

# Scott B. Jones – Curriculum Vita

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## EDUCATION

<b>Ph.D. - Soil Science (Soil Physics)</b>	<b>1992-1997</b>
UTAH STATE UNIVERSITY	LOGAN, UTAH
<b>M.S. - Agricultural &amp; Irrigation Engineering</b>	<b>1990-1992</b>
UTAH STATE UNIVERSITY	LOGAN, UTAH
<b>B.S. - Civil Engineering</b>	<b>1985-1989</b>
BRIGHAM YOUNG UNIVERSITY	PROVO, UTAH

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## PROFESSIONAL EXPERIENCE

<b>Professor and Associate Department Head</b>	<b>2015-present</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Professor</b>	<b>2013-2015</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Adjunct Professor</b>	<b>2014-present</b>
DEPT. CIVIL AND ENVIRONMENTAL ENGINEERING	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Associate Professor</b>	<b>2008-2013</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Assistant Professor</b>	<b>2004-2008</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Adjunct Assistant Professor</b>	<b>2004-2014</b>
DEPT. BIOLOGICAL AND IRRIGATION ENGINEERING	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Ecology Center Associate</b>	<b>2004-Present</b>
ECOLOGY CENTER	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Research Assistant Professor</b>	<b>2001-2004</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Postdoctoral Associate</b>	<b>1999-2001</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY, LOGAN, UTAH
SPACE DYNAMICS LABORATORY	LOGAN, UTAH
<b>Postdoctoral Associate</b>	<b>1997-1999</b>
DEPT. SOIL, WATER AND ENVIRONMENTAL SCIENCES	THE VOLCANI CENTER, ISRAEL
<b>Research Assistant</b>	<b>1994-1997</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY, LOGAN, UTAH
<b>Research Assistant</b>	<b>1992-1994</b>
SVET PLANT GROWTH UNIT UPGRADE	SPACE DYNAMICS LABORATORY, LOGAN, UTAH
<b>Research Assistant</b>	<b>1991-1992</b>
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## PUBLICATIONS

### *Intellectual Property*

1. **Jones, S.B.** C.B. Yang, M Sakai and F. Silfa. 2011. Systems and Methods for Determining Soil Thermal Properties and Water Flux Using a Multi-Needle Heat Pulse Probe. *US Provisional Patent Application No: 61/510,770*, filed July 22, 2011.

### *Book Chapters (Refereed)*

1. **Sadeghi, Morteza**, Ebrahim Babaeian, Ardeshtir M. Ebtehaj, **Scott B. Jones**, and Markus Tuller. 2018. Remote Sensing of Environmental Variables and Fluxes. In: Myer Kutz ed., *Handbook of Environmental Engineering*. pp. 249-302. Wiley, New York.
2. **Sadeghi, Morteza**, Ebrahim Babaeian, Emmanuel Arthur, **Scott B. Jones** and Tuller, Markus. 2018. Soil Physical Properties and Processes. In: Myer Kutz ed., *Handbook of Environmental Engineering*. pp. 137-208. Wiley, New York.
3. **Jones, Scott B.** 2013. *Soil Gasses and Transport* in: Naftali Lazarovitch and Art Warrick Eds., *Exercises in Soil Physics*. Catena, pp. 263-292.
4. Or, Dani, Jon M. Wraith, David A. Robinson and **Scott B. Jones**. 2011. Soil Water Content and Water Potential Relationships. In P.M. Huang, Y. Li, and M.E. Sumner (eds.) *Handbook of Soil Sciences. Properties and Processes*. 2nd Edition, CRC Press, Boca Raton, FL, ISBN: 9781439803035, pp. 4-1 – 4-28.
5. **Jones, Scott B.** and Dani Or. 2005. Thermal and Geometrical Effects on Bulk Permittivity of Porous Mixtures Containing Bound Water. In: K. Kupfer ed., *Electromagnetic Aquametry*. Springer, Springer-Verlag, Berlin, Heidelberg. pp. 71-92.

### *Scientific Journal Articles (Refereed)*

(Supervised **Postdoc/Visiting Scholar**, **Graduate student**, **Undergraduate student**)

### *Published/in Press/Accepted*

1. Robinson, David; Hopmans, Jan; Filipovic, Vilim; van der Ploeg, Martine; Lebron, Inma; **Jones, Scott B.**; Reinsch, Sabine; Jarvis, Nicholas; Tuller, Markus. 2019. Environmental change and how biological feedback's affect soil hydraulic function. Accepted in *Global Change Biology*.
2. Babaeian, E., **M. Sadeghi**, **S.B. Jones**, C. Montzka, H. Vereecken and M. Tuller. 2019. Ground, Proximal and Remote Sensing of Soil Moisture. Accepted in *Reviews of Geophysics*.
3. **Sadeghi, M.**, M. Tuller, A.W. Warrick, E. Babaeian, **K. Parajuli**, M.R. Gohardoust, **S.B. Jones**. 2019. An Analytical Model for Estimation of Land Surface Net Water Flux from Near-Surface Soil Moisture Observations. Accepted in *J. Hydrology*.
4. **Parajuli, K.**, **S.B. Jones**, D.G. Tarboton, G.N. Flerchinger, L.E. Hipps, L.N. Allen, M.S. Seyfried. 2019. Estimating actual evapotranspiration from stony-soils in montane ecosystems. *Agricultural and Forest Meteorology*. 265:183-194.
5. Yang, X, J. Fan and **S.B. Jones**. 2018. Effect of Soil Texture on Estimates of Soil-Column Carbon Dioxide Flux Comparing Chamber and Gradient Methods. *Vadose Zone Journal*. 17(1).
6. Wang, S., J. Fan and **S.B. Jones**. 2018. Correction of Anisotropy Effects on Penta-needle Heat-pulse Probe Sap Flux Density and Thermal Property Measurements. *Agricultural and Forest Meteorology*, 263, pp.399-408. <https://doi.org/10.1016/j.agrformet.2018.09.009>
7. **Gholoubi, A.**, H. Emami, **S.B. Jones** and M. Tuller. 2018. A Novel Shortwave Infrared Proximal

- Sensing Approach to Quantify the Water Stability of Soil Aggregates. *Soil Sci. Soc. Am. J.* doi:10.2136/sssaj2018.05.0170
8. Babaeian, E., **M. Sadeghi**, T.E. Franz, **S.B. Jones** and Markus Tuller. 2018. Mapping Soil Moisture with the OPTical TRApEZoid Model (OPTRAM) based on Long-Term MODIS Observations. *Remote Sensing of Environment*. 211:425-440.
  9. Kustas, W.P., M.C. Anderson, J.G. Alfieri, K. Knipper, A. Torres-Rua, C.K. Parry, H. Hieto, N. Agam, A. White, F. Gao, L. McKee, J.H. Prueger, L.E. Hipps, S. Los, M. Alsina, L. Sanchez, B. Sams, N. Dokoozlian, M. McKee, **S.B. Jones**, Y. Yang, T.G. Wilson, F. Lei, A. McElrone, J.L. Heitman, A.M. Howard, K. Post, F. Melton, and C. Hain 2018. The Grape Remote Sensing Atmospheric Profile and Evapotranspiration eXperiment (GRAPEX). *Bulletin of the American Meteorological Society*. <https://doi.org/10.1175/BAMS-D-16-0244.1>.
  10. **Sadeghi, M.**, E. Babaeian, M. Tuller and **S.B. Jones**. 2018. Effects of Particle Size on Soil Reflectance Explained by an Analytical Radiative Transfer Model. *Remote Sensing Environment*. 210:375-386. <https://doi.org/10.1016/j.rse.2018.03.028>.
  11. **Hu, Enzhu, P. Sutitarnnontr**, M Tuller and **S.B. Jones**. 2018. Modeling Temperature and Moisture Dependent Emissions of Carbon Dioxide and Methane from Drying Dairy Cow Manure. *Front. Agr. Sci. Eng.*, 5(2): 280-286. <https://doi.org/10.15302/J-FASE-2018215>.
  12. Hu, Enzhu, Zaijian Yuan, Hongxing Zhang, Weiwei Zhang, Xiaoke Wang, **Scott B. Jones**, Nana Wang. 2018. Impact of elevated tropospheric ozone on soil C, N and microbial dynamics of winter wheat, *Agriculture, Ecosystems & Environment*, 253:166-176, ISSN 0167-8809, <https://doi.org/10.1016/j.agee.2017.11.010>.
  13. **Sadeghi, M, W. Sheng**, E. Babaeian, M. Tuller and **S.B. Jones**. 2017. High Resolution Shortwave Infrared Imaging of Water Infiltration into Dry Soil. *Vadose Zone Journal* 16(13). doi:10.2136/vzj2017.09.0167.
  14. Jones, A.S., Z.T. Aanderud, J.S. Horsburgh, D. Eiriksson, D. Dastrup, C. Cox, **S.B. Jones**, D. Bowling, J. Carlisle, G. Carling, M.A. Baker. 2017. Designing and Implementing a Network for Sensing Water Quality and Hydrology across Mountain to Urban Transitions. *Journal of the American Water Resources Association (JAWRA)* 53(5):1095–1120. <https://doi.org/10.1111/1752-1688.12557>.
  15. **Sadeghi, M.**, E. Babaeian, M. Tuller and **S.B. Jones**. 2017. The Optical Trapezoid Model: A Novel Approach to Remote Sensing of Soil Moisture Applied to Sentinel-2 and Landsat-8 Observations. Volume 198:52-68, ISSN 0034-4257, <https://doi.org/10.1016/j.rse.2017.05.041>.
  16. **Parajuli, K., M. Sadeghi** and **S.B. Jones**. 2017. A Binary Mixing Model for Characterizing Stony-Soil Water Retention. *Agricultural and Forest Meteorology*, Volumes 244–245:1-8.
  17. **Abdu, H.** D.A. Robinson, J. Boettinger, **S.B. Jones**. 2017. Electromagnetic induction mapping at varied soil moisture reveals field-scale soil textural patterns and gravel lenses. *Front. Agr. Sci. Eng.* 4(2): 135-145, doi: 10.15302/J-FASE-2017143.
  18. **Sheng, W., R. Zhou**, M. Sadeghi, E. Babaeian, D.A. Robinson, M. Tuller and **S.B. Jones**. 2017. A TDR Array Probe for Monitoring Near-surface Soil Moisture Distribution. *Vadose Zone Journal* 16(4). doi:10.2136/vzj2016.11.0112.
  19. Gohardoust, M.R., **M. Sadeghi**, M.Z. Ahmadi, **S.B. Jones**, and M. Tuller. 2017. Hydraulic Conductivity of Stratified Unsaturated Soils: Effects of Random Variability and Layering. *J. Hydrology*. 546:81-89. <http://dx.doi.org/10.1016/j.jhydrol.2016.12.055>.
  20. Sun, Y., Cheng, H., Cheng, Q., Zhou, H., Li, M., Fan, Y., Shan, G., Damerow, L., Lammers, P.S. and **Jones, S.B.**, 2017. A smart-vision algorithm for counting whiteflies and thrips on sticky traps using two-dimensional Fourier transform spectrum. *Biosystems Engineering*, 153, pp.82-88.

<http://dx.doi.org/10.1016/j.biosystemseng.2016.11.001>.

21. **Sadeghi, M.**, Tabatabaenejad, A., Tuller, M., Moghaddam, M. and **Jones, S.B.**, 2016. Advancing NASA's AirMOSS P-band radar root zone soil moisture retrieval algorithm via incorporation of Richards' equation. *Remote Sensing*, 9(1), p.17. doi:10.3390/rs9010017.
22. Shan, G., Y. Sun, Q. Cheng, Z. Wang, H. Zhou, L. Wang, X. Xue, B. Chen, **S.B. Jones**, P. Schulze Lammers, A. Berg and L. Damerow. 2016. Monitoring Tomato Root Zone Water Content Variation and Partitioning Evapotranspiration with a Novel Horizontally-Oriented Mobile Dielectric Sensor. *Ag. Forest Meteorology*. 228: 85–94. <https://doi.org/10.1016/j.agrformet.2016.06.019>.
23. **Sadeghi, M.**, B. Ghahraman, A.W. Warrick, M. Tuller and **S.B. Jones**. 2016. A Critical Evaluation of the Miller and Miller Similar Media Theory for Application to Natural Soils. *Water Resour. Res.* 52(5):3829-3846. doi:10.1002/2015WR017929.
24. Hall, S.J., M.A. Baker, **S.B. Jones**, J.M. Stark, D.R. Bowling. 2016. Contrasting soil nitrogen dynamics across a montane meadow and urban lawn in a semi-arid watershed. *Urban Ecosystems*. doi:10.1007/s11252-016-0538-0.
25. **Sheng, W.**, **K. Rumana**, M. Sakai, F. Silfa and **S.B. Jones**. 2016. A Multi-Functional Penta-Needle Thermo-Dielectric Sensor for Porous Media Sensing. *IEEE Sensors Journal* 16(10):3670-3678. doi:10.1109/JSEN.2016.2527020.
26. Robinson, D.A., **Jones, S.B.**, Lebron, I., Reinsch, S., Domínguez, M.T., Smith, A.R., Jones, D.L., Marshall, M.R., Emmett, B.A. 2016. Experimental Evidence for Drought Induced Alternative Stable States of Soil Moisture. *Scientific Reports*. 6:20018. doi:10.1038/srep20018.
27. Fan, J., Q. Wang, **S.B. Jones** and M. Shao. 2015. Soil Water Depletion and Recharge under Different Land Cover in China's Loess Plateau. *Ecohydrology*. 9(3): 396–406. doi: 10.1002/eco.1642.
28. **Sadeghi, M.**, **S.B. Jones** and W.D. Philpot. 2015. A Linear Physically-Based Model for Remote Sensing of Soil Moisture using Short Wave Infrared Bands. *Remote Sensing Environment*. 164:66-76. doi:10.1016/j.rse.2015.04.007.
29. **Heinse, R.**, **S.B. Jones**, D. Or, I. Podolskiy, T.S. Topham, D. Poritz and G.E. Bingham. 2015. Microgravity Oxygen Diffusion and Water Retention Measurements in Unsaturated Porous Media aboard the International Space Station. *Vadoze Zone Journal*, 14:6, doi: 10.2136/vzj2014.10.0135.
30. **Sadeghi, M.**, M. Tuller, M.R. Gohardoust, and **S.B. Jones**, 2015. Reply to comments on "Column-scale unsaturated hydraulic conductivity estimates in coarse-textured homogeneous and layered soils derived under steady-state evaporation from a water table" [J. Hydrol. 519 (2014), 1238–1248]. *Journal of Hydrology*, 529(3):1277-1281.
31. **Lv, L.**, T. Franz, D.A. Robinson and **S.B. Jones**. 2014. Measured and Modeled Soil Moisture Compared with Cosmic-Ray Neutron Probe Estimates in a Mixed Forest. *Vadose Zone J.* 13:12. doi:10.2136/vzj2014.06.0077.
32. **Sutitarnnontr, P.**, **E. Hu**, M. Tuller and **S.B. Jones**. 2014. Physical and Thermal Characteristics of Dairy Cattle Manure Supporting Fluid, Heat, and Solute Transport Modeling. *Journal of Environmental Quality*. 43(6):2115-29, doi:10.2134/jeq2014.05.0212.
33. **Sadeghi, M.**, M. Tuller, M.R. Gohardoust, and **S.B. Jones**. 2014. Column-Scale Unsaturated Hydraulic Conductivity Estimates in Coarse-Textured Homogeneous and Layered Soils Derived under Steady-State Evaporation from a Water Table. *Journal of Hydrology*, doi:10.1016/j.jhydrol.2014.09.004.
34. Cheng, Q., Y. Sun, **S.B. Jones**, V.I. Vasilyev, V.V. Popov, G. Wang, L. Zheng. 2014. In situ measured and simulated seasonal freeze-thaw cycle: a 2-year comparative study between layered

- and homogeneous field soil profiles. *J. Hydrology*. doi: 10.1016/j.jhydrol.2014.09.023.
35. Robinson, D.A., I. Fraser, E.L. Dominati, B. Davidsdottir, J.O.G. Jonsson, L. Jones, **S.B. Jones**, M. Tuller, I. Lebron, K.L. Bristow, D.M. Souza, S. Banwart, B.E. Clothier. 2014. On the Value of Soil Resources in the Context of Natural Capital and Ecosystem Service Delivery. *Soil Sci. Soc. Am. J.*, 78(3):685-700, doi:10.2136/sssaj2014.01.0017.
  36. Sun, Y., H. Zhou, Y. Qin, P. Schulze Lammers, A. Berg, H. Deng., X. Cai, **S.B. Jones**. 2014. Horizontal monitoring of soil water content using a novel automated and mobile electromagnetic access-tube sensor. *J. Hydrology*. Volume 516, 4 August 2014, Pages 50–55. doi:10.1016/j.jhydrol.2014.01.067.
  37. Deepagoda, C.T.K.K, **S.B. Jones**, M. Tuller, L. Wollesen de Jonge, K. Kawamoto, T. Komatsu and P. Moldrup. 2014. Modeling Gravity Effects of Water Retention and Gas Transport Characteristics in Plant Growth Substrates. *Advances in Space Research*, 54:797-808, doi:10.1016/j.asr.2014.04.018.
  38. Jun, F. and **S.B. Jones**. 2014. Soil Surface Wetting Effects on Gradient-Based Estimates of Soil CO<sub>2</sub> Efflux. *Vadose Zone Journal*, doi:10.2136/vzj2013.07.0124.
  39. **Hu, E.**, E. Babcock, S. Bialkowski, **S.B. Jones** and M. Tuller. 2014. Methods and Techniques for Measuring Gas Emissions from Agricultural and Animal Feeding Operations. *Critical Reviews in Analytical Chemistry*, 44(3):200-219, doi:10.1080/10408347.2013.843055.
  40. **Yang, C., M. Sakai,** and **S.B. Jones**. 2013. Inverse method for simultaneous determination of soil water flux and thermal properties with a penta-needle heat pulse probe. *Water Resour. Res.* 49, doi:10.1002/wrcr.20459.
  41. Vaz, C.M.P., **S.B. Jones**, M. Meding and M. Tuller. 2013. Evaluation of Standard Calibration Functions for Eight Electromagnetic Soil Moisture Sensors. *Vadose Zone Journal*, 12(2), doi:10.2136/vzj2012.0160.
  42. Nearing, Grey S., Markus Tuller, **Scott B. Jones**, **Robert Heinse**, and Mercer S. Meding. 2012. Electromagnetic Induction for Mapping Physical and Chemical Properties of Mine Tailings Deposits. *Journal of Applied Geophysics*, 89:11-20.
  43. **Sadeghi, M.**, N. Shokri and **S.B. Jones**. 2012. A Novel Analytical Solution to Steady-State Evaporation from Soil and Film Region Thickness. *Water Resour. Res.* 48 (9), W09516.
  44. Wuddivira, M.N., D.A. Robinson, I. Lebron, L. Brechet, M. Atwell, S. De Caires, M. Oatham, **S.B. Jones**, **H. Abdu** and M. Tuller. 2012. Estimation of Soil Clay Content from Hygroscopic Water Content Measurements. *Soil Sci. Soc. Am. J.* doi:10.2136/sssaj2012.0034.
  45. Deepagoda, C.T.K.K, P. Moldrup, M.P. Jensen, **S.B. Jones**, L. Wollesen de Jonge, P. Schjønning, K. Scow, J.W. Hopmans, D.E. Rolston, K. Kawamoto, and T. Komatsu. 2012. Diffusion Aspects of Designing Porous Growth Media for Earth and Space. *Soil Sci. Soc. Am. J.* 76 (5), 1564-1578 doi:// 10.2136/sssaj2011.0438.
  46. **Sadeghi, M.** and **S.B. Jones**. 2012. Scaled Solutions to Coupled Soil-Water Flow and Solute Transport during the Redistribution Process. *Vadose Zone J.*, doi:10.2136/vzj2012.0023
  47. Sun, Y., Q. Cheng, X. Xue, L. Fu, J. Chai, F. Meng, P. Schulze Lammers, and **S.B. Jones**. 2012. Determining in-situ soil freeze–thaw cycle dynamics using an access tube-based dielectric sensor. *Geoderma* 189–190:321-327.
  48. **Fan, J., S.B. Jones,** L. Qi, Q. Wang and M. Huang. 2012. Effects of precipitation pulses on water and carbon dioxide fluxes in two semiarid ecosystems: measurement and modeling. *Environ. Earth Sci.* DOI 10.1007/s12665-012-1678-z.
  49. Robinson, D.A., N. Hockley, E. Dominati, I. Lebron, K.M. Scow, B. Reynolds, B.A. Emmett, A.M. Keith, L.W. de Jonge, P. Schjønning, P. Moldrup, **S.B. Jones**, and M. Tuller. 2012. Natural



- Capital, Ecosystem Services, and Soil Change: Why Soil Science must Embrace an Ecosystems Approach. *Vadose Zone J.* 11(1) doi: 10.2136/vzj2011.0051.
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  52. **Blonquist Jr., J.M.**, D.A. Robinson, **S.D. Humphries** and **S.B. Jones**. 2011. Improved Dielectric- and Electrical Conductivity-Anisotropy Measurements Using TDR in Unsaturated Mica. *Vadose Zone J.* 10:1097-1104, doi: 10.2136/vzj2010.0148.
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  65. **Heinse, R.**, **S.B. Jones**, S. Steinberg, M. Tuller, and D. Or. 2007. Measurements and Modeling of Variable Gravity Effects on Water Distribution and Flow in Unsaturated Porous Media. *Vadose Zone J.* 6:713-724, doi:10.2136/vzj2006.0105.
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permittivity of two-phase media containing monodisperse spheres: Effects of microstructure and multiple scattering. *Physical Review B* 76 (5), 054203.

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textured porous media. *Vadose Zone J.* 2:602-610.

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#### ***Technical Papers (Refereed)***

97. **Heinse, R.**, **S.B. Jones**, M. Tuller, G.E. Bingham, I. Podolskiy and D. Or. 2009. Providing Optimal Root Zone Fluxes: Challenges of Capillary-Driven Hysteretic Water Distributions in Microgravity. *SAE Technical Paper* no. 2009-01-2360.
98. **Jones, S.B.**, **R. Heinse**, B. Bugbee, D. Or and G.E. Bingham. 2009. Porous plant growth media design considerations for Lunar and Martian habitats. *SAE Technical Paper* no. 2009-01-2361.
99. **Heinse, R.**, **K.S. Lewis**, **S.B. Jones**, G. Kluitenberg, R.S. Austin, P. Shouse and G.E. Bingham. 2006. Integration of heat capacity and electrical conductivity sensors for root module water and nutrient assessment. *SAE Technical Paper* no. 2006-01-2211.
100. **Heinse, R.**, **S.D. Humphries**, R.W. Mace, **S.B. Jones**, S.L. Steinberg, M. Tuller, R. Newman, D. Or. 2005. Measurement of Porous Media Water Retention during Parabolic Flight Induced Microgravity. *SAE Technical Paper* no. 2005-01-2950.
101. **Jones, S.B.**, **R. Heinse**, G.B. Bingham and D. Or. 2005. Modeling and Design of Optimal Growth



Media from Plant-Based Gas and Liquid Fluxes. *SAE Technical Paper* no. 2005-01-2949.

102. Steinberg, S.L., **S.B. Jones**, M. Xiao, L. Reddi and G. Kluitenberg, D. Or, J.I.D. Alexander, N. Daidzic, M. Tuller. 2005. Challenges to understanding fluid behavior in plant growth media under microgravity. *SAE Technical Paper* no. 2005-01-2973.
103. **Jones, S.B.**, G.E., Bingham, T.S. Topham, D. Or, I.G. Podolskiy, and O.M. Strugov. 2003. An Automated Oxygen Diffusion Measurement System for Porous Media in Microgravity. *SAE Technical Paper* no. 2003-01-2612.
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105. Steinberg, S., N. Daidzek, **S.B. Jones**, G. Kluitenberg, D. Or, L. Reddi, I. Alexander and M. Tuller. 2002. Flow and distribution of fluid phases through porous plant growth media in microgravity. *SAE Technical Paper* no. 2002-01-2386.
106. Bingham, G.E., **S.B. Jones**, I. Podolskiy, and B.S. Yendler. 1996. Porous substrate water relations observed during the greenhouse-II flight experiment (Mir Space Station, 1995). *SAE Technical Paper* no. 961547.
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#### ***Conference Proceedings (Refereed)***

108. **Jones, S. B.**, **W. Sheng**, J. Xu and D. A. Robinson, "Electromagnetic Sensors for Water Content: The Need for International Testing Standards," *2018 12th International Conference on Electromagnetic Wave Interaction with Water and Moist Substances (ISEMA)*, Lublin, Poland, 2018, pp. 1-9. doi: 10.1109/ISEMA.2018.8442316
109. Tabatabaenejad, A., M. Sadeghi, M. Moghaddam, M. Tuller and S.B. Jones. 2017. Retrieval of P-Band AIRMOSS Root-Zone Soil Moisture Products Using a Richards Equation-Based Approach. Proceedings of the IEEE IGARSS 2017.
110. Robinson, D.A., **S.B. Jones** and S.P. Friedman. 2006. Modeling Structural and Thermal Effects on TDR Measurements in Granular Porous Media. Proceedings of the 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University.
111. **Jones, S.B.**, D.A. Robinson and S.P. Friedman. 2006. A subsurface open-ended TDR probe for on-the-go mapping of water content. Proceedings of the 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University.
112. Friedman, S.P., D.A. Robinson and **S.B. Jones**. 2006. Review of geometrical and interfacial factors determining the effective permittivity-volumetric water content relationships of soil and rocks. Proceedings of the 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University.

#### ***Technical Papers (Non-refereed)***

1. **Sutitarnnontr, P.**, **Hu, E.**, Miller, R.L., Tuller, M., **Jones, S.B.** 2013. Measurement Accuracy of a Multiplexed Portable FTIR – Surface Chamber System for Estimating Gas Emissions, Proceedings of the ASABE Annual International Meeting. Kansas City, Missouri, July 21 - July 24. ASABE Paper No. 131620669. St. Joseph, MI.
2. **Sutitarnnontr, P.**, R. Miller, S. Bialkowski, M. Tuller and **S.B. Jones**. 2012. A Multiplexing System for Monitoring Greenhouse and Regulated Gas Emissions from Manure Sources using a

Portable FTIR Gas Analyzer. Proceedings of the ASABE Annual International Meeting, Dallas, Texas, July 29 - August 1. ASABE Paper No. 121337982. St. Joseph, MI.

3. **Jones, S.B., R.M. Estevez** and D.A. Robinson. 2009. Novel Mobile Soil Water Content Sensing Techniques. ASABE Paper No. 097158. St. Joseph, Mich.: ASABE.
4. **Estevez, R.** and **S.B. Jones**. 2009. Frequency Domain Soil Moisture Determination Using an Open-Ended Dielectric Probe. ASABE Paper No. 097130. St. Joseph, Mich.: ASABE.
5. **Fan, J.,** M. Shao, Q. Wang, S. Li and **S.B. Jones**. 2009. Landscape Changes and Vegetation Restoration in the Wind-Water Crisscross Region of the Loess Plateau, China. ASABE Paper No. 097022. St. Joseph, Mich.: ASABE.
6. **C. Wang, R. Estevez,** C.M.P. Vaz and **S.B. Jones**. 2009. Quantifying the Impact of Soil Properties on the Performance of Electromagnetic Water Content Sensors. ASABE Paper No. 096999. St. Joseph, Mich.: ASABE.
7. Norikane, J.H., **S.B. Jones**, S.L. Steinberg, H.G. Levine and D. Or. 2003. Effects of variable gravity on porous media matric potential and water content measurements. *ASAE Technical Paper* 034067. ASAE annual International meeting, Riviera Hotel, Las Vegas, NV. July 27-30, 2003.

#### ***Conference Proceedings (Non-refereed)***

8. Tabatabaenejad, A., M. Sadeghi, M. Moghaddam, M. Tuller, **S.B. Jones**. 2017. IEEE International Geoscience and Remote Sensing Symposium, "Retrieval of AirMOSS Root-Zone Soil Moisture Profile with a Richards' Equation-Based Approach," IEEE, Fort Worth, TX. July 23 - 28, 2017
9. **Jones, S.B.,** Dani Or, Robert Heinse and Markus Tuller. 2010. Beyond Earth: Designing root zone environments for reduced gravity. 1st International Conference and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions "CESAR". Aarhus University, Research Centre Foulum, Denmark, Nov. 30 – Dec. 2.
10. **Jones, S.B., R.M. Estevez** and D.A. Robinson. 2008. Frequency-Dependent Permittivity for Soil Water Content Determination. Second Workshop for Applications of Electromagnetic Techniques in Environmental Monitoring. Proceedings of Workshop II, Applications of Electromagnetic Techniques for Environmental Monitoring. August 26-27, 2008. Department of Civil Engineering – University of Taubate (UNITAU), Brasil.
11. Robinson, D.A., **S.B. Jones**, T. Doyle, J.M. Blonquist, H. Abdu, V. Urdanoz and R. Aragues. Determining Spatial Patterns, Processes and Properties of Soils using Electromagnetic Measurements. 2007. Proceedings of the International Conference on Microwaves and Optoelectronics – 2007. Aurangabad, India, Dec. 17-20.
12. **Jones, S.B.** and K. Shenai. 2007. Subsurface Measurement Needs for Ecological, Hydrological and Agricultural Applications. *Proceedings of the 50<sup>th</sup> IEEE International Midwest Symposium on Circuits and Systems (MWSCAS)*. August 5-7, Montreal, CA, Invited.
13. **Blonquist Jr., J.M., S.B. Jones,** and D.A. Robinson. 2005. Water Conservation from Precise Irrigation Scheduling Using a Subsurface Electromagnetic Soil Moisture Sensor. Technical Session Proceedings of the 26th Annual Irrigation Association International Irrigation Show. November 6-8, 2005, Phoenix, AZ.
14. **Jones, S.B.,** D. Or, G.E. Bingham and T.S. Topham. 2004. Automated Systems for Oxygen Diffusion Measurements in Porous Media at 1g and 0g. Proceedings of the 9th Biennial ASCE Aerospace Division International Conference on Engineering, Construction and Operations in Challenging Environments "Earth & Space 2004". March 7-10, 2004, League City/Houston, TX.
15. Steinberg, S. L., J.I.D. Alexander, D. Or, N. Daidzic, **S.B. Jones**, L. Reddi, M. Tuller, G.

- Kluitenberg and M. Xiao. 2004. Flow and distribution of fluid phases through porous plant growth media in microgravity. Proceedings of the 9th Biennial ASCE Aerospace Division International Conference on Engineering, Construction and Operations in Challenging Environments "Earth & Space 2004". March 7-10, 2004, League City/Houston, TX.
16. Or, D, M. Tuller and **S.B. Jones**. 2004. Liquid-gas interfacial configurations in angular pores under microgravity. Proceedings of the 9th Biennial ASCE Aerospace Division International Conference on Engineering, Construction and Operations in Challenging Environments "Earth & Space 2004". March 7-10, 2004, League City/Houston, TX.
  17. Or, D and **S.B. Jones**. 2002. Time domain reflectometry measurement of bulk permittivity of porous mixtures containing bound water. Proceedings of the Fifth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Media ETOPIM6 held in the Cliff Lodge at Snowbird Ski Resort, Utah, 15-19 July 2002
  18. **Jones, S.B.** and D. Or. 2002. Time domain reflectometry (TDR) applications in earth sciences. Proceedings of the IEEE Antennas and Propagation Society International Symposium, Volume 1, June 16-21, 2002 San Antonio, Texas.
  19. Wraith, J.M., D. Or. and **S.B. Jones**. 2001. Dielectric properties of bound water: Application to porous media surface area and grain moisture determination. TDR 2001: Proceedings of the Second International Symposium and Workshop on Time Domain Reflectometry for Innovative Geotechnical Applications. Northwestern University, September 5-7, 2001, Evanston, Illinois.
  20. **Jones, S.B.** and D. Or. 2001. Automated Frequency Domain Analysis for Extending TDR Measurement Range in Saline Soils. TDR 2001: Proceedings of the Second International Symposium and Workshop on Time Domain Reflectometry for Innovative Geotechnical Applications. Northwestern University, September 5-7, 2001, Evanston, Illinois.
  21. Or, D and **S.B. Jones**. 2001. Thermal and geometrical effects on bulk permittivity of porous mixtures containing bound water. Proceedings of the first workshop on application of TDR techniques in Agriculture. July 17-18, 2001. Campinas State University, Sao Paulo, Brasil.
  22. Or, D and **S.B. Jones**. 2001. Extending TDR measurement range in saline soils using frequency-domain methods. Proceedings of the first workshop on application of TDR techniques in Agriculture. July 17-18, 2001. Campinas State University, Sao Paulo, Brasil.
  23. **Jones, S.B.** and D. Or. 2001. Thermal and geometrical effects on bulk permittivity of porous mixtures containing bound water. Proceedings of the fourth International Conference on Electromagnetic Wave Interactions with Water and Moist Substances". Weimar Germany, May 13-16, 2001.
  24. **Jones, S.B.**, and S.P. Friedman. 1999. Water content and particle shape effects on the dielectric permittivity of anisotropic porous media. Third Workshop on Electromagnetic Wave Interaction with Water and Moist Substances. Holiday Inn, Athens, Georgia, April 12-13.
  25. **Jones, S.B.**, and D. Or. 1997. Microgravity effects on water flow and distribution in unsaturated porous media. Rocky Mountain NASA Space Grant Consortium Fellowship Students Symposium. Univ. of Utah, Salt Lake City, UT. June 12.
  26. **Jones, S.B.** 1996. Capillary-driven root module design for microgravity. Rocky Mountain NASA Space Grant Consortium Fellowship Students Symposium. Univ. of Utah, Salt Lake City, UT. June 12.
  27. **Jones, S.B.** 1995. Growth media for optimal liquid and gaseous fluxes to plant roots in microgravity. Rocky Mountain Space Grant Consortium Fellowship Students Symposium. Hansen Planetarium, Salt Lake City, UT. June 14. Fourth International Symposium On Soil Water Measurement Using Capacitance, Impedance and Time Domain Transmission (TDT). Montreal,

Canada, July 16-18.

### ***Abstracts of Presentations***

#### ***Year 2020***

**Jones, S. B.**, W-3188 Multi-State Research Project, "Utah State University Report," USDA, Desert Research Institute, Las Vegas, NV. January 2 - 4, 2020.

#### ***Year 2019***

1. Robinson, D.A., **S.B. Jones**, J.M. Blonquist, S.P. Friedman. 2019. Structural effects on the dielectric response of porous media. *European Geosciences Union General Assembly*, Vienna, Austria, April 7-12.
2. **Jones, Scott B.**, Wenyi Sheng, Jinghui Xu and David A. Robinson. 2019. Electromagnetic Water Content Sensors: A Quest for Testing and Performance Standards. *European Geosciences Union General Assembly*, Vienna, Austria, April 7-12.
3. Xu, Jinghui, **Scott B. Jones**, Wenyi Sheng. 2019. Factors Influencing MiniVNA-Based Dielectric Measurements using Bilinear Analysis. *European Geosciences Union General Assembly*, Vienna, Austria, April 7-12.
4. **Jones, Scott B.** Advances in sensors and instrumentation for soil physical property and process determination. Invited presentation at the 5th Brazilian Soil Physics Meeting at the Federal University of Lavras (UFLA), Lavras, MG State, Brazil. May, 26 - 29, 2019
5. **Jones, S. B.**, USDA W-3188 Multi-State Research Project, "Utah State University Report", UC Riverside Campus, Riverside, CA. January 9 - 10, 2019.

#### ***Year 2018 (9/11)***

1. **Chihiro Naruke**, Wenyi, Sheng and **Scott B. Jones**. Combining Near Surface Estimates of Surface Heat and Evaporative Fluxes Using Heat Pulse and Dielectric Measurements. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
2. **Jones, Scott B.** Chihiro Naruke, Wenyi Sheng, Rong Zhou, Morteza Sadeghi, Kshitij Parajuli, Ebrahim Babaeian and Markus Tuller. Determination and validation of surface soil moisture using novel gravimetric-, dielectric- and SWIR reflectance-based approaches. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
3. **Parajuli, Kshitij**, Lin Zhao, **Scott B. Jones**, David G. Tarboton, Lawrence E. Hipps, Alfonso Torres-Rua, Morteza Sadeghi, Gerald N. Flerchinger. Evapotranspiration Estimates in Stony Soils using Noah-MP Land Surface Model. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
4. Babaeian, Ebrahim, Maria S. Newcomb, Morteza Sadeghi, Richard Ward, **Scott B. Jones**, and Markus Tuller. High Resolution UAVUAS-based Imaging to Assess the Near-Surface Soil Water Status Moisture for Precision Agriculture Applications. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
5. Babaeian, Ebrahim, Morteza Sadeghi, **Scott B. Jones**, and Markus Tuller. Relationship between Evapotranspiration rate, soil and plant Temperature and SWIR Reflectance for Root Water Uptake Estimation. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
6. **Sadeghi, Morteza**, Ebrahim Babaeian, Markus Tuller and **Scott B. Jones**. Soil Texture Effects on Spectral Reflectance. 2018 SSSA Annual Meeting, San Diego, CA, Jan. 6-9.
7. **Jones, S.B.**, **W. Sheng**, **R. Zhou**, **M. Sadeghi**, E. Babaeian, D.A. Robinson and M. Tuller. 2018. High Resolution Monitoring of Near-Surface Soil Hydrodynamics using a Novel TDR Array. Presented at the 2018 *European Geosciences Union General Assembly*, Vienna, Austria, April 8-

- 13.
8. **Jones, S.B., W. Sheng**, J. Xu, and D.A. Robinson. 2018. Electromagnetic Sensors for Water Content: The Need for International Testing Standards. Proceedings of the 12th International Conference on Electromagnetic Wave Interaction with Water and Moist Substances (ISEMA). Lublin, Poland. June 4-7, 2018.
9. **Sadeghi, M., W. Sheng**, E. Babaeian, M. Tuller and **S.B. Jones**. 2018. Soil-Water Content and - Water Flux Profiles Determined by SWIR Imaging and TDR Array. Presented at the *2018 European Geosciences Union General Assembly*, Vienna, Austria, April 8-13.
10. **Jones, Scott B.** 2018. A soil moisture monitoring and forecast network for water resources management. Utah Water Users Association Workshop. Dixie Center, St. George, UT. March 20-21.
11. **Jones, Scott B.** 2018. Faculty Introduction and Discussions for Collaboration. National Chung Hsing University. Taichung, Taiwan. March 5-8.
12. **Jones, Scott B.** 2018. Soil Moisture Sensors 101. 2018. Utah Green Industry Conference and Trade Show. South Towne Expo Center, Sandy, UT. January 29.
13. **Jones, S. B.**, USDA W-3188 Multi-State Research Project, "Utah State University Report", Atomic Testing Museum/DRI, Las Vegas, NV. January 3-4, 2018.

#### *Year 2017(15/22)*

1. **Jones, S.B.** 2017. "A Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management and Risk Prediction," National Weather Service, Salt Lake City, UT. November 8, 2017.
2. Robinson, DA, **SB Jones**, I Lebron, S Reinsch, MT Dominguez, AR Smith, DL Jones, MR Marshall, BA Emmett. 2016. Experimental evidence for drought induced alternative stable states of soil moisture. EGU2017-1828. Presented at the *2017 European Geosciences Union General Assembly*, Vienna, Austria, April 24-28.
3. **Sadeghi, M.**, Babaeian, E., Tuller, M., **Jones, S. B.**, 2017 Workshop at MOISST: Integrating Diverse Sources of Soil Moisture Information, "A New Optical Trapezoid Model for Remote Sensing of Soil Moisture," Oklahoma State University, Stillwater, OK. May 23 - 25, 2017.
4. Elaheh Ghafari, **Morteza Sadeghi**, Ebrahim Babaeian, Kamran Davary, Ali Farid, **Scott B. Jones** and Markus Tuller. New Physical Algorithms for Downscaling SMAP Soil Moisture. Presented at the American Geophysical Union Annual Meeting, New Orleans, LA, Dec. 10-15.
5. **Jones, S. B.**, iUTAH Annual Symposium and Summer All-hands Meeting, "A Utah Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management and Risk Prediction," iUTAH, Logan, UT. (July 13, 2017 - July 14, 2017)
6. **Naruke, Chihiro** and **Scott B. Jones**, USU Spring Runoff Conference, "Exploring Soil Heat Flux Time Lag using Numerical Simulation," USU - RGS, Logan, UT. (March 28, 2017 - March 29, 2017)
7. **Sadeghi, Morteza**, Ebrahim Babaeian, Markus Tuller, and **Scott B. Jones**. 2017. Optical Remote Sensing of Evapotranspiration. American Geophysical Union Annual Meeting, New Orleans, LA, Dec. 11-15.
8. **Jones, S.B.**, International Workshop: Soil Physics and the Nexus of Food, Energy, and Water, "A Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management," Northeastern University, Shenyang, Liaoning Province, China. August 3 - 5, 2017.
9. Ebrahim Babaeian, **Morteza Sadeghi**, Trenton E. Franz, **Scott B. Jones**, and Markus Tuller. 2017.



- Validation of SMAP L4 Surface & Root Zone Soil Moisture Estimates with Cosmic-Ray Neutron Probe Observations. American Geophysical Union Annual Meeting, New Orleans, LA, Dec. 11-15.
10. **Jones, S. B.**, Institute of Soil and Water Conservation Seminar, "A Utah Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management and Risk Prediction," Chinese Academy of Sciences and Ministry of Water Resources, Yangling, China. (June 19, 2017)
  11. Alireza Tabatabaenejad, **Morteza Sadeghi**, Mahta Moghaddam, Markus Tuller, and **Scott B. Jones**. 2017. Retrieval of AirMOSS Root-Zone Soil Moisture Profile with a Richards' Equation-Based Approach. *2017 IEEE International Geoscience and Remote Sensing Symposium*, July 23–28, Fort Worth, Texas, USA
  12. **Kshitij Parajuli**, **Scott B. Jones**, David G. Tarboton, Lin Zhao and Gerald Flerchinger 2017. Simulating Stony Soil Impact on Evapotranspiration. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  13. **Azadeh Gholoubi**, **Morteza Sadeghi**, Ebrahim Babaeian, Hojat Emami, Markus Tuller and **Scott B. Jones**. 2017. A Novel Proximal Remote Sensing Approach to Quantifying Soil Aggregate Stability. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  14. **Chihiro Naruke**, **Scott B. Jones**, Sebastian Los, Lawrence Hipps, Lynn McKee, Joseph G. Alfieri, Nurit Agam, John Pruger and William Kustas. Comparison of Grape Vineyard Linear-Soil Heat Flux and -Soil Heat Pulse Probe Arrays. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  15. Ebrahim Babaeian, **Morteza Sadeghi**, Mohammad R. Gohardoust, Emmanuel Arthur, **Scott B. Jones**, and Markus Tuller. 2017. Application of Shortwave Infrared Imaging for Estimation of Soil Hydraulic Properties. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  16. Ebrahim Babaeian, Morteza Sadeghi, **Scott B. Jones**, and Markus Tuller. 2017. Evaluation of a Novel Optical Trapezoid Model for Estimation of Large-Scale Root Zone Soil Moisture Based on MODIS Satellite Observations and Reference Cosmic-Ray Measurements. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  17. **Jones, S. B.**, Environmental Sciences Department Seminar, "Plant Growth Media selection for Reduced Gravity Ecosystems: Orbit, Moon and Mars," UC Riverside, Riverside, CA. March 10, 2017.
  18. **Morteza Sadeghi**, **Wenyi Sheng**, Ebrahim Babaeian, Markus Tuller and **Scott B. Jones**. 2017. Application of Shortwave Infrared Imaging for Estimation of Soil Water Content and Flux Profiles. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  19. **Morteza Sadeghi**, Ebrahim Babaeian, Markus Tuller, and **Scott B. Jones**. Effects of Particle Size on Soil Reflectance. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  20. **Wenyi Sheng**, **Rong Zhou**, **Morteza Sadeghi**, Ebrahim Babaeian, Markus Tuller, Scott K. Anderson and **Scott B. Jones**. Printed Circuit Board Time Domain Reflectometry Sensors for Near-Surface Soil Moisture Measurement. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  21. **Jones, Scott B.**, **Kshitij Parajuli**, **Rong Zhou**, **Morteza Sadeghi**, Tyson E. Ochsner and Jirka Šimůnek. 2017. A Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management and Risk Prediction. *2017 ASA-CSSA-SSSA Annual Meeting*. Tampa, FL, Oct. 23-26.
  22. Dr. Zachary T. Aanderud\*, Amber Spackman Jones, Jeffery S. Horsburgh, David Eiriksson, Dylan Dastrup, Christopher Cox, **Scott Jones**, David Bowling, Jobie Carlisle, Greg Carling, and Michelle A. Baker. Transcending system boundaries through integrative ecohydrologic research.

Presentation at the 11th Annual Salt Lake County Watershed Symposium, November 15-16, 2017.

***Year 2016 (8/20)***

1. Mohamed, Ruba A.M., **Scott B. Jones** and Christopher M.U. Neale. 2016. Numerical Modeling of Coupled Heat Transport and Liquid Water and Water Vapor Flow in Geothermally Heated Ground at Norris Geyser Basin. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA, Dec. 11-16
2. Babaeian, Ebrahim, **Morteza Sadeghi**, **Scott B. Jones** and Markus Tuller. 2016. A Novel Optical Model for Remote Sensing of Near-Surface Soil Moisture. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA, Dec. 11-16.
3. **Sadeghi**, **Morteza**, Alireza Tabatabaenejad, Markus Tuller, Ebrahim Babaeian and **Scott B. Jones**. 2016. A New Richards Equation-Based AirMOSS Soil Moisture Retrieval Algorithm. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA, Dec. 11-16.
4. Tuller, Markus, Ebrahim Babaeian, **Morteza Sadeghi**, **Wenyi Sheng** and **Scott B. Jones**. 2016. A Comprehensive Laboratory Study to Improve Ground Truth Calibration of Remotely Sensed Near-Surface Soil Moisture. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA, Dec. 11-16.
5. **Jones, Scott B.** 2016. Soil Sensing and Modeling Approaches for Improved Understanding of Urban Soil Restoration. Invited Presentation at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
6. **Parajuli K.**, **Sadeghi. M.**, **Jones S. B.** (2016). Measuring and modeling the influence of stone content on soil water retention, Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, 6-9 November 2016.
7. Babaeian, Ebrahim, **Morteza Sadeghi**, **Scott B. Jones** and Markus Tuller. 2016. High-Resolution Mapping of Surface Soil Moisture with Hyperspectral Line-Scan Imaging. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
8. Babaeian, Ebrahim, **Morteza Sadeghi**, **Wenyi Sheng**, **Rong Zhou**, **Scott B. Jones**, and Markus Tuller. 2016. Relating Surface Reflectance and Near-Surface Soil Moisture to Improve Ground Truth Calibration of Optical Remote Sensing. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
9. **Sadeghi**, **Morteza**, Alireza Tabatabaenejad, Markus Tuller, Ebrahim Babaeian, and **Scott B. Jones**. 2016. A New Solution to Richards' Equation for Application to P-band Radar Remote Sensing of Root Zone Soil Moisture. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
10. Robinson, DA, **SB Jones**, I Lebron, S Reinsch, MT Dominguez, AR Smith, DL Jones, MR Marshall, BA Emmett. 2016. Experimental evidence for drought induced alternative stable states of soil moisture. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
11. **Sadeghi**, **Morteza**, Ebrahim Babaeian, Markus Tuller, and **Scott B. Jones**. 2016. A Novel Optical Approach to Satellite-Based Remote Sensing of Soil Moisture. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
12. **Sheng**, **Wenyi**, **Rong Zhou**, **Scott B. Jones**, Scott Anderson and Markus Tuller. 2016. Design of a Printed Circuit Board TDR/TDT Near-Surface Soil Moisture Sensor. Presented at the Soil Science Society of America Annual Meeting, Phoenix, AZ, Nov. 6-9.
13. **Sheng**, **Wenyi**, **Rong Zhou**, Mark Blonquist, Bruce Bugbee and **Scott B. Jones**. 2016. A Novel

Multifunctional Energy and Mass Transport Sensor for Environmental Monitoring. Presented at the 2016 USTAR Confluence: Where Innovation Meets Economic Development. University of Utah, Salt Lake City, UT Oct. 4-5.

14. **Jones, Scott B.** Robert Heinse, Dani Or, Markus Tuller, Gail E. Bingham. 2016. Considerations for Growing Plants in the Reduced Gravity of Space: Gas Percolation and Root Intrusion Effects in Porous Media. 2016 Kirkham Conferences. Jacob Blaustein Institutes for Desert Research, Sede Boqer Campus, Israel. 10-14 April.

#### *Year 2015 (8/9)*

1. **Sadeghi, Morteza, Scott B. Jones** and Markus Tuller. 2015. Toward a Calibration-Free Model for Optical Remote Sensing of Soil Moisture. AGU Fall Meeting Abstracts, San Francisco, CA, December 14-18.
2. **Parajuli, Kshitij, Morteza Sadeghi** and **Scott B. Jones**. 2015. Rock content influence on soil hydraulic properties. AGU Fall Meeting Abstracts, San Francisco, CA, December 14-18.
3. **Sheng, Wenyi**, Kashifa Rumana, Masaru Sakai, Franyell Silfa and **Scott B. Jones**. 2015. A Multi-Functional Penta-Needle Thermo-Dielectric Sensor for Porous Media Sensing. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18.
4. **Jones, Scott B., Ling Lv** and Lawrence Hipps. 2015. Estimating Water Use in a Semi-arid Montane Ecosystem using a Soil Moisture Network and Numerical Modeling. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18.
5. **Parajuli, Kshitij, Scott B. Jones** and Larry Hipps. 2015. Numerical Modeling of Evapotranspiration from Montane Vegetation with Verification from Surface Energy Balance Measurements. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18, 2015.
6. **Jones, Scott B., Pakorn Sutitarnnontr**, Markus Tuller and Rhonda Miller. 2015. Automated Closed Chamber-based Measurements of CO<sub>2</sub>, CH<sub>4</sub> and NH<sub>3</sub> Emissions from Fresh, Dried and Sludged Dairy Cattle Manure. 2015. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18, 2015.
7. **Sadeghi, Morteza**, Bijan Ghahraman, Markus Tuller, Arthur W. Warrick and **Scott B. Jones**. 2014. Simultaneous Scaling of Soil Water Retention and Hydraulic Conductivity Curves: Revisiting Millers' Similar-Media Theory. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18, 2015.
8. **Sadeghi, Morteza**, and **Scott B. Jones**. A Physically-Based Model for Optical Remote Sensing of Soil Moisture. Presented at the Soil Science Society of America Annual Meeting, Minneapolis, MN, Nov. 15-18, 2015.
9. Miller, Rhonda, **Pakorn Sutitarnnontr**, Markus Tuller, Jim Walworth and **Scott B. Jones**. Impact of Manure Incorporation on Greenhouse Gas Emissions in Semi-Arid Regions. Waste to Worth Conference. Seattle, Washington. April 2015.

#### *Year 2014 (10/13)*

1. **Rumana, Kashifa**, Markus Tuller and **Scott B. Jones**. Determination of Subsurface Evaporation and Soil Water Content: Implementing a Heat Pulse Probe Array for High-Resolution Measurements. Presented at the Soil Science Society of America Annual Meeting, Long Beach, CA, Nov. 2-5, 2014.
2. **Sutitarnnontr, Pakorn**, Rhonda Miller, Markus Tuller and **Scott B. Jones**. Simulation of Greenhouse Gas Emissions after Land Application of Cattle Manure. Presented at the Soil

- Science Society of America Annual Meeting, Long Beach, CA, Nov. 2-5, 2014.
3. **Jones, Scott B.**, The Growing Need for Measurements and Monitoring of Critical Properties and Processes at the Soil Surface. Presented at the Soil Science Society of America Annual Meeting, Long Beach, CA, Nov. 2-5, 2014.
  4. **Sadeghi, Morteza**, Markus Tuller and **Scott B. Jones**. 2014. Effective Unsaturated Hydraulic Conductivity and Characteristic Length of Layered Soils Considering Steady-State Evaporation. Presented at the Soil Science Society of America Annual Meeting, Long Beach, CA, Nov. 2-5, 2014.
  5. **Sadeghi, Morteza**, **Scott B. Jones**, Stephen Bialkowski and Bill Philpot. Estimation of Soil Water Content using Short Wave Infrared Remote Sensing. Long Beach, CA, Nov. 2-5, 2014.
  6. **Sadeghi, Morteza**, and **Scott B. Jones**. A Closed-Form Solution to Richards' Equation for Soil Evaporation and Concurrent Drainage. Presented at the Soil Science Society of America Annual Meeting, Long Beach, CA, Nov. 2-5, 2014.
  7. Sakai, Masaru, Naho Kondo, **Scott B. Jones**. 2014. Estimation of Water Flux in Andisol with a Penta-Needle Heat Pulse Probe. Japan Geoscience Union Meeting, April 30, 2014.
  8. **Sutitarnnontr P.**, E. Hu, M. Tuller, R. Miller, and **S.B. Jones**. 2014. Field Validation of the Multiplexed Portable FTIR - Surface Chamber System for Estimating Gas Emissions from Animal Feeding Operations. 2014 ASABE and CSBE | SCGAB Annual International Meeting, Montreal, Quebec Canada, July 13 – 16.
  9. Sakai, M. and **S.B. Jones**. 2014. Application of Penta-Needle Heat Pulse Probe for Variably Saturated Water Flux Estimation. Meeting of the World Congress of Soil Scientists, Jeju, South Korea, June 8-13.
  10. **Rumana, Kashifa**, Markus Tuller and **Scott B. Jones**. 2014. A Heat Pulse Probe Array for Subsurface Soil Evaporation Estimates. Meeting of the World Congress of Soil Scientists, Jeju, South Korea, June 8-13.
  11. **Jones, Scott B.**, **Kashifa Rumana**, Masaru Sakai, Pawel Szafruga and Markus Tuller. 2014. A Multifunctional Heat Pulse Probe for Soil Physical Property and Process Assessment. Meeting of the World Congress of Soil Scientists, Jeju, South Korea, June 8-13.
  12. Vaz, CMP, M. Tuller and **S.B. Jones**. 2014. Calibration of EM sensors using acetic acid-water mixtures. Fourth International Symposium on Soil Water Measurement using Capacitance, Impedance and Time Domain Transmission (TDT). Montreal, Canada, July 16-18.
  13. **Sutitarnnontr, Pakorn**, Rhonda Miller, Markus Tuller and **Scott B. Jones**. 2014. Cumulative Evaporation from Surface-Applied Manure Using a Closed Dynamic Chamber Technique. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 2-3.

#### ***Year 2013 (14/15)***

1. **Jones, Scott B.**, Dani Or, Robert Heinse and Markus Tuller. Root Zone Concept Designs for Reduced Gravity Environments. Workshop on Earth-Based Integrated Experimental System of Bioregenerative Life Support System with Humans Involved, Beihang University, Beijing, China, Dec. 2 – 4, 2013.
2. **Hu, Enzhu**, **Pakorn Sutitarnnontr**, Markus Tuller, and **Scott B. Jones**. Emissions of Carbon Dioxide, Methane and Ammonia from Dairy Feces and Manure. Presented at the Soil Science Society of America Annual Meeting, Tampa, FL, Nov. 3-6, 2013.
3. **Sutitarnnontr, Pakorn**, **Enzhu Hu**, Markus Tuller, and **Scott B. Jones**. Determination of Physical and Hydraulic Properties of Cattle Manure Using Soil Analysis Techniques. Presented at the Soil

- Science Society of America Annual Meeting, Tampa, FL, Nov. 3-6, 2013.
4. [Szafruga, Pawel](#), Shmulik P. Friedman and **Scott B. Jones**. Streaming potential and heat pulse methods for high resolution, in-situ, porous medium water flux estimates. Presented at the Soil Science Society of America Annual Meeting, Tampa, FL, Nov. 3-6, 2013.
  5. [Rumana, Kashifa](#), Markus Tuller and **Scott B. Jones**. Resolving Heat Pulse Measurement Anomolies. Presented at the Soil Science Society of America Annual Meeting, Tampa, FL, Nov. 3-6, 2013.
  6. Bacalhau, F.B.; [Sutitarnnontr, P.](#); **Jones, S.B.**; Souza, C.F. 2013. Characterization of the Sensing Volume of The GS3 Sensor. XLII Congresso Brasileiro de Engenharia Agrícola - CONBEA 2013 Fábrica de Negócios - Fortaleza - CE – Brasil, 4 - 8 August.
  7. [Sutitarnnontr, Pakorn](#), [Enzhu Hu](#), Rhonda Miller, Markus Tuller, and **Scott B. Jones**. 2013. Accuracy and Precision of Measurement of Gas Emissions from Manure Sources Using a Multiplexing System and Portable FTIR Gas Analyzer. Presented at the 2013 ASABE Annual International Meeting, Kansas City, MO, July 21 – 24.
  8. [Ducas, Lauren P.](#), A. Joshua Leffler, Helga Van Miegroet, and **Scott B. Jones**. 2013. Effects of Plant Functional Type and Interannual Precipitation Variability on Long-Term Soil Moisture Resource Pool Trends. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  9. [Rumana, Kashifa](#), Markus Tuller, and **Scott B. Jones**. 2013. In-situ Soil Water Content Estimates using a Heat Pulse Probe. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  10. [Szafruga, Pawel](#), [Kashifa Rumana](#), Shmulik P. Freidman, and **Scott B. Jones**. 2013. Measuring mm/d water flux densities with an improved penta-needle heat-pulse probe (PHPP). Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  11. [Hu, Enzhu](#), [Pakorn Sutitarnnontr](#), Markus Tuller, and **Scott B. Jones**. 2013. Emissions of Carbon Dioxide, Methane and Ammonia from Fresh Dairy and Beef Manure Sources. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  12. [Sutitarnnontr, Pakorn](#), [Enzhu Hu](#), Markus Tuller, Rhonda Miller and **Scott B. Jones**. 2013. Effectiveness of Manure Incorporation in Reducing Gas Emissions. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  13. [Lv, Ling](#), **Scott B. Jones**, Trenton E. Franz. 2013. A Cosmic-Ray Soil Moisture Sensor for Intermediate-Scale (700 m) Estimates at the T.W. Daniel Experimental Forest. Presented at the Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 9-10.
  14. [Sutitarnnontr, Pakorn](#), [Enzhu Hu](#), Rhonda Miller, Markus Tuller and **Scott B. Jones**. 2013. Drying and Rewetting Effects on Gas Emissions from Dairy Manure in Semi-arid. Presented at the “Waste to Worth: Spreading Science and Solutions” Conference, Denver, CO, April 1 – 5.
  15. Miller, Rhonda, [Pakorn Sutitarnnontr](#), [Enzhu Hu](#), James Walworth and **Scott B. Jones**. 2013. Best management practices for reducing gas emissions from manure application in semi-arid regions. Presented at the “Waste to Worth: Spreading Science and Solutions” Conference, Denver, CO, April 1 – 5.

*Year 2012(13/20)*



1. **Jones, Scott B.**, Dani Or, Robert Heinse and Markus Tuller. 2012. Beyond Earth: Designing Root Zone Environments for Reduced Gravity Conditions. Invited presentation at the 28th Annual Meeting of the American Society for Gravitational and Space Research, Nov. 28 – Dec. 2, 2012, New Orleans, Louisiana, USA.
2. Verma, Aditya K., **Scott B. Jones** and Markus Tuller. Application of High-Resolution Thermal Imaging and Novel Heat Pulse Technology to Quantify Soil Evaporation. Presented at the Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
3. Mark N. Wuddivira, David A. Robinson, Inma Lebron, Laetitia Brechet, Melissa Atwell, Sunshine De Caires, Mike Oatham, **Scott B. Jones**, Hiruy Abdu, Aditya Verma and Markus Tuller. 2012. Hygroscopic Water Content as a Surrogate for Clay Percentage in Proximal Soil Sensing. Presented at the Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
4. **Jones, Scott B.**, Masaru Sakai and Jonathan Carlisle. 2012. Assessing Snowpack Melt Rates using Penta-needle Heat Pulse Probes and Snowmelt Lysimeters. Presented at the Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
5. Chamindu Deepagoda T.K.K., Per Moldrup, **Scott B. Jones**, Lis de Jonge, Per Schjønning, Jan Hopmans, Dennis Rolston, Kate Scow, Ken Kawamoto and Toshiko Komatsu. Diffusivity-Based Characterization of Plant Growth Media for Earth and Space. Presented at the Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
6. [Ling Lv](#), **Scott B. Jones**, Lawrence E. Hips. 2012. Assessing Water Use in Semi-arid Montane Aspen, Conifer, Sage and Grass/Forb Ecosystems using Measurements and Numerical Simulation. Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012
7. [Szafruga, Pawel](#), Shmulik P. Friedman and **Scott B. Jones**. 2012. Soil Water Flux Estimates from Streaming Potential and Penta-needle Heat Pulse Probe Measurements. Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
8. [Sutitarnnontr, Pakorn](#), Markus Tuller, Rhonda Miller, and **Scott B. Jones**. 2012. Monitoring Temporal Variations in Greenhouse Gas Emissions from Cow Manure in Relation to Moisture Content and Environmental Variables. 2012 ASA, CSSA, and SSSA Annual Meeting, Cincinnati, OH, Oct 21-24, 2012.
9. [Sadeghi, Morteza](#), Masaru Sakai, Markus Tuller, and **Scott B. Jones**. 2012. A New Algorithm for Determining Soil Evaporation using Heat Pulse Probe Measurements. Presented at the Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012.
10. [Rumana, Kashifa](#), Wutthida Rattanapichai, **Scott B. Jones**, Bill Mace and Markus Tuller. 2012. An Automated Microlysimeter for Long-term Monitoring of Soil Evaporation. Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012
11. [Rumana, Kashifa](#), [Morteza Sadeghi](#), Markus Tuller and **Scott B. Jones**. 2012. Determination of Subsurface Soil Evaporation Using a Heat Pulse Probe Array. Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012
12. Verma, Aditya K., **Scott B. Jones** and Markus Tuller. 2012. Application of High-Resolution Thermal Imaging and Novel Heat Pulse Technology to Quantify Soil Evaporation. Soil Science Society of America Annual Meeting, Cincinnati, Ohio, October 21-24, 2012
13. [Sadeghi, Morteza](#) and **Scott B. Jones**. 2012. Modeling Steady-State Evaporation from a Shallow Water Table. Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 3-4, 2012.
14. [Sutitarnnontr, Pakorn](#), Rhonda Miller, Markus Tuller and **Scott B. Jones**. 2012. Temporal Variations in Greenhouse Gas Emissions from Dairy Cow Manure. Annual Spring Runoff

Conference, Utah State University, Eccles Conference Center, Logan, UT, April 3-4, 2012.

15. [Rumana, Kashifa](#), **Scott B. Jones** and Markus Tuller. 2012. Determination of Subsurface Soil Evaporation using a Heat Pulse Probe Array. Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 3-4, 2012.
16. [Lu, Ling](#), Lawrence Higgs and **S.B. Jones**. 2012. Water Use of Aspen, Conifer, Sage and Grass/Forb Communities in a Semi-arid Montane Ecosystem. Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 3-4, 2012.
17. Franz, Trenton, Marek Zreda, **Scott B. Jones** and Jonathan Carlisle. 2012. Measurement of Hydrogen Pools at Intermediate Spatial Scales Using Cosmic-Ray Neutron Probes at the T.W. Daniel Experimental Forest Instrumented Research Site. Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, April 3-4, 2012.
18. Verma, Aditya K., **Scott B. Jones** and Markus Tuller. 2012. Application of High-Resolution Thermal Imaging and Novel Heat Pulse Technology to Quantify Soil Evaporation. Earth Week, The University of Arizona, Tucson.
19. [Sutitarnnontr, P.](#), M. Tuller, R. Miller, S. Bialkowski, and **S.B. Jones**. 2012. A Multiplexing System for Monitoring Greenhouse and Regulated Gas Emissions from Manure Sources using a Portable FTIR Analyzer. 2012 ASABE Annual International Meeting, Dallas, TX, July 29 – August 1, 2012.
20. Vaz, Carlos M.P., **Scott B. Jones**, Mercer Meding and Markus Tuller. 2012. Comparison of Commonly-Applied Electromagnetic Sensors for Soil Water Content and Electrical Conductivity Measurements in Mineral, Organic and Saline Soils. Presented at the Second International Soil Moisture Sensing Technology Conference, Honolulu, Hawaii, January 3-7. 11

#### ***Year 2011(10/18)***

1. **Jones, S.B.**, M. Sakai and M. Tuller. 2011. Partitioning Evaporation and Infiltration Processes with an Array of Multifunction Heat Pulse Probes. AGU Fall Meeting Abstracts, San Francisco, CA, December 5-9.
2. Robinson, D.A., **S.B. Jones**, I. Lebron. 2011. Linking Above and Belowground Soil and Vegetation Spatial Patterns using Eco-Geophysical Approaches. AGU Fall Meeting Abstracts, San Francisco, CA, December 5-9.
3. [Sadeghi, M.](#), B. Ghahraman, A.N. Ziaei, K. Davary, K. Reichardt, and **S.B. Jones**. 2011. Scaled Solutions of Richards' Equation for Infiltration and Drainage Considering Dissimilar Soils. AGU Fall Meeting Abstracts, San Francisco, CA, December 5-9.
4. [Sutitarnnontr Pakorn](#), **Scott B. Jones**, and Markus Tuller. 2011. Metal oxide gas sensors for monitoring regulated and greenhouse gas fluxes from manure sources. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
5. [Ling Lu](#), Jobie Carlisle, Lawrence Higgs and **Scott B. Jones**. 2011. Modeling Evapotranspiration in a Semi-arid Mountain Ecosystem Integrating HYDRUS-1D and Weather Data. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
6. [Sakai, Masaru](#), Changbing Yang, Gerard Kluitenberg and **Scott B. Jones**. 2011. Improved Determination of Soil Water Flux and Thermal Properties with a Penta-Needle Heat Pulse Probe. ASA, CSSA, and SSSA International Annual Meeting, San Antonio, TX, Oct. 16-19.
7. [Wutthida Rattanapichai](#), **Scott B. Jones**, Bill Mace and Markus Tuller. 2011. An Automated Microlysimeter for Long-term Monitoring of Soil Evaporation. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.

8. Babcock, Esther, Markus Tuller and **Scott B. Jones**. 2011. Quantification and Monitoring of Gas Emission from Agricultural Sources: Measurement Technology and Limitations. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
9. Babcock, Esther, Markus Tuller, **Scott B. Jones** and James Walworth. 2011. Greenhouse Gas Emissions from Agriculture and Animal Operations: Influencing Factors, Measurement Limitations, and Potential Mitigation Strategies. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
10. Vaz, Carlos M.P., **Scott B. Jones** and Markus Tuller. 2011. Evaluation of commercially available electromagnetic sensors for measuring soil water content and electrical conductivity in mineral, organic and saline soils. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
11. Vaz, Carlos M.P., **Scott B. Jones**, Astrid Jacobsen, Markus Tuller. 2011. Evaluation of electromagnetic sensors using acetic acid/water mixtures – the dielectric constant and electrical conductivity responses. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
12. **Jones, Scott B.**, Masaru Sakai, [Morteza Sadeghi](#) and Markus Tuller. 2011. A Penta-Needle Heat Pulse Probe Array for Soil Subsurface Evaporation and Heat Flux Estimates. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX, October 16 – 19, 2011.
13. Robinson, D.A., **S.B. Jones**, I. Lebron, B. Rawlins, M. Lark, B. Emmett, and A. Keith. 2011. Geophysics Role in the Spatial Prediction of Soil Natural Capital and Ecosystem Services. Invited talk presented at the ASA-CSSA-SSSA International Annual Meeting held in San Antonio, TX, Oct. 16-19, 2011.
14. [Sakai, M.](#), and **S.B. Jones**. 2011. Simultaneous Determination of Soil Water Flux and Thermal Properties with a Penta-Needle Heat Pulse Probe. The Japanese Society of Irrigation, Drainage and Rural Engineering annual Meeting. Sept. 6-9, 2011.
15. [Sutitarnnontr, P.](#), M. Tuller and **S.B. Jones**. 2011. An Automated Multi-gas Sensor System for Long-term Monitoring of Regulated and Greenhouse Gas Fluxes from Animal Feeding Operations (AFOs). Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, March 29-30.
16. [Lu, Ling](#), Jobie Carlisle and **S.B. Jones**. 2011. Modeling Conifer Forest Evapotranspiration in a Semi-arid Mountain Ecosystem. Annual Spring Runoff Conference, Utah State University, Eccles Conference Center, Logan, UT, March 29-30.
17. Tuller, M., G.S. Nearing, **S.B. Jones** and R. Heinse. 2011. Geophysical Characterization of Inactive Mine Tailings - A First Step for Revegetation. European Geophysical Union General Assembly, Vienna, Austria, Mar. 31 - Apr. 4. Vol. 13, EGU2011-PREVIEW.
18. Robinson, D.A., I. Lebron, **S.B. Jones**, R. Ryel. 2011. Soil moisture sequestration in drylands: ecosystem engineering in pinyon juniper woodland via soil water repellency. JULES meeting: Soils. CEH Wallingford, January 12-13.

#### ***Year 2010 (6/10)***

1. Sun, H., K. Kopp and **S.B. Jones**. 2010. Simulation of Water and Nutrient Transport in Three Turf Species. ASA, CSSA, and SSSA International Annual Meeting, Long Beach, CA, Oct. 31-Nov. 4.
2. [Sakai, M.](#), **S.B. Jones** and M. Tuller. 2010. Estimation of Evaporation Rates from a Subsurface Drying Front using a Penta-Needle Heat Pulse Probe. ASA, CSSA, and SSSA International Annual Meeting, Long Beach, CA, Oct. 31-Nov. 4.
3. **Jones, S.B.**, [M. Sakai](#) and G. Kluitenberg. 2010. Exploring Limits of Near-Surface Water Flux

- Determination from Penta-needle Heat Pulse-Based Measurements. ASA, CSSA, and SSSA International Annual Meeting, Long Beach, CA, Oct. 31-Nov. 4.
4. [Heinse, R.](#) and **S.B. Jones**. 2010. Identifying Thresholds for Water Storage and Transmission In Montane Watersheds From the Soil up. ASA, CSSA, and SSSA International Annual Meeting, Long Beach, CA, Oct. 31-Nov. 4.
  5. Ducas, L., J. Leffler, R. Ryel, **S.B. Jones**. 2010. Associations of near-surface soil moisture and annual plant community dynamics. 16th Wildland Shrub Symposium. Utah State University, Eccles Conference Center, May 19.
  6. Carlisle, J., P. Szafruga, V. Mahat, B. Mace, K. Schreuders, **S.B. Jones**, D.G. Tarboton, L. Hipps and J.L. Boettinger. 2010. Instrumentation Enhancement and Data Processing at the T.W. Daniel Experimental Forest: A Drought Management Initiative Project. Combined Western Snow Conference and Spring Runoff Conference, April 19-22, Logan, UT.
  7. **Jones, S.B.**, [M. Sakai](#) and M. Tuller. 2010. Snowmelt Infiltration and Soil-Water Evaporation Estimates using Heat-Pulse Measurements and Energy Balance Modeling. Combined Western Snow Conference and Spring Runoff Conference, April 19-22, Logan, UT
  8. [Sakai, M.](#), and **S.B. Jones**. 2010. Numerical Evaluation of Snowmelt Infiltration Using Soil Water Content Monitoring. Combined Western Snow Conference and Spring Runoff Conference, April 19-22, Logan, UT.
  9. Robinson, D.A., **S.B., Jones**, S.P. Friedman and T.E. Doyle. Water content determination in soils and porous media using dielectric measurements. Universita Roma Tre, Rome, Italy June 17.
  10. Sun, H., K. Kopp, M. Dietz, **S.B. Jones** and J. Fan. 2010. A Comprehensive Research Method to Investigate the Environmental Issues of Urban Landscapes: Water Use and Nitrogen Leaching of Urban Landscapes on Community Water Quantity and Quality. American Society for Horticultural Science Annual Meeting. Palm Desert, CA, 2-5 August 2010.

#### *Year 2009 (11/16)*

1. **Jones, S.B.**, [C. Wang](#), D.A. Robinson and M. Tuller. Exploring Soil Properties through Electromagnetic Sensor-based Complex Dielectric Permittivity. 2009. AGU Fall Meeting Abstracts, San Francisco, CA, December 14-18.
2. [Heinse, R.](#), **Jones, S.B.**, [H. Abdu](#) and D.A. Robinson. Time-lapse Characterization of Soil Moisture Dynamics – A First Step towards Ecological Integrity. 2009. AGU Fall Meeting Abstracts, San Francisco, CA, December 14-18.
3. [Sakai, M.](#), **Jones, S.B.** and M. Tuller. Numerical Evaluation of Heat Pulse Technology for Estimation of Evaporation Rates from a Subsurface Drying Front. 2009. AGU Fall Meeting Abstracts, San Francisco, CA, December 14-18.
4. Berger, P.A., [R. Heinse](#), M. Tuller, **S.B. Jones**. Geophysical Characterization of Inactive Mine Tailings – A First Step for Revegetation. 2009. ASA-CSSA-SSSA Annual Meeting, Pittsburgh, PA - Nov. 1-5, See Agronomy Abstracts, ASA, Madison, WI.
5. **Jones, S.B.**, [H. Abdu](#), [R. Heinse](#), D.A. Robinson and R.J. Ryel. 2009. Identifying Soil Resource Pools within Forest Communities using Eco-Geophysics. ASA-CSSA-SSSA Annual Meeting, Pittsburgh, PA - Nov. 1-5, See Agronomy Abstracts, ASA, Madison, WI.
6. Carlisle, J, **S.B. Jones**, D.G. Tarboton, L. Hipps and J.L. Boettinger. 2009. Instrumentation Enhancement at the T.W. Daniel Experimental Forest: A Drought Management Initiative Project. Spring Runoff Conference, Eccles Conference Center, Utah State University, Logan, UT, April 2-3.
7. Fan J. and **S.B. Jones**. 2009. Limitations for Applying the Gradient-Based Soil CO<sub>2</sub> Efflux

Method. Spring Runoff Conference, Eccles Conference Center, Utah State University, Logan, UT, April 2-3.

8. Doyle, T.E., A.T. Tew, D.A. Robinson, and **S.B. Jones**. 2009. Modeling the Dielectric Response of Aggregated Soils. Spring Runoff Conference, Eccles Conference Center, Utah State University, Logan, UT, April 2-3.
9. **Wang, C.** and **S.B. Jones**. 2009. Evaluating Soil Water Content Sensors by Simulating High Clay Content Soils with Varied Relaxation- and Electrically Conductive-Dielectric Liquids. Spring Runoff Conference, Eccles Conference Center, Utah State University, Logan, UT, April 2-3.
10. **Jones, S.B.**, I. Podolskiy, R. Heinse, S.T. Topham, V.N. Sytchev, D. Or and G.E. Bingham. 2009. Porous Media Fluid Transport in Microgravity: The ORZS Flight Experiments. Presented at the 17th International Academy of Astronautics 'Humans in Space' Symposium, Moscow, Russia, June 7-11.
11. **Heinse, R.**, **S.B. Jones**, M. Tuller, G.E. Bingham, I. Podolskiy and D. Or (2009). Providing Optimal Root Zone Fluxes: Challenges of Capillary-Driven Hysteretic Water Distributions in Microgravity. 39th International Conference on Environmental Systems (ICES), Hyatt Regency, Savannah, Georgia, USA, July 12 - 16.
12. **Jones, S.B.**, **R. Heinse**, B. Bugbee, D. Or and G.E. Bingham. Porous plant growth media design considerations for Lunar and Martian habitats. 2009. 39th International Conference on Environmental Systems (ICES), Hyatt Regency, Savannah, Georgia, USA, July 12 - 16.
13. **Jones, S.B.**, **R.M. Estevez** and D.A. Robinson. 2008. Mobile Soil Water Content Derived from Time Domain Reflectometry and an Open-Ended Dielectric Probe. ASABE Annual Meeting, Reno Nevada, June 21-24.
14. **Estevez, R.M.** and **S.B. Jones**. 2009. Frequency Domain Soil Moisture Determination Using an Open-Ended Dielectric Probe. ASABE Annual Meeting, Reno Nevada, June 21-24.
15. Fan, J., M. Shao, Q. Wang, S. Li and **S.B. Jones**. 2009. Landscape Changes and Vegetation Restoration in the Wind-Water Crisscross Region of the Loess Plateau, China. ASABE Annual Meeting, Reno Nevada, June 21-24.
16. **C. Wang**, **R.M. Estevez**, C.M.P. Vaz and **S.B. Jones**. 2009. Quantifying the Impact of Soil Properties on the Performance of Electromagnetic Water Content Sensors. ASABE Annual Meeting, Reno Nevada, June 21-24.

#### ***Year 2008 (18/23)***

1. Berger, P.A., **R. Heinse**, **H. Abdu**, M. Tuller, **S.B. Jones**, M.G. Schaap and J.F. Artiola. 2008. Geophysical Characterization of Inactive Mine Tailings – A First Step for Economical Design of Vegetative Covers. AGU Fall Meeting Abstracts, San Francisco, CA, December 15-19.
2. **Abdu, H.**, D. A. Robinson, M. Seyfried, and **S. B. Jones**. 2008. Using Electromagnetic Induction Images of a Watershed Subsurface to Predict Soil Textural Properties. 3rd Global Workshop on Digital Soil Mapping, Eccles Conference Center, Utah State University, Sept. 30 -Oct. 3.
3. Monje, O., R.M. Wheeler, **S.B. Jones** and C.A. Mitchell. 2008. Design of Root Modules for a Lunar Salad Machine. Joint Annual Meeting of the Lunar Exploration Analysis Group (LAEG), Cape Canaveral, FL, Oct. 28-31.
4. **Jones, S.B.**, **R.M. Estevez** and D.A. Robinson. 2008. Water content determination using a portable vector network analyzer and open-ended dielectric probe. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
5. **Heinse, R.**, J. Carlisle and **S.B. Jones**. 2008. Subsurface snowmelt patterns identified using time-



- lapse electrical resistivity imaging. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
6. **Yang, C.B.** and **S.B. Jones**. 2008. Snowmelt Infiltration Determination using Heat Pulse Probe and Snow Lysimeter Techniques compared with an Energy Balance Model. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
  7. Berger, P.A., **R. Heinse**, M. Tuller, **S.B. Jones**, M.G. Schaap and J.F. Ariola. 2008. Physical and Hydrological Characterization of Mine Tailings – A First Step for Revegetation with Native Plant Communities. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
  8. **Heinse, R.**, **S.B. Jones**, D. Or, T.S. Topham, I.G. Podolskiy and G.E. Bingham. 2008. Microgravity Implications of Water Distribution on Oxygen Diffusion Pathways in Unsaturated Porous Media. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
  9. Bugbee, B., J.M. Blonquist Jr., B. Doucette, and **S.B. Jones**. 2008. Improved Techniques for Long-term Continuous Measurement of Soil Respiration and Respiratory Quotient. GSA-SSSA-ASA-CSSA-GCAGS-HGS 2008 Joint Annual Meeting, George R. Brown Convention Center, Houston, TX, Oct. 5-9, See Agronomy Abstracts, ASA, Madison, WI.
  10. **Jones, S.B.**, **R.M. Estevez** and D.A. Robinson. 2008. Frequency-Dependent Permittivity for Soil Water Content Determination. Second Workshop for Applications of Electromagnetic Techniques in Environmental Monitoring. August 26-27, 2008. Department of Civil Engineering – University of Taubate (UNITAU), Brazil.
  11. **Heinse, R.** and **S.B. Jones**. 2008. Towards Using Time-Lapse Electrical Resistivity Imaging for Improved Subsurface Snowmelt Characterization. Spring Runoff Conference, Eccles Conference Center, Utah State University, Mar. 31-Apr. 1.
  12. **Yang, C.**, **S.B. Jones** and G.J. Kluitenberg, 2008. Optimized Soil Thermal Properties and Water Flux from Penta-needle Heat Pulse Probe Measurements. Spring Runoff Conference, Eccles Conference Center, Utah State University, Mar. 31-Apr. 1.
  13. **Jones, S.B.** Critical Measurements for Understanding Critical Zone Hydrology. Spring Runoff Conference, Eccles Conference Center, Utah State University, Logan, UT, Mar. 31 – Apr. 1, 2008.
  14. **Estevez, R.**, D.A. Robinson and **S.B. Jones**. 2008. Bilinear Analysis for Soil Moisture Determination Using an Open-Ended Dielectric Probe. Spring Runoff Conference, Eccles Conference Center, Utah State University, Mar. 31-Apr. 1.
  15. Carlisle, J, J. Robinson, J. Suisse, V. Mahat, **S.B. Jones**, D.G. Tarboton, L. Hipps and J.L. Boettinger. 2008. Instrumentation and Measurement Facilities at the T.W. Daniel Experimental Forest: A Drought Management Initiative Project. Spring Runoff Conference, Eccles Conference Center, Utah State University, Mar. 31-Apr. 1.
  16. **Jones, S.B.**, D.A Robinson, H. Abdu, R. Heinse and R. Ryel. 2008. Monitoring and Assessment of Vegetation Root-Zone Status in the T.W. Daniel Experimental Forest. Restoring the West Conference, Utah State University, Logan, UT, Sept. 16 – 18.
  17. **Abdu, H.**, D. A. Robinson, J. L. Boettinger, M. Seyfried, and **S. B. Jones**. 2008. The Use of Geophysical Imaging to Identify Subsurface Soil Textural Patterns. Spring Runoff Conference, Eccles Conference Center, Utah State University, Mar. 31-Apr. 1.
  18. **Jones, S.B.**, D.A. Robinson, **H. Abdu** and **R. Heinse**. Coupled geophysical techniques uncover soil property influence on Ecohydrology. 93rd Ecological Society of America Annual Meeting,

Midwest Airlines Center, Milwaukee, Wisconsin, Aug. 3 – 8, 2008. Invited.

19. Blonquist, J. M. Jr., **S.B. Jones** and B. Bugbee. Estimation of soil respiration: Improved techniques for measurement of soil gas. 93<sup>rd</sup> Ecological Society of America Annual Meeting, Midwest Airlines Center, Milwaukee, Wisconsin, Aug. 3 – 8, 2008.
20. Robinson, D.A., **H. Abdu**, **S.B. Jones**, I. Lebron, R. Knight and M.P. Oatham. Applications of geophysical survey to Ecohydrology in tropical and dryland ecosystems. 93<sup>rd</sup> Ecological Society of America Annual Meeting, Midwest Airlines Center, Milwaukee, Wisconsin, Aug. 3 – 8, 2008.
21. **Jones, S.B.**, M. Tuller and D. Or. Liquid imbibition in particulate porous media in microgravity. 37th COSPAR Scientific Assembly, Montreal, Canada, 13-20 July 2008.
22. **Heinse, R.**, **S.B. Jones**, D. Or, M. Tuller, T.S. Topham, I.G. Podolskiy and G.E. Bingham. Challenges of Watering Plants in Space: Water Retention and Distribution---What Have we Learned? 37th COSPAR Scientific Assembly, Montreal, Canada, 13-20 July 2008.
23. **Jones, S.B.**, **R. Heinse**, D. Or, T.S. Topham, I.G. Podolskiy and G.E. Bingham. Oxygen diffusion measurements in porous media on the ISS: One piece of the puzzle for optimal root zone performance. 37th COSPAR Scientific Assembly, Montreal, Canada, 13-20 July 2008.

#### **Year 2007 (16/18)**

1. **Jones, S.B.**, R. Heinse, J. Simunek, M. Tuller and D. Or. 2007. Numerical modeling of porous-media hydrodynamics in variable-gravity during parabolic flight. AGU Fall Meeting Abstracts, San Francisco, CA, December 10-14.
2. Robinson D.A., **H. Abdu**, **S.B. Jones**, M.S. Seyfried, I. Lebron and R. Knight. 2007. Exploring Soils and Ecohydrological Structure in Small Watersheds Using Electromagnetic Induction.. AGU Fall Meeting Abstracts, San Francisco, CA, December 10-14.
3. **Yang, C.B.** and **S.B. Jones**. 2007. 2-D water flux using a pentaprobe heat-pulse sensor: laboratory experiment and numerical evaluation. AGU Fall Meeting Abstracts, San Francisco, CA, December 10-14.
4. **Abdu, H.**, D.A. Robinson and **S.B. Jones**. 2007. Separating Water Content Changes and Soil Texture Using Electromagnetic Induction Soil Imaging. AGU Fall Meeting Abstracts, San Francisco, CA, December 10-14.
5. **Heinse, R.**, **S.B. Jones**, D. Or, T.S. Topham, I.G. Podolskiy and G.E. Bingham. 2007. Oxygen Diffusion Measurements in Unsaturated Porous Media on the International Space Station. AGU Fall Meeting Abstracts, San Francisco, CA, December 10-14.
6. **Jones, S.B.** and Krishna Shenai. 2007. Subsurface Measurement Needs for Ecological, Hydrological and Agricultural Applications. *The 50<sup>th</sup> IEEE International Midwest Symposium on Circuits and Systems* (MWSCAS). Montreal, Canada, August 5-7.
7. Robinson, D.A. and **S.B. Jones**. 2007. Mapping Soil Properties for Ecohydrological Studies in Small Semi-Arid Watersheds using Electromagnetic Induction. Presented by Jones at the AGU Joint Assembly, Acapulco, Mexico, May 22-25.
8. Robinson, D.A., **H. Abdu**, **S.B. Jones**, M. Seyfried and I. Lebron. 2007. Geophysical Mapping for Exploration of Soil Texture and Plant Community Structure. Agronomy Abstracts, ASA, Madison, WI.
9. **Abdu, H.**, **S.B. Jones** and D.A. Robinson. 2007. Soil Moisture Variation Reveals Soil Textural Features Using Electromagnetic Induction Mapping. Agronomy Abstracts, ASA, Madison, WI.
10. **Jones, S.B.**, **K.S. Lewis** and D.A. Robinson. 2007. Near-Surface Infiltration Estimation under Snowmelt using Heat-Pulse-Based Water Flux Sensors. Agronomy Abstracts, ASA, Madison, WI.
11. **Jones, S.B.**, **R. Heinse**, D. Or and G.E. Bingham. 2007. Oxygen diffusion measurements in

- partially saturated porous media in microgravity, Agronomy Abstracts, ASA, Madison, WI.
12. [Heinse, R.](#), **S.B. Jones**, D. Or, T.S. Topham, I.G. Podolsky and G.E. Bingham, 2007. Porous Media Water Retention in Prolonged Microgravity: The ORZS Experiment. Agronomy Abstracts, ASA, Madison, WI.
  13. [Heinse, R.](#), **S.B. Jones**, G.E. Bingham and B. Bugbee, 2007. Optimizing Straticulate Plant-Growth Media for Improved Root Zone Performance and Management. Agronomy Abstracts, ASA, Madison, WI.
  14. Robinson, D.A., I. Lebron, **S.B. Jones** and [H. Abdu](#). 2007. Using Geophysics to Explore Soils and Plant Community Structure. ESA/SER Joint Meeting, August 5 - 10, 2007.
  15. [Robinson, J.](#), D.G. Chandler, **S.B. Jones**, D.G. Tarboton, J.L. Boettinger and L.E. Hipps. 2007. A Developing Ecohydrological Instrument Network at the T.W. Daniel Experimental Forest. Spring Runoff Conference, Utah State University, Logan, UT, April 5-6.
  16. [Heinse, R.](#), **S.B. Jones**, G. Bingham and B. Bugbee. 2007. Improving root zone performance: physical and numerical modeling of a layered plant-growth medium. Spring Runoff Conference, Utah State Univ., Logan, UT, April 5-6.
  17. **Jones, S.B.**, [H. Abdu](#), F. Ogden and D.A. Robinson. 2007. Assessment and Monitoring of the Subsurface for Snowmelt Fate Determination in Small Semi-Arid Watersheds. Spring Runoff Conference, Utah State University, Logan, UT, April 5-6.
  18. [Abdu, H.](#), **S.B. Jones** and D.A. Robinson. 2007. Spring Runoff Conference, Utah State University, Logan, UT, April 5-6.

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1. **Jones, S.B.** and D.A. Robinson. 2006. Heat-Pulse-Based Water Flux Probes for Near-Surface Infiltration Determination in Hydrology. AGU Fall Meeting Abstracts, San Francisco, CA, December 11-15
2. [Heinse, R.](#), **S.B. Jones**, B. Bugbee and G.E. Bingham. 2006. Graduated Plant-Growth Media for Optimizing Gaseous, Liquid and Nutrient Requirements: Modeling, Design and Monitoring. AGU Fall Meeting Abstracts, San Francisco, CA, December 11-15
3. [Abdu, H.](#) Robinson, D.A., M. Seyfried and **S.B. Jones**. 2006. Predicting Spatial Distribution of Soil Texture with Electromagnetic Induction Mapping in Small Watersheds. AGU Fall Meeting Abstracts, San Francisco, CA, December 11-15
4. Robinson, D.A., **S.B. Jones**, [J.M. Blonquist Jr.](#), [H. Abdu](#) and M. Seyfried. 2006. Water Content Determination in Small Watersheds: Sensors for Distributed Networks and Geophysical Approaches. AGU Fall Meeting Abstracts, San Francisco, CA, December 11-15
5. Crook, N., B. Golden-Chen, R. Knight, [H. Abdu](#), D.A. Robinson, **S. Jones** and I. Lebron. 2006. Combined Geophysical Approach to Characterizing Subsurface Flow-paths in the Reynolds Creek Watershed. AGU Fall Meeting Abstracts, San Francisco, CA, December 11-15
6. Robinson, D.A., M. Seyfried, V. Urdanoz, [H. Abdu](#), **S.B. Jones**, D. Chandler and R. Knight. 2005. Application of electromagnetic induction sensors for mapping the subsurface in small watersheds. Eos Trans. AGU. 86(52), Fall Meet. Suppl. H31F-1352.
7. **Jones, S.B.**, [R. Vinukollu](#) and J.L. Boettinger. 2006. Determining optimal sensor depth for gradient-based flux estimates using measured subsurface CO<sub>2</sub> concentrations. Agronomy Abstracts, ASA, Madison, WI.
8. [Abdu, H.](#), D.A. Robinson and **S.B. Jones**. 2006. Modeling the dielectric permittivity of porous media using coated TDR probes. Agronomy Abstracts, ASA, Madison, WI.
9. [Heinse, R.](#) and **S.B. Jones**. 2006. Porous-Media Water Retention and Distribution observed in

Variable Gravity during Parabolic Flight. Agronomy Abstracts, ASA, Madison, WI.

10. **Jones, S.B.** and D.A. Robinson. 2006. Sensing the Environment. *nanoUtah* 2006, Utah's Statewide Nanotechnology Conference, October 5, University of Utah, Merrill Engineering Building.
11. Robinson, D.A., **S.B. Jones**, and S.P. Friedman. 2006. Modeling Structural and Thermal Effects on TDR Measurements in Granular Porous Media. TDR 2006: 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University, West Lafayette, IN.
12. Friedman S.P., **S.B. Jones** and D.A. Robinson. 2006. Review of geometrical and interfacial factors determining the effective permittivity-volumetric water content relationships of soil and rocks. TDR 2006: 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University, West Lafayette, IN.
13. **Jones, S.B.**, D.A. Robinson and S.P. Friedman. 2006. A subsurface open-ended TDR probe for on-the-go mapping of water content. TDR 2006: 3rd International Symposium and Workshop on Time Domain Reflectometry for Innovative Soils Applications. September 17-20, 2006, Purdue University, West Lafayette, IN.
14. **Heinse, R.**, G. Kluitenberg, P. Shouse, **K. Lewis**, G. E. Bingham and **S.B. Jones**. Integration of heat capacity and electrical conductivity sensors for root module water and nutrient assessment. SAE Technical Paper 06ICES-189. The 36th International Conference on Environmental Systems (ICES), Norfolk, VI, July 2006.
15. **Abdu, H.**, D.A. Robinson and **S.B. Jones**. 2006. Layered Soil Salinity and Moisture Effects on Electromagnetic Induction Measurements (Sounding) in a Soil Profile. Western Regional Cooperative Soil Survey (WRCSS) and Western Society of Soil Science (WSSS) conference, Park City, Utah, June 19-23.
16. **Jones, S.B.**, D.A. Robinson and S.P. Friedman. 2006. Development of Rapid TDR Measurement Capability for Mobile Water Content Mapping. Western Regional Cooperative Soil Survey (WRCSS) and Western Society of Soil Science (WSSS) conference, Park City, Utah, June 19-23.
17. **Heinse, R.**, **K. S. Lewis** and **S.B. Jones**. 2006. A Small-Scale Multifunctional Heat-Pulse Sensor for Soil Water Content and Electrical Conductivity. West Regional Cooperative Soil Survey (WRCSS) and Western Society of Soil Science (WSSS) conference, Park City, Utah, June 19-23.
18. **Vinukollu, R.**, **S.B. Jones**, and J.L. Boettinger. 2006. Development and validation of a measurement system for characterizing subsurface CO<sub>2</sub> concentration profiles in soil. Western Regional Cooperative Soil Survey (WRCSS) and Western Society of Soil Science (WSSS) conference, Park City, Utah, June 19-23.
19. Doyle, T.E., D.A. Robinson, **S.B. Jones**, and K.H. Warnick. 2006. Modeling the Dielectric Properties of Granular Media to Determine Water Content. Spring Runoff Conference, Utah State University, Logan, UT, March 27-28.
20. **Okwany, R.O.** and **S.B. Jones**. 2006. Water Application Rate Determination for Optimizing Salt Leaching in Structured Soils. Spring Runoff Conference, Utah State University, Logan, UT, March 27-28.
21. **Abdu, H.**, **S.B. Jones**, **S.M. Hansen** and D.A. Robinson. 2006. Modeling a Coated Coaxial Time Domain Reflectometry Probe response in High Electrical Conductivity Solutions. Spring Runoff Conference, Utah State University, Logan, UT, March 27-28.
22. **Heinse, R.**, **K.S. Lewis** and **S.B. Jones**. 2006. Water Content and Electrical Conductivity Assessment using Small-Scale Multifunctional Heat-Pulse Sensors. Spring Runoff Conference, Utah State University, Logan, UT, March 27-28.



23. [Abdu, H.](#), D.A. Robinson, M.S. Seyfried and **S.B. Jones**. 2006. Predicting Spatial Distribution of Soil Texture with Electromagnetic Induction Mapping and Terrain Analysis Models in Small Watersheds. Eos Trans. AGU, 87(36), Jt. Assem. Suppl., Abstract NS23A-06.
24. Robinson, D.A., **S.B. Jones**, T. Doyle and S.P. Friedman. 2006. Water content determination in porous media using dielectric petrophysical relationships and multipole simulations. Eos Trans. AGU, 87(36), Jt. Assem. Suppl., Abstract NS31B-06.
25. **Jones, S.B.**, [R. Heinse](#), D. Or, D. Poritz and G.E. Bingham. 2006. Characterization and analysis of water retention and oxygen diffusion in plant growth media on earth: Criteria for comparison in microgravity. Habitation 2006: Conference on Habitation Research and Technology Development. Rosen Plaza Hotel, Orlando, FL, February 5-8, 2006
26. [Heinse, R.](#), K. Lewis, G. Kluitenberg, G. Bingham and **S.B. Jones**. 2006. Coupled heat capacity and electrical conductivity measurements for root zone water and nutrient assessment. Habitation 2006: Conference on Habitation Research and Technology Development. Rosen Plaza Hotel, Orlando, FL, February 5-8, 2006.

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1. Robinson, D.A., M. Seyfried, V. Urdanoz, [H. Abdu](#), **S.B. Jones**, D. Chandler and R. Knight. 2005. Application of electromagnetic induction sensors for mapping the subsurface in small watersheds. Eos Trans. AGU. 86(52), Fall Meet. Suppl. H31F-1352.
2. [Abdu, H.](#), D.A. Robinson and **S.B. Jones**. 2005. Comparing Dual-Dipole Electromagnetic Induction Sensors For Measuring Soil Electrical Conductivity. INRA Environmental Subsurface Science Symposium. Big Sky Resort, Montana. September 19-21.
3. [Blonquist Jr., J.M.](#), **S.B. Jones**, and D.A. Robinson. 2005. Water Conservation from Precise Irrigation Scheduling Using a Subsurface Electromagnetic Soil Moisture Sensor. 26th Annual Irrigation Association International Irrigation Show. November 6-8, 2005, Phoenix, AZ.
4. **Jones, S.B.**, M. Tuller and D. Or. 2005. Characterizing Liquid Imbibition in Porous Media under Microgravity. Agronomy Abstracts, ASA, Madison, WI.
5. [Abdu, H.](#), D.A. Robinson and **S.B. Jones**. 2005. A Complex Permittivity Model for a Coated Coaxial TDR Probe in Saline Solutions. Agronomy Abstracts, ASA, Madison, WI.
6. [Blonquist, J.M.Jr.](#), **S.B. Jones**, and D.A. Robinson. 2005. Precise Irrigation Scheduling Using a Subsurface Electromagnetic Soil Moisture Sensor. Agronomy Abstracts, ASA, Madison, WI.
7. [Heinse, R.](#), **S.B. Jones** and D. Or. 2005. Inverse Modeling of Porous Media Unsaturated Hydraulic Properties in Microgravity. Agronomy Abstracts, ASA, Madison, WI.
8. [Blonquist, J.M.Jr.](#), R. Heinse, P. Dittthakit, R.W. Mace and **S.B. Jones**. 2005. An Instrumented Soil Column for Teaching Unsaturated Flow and Transport Processes. Agronomy Abstracts, ASA, Madison, WI.
9. Steinberg, S.L., **S.B. Jones**, M. Xiao, L. Reddi and G. Kluitenberg, D. Or, J.I.D. Alexander, N. Daidzic, M. Tuller. 2005. Challenges to understanding fluid behavior in plant growth media under microgravity, The 35th International Conference on Environmental Systems (ICES) and the 8th European Symposium on Space Environmental Control Systems (ESSECS), Villa Pamphili Hotel, Rome, Italy, 11-14 July 2005.
10. **Jones, S.B.**, [R. Heinse](#), G.B. Bingham and D. Or. 2005. Modeling and Design of Optimal Growth Media from Plant-Based Gas and Liquid Fluxes, The 35th International Conference on Environmental Systems (ICES) and the 8th European Symposium on Space Environmental Control Systems (ESSECS), Villa Pamphili Hotel, Rome, Italy, 11-14 July.
11. [Heinse, R.](#), **S.B. Jones**, [S.D. Humphries](#), R.W. Mace, S.L. Steinberg, M. Tuller, R. Newman, D.



- Or. 2005. Measurement of Porous Media Water Retention during Parabolic Flight Induced Microgravity. The 35th International Conference on Environmental Systems (ICES) and the 8th European Symposium on Space Environmental Control Systems (ESSECS), Villa Pamphili Hotel, Rome, Italy, 11-14 July.
12. Friedman, S.P., D.A. Robinson, **S.B. Jones**, [J.M. Blonquist Jr.](#), and M.G. Schaap. 2005. Measurement and Modeling of the TDR Signal Propagation Through Layered Dielectric Media and of the Effective Permittivity of Sandy Soils, Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract NS41B-10.
  13. **Jones, S.B.**, [J.M. Blonquist Jr.](#), D.A. Robinson, V.P. Rasmussen and D. Or. 2005. Proposal of a Methodology for Comparing Electromagnetic Soil Water Content Sensors, Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract H13B-02.
  14. [Blonquist, J.M. Jr.](#), D.A. Robinson and **S.B. Jones**. 2005. Comparison of Seven Electromagnetic Water Content Sensors Commonly Used in Ecohydrological Studies. Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract H21E-04.
  15. Robinson, D.A., D. Chandler and **S.B. Jones**. 2005. An Overview of Advances in Water Content Sensing for Small Watersheds and Ecohydrological Studies. Eos Trans. AGU, 86(18), Jt. Assem. Suppl., Abstract H21E-03.
  16. **Jones, S.B.**, [R. Heinse](#), G.B. Bingham and D. Or. 2005. Particulate Plant Growth Media for Reduced Gravity: Experiences and Challenges. Workshop on Granular Materials in Lunar and Martian Exploration, Feb. 2-3. John F. Kennedy Space Center, Orlando, FL.
  17. Or. D., **S.B. Jones**, S. Steinberg and I. Alexander. 2005. Fluid Distribution in UnSaturated Porous Media under Zero Gravity – Plant Growth and Life Support Applications. Workshop on Granular Materials in Lunar and Martian Exploration, Feb. 2-3. John F. Kennedy Space Center, Orlando, FL.
  18. Robinson, D.A., **S.B. Jones**, [J.M. Blonquist Jr.](#), M.G. Schaap, A. Lazar, S.P. Friedman. 2005. Measurement and Modeling of the TDR Signal Propagation through Layered Dielectric Media and of the Effective Permittivity of Sandy Soils. Conference on Monitoring and Modeling of Porous Media Properties. Institute of Agrophysics PAS, Lublin, Poland, February 13-16.
  19. Friedman, S.P., **S.B. Jones**, D.A. Robinson. 2005. Geometrical Factors Affecting the Bulk Electrical Properties of Soils and Rocks: Measurements and Continuum Mean Field Computations. Conference on Monitoring and Modeling of Porous Media Properties. Institute of Agrophysics PAS, Lublin, Poland, February 13-16.

#### *Year 2004 (10/16)*

1. **Jones, S.B.**, [J.M. Blonquist](#), D.A. Robinson, V.P. Rasmussen, D. Or. 2004. Standardizing Characterization and Calibration of Electromagnetic Sensors for Dielectric Measurement. Agronomy Abstracts, ASA, Madison, WI.
2. [Blonquist, J.M.](#), **S.B. Jones**, D.A. Robinson. 2004. Comparison of Seven Water Content Sensors in Lossless and Lossy Dielectrics. Agronomy Abstracts, ASA, Madison, WI.
3. Robinson, D.A., **S.B. Jones**, S.P. Friedman and [J.M. Blonquist](#). 2004. Grain-Scale Structural Effects on Electrical Transport Properties in Soils. Agronomy Abstracts, ASA, Madison, WI.
4. Robinson, D.A., **S.B. Jones**, I. Lebron, and T. Kelleners, M.G. Schaap. 2004. Water Content Determination in Clay Soils: Implications for Comparing Water Content Sensors. Agronomy Abstracts, ASA, Madison, WI.
5. [Heinse, R.](#), **S.B. Jones**, [S.D. Humphries](#), R.W. Mace, S.L. Steinberg, M. Tuller, R. Newman, D. Or. 2004. Porous Media Water Retention and Saturated Hydraulic Conductivity During Parabolic

Flight Induced Microgravity. Agronomy Abstracts, ASA, Madison, WI.

6. Or, D., **S.B. Jones**, M. Tuller, S. Steinberg, I. Alexander, N. Diadzic, L.N. Reddi, G. Kluitenberg, F.L. Ogden, **R. Heinse**. 2004. Unsaturated Flow in Zero Gravity - Lessons and Challenges. Agronomy Abstracts, ASA, Madison, WI.
7. Friedman, S.P., **S.B. Jones**, and D.A. Robinson. 2004. Geometrical factors affecting the bulk electrical properties of soils and rocks: measurements and continuum mean field computations, p. 81-82, In D. J. Bergman and E. Inan, eds. Continuum Models and Discrete Systems, Vol. 158. Kluwer Academic Publishers, Dordrecht.
8. Or, D., **S.B. Jones**, M. Tuller, S. Steinberg, I. Alexander, N. Diadzic, L.N. Reddi, G. Kluitenberg, F.L. Ogden, **R. Heinse**. 2004. Unsaturated Flow in Zero Gravity - Lessons and Challenges. Kirkham Conference, Logan, UT, Oct. 28-29, 2004.
9. Robinson D.A., **Jones S.B.**, Friedman S.P., **Blonquist J.M Jr.** and Schaap, M.G. 2004. Geometrical effects on electromagnetic wave interaction with moist materials. 85th Annual Meeting of the Pacific Division, AAAS, June 14-17, 2004, Logan UT.
10. **Jones S.B.**, **Blonquist J.M Jr.**, Robinson D.A., Rassmussen V.P. and Or D. 2004. Toward standardizing electromagnetic sensor characterization and calibration. 85th Annual Meeting of the Pacific Division, AAAS, June 14-17, 2004, Logan UT.
11. **Blonquist J.M Jr.**, **Jones S.B.** and Robinson D.A., 2004. A low cost time domain transmission sensor with TDR performance characteristics. 85th Annual Meeting of the Pacific Division, AAAS, June 14-17, 2004, Logan UT.
12. Robinson D.A., **Jones S.B.**, Wraith J.M., Or D. and Friedman S.P. 2004. An Overview of Advances in Water Content and Electrical Conductivity Measurement in Soils Using Time Domain Reflectometry. CIGR The 7th Inter-Regional Conference on Environment-Water; Land and Water Management: Decision Tools and Practice, Beijing, China; Oct. 11 -14.
13. Chau, J.,D. Or, **S.B. Jones**, and M. Sukop. 2004. Lattice Boltzmann Modeling of Gaseous Diffusion in Unsaturated Porous Media under Variable Gravity Conditions. AGU 2004 Joint Assembly. May 17-21, Montreal, Canada.
14. Or, D., J.M. Wraith, G. Serbin, Y. Chen, and **S.B. Jones**. 2004. Bound water and thermoelectric phenomena affecting soil water content measurement using time domain reflectometry and radar remote sensing. AGU 2004 Joint Assembly. May 17-21, Montreal, Canada.
15. **Jones, S.B.**, G.E. Bingham, Dani Or and T.S. Topham. 2004. Measuring Oxygen Diffusion in Unsaturated Plant Growth Media in Microgravity. Habitation 2004 Conference on Space Habitation Research and Technology Development. Rosen Plaza Hotel in Orlando, Florida, January 4-7.
16. Steinberg, S., Alexander, I, N. Daidzek, **S.B. Jones**, G. Kluitenberg, D. Or, L. Reddi, , M. Tuller. 2004. Fluid flow and distribution through porous plant growth media in microgravity: Status update. Habitation 2004 Conference on Space Habitation Research and Technology Development. Rosen Plaza Hotel, Orlando, Florida, January 4-7.

#### *Year 2003 (2/4)*

1. **Jones, S.B.**, D. Or, M. Tuller, S.L. Steinberg, **S.D. Humphries**, G.E. Bingham, N.E. Daidzik and L.N. Reddi. 2003. Influence of Variable Gravity on Liquid Configurations in Micromodels. Agronomy Abstracts, ASA, Madison, WI.
2. Steinberg S.L., **S.B. Jones**, D. Or, N.E. Daidzik, M. Tuller, and F. Ogden. 2003. Tensiometer measurements under variable gravity conditions. Agronomy Abstracts, ASA, Madison, WI.
3. **Jones, S.B.**, D. Or. and G.E. Bingham. 2003. An Automated Measurement System and Models for

Gaseous Diffusion in Coarse-Textured Porous Media Under Variable Gravity. Agronomy Abstracts, ASA, Madison, WI.

4. Friedman, S.P.; **Jones, S.B.**; Robinson, D.A. 2003. The effects of particle shape, orientation and size distribution on the conductivity of granular media. EGS - AGU - EUG Joint Assembly, Nice, France.

#### *Year 2002 (6/10)*

1. **Jones, S.B.**, D. Or and G.E. Bingham. 2002. Gas Diffusion Measurement and Modeling In Coarse-Textured Porous Media. Special publication in Vadose Zone Journal.
2. **Jones, S.B.** and D. Or. 2002. Time domain reflectometry (TDR) measurement of water content in high surface area porous media. Special Publication in Physica B.
3. **Jones, S.B.** and D. Or. 2002. Dielectric and acoustic monitoring of water content and volume changes in ear corn drying bins. Agronomy Abstracts, ASA, Madison, WI.
4. Tuller, M., **S.B. Jones**, and D. Or, 2002. Liquid Configuration in Angular Pores under Microgravity. SSSA Annual Meeting Abstracts, November 10-14, Indianapolis, Indiana. IN. Agronomy Abstracts. ASA, Madison, WI
5. **Jones, S.B.** and D. Or. 2002. Automated gas diffusion measurements in coarse-textured plant growth media for microgravity studies. Agronomy Abstracts, ASA, Madison, WI.
6. **Jones, S.B.**, Bingham, G.E., D. Or and R.C. Morrow. 2002. ORZS: Optimization of Root Zone Substrates for Microgravity. The 32nd International Conference on Environmental Systems (ICES), San Antonio, Texas, USA, July 15-18.
7. Or, D. and **S.B. Jones**. 2002. Time Domain Reflectometry Measurement of Bulk Permittivity of Porous Mixtures Containing Bound Water. Sixth International Conference on the Electrical Transport and Optical Properties of Inhomogeneous Media. Snowbird's Cliff Lodge, Salt Lake City, Utah, July 15 - 19.
8. **Jones, S.B.** and D. Or. 2002. Time Domain Reflectometry (TDR) Applications in Earth Sciences. 2002 IEEE AP-S International Symposium and USNC/URSI National Radio Science Meeting. Hilton, San Antonio, Texas, 16-21 June.
9. Alexander, I, N. Daidzek, **S.B. Jones**, G. Kluitenberg, D. Or, L. Reddi, S. Steinberg, M. Tuller. 2002. Magnetic Resonance Imaging of the wetting front in thin slices of porous media: The effect of gravity. The 32nd International Conference on Environmental Systems (ICES), San Antonio, Texas, USA, July 15-18.
10. Steinberg, S., Alexander, I, N. Daidzek, **S.B. Jones**, G. Kluitenberg, D. Or, L. Reddi, , M. Tuller. 2002. Flow and distribution of fluid phases through porous plant growth media in microgravity. The 32nd International Conference on Environmental Systems (ICES), San Antonio, Texas, USA, July 15-18.

#### *Year 2001 (3/5)*

1. **Jones, S.B.**, G.E. Bingham, D. Or, R.C. Morrow and I.G. Podolsky. 2001. Optimization of the root zone substrates (ORZS): microgravity modeling and validation. ASGSB seventeenth annual meeting. November 7-10, Alexandria, VA, Gravitational and Space Biology Bulletin 15(1):66.
2. Chard, J., A. Henry, B. Doucette, J. Norton, **S.B. Jones**, C. Palmer, R. Hess, and B. Bugbee. 2001. Sterile Culture Techniques for Characterization of Root Exudates. Agronomy Abstracts, ASA, Madison, WI.
3. Wraith, J.M., D. Or. and **S.B. Jones**. 2001. Dielectric properties of bound water: Application to porous media surface area and grain moisture determination. TDR 2001: Innovative Applications

of TDR Technology. Northwestern University, September 5-7, Evanston, Illinois.

4. **Jones, S.B.** and D. Or. 2001. Automated Frequency Domain Analysis for Extending TDR Measurement Range in Saline Soils. TDR 2001: Innovative Applications of TDR Technology. Northwestern University, September 5-7, Evanston, Illinois.
5. **Jones, S.B.** and D. Or. 2001. Thermal and geometrical effects on bulk permittivity of porous mixtures containing bound water. 1st International Conference on Dielectric Spectroscopy. 12-15 March, Jerusalem, Israel.

#### ***Year 2000 (2/2)***

1. **Jones, S.B.** and D. Or. 2000. Frequency Domain Analysis for Extending the TDR Measurement Range in Saline Soils. ASA-CSSA-SSSA Annual Meeting. Minneapolis, MN, Nov. 5-9, *Agronomy Abstracts, ASA, Madison, WI.*
2. **Jones, S.B.,** B.W. Bingham and D. Or. 2000. Measurement of Soil CO<sub>2</sub> Gradient for In-situ Estimation of Carbon Fluxes. ASA-CSSA-SSSA Annual Meeting. Minneapolis, MN, Nov. 5-9, *Agronomy Abstracts, ASA, Madison, WI.*

#### ***Year 1999 (4/4)***

1. **Jones, S.B.** and D. Or. 1999. Frequency-domain analysis of TDR waveforms in lossy porous media. Eos Trans. AGU. 80(17), Fall Meet. Suppl. F291.
2. **Jones, S.B.** and S.P. Friedman. 1999. Particle Shape Effect on the Dielectric Permittivity of Isotropic and Anisotropic Porous Media. *Agronomy Abstracts, ASA, Madison, WI.*
3. **Jones, S.B.,** D. Or, and S.P. Friedman. 1999. Permittivity of Moist Particulate Mixtures -- Geometrical, Interfacial, and Thermal Effects. *Agronomy Abstracts, ASA, Madison, WI.*
4. A.R. Mitchell, D. Or, M. Caldwell and **S.B. Jones.** 1999. Gradient method for in-situ measurement of CO<sub>2</sub> Flux. *Agronomy Abstracts, ASA, Madison, WI.*

#### ***Year 1996 (2/2)***

1. **Jones, S.B.** and D. Or. 1996. Selection of particulated media for optimal liquid and gaseous fluxes to plant roots. Eos Trans. AGU. 77(46), Fall Meet. Suppl.
2. **Jones, S.B.** and D. Or. 1996. A capillary-driven root module for plant growth in microgravity. 31<sup>st</sup> Scientific Assembly of COSPAR. University of Birmingham, England, July, 14-21, 2006.

#### ***Year 1995 (1/1)***

1. **Jones, S.B.** and D. Or. 1995. Growth media for optimal liquid and gaseous fluxes to plant roots in microgravity. 87th Annual Meeting, ASA, CSSA, SSSA. St. Louis, MO. Oct. 29 - Nov. 3.

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## **FUNDED RESEARCH CONTRACTS AND GRANTS**

### ***Competitive Federal/International/Private Grants***

#### **Submitted:**

**NSF– \$325,000 (\$650,000 PI-Sadeghi USU)**

**Apr 2019-Mar 2022**

**COLLABORATIVE RESEARCH: A TRANSFORMATIVE MODEL FOR ESTIMATION OF HYDROLOGICAL FLUXES FROM NEAR-SURFACE SOIL MOISTURE OBSERVATIONS**

**Funded:**

**USDA-SBIR – \$12,000 (\$100,000, PI-Scott Anderson - Acclima) Sep 2018-May 2019**  
A NOVEL INTEGRATED THERMO-TIME DOMAIN REFLECTOMETRY PROBE FOR POROUS MEDIUM DENSITY AND POROSITY DETERMINATION

**NASA X-Hab - \$20,000, Co-I w/Tim Taylor PI May 2017-May 2018**  
CREATIVE 3D PLANT OPTIMIZATION (C3PO) SYSTEM

**NSF-Hydrological Sciences – \$647,000 (PI-Jones,w/Sadeghi,Tuller) Jul 2015-Jun 2018**  
COLLABORATIVE RESEARCH: NOVEL IN SITU MEASUREMENT AND REMOTE SENSING TECHNIQUES FOR CHARACTERIZATION OF NEAR-SURFACE SOIL HYDROLOGY

**NSF-EPSCoR – (\$20,000,000; PI-Todd Crowl/Michelle Baker) Sep 2012-Aug 2017**  
IUTAH - URBAN TRANSITIONS AND ARID REGION HYDRO-SUSTAINABILITY

**High-end Foreign Expert Program (\$15,000; PI- Yurui Sun) March 2013-April 2016**  
FOREIGN EXPERT BUREAU OF CHINA AWARD

**Western SARE Grad. Student - \$25,000 (Pakorn Suttitaranontr, Ph.D.) Jul 12'-Jun14'**  
DETERMINATION OF REGULATED AND GREENHOUSE GAS EMISSIONS FROM MANURE SOURCES IN ANIMAL FEEDING OPERATIONS

**USDA-NIFA - \$5,000 Speaker Support Grant (PI w/ W2188 Committee) Jan 2012**  
W2188 SOIL PHYSICS TECHNICAL COMMITTEE MEETING AND THE SECOND INTERNATIONAL SOIL MOISTURE SENSING TECHNOLOGY CONFERENCE

**BARD – \$165,000 (\$314,000; PI w/S Friedman and G. Communar) Dec 2011-Nov 2014**  
NOVEL STREAMING POTENTIAL AND THERMAL SENSOR TECHNIQUES FOR MONITORING WATER AND NUTRIENT FLUXES IN THE VADOSE ZONE.

**USDA-NIFA - \$318,605 (\$599,880; PI w/Miller, Tuller, Walworth) Jan 2010-Jun 2014**  
NOVEL GRADIENT-BASED AND SURFACE CHAMBER TECHNIQUES FOR MONITORING REGULATED AND GREENHOUSE GAS EMISSIONS FROM ANIMAL FEEDING OPERATIONS

**USDA-NIFA - \$164,412 (\$448,662; Co-I w/ M. Tuller-PI, D. Or) Jul 2009-Jun 2014**  
A NOVEL APPROACH TO QUANTIFYING SOIL EVAPORATION RATES WITH HIGH RESOLUTION THERMAL IMAGING AND HEAT FLUX MEASUREMENTS.

**CMIRP - (\$148,778; Co-I w/Ron Ryel-PI, D. Bartos, J. Leffler-Co-Is) Jul 2008-Jun 2011**  
EVALUATING THE MAGNITUDE AND EXTENT, AND ASSESSING CAUSES, OF ASPEN (*POPULUS REMULOIDES*) MORTALITY (DIE-OFF) IN SOUTHERN UTAH. *CEDAR MOUNTAIN INITIATIVE RESEARCH PROGRAM*

**NASA-NAG 9-1284 \$50,540 (\$175,000; Co-I w/G.E. Bingham-PI) Jul 2006-Mar 2008**  
OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE VI.

**NASA-NAG 9-1284 \$60,380, (\$100,000; Co-I w/G.E. Bingham-PI) Apr 2005-Mar 2006**  
OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE II.

**NASA-NAG 9-1284 \$56,748 (\$441,554; Co-I w/G.E. Bingham-PI) Apr 2004-Mar 2005**  
OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE II.

**INRA (051131) - \$60,876 (PI) Ph.D. Graduate Research Fellowship Apr 2004-Jul 2006**  
VEHICLE-BASED FIELD-SCALE MAPPING OF SOIL WATER CONTENT AND ELECTRICAL CONDUCTIVITY.

**NASA-NAG 9-1284 \$81,051 (\$642,762; Co-I w/G.E. Bingham-PI) Apr 2003-Mar 2004**  
OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE II.

**UCONN (NASA NRA-01-OBPR) \$60,820 (Co-I, D. Or-PI, M Tuller ) Apr 2003-Mar 2004**  
FLOW AND DISTRIBUTION OF FLUID PHASES THROUGH POROUS PLANT GROWTH MEDIA IN MICROGRAVITY.

**NASA-NAG 9-1284 \$67,827 (\$465,340; Co-I w/G.E. Bingham-PI) Apr 2002-Mar 2003**  
OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE II.

**USDA - NRICGP – \$264,000 (PI w/ D. Or-Co-I and D. Robinson-Co-I) Sep 2002-Aug 2005**  
IMPROVED ELECTROMAGNETIC DETERMINATION OF WATER CONTENT AND ELECTRICAL CONDUCTIVITY IN SALINE AND CLAYEY SOILS.



**NASA 01-OBPR-01 \$68,000 (\$1,554,554-3Co-I w/ Steinberg-PI Co-I's) Apr 2001-Mar 2005**  
 FLOW AND DISTRIBUTION OF FLUID PHASES THROUGH POROUS PLANT GROWTH MEDIA IN MICROGRAVITY.  
**NASA 99-HEDS-02 \$95,000 (Co-I w/ G.Bingham-PI, D.Or-CoI) 1 Dec 1999**  
 OPTIMIZATION OF ROOT ZONE SUBSTRATES FOR REDUCED GRAVITY EXPERIMENTS PHASE I.  
**BARD Postdoctoral Fellowship Proposal FU-267-97 \$38,000 (Postdoc) Sep 1997-Mar 1999**  
 DIELECTRIC MIXING MODEL FOR SOIL WATER MEASUREMENT: CONSTITUENT GEOMETRY AND  
 INTERFACIAL EFFECTS.

*Non-competitive Federal/Private Grants*

**USDA-CSREES Special Project (Congressional earmark)-\$100,000 (\$586,409 Co-I w/ P. Johnson-PI, and 6 Co-I's) Jul 2009-Jun 2012**  
 DROUGHT MANAGEMENT INITIATIVE-VADOZE ZONE HYDROLOGY  
**USDA-CSREES Special Project (Congressional earmark)-\$145,000 (\$625,043 Co-I w/ P. Johnson-PI, and 6 Co-I's) Jul 2008-Jun 2010**  
 DROUGHT MANAGEMENT INITIATIVE-VADOZE ZONE HYDROLOGY  
**USDA-CSREES Special Project (Hatch Fund)-\$55,000 (\$250,000 Co-I w/ P. Johnson-PI, and 6 Co-I's) Sep 2007-Oct 2008**  
 DROUGHT MANAGEMENT INITIATIVE-VADOZE ZONE HYDROLOGY  
**USDA-CSREES Special Project (Congressional earmark)-\$202,000 (\$739,000 Co-I w/ P. Johnson-PI, and 6 Co-I's) Jul 2006-Jun 2008**  
 DROUGHT MANAGEMENT INITIATIVE-VADOZE ZONE HYDROLOGY  
**ACCLIMA \$47,726 (PI) Aug 2003-Sep 2004**  
 ELECTROMAGNETIC MEASUREMENT ENHANCEMENT OF THE ACCLIMA SENSOR.

*Competitive USU Grants*

**UAES – \$79,375, PI-Jones w/ Zhou, Parajuli, Sadeghi, Gillies, Allen May 2017-Apr 2019**  
 A UTAH SOIL MOISTURE MONITORING AND FORECAST NETWORK FOR IMPROVED WATER RESOURCE MANAGEMENT AND RISK PREDICTION  
**USU Research Catalyst Proposal - \$20,000 PI-Jones w/Sadeghi Jul 2017-Apr 2018**  
 DEVELOPING HIGH-RESOLUTION ROOT-ZONE SOIL MOISTURE PRODUCTS FROM OPTICAL SATELLITE IMAGES  
**USTAR-USU – \$95,742 (PI-Jones) Dec 2015-Sep 2016**  
 A NOVEL MULTIFUNCTIONAL ENERGY AND MASS TRANSPORT SENSOR FOR ENVIRONMENTAL MONITORING  
**USU Research Catalyst Proposal - \$20,000 Jul 2013-Jun 2015**  
 NOVEL PHYSICALLY-BASED ALGORITHMS AND INSTRUMENTATION FOR REMOTE SENSING OF NEAR-SURFACE SOIL MOISTURE  
**UAES - \$20,000 Jul 2012-Jun 2014**  
 MODELING GREENHOUSE GAS EMISSIONS FROM ANIMAL MANURE SOURCES BASED ON DIETARY AND ENVIRONMENTAL VARIABLES.  
**UAES Equipment Grant - \$20,000 (PI w/Rhonda Miller-/Co-I) Jul 2011**  
 ACQUISITION OF A FOURIER TRANSFORMED INFRARED (FTIR) GAS ANALYZER FOR DETECTION OF REGULATED AND GREENHOUSE GAS CONCENTRATION AND FLUX.  
**SPARK - \$35,000 (Co-I w/Jennifer MacAdam PI + et al.) Oct 2011-Sep 2016**  
 RAPID BEEF FINISHING ON BIRDSFOOT TREFOIL PASTURES FOR SUSTAINABLE MITIGATION OF CLIMATE CHANGE.  
**RC - \$20,000 (Co-I w/Ron Ryel – PI) Jul 2011-Jun 2012**  
 EXPLORING PLANT SOIL WATER RESOURCE POOLS: QUANTIFYING RHIZOSPHERE DYNAMICS.

**UAES - \$16,000** **Jul 2010-Jun 2012**  
 EXPLORING NOVEL MEASUREMENT METHODS FOR SOIL FLUID FLUX DETERMINATION.

**USU – Water Initiative - \$19,430 (Co-I w/ Timothy Doyle-PI)** **Jul 2009-Jun 2010**  
 NUMERICAL METHODS FOR SENSING MOISTURE AND PHYSICAL CONDITION OF SOILS.

**USU – Water Initiative - \$20,005 (Co-I w/ R. Ryel-PI, and Kasahara, Leffler Co-I)** **Jul 2008**  
 ECOHYDROLOGY OF QUAKING ASPEN (*POPULUS TREMULOIDES*) COMMUNITIES.

**USU – Water Initiative - \$20,000 (Co-I w/ K. Shenai-PI, and M. McKee Co-I)** **30 Oct 2006**  
 DEVELOPMENT OF COST-EFFECTIVE SOIL PROPERTIES SENSOR FOR UBIQUITOUS WIRELESS NETWORKS.

**USU – CURI Grant - \$15,000 (PI w/ Janis Boettinger-Co-I)** **Jul 2006-Jun 2007**  
 A NOVEL APPROACH TO MODELING SOIL CARBON DIOXIDE LOSS FROM A FOREST-RANGE ECOSYSTEM

**SDL – Enabling Technology Grant - \$30,000 (PI)** **Mar 2005-Apr 2006**  
 IMPROVING WATER AND NUTRIENT STATUS OF PLANT GROWTH SUBSTRATES IN SPACE FLIGHT.

**USU - New Faculty Startup Grant - \$15,000 (PI)** **Jul 2005-Jun 2006**  
 DEVELOPMENT OF FIELD-SCALE WATER CONTENT MEASUREMENT USING ADVANCED ELECTROMAGNETIC TECHNIQUES.

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## TEACHING

**PSC 5670/6670 – Environmental Soil Physics (4 Cr.)** **2010, 2012, 2014, 2016, 2018**  
**SOIL 5650/6650 – Environmental Soil Physics (3 Cr.)** **2006, 2008**  
**SOIL 5650/6650 – Applied Soil Physics (3 Cr.)** **2002, 2003, 2004, 2005**  
 Taught Fall semester each year, includes 5 laboratory sessions  
 DEPT. PLANTS, SOILS AND BIOMETEOROLOGY UTAH STATE UNIVERSITY, LOGAN, UTAH

**PSC 6140 – Unsaturated Flow and Transport (3 Cr.)** **2011, 2015**  
**SOIL 6140 – Unsaturated Flow and Transport (3 Cr.)** **2007, 2009**  
**PSB 7900 – Special Problems (2 Cr.)** **2005**  
 Taught Spring semester, odd years  
 DEPT. PLANTS, SOILS AND BIOMETEOROLOGY UTAH STATE UNIVERSITY, LOGAN, UTAH

**PSC 5740 – Environmental Quality: Soil and Water (2 Cr.)** **Spring 2013, 2014**

**PLSC 4230 – Landscape Irrigation Design (3 Cr.)** **Spring 2009**  
 Taught hydraulics section spring semester w/ Kelly Kopp  
 DEPT. PLANTS, SOILS AND CLIMATE UTAH STATE UNIVERSITY, LOGAN, UTAH

### *Invited National/International Presentations (24)*

1. **Jones, S.B., W. Sheng, J. Xu, and D.A. Robinson.** 2018. Electromagnetic Sensors for Water Content: The Need for International Testing Standards. Proceedings of the 12th International Conference on Electromagnetic Wave Interaction with Water and Moist Substances (ISEMA). Lublin, Poland.
2. **Jones, S. B.,** International Workshop: Soil Physics and the Nexus of Food, Energy, and Water, "A Soil Moisture Monitoring and Forecast Network for Improved Water Resource Management," Northeastern University, Shenyang, Liaoning Province, China. August 3 - 5, 2017.
3. **Jones, S. B.,** Institute of Soil and Water Conservation Seminar, "A Utah Soil Moisture

Monitoring and Forecast Network for Improved Water Resource Management and Risk Prediction," Chinese Academy of Sciences and Ministry of Water Resources, Yangling, China. (June 19, 2017)

4. **Jones, S. B.**, Environmental Sciences Department Seminar, "Plant Growth Media selection for Reduced Gravity Ecosystems: Orbit, Moon and Mars," UC Riverside, Riverside, CA. March 10, 2017.
5. **Jones, Scott B.** 2016. Soil Sensing and Modeling Approaches for Improved Understanding of Urban Soil Restoration. ASA-CSSA-SSSA Annual Meeting, November 6-9, Phoenix, AZ. Agronomy Abstracts. ASA, Madison, WI.
6. **Jones, Scott B.**, Robert Heinse, Dani Or, Markus Tuller and Gail E. Bingham. 2016. Considerations for Growing Plants in the Reduced Gravity of Space: Gas Percolation and Root Intrusion Effects in Porous Media. 2016 Kirkham Conference, April 10-14, Sde Boker, Israel.
7. **Jones, Scott B.**, Shmulik, P. Friedman, Pawel Szafruga and Kashifa Rumana. 2013. Exploring Soil Water Flux Estimates using Streaming Potential and Heat Pulse Measurement Techniques. Institute of Soil and Water Conservation, Chinese Academy of Sciences, Yangling, China, Dec. 13.
8. **Jones, Scott B.**, Dani Or, Robert Heinse and Markus Tuller. Root Zone Concept Designs for Reduced Gravity Environments. Workshop on Earth-Based Integrated Experimental System of Bioregenerative Life Support System with Humans Involved, Beihang University, Beijing, China, Dec. 2 – 4, 2013.
9. **Jones, S. B.**, D. Or, R. Heinse and M. Tuller. 2012. Beyond Earth: Designing Root Zone Environments for Reduced Gravity Conditions. Invited presentation at the 28th Annual Meeting of the Am. Soc. for Gravitational and Space Res., Nov. 28 – Dec. 2, 2012, New Orleans, Louisiana, USA.
10. **Jones, S.B.** 2012. Partitioning Evaporation and Infiltration Processes with an Array of Multifunction Heat Pulse Probes Beijing Forestry University, Beijing, P. R. China, March 13.
11. **Jones, S.B.**, D. Or, R. Heinse and M. Tuller. 2010. Beyond Earth: Designing root zone environments for reduced gravity. 1st International Conference and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions "CESAR". Aarhus University, Research Centre Foulum, Denmark, Nov. 30 – Dec. 2.
12. **Jones, S.B.** and M. Sakai. 2010. Water Evaporation and Infiltration Estimates using Penta-needle Heat Pulse Technology. Department of Environmental Physics and Irrigation; Soil, Water and Environmental Sciences Institute, Volcani Center, ARO, Bet Dagan, Israel, June 20.
13. **Jones, S.B.** 2009. Optimizing Root Zone Substrates for Microgravity. Environmental Biology and Life Support Technology Laboratory, School of Biological Science and Medical Engineering; Beihang University, Beijing, China, Aug. 18.
14. **Jones, S.B.** 2009. Improving crop production using irrigation management in greenhouse agriculture with numerical modeling and instrumented monitoring. Shanghai International Soil and Sustainable Agricultural Symposium, Shanghai, China, Aug. 15-16.
15. **Jones, S.B.** 2008. Soil Electromagnetic, Electrical, Thermal Property Assessment from Point- to Watershed-Scales. Institute of Soil and Water Conservation, Chinese Academy of Sciences, Yangling, China, Oct. 30.
16. **Jones, S.B.** 2008. Understanding Soil Properties Impacting Electromagnetic Determination of Soil Water Content. Korea University, Seoul, South Korea, Oct 28.
17. **Jones, S.B.** and C.B. Yang. 2008. Two-Dimensional Water Flux Using a Penta-needle Heat-Pulse Probe (PHPP) Sensor: Numerical Evaluation and Laboratory Experiment. Agricultural Science

Institute, Rural Development Administration, Suwon, South Korea, Oct 27.

18. **Jones, S.B.**, D.A. Robinson, H. Abdu, R. Heinse and R. Ryel. Monitoring and Assessment of Vegetation Root-Zone Status in the T.W. Daniel Experimental Forest. Restoring the West Conference, Utah State University, Logan, UT, Sep 16 – 18, 2008
19. **Jones, S.B.**, D.A. Robinson, H. Abdu and R. Heinse. Coupled geophysical techniques uncover soil property influence on ecohydrology. 93rd Ecological Society of America Annual Meeting, Midwest Airlines Center, Milwaukee, Wisconsin. Aug. 3 – 8, 2008
20. **Jones, S.B.** Frequency-Dependent Permittivity for Soil Water Content Determination. Workshop on Electromagnetic Techniques, Taubaté, Brazil Aug 28-29, 2008
21. **Jones, S.B.** Parabolic Flight and Space-Based (ISS) Experiments Reveal Porous Media-Fluid Behavior in Reduced Gravity. Soil, Water and Environmental Science Seminar Series, University of Arizona, Tuscon, AZ. Jan 28, 2008
22. **Jones, S.B.** Automated Measurements for Characterizing O<sub>2</sub> and CO<sub>2</sub> Diffusion and Flux in Controlled and Natural Environments. Soil and Environmental Biogeochemistry Group, Stanford University. 7 Dec 2006
23. **Jones, S.B.** and Krishna Shenai. Subsurface Measurement Needs for Ecological, Hydrological and Agricultural Applications. *The 50<sup>th</sup> IEEE International Midwest Symposium on Circuits and Systems (MWSCAS)*. Montreal, Canada Aug 5-7, 2007
24. Robinson, D.A. and **S.B. Jones**. 2007. Mapping Soil Properties for Ecohydrological Studies in Small Semi-Arid Watersheds using Electromagnetic Induction. Presented by Jones at the AGU Joint Assembly, Acapulco, Mexico, May 22-25, 2007

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## ACADEMIC AND RESEARCH MENTORING

*Current - Graduate Student/Postdoc/Scholar (1 MS; 1 Ph.D.; 0 Postdoc; 0 Scholar)*

### M.S. Students (1)

**Chihiro Naruke**

Aug 2016 –

IMPROVED SOIL HEAT FLUX DETERMINATION USING TRI-NEEDLE HEAT PULSE PROBES

### Ph.D. Students (1)

**Pakorn Sutitarnnontr**

Aug 2010 – May 2019

MEASUREMENT AND MODELING OF REGULATED AND GREENHOUSE GAS EMISSIONS FROM ANIMAL FEEDING OPERATIONS

### Postdoctoral Fellows (0)

### Visiting Scholars (0)

*Completed - Graduate Student/Postdoc/Scholar (6 MS; 4 Ph.D.; 5 Postdoc; 4 Scholars)*

### Past M.S. Degrees (6)

**Kashifa Rumana** (Major Professor)

Aug 2011 – May 2015

A NOVEL APPROACH FOR QUANTIFYING SOIL EVAPORATION RATE USING HEAT FLUX MEASUREMENTS

**Lauren Ducas** (Major Professor after Ron Ryel)

Oct 2012 – Jul 2014

IDENTIFYING GROWTH AND MAINTENANCE RESOURCE POOL IMPACTS ON GRASS-SAGEBRUSH ECOSYSTEM DYNAMICS

**Pawel Szafruga** (Major Professor)

Aug 2012 – Jul 2014

NOVEL STREAMING POTENTIAL AND THERMAL SENSOR TECHNIQUES FOR MONITORING WATER AND NUTRIENT FLUXES IN THE VADOSE ZONE

**Kelly S. Lewis** (Co-Advising MS project in Electrical Engineering)

Jan 2007 – Dec 2007

DESIGN OF AN AUTOMATIC WIRELESS MULTI-LOGGER NETWORK (ENGINEER WITH ACCLIMA INC.)

**Romulus Okwany** (Major Professor)

Jul 2004 – Dec 2006

LEACHING EFFICIENCY OPTIMIZATION AS A FUNCTION OF WATER APPLICATION RATE IN AGGREGATED POROUS MEDIA

**James Mark Blonquist Jr.** (Major Professor)

Jun 2003 – Dec 2005

CHARACTERIZATION AND EVALUATION OF ELECTROMAGNETIC SENSORS AND CONSTITUENT INFLUENCE ON PERMITTIVITY MEASUREMENTS IN AGGREGATED POROUS MEDIA (PRODUCT DEVELOPMENT MANAGER WITH APOGEE INSTRUMENTS INC., LOGAN, UT)

### **Past Ph.D. Degrees (5)**

**Kshitij “Kay” Parajuli** (Dept. Civ. Env. Engrng.)

Aug 2014 – May 2018

ADVANCING METHODS TO QUANTIFY ACTUAL EVAPOTRANSPIRATION IN MONTANE ECOSYSTEMS

**Ling Lv** (Major Professor)

Jan 2011 – Jul 2014

MODELING EVAPOTRANSPIRATION IN A SEMI-ARID MOUNTAIN ECOSYSTEM INTEGRATING HYDRUS-1D AND WEATHER DATA

**Robert Heinse** (Major Professor)

Jan 2004 – Jan 2009

MEASUREMENT AND MODELING OF REDUCED-GRAVITY FLUID DISTRIBUTION AND TRANSPORT IN UNSATURATED POROUS PLANT-GROWTH MEDIA

**Hiruy Abdu** (Major Professor)

Aug 2004 – Apr 2009

CHARACTERIZING SUBSURFACE TEXTURAL PROPERTIES USING ELECTROMAGNETIC INDUCTION MAPPING AND GEOSTATISTICS

**Vasile E. L. Turcu** (Advisor w/Dani Or pre-2005)

Apr 2005 – Apr 2007

CONTINUOUS MONITORING AND MODELING OF SOIL AND ATMOSPHERIC CO<sub>2</sub> DYNAMICS IN SEMI-ARID ECOSYSTEMS (ROMANIAN METEOROLOGICAL SERVICE, NOW STARTING HIS OWN ENVIRONMENTAL MONITORING BUSINESS, ROMANIA)

### **Past Postdoctoral Fellows (7)**

**Kshitij “Kay” Parajuli** (Ph.D. in Dept. Civ. Env. Engrng., Utah State U)

May 2018 – Feb 2019

ADVANCING METHODS TO QUANTIFY ACTUAL EVAPOTRANSPIRATION IN MONTANE ECOSYSTEMS

**Dr. Morteza Sadeghi** (Ph.D. from Ferdowsi Univ. of Mashhad, Iran)

Jul 2014 – Jan 2019

NOVEL PHYSICALLY-BASED ALGORITHMS AND INSTRUMENTATION FOR DETERMINATION OF NEAR-SURFACE SOIL MOISTURE

**Dr. Rong Zhou** (Ph.D. from Hodaka University, Japan)

June 2015 – May 2018

REMOTE SENSING OF SURFACE MOISTURE CONTENT IN POROUS MEDIA

**Dr. Wenyi Sheng** (Ph.D. from China Ag. Univ., Beijing)

Sep 2014 – May 2018

NOVEL INSTRUMENTATION FOR NEAR SURFACE CHARACTERIZATION OF AGRICULTURAL SOIL PROPERTIES AND PROCESSES

**Enzhu Hu**

Jul 2012 – Sep 2013

MODELING GREENHOUSE GAS EMISSIONS FROM ANIMAL MANURE SOURCES BASED ON DIETARY AND ENVIRONMENTAL VARIABLES

**Masaru Sakai**

Sep 2009 – Apr 2011



MEASUREMENT AND MODELING OF TRANSPORT AND FATE OF SNOWMELT WATER AND SUBSURFACE EVAPORATION PROCESSES.

**Changbing Yang** Jun 2007 – Aug 2008  
MODELING THE IMPACT OF MOUNTAIN VEGETATION ON THE TRANSPORT AND FATE OF SNOWMELT WATER

**David A. Robinson** (Promoted to Res. Asst. Prof. Oct. 2004) Aug 2003 – Oct 2004  
MODELING IMPROVED ELECTROMAGNETIC DETERMINATION OF WATER CONTENT AND ELECTRICAL CONDUCTIVITY IN SALINE AND CLAYEY SOILS (ENVIRONMENT CENTRE WALES, UK)

**Zijun Zhang** Jan 2006 – May 2006  
DEVELOPMENT OF FIELD-SCALE WATER CONTENT MEASUREMENT USING ADVANCED ELECTROMAGNETIC TECHNIQUES (FAIRFAX, VA)

**Past Visiting Scholars** (6: 1 Scientist; 3 Ph.D.; 2 B.S.)

**Dr. Jinghui Xu** Aug 2017 – Sep 2018  
IMPACT OF SOIL PHYSICAL AND CHEMICAL PROPERTIES ON POROUS MEDIUM DIELECTRIC PERMITTIVITY AS MEASURED BY ELECTROMAGNETIC SENSORS AND INSTRUMENTATION

**Azadeh Gholoubi** (Ph.D. Candidate Mashhad University, Iran) March 2017 – May 2018  
SOIL QUALITY CHANGE AFTER 50 YEARS IN FOREST - TEA FARM SYSTEMS AND ASSESSMENT OF SOIL AGGREGATE STABILITY USING SPECTRAL REFLECTANCE

**Fabiana Bacalhau** (B.S. student from Sao Paulo, Brazil) Sep 2012 – Dec 2012  
PHYSICAL CHARACTERIZATION OF DAIRY MANURE

**Rafael Fernandes** (B.S. student from Sao Paulo, Brazil) May 2012 – Jul 2012  
PHYSICAL CHARACTERIZATION OF DAIRY MANURE

**Morteza Sadeghi** (Ph.D. student from Ferdowsi Univ. of Mashhad, Iran) Jul 2011 - Jul 2012  
NOVEL ANALYTICAL SOLUTIONS TO RICHARDS EQUATION USING SCALING

**Congying Wang** (Ph.D. student from China Agricultural University) Sep 2008 – Sep 2009  
DEVELOPMENT OF REFERENCE STANDARDS FOR EM SENSOR CHARACTERIZATION AND CALIBRATION FOR WATER CONTENT DETERMINATION

**Jun FAN** (Scientist - Chinese Academy of Sciences, Yangling) Jul 2008 – Jul 2009  
SENSOR-BASED IRRIGATION MANAGEMENT AND GRADIENT-BASED DETERMINATION OF SOIL CARBON FLUX

***Graduate Student Committee Service (2 M.S. and 3 Ph.D.)***

**M.S. Degrees**

**Ryan Berry**, Watershed Sciences Apr 2015 – May 2016

**Lauren Ducas**, Watershed Sciences Jan 2009 – Oct 2012

**Melissa Atwell**, University of The West Indies, Trinidad Feb 2012 – May 2013

**Curtis B. Adams**, Plants, Soils and Climate Aug 2008 – Aug 2010

**Amy Burke**, Watershed Sciences Mar 2007 – Dec 2008

**Ph.D. Degrees**

**Idowu Atoloye**, Soil Science August 2015 - Present

**Andrea Bolletta**, Plant Science May 2015 - Present

**Miguel Leonardo**, Civil and Environmental Engineering Jan 2015 - Present

**Christopher Parry**, Plants, Soils and Climate Mar 2012 – Aug 2014

<b>Aditya Verma</b> , Soil, Water and Environmental Sciences, U. of Arizona	Jul 2011 – Dec 2012
<b>Esther Babcock</b> , Soil, Water and Environmental Sciences, U. of Arizona	Jan 2011 – May 2012
<b>Chod Stephens</b> , Plants, Soils and Climate	Aug 2011 -
<b>Xystus Amakor</b> , Plants, Soils and Climate	Dec 2009 – May 2013
<b>Hongyan Sun</b> , Horticulture	Nov 2008 – Dec 2011
<b>Vinod Mahat</b> , Civil Engineering	Jun 2007 – Dec 2011
<b>May Myklebust</b> , Watershed Science	May 2007 – Dec 2007
<b>Robert N. Love</b> , Plants, Soils and Biometeorology	Apr 2003 – Deceased

***Employees - Research Associate-, Graduate-, Undergraduate-Research Mentoring***

**Research Associate II/III (1-currently, 4 completed)**

<b>Jonathon Carlisle</b> (20%)	Sep 2007 – Present
<b>Christopher Cox</b> (100%)	Jan 2012 – July 2017
<b>R. William Mace</b> (20%)	Sep 2002 – Aug 2015
<b>Pawel Szafruga</b> (50%)	Jul 2009 – May 2010
<b>Justin Robinson</b> (100%) (Campbell Scientific Inc., Logan, UT)	Jan 2007 – Mar 2007

**Graduate Students (0-currently, 7 completed)**

<b>Ricardo Tejeda</b> , Electrical Engineering	Jun 2012 – Jun 2014
<b>Harsha Balam</b> , Electrical Engineering	Apr 2012 – Jan 2015
<b>Matthew Dawson</b> , M.S. Education, field technician	Aug 2007 – Sep 2008
<b>Guy Serbin</b> , Ph.D. Soil Science, 2005 (co-advised with Dani Or)	Aug 2002 – Dec 2003
<b>Raghuveer Vinukollu</b> , BIE	May 2006 – Jul 2006
<b>Zijun Zhang</b> , Ph.D. – Physics	Summer 2005
<b>James Gregory</b> , M.S. - Ecology	Summer 2007

**Undergraduate Students (1 currently, 34 completed)**

1. Joseph Turcotte, Computer Science	Dec 2018 - present
2. Derek Workman, Electrical and Computer Engineering	Jan 2016 - present
3. Benjamin Lundberg, Business Information Systems	Feb 2016 – May 2017
4. Benjamin Zeller, Electrical and Computer Engineering	Dec 2015 – Dec 2016
5. Benjamin Rider, Environmental Soil and Water Science	Jan 2015 – Jun 2017
6. Dane Brophy, Geology	Jan 2015 – Aug 2017
7. Utkarsh Shukla, Business Information Systems	Feb 2016 – Aug 2016
8. Joshua Perkins, Electrical and Computer Engineering	Dec 2015 – May 2016
9. Brant Cook, Environmental Soil and Water Science	Sep 2014 – May 2016
10. Vishal Patel, Business Information Systems	Jan 2013 – Dec 2014
11. Swadesh Patra, Electrical and Computer Engineering	Feb 2013 – May 2013
12. JC Almonte, Electrical Engineering	Aug 2012 – May 2014
13. Clinton Bell, Electrical Engineering	Apr 2012 – May 2013
14. Jason Macy, Computer Engineering	Feb 2012 – May 2012
15. Sammy Bhushan, Electrical and Computer Engineering	Aug 2011 – Feb 2016
16. Ricardo Tejeda, Electrical Engineering	Apr 2011 – Jun 2014
17. Franyell Silfa, Electrical Engineering	Jul 2007 – Jul 2012
18. Marcos Chalas, Electrical Engineering	Jul 2007 – Dec 2011

19. Brittin Bennett, Electrical Engineering	Jun 2010 – Apr 2011
20. Kade Cox, Electrical Engineering	Jul 2009 – Feb 2011
21. Justin Walker, Mechanical Engineering	Aug 2009 – May 2010
22. Ricardo Estevez, Electrical Engineering	Nov 2006 – Aug 2010
23. Mark Nielsen, Statistics	Oct 2007 – Dec 2008
24. James Suisse, Electrical Engineering	Jun 2006 – May 2008
25. Isaac Ashby, Natural Resources Graduate	Jun 2007 – Dec 2007
26. Aaron Gines, Biology	Apr 2007 – Aug 2007
27. Justin Robinson, Plants, Soils and Climate	May 2006 – May 2007
28. Michael Larson, Electrical Engineering	Jan 2006 – May 2006
29. Shane Hansen, Mathematics	Oct 2005 – May 2006
30. Kelly Lewis, Electrical Engineering (+M.S.)	Jan 2005 – Dec 2006
31. Jeremiah Heiner, Computer Science	Aug 2004 – Dec 2004
32. Louis Koberstein, Electrical Engineering	Aug 2002 – May 2003
33. Jason Bingham, Computer Engineer	Aug 2002 – May 2004
34. Jeff VanShaar, Computer Science	Apr 2001 – May 2004
35. Seth Humphries, Electrical Engineering/Mathematics (+M.S.)	Dec 2000 – Aug 2004
36. Brent Bingham, Biological and Irrigation Engineering	Jun 1999 – Dec 2002

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## HONORS and AWARDS

<b>Graduate Research Mentor of the Year</b>	<b>Apr 2019</b>
COLLEGE OF AGRICULTURE AND APPLIED SCIENCES	UTAH STATE UNIVERSITY
<b>Fellow</b>	<b>Sep 2018</b>
SOIL SCIENCE SOCIETY OF AMERICA	SAN DIEGO, CA
<b>DFG Review Panel</b>	<b>Jun 2018</b>
GERMAN RESEARCH FOUNDATION	GERMANY
<b>BARD Technical Advisory Committee Member</b>	<b>2017-2019</b>
BINATIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT FUND	ISRAEL
<b>Chair-Soil Physics &amp; Hydrology Division</b>	<b>Oct 2016</b>
SOIL SCIENCE SOCIETY OF AMERICA ANNUAL MEETING	PHOENIX, AZ
<b>Faculty Researcher of the Year</b>	<b>Apr 2013</b>
COLLEGE OF AGRICULTURE	UTAH STATE UNIVERSITY
<b>National Science Foundation Review Panel</b>	<b>Apr 2012</b>
HYDROLOGICAL SCIENCES REVIEW PANEL	WASHINGTON, DC
<b>BARD Fund Proposal Review Panel</b>	<b>2012-2014</b>
SOIL AND WATER PROPOSAL REVIEW PANEL	BALTIMORE, MD
<b>Wilford R. and Marjorie C. Gardner Junior Faculty Travel Fellowship</b>	<b>May 1, 2009</b>
AWARDS GRANTED IN PHYSICS AND MUSIC RELATED SUBJECTS	UTAH STATE UNIVERSITY
<b>Undergraduate Mentor of the Year</b>	<b>Apr 1, 2008</b>
COLLEGE OF AGRICULTURE	UTAH STATE UNIVERSITY
<b>USDA-NRI Proposal Review Panel</b>	<b>May 2008</b>
SOIL PROPOSAL REVIEW PANEL	WASHINGTON, DC
<b>Kirkham Conference Invitation</b>	<b>Feb 25 - 26, 2008</b>
INVITED GUEST	UNIVERSITY OF CALIFORNIA-DAVIS, DAVIS, CA
<b>International Space Station (ISS) Experiment</b>	<b>May 12, 2007 – Oct 4, 2007</b>

OPTIMIZATION OF ROOT ZONE SUBSTRATES	SDL, USU AND IMBP, RUSSIA
<b>NASA-JSC Parabolic Flight Weeks</b>	<b>Jan 2003, Jun 2003, Feb 2004, May 2006</b>
MICROGRAVITY POROUS MEDIA EXPERIMENTS, REDUCED GRAVITY OFFICE	HOUSTON, TEXAS
<b>Kirkham Conference Coordinator</b>	<b>Oct 28 - 29, 2004</b>
COORDINATED THE CONFERENCE, DEVELOPED THE PROGRAM AND ARRANGED MEALS AND TRAVEL FOR 20 PRESENTERS AND ROOMS FOR 30 GUESTS.	USU, LOGAN, UTAH
<b>BARD Postdoctoral Fellowship</b>	<b>1997-1999</b>
BINATIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT FUND	THE VOLCANI CENTER, ISRAEL
<b>RMNSGC Fellowship</b>	<b>1992-1997</b>
ROCKY MOUNTAIN NASA SPACE GRANT CONSORTIUM	LOGAN, UTAH
<b>Phi Kappa Phi</b>	<b>1997</b>
NATIONAL HONOR SOCIETY	
<b>Passed EIT (Engineer-In-Training) Exam.</b>	<b>1990</b>

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## PROFESSIONAL AFFILIATIONS

1996 –	American Geophysical Union
1996 –	Soil Science Society of America
2000 –	American Society of Agronomy
2000 –	W-1188 Western Regional Research Project
2002 – 2015	American Society of Agricultural Engineers
2004 – 2006	Western Society of Soil Science
2008 – 2009	Ecological Society of America

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## SERVICE ACTIVITIES

**Symposium Co-Chair** at the 2018 Annual Meeting of the Soil Science Society of America. M. Tuller and S.B. Jones. “Symposium--Advances in Remote Sensing of Land Surface Properties and Processes”. Tuesday, **8 January 2019**: 9:25-11:30 AM; Point Loma A, San Diego, CA.

**2016 iUTAH Management Team** **Jun 2016-Aug 2017**  
NSF – EPSCoR FUNDED GRANT

**SSSA Rapid Response Team** **Jan 2015-Dec 2017**  
SOIL SCIENCE SOCIETY OF AMERICA

**Past Chair–Soil Physics and Hydrology Division of SSSA** **2017**  
SOIL SCIENCE SOCIETY OF AMERICA

**Chair–Soil Physics and Hydrology Division of SSSA** **2016**  
SOIL SCIENCE SOCIETY OF AMERICA

**Chair Elect–Soil Physics and Hydrology Division of SSSA** **2015**  
SOIL SCIENCE SOCIETY OF AMERICA

**Incoming Chair Elect–Soil Physics and Hydrology Division of SSSA** **2014**  
SOIL SCIENCE SOCIETY OF AMERICA

**SSSA Fellows Committee** **2014-2016**  
CHARGED WITH REVIEWING AND RATING SSSA FELLOW APPLICATIONS

**Vadose Zone Journal Associate Editor** **2013-**  
CHARGED WITH SELECTING BOOKS AND REVIEWERS RELEVANT TO VZJ READERSHIP

**Symposium Organizer and Convener** 20<sup>th</sup> World Congress of Soil Science in Jeju, Korea **2014**  
“Hydro-Ecological Observatories and Advances in Soil Measurement Science and Sensors”

**Soils S495 Fellows Committee** 2014-2015  
 CHARGED WITH REVIEWING NOMINATIONS FOR FELLOW IN THE SOIL SCI. SOC. AM.

**Soils Methods Subcommittee of the SSSAJ Book and Multimedia Committee** 2012-  
 CHARGED WITH EXPANDING THE SOIL SCI. SOC. AM. J. "METHODS" OFFERINGS

**Vadose Zone Journal Book Review Editor** 2011-2014  
 CHARGED WITH SELECTING BOOKS AND REVIEWERS RELEVANT TO VZJ READERSHIP

**S-1 Session Co-Chair** at the 2011 Annual Meeting of the Soil Science Society of America. M. Tuller, R. Knighton, S.B. Jones. "Symposium--Emission of Regulated and Greenhouse Gases: Measurement Technology, Monitoring and Policy: I". Tuesday, 18 October 2011: 8:00 AM; HGCC Room 206A, San Antonio, TX.

**Don and Betty Kirkham Soil Physics Award Committee (S483)** Jan. 2010 – Dec. 2011

**Chair – W2188 Soil Physics Technical Committee** 2010-2011  
 WESTERN REGIONAL MULTI-STATE RESEARCH PROJECT USDA

**Secretary - W1188 Soil Physics Technical Committee** 2009-2010  
 WESTERN REGIONAL MULTI-STATE RESEARCH PROJECT USDA

**S-1 Session Chair** at the 2010 Annual Meeting of the Soil Science Society of America. "Soil Change: Characterizing and Modeling across Scales". Monday, 1 November 2010: 8:00 AM; Hyatt Regency Long Beach, Shoreline B room, Long Beach, CA.

**S-1 Session Chair** at the 2008 Annual Meeting of the Soil Science Society of America. "Soil Moisture: Advances in Design and Development of Water Content, Matric Potential, and Flux Measurement Methods for the Critical Zone: I". Tuesday, 7 October 2008: 8:55 AM; George R. Brown Convention Center, 362F; Houston, TX.

**S-1 Session Chair** at the 2005 Annual Meeting of the Soil Science Society of America. "Advances in Methods/Theory" Monday, 7 November 2005: 2:10 PM; Salt Palace Convention Center, Salt Lake City, UT.

**2004 Kirkham Conference Coordinator.** Arranged travel and housing of 20 invited presenters and scheduled the facilities for the conference which honors one of the great soil physicists, Don Kirkham, Held at the Eccles Conference Center, Utah State University, Logan, UT, October 28-29.

#### **Manuscript Reviews (53 total)**

13	Soil Science Society of America
14	Vadose Zone Journal
9	Water Resources Research
2	Soil Science
2	Hydrology Journal
1	Environmental Science and Technology
2	Soil and Tillage Research
1	Journal of Environmental Engineering
1	Geoderma
1	Horticultural Science
2	Society of Automotive Engineers (Space Flight Hardware Division)
1	Canadian Biosystems Engineering
1	Habitation Journal
3	USDA - ARS



## Grant Proposal Reviews (29 Total)

7	National Science Foundation
15	USDA-NRI Panel (2008)
5	USU-Agriculture Experiment Station
2	USU Water Initiative

## USU Committee Assignments

<b>Space Committee Chair</b>	<b>2017-</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY
<b>Associate Dept. Head</b>	<b>2016-</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY
<b>Graduate Studies Committee Chair</b>	<b>2011-2015</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY
<b>Safety Committee</b>	<b>2009-2012</b>
DEPT. PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY
<b>Soils Curriculum Committee</b>	<b>2002-</b>
<b>Extension Irrigation Engineer Search Committee</b>	<b>2011-2012</b>
ASST./ASSOC. PROFESSOR POSITION IN CIVIL & ENVIRONMENTAL ENG.	UTAH STATE UNIVERSITY
<b>Graduate Studies Committee</b>	<b>2002-2011</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY
<b>College of Agriculture Scholarships and Fellowships Committee</b>	<b>2009-2010</b>
	UTAH STATE UNIVERSITY
<b>PSC Climate Scientist Position Search Committee</b>	<b>2010</b>
ASSISTANT PROFESSOR POSITION IN PLANTS, SOILS AND CLIMATE	UTAH STATE UNIVERSITY
<b>WATS Hydrology Position Search Committee</b>	<b>2008-2009</b>
ASSISTANT PROFESSOR POSITION IN WATERSHED SCIENCES	UTAH STATE UNIVERSITY
<b>USU SusCounc Transportation Committee</b>	<b>2008-2011</b>
USU SUSTAINABILITY COUNCIL (SUSCOUNC)	UTAH STATE UNIVERSITY
<b>Vehicle Committee Chair</b>	<b>2006-2011</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY
<b>Spring Runoff Conference Organizing Committee</b>	<b>2006, 2008</b>
USU WATER INITIATIVE	UTAH STATE UNIVERSITY
<b>Department Advisory Committee (DAC)</b>	<b>2006-2008</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY
<b>Seminar Committee</b>	<b>2004-2008</b>
DEPT. PLANTS, SOILS AND BIOMETEOROLOGY	UTAH STATE UNIVERSITY
<b>Water Initiative Task Force</b>	<b>2002-2003</b>
UNIVERSITY WIDE COMMITTEE TO STUDY WATER ISSUES	UTAH STATE UNIVERSITY
<b>Extracurricular Service</b>	
<b>Institute Men's Association (IMA) Advisor</b>	<b>2002-2006</b>
(FORMERLY SIGMA GAMMA CHI FRATERNITY)	LOGAN INSTITUTE OF RELIGION