Science Societies

Vadose Zone Journal celebrates 20th volume

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image

In 2002, inaugural *Vadose Zone Journal* (VZJ) Editor Rien van Genuchten wrote,

"The scientific community needs a home for research that covers all of the physical, chemical, and biological aspects of the vadose zone, especially multidisciplinary research."

Nineteen years and 20 volumes later, that home certainly is VZJ.

"*Vadose Zone Journal* has been a fantastic addition to the scientific literature," says Editor Markus Flury. "It has pioneered research on the interface between the atmosphere and the geosphere, bringing this critical zone to the forefront."

Not only is the journal broad-reaching, transdisciplinary, and impactful, it also set some prescient trends in scientific publishing. Since its inception, VZJ has been entirely paperless, and it was the first ASA, CSSA, or SSSA journal to transition to an open access model. In the coming years, Flury hopes to see VZJ maintain the rigorous quality of its publications while expanding its reach into more interdisciplinary research. It's a goal perfectly in keeping with Genuchten's vision: for VZJ to "break down barriers between disciplines and societies while also narrowing the increasingly severe gap between the state-of-the-science and the state-of-the-practice."

Below, you can see a top five list of VZJ's all-time most-cited articles, which neatly illustrate the journal's wide range of subject matter and current applicability to a huge swath of disciplines.

VZJ's Top Five Most-Cited Articles

1. **"Development and Applications of the HYDRUS and STANMOD Software Packages and Related Codes" (**Šimůnek et al., **2008)—1082 Citations**

   The definitive paper on applications of HYDRUS and STANMOD, two widely used modeling tools developed by the USDA-ARS and the University of California–Riverside over three decades. These modeling tools help researchers better calculate vadose zone flow, which scientists use as foundational tools of the trade today.

2. **"Measuring Soil Water Content with Ground Penetrating Radar: A Review" (** Huisman et al., **2003)—989 Citations**

Geophysicists, forensic anthropologists, engineers, and, of course, soil scientists have all cited this comprehensive review—and that's just in 2021. This review outlines ground-penetrating radar technology and techniques, offering insights that a broad range of researchers have counted essential. In 2018, VZJ published a follow-up review, offering another decade's worth of insights for an incredibly practical, transdisciplinary technique.

3. **"A Review of Advances in Dielectric and Electrical Conductivity Measurement in Soils Using Time Domain Reflectometry" (**Robinson et al., **2003)—982 Citations**

   This paper tackles time domain reflectometry (TDR) techniques that measure a material's permittivity—that is, its ability to store electrical energy in an electrical field. Coupled with EC, TDR is a useful technique to estimate the water content in soil. This year alone, scientists cited this article in new research on precision agriculture, biochar applications, tree stem water content, and monitoring general agricultural field conditions.

4. **"Estimating Uncertain Flow and Transport Parameters Using a Sequential Uncertainty Fitting Procedure" (**Abbaspour et al., **2004)—876 Citations**

   If you're looking for a statistical term that sounds like a Star Trek reference, this paper has it. Using Latin hypercube sampling, among many other techniques, this research team created a model that better analyzes the uncertainty in calculating the cause of water movement in the soil. They used two municipal solid waste incinerator bottom ash landfills to test the model, monitoring the leachates coming from the site. This paper has recently popped up in ground and satellite watershed monitoring, crop production, water management, and land use studies.

5. **“Soil Moisture Measurement for Ecological and Hydrological Watershed-Scale Observatories: A Review” (**Robinson et al., 2008**)—838 Citations**

   This review tackles advances in sensor technology—particularly geophysical methods and distributed sensors—for better understanding how soil hydrology impacts the watershed. Soil moisture impacts runoff, microbial activity, nitrification, and respiration. The paper has been cited in plant species composition studies, broad analyses of climate, and “plant wearable” technology, to name a few recent articles.

Dig Deeper

- Read Rien van Genuchten’s inaugural letter from the editor here: **https://doi.org/10.2136/vzj2002.1000**
- Read the current editorial team’s perspective on VZJ’s 20th anniversary here: **https://doi.org/10.1002/vzj2.20141**

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