. What we need is one with a good meeting venue, reasonable travel access, interest to the UZIG membership, and support from local UZIG members. Bill Herkelrath (USGS, NRP, Menlo Park) has volunteered to coordinate arrangements. Please contact Bill (wnherkel@usgs.gov, or 650-329-4625) with ideas, suggestions, or expressions of interest.

### Other Upcoming Meetings

*Soil Science Society of America Annual Meeting*

*November 2-6, 2003*
*Denver, Colorado*

Abstract deadline: July 23, 2003

Areas of soil science that will have sessions at the meeting include: physics, chemistry, biology, management and conservation, and environmental quality.

For more information:
http://www.asa-cssa-sssa.org/anmeet/

*IGWMC Conference "MODFLOW and More 2003: Understanding through Modeling"*

*September 16-19,2003*
*Golden, Colorado*

Abstract deadline: April 20, 2003

The conference is open to papers related to any ground-water model -- not just MODFLOW. The subject of papers can range from the practical application of models to the theory of modeling methods.

For specific information, visit:

http://typhoon.mines.edu/events/modflow2003/modflow2003.shtml

## Publications & Websites of Interest

**Methods of Soil Analysis, Part 4—Physical Methods, edited by J.H. Dane and G.C. Topp**

Published by the Soil Science Society of America

The 3rd edition of Methods of Soil Analysis, which serves as a standard reference for many soil science procedures, was recently released in 2002 (previous version 1986). Topics include lab and field methods for measuring unsaturated properties of liquid water (including sections on parameterization of the water retention and unsaturated conductivity relations and the use of pedotransfer functions to estimate hydraulic properties), gas sampling, heat measurements, solute transport, multifluid flow, and much more. A diverse group of authors has contributed to this book, including USGS scientists Brian Andraski (Nevada district), Alan Flint and Lorrie Flint (California district), and John Nimmo, Kim Perkins, and Kari Winfield (NRP, Western Region).

For more information, visit the website:

http://www.asa-cssa-sssa.org/cgi-bin/Web_store/web_store.cgi?page=sssa_books.html&cart_id=9007977_24754

**Soil physics home page of the Soil Science Society of America:**

http://environmental.gatech.edu/S1/s1home.htm

**Soil chemistry home page of the Soil Science Society of America:**

http://www.oznet.ksu.edu/pr_schem/S-2.html

**The International Association of Hydrogeologists:**

http://www.iah.org/

**Hydrogeology Division of the Geological Society of America:**

http://gsahydrodiv.unl.edu/gsahydrodiv/index.htm

**A listing of soil physics websites (it would be good to see more USGS sites included):**

http://environmental.gatech.edu/S1/s1link/s1res.htm

**USGS-NRP Unsaturated Zone Flow Project Website**

http://wwwrcamnl.wr.usgs.gov/uzf

**USGS-UZIG Website**

http://mn.water.usgs.gov/uzig/

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