SPECIAL SECTION: ZNS'03 VADOSE ZONE RESEARCH

Preface: ZNS'03 Vadose Zone Research 281
Javier Álvarez-Benedí

Adsorption–Desorption of Arsenate in Three Spanish Soils 282–290
J. Álvarez-Benedí, S. Bolado, I. Cancillo, C. Calvo, and D. García-Sinovas

Simplified Method to Estimate the Green–Ampt Wetting Front Suction and Soil Sorptivity with the Philip–Dunne Falling-Head Permeameter 291–299
C.M. Regalado, A. Ritter, J. Álvarez-Benedí, and R. Muñoz-Carpena

Using TDR and Inverse Modeling to Characterize Solute Transport in a Layered Agricultural Volcanic Soil 300–309
A. Ritter, R. Muñoz-Carpena, C.M. Regalado, M. Javaux, and M. Vanclooster

Simulation of Tracer Dispersion in Porous Media Using Lattice Boltzmann and Random Walk Models 310–316
Francisco J. Jiménez-Hormero, Juan V. Giráldez, and Ana Laguna

Soil Water-Holding Capacity Assessment in Terms of the Average Annual Water Balance in Southern Spain 317–328
Karl Vanderlinden, Juan V. Giráldez, and Marc Van Meirvenne

Characterization of Nitrogen Transformations, Sorption and Volatilization Processes In Urea Fertilized Soils 329–336
S. Bolado Rodríguez, A. Alonso-Gaite, and J. Álvarez-Benedí

Volatile Organic Compounds in the Saturated–Unsaturated Interface Region of a Contaminated Phreatic Aquifer 337–344
Daniel Ronen, Ellen R. Graber, and Yael Laor

Experimental System for Studying the Hydromechanical Behavior of Porous Media 345–353
Roberto Rodríguez, Lucila Candela, and Antonio Lloret

REVIEWS AND ANALYSES

Significance of Well Locations and Flow Rates in Bioventing Systems Design 354–359
Wa’il Y. Abu-El-Sha’r and Jehad Y. Al-Zou’by

Simulating Solute Transport in Porous or Fractured Formations Using Random Walk Particle Tracking: A Review 360–379
Frédéric Delay, Philippe Ackerer, and Charles Danquigny

ORIGINAL RESEARCH

Measurement and Modeling of Temporal Variations in Hydrocarbon Vapor Behavior in a Layered Soil Profile 225–239
G.B. Davis, J.L. Rayner, M.G. Trefry, S.J. Fisher, and B.M. Patterson

Intercomparison of Flow and Transport Models Applied to Vertical Drainage in Cropped Lysimeters 240–254

Unsaturated Flow Through Spherical Inclusions with Contrasting Sorptive Numbers 255–263
Alex Furman and A. W. Warrick

Defining Geometric Similarity in Soils 264–270
Bhabani S. Das, Nathan W. Haws, and P. Suresh C. Rao

Infrared Thermography and Fracture Analysis of Preferential Flow in Chalk 271–280
Annette E. Rosenbom and Peter Jakobsen

Comparison of a Lattice-Boltzmann Model, a Full-Morphology Model, and a Pore Network Model for Determining Capillary Pressure–Saturation Relationships 380–388
H.-J. Vogel, J. Tölke, V.P. Schulz, M. Krafczyk, and K. Roth

A Genetic Algorithm for Predicting Pore Geometry Based on Air Permeability Measurements 389–397
E. Unsal, J.H. Dane, and G.V. Dozier

An Improved Dual-Permeability Model of Water Flow and Solute Transport in the Vadose Zone 398–406
Mats Larsbo, Stephanie Roulier, Fredrik Stenemo, Roy Kasteel, and Nicholas Jarvis

Scaling and Estimation of Evaporation and Transpiration of Water across Soil Textures
Joseph A. Kozak, Lajpat R. Ahuja, Liwang Ma, and Tim R. Green 418–427

A Dynamic Air Permeameter for Coarse-Textured Soil Columns and Cores
J.S. Tyner, W.C. Wright, J. Lee, and A.D. Crenshaw 428–433

Buckingham, 1907: An Appreciation
T.N. Narasimhan 434–441

BOOK REVIEWS

Soil Tillage in Agroecosystems
Warren Busscher 442

Groundwater Recharge in a Desert Environment: The Southwestern United States
Thomas Harter 443–444

Soil and Water Chemistry: An Integrated Approach
George F. Vance 445

Agrometeorology. Principles and Applications of Climate Studies in Agriculture
D. Wang 446

Pesticide Residues. Significance, Management and Analysis
Ruth H. Ellerbrock 447

Principles of Soil Physics
Maria Inés Dragila 448

An Introduction to the Environmental Physics of Soil, Water and Watersheds
Laosheng Wu 449

Fundamentals of Soil Ecology
Hector Causarano 450

Unsaturated Soil Mechanics
Markus Berli and Dani Or 451

Cover: In a quarry in Denmark, extensive fracture mapping and infrared thermography investigations of exposed Cretaceous chalk walls reveal a preferential flow pattern, which seems to be influenced by the regional setting. In “Infrared Thermography and Fracture Analysis of Preferential Flow in Chalk,” Annette E. Rosenbom and Peter R. Jakobsen from the Geological Survey of Denmark and Greenland (GEUS) describe a valid and useful tool for distinguishing between hydraulically active and inactive fractures, p. 271–280.