

DANI OR, PhD - Curriculum Vitae**PROFESSOR (EM.) - SOIL AND TERRESTRIAL ENVIRONMENTAL PHYSICS**

Swiss Federal Institute of Technology, Zurich (ETHZ)
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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 landslides and avalanches; evaporation from porous surfaces, and on biophysical processes and biological activity in soil. Dr. Or is the former 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 Birdsall-Dreiss distinguished lecturer, recipient of the 2013 Helmholtz International Fellow Award; elected 2014 *Fellow of the Geological Society of America*, the 2017 *European Geosciences Union John Dalton Medal* recipient; 2018 *Langbein lecture* of the AGU, and elected for the National Academy of Engineering 2022 (<http://www.step.ethz.ch/people/scientific-staff/prof-dani-or.html>)

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

2020-present	Research Professor	Desert Research Institute
2008 - 2020	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

PROFESSIONAL AFFILIATIONS

Editor *Vadose Zone Journal* (2010-2013)
 Editorial Board of *Vadose 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

Member National Academy of Engineering 2022
The Langbein lecture the American Geophysical Union 2018
The European Geosciences Union John Dalton Medal 2017
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 - <http://orcid.org/0000-0002-3236-2933>

<https://scholar.google.com/citations?user=mNdz5CMAAAAJ>

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. Groeneveld. 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
- (18) Coelho, F.E., and D. Or. 1996. A Parametric Model for Two-Dimensional Water Uptake Intensity by Corn Roots Under Drip Irrigation. *Soil Sci. Soc. Am. J.* 60:1039-1049.

- (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.
- (34) Coelho, F. E., D. Or and V.F. De Sousa. 1999. Evaluation of Soil Hydraulic Parameters for Soil Water Distribution Models Under Drip Irrigation. *Pesq. Agropec. Bras., Brasilia* 34(4):651-657 (in Portuguese).
- (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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- (37) Coelho, F. E. and D. Or. 1999. Root Distribution and Water Uptake Patterns under Surface and Subsurface Drip Irrigation. *Plant and Soil* 206:123-136.
- (38) Tuller M., D. Or and L.M. Dudley. 1999. Adsorption and capillary condensation in porous media - liquid retention and interfacial configurations in angular pores. *Water Resour. Res.* 35:1949-1964.
- (39) Or, D. and M. Tuller. 1999. Liquid Retention and Interfacial Area in Variably Saturated Porous Media: Upscaling from Single Pore to Sample Scale Model. *Water Resour. Res.* 35:3591-3606.
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- (43) Or, D. and T.A. Ghezzehei. 2000. Dripping into cavities from unsaturated fractures under evaporative conditions. *Water Resour. Res.* 36:381-393.
- (44) Ghezzehei, T.A. and D. Or. 2000. Dynamics of soil aggregate coalescence governed by capillary and rheological processes. *Water Resour. Res.* 36:367-379.
- (45) Or, D., F.J. Leij, V. Snyder and T.A. Ghezzehei. 2000. Stochastic model for post-tillage soil pore size evolution. *Water Resour. Res.* 36:1641-1652.
- (46) Bingham, G.E., S.B. Jones, D. Or, I.G. Podolski, M.A. Levinskikh, V.N. Sytchov, T. Ivanova, P. Kostov, S. Sapunova, I. Dandolov, D.B. Bubenheim, G. Jahns. 2000. Microgravity effects on water supply and substrate properties in porous matrix root support systems. *Acta Astronautica* 47:1-10.
- (47) Or, D., U. Shani and A.W. Warrick. 2000. Subsurface tension permeametry. *Water Resour. Res.* 36:2043-2053.
- (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., D. Or and D. Blumberg. 2001. Thermodielectric effects on radar backscattering from wet soils. *IEEE TGARS* 39:897-901.
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- (52) Tuller, M. and D. Or. 2001. Hydraulic conductivity of variably saturated porous media: Film and corner flow in angular pore space, *Water Resour. Res.* 37:1257-1276.
- (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.
- (54) Wraith, J.M. and D. Or. 2001. Soil water characteristic determination from concurrent water content measurements in reference porous media. *Soil Sci. Soc. Am. J.* 65:1659-1666.
- (55) Ryel, R.J., M.M. Caldwell, C.K. Yoder, D. Or and A.J. Leffler. 2002. Hydraulic redistribution in a stand of *Artemisia tridentata*: Evaluation of benefits to transpiration assessed with a simulation model. *Oecologia* 130:173-184.
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- (57) Leij, F.J., T.A. Ghezzehei and D. Or. 2001. Modeling the dynamics of the soil pore size distribution. *Soil Tillage Res.* 64:61-78.
- (58) Jones, S.B., J.M. Wraith and D. Or. 2002. Time Domain Reflectometry (TDR) measurement principles and applications. *Hydrol. Proc.* 16:141-153.
- (59) Jones, S.B. and D. Or. 2002. Thermal and geometrical effects on bulk permittivity of porous mixtures containing bound water. *J. Non-Crystalline Solids* 305(1-3):247-254.
- (60) Leij, F.J., T.A. Ghezzehei and D. Or. 2002. Analytical models for soil pore size distribution after tillage. *Soil Sci. Soc. Am. J.* 66:1104-1114
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- (62) Bialkowski, S., L.M. Dudley and D. Or. 2002. Using Expectation Maximization to obtain dielectric relaxation time spectra of aqueous montmorillonite clay suspensions. *J. Applied Spectroscopy* 56(11):1470-1474.

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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.
- (68) Ghezzehei, T.A. and D. Or. 2003. Stress induced shrinkage of isolated pores in a wet soil matrix. *Water Resour. Res.* 39(3) 1067,10.1029/2001WR001137.
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- (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
- (75) Jones, S.B., D. Or and G. Bingham. 2003. Gas diffusion measurement and modeling in coarse-textured porous media. *Vadose Zone J.* 2:602-610.
- (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. Matura. 2004. A variable-volume TDR probe for measuring water content in large soil volumes. *Soil Sci. Soc. Am. J.* 68:25-3
- (78) Sukop, M.C. and D. Or. 2004. Lattice Boltzmann method for modeling liquid-vapor interfacial configurations in porous media. *Water Resour. Res.* 40 (1), 1509,10.1029/2003WR002333.
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- (82) Jones, S.B. and D. Or. 2004. Frequency domain analysis to extend water content measurement in highly saline soils using short TDR probes. *Soil Sci. Soc. Am. J.* 68:1568-1577.
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- (86) Jones, S.B., W.R. Mace and D. Or. 2005. A TDR Coaxial Cell for Control and Monitoring of Matric Potential and Electrical Conductivity of Variably Saturated Porous Media. *Vadose Zone J.* 4:977-982.
- (87) Sukop, M.C., and D. Or. 2005. Lattice Boltzmann method for homogeneous and heterogeneous cavitation. *Phys. Rev. E* 71, 046703 (1-5).
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- (351) Or, D., M. Aminzadeh and M.L. Roderick (2015) Complementary relationship between actual and potential evaporation-new insights and predictability based on steady state reference surface temperature, Fall Meeting of the American Geophysical Union (AGU Fall meeting 2015)
- (352) Tecon, R. and D. Or (2015) Interaction and self-organization of mutualistic bacterial consortia on hydrated surfaces ESF-EMBO Symposium on Bacterial Networks, BacNet 15, 2015
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- (360) Schymanski, S.J. and D. Or (2015) On the effects of wind and other atmospheric drivers on transpiration in contrast to " potential evaporation", 26th General Assembly of the International Union of Geodesy and Geophysics, IUGG 2015
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- (367) Capelli, A., J.C. Kapil, I. Reiweger, J. Schweizer and D. Or (2015) Propagation characteristics of acoustic waves in snow, EGU General Assembly Conference 2015
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- (371) Schymanski, S.J. and D. Or (2015) Wind increases" evaporative demand" but reduces plant water requirements, AGU Fall Meeting 2015, Abstracts
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- (379) Aminzadeh, M. and D. Or (2016) The complementary relationship for estimating actual evaporation from heterogeneous land surfaces, AGU Fall Meeting 2016
- (380) Schymanski, S.J. and D. Or (2016) The failure of the Penman-Monteith equation in explaining leaf transpiration, EGU General Assembly Conference 2016, Abstracts 18, 12635
- (381) Lehmann, P., F. Hoogland and D. Or (2016) On the air-entry value of porous media: New insights from measurements, imaging and pore scale modeling, EGU General Assembly Conference 2016, Abstracts 18, 12169
- (382) Keller, T., T. Colombi, S. Ruiz, L. Grahm, R. Reiser, J. Rek, H.R. Oberholzer, S.J. Schymanski, A. Walter and D. Or (2016) A long-term soil structure observatory for post-compaction soil structure evolution: design and initial soil structure recovery observations, EGU General Assembly Conference 2016, Abstracts 18, 9030
- (383) Or, D., M. Aminzadeh and M.L. Roderick (2016) Towards the prediction of actual evaporation from terrestrial surfaces using analytical complementary relationship, EGU General Assembly Conference 2016, Abstracts 18, 10300
- (384) Breitenstein, D. and D. Or (2016) A modular subsurface borehole-tower for deep Vadose zone monitoring, EGU General Assembly Conference 2016, Abstracts 18, 12034
- (385) Ruiz, S., S. Schymanski and D. Or (2016) Soil Penetration Rates by Earthworms and Plant Roots—Mechanical and Energetic Considerations, EGU General Assembly Conference 2016, Abstracts 18, 8035
- (386) Fatichi, S., S. Manzoni, D. Or and A. Paschalis (2016) A mechanistic soil biogeochemistry model with explicit representation of microbial and macrofaunal activities and nutrient cycles, EGU General Assembly Conference 2016, Abstracts 18, 9001
- (387) Ghezzehei, T. and D. Or (2016) Biological framework for soil aggregation: Implications for ecological functions, EGU General Assembly Conference 2016, Abstracts 18, 16095
- (388) Haghighi, E., J. Kirchner and D. Or (2016) Interactions between surface roughness and airflow turbulence affecting drying dynamics of rough porous surfaces, EGU General Assembly Conference 2016, Abstracts 18, 4665
- (389) Ebrahimi, A. and D. Or (2016) Microbial community dynamics in soil aggregates shape biogeochemical gas fluxes from soil profiles, EGU General Assembly Conference 2016, Abstracts 18, 1969
- (390) Kleyer, H., R. Tecon and D. Or (2016) Species-level microfluidic-qPCR quantification of soil bacterial assembly dynamics, 16th International Symposium on Microbial Ecology (ISME 2016), 341B
- (391) Or, D., P. Lehmann, M. Aminzadeh, M. Sommer, H. Wey, H. Wunderli and D. Breitenstein (2016) Evaporation suppression from water reservoirs using floating covers: Lab scale observations and model predictions, AGU Fall Meeting 2016, Abstracts
- (392) Ghezzehei, T.A. and D. Or (2016) Mechanisms of Soil Aggregation: a biophysical modeling framework, AGU Fall Meeting 2016, Abstracts

- (393) Or, D., P. Lehmann, F. Hoogland and S. Assouline (2016) The Soil Foam Drainage Equation-revisiting a geometrically-explicit formulation of unsaturated flow, AGU Fall Meeting 2016, Abstracts
- (394) Decker, M.R., D. Or, A. Pitman and A. Ukkola (2016) Implementation of a Pore Scale Resistance Parameterization for Soil Evaporation in a Land Surface Model, AGU Fall Meeting 2016, Abstracts
- (395) Or, D. and M. Aminzadeh (2016) The complementary relationship for estimating actual evaporation from heterogeneous land surfaces, AGU Fall Meeting 2016, Abstracts
- (396) Schymanski, S.J. and D. Or (2016) Omissions in the Penman-Monteith equation affect leaf energy balance estimates and potential sensitivity to climate change, AGU Fall Meeting 2016, Abstracts
- (397) Montano-Herrera, L., H. Kleyer and D. Or (2017) Metabolic network prediction of species abundances in a synthetic microbial community, 3rd International SystemsX.ch Conference on Systems Biology 2017
- (398) Fatichi, S., S. Manzoni, D. Or and A. Paschalis (2017) Mechanistic soil biogeochemistry modeling quantifies the partition of soil respiration components and microbial biomass patterns, ESA Annual Meeting 2017
- (399) Kleyer, H., R. Tecon and D. Or (2017) Hydration dynamics affects the diversity of a synthetic soil bacterial community in unsaturated microcosms, 14th Symposium on Bacterial Genetics and Ecology (BAGECO 14) 2017
- (400) Or, D., R. Tecon, A. Ebrahimi, H. Kleyer and B. Borer (2017) Microbial life in soil aggregates—from hotspots to soil biogeochemical fluxes, Special Seminar 2017
- (401) Or, D. (2017) KN 5 Microbial life in unsaturated soil—how liquid phase architecture affects diversity and mediates trophic and genetic interactions, 14th Symposium on Bacterial Genetics and Ecology (BAGECO 14) 2017, P13
- (402) Or, D. (2017) Microbial life in soil aggregates—linking hotspots to soil biogeochemical fluxes, CAU Soil and Water System Science Seminar 2017
- (403) Or, D. (2017) Physical insights into evaporation dynamics and energy partitioning of drying terrestrial surfaces, International Workshop: Soil Physics and the Nexus of Food, Energy, and Water, 2017
- Or, D. and P. Lehmann (2017), Surface evaporative capacitance—soil type and rainfall characteristics used to bound soil evaporation estimates, Drylands, Deserts and Desertification conference 2017
- (404) Ebrahimi, A. and D. Or (2017), Dynamics of soil GHG emissions shaped by hydration state, aggregate size distribution and carbon placement: Column experiments using artificial soil aggregates, EGU General Assembly Conference 2017, Abstracts 19, 3908
- (405) Assouline, S., P. Lehmann, F. Hoogland and D. Or (2017) The Soil Foam Drainage Equation—an alternative model for unsaturated flow in porous media, EGU General Assembly Conference 2017, Abstracts 19, 6206
- (406) Ebrahimi, A. and D. Or (2017) Mechanistic modeling of thermo-hydrological processes and microbial interactions at pore to profile scales resolve methane emission dynamics from permafrost soil, EGU General Assembly Conference 2017, Abstracts 19, 3911
- (407) Aminzadeh, M., P. Lehmann and D. Or (2017) Evaporation and energy balance of partially covered water reservoirs using self-assembling floating elements, EGU General Assembly Conference 2017, Abstracts 19, 8393
- (408) Schymanski, S.J., L. Grahm and D. Or (2017) The physical origins of rapid soil CO₂ release following wetting, EGU General Assembly Conference 2017, Abstracts 19, 14101
- (409) Aminzadeh, M. and D. Or (2017) Can the complementary relationship between actual and potential evaporation be used to quantify heatwaves?, EGU General Assembly Conference 2017, Abstracts 19, 8226
- (410) Or, D. (2017) On Dalton and evaporation research—a passage in the footsteps of scientific discovery (John Dalton Medal Lecture), EGU General Assembly Conference 2017, Abstracts 19, 19237

- (411) Schymanski, S.J., T. Singer and D. Or (2017) Linking stomata geometries and densities to leaf gas exchange-new opportunities and old pitfalls, EGU General Assembly Conference 2017, Abstracts 19, 11526
- (412) Ruiz, S. and D. Or (2017) Measurement of earthworm radial pressures during peristaltic motion, EGU General Assembly Conference 2017, Abstracts 19, 12549
- (413) Lehmann, P., J. Fuchs, J. Dehaspe, D. Breitenstein, H. Wunderli and D. Or (2017) Evaporation dynamics from wetted porous surfaces affected by internal drainage, EGU General Assembly Conference 2017, Abstracts 19, 10666
- (414) Or, D., P. Lehmann, M. Aminzadeh, M. Sommer, H. Wey, C. Krentscher, H. Wunderli and D. Breitenstein (2017) Evaporation suppression from reservoirs using floating covers: Lab scale wind-tunnel observations and mechanistic model predictions, EGU General Assembly Conference 2017, Abstracts 19, 11469
- (415) Kim, M. and D. Or (2017) Dynamics of Gaseous Efflux from Biological Soil Crusts, 10th IBP PhD Congress 2017
- (416) Tecon, R. and D. Or (2017) Cooperation controls partners spatial intermixing in a synthetic bacterial consortium, 3rd International SystemsX.ch Conference on Systems Biology 2017
- (417) Bickel, S. and D. Or (2017) Growing under pressure: microbial growth rates under physical confinement, Abstract Book, 3rd International SystemsX.ch Conference on Systems Biology 2017, Pages 45-45
- (418) Or, D., J. von Ruetten and P. Lehmann, STEP-TRAMM-A modeling interface for simulating localized rainfall induced shallow landslides and debris flow runout pathways, AGU Fall Meeting 2017, Abstracts
- (419) Or, D., M. Aminzadeh and M.L. Roderick, Towards prediction of heatwaves based on the complementary relationship between actual and potential evaporation-energy partitioning and hydrologic attributes, AGU Fall Meeting 2017, Abstracts
- (420) Ghezzehei, T.A. and D. Or (2017) Life cycle of soil aggregates: from root residue to microbial and physical hotspots, AGU Fall Meeting 2017, Abstracts
- (421) Or, D., P. Lehmann and M. Sommer (2017) How internal drainage affects evaporation dynamics from soil surfaces? AGU Fall Meeting 2017, Abstracts
- (422) Or, D., S. Bickel and P. Lehmann (2017) Linking soil type and rainfall characteristics towards estimation of surface evaporative capacitance, AGU Fall Meeting 2017 Abstracts
- (423) Fatichi, S., D. Or, R.L. Walko, H. Vereecken, S.J. Kollet, M. Young, T.A. Ghezzehei, T. Hengl, N. Agam and R. Avissar (2018) Soil Structure-A Neglected Component of Land-Surface Models, AGU Fall Meeting 2018, Abstracts
- (424) von Ruetten, J., P. Lehmann and D. Or (2018) Physically based modeling of rainfall thresholds for landslide triggering, AGU Fall Meeting 2018 Abstracts, NH14A-05
- (425) Fatichi, S., S. Manzoni, D. Or and A. Paschalis (2018) The Challenges of Soil Biogeochemistry Mechanistic Modeling—A Reality Check, AGU Fall Meeting 2018
- (426) Fatichi, S., D. Or, R. Walko, H. Vereecken, S. Kollet, M. Young, T.A. Ghezzehei, T. Hengl, N. Agam and R. Avissar (2018) International Soil Modelling Consortium (ISMC) Conference—New Perspective on Soil
- (427) Romero-Ruiz, A., N. Linde, T. Keller and D. Or (2018) Geophysical Methods in Soil Structure Characterization, EGU General Assembly Conference Abstracts 20, 6759
- (428) von Ruetten, J., P. Lehmann and D. Or (2018) Quantifying deforestation effects on rainfall induced shallow landslides and debris flows pathways, EGU General Assembly Conference 2018, Abstracts 20, 11465
- (429) Or, D. and S. Ruiz (2018) Mechanical and Biophysical Constraints Affecting Soil Bioturbation by Earthworms and Plant Roots, EGU General Assembly Conference 2018, Abstracts 20, 8157

- (430) Keller, T., T. Colombi, P. Weisskopf, A. Walter and D. Or (2018) A long-term soil structure observatory for post-compaction soil structure and function recovery rates, EGU General Assembly Conference 2018, Abstracts 20, 9906
- (431) Mady, B., P. Lehmann and D. Or, How many small water reservoirs are there? A global survey using multi-spectral Imagery, EGU General Assembly Conference 2018, Abstracts 20, 19231
- (432) Lehmann, P., M. Berli, J.E. Koonce and D. Or (2018) Modeling a decade-long record of evaporation and recharge dynamics in a deep desert soil lysimeter using the surface evaporation capacitor concept, EGU General Assembly Conference 2018, Abstracts 20, 11412
- (433) Lehmann, P., S. Scognamiglio, J. von Ruetten and D. Or (2018) Physically based modeling of the origins of rainfall intensity-duration landslide triggering thresholds, EGU General Assembly Conference 2018, Abstracts 20, 11453
- (434) Or, D. and P. Lehmann (2018) Surface evaporation capacitance-soil type and rainfall characteristics provide an upper bound for soil evaporation, EGU General Assembly Conference 2018, Abstracts 20, 7539
- (435) Bergstad, M., S. Shokri-Kuehni, D. Or and N. Shokri, Pore Scale Study of Ion Transport in Porous Media with Mixed Wettability, EGU General Assembly Conference 2018, Abstracts 20, 9453
- (436) Bickel, S. and D. Or (2018) Climate and soil properties affect diversity and abundance of soil microbial life across scales-from grains to biomes, EGU General Assembly Conference 2018, Abstracts 20, 8486
- (437) Ghezzehei, T.A. and D. Or (2018) Biophysical Model of Soil Aggregation: from root residues to microbial and physical hotspots, EGU General Assembly Conference 2018, Abstracts 20, 5578
- (438) Tecon, R., A. Ebrahimi, H. Kleyer and D. Or (2018) Hydration conditions affect cell-to-cell bacterial interactions in porous media, EGU General Assembly Conference Abstracts 20, 6380
- (439) Borer, B., M. Ataman, R. Tecon and D. Or (2018) A marriage made in soil—combining individual based models with metabolic networks to quantify bacterial life in heterogeneous habitats, VAAM Annual Conference 2018
- (440) Mady, B., P. Lehmann and D. Or (2018) Evaporation suppression from water reservoirs using floating covers-preliminary results from field experiments, EGU General Assembly Conference 2018, Abstracts 20, 11778
- (441) Borer, B., M. Ataman, V. Hatzimanikatis and D. Or (2018) Integrating metabolic networks into an individual based model of bacterial life in soil, 17th International Symposium on Microbial Ecology (ISME17, 2018)
- (442) Ben Said, S., R. Tecon and D. Or (2018) Spatial segregation of microbial consortia: biodiesel production example, ISME17, 2018
- (443) Borer, B. and D. Or (2018) Bacterial spatial self-organization in soil-Insights from metabolic network modelling, DMF Impromptu-Annual Seminar, 2018
- (444) Bickel, S., J. Wang and D. Or (2018) Spatial Patterns of Soil Bacterial Abundance and Diversity-From Pores to Continents, AGU Fall Meeting 2018
- (445) Tecon, R. and D. Or (2019) Fragmented aqueous habitats affect bacterial plasmid transfer in porous environments, EMBO| EMBL Symposium on 'New Approaches and Concepts in Microbiology' (EMBO| EMBL 2019)
- (446) Baatz, R., J. Vanderborght, A. Verhoef, J. Simunek, M. v.d. Ploeg, D. Or, T.A Ghezzehei, U. Wollschläger, A.M. Tarquis, S. Painter, U. Mishra, M. Young and H. Vereecken (2019) The International Soil Modeling Consortium: ISMC status, goals and perspectives, Geophysical Research Abstracts 21, 2019
- (447) Wei, Z., P. Lehmann, S. Gupta, S. Bonetti, Y. Zhang and D. Or (2019) Land surface model response to hierarchical soil hydraulic parameterization updating, AGU Fall Meeting Abstracts 2019, H51U-1809

- (448) Bonetti, S., P. Lehmann, Z. Wei and D. Or (2019) Soil structure effects on infiltration-runoff partitioning-injecting vegetation and soil type into soil hydraulic parameterization, AGU Fall Meeting 2019, Abstracts, H11J-1635
- (449) Lehmann, P., S. Fatichi and D. Or, Estimating vegetation carrying capacity of arid landscapes from rainfall fraction escaping surface evaporation, AGU Fall Meeting 2019, Abstracts, H43A-04
- (450) Bonetti, S. (2019) Green wood is not deadwood-sensitivity of xylem hydraulic conductivity to pressure gradient, AGU Fall Meeting 2019
- (451) Gupta, S., T. Hengl, P. Lehmann, S. Bonetti, A. Papritz and D. Or (2019) Global high resolution mapping of soil saturated hydraulic conductivity, ZHydro Seminar, 2019
- (452) Gupta, S., S. Bonetti, P. Lehmann, A. Papritz, and D. Or (2019) Using vegetation attributes to represent soil structure effects in pedotransfer functions, Geophysical Research Abstracts 21, 2019
- (453) Tecon, R. and D. Or (2019) Bacterial plasmid transfer affected by fragmented aqueous habitats in porous media, Swiss Society for Microbiology Annual Meeting 2019, Session 22
- (454) Lehmann, P., S. Bickel and D. Or, Global surface evaporation—insights and opportunities, Geophysical Research Abstracts 21, 2019
- (455) Bonetti, S. and D. Or (2019) A new generation of pedotransfer functions—vegetation and soil structure effects on infiltration-runoff partitioning, Geophysical Research Abstracts 21, 2019
- (456) Mady, B., P. Lehmann and D. Or (2019) Floating covers for evaporation suppression from small reservoirs-global survey of feasibility and water saving potential, Geophysical Research Abstracts 21, 2019
- (457) von Ruetten, J., P. Lehmann and D. Or (2019) Physically based modeling of rainfall thresholds for the onset of landslides, Geophysical Research Abstracts 21, 2019
- (458) Jarvis, N., K. Meurer, D. Or and T. Keller Dynamic modelling of soil structure and its links with soil (2019) processes: status and challenges, Geophysical Research Abstracts 21, 2019
- (459) Or, D. and T. Keller (2019) Soil Structure—the elusive and fragile scaffolding for soil ecological functioning, Geophysical Research Abstracts 21, 2019
- (460) Ghezzehei, T.A., D. Or and A.A. Berhe (2019) Linkages between Aggregate Turnover Rate and Soil Organic Matter Dynamics, Geophysical Research Abstracts 21, 2019
- (461) Fatichi, S., S. Manzoni, D. Or and A. Paschalis (2019) A mechanistic model of soil biogeochemistry—a reality check, Geophysical Research Abstracts 21, 2019
- (462) Or, D. (2019) Extracellular polymeric substances (EPS)—versatile biological interfaces with the physical world, Geophysical Research Abstracts 21, 2019
- (463) Romero-Ruiz, A., N. Linde, T. Keller and D. Or (2019) Field-based geophysical characterization of soil structure, Geophysical Research Abstracts 21, 2019
- (464) Papritz, A., P. Lehmann, S. Gupta, S. Bonetti and D. Or, Estimating parameters of soil hydraulic functions by nonlinear programming, Geophysical Research Abstracts 21, 2019
- (465) Tecon, R. and D. Or (2019) Cell distribution and habitat fragmentation affecting the spread of plasmids in soil bacterial populations, 7th Swiss Microbial Ecology Meeting (SME 2019), 2019
- (466) Tecon, R., S. Mitri, D. Ciccacese, D. Or, J.R. van der Meer and D.R. Johnson (2019) Bridging the holistic-reductionist divide in microbial ecology, MSystems 4 (1), e00265-18, 2019
- (467) von Ruetten, J., P. Lehmann and D. Or (2019) Physically based modeling of rainfall thresholds for the onset of landslides, EGUGA, 11829, 2019
- (468) Vereecken, H., L. Weihermüller, S. Assouline, J. Šimůnek, A. Verhoef, D. Or et al (2019) Infiltration from the Pedon to Global Grid Scales: An Overview and Outlook for Land Surface Modeling, Vadose Zone Journal 18 (1), 2019
- (469) Fatichi, S., S. Manzoni, D. Or and A. Paschalis (2019) A Mechanistic model of microbially mediated soil biogeochemical processes: A reality check, Global Biogeochemical Cycles 33 (6), 620-648, 2019

- (470) Lehmann, P., M. Aminzadeh and D. Or (2019) Evaporation Suppression From Water Bodies Using Floating Covers: Laboratory Studies of Cover Type, Wind, and Radiation Effects, *Water Resources Research* 55 (6), 4839-4853, 2019
- (471) Borer, B., M. Ataman, V. Hatzimanikatis and D. Or (2019) Modeling metabolic networks of individual bacterial agents in heterogeneous and dynamic soil habitats (IndiMeSH), *PLoS computational biology* 15, 2019
- (472) Kleyer, H., R. Tecona and D. Or (2019) Soil hydration state and interspecies interactions determine bacterial community composition across a wide range of initial inoculation ratios, EMBO | EMBL Symposium on 'New Approaches and Concepts in Microbiology'(EMBO | EMBL 2019), 2019
- (480) Jones, S.B., B. Bugbee, R. Heinse, D. Or and G.E. Bingham (2019) Moon, Mars and Microgravity Design Considerations for Optimizing Plant Growth Medium Water and Oxygen Supply, ASA-CSSA-SSSA International annual meeting 2019
- (481) Lehmann, P., J. von Ruetten and D. Or (2019) Deforestation effects on rainfall-induced shallow landslides: remote sensing and physically-based modelling, *Water Resources Research*, 2019
- (482) Mady, B., P. Lehmann and D. Or (2019) Evaporation suppression from water reservoirs using floating covers – insights from a field study, AGU Fall Meeting 2019
- (483) Or, D. (2019) The Challenges of Monitoring the Deep Critical Zone—Going Under the Living Skin of the Earth Surface, AGU Fall Meeting 2019
- (484) Ruiz, S., S. Bickel, P. Lehmann and D. Or (2019) Soil, Climatic and Biophysical Constraints Determine Global Distribution and Activity Windows of Earthworms, AGU Fall Meeting 2019
- (485) Or, D., S. Bickel and P. Lehmann (2019) Physical constraints improve soil hydraulic parameters deduced from pedotransfer functions, AGU Fall Meeting 2019
- (486) Gupta, S., T. Hengl, P. Lehmann, S. Bonetti, A. Papritz and D. Or (2019) Global Mapping of Soil Saturated Hydraulic Conductivity—Using Comprehensive Legacy Data and Ensemble Machine Learning, AGU Fall Meeting 2019
- (487) Baatz, R., A.M. Tarquis, A. Verhoef, S.L. Painter, U. Mishra, J. Simunek, D. Or, et al (2019) The International Soil Modeling Consortium (ISMC)—New Opportunities for Advancing Data and Modeling of Soil Systems, AGU Fall Meeting 2019
- (488) Gupta, S., T. Hengl, P. Lehmann, S. Bonetti, A. Papritz and D. Or (2019) Global Mapping of Soil Saturated Hydraulic Conductivity—Combining Legacy Data, Spatial Covariates and Ensemble Machine Learning, AGU Fall Meeting Abstracts, H21A-05, 2019
- (489) Romero-Ruiz, A., N. Linde, L. Baron, S.G. Solazzi, T. Keller and D. Or (2019) Seismic characterization of soil structure—field observations and modeling, AGU Fall Meeting 2019
- (490) Leshchinsky, B.A., P. Lehmann and D. Or (2019) Seismic triggering of shallow landslides—linking threshold mechanics and hydrological considerations, AGU Fall Meeting 2019
- (491) Kleyer, H., R. Tecon and D. Or (2019) Rapid shifts in bacterial community assembly under static and dynamic hydration conditions in porous media, *Applied and environmental microbiology* 86 (1) (492), 2019
- (493) Bickel, S. and D. Or (2019) Soil bacterial diversity mediated by microscale aqueous-phase processes across biomes, *Nature Communications* 11 (1), 1-9, 2020
- (494) Fan, L., P. Lehmann, C. Zheng and D. Or (2019) Rainfall Intensity Temporal Patterns Affect Shallow Landslide Triggering and Hazard Evolution, *Geophysical Research Letters* 47 (1), e2019GL085994, 2020
- (495) Ben Said, S., R. Tecon, B. Borer and D. Or (2019) The engineering of spatially linked microbial consortia—potential and perspectives, *Current opinion in biotechnology* 62, 137-145, 2020

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., Hoenggerberg, 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

- 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, Berkeley, CA
- Invited talk – *“Pore scale view of fluid displacement fronts in porous media”* Dani Or 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
- BSSS 2016 Redding UK- *“Biophysical Aspects of Microbial Life in Soil: Microbial Diversity and Self-Organization”*
- The 2017 EGU John Dalton Medal Lecture: *“On Dalton, Evaporation and the hydrologic cycle – a brief journey to scientific discovery”* April 2017, Vienna, Austria
- Bacterial Genetics and Ecology (BaGEco 14) – Keynote lecture on *“Microbial life in unsaturated soil – how liquid phase architecture affects diversity and mediates trophic interactions”* Aberdeen, Scotland (June 2017).
- Drylands, Deserts, and Desertification (DDD 2017) – Invited speaker *“Surface evaporative capacitance – soil type and rainfall characteristics provide an upper bound for soil evaporation”* BGU, Sde-Boker, Israel (November 2017)
- Shenyang Soil Physics Conference – Keynote speaker *“Evaporation dynamics and energy partitioning over drying terrestrial surfaces”*. Shenyang, China (August 2018)
- USA Nuclear Waste Technical Review Board – *Expert opinion on monitoring of the deep vadose zone processes for nuclear waste repositories*, Washington DC, (March 2018)
- *Biosphere arid land workshop (Tucson Arizona - 2018) – Invited speaker*
- *11th European conference on Mathematical Biology, Lisbon – Invited speaker (July 2018)*
- *17th International Symposium on Microbial Ecology (ISME17 2018) Session organizer and invited speaker, Leipzig, Germany (August 2018)*
- Physics of Drying Conference – Invited speaker *“Pore scale physics constrain global terrestrial evaporation”* Paris, France (November 2018)
- American Geophysical Union the Langbein Lecture – *“The tyranny of small scales – the challenge of representing soil processes in global land surface models”* Washington DC (December 2018)
- Transport in Disordered Environments (Princeton Center for Theoretical Science) – Invited speaker *“Microbial life in unsaturated soil - hotspots and self-organization”* Princeton Uni. (January 2019)
- Swedish University of Agricultural Sciences – Invited speaker *“Managed and natural soil structure commonalities and differences”* Uppsala, Sweden (March 2019)
- EGU 2019 – Invited speaker *“Extracellular polymeric substances (EPS) – versatile biological interfaces with the physical world”* Vienna (April 2019)
- ISTO-OZNS workshop on Knowledge frontiers in water unsaturated hydro-geosystems: interface dynamics, heterogeneities and couplings. Invited speaker *“The challenges of observing the deep critical zone”* Orleans, France (June 2019)
- 2019 International Top-Level Forum on Land Conservation and Sustainable Agriculture in the Black Soil Region NE China. Invited Speaker *“Managed and natural soil structure - challenges, commonalities and differences”* Changchun, China (August 2019)

- TERENO meeting - Invited speaker “*The surface evaporation capacitor (SEC) Pore scale physics constrain terrestrial surface evaporation*” Potsdam, Germany (September 2019)
- GEWEX Evapotranspiration meeting – “*The surface evaporation capacitor (SEC) Pore scale physics constrain terrestrial surface evaporation*” Sydney, Australia (October 2019)

RESEARCH ACTIVITIES

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

<u>Year</u>	<u>Dollars</u>	<u>Agency, Title, Investigator(s)</u>
92-95	\$375,000	NASA. <i>Mesoscale Study of Surface Heat Fluxes and Boundary Layer Processes in a Desert Region</i> . 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. <i>Characterization of Soil Spatial Variability for Upgrading Soil Water Monitoring in Owens Valley</i> . D. Or.
93-94	\$75,000	PacificCorp. <i>Using Saline Waste Water from Electrical Power Plants for Irrigation</i> . L. Dudley, J. MacAdam, D. Or.
93-96	\$264,000	BARD. <i>Drip Irrigation Management by TDR Monitoring of Soil Water and Solute Distributions</i> . S. Dasberg, J. Hopmans, D. Or.
93-94	\$15,000	USU New Faculty Research Grants. <i>In situ Characterization of Temporal Changes in Soil Structural and Hydraulic Properties</i> . D. Or.
94-95	\$75,000	PacificCorp. <i>Using Saline Waste Water from Electrical Power Plants for Irrigation</i> . L. Dudley, J. MacAdam, D. Or.
94-95	\$14,000	USU New Faculty Research Grants. <i>In situ Characterization of Temporal Changes in Soil Structural and Hydraulic Properties - Phase II</i> . D. Or.
95-96	\$75,000	PacificCorp. <i>Using Saline Waste Water from Electrical Power Plants for Irrigation</i> . L. Dudley and D. Or.
95-98	\$290,615	BARD. <i>In situ Evaluation of Unsaturated Hydraulic Properties Using Subsurface Point Sources</i> . A. Warrick, U. Shani, D. Or.
96-97	\$80,000	PacificCorp. <i>Using Saline Waste Water from Electrical Power Plants for Irrigation</i> . L. Dudley and D. Or.
97-99	\$299,400	BARD. <i>Characterization of Post-Tillage Soil Fragmentation and Rejoining Affecting Soil Pore Space Evolution and Transport Properties</i> . V. Snyder, D. Or, and A. Hadas.
97-99	\$100,000	NRI-USDA <i>Post-Tillage Soil Pore Space Dynamics</i> . D. Or and V. Snyder.
97-98	\$39,000	NRI-USDA Equipment Grant + USU matching - <i>Impedance Analyzer for Characterization of Dielectric Properties of Soils and Grains</i> . D. Or and L. Dudley.
98-2000	\$285,000	BARD. <i>Geometrical Considerations and Interfacial Processes Affecting Electromagnetic Measurement of Soil Water Content Using TDR and Remote Sensing Methods</i> . S. Friedman, J. Wraith, and D. Or.
98-2001	\$300,000	NSF-EAR. <i>Thin Liquid Films in Unsaturated Porous Media - Effects on Flow and Transport</i> . D. Or, L.M. Dudley, and S. Bialkowski.

98-2003	\$2,000,000*	NSF-GPG. <i>Pulsing of plant-available moisture and nitrogen in Great Basin communities</i> . M.M. Caldwell, L.H. Hipps, J.M. Stark, C.M. Neale, and D. Or.
99-2003	\$307,420	NRI-USDA. <i>Electromagnetic Characterization of Soil Electrochemical and Geometrical Factors Affecting Transport Processes</i> . Dudley, L., D. Or, and S. Bialkowski.
99-2000	\$25,000	Campbell Scientific Inc. and HarvestMaster. <i>Dielectric Mixing Models for Grain Water Content Measurement</i> . Or, D. and S.B. Jones.
2000-03	\$229,500	NRI-USDA. <i>Hydraulic Conductivity of Unsaturated Porous Media – Film and Corner Flows in Angular Pore Space</i> . D. Or, and M. Tuller.
2000-04	\$100,000	NASA - <i>Advanced Life Support. Optimization of Root Zone Substrates for Reduced Gravity Experiments</i> . Bingham, G., D. Or, S.B. Jones, and B. Morrow. (2000-2004 \$878,098)
2000-01	\$55,000	Pioneer Hi-Bred International Inc. <i>TDR Measurement of Corn-Ear Water Content</i> . Or, D. and S.B. Jones. (Cont.)
2000-01	\$25,000	Campbell Scientific Inc. and HarvestMaster. <i>Dielectric Mixing Models for Grain Water Content Measurement</i> . Or, D. and S.B. Jones. (Cont.)
2001-03	\$275,000	NRI-USDA (Soils and Soil Biology). <i>Thermodielectric Measurement of Soil Specific Surface Area and Bound Water</i> . 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	Pioneer Hi-Bred International Inc. <i>TDR Measurement of Corn-Ear Water Content</i> . Or, D. and S.B. Jones. (Cont.)
2002-05	\$335,000	BARD - <i>Physical Processes Affecting Microbial Habitats & Activity In Unsaturated Agricultural Soils</i> Or, D, S.P. Friedman, J. Norton
2004-05	\$193,000	NRI-USDA (Soils and Soil Biology) <i>Compaction of Tilled Soils - Microscale Structural Dynamics Affecting Pore Space and Hydraulic Properties</i> . Or, D, and M. Berli
2004-07	\$436,000	NSF-EAR (Hydrologic Sciences) <i>Diffusional Constraints Affecting Microbial Distribution and Activity in Unsaturated Porous Media</i> . Or, D, and B. Smets.
2004-07	\$353,000	NRI-USDA (Soils and Soil Biology) <i>Shrink-Swell Behavior and Hydraulic Properties of Clay Soils</i> . Tuller M. and Or, D.
2005-07	\$261,000	NSF-EAR (Hydrologic Sciences) <i>Noninvasive Imaging of Near-Surface Preferential Flow Pathways and Dynamics in Carbonate Vadose Zone</i> . Grasmueck, M., F.D. Day-Lewis, S. Kruse, and D. Or.

Total amount awarded in Grants and Contracts as PI/Co-PI (US) -- \$8,500,750

Switzerland as PI/Co-PI:

<u>Year</u>	<u>Amount</u>	<u>Agency, Title, Investigator(s)</u>
2006-09	CHF 285,396	SNF (200021-113676/1) - <i>Evaporation from Porous Media – Microscale Study of Dynamics and Morphology of Drying Fronts</i> , Dani Or and Peter Lehmann

2006-09	CHF 131,172	SNF (200021-113442/1) - <i>Linking Diffusional Heterogeneity and Aquatic Habitat Fragmentation with Microbial Coexistence and Diversity in the Vadose Zone</i> , Dani Or
2006-09	CHF 1, 440,000	CCES - <i>Triggering of Rapid Mass Movements in Steep Terrain (TRAMM) – Hydrologic and Climatic Factors</i> , Stähli, M. D. Or, S. Springman, L. Laloui, L. Tacher, J. Schweizer, M. Schwank, P. Bartlet, C. Ancey.
2009-18	€ 1, 581,000	DFG - <i>Multi-Scale Interfaces in Unsaturated Soil</i> , Neuweiler, I., Krafczyk, M., Lehmann, P., Or, D., Vogel, H.J., Helmig, R., Vanderborght, J.
2011-2015	CHF 304,000	SNSF - <i>Evaporation from terrestrial surfaces – linking pore scale phenomena with landscape processes (SoilEvap)</i> D. Or and P. Lehmann
2011-2015	CHF 206,000	SNSF - <i>Quantifying Biophysical Processes Promoting Microbial Diversity in Soil</i> , D. Or
2011-2015	CHF 1, 000,000	CCES - <i>Triggering of Rapid Mass Movements in Steep Terrain (TRAMM)</i> Stahli M., D. Or, S. Springman, B. McArdle, L. Laloui, J. Schweizer.
2011-2015	€ 1, 200,000	DFG - <i>Multi-Scale Interfaces in Unsaturated Soil</i> , Neuweiler, I., Krafczyk, M., Lehmann, P., Or, D., Vogel, H.J., Helmig, R., Vanderborght, J.
2009-2014	CHF 164,000	SNSF (200021-113442/1) - <i>Local and regional hydrologic and geomorphic factors determining landslide patterns</i> . Lehmann, P., Papritz, A., Stähli, M., and Or, D.
2013-2018	€ 2, 200,000	ERC Advanced Grant (320499) - <i>The Hidden Frontier: Quantitative exploration of physical and ecological origins of microbial diversity in soil (SoilLife)</i> , Or, D.
2014-2018	CHF 2,530,000	SystemsX.ch - <i>Design and Systems Biology of Functional Microbial Landscapes (MicroScapesX)</i> van der Meer J.; D Or and D. Johnson (CHF 990,000 - ETH)
2017-2020	CHF 207,000	SNSF - <i>Evaporation suppression from water reservoirs using floating covers: scientific basis and design considerations</i> . Or, D. and Lehmann P.
2018-2020	CHF 180,800	ETH-18 18-1 SSPL – <i>The omission of soil structure in parameterization of land-surface models and the need for a new generation of pedotransfer functions</i>

(* bold font for active projects)

Total amount awarded in Grants and Contracts as PI/Co-PI (ETH/EPFL) -- CHF 11,016,000

TEACHING ACTIVITIES

Regular Courses Taught --

<u>USU</u>	<u>Title</u>	<u>Year Taught</u>	<u>Enrollment</u>
• SOILS 5650/6650	<i>Applied Soil Physics</i>	93-2001	25/yr
• SOILS 566/666	<i>Applied Soil Physics Laboratory</i>	93-98 (combined w/5650)	18/yr
• SOILS 614	<i>Unsaturated Flow and Transport</i>	95-2001 (alt. Year)	7/yr
• SOILS 7200	<i>Interfacial Processes & Reactive</i>	2002 (alt. year)	9/yr
<u>UCONN</u>			
• CE/ENVE 320-3	<i>Vadose Zone Hydrology</i>	2004 (alt. year)	18/yr
• CE/ENVE 320-4	<i>Environmental Measurements</i>	2004 (alt. year)	8/yr
• CE/ENVE 310	<i>Transport Phenomena</i>	2005 (alt. year)	12/yr
<u>EPFL</u>			
• SSIE/ENAC	<i>Soil and the Environment</i>	2006 (yearly)	50/yr
• SSIE/ENAC	<i>Vadose Zone Hydrology</i>	2006 (alt. year)	40/yr
• UNIL/EPFL	<i>Hydrogeophysics</i>	2007 (alt. year)	25/yr
• SSIE/ENAC	<i>Scientific Communication</i>	2007 (yearly)	32/yr
<u>ETH Zurich</u>			
• D-USYS	Advanced Vadose Zone Hydrology	2009 - 2016	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	<i>Modern Approaches to Liquid Behavior in Porous Media</i>	4-6, 2001	25
• DTU, Copenhagen	<i>Modern Approaches to Liquid Behavior in Porous Media (revised)</i>	6-7, 2002	15

Graduate Students Supervised --

<u>Date Graduated</u>	<u>Name</u>	<u>Degree</u>
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 Shahræeni (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 Michlmayr (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
2016	Milad Aminzadeh (ETH)	PhD
2016	Linfeng Fan (ETH)	PhD
2016	Frouke Hoogland (ETH)	PhD
2017	Thomas Singer (ETH)	MS
2017	Ali Nejad Ebrahimi (ETH)	PhD
2017	Madlene Nussbaum (ETH)	PhD
2017	Mareike Wiese (ETH-WSL)	PhD
2017	Martina Sommer (ETH)	MS
2018	Minsu Kim (ETH)	PhD
2018	Siul Ruiz (ETH)	PhD
2018	Achille Capelli (ETH-WSL)	PhD
2018	Siul Ruiz (ETH)	PhD
2019	Benedict Borer (ETH)	PhD
2020	Hannah Kleyer (ETH)	PhD
2020	Davide Ciccarese (ETH-EAWAG)	PhD
2020	Samuel Bickel (ETH)	PhD
2021	Bassem Mady (ETH)	PhD
2021	Surya Gupta (ETH)	PhD

(Cumulative 1993-present)

Number of Graduate Committees: **30 M.S. 55 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 2009-2016
- Director Institute of Terrestrial Ecosystems (ITES) 2012-2016

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 – 2012
- 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-
- International Conference on 'Soil Systems and Critical Zone Processes - Integrating Life Support Functions across Disciplines' (Monte Verita) 2013
- Co-chair GEWEX-SoilWat first planning workshop Leipzig, June 2016
- ***ERC Review Panel – 2018-present***
- ***Scientific Advisory Board PoreLab (U. Oslo, Norway). 2018-present***
- ***Scientific Advisory Board Hydro-ecological Observatories TERENO. 2018-present***
- ***Scientific Advisory Board NCCR Microbiomes, 2020 - present***

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
- ***Pioneer 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

- **Meter Group** (Pullman, Washington) – Designing a subsurface tower for deep vadose zone monitoring (2019-ongoing)

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/>)
- Developed and maintains landslide and debris flows modeling and dataset (**STEP-TRAMM**) for researchers and practitioners all over the world. (<https://step.ethz.ch/step-tramm.html>)

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
Vadose 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)