DANI OR, PhD - Curriculum Vitae

PROFESSOR OF SOIL AND TERRESTRIAL ENVIRONMENTAL PHYSICS

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SUMMARY OF RESEARCH INTERESTS AND SCHOLARLY ACTIVITY

Prof. Or's research focuses on mass and energy transport in porous media; mechanics of abrupt landslides and avalanches; evaporation and gas exchange from porous surfaces, and on linking physical processes and biological activity in soil. Dr. Or has authored over 230 refereed publications, co-authored a book, and over 350 proceeding papers and abstracts. Dr. Or is the outgoing Editor in Chief of the Vadose Zone Journal, recipient of the Kirkham Soil Physics Award (2001), 2004 Fellow of the Soil Science Society of America, chair of the 2008 Gordon Research Conference on Flow and Transport (Oxford, UK), and 2010 Fellow of the American Geophysical Union. He was selected the 2013 Birdsall-Dreiss distinguished lecturer, recipient of the 2013 Helmholtz International Fellow Award, and elected 2014 Fellow of the Geological Society of America (http://www.step.ethz.ch/people/scientific-staff/dani-or)

EDUCATION

Ph.D. Soil Science and Biometeorology (Soil Physics)
Utah State University, Logan, UT. 1990
M.Sc. Soil and Water Sciences, *Cum Laude*.
The Hebrew University of Jerusalem, Israel. 1987
B.A. Soil and Water Sciences, *Cum Laude*.
The Hebrew University of Jerusalem, Israel. 1985

PROFESSIONAL EXPERIENCE

2008 - present	Professor of Terrestrial Env. Physics	ETH - Zurich
2005 - 2008	Professor of Soil & Env. Physics	EPF - Lausanne
2002 - 2005	NU Chair Professor CEE/ENVE	University of Connecticut
2000 - 2002	Professor of Soil Physics	Utah State University
1997 - 2000	Assoc. Professor of Soil Physics	Utah State University
1993 - 1997	Assist. Professor of Soil Physics	Utah State University
1991 - 1992	Post-Doctorate (Civil Eng.)	University of California, Berkeley
1990 - 1991	Post-Doctorate (Hydrologic Sci.)	University of California, Davis
1988 - 1990	Research Assistant	Utah State University

PROFESSIONAL AFFILIATIONS

Editor *Vadoze Zone Journal (2010-2013)*
Editorial Board of *Vadoze Zone* Journal (2001-2010)
Editorial Board of *Advances in Water Resources* (2004-2009)
Associate Editor *Water Resources Research* (1999-2002)
American Geophysical Union
Soil Science Society of America

AWARDS AND HONORS

Elected *Fellow of the Geological Society of America (GSA), 2014*
Selected the *2013 Birdsall-Dreiss distinguished lecturer (Geological Society of America)*
Selected the *2012 Boussinesq lecturer (Center for Hydrology and KNAW)*
Elected *Fellow of American Geophysical Union (AGU), 2010*
Selected for the *Nyle C. Brady Frontiers of Soil Science Lectureship, 2008*
Elected *Chair 2008 Gordon Research Conference (GRC).Flow & Transport in Permeable Media*
Elected to the *Connecticut Academy of Science and Engineering*, *2005*

Elected *Fellow of the Soil Science Society of America*, *2004*
Recipient of the *SSSA Kirkham Soil Physics Award, 2001*

PUBLICATIONS *(ISI Citations=4804, h index 35)*

SCIENTIFIC JOURNALS *(Refereed)* --

(**1**) Or, D., and R.J. Hanks. 1992. Spatial and Temporal Soil Water Estimation Considering Soil Variability and Evapotranspiration Uncertainty. *Water Resour. Res*. 28(3):803-814.

(**2**) Or, D., and R.J. Hanks. 1992. Soil-Water and Crop Yield Spatial Variability Induced by Irrigation Non-uniformity. *Soil Sci. Soc. Am. J*. 52:226-233.

(**3**) Or, D., and R.J. Hanks. 1992. Measurement of Crop Production Functions Using Point Source Sprinkler Irrigation. *Irrigation Sci.* 13:55-64.

(**4**) Govindaraju, R.S., D. Or, M.L. Kavvas, D.E. Rolston, and J. Biggar. 1992. Error Analyses of Simplified Unsaturated Flow Models Under Large Uncertainty in Hydraulic Properties. *Water Resour. Res.* 28(11):2913-2924.

(5) Rubin, Y., and D. Or. 1993. Stochastic Modeling of Unsaturated Flow in Heterogeneous Soils with Water Uptake by Plant Roots: The Parallel Columns Model. *Water Resour. Res*. 29(3):619-631.

(6) Indelman, P., D. Or and Y. Rubin. 1993. Stochastic Analysis of Unsaturated Flow through Bounded Heterogeneous Formations. *Water Resour. Res*. 29(4):1141-1148.

(7) Or, D., and Y. Rubin. 1993. Stochastic Modeling of Unsaturated Flow in Heterogeneous Soils with Water Uptake by Plant Roots: Tests of the Parallel Columns Model Under Two- Dimensional Flow Conditions. *Water Resour. Res*. 29 (12): 4109-4119.

(8) Marion J., D. Or, D.E. Rolston, M.L. Kavvas, and J.W. Biggar. 1994. Evaluation of Methods for Determining Soil Water Retentivity and Unsaturated Hydraulic Conductivity. *Soil Science*. 158(1):1-13.

(9) Or, D., and D.P. Groenveleld. 1994. Stochastic Estimation of Plant-Available Soil Water in Owens Valley Under Fluctuating Water Table Depths. *J. Hydrology* 163:43-64.

(10) Groeneveld, D. P., and D. Or. 1994. Water Table-Induced Shrub-Herbaceous Ecotone in Owens Valley California. *Water Resour. Bull*. 30:911-920.

(11) Or, D. 1994. Book Review "*An Inventory of Irrigation Software for Microcomputers*" by Lenselink K.J. and M. Jurriens. *Irrigation Sci*. 15:196.

(12) Or, D. 1995. Stochastic Analysis of Soil Water Monitoring for Drip Irrigation Management in Heterogeneous Soils. *Soil Sci. Soc. Am. J.* 59:1222-1233.

(13) Shani, U., and D. Or. 1995. In-situ Method for Estimating Subsurface Unsaturated Hydraulic Conductivity. *Water Resour. Res*. 31:1863-1870.

(14) Coelho, F.E., D. Or, and C.L. Andrade. 1995. Evaluation of Steady State Regime and Sensor Placement for Determining Water Content and Matric Potential in Drip Irrigation (in Portuguese). *Pesq. Agropec. Bras. Brasilia* 30(11):1327-1333.

(15) Or, D. and Wynn R. Walker. 1996. Effects of Spatially Variable Intake Properties on Surface Irrigation Advance. *J. Irrig. and Drain. ASCE* 122:122-130.

(16) Kavvas, M.L., Z.-Q. Chen, R.S. Govindaraju, D.E. Rolston, T. Koos, A. Karakas, D. Or, S. Jones, J. Biggar. 1996. Probability Distribution of Solute Travel Time for Convective Transport in Field-Scale Soils Under Unsteady-Nonuniform Flows. *Water Resour. Res*. 32:875-889.

(17) Or, D. and U. Shani. 1996. Reply to comment on "*In-situ Method for Estimating Subsurface Unsaturated Hydraulic Conductivity*". *Water Resour. Res.* 32(6):1897

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(19) Or, D. and H.R. Silva. 1996. Prediction of Surface Irrigation Advance Trajectories Using Soil Intake Properties. *Irrig. Sci.* 16:159-167.

(20) Or, D. 1996. Drip Irrigation in Heterogeneous Soils: Steady State Field Experiments for Stochastic Model Evaluation. *Soil Sci. Soc. Am. J.* 60:1339-1349.

(21) Or, D. 1996. Wetting-Induced Soil Structural Changes: The Theory of Liquid Phase Sintering. *Water Resour. Res*. 32:3041-3049.

(22) Or, D. and E.F. Coelho. 1996. Soil water dynamics under drip irrigation: transient flow and uptake Models. *Trans. ASAE* 39:2017-2025.

(23) Coelho, F.E. and D. Or, 1996. Flow and Uptake Patterns Affecting Soil Water Sensor Placement for Drip Irrigation Management. *Trans. ASAE* 39:2007-2016.

(24) Malek, E., G. E. Bingham, D. Or, and G. McCurdy. 1997. Annual Mesoscale Study of Water Balance in a Great Basin Heterogeneous Desert Valley. *J. Hydrology* 191:223-244.

(25) Coelho, F.E., and D. Or. 1997. Applicability of Analytical Solutions for Water Flow From Point Sources to Drip Irrigation Management. *Soil Sci. Soc. Am. J.* 61:1331-1341.

(26) Jones, S.B., and D. Or. 1999. Particulated Growth Media for Optimal Liquid and Gaseous Fluxes to Plant Roots in Microgravity. *Adv. Space Res*. 22(10):1413-1418.

(27) Jones, S.B., and D. Or. 1999. A Capillary-Driven Root Module for Plant Growth in Microgravity. *Adv. Space Res*. 22(10):1407-1412.

(28) Jones, S.B., and D. Or. 1998. Design of Porous Media for Optimal Liquid and Gaseous Fluxes to Plant Roots. *Soil Sci. Soc. Am. J*. 62:563-573.

(29) Wraith J.M., and D. Or. 1998. Nonlinear Parameter Estimation Using Spreadsheet Software. J. Nat. Resour. Life. Sci. Edu. 27:13-19.

(30) Friel, R., and D. Or. 1999. Frequency Analysis of Time Domain Reflectometry (TDR) with Applications to Dielectric Spectroscopy of Soil Constituents. *Geophysics* 64(3):1-12.

(31) Coelho, F. E., and D. Or. 1999. A Model for Soil Water and Matric Potential Distribution under Drip Irrigation with Water Extraction by Roots. *Pesq. Agropec. Bras. Brasilia* 34(2):225-234 (in Portuguese).

(32) Wraith, J.M., and D. Or. 1999. Temperature effects on time domain reflectometry measurement of soil bulk dielectric constant: experimental evidence and hypothesis development. *Water Resour. Res*. 35:361-369.

(33) Or, D., and J.M. Wraith. 1999. Temperature effects on time domain reflectometry measurement of soil bulk dielectric constant: A physical model. *Water Resour. Res*. 35:371-383.

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(35) Jones, S.B., and D. Or. 1999. Microgravity Effects on Water Flow and Distribution in Unsaturated Porous Media: Analyses of Flight Experiments. *Water Resour. Res*. 35:929-942.

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(48) Mmolawa, K. B., and D. Or, 2000. Root zone solute dynamics under drip irrigation: A review. *Plant and Soil* 222:161-189.

(49) Serbin G, Or D., and D. Blumberg. 2001. Thermodielectric effects on radar backscattering from wet soils. *IEEE TGARS* 39:897-901.

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(53) Ghezzehei, T.A., and D. Or. 2001. Rheological properties of wet soils and clays under steady and oscillatory stresses. *Soil Sci. Soc. Am. J.* 65:624-637.

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(64) Ghezzehei, T.A., and D. Or. 2003. Dynamics of pore space in soil aggregate bed under static and dynamic external loads. *Soil Sci. Soc. Am. J.* 67:12-16.

(65) Mmolawa, K. B., and D. Or, 2003. Experimental and numerical evaluation of analytical volume balance model for soil water dynamics under a drip irrigation. *Soil Sci. Soc. Am. J.* 67: 1657-1671.

(66) Dudley, L. M., S. Bialkowski, and D. Or. 2003. Low frequency behavior of Montmorillonite suspensions. *Soil Sci. Soc. Am. J.* 67:518-526.

(67) Or, D., and M. Tuller, 2003. Hydraulic conductivity of unsaturated fractured porous media: Flow in a cross-section. *Adv. Water Resour*., Vol.26, No.8, 883-898.

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(69) Tuller, M. and D. Or, 2003. Hydraulic functions for swelling soils: pore scale considerations. *J. Hydrology* 272:50-71.

(70) Sukop M.C., and D. Or, 2003. Invasion percolation of single component, multiphase fluids with lattice Boltzmann models. *Physica B 338:298-303.*

(71) Jones, S.B., and D. Or, 2003, Time domain reflectometry (TDR) measurement of water content in high surface area porous media. *Physica B 338:284-290.*

(72) Or, D., 2003. Physical processes affecting microbial habitats and activity in unsaturated porous media. *Agric. Sci.* 7(2):39-45.

(73) Serbin, G. and D. Or, 2003. Near-surface soil water content measurements using horn antenna radar – methodology and overview. *Vadose Zone J. 2:500-510*

(74) Or, D., and M. Tuller. 2003. Response to comment by Toker et al. on “Cavitation during desaturation of porous media under tension”. *Water Resour. Res. 39(11),1306, doi:10.1029/2003WR002492*

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(76) Robinson D.A., S.B. Jones, J.M. Wraith, D. Or, and S.P. Friedman. 2003. A review of advances in dielectric and electrical conductivity measurement in soils using time domain reflectometry. *Vadose Zone J. 2:444-474*

(77) Souza, C.F., D. Or, and E. E. Matsura, 2004. A variable-volume TDR probe for measuring water content in large soil volumes. *Soil Sci. Soc. Am. J. 68:25-3*

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(79) Grant S. A., D. Or, 2004, Relationship between temperature sensitivity of capillary pressure and soil particle size*, Geophys. Res. Lett., 31, L07501, doi:10.1029/2003GL019211*

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permittivity under variable temperature and electrical conductivity. *Water Resour. Res., 42, W06424, doi:10.1029/2005WR004590.*

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(228) Or, D., and F. Moebius (2010) Inertial jumps, pressure bursts and acoustic emissions at displacement fronts: Pore scale dynamics affecting macroscopic properties, 2010 Interpore Conference and Annual Meeting, 2010-3-16, Texas, USA

(229) Lehmann, P., N. Shokri, and D. Or (2010) New methods to determine air-entry values of porous media, Geophysical Research Abstracts, Vol. 12, EGU2010-7517

(230) Michlmayr, G., D. Cohen and D. Or (2010) Characteristics of Acoustic Emissions from Shearing of Granular Material, European Geosciences Union (EGU) General Assembly, 2010-5-3, Vienna, Austria, EGU2010-2752

(231) Moebius, F., and D. Or (2010) Linking acoustic emission and pressure fluctuations with interfacial jumps during fluid displacement in porous media, European Geosciences Union (EGU) General Assembly, 2010-5-6, Vienna, Austria, EGU2010-5057

(232) Cohen, D., M. Schwarz, and D. Or (2010) Mechanics of progressive failures leading to rapid shallow landslides using the fiber bundle model, European Geosciences Union, General Assembly, 2010-5-4, Vienna, Austria, EGU2010-2791

(233) Jin, Y., D. Or, F. Moebius and G. Wang (2010) Colloid mobilization by displacement fluid fronts in porous media, European Geosciences Union (EGU) General Assembly, 2010-5-5, Vienna, Austria, EGU2010-6918

(234) Shahraeeni, E., and D. Or (2010) Temperature field beneath evaporating surface resolved by infrared thermography, EGU General Assembly, 2010-5-6, Vienna, Austria, Geophysical Research Abstracts, 12, EGU2010-3358

(235) Or, D., and F. Moebius (2010) Linking pore scale pressure bursts and interfacial jumps during fluid displacement with porous media pore space characteristics, European Geosciences Union (EGU) General Assembly 2010, 2010-5-6, Vienna, Austria, EGU2010-6943

(236) Cohen, D., M. Schwarz, and D. Or (2010) The fiber bundle model to quantify the mechanics and dynamics of shallow landslides, Triggering of Rapid Mass Movements in Steep Terrain - Mechanisms and Risks, 2010-4-15, Monte Verità, Switzerland

(237) Shokri, N., P. Lehmann, and D. Or (2010) Pore scale dynamics of liquid phase continuity and solute concentration during evaporation from porous media, Gordon Research Conferences on Flow and Transport in Permeable Media, Bates College, ME, USA

(238) Michlmayr, G., A. van Herwijnen, J. Schweizer, D. Cohen and D. Or (2010) Acoustic emissions for early detection of landslide and snow avalanche release, LATSIS Symposium, 2010-11-16, Zurich, Switzerland

(239) Michlmayr, G., D. Cohen and D. Or (2010) Characteristics of acoustic emission generating processes during shearing of granular media, Triggering of Rapid Mass Movements in Steep Terrain - Mechanisms and Risks, 2010-4-12, Monte Verità, Switzerland

(240) Moebius, F., and D. Or (2010) Pore scale study of acoustic emissions and pressure fluctuations during fluid displacement in porous media, Gordon Research Conference - Flow & Transport in Permeable Media, 2010-7-13, Maine, USA

(241) Or, D. (2010) On evaporative fluxes and thermal signatures: From pores to land surfaces, 2nd Summer School on Flow and Transport in Porous and Fractured Media, 2010-8-26, Cargèse, Italy

(242) Or, D., and F. Moebius (2010) Inertial jumps, pressure bursts and acoustic emissions at displacement fronts: Pore scale dynamics affecting macroscopic properties, 2nd Summer School on Flow and Transport in Porous and Fractured Media, 2010-8-27, Cargèse, Italy

(243) Or, D. (2010) The hidden frontier: Life and transport in soil inner spaces, 1st International Conference and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions, 2010-11-30, Viborg, Denmark

(244) Wang, G., and D. Or (2010) Hydration affects motility and nutrient diffusion and governs microbial coexistence on rough surfaces, 1st International Conference and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions, 2010-11-30, Viborg, Denmark, CESAR 2010, 405-408

(245) Or, D., M. Ioannidis and F. Moebius (2010) Bubble dynamics and rapid interfacial displacement in porous media, American Geophysical Union, Fall Meeting, 2010-12-14, San Francisco, USA

(246) Von Ruette, J., P. Lehmann, and D. Or (2010) Concepts of Self-Organized Criticality applied in hydro-mechanical modeling of landslide occurrence at catchment scale, EGU General Assembly, 2010-5-4, Vienna, Austria, Geophysical Research Abstracts, 12, EGU2010-7593

(247) Cohen, D., P. Lehmann, M. Schwarz, G. Michlmayr, and D. Or (2010) Mechanics of hydrologically triggered shallow landslide using concepts of fiber bundle models, IV European Conference on Computational Mechanics, 2010-5-17, Paris, France

(248) Shahraeeni, E., and D. Or (2010) Transient Vapor Transport in Partially Saturated Porous Media with Temperature Gradient, Gordon Research Conference on Flow and Transport in Porous Media, 2010-7-11, Bates College, Lewiston, ME, USA

(249) Shahraeeni, E., and D. Or (2010) Surface wetness limit high evaporation rates from porous media into convective air flows, AGU Fall Meeting, San Francisco, California, USA, Eos Trans. AGU, H53C-1047

(250) Assouline S., and D. Or (2010) Plant water use efficiency shapes co-evolution of stomata size and density over geologic time, AGU Fall Meeting, San Francisco, California, USA, Eos Trans. AGU, B22A-02

(241) Jin, Y., and D. Or (2010) Colloid mobilization by displacement fluid fronts in porous media AGU Fall Meeting, San Francisco, California, USA, Eos Trans. AGU, H51F-0974

(251) Or, D. and N. Shokri (2010), Vaporization plane dynamics at the onset of stage 2 evaporation from porous media, American Geophysical Union, Fall Meeting, CA, USA

(252) Von Ruette, J., A. Papritz, P. Lehmann, C. Rickli, and D. Or (2010) Statistical landslide susceptibility analysis using geomorphic and physically-based variables, International Conference on Triggering of Rapid Mass Movements in Steep Terrains - Mechanisms and Risk, 2010-4-12, Monte Verita, Ascona, Switzerland

(253) Wang, G., and D. Or (2010) Heterogeneous diffusion of two nutrients shape growth and dispersal patterns of competing bacterial species grown on partially saturated rough surfaces, International Symposium of Microbial Contaminant Degradation at Biogeochemical Interfaces, 2010-3-3, Leipzig, Germany, RAISEBIO 2010 IV-6

(254) Lehmann, P., F. Moebius, and D. Or (2011) Characteristic capillary pressures for air- and water-phase continuity, EGU General Assembly, 2011-4-7, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-7985

(255) Lehmann, P., E. Shahraeeni, and D. Or (2011) Surface-atmosphere coupling determines evaporation dynamics from a drying porous surface, Workshop on interfaces and interface displacement in unsaturated porous media, 2011-2-2, Lauterbad, Germany

(256) Lehmann, P., and D. Or (2011) Emergence of power law for frequency-magnitude statistics of shallow landslides based on Self-Organized Criticality hydro-mechanical model, EGU General Assembly, 2011-4-6, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-8803

(257) Lehmann, P., and D. Or (2011) Characteristic capillary pressures for air- and water-phase continuity, EGU General Assembly, 2011-4-7, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-7985

(258) Möbius, F., and D. Or (2011) Interfacial jumps, pressure bursts and acoustic emission during fluid front displacement, Workshop on Interfaces and Interfacial Displacement in Unsaturated Porous Media, 2011-2-2, Lauterbad, Germany

(259) Shahraeeni, E., P. Lehmann and D. Or (2011) Surface wetness affecting coupling with atmosphere during evaporation from porous media, Interpore Annual Meeting, 2011-3-29, Bordeaux, France

(260) Von Ruette, J., P. Lehmann, and D. Or (2011) Catchment scale hydro-mechanical modeling of shallow landslides: dynamics and spatial distribution, EGU General Assembly, 2011-4-7, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-9779

(261) Von Ruette, J., P. Lehmann, and D. Or (2011) Localization patterns and size-timing statistics of rainfall-induced shallow landslides at the catchment scale, AGU, 2011-12-7, San Francisco, USA, Fall Meet. Suppl., NH31B-1551

(262) Wang, G., and D. Or (2011) Constrained motility and nutrient diffusion shape bacterial colony morphology on partially hydrated rough surfaces, FEMS - 4th Congress of European Microbiologists, 2011-6-29, Geneva, Switzerland

(263) Michlmayr, G., D. Cohen and D. Or (2011) Acoustic Emissions Characteristics During Shearing of Granular Media, EGU General Assembly, 2011-4-5, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-10817-1

(264) Or, D., E. Shahraeeni, N. Shokri, and P. Lehmann (2011) Interfacial processes controlling evaporation rates from porous media, EGU General Assembly, 2011-4-7, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-4918

(265) Or, D. P. Lehmann, E. Shahraeeni, and N. Shokri (2011), Capillary and boundary-layer coupling affecting evaporative fluxes and thermal signatures on porous media surfaces, 3rd International Conference on Porous Media (Interpore), 29-31 March, Bordeaux, France

(266) Michlmayr, G., D. Cohen, and D. Or (2011) Progressive shear failure in granular materials: linking force fluctuations with acoustic emissions, AGU Fall Meeting, 2011-12-7, San Francisco, CA, Abstract EP31E-0860

(267) Moebius, F., and D. Or (2011) Fluid displacement fronts in porous media - Pore and front scale interfacial and pressure dynamics, American Geophysical Union, Fall Meeting, 2011-12-6, San Francisco, USA, Eos Trans. AGU, Fall Meet. Suppl., H23C-1285

(268) Or, D., and P. Lehmann (2011) Rainfall-induced shallow landslides - from local progressive failures to hillslope criticality, Fall Meet. Suppl., 2011-12-7, San Francisco, USA, NH33C-03

(269) Shokri, N., M. Sahimi, and D. Or (2011), Morphology and scaling characteristics of propagating drying fronts in porous media delineated by neutron radiography, American Geophysical Union, Fall Meeting, CA, USA, H33A-1269

(270) Grapsas, N., N. Shokri, D. Or (2011), Characteristics of acoustic emissions generated by drying front displacement in porous media, American Geophysical Union, Fall Meeting, CA, USA, H33A-1270

(271) O'Carroll D.M, K. G. Mumford, D. Or and F. Möbius (2011), Non-equilibrium capillarity effects – Insights from REV and pore scale experiments, American Geophysical Union, Fall Meeting, CA, USA, H34B-05

(272) Schymanski S.J., D. Or and M. Zwieniecki (2011), Leaf thermal and hydraulic capacitances – structural safeguards for rapid ambient fluctuations, American Geophysical Union, Fall Meeting, CA, USA, H41J-05

(273) Schymanski S.J., D. Or, M. Sivapalan and M. L. Roderick (2011), Prediction under change: should we trust hydrologic models? American Geophysical Union, Fall Meeting, CA, USA, H24G-05

(274) Shahraeeni, E., and D. Or, Evaporation - Condensation Dynamics Affecting Vapor Transport in Partially Saturated Porous Media: Models and Experiments, EGU General Assembly 2011, 2011-4-7, Vienna, Austria, Geophysical Research Abstracts, 13, EGU2011-5592

(275) Von Ruette, J., A. Papritz, P. Lehmann, C. Rickli, and D. Or, Triggering of shallow landslides: improving predictions of event localization and temporal dynamics at the watershed scale, ITES - Research Colloquia, 2011-11-7, Zurich, Switzerland

(276) Claes, N., and D. Or, Hydration Induced Sporulation and Germination Patterns, EGU 2012, 2012-4-26, Vienna

(277) Cohen, D., G. Michlmayr and D. Or, Statistics of acoustic emissions and stress drops during granular shearing using a stick-slip fiber bundle mode, EGU General Assembly 2012, 2012-4-23, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-5750

(278) Cohen, D., Michlmayr, G., Or, D., Fiber bundle models for granular shearing and acoustic emissions during landslide initiation, Swiss Physical Society Annual Meeting, 2012-6-21, Zürich, Switzerland

(279) Haghighi, E., and D. Or, From pores to eddies-Linking diffusion-based evaporative fluxes from porous surfaces with a turbulent air boundary layer, EGU General Assembly 2012, 2012-4-26, Vienna, Austria, Geophysical Research Abstracts, Vol. 14, EGU2012-2439

(280) Haghighi, E., and D. Or, Thermal signatures of diffusive evaporative fluxes from porous surfaces into turbulent air flow-Coupling eddies with vapor diffusion, Gordon Research Conferences: Flow & Transport in Permeable Media, 2012-6-26, Les Diablerets, Switzerland

(281) Hoogland, F., P. Lehmann, A. Yiotis and D. Or, Evaporation rate from square capillaries limited by corner flow viscous, EGU General Assembly, 2012-4-27, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-10146

(282) Lehmann, P., and D. Or, Evaporative coupling between patchy wet surfaces and air boundary layer, Gordon Research Conferences, Flow & Transport in Permeable Media, 2012-6-26, Les Diablerets, Switzerland

(283) Lehmann, P., E. Shahraeeni and D. Or, Pore scale model for evaporation dynamics from soil surfaces with patchy wetness, EGU General Assembly, 2012-4-27, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-12658

(284) Lehmann, P., J. von Ruette and D. Or, Effect of soil heterogeneity on precursor events and landslide patterns, EGU General Assembly, 2012-4-25, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-7610

(285) Michlmayr, G., D. Cohen and D. Or, Linking acoustic emission signatures with grain-scale mechanical interactions during granular shearing, EGU General Assembly 2012, 2012-4-23, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-7079

(286) Michlmayr, G., D. Cohen and D. Or, Linking grain-scale mechanics and acoustic emissions (AE) during shear zone development in granular materials, Gordon Reseach Conference "Flow & Transport in Permeable Media", 2012-6-25, Les Diablerets, Switzerland

(287) Moebius, F., and D. Or, Fluid front displacement dynamics affecting pressure fluctuations and phase entrapment in porous media, European Geosciences Union (EGU) General Assembly 2012, 2012-4-27, Vienna, Austria, EGU2012-5926

(288) Moebius, F., and D. Or, Pore invasion dynamics during fluid front displacement in porous media - functional pore size distribution and phase entrapment, American Geophysical Union, Fall Meeting, 2012-12-7, San Francisco, USA, Abstract H51G-1430

(289) Or, D., Capillary and boundary-layer coupling affecting evaporative fluxes from porous surfaces, Workshop on Drying of Building and Soil Materials, ENPC, 2012-7-3, Paris

(290) Or, D., Water Retention and Flow in Unsaturated Porous Media - Pore Scale Perspectives, The NATO Science for Peace and Security Programme - NATO Advanced Res. Workshop, 2012-5-8, Dead Sea, Israel

(291) Schymanski, S. J., D. Or, M. L. Roderick and M. Sivapalan, Prediction under change: invariant model parameters in a varying environment, EGU General Assembly 2012, 2012-4-27, Vienna, Austria, Geophysical Research Abstracts, 14, EGU2012-14242

(292) Wang, G., and D. Or, Biophysical Index for Predicting Hydration-Mediated Microbial Diversity in Soils, EGU General Assembly 2012, 2012-4-25, Vienna, Austria, 14, EGU2012-8993-2

(293) Wang, G., and D. Or, Self-organization of microbial consortia via trophic interactions on hydrated rough surfaces, 14th International Symposium on Microbial Ecology, 2012-8-21, Copenhagen, Denmark

(294) Aminzadeh, M., and D. Or, Temperature dynamics during drying of porous surfaces (non-isothermal evaporation), EGU-2013, 2013-4-9, Vienna, Austria

(295) Aminzadeh, M., and D. Or, Prediction of energy partitioning over evaporating terrestrial surfaces, AGU-2013, 2013-12-10, San Francisco, USA

(296) Fan, L., P. Lehmann, J. von Ruette, and D. Or, Progressive failure dynamics and self-healing of hillslope hydro-mechanical damage: Application of the Fiber Bundle Model to rainfall-induced landslide triggering, EGU, 2013-4-8, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8769

(297) Haghighi, E., and D. Or, Evaporation from porous surfaces into turbulent air flows-On the coupling of momentum and thermal signatures, EGU General Assembly 2013, 2013-4-8, Vienna, Austria, Geophysical Research Abstracts, Vol. 15, EGU2013-3148

(298) Haghighi, E., and D. Or, Rapid surface thermal signatures for estimation of evaporative fluxes into turbulent flows, American Geophysical Union-Fall Meeting, 2013-12-10, San Francisco, USA, Abstract H21C-1046

(299) Hoogland, F., P. Lehmann, F. Moebius, P. Vontobel, D. Or, Liquid redistribution behind a drainage front in porous media imaged by neutron radiography, EGU General Assembly, 2013-4-8, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8156

(300) Hoogland, F., P. Lehmann, R. Mokso and D. Or, Fast X-ray CT imaging of interfacial dynamics behind drainage fronts in porous media, InterPore, 2013-5-23, Prague, Czech Republic

(301) Kim, M., Wang, G, and Or, D., Dynamics of microbial communities on patchy rough surfaces - hydration and diffusion mediated self-organized consortia, STATPHYS25, 2013-7-23, Seoul, Rep. of Korea

(302) Lehmann, P., F. Linfeng and D. Or, The role of local damage accumulation and mechanical healing on rainfall-induced landslide triggering, European Geosciences Union General Assembly, 2013-4-8, Vienna, Austria, 15, EGU2013-8664

(303) Lehmann, P., F. Moebius, F. Hoogland and D. Or, Fundamentals of air invasion and front displacement processes in porous media, Interpore, 2013-5-23, Prague, Czech Republic

(304) Michlmayr, G. and D. Or, Acoustic emissions during shearing of geologic granular media - sources and mechanisms, International workshop of acoustic and seismic monitoring of bedload and mass movements, 2013-9-4, Birmensdorf, Switzerland

(305) Michlmayr, G. and D. Or, Granular Shear Zone Formation: Linking acoustic emissions with intrinsic failure events during granular shearing, EGU General Assembly 2012, 2013-3-1, Vienna, Austria

(306) Moebius, F., and D. Or, Pore invasion dynamics during fluid front displacement - pore volumes and the role of inertia, Interpore, 2013-5-23, Prague, Czech Republic

(307) Moebius, F., and D. Or, Pore invasion dynamics during fluid front displacement in porous media - interfacial jumps, invasion volumes, and the role of inertia, American Geophysical Union, Fall Meeting, 2013-12-13, San Francisco, USA, Abstract H51L-1357

(308) Or, D., D. Breitenstein and P. Lehmann, The role of pore clusters (wet patches) on evaporation dynamics from drying porous surfaces, European Geosciences Union General Assembly, 2013-4-8, Vienna, Austria, 15, EGU2013-14117

(309) Schymanski S.J. and D. Or, Effects of wind speed on leaf energy and gas exchange, EGU General Assembly, 2013-4-9, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8628

(310) Schymanski, S. J. and D. Or, The unexpected effects of wind speeds on plant water use efficiency, AGU Fall Meeting, 2013-12-9, San Francisco, USA

(311) Schymanski, S. J., J. McDonnell and D. Or, Interactions between Hillslope Hydraulic Response Function, Vegetation Organisation and Catchment Behaviour, EGU General Assembly, 2013-4-8, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8808

(312) Von Ruette, J., P. Lehmann, and D. Or, Implications of high resolution spatial and temporal rainfall patterns for shallow landslide triggering at catchment scale, European Geosciences Union General Assembly, 2013-4-10, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8344

(313) Von Ruette, J., P. Lehmann, and D. Or, Analysis of runout length of debris flows based on catchment-scale model of hydrologcially-induced shallow landslides, European Geosciences Union General Assembly, 2013-4-9, Vienna, Austria, Geophysical Research Abstracts, 15, EGU2013-8618

(314) Wang, G., and D. Or, Trophic Interaction and Emergence of Self-Organized Bacterial Consortia on Hydrated Rough Surfaces, FEMS 2013, 2013-7-23, Leipzig, Germany

(315) Ebrahimi, A., Or, D., Hydration and diffusion dynamics shape microbial community composition and function in soil aggregates, American Geophysical Union (AGU), Fall Meeting 2014, 2014-12-17, San Francisco, USA

(316) Ebrahimi, A., Or, D., Hydration State and Aqueous Phase Connectivity Shape Microbial Dispersal Rates in Unsaturated Angular Pore Networks, American Geophysical Union (AGU), Fall Meeting 2014, 2014-12-16, San Francisco, USA

(317) Ebrahimi, A., Or, D., Hydration and diffusion dynamics shape microbial community composition and function in soil aggregates, 2nd International SystemsX.ch, 2014-10-22, Lausanne, Switzerland

(318) Ebrahimi, A., Or, D., Microbial Dispersal Rates in Unsaturated 3-D Angular Pore Networks, Flow & Transport in Permeable Media, Gordon Research Conference, 2014-7-8, Lewiston, ME, USA

(319) Fan, L., P. Lehmann and D. Or, Modeling the roles of damage accumulation and mechanical healing on rainfall-induced landslides, European Geosciences Union (EGU) General Assembly 2014, 2014-4-27, Vienna, Austria, Poster

(320) Haghighi, E., and D. Or, Effects of surface roughness on evaporation from porous surfaces into turbulent airflows, EGU General Assembly, 2014-5-1, Vienna, Austria, Geophysical Research Abstracts, 16, EGU2014-15915

(321) Hoogland, F., P. Lehmann and D. Or, Drainage front zonation - viscous effects on phase entrapment and drainage timescales, EGU General Assembly 2014, 2014-1-5, Vienna, Austria, Geophysical Research Abstracts, 16, EGU2014, 3882

(322) Hoogland, F., P. Lehmann and D. Or, Characteristics of transition to slow corner flow behind fluid fronts in porous media, Gordon Research Conference on Flow and Transport in Permeable Media, 2014-7-9, Lewiston, ME, United States

(323) Lehmann, P., and D. Or, Characteristic lengths for evaporation suppression from patchy porous surfaces, European Geosciences Union General Assembly, 2014-5-1, Vienna, Austria, 16, EGU2014-9281

(324) Lehmann, P., J. von Ruette, L. Fan and D. Or, Coupling of rainfall-induced landslide triggering model with predictions of debris flow runout distances, European Geosciences Union General Assembly, 2014-4-28, Vienna, Austria, 16, EGU2014-10305

(325) Michlmayr G., A. Chalari, A. Clarke, D. Breitenstein, H. Wunderli, P. Lehmann, L. Fan and D. Or, Fiber-optic based measurements of acoustic and microseismic emissions for early warning of rapid mass movements, Swiss Geosciences Meeting, 2014-11-22, Fribourg, Switzerland

(326) Moebius F., and D. Or, Fluid displacement fronts in porous media: pore scale interfacial jumps, pressure bursts and acoustic emissions, EGU General Assembley 2014, 2014-5-1, Vienna, Austria, EGU2014-16861

(327) O'Carroll, D. M., K. G. Mumford, D. Or, and F. Moebius, Interfacial motions and pressure fluctuations during fluid displacement in porous media, American Geophysical Union-Fall Meeting, 2014-12-15, San Francisco, AGU2014

(328) Or, D., Trophic interdependencies shape spatial self-organization of microbial consortia on complex hydrated soil surfaces, International Symposium 2014 - Biogeochemical Interfaces in Soil: Towards a Comprehensive and Mechanistic Understanding of Soil Functions, 2014-10-7, Leipzig, Germany, Keynote address

(329) Or, D., and F. Möbius, Pore scale view of fluid displacement fronts in porous media, American Geophysical Union-Fall Meeting, 2014-12-15, San Francisco, USA, AGU2014

(330) Or, D., G. Wang, and R. Tecon, Motility in water films and trophic interactions shape self-organization of microbial consortia on hydrated soil surfaces, Complex Soil Systems Conference ?A Path to Improved Understanding of Complex Soil Systems?, 2014-9-2, Berkeley, CA, USA

(331) Or, D., R. Tecon, A. Ebrahimi, H. Kleyer, O. Ilie, and G. Wang, Microbial Life in Soil - Linking Biophysical Models with Observations, American Geophysical Union (AGU), Fall Meeting 2014, 2014-12-15, San Francisco, USA, AGU2014

(332) Or, D., S. Assouline, M. Aminzadeh, E. Haghighi, S. Schymanski, and P. Lehmann, Stomata size and spatial pattern effects on leaf gas exchange-a quantitative assessment of plant evolutionary choices, EGU General Assembley, 2014-5-2, Vienna, Austria, EGU2014-14801

(333) Or, D., W. Gang, and R. Tecon,, Soil hydration shapes microbial interactions - localized trophic interactions and self-organization of microbial consortia on hydrated soil surfaces, Ecological Society of America ESA Annual Convention 2014, 2014-8-15, Sacramento, CA, USA, 99th, ESA2014, OOS 47-1

(334) Ruiz, S., D. Or, and S. Schymanski, The Mechanics and Energetics of Soil Bioturbation by Plant Roots and Earthworms-Plastic Deformation Considerations, EGU General Assembley 2014, 2014-5-1, Vienna, Austria, EGU2014-8170

(335) Ruiz, S., D. Or, and S. Schymanski, Soil bioturbation by earthworms and plant roots - mechanical and energetic considerations for plastic deformation, American Geophysical Union, 2014-12-17, San Francisco, USA

(336) Schymanski, S. J., and D. Or, Theoretical and experimental insights into effects of wind on leaf heat and gas exchange, EGU General Assembly, 2014-4-29, Vienna

(337) Schymanski, S., J., and D. Or, Wind speed effects on leaf energy balance, transpiration and water use efficiency, AGU Fall Meeting, 2014-12-17, San Francisco

(338) Shokri N., E. Shahraeeni, R. Shahabdeen, and D. Or, Dynamics of transition from stage-1 to stage-2 evaporation from porous media, European Geosciences Union (EGU) General Assembly 2014, 2014-4-27, Vienna, Austria, 16, EGU2014-12090

(339) Vögtli, M., P. Lehmann, D. Breitenstein and D. Or, Can acoustic emissions patterns signal imminence of avalanche events in a growing sand pile?, European Geosciences Union General Assembly, 2014-5-2, Vienna, 16, EGU2014-9340

INVITED PRESENTATIONS

- *Three-Dimensional Imaging of Soil Water Content Fields with Applications to Monitoring in Owens Valley, CA. 1992. Invited seminar (Hydrology Series), University of California Berkeley, Berkeley, CA.*
- *Parametric Models for Water Retention. 1992. Invited seminar, Chevron Oil, La-Habra, CA.*
- *Soil Spatial Variability and Soil Water Dynamics. 1994. Invited Workshop Presentation. Los Angeles Water and Power/ Inyo County Water Dept., Bishop, CA.*
- *Dielectric Spectroscopy of Soil Constituents at DC to Microwave Frequencies with Application to Time-Domain Reflectometry Measurements. 1996. Invited seminar. Soil Crop & Atmospheric Sciences, Cornell University, Ithaca, NY.*
- *Temperature Effects on Near-surface Soil Water Measurements Using Time Domain Reflectometry (TDR), 1997. Symposium on "Soil Moisture Measurement: Integration From Point to Field Scale", AGU Spring Meeting. Baltimore, MD.*
- *Monitoring Soil Water Dynamics Under Drip Irrigation Using Time Domain Reflectometry (TDR) 1997. Invited seminar. CNPMS-EMBRAPA, Sete Lagoas, Brazil*
- *Adsorption and Capillary Condensation in Partially-Saturated Porous Media, June 1998. Dept. of Environmental Sciences, UCR and US Salinity Lab, Riverside, CA.*
- *Adsorption and Capillary Condensation in Partially-Saturated Porous Media, October 1998. SSSA Annual meeting, S1/S2 special symposium, Baltimore, MD.*
- *Liquid Retention and Interfacial Area in Variably Saturated Porous Media, April 1999. The Inst. of Soil and Water, The Volcani Center - ARO, Bet Dagan, Israel.*

- *Liquid Retention and Interfacial Area in Variably Saturated Porous Media: Upscaling from Single Pore to Sample Scale, May, 3, 1999. The Water Resour. Res. Inst., The Technion (Israel Institute of Technology), Haifa, Israel.*
- *Pore Scale Models for Liquid Retention and Hydraulic Conductivity of Unsaturated Porous Media, March, 6, 2000. Soil, Water and Environmental Science Dept., University of Arizona, Tucson, AZ.*
- *Dripping from Unsaturated Fractures Into Subterranean Cavities, March, 20, 2000. Dept. of Mathematics (Applied Math Seminar), University of Utah, Salt Lake City, UT.*
- *Hydraulic Functions for Unsaturated Porous Media Based on Pore Scale Processes, May, 3, 2000. The Agricultural University of Vienna, Vienna, Austria.*
- *Hydraulic Functions for Unsaturated Porous Media From Equilibrium Liquid Configurations in Angular Pore Spaces, August, 10, 2000. Gordon Research Conference Modeling of Flow in Permeable Media, Proctor Academy, Andover, New Hampshire.*
- *Presented an invited talk in a symposium on "Future Directions in Soil Physics Research" at the SSSA annual meeting in Minneapolis, MN, NC, Nov. 2000.*
- *Hydraulic Properties of Unsaturated Fractured Porous Media, April, 25, 2001, Hydrology Dept., Hoenggenberg, ETH Zurich, Switzerland.*
- *Dripping , Liquid Bridges, and Intermittent Flow Regimes in Unsaturated Fractured Porous Media, May, 29, 2001, University of Bern, Switzerland.*
- *Physical Processes Affecting Microbial Habitats and Activity in Unsaturated Porous Media, May, 25, 2001, Inst. Terrestrial Ecology, ETH Zurich, Switzerland*.
- *Extending TDR Measurement Range in Saline Soils Using Frequency-Domain Methods, July, 18, 2001*. University of Campinas, SP, Brazil.
- *Thermal and Geometrical Effects on Bulk Permittivity of Porous Mixtures Containing Bound Water, July, 19, 2001*. University of Campinas, SP, Brazil.
- *Unstable and Intermittent Flow Regimes in Unsaturated Porous Media, August, 27, 2001,* Czech Technical University, Prague, Czech Republic.
- *Presented an invited talk in a Don Nielsen symposium on "Hydraulic Functions for Swelling Soils" at the SSSA annual meeting in Charlotte, NC, Oct. 2001.*
- *Physical Processes Affecting Microbial Habitats and Activity in Unsaturated Porous Media, February, 22, 2002, University of Idaho, Moscow, Idaho***.**
- *Time domain reflectometry measurement of bulk permittivity of porous mixtures containing bound water (Invited Speaker), Electrical Transport and Optical Properties of Inhomogeneous Media Conference (ETOPIM 6), July,15, 2002, Snowbird, Utah.*
- *Physical Processes Affecting Microbial Habitats and Activity in Unsaturated Porous Media, January, 20, 2003, (keynote Speaker) Int. Conference on Soil and Groundwater Contamination and Cleanup in Arid Countries, Sultan Qaboos University, Oman***.**
- *Dripping and Intermittent Flow Regimes in Unsaturated Fractured Porous Media, March 19, 2003, Duke University, NC.*
- *Diffusion Processes and Microbial Habitats and Activity in the Vadose Zone, April 27, 2004. IGERT Seminar, Oregon State University, Corvallis, Oregon.*
- *Liquid Fragmentation and Intermittent Flow in Unsaturated Fractured Rock, April 28, 2004, Oregon State University, Corvallis, Oregon.*
- *Soil Physics in Zero Gravity - Lessons and Challenges - Invited speaker at the Kirkham Conference on Fundamental Physical and Biological Soil Processes from Pore- to Field-Scale, October, 2004, Logan, Utah, USA.*

- *Flow in Unsaturated Porous Media under Zero Gravity – Lessons and Challenges –Institute of Terrestrial Ecology, ETH Zurich, January, 26, 2005 invited as part of the Extreme Environments Colloquium.*
- *Diffusional Constraints affecting Microbial Activity and Coexistence in Unsaturated Porous Media, April 7-8, 2005.The 2005 Graduate Student Enrichment Speaker, University of Delaware, Newark, DE.*
- *Fluid Distribution in Unsaturated Porous Media under Reduced Gravity – invited Speaker Gordon Conference Science & Engineering for Space Exploration, August 2005, Les Diablerets, Switzerland*
- *A Framework for Unifying Capillary, Gravity and Viscous Forces Affecting Flow Morphology in Unsaturated Porous Media – invited speaker in the Multi-scale Modeling of Flow and Transport in Porous Media conference, April 2006, Monte Verità, Switzerland*
- *Linking Soil Micromechanics and Hydraulic Conductivity – invited lecture in "Sustainability – its Impact on Soil Management and Environment", the 17th Triennial ISTRO Conference August 2006, Kiel, Germany*
- *Pore size distribution and characteristic lengths affecting drying fronts and evaporation rates from porous media, 2007, Universitat Stuttgart, Germany*
- *Evaporation from heterogeneous media with sharp textural contrasts, 2007, University of Copenhagen, Denmark*
- *"Characteristic lengths affecting evaporation from heterogeneous porous media with sharp textural boundaries" Estudios de la zona no saturada del suelo, November 2007 Cordoba, Spain*
- Nyle C. Brady Frontiers of Soil Science Lecture: *"Biophysical aspects of soil microbial diversity - lessons for disciplinary survival strategies", Houston, Joint SSSA-GSA meeting, October, 2008*
- The L.A. Colding Lecture Series: *"Life on Partially-Hydrated Rough Surfaces", October 2008,Technical University of Denmark, Lyngby, Denmark*
- Invited talk *"Characteristic lengths affecting evaporation from porous media with textural and wettability contrast", Int. Conf. Agric. Eng., August 2008, Iguassu Falls City, Brazil*
- Invited *"Life on partially-hydrated rough surfaces" May 2009, SCRI and University of Dundee*
- EGU symposium on Vision and trends in subsurface hydrology: *"Hydraulic continuity and flow dissipation lengths define scales of applicability for the Richards equation" April 2009, Vienna*
- Invited speaker - SSSA Special Symposium Honoring Martinus Th. Van Genuchten: *"Listening to Imbibition and Drainage - Bursts and Jumps at the Front" November 2009, Pittsburgh*
- Interpore 2010 (invited speaker): *"Inertial jumps, pressure bursts and acoustic emissions at displacement fluid fronts" March, 2010, Texas A&M, College Station, TX*
- Gordon Research Conference (invited speaker) *"Evaporative fluxes and thermal signatures - from pores to land surfaces", July 2010, Bates College, Lewiston, ME*
- Keynote speaker CESAR – *1st Inter. Conf. and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions, December 2010 University of Aarhus, Foulum, Denmark*
- Invited talk "Bubble dynamics and rapid interfacial displacement in porous media" *AGU Fall Meeting, December 2010, San Francisco*
- Invited speaker *" Capillary and boundary-layer coupling affecting evaporative fluxes and thermal signatures on porous media surfaces, 3rd Int. Conf. Interpore, March 2011, Bordeaux, France*
- Invited talk *"Life on partially-hydrated rough surfaces" June 2011, FAST lab, CNRS-UPMC, Orsay*
- Invited talk "*Rainfall-induced shallow landslides - from local progressive failures to hillslope criticality", AGU Fall Meeting, December 2011, San Francisco*

- Invited talk " *Exploring soil hidden frontier: Microbial life on unsaturated rough surfaces" MIT Parsons Lab, Cambridge, MA Oct. 2011,*
- Invited talk *"Water Retention and Flow in Unsaturated Porous Media – Pore Scale Perspectives". The NATO Science for Peace and Security Programme - NATO Advanced Research Workshop. Dead Sea, Israel, 7-11 May 2012*
- Keynote speaker *"Capillary and boundary-layer coupling affecting evaporative fluxes from porous surfaces" Workshop on Drying of Building and Soil Materials, ENPC, Paris, France, July 3, 2012*
- The 2012 Boussinesq lecture on *"Micro-hydrological controls of life in the subsurface: Exploring soil hidden frontier" Royal Netherlands Academy of Sciences (KNAW), Amsterdam, 11 October, 2012*
- The 2013 WH Pierre Memorial Lecture on *"Biophysical processes shaping microbial life in soil : an unexplored universe under our feet" Iowa State University, Ames, February 2013*
- Keynote speaker "*Biophysical processes shaping microbial life in soil" The 11th Dahlia Greidinger Memorial Symposium 2013- Technion-IIT, Haifa, Israel, 4-7 March, 2013*
- Keynote speaker "*Evaporation dynamics from drying porous surfaces: Lessons for water loss from plant leaves" The International Workshop on: Eco-hydrology of Semiarid Environments Ben Gurion University, Israel, 19-23 May, 2013*
- Keynote speaker "*Biophysical processes shaping microbial life in soil – An unexplored universe under our feet" Bio-meets-Hydrology: Biohydrology 2013, 21-24 May 2013, Landau/Pfalz, Germany*
- Invited speaker *"Breakthrough in Soil Physics – On Evaporation Dynamics from Porous Media" GIWS Distinguished Lecture Series, University of Saskatchewan, Canada, 11 September, 2013*
- Invited talk - *Soil hydration shapes microbial interactions - localized trophic interactions and self-organization of microbial consortia on hydrated soil surfaces - Dani Or, Wang Gang, Robin Tecon, Conference: 99th Ecological Society of America ESA Annual Convention 2014)*
- Keynote address – *"Trophic interdependencies shape spatial self-organization of microbial consortia on complex hydrated soil surfaces" International Symposium 2014 - Biogeochemical Interfaces in Soil: Towards a Comprehensive and Mechanistic Understanding of Soil Functions (http://www.spp1315.uni-jena.de/Meetings+_+Events/International+Symposium+2014.html)*
- Keynote speaker- "*Motility in water films and trophic interactions shape self-organization of microbial consortia on hydrated soil surfaces" Proceedings of the Complex Soil Systems Conference "A Path to Improved Understanding of Complex Soil Systems" September 3 – 5, 2014, David Brower Center, Berkeley, California*
- Invited talk – "*Pore scale view of fluid displacement fronts in porous media" Dani Or and Franziska Möbius AGU Fall meeting, Dec. 2014*
- Keynote address "*Trophic interdependencies shape spatial self-organization of microbial consortia on complex hydrated soil surfaces", International Symposium 2014 - Biogeochemical Interfaces in Soil: Towards a Comprehensive and Mechanistic Understanding of Soil Functions, 2014-10-7, Leipzig, Germany*
- SME 2015 – Monte Verita - Biophysical Aspects of Microbial Life in Soil: On Microbial Diversity and Self-Organization

<u>RESEARCH ACTIVITIES</u>

Grants and Contracts (<u>U.S.A. as PI/Co-PI):</u>

<u>Year</u>	<u>Dollars</u>	<u>Agency, Title, Investigator(s)</u>

92-95	$375,000	NASA. *Mesoscale Study of Surface Heat Fluxes and Boundary Layer Processes in a Desert Region*. Bingham, G., L. Hipps, C. Neale, E. Malek, J. Boettinger, D. Or
93-94	$21,000	Los Angeles Water and Power Dept. and Inyo County Water Dept. *Characterization of Soil Spatial Variability for Upgrading Soil Water Monitoring in Owens Valley*. D. Or.
93-94	$75,000	PacificCorp. *Using Saline Waste Water from Electrical Power Plants for Irrigation*. L. Dudley, J. MacAdam, D. Or.
93-96	$264,000	BARD. *Drip Irrigation Management by TDR Monitoring of Soil Water and Solute Distributions*. S. Dasberg, J. Hopmans, D. Or.
93-94	$15,000	USU New Faculty Research Grants. *In situ Characterization of Temporal Changes in Soil Structural and Hydraulic Properties.* D. Or.
94-95	$75,000	PacificCorp. *Using Saline Waste Water from Electrical Power Plants for Irrigation*. L. Dudley, J. MacAdam, D. Or.
94-95	$14,000	USU New Faculty Research Grants. *In situ Characterization of Temporal Changes in Soil Structural and Hydraulic Properties - Phase II.* D. Or.
95-96	$75,000	PacificCorp. *Using Saline Waste Water from Electrical Power Plants for Irrigation*. L. Dudley and D. Or.
95-98	$290,615	BARD. *In situ Evaluation of Unsaturated Hydraulic Properties Using Subsurface Point Sources*. A. Warrick, U. Shani, D. Or.
96-97	$80,000	PacificCorp. *Using Saline Waste Water from Electrical Power Plants for Irrigation*. L. Dudley and D. Or.
97-99	$299,400	BARD. *Characterization of Post-Tillage Soil Fragmentation and Rejoining Affecting Soil Pore Space Evolution and Transport Properties*. V. Snyder, D. Or, and A. Hadas.
97-99	$100,000	NRI-USDA *Post-Tillage Soil Pore Space Dynamics*. D. Or and V. Snyder.
97-98	$39,000	NRI-USDA Equipment Grant + USU matching - *Impedance Analyzer for Characterization of Dielectric Properties of Soils and Grains*. D. Or and L. Dudley.
98-2000	$285,000	BARD. *Geometrical Considerations and Interfacial Processes Affecting Electromagentic Measurement of Soil Water Content Using TDR and Remote Sensing Methods.* S. Friedman, J. Wraith, and D. Or.
98-2001	$300,000	NSF-EAR. *Thin Liquid Films in Unsaturated Porous Media - Effects on Flow and Transport*. D. Or, L.M. Dudley, and S. Bialkowski.
98-2003	$2,000,000*	NSF-GPG. *Pulsing of plant-available moisture and nitrogen in Great Basin communities*. M.M. Caldwell, L.H. Hipps, J.M. Stark, C.M. Neale, and D. Or.
99-2003	*$307,420*	NRI-USDA. *Electromagnetic Characterization of Soil Electrochemical and Geometrical Factors Affecting Transport Processes*. Dudley, L., D. Or, and S. Bialkowski.
99-2000	$25,000	Campbell Scientific Inc. and HarvestMaster. *Dielectric Mixing Models for Grain Water Content Measurement.* Or, D. and S.B. Jones.
2000-03	$229,500	NRI-USDA. *Hydraulic Conductivity of Unsaturated Porous Media – Film and Corner Flows in Angular Pore Space*. D. Or, and M. Tuller.

2000-04	*$100,000*	NASA - *Advanced Life Support*. *Optimization of Root Zone Substrates for Reduced Gravity Experiments.* Bingham, G., D. Or, S.B. Jones, and B. Morrow. (*2000-2004 $878,098*)
2000-01	$55,000	Poineer Hi-Bred International Inc. *TDR Measurement of Corn-Ear Water Content.* Or, D. and S.B. Jones. (*Cont.*)
2000-01	$25,000	Campbell Scientific Inc. and HarvestMaster. *Dielectric Mixing Models for Grain Water Content Measurement.* Or, D. and S.B. Jones. (*Cont.*)
2001-03	*$275,000*	NRI-USDA (Soils and Soil Biology). *Thermodielectric Measurement of Soil Specific Surface Area and Bound Water*. Wraith J. and D. Or.
2002-05	*$1,554,554*	NASA - Flow and distribution of fluid phases through porous plant growth media in microgravity. Steinberg S. (NASA JSC); Alexander I. (NASA Glenn); Or D. and Jones S. (USU); Lakshmi R. and Kluetenberg G. (KSU); Tuller M. (UI)
2001-03	*$50,000*	Poineer Hi-Bred International Inc. *TDR Measurement of Corn-Ear Water Content.* Or, D. and S.B. Jones. (*Cont.*)
2002-05	*$335,000*	BARD - *Physical Processes Affecting Microbial Habitats & Activity In Unsaturated Agricultural Soils* Or, D, S.P.Friedman, J. Norton
2004-05	*$193,000*	NRI-USDA (Soils and Soil Biology) *Compaction of Tilled Soils - Microscale Structural Dynamics Affecting Pore Space and Hydraulic Properties.* Or, D, and M. Berli
2004-07	*$436,000*	NSF-EAR (Hydrologic Sciences) *Diffusional Constraints Affecting Microbial Distribution and Activity in Unsaturated Porous Media.* Or, D, and B. Smets.
2004-07	*$353,000*	NRI-USDA (Soils and Soil Biology) *Shrink-Swell Behavior and Hydraulic Properties of Clay Soils.* Tuller M. and Or, D.
2005-07	*$261,000*	NSF-EAR (Hydrologic Sciences) *Noninvasive Imaging of Near-Surface Preferential Flow Pathways and Dynamics in Carbonate Vadose Zone. Grasmueck, M., F.D. Day-Lewis, S. Kruse, and D. Or*.

Total amount awarded in Grants and Contracts as PI/Co-PI -- **$8,500,750**

Switzerland as PI/Co-PI:

Year	Amount	Agency, Title, Investigator(s)
2006-09	*CHF 285,396*	***SNF*** (200021-113676/1) - *Evaporation from Porous Media – Microscale Study of Dynamics and Morphology of Drying Fronts,* Dani Or and Peter Lehmann
2006-09	*CHF 131,172*	***SNF*** (200021-113442/1) - *Linking Diffusional Heterogeneity and Aquatic Habitat Fragmentation with Microbial Coexistence and Diversity in the Vadose Zone,* Dani Or
2006-09	*CHF 1, 440,000*	***CCES*** - *Triggering of Rapid Mass Movements in Steep Terrain (TRAMM) – Hydrologic and Climatic Factors*, Stahli, M. D. Or, S. Springman, L. Laloui, L. Tacher, J. Schweizer, M. Schwank, P. Bartlet, C. Ancey.
2009-11	*€ 1, 581,000*	***DFG*** - *Multi-Scale Interfaces in Unsaturated Soil* , Neuweiler, I., Krafczyk, M., Lehmann, P., Or, D., Vogel, H.J., Helmig, R., Vanderborght, J.

2011-2015	***CHF 304,000***	**SNSF** - Evaporation from terrestrial surfaces – linking pore scale phenomena with landscape processes (SoilEvap) D. Or and P. Lehmann
2011-2015	***CHF 206,000***	**SNSF** - Quantifying Biophysical Processes Promoting Microbial Diversity in Soil, D. Or
2011-2015	***CHF 1, 000,000***	**CCES** - Triggering of Rapid Mass Movements in Steep Terrain (TRAMM) Stahli M., D. Or, S. Springman, B. McArdle, L. Laloui, J. Schweizer.
2011-2015	***€ 1, 200,000***	**DFG -** Multi-Scale Interfaces in Unsaturated Soil, Neuweiler, I., Krafczyk, M., Lehmann, P., Or, D., Vogel, H.J., Helmig, R., Vanderborght, J.
2009-2014	***CHF 164,000***	**SNSF** (200021-113442/1) - Local and regional hydrologic and geomorphic factors determining landslide patterns. Lehmann, P., Papritz, A., Stähli, M., and Or, D.
2013-2018	***€ 2, 200,000***	**ERC Advanced Grant** (320499) - The Hidden Frontier: Quantitative exploration of physical and ecological origins of microbial diversity in soil (*SoilLife*), Or, D.
2014-2018	***CHF 2.530,000***	**SystemsX.ch** - Design and Systems Biology of Functional Microbial Landscapes (*MicroScapesX*) van der Meer J.; D Or and D. Johnson (CHF 990,000 - ETH)

(* bold font for active projects)

TEACHING ACTIVITIES

Regular Courses Taught --

	Title	Year Taught	Enrollment
USU			
• SOILS 5650/6650	*Applied Soil Physics*	93-2001	25/yr
• SOILS 566/666	*Applied Soil Physics Laboratory*	93-**98** (combined w/5650)	18/yr
• SOILS 614	*Unsaturated Flow and Transport*	95-2001 (alt. Year)	7/yr
• SOILS 7200	*Interfacial Processes & Reactive*	2002 (alt. year)	9/yr
UCONN			
• CE/ENVE 320-3	*Vadose Zone Hydrology*	2004 (alt. year)	18/yr
• CE/ENVE 320-4	*Environmental Measurements*	2004 (alt. year)	8/yr
• CE/ENVE 310	*Transport Phenomena*	2005 (alt. year)	12/yr
EPFL			
• SSIE/ENAC	*Soil and the Environment*	2006 (yearly)	50/yr
• SSIE/ENAC	*Vadose Zone Hydrology*	2006 (alt. year)	40/yr
• UNIL/EPFL	*Hydrogeophysics*	2007 (alt. year)	25/yr
• SSIE/ENAC	*Scientific Communication*	2007 (yearly)	32/yr
ETH Zurich			
• D-USYS	Advanced Vadose Zone Hydrology	2009 - (yearly)	14/yr
• D-USYS	Soil Physics/Vadose Zone Hydrology	2009 - (yearly)	25/yr
• D-BAUG	Soil& Environmental Measurements	2012 - (yearly)	20/yr

Special Courses Taught

• ETH, Zurich	*Modern Approaches to Liquid Behavior in Porous Media*	4-6, 2001	25
• DTU, Copenhagen	*Modern Approaches to Liquid Behavior in Porous Media (revised)*	6-7, 2002	15

Graduate Students Supervised --

Date Graduated	Name	Degree
1995	Henoque R. Silva (USU)	PhD
1996	Eugenio F. Coelho (USU)	PhD
1997	Scott Jones (USU)	PhD
2000	Khumo Mmulawa (USU)	PhD
2001	Teamrat Ghezzehei (USU)	PhD
2004	Guy Serbin (USU)	PhD
2005	Alberto Colombo (USU)	PhD
2005	Chris Eggers (UConn)	MS
2005	Jessica Chau (UConn)	MS
2006	Yongping Chen (UConn)	MS
2006	Tao Long (UConn)	PhD
2009	Nima Shokri (EPFL)	PhD
2010	Massimiliano Schwarz (ETH)	PhD
2010	Ebrahim Shahraeeni (ETH)	PhD
2012	Gang Wang (ETH)	PhD
2012	Fabienne Riche (ETH-WSL)	PhD
2012	Christoph Mitterer (ETH-WSL)	PhD
2012	Frouke Hoogland (ETH/Utrecht)	MS
2012	Charlotte Wirion (ETH-DBAUG)	MS
2012	Christian Lenz (ETH/MVAT)	MS
2013	Gernot Michlmyer (ETH)	PhD
2013	Melanie Vögtli (ETH-DBAUG)	MS
2014	Selina Dirksen (ETH-DBAUG)	MS
2014	Crespo Pilar (ETH-DBAUG)	MS
2014	Jonas van Rütte (ETH)	PhD
2014	Franziska Möbius (ETH)	PhD
2014	Straub Isabelle (ETH-DBAUG)	MS
2015	Erfan Haghighi (ETH)	PhD
2015	Lina Grahm (ETH-DBAUG)	MS

Current Graduate Students

2012 -	Milad Aminzadeh (ETH)	PhD
2012 -	Linfeng Fan (ETH)	PhD
2012-	Frouke Hoogland (ETH)	PhD
2012-	Minsu Kim (ETH)	PhD
2013-	Siul Riuz (ETH)	PhD
2013-	Ali Nejad Ebrahimi (ETH)	PhD
2013-	Madlene Nussbaum (ETH)	PhD
2014-	Mareike Wiese (ETH-WSL)	PhD
2014-	Kleyer Hannah (ETH)	PhD
2014-	Borer Benedict (ETH)	PhD
2015-	Bickel Samuel (ETH)	PhD

(Cumulative 1993-present)
Number of Graduate Committees: **25** M.S. **45** Ph.D.

Other Teaching Support --

- Developed a comprehensive set of class notes (in textbook format) in cooperation with Dr. J.M. Wraith from MSU for Soils 5650/6650 entitled: *Agricultural and Environmental Soil Physics* by Or, D. and J.M. Wraith, 225 pp.
- Designed new labs and developed new lab manual for Soils 5660/6660.
- Developed class notes Soils 6140 - *Unsaturated Flow and Transport,* Or, D., 149 pp.
- Maintains a *Soil Physics* homepage on the World Wide Web (*http://tal.agsci.usu.edu)* for student information and use.
- Supervised Work Study and Cooperative Ed. Internship students (2)
- Guest lecturer: Biomet. 6150 - Principles of Remote Sensing

MAJOR COMMITTEES AND PROFESSIONAL SERVICE

University, School and Department --

- University - Scholarships Committee - 1997 - 2002
- University - Radiation Safety Committee - 1999 – 2002
- University – Board of Trustees Distinguished Professor committee - 2004
- Chaired and participated in numerous faculty search committees
- Chair School of Engineering Promotion and Tenure (PTR) committee - 2004
- Environmental Engineering program director 2002- 2004
- CEE PTR committee – 2005; SoE 2003-2004
- EPFL/ENAC APC (PTR) committee – 2007-2008
- Chair of EPFL/ENAC Research Commission 2006-2008
- ***Member D-UWIS Strategic planning committee 2009-present***
- ***Director Institute of Terrestrial Ecosystems (ITES) 2012-present***

National --

- Chair W-188 USDA Regional Research Committee (1995-96)
- Soil Sci. Soc. Am. - *Kirkham Soil Physics Award Committee* - 1998-2000
- Irrigation Science Journal - *Advisory Editor* - 1994 - present
- Symposium co-convener - *Pore Scale Soil Processes:Interdisciplinary Perspectives* (ASA/SSSA Annual Meeting, SLC, UT (Nov. 1999)
- Water Resources Research - *Associate Editor* - 2000 – 2002
- Vadose Zone Journal - *Associate Editor* - 2001 – present
- Soil Sci. Soc. Am. - *Soil Physics Division (S-1) Chair elect* – 2001
- Gordon Conference on Transport in Porous Media, Andover, NH – 2002
- Co-organizer *Kirkham Conference* (Logan, Utah, 2004)
- Organizing committee *Kirkham Conference* (Davis, CA, 2008)
- ***Member of Steering Board for CCES, ETH domain, 2006 - 2008***

International Activities --

- Proceedings Committee - the 5th International Microirrigation Congress - 1995
- Visit and collaborative agreement with CNPMS-EMBRAPA, Brazil - 1997
- Proceedings Committee - the 5th International Microirrigation Congress – 1995
- Symposium co-convener - *Soil Dynamic Processes* (EGS, Nice, France - 2000)
- Member DOE panel vadose zone science & technology roadmap (2000)
- Facilitator - *Preferential Flow Workshop* (CTU, Prague, Czech Republic, August, 2001)
- CMWR International Conference (Delft, June 2002) *Panel member* – 2002

- Keynote speaker International Conference on *Soil and Groundwater Contamination and Cleanup in Arid Countries*, Sultan Qaboos University, Oman (Oman, January, 2003)
- Symposium convener - Soil dynamic processes (EGS, Nice, France April 2003)
- Organized & hosted *HydroMech05* international workshop (Storrs, May 2005)
- *Gordon Conference Transport in Porous Media – chair 2008; vice chair 2006*
- *Co-chair Intl. conf. on Preferential and Unstable Flows (Monte Verita, 2009)*
- ***Editor Vadose Zone Journal 2010 – present***
- ***Co-chair Intl. conf. on Triggering of Rapid Mass Movement (Monte Verita, 2010)***
- ***Co-chair AGU technical committee "Soil Systems and Critical Zone Processes" 2011-***

Industry Collaboration --

- ***Campbell Scientific Inc.*** (Logan, Utah) - Interest in using WinTDR program for controlling a newly-developed TDR-100 unit
- ***HarvestMaster Inc.*** (Logan, Utah) - Expanding the work on electromagnetic methods for measurement of soil constituents to the measurement of grain moisture and density as part of a yield monitoring system
- ***Poineer Hi-Bred International Inc.*** - Potential collaboration (w/CSI and HarvestMaster on electromagnetic measurement technology for grain moisture
- ***Resource Management Inc.*** - Consulting Firm (Telluride, CO) - Provide professional services in Hydrology, Soil Physics and Environmental Statistics

Public Service Activities --

- Developed and maintains a *Soil Physics* and ***Win-TDR*** program and webpage providing information and software on TDR for researchers and practitioners. (*http://soilphysics.usu.edu/wintdr/*)

Peer reviewer:

Journals: (Averaging 8 papers per year)

Advances in Water Resources
Irrigation and Drainage Journal, ASCE
Irrigation Science
Journal of Environmental Quality
Journal of Geophysical Research - Atmospheres
Journal of Geophysical Research - Solid Earth
Journal of Hydrology
Proceedings of the National Academy of Science
Soil Science
Soil Science Society of America Journal
Transactions of the ASAE
Transport in Porous Media
Porous Media Journal
Water Resources Research
Vadoze Zone Hydrology

Competitive Research Grant Proposals:

EU/FP7
DFG (Germany)
Swiss-NSF
NASA
NSF - Hydrologic Sciences and other program areas
NOAA - Climate and Global Change
USDA/NRI - several program areas

USDA/CSREES SBIR (Small Business Innovative Research)
BARD (Binational US-Israeli Agric. and Resource Development)

Internal manuscript reviews:

PSB - Department and College of Agriculture
UAES - Utah Agricultural Experimental Station projects

CONSULTING ACTIVITIES

- 1992-97; 2002-03 Los Angeles Water and Power and Inyo County Water Depts. - *Upgrading Soil Water Monitoring Network in Owens Valley, CA*.
- 1996-2008 Center for Nuclear Waste Regulatory Analysis, San Antonio, TX (NRC) - *Hydrological Impacts of Vegetation on Long-Term Predictions of Deep Recharge in Yucca Mountain, NV*.
- June 15-30, 1997 CNPMS-EMBRAPA, Sete Lagoas, Brazil - Soil Water and Solute Dynamics under High-Intensity Irrigation in Sandy Soils. Jaiba Project (Minas Gerais, Brazil)