

Markus Tuller

List of Publications by Year in descending order

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126
papers

5,607
citations

94433

37
h-index

85541

71
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132
all docs

132
docs citations

132
times ranked

5438
citing authors

#	ARTICLE	IF	CITATIONS
1	Adsorption and capillary condensation in porous media: Liquid retention and interfacial configurations in angular pores. <i>Water Resources Research</i> , 1999, 35, 1949-1964.	4.2	505
2	Segmentation of X-ray computed tomography images of porous materials: A crucial step for characterization and quantitative analysis of pore structures. <i>Water Resources Research</i> , 2009, 45, .	4.2	460
3	Ground, Proximal, and Satellite Remote Sensing of Soil Moisture. <i>Reviews of Geophysics</i> , 2019, 57, 530-616.	23.0	307
4	Hydraulic conductivity of variably saturated porous media: Film and corner flow in angular pore space. <i>Water Resources Research</i> , 2001, 37, 1257-1276.	4.2	265
5	Liquid retention and interfacial area in variably saturated porous media: Upscaling from single-pore to sample-scale model. <i>Water Resources Research</i> , 1999, 35, 3591-3605.	4.2	258
6	Water films and scaling of soil characteristic curves at low water contents. <i>Water Resources Research</i> , 2005, 41, .	4.2	253
7	The optical trapezoid model: A novel approach to remote sensing of soil moisture applied to Sentinel-2 and Landsat-8 observations. <i>Remote Sensing of Environment</i> , 2017, 198, 52-68.	11.0	251
8	Evaluation of Standard Calibration Functions for Eight Electromagnetic Soil Moisture Sensors. <i>Vadose Zone Journal</i> , 2013, 12, 1-16.	2.2	148
9	Multifractal analysis of discretized X-ray CT images for the characterization of soil macropore structures. <i>Geoderma</i> , 2010, 156, 32-42.	5.1	135
10	Flow in unsaturated fractured porous media: Hydraulic conductivity of rough surfaces. <i>Water Resources Research</i> , 2000, 36, 1165-1177.	4.2	129
11	Modeling and correction of soil penetration resistance for varying soil water content. <i>Geoderma</i> , 2011, 166, 92-101.	5.1	128
12	Mapping soil moisture with the OPTical TRAPezoid Model (OPTRAM) based on long-term MODIS observations. <i>Remote Sensing of Environment</i> , 2018, 211, 425-440.	11.0	105
13	Cavitation during desaturation of porous media under tension. <i>Water Resources Research</i> , 2002, 38, 19-1-19-14.	4.2	102
14	Natural Capital, Ecosystem Services, and Soil Change: Why Soil Science Must Embrace an Ecosystems Approach. <i>Vadose Zone Journal</i> , 2012, 11, .	2.2	101
15	On the Value of Soil Resources in the Context of Natural Capital and Ecosystem Service Delivery. <i>Soil Science Society of America Journal</i> , 2014, 78, 685-700.	2.2	91
16	Impact of long-term fertilization practice on soil structure evolution. <i>Geoderma</i> , 2014, 217-218, 181-189.	5.1	83
17	Hydraulic functions for swelling soils: pore scale considerations. <i>Journal of Hydrology</i> , 2003, 272, 50-71.	5.4	81
18	Relationship between specific surface area and the dry end of the water retention curve for soils with varying clay and organic carbon contents. <i>Water Resources Research</i> , 2011, 47, .	4.2	80

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19	A New Two-Stage Approach to predicting the soil water characteristic from saturation to oven-dryness. <i>Journal of Hydrology</i> , 2015, 521, 498-507.	5.4	74
20	Unsaturated Hydraulic Conductivity of Structured Porous Media: A Review of Liquid Configuration-Based Models. <i>Vadose Zone Journal</i> , 2002, 1, 14-37.	2.2	71
21	Soil Specific Surface Area and Non-Singularity of Soil-Water Retention at Low Saturations. <i>Soil Science Society of America Journal</i> , 2013, 77, 43-53.	2.2	64
22	Global environmental changes impact soil hydraulic functions through biophysical feedbacks. <i>Global Change Biology</i> , 2019, 25, 1895-1904.	9.5	60
23	Relating soil specific surface area, water film thickness, and water vapor adsorption. <i>Water Resources Research</i> , 2014, 50, 7873-7885.	4.2	59
24	Estimation of Soil Clay Content from Hygroscopic Water Content Measurements. <i>Soil Science Society of America Journal</i> , 2012, 76, 1529-1535.	2.2	56
25	Estimation of root zone soil moisture from ground and remotely sensed soil information with multisensor data fusion and automated machine learning. <i>Remote Sensing of Environment</i> , 2021, 260, 112434.	11.0	56
26	Density and permeability of a loess soil: Long-term organic matter effect and the response to compressive stress. <i>Geoderma</i> , 2013, 193-194, 236-245.	5.1	53
27	Effects of biochar and manure amendments on water vapor sorption in a sandy loam soil. <i>Geoderma</i> , 2015, 243-244, 175-182.	5.1	50
28	Evaluation of theoretical and empirical water vapor sorption isotherm models for soils. <i>Water Resources Research</i> , 2016, 52, 190-205.	4.2	50
29	The Landscape Evolution Observatory: A large-scale controllable infrastructure to study coupled Earth-surface processes. <i>Geomorphology</i> , 2015, 244, 190-203.	2.6	47
30	Application of Segmentation for Correction of Intensity Bias in X-Ray Computed Tomography Images. <i>Vadose Zone Journal</i> , 2010, 9, 187.	2.2	45
31	Numerical evaluation of subsurface soil water evaporation derived from sensible heat balance. <i>Water Resources Research</i> , 2011, 47, .	4.2	43
32	Effects of CT Number Derived Matrix Density on Preferential Flow and Transport in a Macroporous Agricultural Soil. <i>Vadose Zone Journal</i> , 2015, 14, 1-13.	2.2	43
33	Applicability of the Guggenheim-Anderson-Boer water vapour sorption model for estimation of soil specific surface area. <i>European Journal of Soil Science</i> , 2018, 69, 245-255.	3.9	43
34	Advancing NASA's AirMOSS P-Band Radar Root Zone Soil Moisture Retrieval Algorithm via Incorporation of Richards' Equation. <i>Remote Sensing</i> , 2017, 9, 17.	4.0	41
35	Evaluation of an Advanced Benchtop Micro-Computed Tomography System for Quantifying Porosities and Pore-Size Distributions of Two Brazilian Oxisols. <i>Soil Science Society of America Journal</i> , 2011, 75, 832-841.	2.2	40
36	Prediction of clay content from water vapour sorption isotherms considering hysteresis and soil organic matter content. <i>European Journal of Soil Science</i> , 2015, 66, 206-217.	3.9	40

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37	Prediction of the soil water retention curve for structured soil from saturation to oven-dryness. <i>European Journal of Soil Science</i> , 2017, 68, 57-65.	3.9	40
38	Column-scale unsaturated hydraulic conductivity estimates in coarse-textured homogeneous and layered soils derived under steady-state evaporation from a water table. <i>Journal of Hydrology</i> , 2014, 519, 1238-1248.	5.4	38
39	Particle size effects on soil reflectance explained by an analytical radiative transfer model. <i>Remote Sensing of Environment</i> , 2018, 210, 375-386.	11.0	37
40	Three-Dimensional Multiphase Segmentation of X-Ray CT Data of Porous Materials Using a Bayesian Markov Random Field Framework. <i>Vadose Zone Journal</i> , 2012, 11, .	2.2	36
41	Simultaneous Loss of Soil Biodiversity and Functions along a Copper Contamination Gradient: When Soil Goes to Sleep. <i>Soil Science Society of America Journal</i> , 2014, 78, 1239-1250.	2.2	35
42	An analytical model for estimation of land surface net water flux from near-surface soil moisture observations. <i>Journal of Hydrology</i> , 2019, 570, 26-37.	5.4	35
43	Prediction of biopore- and matrix-dominated flow from X-ray CT-derived macropore network characteristics. <i>Hydrology and Earth System Sciences</i> , 2016, 20, 4017-4030.	4.9	33
44	Hydraulic conductivity of partially saturated fractured porous media: flow in a cross-section. <i>Advances in Water Resources</i> , 2003, 26, 883-898.	3.8	30
45	Economical and environmental implications of solid waste compost applications to agricultural fields in Punjab, Pakistan. <i>Waste Management</i> , 2009, 29, 2437-2445.	7.4	30
46	Evaluation of a Fully Automated Analyzer for Rapid Measurement of Water Vapor Sorption Isotherms for Applications in Soil Science. <i>Soil Science Society of America Journal</i> , 2014, 78, 754-760.	2.2	29
47	Quantification of Soil Pore Network Complexity with X-ray Computed Tomography and Gas Transport Measurements. <i>Soil Science Society of America Journal</i> , 2015, 79, 1577-1589.	2.2	29
48	Physicochemical controls on initiation and evolution of desiccation cracks in sand-bentonite mixtures: X-ray CT imaging and stochastic modeling. <i>Journal of Contaminant Hydrology</i> , 2011, 126, 100-112.	3.3	28
49	Clay content and mineralogy, organic carbon and cation exchange capacity affect water vapour sorption hysteresis of soil. <i>European Journal of Soil Science</i> , 2020, 71, 204-214.	3.9	28
50	Global Estimates of Land Surface Water Fluxes from SMOS and SMAP Satellite Soil Moisture Data. <i>Journal of Hydrometeorology</i> , 2020, 21, 241-253.	1.9	27
51	Gas diffusion-derived tortuosity governs saturated hydraulic conductivity in sandy soils. <i>Journal of Hydrology</i> , 2014, 512, 388-396.	5.4	26
52	A New Optical Remote Sensing Technique for High-Resolution Mapping of Soil Moisture. <i>Frontiers in Big Data</i> , 2019, 2, 37.	2.9	26
53	Rapid and Fully Automated Measurement of Water Vapor Sorption Isotherms: New Opportunities for Vadose Zone Research. <i>Vadose Zone Journal</i> , 2014, 13, 1-7.	2.2	25
54	A TDR Array Probe for Monitoring Near-Surface Soil Moisture Distribution. <i>Vadose Zone Journal</i> , 2017, 16, 1-8.	2.2	25

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55	Application of Satellite Remote Sensing for Estimation of Dust Emission Probability in the Urmia Lake Basin in Iran. <i>Soil Science Society of America Journal</i> , 2019, 83, 993-1002.	2.2	25
56	Measurements and Modeling of Variable Gravity Effects on Water Distribution and Flow in Unsaturated Porous Media. <i>Vadose Zone Journal</i> , 2007, 6, 713-724.	2.2	22
57	Methods and Techniques for Measuring Gas Emissions from Agricultural and Animal Feeding Operations. <i>Critical Reviews in Analytical Chemistry</i> , 2014, 44, 200-219.	3.5	22
58	Physical and Hydraulic Properties of Baked Ceramic Aggregates Used for Plant Growth Medium. <i>Journal of the American Society for Horticultural Science</i> , 2005, 130, 767-774.	1.0	21
59	Unsaturated Hydraulic Conductivity of Structured Porous Media: A Review of Liquid Configuration-Based Models. <i>Vadose Zone Journal</i> , 2002, 1, 14-37.	2.2	20
60	Beyond Earth: Designing Root Zone Environments for Reduced Gravity Conditions. <i>Vadose Zone Journal</i> , 2012, 11, .	2.2	19
61	Integral parameters for characterizing water, energy, and aeration properties of soilless plant growth media. <i>Journal of Hydrology</i> , 2013, 502, 120-127.	5.4	19
62	Pore Structure of Natural and Regenerated Soil Aggregates: An X-Ray Computed Tomography Analysis. <i>Soil Science Society of America Journal</i> , 2014, 78, 377-386.	2.2	19
63	Predicting Near-Surface Moisture Content of Saline Soils from Near-Infrared Reflectance Spectra with a Modified Gaussian Model. <i>Soil Science Society of America Journal</i> , 2016, 80, 1496-1506.	2.2	18
64	Characterization of Physicochemical and Hydraulic Properties of Organic and Mineral Soilless Culture Substrates and Mixtures. <i>Agronomy</i> , 2020, 10, 1403.	3.0	18
65	Information depth of NIR/SWIR soil reflectance spectroscopy. <i>Remote Sensing of Environment</i> , 2021, 256, 112315.	11.0	18
66	Liquid Behavior in Partially Saturated Porous Media under Variable Gravity. <i>Soil Science Society of America Journal</i> , 2009, 73, 341-350.	2.2	17
67	Prediction of the Soil Water Characteristic from Soil Particle Volume Fractions. <i>Soil Science Society of America Journal</i> , 2012, 76, 1946-1956.	2.2	16
68	Soil structure and microbial activity dynamics in 20-month field-incubated organic-amended soils. <i>European Journal of Soil Science</i> , 2014, 65, 218-230.	3.9	16
69	Segmentation of X-Ray CT Data of Porous Materials: A Review of Global and Locally Adaptive Algorithms. <i>SSSA Special Publication Series</i> , 0, , 157-182.	0.2	16
70	Estimating Atterberg limits of soils from hygroscopic water content. <i>Geoderma</i> , 2021, 381, 114698.	5.1	16
71	Short- and mid-term forecasts of actual evapotranspiration with deep learning. <i>Journal of Hydrology</i> , 2022, 612, 128078.	5.4	15
72	Effects of Soil Bulk Density on Gas Transport Parameters and Pore-Network Properties across a Sandy Field Site. <i>Vadose Zone Journal</i> , 2015, 14, 1-12.	2.2	13

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73	A critical evaluation of the Miller and Miller similar media theory for application to natural soils. <i>Water Resources Research</i> , 2016, 52, 3829-3846.	4.2	13
74	Hydraulic conductivity of stratified unsaturated soils: Effects of random variability and layering. <i>Journal of Hydrology</i> , 2017, 546, 81-89.	5.4	13
75	Inorganic and Synthetic Organic Components of Soilless Culture and Potting Mixtures. , 2019, , 259-301.		13
76	Genome Wide Association Study Uncovers the QTLome for Osmotic Adjustment and Related Drought Adaptive Traits in Durum Wheat. <i>Genes</i> , 2022, 13, 293.	2.4	12
77	Electromagnetic induction for mapping textural contrasts of mine tailing deposits. <i>Journal of Applied Geophysics</i> , 2013, 89, 11-20.	2.1	11
78	Effects of Soil Compaction and Organic Carbon Content on Preferential Flow in Loamy Field Soils. <i>Soil Science</i> , 2015, 180, 10-20.	0.9	11
79	Reply to comment by N. Kartal Toker, John T. Germaine, and Patricia J. Culligan on "Cavitation during desaturation of porous media under tension" <i>Water Resources Research</i> , 2003, 39, .	4.2	9
80	Seepage into drifts and tunnels in unsaturated fractured rock. <i>Water Resources Research</i> , 2005, 41, .	4.2	9
81	Sampling Silica and Ferrihydrite Colloids with Fiberglass Wicks under Unsaturated Conditions. <i>Journal of Environmental Quality</i> , 2006, 35, 1127-1134.	2.0	9
82	LINKING THE GARDNER AND CAMPBELL MODELS FOR WATER RETENTION AND HYDRAULIC CONDUCTIVITY IN NEAR-SATURATED SOIL. <i>Soil Science</i> , 2006, 171, 573-584.	0.9	9
83	Gas Diffusivity-Based Design and Characterization of Greenhouse Growth Substrates. <i>Vadose Zone Journal</i> , 2013, 12, 1-13.	2.2	9
84	Physical and Thermal Characteristics of Dairy Cattle Manure. <i>Journal of Environmental Quality</i> , 2014, 43, 2115-2129.	2.0	9
85	Controlled Experiments of Hillslope Coevolution at the Biosphere 2 Landscape Evolution Observatory: Toward Prediction of Coupled Hydrological, Biogeochemical, and Ecological Change. , 0, , .		9
86	New Perspectives for the Application of High-Resolution Benchtop X-Ray MicroCT for Quantifying Void, Solid and Liquid Phases in Soils. , 2014, , 261-281.		9
87	Improved estimation of clay content from water content for soils rich in smectite and kaolinite. <i>Geoderma</i> , 2019, 350, 40-45.	5.1	8
88	Soil Architecture and Physicochemical Functions: An Introduction. <i>Vadose Zone Journal</i> , 2012, 11, .	2.2	7
89	Modeling gravity effects on water retention and gas transport characteristics in plant growth substrates. <i>Advances in Space Research</i> , 2014, 54, 797-808.	2.6	7
90	Combining visible near-infrared spectroscopy and water vapor sorption for soil specific surface area estimation. <i>Vadose Zone Journal</i> , 2020, 19, e20007.	2.2	7

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91	Estimation of soil specific surface area from adsorbed soil water content. <i>European Journal of Soil Science</i> , 2021, 72, 1718-1725.	3.9	7
92	Measurement of Porous Media Hydraulic Properties During Parabolic Flight Induced Microgravity. , 0, , .		6
93	A Novel Shortwave Infrared Proximal Sensing Approach to Quantify the Water Stability of Soil Aggregates. <i>Soil Science Society of America Journal</i> , 2018, 82, 1358-1366.	2.2	6
94	Combining Visâ€“NIR spectroscopy and advanced statistical analysis for estimation of soil chemical properties relevant for forest road construction. <i>Soil Science Society of America Journal</i> , 2021, 85, 1073-1090.	2.2	6
95	Flow and Distribution of Fluid Phases through Porous Plant Growth Media in Microgravity: Progress to Date. , 0, , .		5
96	Challenges to Understanding Fluid Behavior in Plant Growth Media Under Microgravity. , 0, , .		5
97	The Application of X-ray Computed Tomography for Characterization of Surface Crack Networks in Bentonite-Sand Mixtures. , 0, , 207-212.		5
98	Reply to comments on â€œColumn-scale unsaturated hydraulic conductivity estimates in coarse-textured homogeneous and layered soils derived under steady-state evaporation from a water tableâ€•[J. Hydrol. 519 (2014), 1238â€“1248]. <i>Journal of Hydrology</i> , 2015, 529, 1277-1281.	5.4	5
99	Highâ€“Resolution Shortwave Infrared Imaging of Water Infiltration into Dry Soil. <i>Vadose Zone Journal</i> , 2017, 16, 1-10.	2.2	5
100	A new mathematical formulation for remote sensing of soil moisture based on the Red-NIR space. <i>International Journal of Remote Sensing</i> , 2020, 41, 8034-8047.	2.9	5
101	Estimating specific surface area: Incorporating the effect of surface roughness and probing molecule size. <i>Soil Science Society of America Journal</i> , 2021, 85, 534-545.	2.2	5
102	Cation exchange capacity and soil pore system play key roles in water vapour sorption. <i>Geoderma</i> , 2022, 424, 116017.	5.1	5
103	Providing Optimal Root-Zone Fluid Fluxes: Effects of Hysteresis on Capillary-Dominated Water Distributions in Reduced Gravity. , 0, , .		4
104	Effects of increasing water activity on the relationship between water vapor sorption and clay content. <i>Soil Science Society of America Journal</i> , 2021, 85, 520-525.	2.2	4
105	Adaptation and validation of the ParSWMS numerical code for simulation of water flow and solute transport in soilless greenhouse substrates. <i>Journal of Hydrology</i> , 2021, 596, 126053.	5.4	4
106	Linking water vapor sorption to water repellency in soils with high organic carbon contents. <i>Soil Science Society of America Journal</i> , 2021, 85, 1037-1049.	2.2	4
107	The Paramount Societal Impact of Soil Moisture. <i>Eos</i> , 2019, 100, .	0.1	4
108	Flow and Distribution of Fluid Phases through Porous Plant Growth Media in Microgravity. , 2004, , 325.		3

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109	PHYSICAL CHARACTERIZATION OF GREENHOUSE SUBSTRATES FOR AUTOMATED IRRIGATION MANAGEMENT. Acta Horticulturae, 2008, , 333-338.	0.2	3
110	Simple Predictive Models for Saturated Hydraulic Conductivity of Technosands. Soil Science, 2012, 177, 153-157.	0.9	3
111	Robotic lake lander test bed for autonomous surface and subsurface exploration of Titan lakes. , 2012, , .		3
112	The feasibility of shortwave infrared imaging and inverse numerical modeling for rapid estimation of soil hydraulic properties. Vadose Zone Journal, 2021, 20, e20089.	2.2	3
113	Unsaturated Hydraulic Conductivity of Structured Porous Media. Vadose Zone Journal, 2002, 1, 14.	2.2	3
114	Hydraulic Properties of Swelling Clay-Sand Mixtures: Microscale Modeling and Measurements. , 2006, , 2186.		2
115	Modeling temperature and moisture dependent emissions of carbon dioxide and methane from drying dairy cow manure. Frontiers of Agricultural Science and Engineering, 2018, .	1.4	2
116	Physical and hydraulic properties of baked ceramic aggregates used for plant growth medium. Journal of the American Society for Horticultural Science, 2005, 130, 767-74.	1.0	2
117	Liquid-Gas Interfacial Configurations in Angular Pores under Microgravity. , 2004, , 346.		1
118	Quantitative Pore-Scale Investigations of Multiphase Bio/Geo/Chemical Processes. Vadose Zone Journal, 2010, 9, 573-575.	2.2	1
119	A Multiplexing System for Monitoring Greenhouse and Regulated Gas Emissions from Manure Sources using a Portable FTIR Gas Analyzer. , 2012, , .		1
120	Retrieval of AirMOSS root-zone soil moisture profile with a richards' equation-based approach. , 2017, , .		1
121	Hydraulic Functions for Macroporous Soils. , 0, , .		0
122	Reply to comment by Stefan Finsterle on "Seepage into drifts and tunnels in unsaturated fractured rock". Water Resources Research, 2006, 42, .	4.2	0
123	Measurement Accuracy of a Multiplexed Portable FTIR - Surface Chamber System for Estimating Gas Emissions. , 2013, , .		0
124	Adsorption and Capillary Processes in Variably Saturated Porous Media-Pore Scale Hydrostatic and Hydrodynamic Considerations. SSSA Special Publication Series, 2015, , 1-50.	0.2	0
125	The effects of irrigation frequency on water and heat regimes in different substrates and their mixtures: tomato as a case study. Acta Horticulturae, 2021, , 31-38.	0.2	0
126	Field Methods for Monitoring Solute Transport. , 2004, , 309-355.		0