

## Unsaturated Zone Interest Group Overcomes Barriers to Advance Interdisciplinary Science

In multidisciplinary research, there is hardly a better way to promote major advances than by easing the way to transcend topical and organizational boundaries. This has been the goal of the Unsaturated Zone Interest Group (UZIG) since its initiation in 1987 for unsaturated zone, or vadose zone, research, which involves multiple disciplines. Researchers commonly have academic backgrounds in soil science, agriculture, hydrology, soil mechanics, fluid mechanics, civil engineering, or various other fields, often with additional expertise in biology, physics, chemistry, geology, and mathematics. Modes of investigation include lab and field experiments, environmental monitoring, theoretical analysis, and numerical simulation; applications are in areas as diverse as agriculture, water quality, mining, landslide prediction, and ecosystem management.

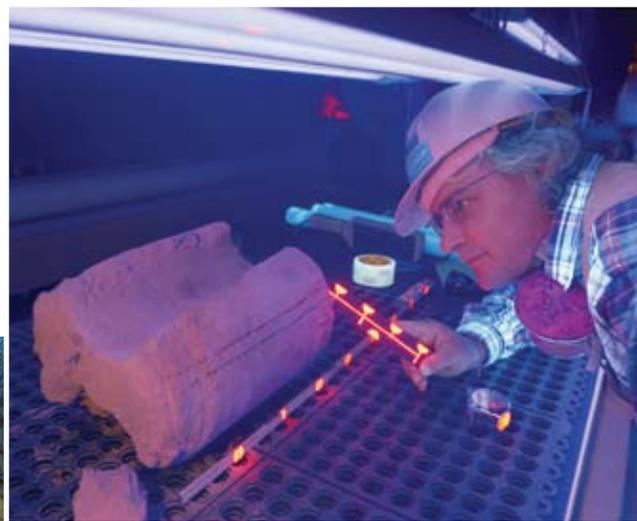
UZIG was created as an informal organization sponsored by the U.S.

Geological Survey (USGS), and at first, its main activity was to connect scientists whose main specialty was soils or soil physics with those whose emphasis was more hydrologic, related to water supply and water quality issues. After more than 22 years, UZIG has broadened, not only topically, but with increasing involvement from outside both the USGS and the United States.

The May 2009 issue of *Vadose Zone Journal* (VZJ) contains a special section with recent contributions from UZIG. This journal is especially appropriate for this set of articles because VZJ itself was launched under SSSA sponsorship in 2003 for a similar purpose of filling gaps and bridging barriers that result from traditional divisions of subject matter.

UZIG encouragement and support of interdisciplinary collaboration occurs primarily through meetings with presentations, informal discussions, and field trips. Most meetings are sponsored jointly by USGS and one or more other institutions. UZIG is made up of volunteers and has no budget, dues, or official staff. One consequence of such an informal structure is that meetings do not occur on a regular schedule but rather whenever a group of people within UZIG commits to organizing one. Presentations at the 10th meeting of UZIG at Los Alamos, NM in August 2007, jointly sponsored by the USGS and Los Alamos National Laboratory, served as the initial basis for selecting the special section of papers in the May issue of VZJ.

Not surprisingly, this special section covers highly diverse subject matter, but the 11 individual research



LEFT: An underground image of an L-shaped alcove used to conduct the Busted Butte Unsaturated Zone Transport Test. Experimental and modeling results from the test are presented by Philip Stauffer and colleagues from Los Alamos National Laboratory (LANL) as part of a special section in the May issue of *Vadose Zone Journal*. ABOVE: An LANL scientist observes flow results of fluorescent traced fluid under black-light conditions from a section of core obtained from the Busted Butte Unsaturated Zone Transport Test.





Los Alamos National Laboratory scientist observes injection quantities of traced fluid for the Busted Butte Unsaturated Zone Transport Test.

papers can be considered in two broad categories: (1) soil–plant–atmosphere interactions and (2) unsaturated-zone

properties and processes. The first category includes papers on the dynamics of hydrologic and contami-

nant-transport processes. The second category groups papers that emphasize improved measurement and predictive modeling approaches for characterizing earth–air–water systems. In addition to topical diversity, the reported research includes work done in the laboratory and in environmental settings that range from humid subtropical forest, to agricultural fields, to desert scrub.

These papers represent a small portion of the interdisciplinary unsaturated-zone research promoted by UZIG and USGS. Their publication exemplifies the constructive contributions to unsaturated-zone science that are facilitated by active measures to span traditional disciplinary and institutional boundaries.

*Nimmo, J.R., B.J. Andraski, and R. Muñoz-Carpena. 2009. UZIG/USGS research: Advances through interdisciplinary interaction. Vadose Zone J. 8. This special section will be posted online by mid-May at <http://vzj.scijournals.org/content/vol8/issue2>*