

## Nishan Bhattarai, Ph.D.

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### 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. **Bhattarai, N.**, Mallick, K., Brunzell, 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]
2. 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]
3. **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]
4. 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]
5. **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]
6. 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]
7. Richards, P. Arima, E., VanWey, L, Cohn, A., & **Bhattarai, N.** 2017. Are Brazil's Deforesters Avoiding Detection? *Conservation Letters*, 10:470-476. [Link]
8. **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]

9. **Bhattacharai, 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]
  10. Shaw, Stephen B., Marrs, J., **Bhattacharai, 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]
  11. **Bhattacharai, 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
12. Jain, M., Fishman, R., Mondal, P., Galford, G.L., **Bhattacharai, N.**, Naeem, S., Lall, U., & DeFries, R.S. 201X. Groundwater depletion will reduce cropping intensity in India (Under Review).
  13. Wandera, L., Mallick, K., **Bhattacharai, N.**, Hostache, R., Chormanski J., Kleniewska, M., & Verhoef, W. 201X. 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 (Under Review).
  14. **Bhattacharai, N.**, Mallick, K., Stuart, J., Niraula, R., Sen, S., & Jain, M., 201X. An automated multi-model evapotranspiration mapping framework using remote sensing and reanalysis data (In Revisions).
  15. Kafley, H., Lamichane, B.R., Maharjan, R., Thapaliya, B., **Bhattacharai, N.**, Khadka, M., Gompper, M.E. 201X. Estimating Prey Abundance and Distribution from camera Trap data using bionomical mixture models (Under Review).
  16. Kafley, H., Lamichane, B.R., Maharjan, R., Khadka, M., **Bhattacharai, N.**, Gompper, M.E., 201X. Tiger and leopard co-occurrence: intraguild interactions in response to human and livestock disturbance (Under Review).
  17. Cohn, A., **Bhattacharai, N.**, Duncan, J., & Jeffries, G., 201X. Dispersive heat is a large and unrecognized fraction of warming from tropical forest loss (Under Review).

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\* indicates shared first authorships

#### **NON-REFERRED PUBLICATIONS**

1. **Bhattacharai, 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. **Bhattacharai, N.** 2015. Single-source surface energy balance algorithms to estimate evapotranspiration from satellite-based remotely sensed data, PhD Dissertation, SUNY-ESF.
3. **Bhattacharai, 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. **Bhattacharai, 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. **Bhattacharai, 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*, Auburn University (Aug-Sep 2009): Course: Introduction to renewable resources

*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)

### ***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**

- 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. 24<sup>th</sup> 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. 23rd ASPRS 2012 annual conference, March 19-23, 2012, Sacramento, CA.

### **AWARDS, HONORS, AND GRANTS**

- 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
- 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 (> 50 manuscripts total):** *Remote Sensing of Environment*, *Environmental Research Letters*, *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*.

**Proposal/Project Reviewer:** External project Advisor for International Initiative 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.