

# Varaprasad Bandaru

Associate Research Professor

Department of Geographical Sciences, University of Maryland  
4321 Hartwick Road, Suite 400, College Park, MD 20740 USA

Email: [vbandaru@umd.edu](mailto:vbandaru@umd.edu); Telephone: 301-405-3074

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## PROFESSIONAL EXPERIENCE

*University of Maryland, Dep. Geographical Sciences, College Park, Maryland.*

**Associate Research Professor**, 2015 – present.

*University of California-Davis, Energy Institute, Davis, California.*

**Project Scientist**, 2013 – 2015.

*Pacific Northwest Nat. Lab., Joint Global Change Research Institute, College Park, Maryland.*

**Research Scientist**, 2010 – 2013.

*Oak Ridge National Laboratory, Environmental Sciences Division, Oak Ridge, Tennessee.*

**Postdoctoral Research Associate**, 2008 – 2010.

## EDUCATION

*Ph.D., Plant and soil sciences, University of Delaware, 2009.*

Concentrations: Hyperspectral Remote Sensing of Environment

Research conducted at USDA-ARS, hydrology and remote sensing lab, Beltsville, MD

*M.S., Plant, soil and environmental sciences, West Texas A&M University, 2005.*

Research conducted at USDA-ARS, conservation and production research lab, Bushland, TX

*B.S., Agriculture, Andhra Pradesh Agricultural University, Hyderabad, India, 2000.*

## PRIMARY RESEARCH INTERESTS

- Large scale geospatial modeling of agricultural systems
- Modeling crop yields and cropland carbon fluxes
- Modeling impacts of biofuel production
- Evaluating adaptation strategies to land use and climate change

## PROFESSIONAL AFFILIATIONS & ACTIVITIES

- **Associate editor** (Subject: Precision Agriculture), *Agronomy Journal*, January 2013-present (Recognized as an **outstanding associate editor of the year 2014**).
- **Reviewer** for *Nature Communications*, *Science of Total Environment*, *Global Change Biology-Bioenergy*, *Agronomy Journal*, *Journal of Environmental Quality*, *International Journal of Remote Sensing*, *Journal of Applied Remote Sensing*, *Remote Sensing*, *Journal of Computational Science*, *Hydrology and Earth System Sciences*, *Soil Science Society of America Journal*, *Land Degradation and Development Journal*, *Environmental Monitoring and Assessment*, and *Geocarto International*.
- **Member** of NASA CMS Science Team (2016-present), American Society of Agronomy (2005-present), Soil Science Society of America (2005-present), American Geophysical Union (2008-present), American Association of Geographers (2011-present).
- **Participant, CO-PI and co-investigator** in projects associated with North American Carbon Program.

## RESEARCH PROJECTS

- Cropland Carbon Monitoring System (CCMS): A Satellite-based System to Estimate Carbon Fluxes on US Croplands (NASA-CMS), 2016-19.
- System for Advanced Biofuels Production from the Woody Biomass in the Pacific Northwest (USDANIFA), 2015-17.
- Estimating Global Inventory-based Net Carbon Exchange from Agricultural Lands for Use in the NASA Flux Pilot Study (NASA-CMS), 2012-2013.
- Developing Spatially-explicit Future Realizations of Land Use and Land Cover Change (LULCC) in iRESM (PNNL Laboratory Directed Research & Development), 2012-2014.
- Great Lakes Bioenergy Research Center (GLBRC) –Sustainability assessment of biofuel cropping systems (DOE), 2010-2013.

## PEER-REVIEWED PUBLICATIONS

- Bandaru, V.**, Y. Pei, Q. Hart, and B.M. Jenkins. 2017. Impact of biases in gridded weather datasets on biomass estimates of short rotation woody cropping systems. *Agricultural and Forest Meteorology*. 233: 71-79.
- Bandaru, V.**, C.S. Daughtry, E.E. Codling, D.J. Hansen, S. White-Hansen, and C.E. Green. 2016. Evaluating Leaf and Canopy Reflectance of Stressed Rice Plants to Monitor Arsenic Contamination. *International Journal of Environmental Research and Public Health*. 13(6):606.
- A. Tiwary, I.D. Williams, O. Heidrich, A. Namdeo, **V. Bandaru**, C. Calfapietra. 2016. Development of multi-functional streetscape green infrastructure using a performance index approach, *Environmental Pollution*. 208: 209-220.
- Bandaru, V.**, N. C. Parker, Q. Hart, M. Jenner, B-L Yeo, J. Crawford, Y. Li, P. Tittmann, L. Rogers, S. Kaffka and B.M. Jenkins. 2015. Economic sustainability modeling provides decision support for assessing hybrid poplar based biofuel development in California. *California Agriculture*. 69: 171-176.
- Hart, Q., P.W. Tittmann, **V. Bandaru**, B.M. Jenkins. 2015. Modeling Poplar Growth as a Short Rotation Woody Crop for Biofuels in the Pacific Northwest. *Biomass and Bioenergy*. 79: 12-27.
- Prilepova, O., Q. Hart, J. Merz, N. C. Parker, **V. Bandaru**, B.M. Jenkins. 2014. Design of a GIS-based Web Application for Simulating Biofuel Feedstock Yields. *ISPRS International Journal of Geo-Information* 3: 929-941.
- Thomson A.M., G.P Kyle, X. Zhang, **V. Bandaru**, T.O West, M.A Wise, R.C Izaurralde, and K.V Calvin. 2014. The contribution of future agricultural trends in the US Midwest to global climate change mitigation. *Global Environmental Change* 24, 143-154.
- Bandaru, V.**, R.C. Izaurralde, D. Manowitz, R. Link, X. Zhang, W.M. Post. 2013. Soil carbon and net energy associated with biofuel production on marginal lands; a regional modeling perspective. *Journal of Environmental Quality* 42:1802-1814.
- Bandaru, V.**, T.O. West, D. Ricciuto and R.C. Izaurralde. 2013. Estimating crop net primary production using inventory data and MODIS derived parameters. *ISPRS Journal of Photogrammetry and Remote Sensing*.
- Kang S., W.M. Post, D. Wang, J. Nichols, **V. Bandaru**, and T. West. 2013. Hierarchical Marginal Land Assessment for Land Use Planning. *Land Use Policy* 3: 106-113
- Kang S., W.M. Post, J. Nichols, D. Wang, T. West, **V. Bandaru**, and R.C. Izaurralde. 2013. Marginal Lands: Concept, Assessment and Management. *Journal of Agricultural Science* 5: 129-139.
- Miles, N.L., S.J. Richardson, K.J. Davis, A.E. Andrews, T. Lauvaux, T.O. West, **V. Bandaru**, and E.R. Crosson. 2012. Large amplitude spatial and temporal gradients in atmospheric boundary layer CO<sub>2</sub> mole fractions detected with a tower-based network in the U.S. Upper Midwest. *Journal of Geophysical Research – Biogeosciences* 117: G01019 doi:10.1029/2011JG001781.
- West, T.O., **V. Bandaru**, C.C. Brandt, S.M. Ogle and A.E. Schuh. 2011. Regional uptake and release of crop carbon in the United States. *Biogeosciences* 8: 2037-2046.

- Nichols, J., S. Kang, W.M. Post, D. Wang, **V. Bandaru**, D. Manowitz, X. Zhang, and R.C. Izaurrealde. 2011. HPC-EPIC for high resolution simulations of environmental and sustainability assessment. *Computers and Electronics in Agriculture* 79: 112-115.
- Scott M.S., B.A. Babcock, L.K. James, and **V. Bandaru**. 2011. Higher U.S. crop prices trigger little area expansion so marginal land for biofuel crops is limited. *Energy Policy* 39(9): 5254-5258.
- Zhang, X., R.C. Izaurrealde, D. Manowitz, T.O. West, W.M. Post, A.M. Thomson, **V. Bandaru**, J. Nichols, J.R. Williams. 2010. An integrative modeling framework to evaluate the productivity and sustainability of biofuel crop production systems. *Global Change Biology-Bioenergy* 2 (5): 258-277.
- Bandaru, V.**, D.J. Hansen, E. Codling, C. Daughtry, S. White and C. Green. 2010. Quantifying arsenic-induced morphological changes in spinach leaves: implications for remote sensing. *International Journal for Remote sensing* 31(15): 4163-4177.
- West, T.O., C.C. Brandt, L.M. Baskaran, C.M. Hellwinckel, R. Mueller, C.J. Bernacchi, **V. Bandaru**, B. Yang, B.S. Wilson, G. Marland, R.G. Nelson, D.G. De La Torre Ugarte, and W.M. Post. 2010. Cropland carbon flux in the United States: Increasing geospatial resolution of inventory-based carbon accounting. *Ecological Applications* 20 (4): 1074-1086.
- Bandaru, V.**, B.A. Stewart, R.L. Baumhardt, S. Ambati, C.A. Robinson, and A. Schlegel. 2006. Growing dryland grain sorghum in clumps to reduce vegetative growth and increase yields. *Agronomy Journal* 98:1109-1120.

#### **BOOK CHAPTERS & ARCHIVED DATA SETS**

- Bandaru, V.**, R.C. Izaurrealde and K. Zhao 2015. Bioenergy potential of Switchgrass and Miscanthus on US marginal lands, In Bhardwaj. K. A, Chen. J, Zenone. J (eds) *Sustainable Biofuels: An Ecological Assessment of the Future Energy*: Higher Education Press (HEP) in China and De Gruyter in Germany. p. 299-318. (published April 2015).
- Miles, N.L., S.J. Richardson, K.J. Davis, A.E. Andrews, T.J. Griffis, **V. Bandaru**, and K.P. Hosman. 2013. NACP MCI: Tower Atmospheric CO<sub>2</sub> Concentrations, Upper Midwest Region, USA, 2007-2009. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAAC/1202>
- Hively, W.D., G.W. McCarty, M.W. Lang, **V. Bandaru**, A. Kim, A.M. Sadeghi. 2008. Developing crop rotation maps from satellite imagery for use in modeling water quality in the Choptank River Watershed. In: *Proceedings of the National Sedimentation Laboratory – 50 Years of Soil and Water Research in a Changing Agricultural Environment*, Oxford, Mississippi.