

# Binayak P. Mohanty

MS: 2117 TAMU, Texas A&M University, College Station, Texas 77843; [bmohanty@tamu.edu](mailto:bmohanty@tamu.edu)

## Professional Preparation

- 1992 Ph.D. Soil and Water Engineering, Iowa State University  
1987 M.S. Soil and Water Engineering, Asian Institute of Technology  
1985 B.Sc. Agricultural Engineering, Orissa University of Agriculture and Technology

## Appointments

- 2014-Present Regents Professor and COALS Chair in Hydrologic Engineering and Sciences, Texas A&M University  
2004-2014 Professor, Departments of Biological and Agricultural Engineering, and Ecosystem Science and Management, Texas A&M University  
2001-2004 Associate Professor, Departments of Biological and Agricultural Engineering, and Ecosystem Science and Management, Texas A&M University  
1996-2001 Associate Researcher, Department of Environmental Sciences, University of California, Riverside; located at USDA-ARS US Salinity Laboratory

## Selected Honors and Awards

- 2017 Fellow, American Association for the Advancement of Science (AAAS)  
2016 Distinguished Alumni Award for Research Excellence, Asian Institute of Technology (AIT),  
2014 Don and Betty Kirkham Soil Physics Award, Soil Science Society of America (SSSA)  
2014 Regents Professor, Texas A&M University System  
2014 Inaugural Holder of College of Agriculture and Life Sciences (COALS) Chair in Hydrologic Engineering and Sciences, Texas A&M University  
2014 Fellow (Senior), Texas A&M Engineering Experiment Station (TEES)  
2013 NASA Group Achievement Award for a Successful Pre-Launch Field Campaign (SMAPVEX12) in Manitoba, Canada, in Support of SMAP Algorithm and Applications  
2012 Fellow, Soil Science Society of America (SSSA) & Agronomy Society of America (ASA)  
2012 Fellow, Texas AgriLife Research  
1992 Reverend P.T. Taiganides Outstanding Graduate Student Award  
1985 University Gold Medal for Outstanding Undergraduate Student

## Representative Synergistic Activities

- Founding Director: Texas Water Observatory: Capacity Building in Brazos Corridor (2015-Present)
- Leader: National Soil/Vadose Zone Hydrology Teams During NASA (Earth Sciences) Field Campaigns including Southern Great Plains SGP (1997), SMEX (2002-2005), CLASIC, and SMAPVEX12 Air-Borne and Space-Borne Soil Moisture Remote Sensing Campaigns.
- Organizing Committee: Gordon Research Conference – Frontier in Science, Flow and Transport in Porous Media (2006-2008), Soils and Critical Zone / Hydrology Sessions in American Geophysical Union Fall Meetings (2004-2015)
- Associate Editor: *Nature Scientific Reports* (2017-Present); *Water Resources Research* (2009-2016); *Vadose Zone Journal* (2008-2016); *Journal of Environmental Quality* (2001-2007)
- Panelist: US National Academy- Soil Moisture Dynamics (2016); NASA- New Satellite Mission (2016); NASA-ACCESS Panel (2013); NASA-SMAP (2011); DOE Yucca Mountain Infiltration Model Independent Review Panel, 2007-2008; NSF Hydrologic Sciences Panel, 2007, 09, 14 & SiTs 2019
- PI, Co-PI, and Co-I of 35+ Competitive National and International Grants totaling \$54 million
- CUAHSI Texas A&M University Representative, 2007-Present
- Member, Organizing Committee, 2014 Texas Water Summit, The Academy of Medicine, Engineering, and Science of Texas (TAMEST) (2013-2014)
- Chairman, Symposium/Workshop on Arid Zone Hydrology under Climate Change Scenarios for the 21st Century, Texas A&M University (2014)
- Chairman, Planning/Organizing Committee for International Conference on “Remote Sensing for Soils”, Soil Science Society of America (SSSA) (2014-2016)

### **Selected Journal Papers (Career Total – 145+)**

- Mohanty, B.P., R.S. Bowman, J.M.H. Hendrickx, and M.Th. van Genuchten. New Piecewise-Continuous Hydraulic Functions for Modeling Preferential Flow in An Intermittent-Flood-Irrigated Field. *Water Resources Research*. 33(9), 2049-2063, 1997.
- Mohanty, B.P., R.S. Bowman, J.M.H. Hendrickx, J. Simunek, and M.Th. van Genuchten. Preferential Transport of Nitrate to a Tile Drain in an Intermittent-Flood-Irrigated Field: Model Development and Experimental Evaluation. *Water Resources Research*. 34(5), 1061-1076, 1998.
- Mohanty, B. P., and T.H. Skaggs. Spatio-Temporal Evolution and Time-Stable Characteristics of Soil Moisture Within Remote Sensing Footprints with Varying Soil, Slope, and Vegetation. *Advances in Water Resources*. 24(9-10), 1051-1067, 2001.
- Zhu, J., and B.P. Mohanty. Upscaling of Soil Hydraulic Properties Under Steady State Evaporation and Infiltration. *Water Resources Research*. 38 (9), 10.1029/2001WR000704, 2002.
- Mohanty, B.P. and J. Zhu. Effective Averaging Schemes for Hydraulic Parameters in Horizontally and Vertically Heterogeneous Soils. *J. of Hydrometeorology*. 8(4), 715-729, 2007.
- Ines, A.V.M. and B.P. Mohanty. Near-Surface Soil Moisture Assimilation to Quantify Effective Soil Hydraulic Properties Using Genetic Algorithm. 2. with Air-Borne Remote Sensing During SGP97 and SMEX02. *Water Resources Research*. 44, 10.1029/2007WR007022, 2008.
- Das, N.N., B.P. Mohanty, and E.G. Njoku. A Markov Chain Monte Carlo Algorithm for Upscaled Soil-Vegetation-Atmosphere-Transfer Modeling to Evaluate Satellite-Based Soil Moisture Measurements. *Water Resources Research*. Doi:10.1029/2007WR006472, 2008.
- Jana, R., and B.P. Mohanty, A Comparative Study of Multiple Approaches to Soil Hydraulic Parameter Scaling Applied at the Hillslope Scale. *Water Resources Research*. 48, W02520, doi:10.1029/2010WR010185, 2012.
- Shin, Y., B.P. Mohanty, and A.V.M. Ines, Soil Hydraulic Properties in One-Dimensional Layered Soil Profile Using Layer-Specific Soil Moisture Assimilation Scheme. *Water Resources Research*. 48, W06529, doi:10.1029/2010WR009581, 2012.
- Ines, A.V.M., B.P. Mohanty, and Y. Shin, An Unmixing Algorithm for Remotely Sensed Soil Moisture, *Water Resources Research*. 49, 408–425, doi:10.1029/2012WR012379, 2013.
- Gaur, N., and B.P. Mohanty, Evolution of Physical Controls for Soil Moisture in Humid and Sub-Humid Watersheds, *Water Resources Research*, 49, 1-15, doi:10.1002/wrcr.20069, 2013.
- Mohanty, B.P., Soil Hydraulic Property Estimation Using Remote Sensing: A Review, *Vadose Zone Journal*., doi:10.2136/vzj2013.07.0128, 2013.
- Kim, J., and B.P. Mohanty, Influence of Lateral Subsurface Flow and Connectivity on Soil Water Storage in Land Surface Modeling, *Journal of Geophysical Research - Atmosphere*. 121, doi:10.1002/2015JD024067, 2016.
- Mohanty, B.P., M. Cosh, V. Lakshmi, and C. Montzka, Soil Moisture Remote Sensing – State-of-the-Science, *Vadose Zone Journal*. doi:10.2136/vzj2016.10.0105, 2017.
- Mao, H., N. Duffield, D. Kathuria, and B.P. Mohanty, Gap Filling of High-Resolution Soil Moisture for SMAP/Sentinel-1: A Two-layer Machine Learning-based Framework, *Water Resources Research*. 55, 6986–7009. Doi:10.1029/2019WR024902, 2019.
- Kathuria, D., B.P. Mohanty, and M. Katzfuss, Multiscale Data Fusion for Soil Moisture Estimation: A Spatial Hierarchical Approach. *Water Resources Research*. 55, doi:10.1029/2018WR024581, 2019.
- Hong, M., B.P. Mohanty, and Z. Sheng, An Explicit Scheme to Represent the Bidirectional Hydrologic Exchanges Between the Vadose Zone, Phreatic Aquifer, and River. *Water Resources Research*. 56, 10.1029/2020WR027571, 2020.
- Sehgal, V., N. Gaur, and B.P. Mohanty, Global Surface Soil Moisture Drydown Patterns. *Water Resources Research*, 56, doi.org/10.1029/2020WR027588, 2020.
- Jena, S., B.P. Mohanty, R.K. Panda, M. Ramadas, Towards Developing a Generalizable Pedo-Transfer Function for Saturated Hydraulic Conductivity using Transfer Learning and Predictor Selector Algorithm, *Water Resources Research*, 2021.