Nishan Bhattarai, Ph.D.

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Ann Arbor, MI 48103; Email: nbhattar@umich.edu/Website

ACADEMIC BACKGROUND

University of Michigan, **Ann Arbor, MI**
School for Environment and Sustainability
Postdoctoral Research Fellow, Sep 2016 -/Advisor: Dr. Meha Jain

Tufts University, Medford, MA
Center for International Environment and Resource Policy at The Fletcher School of Law & Diplomacy
Postdoctoral Research Fellow, 2015-2016/Advisor: Dr. Avery Cohn

SUNY College of Environmental Science & Forestry (SUNY-ESF), Syracuse, NY
Department of Environmental Resources Engineering
Ph.D. Environmental Resources Engineering, 2015/Advisor: Dr. Lindi J. Quackenbush

Auburn University, Auburn, AL
Department of Biosystems Engineering and School of Forestry and Wildlife Sciences
M.S. Forestry, 2010/Advisors: Dr. Mark Dougherty and Dr. Latif Kalin

Tribhuvan University, Nepal
B.S. Forestry, 2006

PAPERS IN PEER-REVIEWED JOURNALS

Published

1. Cohn, A., **Bhattarai, N.**, Campolo, J., Crompton, O., Dralle, D., Duncan, J., & Thompson, S., 2019. Forest loss in Brazil increases maximum temperatures within 50km. *Environmental Research Letters* (In Press).
2. **Bhattarai, N.,** Mallick, K., Stuart, J.**, Vishwakarma, B.D., Niraula, R., Sen, S., & Jain, M. 2019. An automated multi-model evapotranspiration mapping framework using remotely sensed and reanalysis data. *Remote Sensing of Environment*, 229: 69-92. [Link]
3. **Bhattarai, N.** & Liu, T. 2019. LandMOD ET Mapper: a new Matlab-based graphical user interface (GUI) for automated implementation of SEBAL and METRIC models in thermal imagery. *Environmental Modelling and Software*, 118: 76-82. [Link]
4. Mallick, K., Wandera, L., **Bhattarai, N.**, Hostache, R., Chormanski J., & Kleniewska, M. 2018. A critical evaluation on the role of aerodynamic and canopy-surface conductance parameterization in SEB and SVAT models for simulating evapotranspiration: a case study in the Upper Biebrza National Park wetland. *Water,* 10 (12): 1753. [Link]
5. **Bhattarai, N.**, Mallick, K., Brunsell, N. A., Sun, G., & Jain, M. 2018. Regional evapotranspiration from an image-based implementation of the Surface Temperature Initiated Closure (STIC1.2) model and its validation across an aridity gradient in the conterminous United States, *Hydrology and Earth System Sciences*, 22: 2311-2341. [Link]
6. Niraula, R., Meixner, T., Dominguez, F., **Bhattarai, N.**, Rodell, M., Ajami, H., Gochis, D., & Castro, C. 2017. How might recharge change under projected climate change in the western US? *Geophysical Research Letters*, 44: 10407-10418.[Link]
7. **Bhattarai, N.**, Wagle, P., Gowda, P., & Kakani, V. 2017. Utility of remote sensing-based surface energy balance models to track water stress in rain-fed switchgrass under dry and wet conditions. *ISPRS Journal of Photogrammetry and Remote Sensing*, 133:128-141. [Link]
8. Richards, P., Cohn, A., Arima, E., VanWey, L., & **Bhattarai, N.** 2017. Enforcement evasion highlights need for independent satellite monitoring for forest governance. *Conservation Letters*, 10:497-498. [Link]
9. **Bhattarai, N.**, Quackenbush, L.J., Im, Jungho, & Shaw, S.B., 2017. A new optimized algorithm for automating endmember pixel selection in the SEBAL and METRIC models. *Remote Sensing of Environment*,196:178-192. [Link]

10. Wagle, P., **Bhattarai, N.***, Gowda, P., & Kakani, V. 2017. Performance of five surface energy balance models for estimating daily evapotranspiration in high biomass sorghum. *ISPRS Journal of Photogrammetry and Remote Sensing,* 128:192-203. [Link]
11. Richards, P. Arima, E., VanWey, L, Cohn, A., & **Bhattarai, N.** 2017. Are Brazil's Deforesters Avoiding Detection? *Conservation Letters*, 10:470-476. [Link]
12. **Bhattarai, N.**, Shaw, S. B., Quackenbush, L. J., Im, J., & Niraula, R. 2016. Evaluating five remote sensing-based single-source surface energy balance models for estimating daily evapotranspiration rates in a humid subtropical climate. *International Journal of Applied Earth Observation and Geoinformation* 49:75-86 [Link]
13. **Bhattarai, N.**, Quackenbush, L.J., Dougherty, M., & Marzen, L. 2015. A simple Landsat–MODIS fusion approach for monitoring seasonal evapotranspiration at 30 m spatial resolution. *International Journal of Remote Sensing* 36:115-143. [Link]
14. Shaw, Stephen B., Marrs, J.**, **Bhattarai, N.**, & Quackenbush, L.J. 2014. Longitudinal Study of the Impacts of Land Cover Change on Hydrologic Response in Four Mesoscale Watersheds in New York State, USA. *Journal of Hydrology* 519:12-22. [Link]
15. **Bhattarai, N.,** Dougherty, M., Marzen, L., & Kailn, L. 2012.Validation of evaporation estimates from a modified surface energy balance algorithm for land model in the south-eastern US. *Remote sensing letters* 3:511-519. [Link]

In Review/Revisions

16. Jain, M., Fishman, R., Mondal, P., Galford, G.L., **Bhattarai, N.**, Naeem, S., Lall, U., & DeFries, R.S. 201X. Groundwater depletion will reduce cropping intensity in India (Under Review).
17. Kafley, H., Lamichane, B.R., Maharjan, R., Thapaliya, B., **Bhattarai, N.**, Khadka, M., & Gompper, M.E. 201X. Estimating Prey Abundance and Distribution from camera Trap data using bionomical mixture models (In Revisions).
18. Kafley, H., Lamichane, B.R., Maharjan, R., Khadka, M., **Bhattarai, N**., & Gompper, M.E., 201X. Tiger and leopard co-occurrence: intraguild interactions in response to human and livestock disturbance (In Revisions).
19. Niraula, R., Saleh, A., **Bhattarai, N.**, Bajgain, R., Kannan, N., Osie, E., Gowda, P., Neel, J., Xiao, X., & Basara, J. 201X. Understanding the effects of pasture type and stocking rate on the hydrology of Southern Great Plains (Under Review).

***** *indicates shared first authorships; ***undergraduate students mentored*

NON-REFERRED PUBLICATIONS

1. **Bhattarai, N.** and Jain, M. 2016. Understanding the climate-included variations in the seasonal water demands of irrigated crops in Northern India. AGU Fall Meetings Abstracts, December 11-16, 2016, San Francisco, CA.
2. **Bhattarai, N.** 2015. Single-source surface energy balance algorithms to estimate evapotranspiration from satellite-based remotely sensed data, PhD Dissertation, SUNY-ESF.
3. **Bhattarai, N.,** Quackenbush L.J., Jungho, Im, and Shaw, S. B Automation of Endmember Pixel Selection in SEBAL/METRIC Model. AGU Fall Meetings Abstracts, December 14-18, 2015, San Francisco, CA.
4. **Bhattarai, N.,** Quackenbush L.J., & Shaw, S. B. 2014. Comparison of four single-source surface energy balance-based models for estimating remotely sensed daily ET. Abstracts from the ASABE 2014 International Symposium on ET. April 7-11, 2014, Raleigh, NC.
5. **Bhattarai, N.** & Quackenbush, L.J. 2013. A data fusion approach for monitoring remotely sensed seasonal ET. AGU Fall Meetings Abstracts, December 9-13, 2013, San Francisco, CA.
6. **Bhattarai, N.,** Quackenbush, L.J., Calandra, L., Im, J., & Teale, S. 2012. An automated object-based approach to detect Sirex-infestation in pines. Proceedings of American Society for Photogrammetry and Remote Sensing (ASPRS) 2012 Annual conference, March 19-23, Sacramento, CA.

7. **Bhattarai, N.,** Quackenbush, L.J., Calandra, L., Im, J., & Teale, S. 2011. Spectral analysis of Scotch pine infested by Sirex Noctillo. Proceedings of ASPRS 2011 Annual conference, May 1-5, 2011, Milwaukee, WI.
8. **Bhattarai, N.** 2010. Use of Remotely Sensed Data to Quantify Plant Water Use from Irrigated Lands in Wolf Bay Watershed Area, MS Thesis, Auburn University.

PROFESSIONAL PREPARATIONS

Research experience

Postdoctoral Research Fellow, University of Michigan Ann Arbor	Sep 2016-
Research Affiliate, Tufts University, Medford, MA	Sep 2016- Aug 2017
Postdoctoral Research Fellow, Tufts University, Medford, MA	Aug 2015- Sep 2016
Research Project Assistant, Research Foundation for the SUNY, Syracuse, NY	Sep – Dec 2014
Research Aide, Research Foundation for the SUNY, Syracuse, NY	May – Aug 2012
Research Project Assistant, Research Foundation for the SUNY, Syracuse, NY	Aug 2010 – Aug 2011
Research Assistant, Biosystems Engineering, Auburn University, AL	Aug 2008 – Aug 2010

Teaching experience

Teaching Assistant, SUNY-ESF (Aug 2011-May 2014): Courses: GIS for engineers (fall 2011, 2012, and 2013 graduate courses; conducted all GIS labs); Statics and Dynamics (Spring 2012 undergraduate course); Mechanics of Materials (spring 2012, undergraduate course); Introduction to Engineering Design (springs of 2012, 2013, and 2014, undergraduate course)

Teaching Assistant, Auburn University (Aug-Sep 2009): Course: Introduction to renewable resources

Mentorship experience

STEM Mentor (Jan 2015 – May 2015), Research Foundation for the SUNY: Taught science classes three classes/week at two elementary schools during spring 2015.

UROP (Undergraduate opportunity research program) Mentor (June 2017-), University of Michigan: Mentored two undergraduates on research projects (climate change, programming in R, matlab, Google Earth Engine, ArcGIS, and remote sensing).

Undergraduate Mentor (summers of 2012 and 2015), SUNY-ESF: Mentored three Undergraduates at SUNY-ESF (ArcGIS, Python, SapFlux Instrumentation, and Weather station data collection)

Other field/research experience

Research/Field Tech, University of Illinois, Urbana-Champaign, IL	Jun – Aug 2014
Conservation Science Intern, World Wildlife Fund for Nature, Washington, DC	Jun – Aug 2013
International Corps Member, EarthCorps, Seattle, WA	Jun – Dec 2007

SELECTED TALKS

- Understanding the impacts of groundwater depletion and climate shocks on irrigation decisions in India. AGU Fall Meetings Abstracts, December 10-14, 2018, Washington, DC.
- An automated multi-model based evapotranspiration estimation framework for understanding crop-climate interactions in India, AGU Fall Meetings, December 11, 2017, New Orleans, LA.
- Understanding the climate-included variations in the seasonal water demands of irrigated crops in Northern India. AGU Fall Meetings, December 11-16, 2016, San Francisco, CA.
- Introduction of automated calibration approaches to the surface energy balance-based ET algorithms, ASPRS annual Conference, March 23-27, 2014, Louisville, KY.
- Comparison of four single-source surface energy balance-based models for estimating remotely sensed daily ET. ASABE 2014 International Symposium on ET. April 7-11, 2014, Raleigh, NC.

- Application of remote sensing and surface energy balance algorithms in estimating ET in the southeastern US. 24th ASPRS 2013 annual conference, March 24-28, 2013, Baltimore, MD.
- Using remote sensing and geospatial techniques in hydrological applications. NYGeoCon. NYGIS Association, November 12-13, 2013, Saratoga Springs, NY.
- Calibration of the InVEST water yield model- An automated approach, World Wildlife Fund-US, August 9, 2013 Washington, DC.
- A coupled multi-sensor fusion & surface energy balance algorithm approach to derive spatially-distributed seasonal ET.22nd GIS/SIG Annual Spatial/Digital Mapping Conference, April 16, 2013, Pittsford, NY.
- An automated object-based approach to detect Sirex-infestation in pines. 23rdASPRS 2012 annual conference, March 19-23, 2012, Sacramento, CA.

AWARDS, HONORS, AND GRANTS

- Pending Proposals (~2.5 million, NSF INFEWS).
- Outstanding Reviewer: *Agricultural and Forest Meteorology* (2018) and *ISPRS Journal of Photogrammetry and Remote Sensing* (2018)*; Remote Sensing of Environment* (2017) and *Science of the Total Environment* (2017)
- ERE Departmental Award for Academic Excellence (2014), SUNY-ESF, $1,000
- AGU Student travel award (2013), American Geophysical Union (AGU), $500
- CNY Graduate Student of the year (2013), ASPRS, $500
- Ta Liang Memorial Award (2013), ASPRS, $2,000
- ESF travel grant (2012-2013), ESF, $500, $250
- RvD Idea Awards (Raymond Von Dran Fund) (2012), Syracuse University, $2,000
- Research in Need travel grant (2012), GSA, SUNY-ESF, $250
- BSc Entrance Topper (Science stream), Merit Scholarship, and ConForM/Danida fellowship for undergraduate research (~$250), 2006, Tribhuvan University

PROFESSIONAL SERVICES

Editorial: Editorial Board Member, GIScience & Remote Sensing (Publisher: Taylor & Francis)
Peer Reviewer (> 60 manuscripts total): *Remote Sensing of Environment, Environmental Research Letters, JGR-Atmospheres, Agricultural & Forest Meteorology, IEEE Transactions on Geosciences and Remote Sensing, Nature Scientific Reports, International Journal of Remote Sensing, ISPRS Journal of Photogrammetry & Remote Sensing, Hydrological Processes, Remote Sensing , IEEE-JSTARS, Stochastic Environmental Research & Risk Assessment, , GIScience & Remote Sensing, PLoS ONE , Hydrology, Water, Transaction of ASABE, Science of the Total Environment, Applied Water Science, Sustainability, Sensors, International Journal of Applied Earth Observation and Geo-information, Remote Sensing Letters.*

Proposal/Project Reviewer: External project Advisor for International Initiate for Impact Evaluation (3ie)

Professional Memberships: American Geophysical Union (AGU, 2012-); American Society for Photogrammetry and Remote Sensing (ASPRS, 2010-); European Geophysical Union (EGU, 2018); Nepalese Forester Association (NFA, 2007-); Association of Nepalese Agricultural Professionals of America (NAPA, 2016-); American Society of Agricultural and Biological Engineers (ASABE, 2014)

SKILLS

Programming/Computational skills**:** Fluent in MATLAB and R; Advanced skills in High Performance Computer (HPC) cluster systems and SSH Client; Good knowledge of Python, Google Earth Engine API (JavaScript), UNIX shells.; Basic knowledge of C/C++ and Visual Basic
GIS and Remote Sensing tools**:** ArcGIS, QGIS, ENVI, and ERDAS IMAGINE
Other Software Packages: AutoCAD, HEC-HMS, SAS, SPSS, SigmaPlot, SQL Server, Photoshop.