

Nishan Bhattarai, Ph.D.

Department of Geography & Environmental Sustainability,
University of Oklahoma, Norman, OK 73019
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ACADEMIC APPOINTMENTS

- 2022- Assistant Professor, Department of Geography & Environmental Sustainability, University of Oklahoma, Norman, OK
- 2020-2022 Postdoctoral Research Associate (Research Physical Scientist), Hydrology and Remote Sensing Lab, USDA-ARS, Beltsville, MD
- 2016-2020 Postdoctoral Research Fellow, School for Environment & Sustainability, University of Michigan, Ann Arbor, MI
- 2015-2016 Postdoctoral Researcher, Fletcher School of Law & Diplomacy, Tufts University, MA
- 2011-2014 Teaching Assistant, Dept. of Environmental Resources Engineering, State University of New York, College of Environmental Science & Forestry (SUNY-ESF), Syracuse, NY
- 2010-2011 Research Project Assistant, Dept. of Environmental Resources Engineering, SUNY-ESF, Syracuse, NY
- 2008-2010 Research Assistant, Department of Biosystems Engineering, Auburn University, AL

EDUCATION

- Ph.D. Environmental Resources Engineering, 2015** SUNY College of Environmental Science & Forestry, Syracuse, NY
Department of Environmental Resources Engineering
Supervisor: Dr. Lindi J. Quackenbush
- M.S. Forest Hydrology, 2010** Auburn University, Auburn AL
Department of Biosystems Engineering and School of Forestry & Wildlife Sciences
Supervisors: Dr. Mark Dougherty and Dr. Latif Kalin
- B.S. Forestry, 2006** Tribhuvan University, Nepal
Institute of Forestry
Thesis Supervisor: Dr. Bir Bahadur Khanal Chhetri

PEER-REVIEWED PUBLICATIONS

* Student, **shared first authorship

2023

1. **Bhattarai N**, Lobell DB, Singh, B, Fishman, R, Kustas WP, Pokhrel Y, & Jain M. 2023. Warming temperatures exacerbate groundwater depletion rates in India. *Science Advances*, 9, eadi1401. [Link]
Media: *NYTimes*, *The Hindu*, *The Times of India*, *The Economic Times*, *The Weather Channel*, and more
2. Hu T, Mallick K, Hitzelberger P, Didry Y, Boulet G, Szantoi Z, Koetz B, Alonso I, Pascolini-Campbell M, Halverson G, Cawse-Nicholson K, Hulley G, Hook G, **Bhattarai N**, Oliso A, Roujean J-L, Gamet P, Su Z, 2023. Evaluating European ECOSTRESS Hub Evapotranspiration Products Retrieved from Three Structurally Contrasting SEB Models over Europe. *Water Resources Research*, 59, e2022WR034132. [Link]
3. Zhou Y, Wang H, Liu, Z, **Bhattarai N**, Paudel J, & Qiu, H. 2023. Can solar photovoltaic plants reduce carbon emissions & increase income in China? *Environmental Science & Technology*, 57, 49, 20583–20594 [Link]

4. Javed T, **Bhattarai N**, Acharya BS, Zhang J, 2023. Monitoring agricultural drought in Peshawar Valley, Pakistan using long-term satellite & meteorological data. *Environmental Science and Pollution Research*. [Link]
5. Dhal S*, Wyatt B, Mahanta M, **Bhattarai N**, Sharma S, Rout T, Saud P, Acharya BS, 2023. Internet of Things (IoT) in Digital Agriculture: An Overview. *Agronomy Journal* [Link].

2022

6. Mallick K, Baldocchi D, Jarvis A, Hu T, Trebs I, Sulis M, **Bhattarai N**, Bossung C, Eid Y, Cleverly J, Beringer J, Woodgate W, Silberstein R, Hinko-Najera N, Meyer WS, Ghent D, Szantoi Z, Boulet G, Kustas WP, 2022. Insights into the Aerodynamic versus Radiometric Surface Temperature Debate in Thermal-based Evaporation Modeling. *Geophysical Research Letters* 49, e2021GL097568 [Link].
7. Bai Y, **Bhattarai N**, Mallick K, Zhang S, & Zhang J, 2022. Thermally derived evapotranspiration from the Surface Temperature Initiated Closure model improves cropland GPP estimates under dry conditions. *Remote Sensing of Environment* 271: 112901 [Link].
8. **Bhattarai N**, D'Urso G, Kustas WP, N Bambach-Ortiz, Knipper KR, Anderson M, Gao F, Alsina MM, Aboutalebi M, Mckee L, Alfieri JG, McElrone AJ, Prueger JH, & Belfiore OR, 2022. Influence of modeling domain and meteorological forcing data on daily evapotranspiration estimates from a Shuttleworth-Wallace model using Sentinel-2 surface reflectance data. *Irrigation Science* 40, 497-513 [Link].
9. Jiang Q, **Bhattarai N**, Pahlow M, & Xu Z, 2022. Environmental Sustainability and Footprints of Global Aquaculture *Resources, Conservation & Recycling*, 180: 106183 [Link]
10. Xu G, Dong H, Xu Z, & **Bhattarai N**, 2022. China can reach carbon neutrality before 2050 by improving economic development quality. *Energy* 243: 12087. [Link]
11. Singh KK, **Bhattarai N**, & Vukomanovic J, 2022. Landscape-scale hydrologic response of plant inva: relative to native vegetation in urban forests. *Science of the Total Environment*: 802:149903 [Link].

2021

12. **Bhattarai N****, Pollack A**, Lobell DB, Fishman R, Singh B, Dar A, & Jain M, 2021. The impact of groundwater depletion on agricultural production in India. *Environmental Research Letters*, 16:085003 [Link]. *Media: cited in BBC News*.
13. Jain M, Fishman R, Mondal P, Galford GL, **Bhattarai N**, Naeem S, Lall U, Singh B, & DeFries RS, 2021. Groundwater depletion will reduce cropping intensity in India. *Science Advances* 7, eabd2849 [Link]. *Media: CNN, AAAS, NPR, Earther and more*.
14. Trebs, I, Mallick K, **Bhattarai N**, Sulis M, Cleverly J, Woodgate W, Silberstein R, Najera Hinko-Najera, N, Beringer J, Su Z, & Boulet G, 2021. The role of aerodynamic resistance in thermal remote sensing-based evapotranspiration models. *Remote Sensing of Environment* 264: 112602 [Link].
15. Bai Y, Zhang S, **Bhattarai N**, Mallick K, Qi L, Tang L, Im J, Guo L, & Zhang J, 2021. On the use of machine learning algorithms to improve cropland evapotranspiration across a wide environmental gradient. *Agricultural and Forest Meteorology* 288-289: 208308 [Link]
16. Rao P, Zhou W, **Bhattarai N**, Srivastava A, Singh B, Poonia S, Lobell DB, & Jain M, 2021. Using Sentinel-1, Sentinel-2, and Planet Imagery to Map Crop Type of Smallholder Farms. *Remote Sensing*, 13: 870 [Link].
17. Javed T, Zhang J, **Bhattarai N**, Zhang S, Rashid S, Yun B, Ahmad S, Henchiri M, & Kamran M, 2021. Drought characterization across agricultural regions of China using standardized precipitation and vegetation water supply indices. *Journal of Cleaner Production*, 313: 127866 [Link].
18. Khand K, **Bhattarai N**, Taghvaeian S, Wagle P, Gowda P, & Alderman P, 2021. Modeling evapotranspiration of winter wheat using contextual and pixel-based surface energy balance

models. *Transactions of ASABE* 64: 507-519 [Link].

2020

19. Xu Z, Chen X, Liu J, Zhang Y, Chau S, **Bhattarai N**, Wang Y, Li Y, Li Y, & Connor T, 2020. Impacts of irrigated agriculture on food-energy-water-CO₂ nexus across metacoupled systems. *Nature Communications*, 11, 5837 [Link]. Media: [SciMag](#), [Phys.org](#), [EurekaAlert](#), [ENN](#)
20. Niraula R, Saleh A, **Bhattarai N**, Bajgain R, Kannan N, Osie E, Gowda P, Neel J, Xiao X, & Basara J, 2020. Understanding the effects of pasture type and stocking rate on the hydrology of Southern Great Plains. *Science of the Total Environment* 708: 134873. [Link]

2019

21. **Bhattarai N**, Mallick K, Stuart J*, Vishwakarma BD, Niraula R, Sen S, & Jain M, 2019. An automated multi-model evapotranspiration mapping framework using remote sensing and reanalysis data. *Remote Sensing of Environment* 229: 69-92. [Link]
22. 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* 14: 084047. Media: [phys.org](#), [Scientific American](#), [Newsroom](#)
23. Kafley H, Lamichane BR, Maharjan R, Khadka M, **Bhattarai N**, & Gompfer ME, 2019. Tiger and leopard co-occurrence: intraguild interactions in response to human and livestock disturbance. *Basic and Applied Ecology* 40: 78-89 [Link]
24. **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]
25. Kafley H, Lamichane BR, Maharjan R, Thapaliya B, **Bhattarai N**, Khadka M, & Gompfer ME 2019. Estimating prey abundance and distribution from camera trap data using bionomical mixture models. *European Journal of Wildlife Research* 65:77. [Link]

2018

26. **Bhattarai N**, Mallick K, Brunsell NA, 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]. Highlighted by the editors of *EGU*
27. 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 & SVAT models for simulating evapotranspiration: a case study in the Upper Biebrza National Park wetland. *Water*, 10: 1753 [Link]

2017

28. **Bhattarai N**, Quackenbush LJ, Im J, & Shaw SB 2017. A new optimized algorithm for automating endmember pixel selection in the SEBAL and METRIC models. *Remote Sensing of Environment*, 196: 178-192. [Link]
29. 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]. Highlighted by the editors of *AGU*
Media: [UA News](#), [Science Daily](#), [phys.org](#), [AAAS](#) and [EurekaAlert](#), [technology.org](#), [futurity.org](#)
30. **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]
31. Richards P, Cohn A, Arima E, VanWey L, & **Bhattarai N** 2017. Enforcement evasion highlights need for better satellite monitoring for forest governance. *Conservation Letters*, 10:497-498. [Link]

32. Wagle P, **Bhattacharai 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]
33. Richards P, Arima E, VanWey L, Cohn A, & **Bhattacharai N** 2017. Are Brazil's deforesters avoiding detection? *Conservation Letters*, 10:470-476. [Link]. *Media: Nature Climate Change; Mongabay, phys.org, eurekaalert, Brown University, Nature World News, Technology.org*

2016 and earlier

34. **Bhattacharai N**, Shaw SB, Quackenbush LJ, 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 & Geoinformation*, 49:75-86 [Link]
35. **Bhattacharai N**, Quackenbush LJ, 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]
36. Shaw, SB, Marrs J*, **Bhattacharai N**, & Quackenbush, LJ, 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]
37. **Bhattacharai N**, Dougherty M, Marzen L, & Kalin 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]

Under Review/Revisions/In Near submission

1. Jiang Q, Xu Z, **Bhattacharai N**, Xiao H, Ren J, Liu Y, Wu X, Zhang H, Li J, Zhu P, Cui Y, Liu J, Synthesized knowledge and integrated approaches for promoting sustainable development in a metacoupled world. (In revisions)
2. **Bhattacharai N**, Kustas WP, D'Urso G, Gao F, Bambach-Ortiz N, Anderson M, Kang Y, Mallick K, McElrone AJ, Alsina MM, Mckee L, Knipper KR, Alfieri JG, Prueger JH, & Belfiore OR, Evaluating the synergy of Landsat 8 and Sentinel-2 spectral bands for monitoring crop water status in California vineyards. (To Be revised and resubmitted)
3. He L, **Bhattacharai N**, Pokhrel Y, Jia N, Ye G, Song C, Xu Z, Wu S, Li Z, 202X. Dynamics of land cover changes and carbon emissions driven by large dams in China. (In Revisions)
4. Xu Z et al. with **Bhattacharai N** and 16 coauthors. Spatiotemporal Dynamics of Global Sustainable Development and Imbalance. (Resubmission in progress)

RESEARCH GRANTS AND CONTRIBUTED PROPOSALS

Funded Proposals (≈ \$85K as PI and \$900K as collaborator)

1. **USGS** South Central Climate Adaptation Center (≈\$71K). **Title:** A novel vegetation water use and efficiency monitoring tool to support land and water management decision making and sustainable agroecosystem production, **PI: Nishan Bhattacharai**, Period: 2024-2026.
2. **Data Institute for Societal Challenges** Seed grant (\$10K). **Title:** The water-saving potential of sprinkler irrigation systems across winter wheat farms in Oklahoma, **PI: Nishan Bhattacharai**, Co-I: Pradeep Wagle. Period: Summer 2023.
3. **NASA** NNH21ZDA001N-LCLUC: Land Cover/Land Use Change (≈\$450K). **Title:** Water scarcity in the Serbian Danube: Agricultural land use change and irrigation, **PI:** Sean Woznicki (Grand Valley State University); **Co-PIs:** Matthew Gammans (Michigan State University) and Tao Liu (Michigan Technological University); **Collaborators:** **Nishan Bhattacharai (USDA-ARS)**, Oskar Marco (Biosense Institute), Period: Jan 2022- Dec 2024.

4. **NASA:** NNH19ZDA001N-LCLUC (~\$448K). **Title:** Policy, Market, and Climate Change Impacts on Maize Production in Mexico **PI:** Meha Jain (U of M); **Collaborators:** **Nishan Bhattarai (U of M);** Vijesh V. Krishna (CIMMYT, Mexico); Amy Learner (National Autonomous University of Mexico), **Period:** Jan 2021- Dec 2023.
5. **NCAR, Computational & Information Systems Laboratory. Cheyenne (SGI ICE XA Cluster)** (100,000.0 Core-hours). Project # UMIC0046, 2016-2019.
6. **Raymond Von Dran Fund** (\$2,000). Project: Micro-Hydro consultants, Syracuse University. **PIs:** **Nishan Bhattarai**, John McDonald, and Prakhyat Thapa. **Period:** Summer 2012 to Fall 2012
7. **Research In Need Grant** (\$250), SUNY-ESF, Summer 2012
8. **ConForM/Danida fellowship** (~\$250). Good governance in two community forests in Gorkha, 2005-2006.

Proposals Under Review (Pending ≈ \$3 million)

1. **USDA NIFA**(~744K). **Title:** The Potential of No-Tillage Farming to Conserve Water and Offset the Negative Effects of Future Heat Stress on Agricultural Production. **PI:** **Nishan Bhattarai** (University of Oklahoma, OU); **Co-PIs:** Jayash Paudel (OU), Sumit Sharma (Oklahoma State University), and Sean A. Woznicki (Grand Valley State University). Period: June 2024- May 2027
2. **Big Idea Challenge, OU**(≈\$300K). **Title:** Climate Information on Actionable Timescales for Climate Security in Latin America. **PI:** Kathy Pegion, Co-PIs: **Nishan Bhattarai**, Kenny Charles, Victor Maqqe Victor, Rachel Schwartz, Erin Kokdil, Fabio de Sa e Silva, Jackie Vadjunec, Qihong Liu, Venera Bekteshi, Elinor Martin, Pierre Kirstetter, Cliff Wojtalewicz, Yanhua Xie, Tiantian Yang. Period: 2024-2026.
3. **NSF Human-Environment and Geographical Sciences Program** (~400K). Title: Exploring the Biophysical and Social Impacts of Migration in Nepal- Strengthening Food System Resilience. PI: Abinash Bhattachan (Texas Tech University), co-PIs: **Nishan Bhattarai (OU)**, Nathalie Williams (University of Washington), Yunuen Reygadas Langarica (Texas Tech University). Period: 2024-2027.
4. **UNSA-OU Global Change and Human Health (GCHH) Institute** (≈ \$1 million): Title: A new UNSA soil monitoring and modeling research and services program to support the people, environment, and economy of Arequipa's desert irrigated agricultural communities. PI: Tim Filley, Co-PIs: **Nishan Bhattarai**, Jackie Vadjunec, Daliang Ning, Jizhong Zhou. Period: 2025-2027.
5. **UNSA-OU Global Change and Human Health (GCHH) Institute** (≈ \$1 million): Title: Building a Geospatial Infrastructure for Socio-Ecological Resilience: Participatory Approaches and Coproduction of Knowledge. PI: Todd Fagin, Co-PIs: **Nishan Bhattarai**, Chengbin Deng, and Jackie Vadjunec. Period: 2025-2027.

TEACHING EXPERIENCE

University of Oklahoma

GIS 4133/5133 *Fundamentals of Remote Sensing* (Spring 2024) – 3 credits
 GIS 5133 (online) *Fundamentals of Remote Sensing* (Spring 2024) – 3 credits
 GEOG 4293/5293 *Hydrologic Science* (Fall 2023) – 3 credits
 GIS 4133/5133 *Fundamentals of Remote Sensing* (Fall 2023) – 3 credits
 GIS 5133 (online) *Fundamentals of Remote Sensing* (Summer 2023)
 GIS 5133 (online) *Fundamentals of Remote Sensing* (Spring 2023) – 3 credits
 GIS 4133/5133 *Fundamentals of Remote Sensing* (Fall 2022) – 3 credits

University of Michigan

Co-Instructor, EAS 501 Introduction to R (Natural Resources Statistics), 1 credit (Spring 2019)

- Co-designed and taught Introduction to R materials for beginners.

Guest Lecturer, EAS 501 Watershed Hydrology & Water Resources Management (Spring 2020)

SUNY-ESF: *Teaching Assistant (Aug 2011- 2014): Courses: GIS for engineers (Fall 2011-2013); Statics & Dynamics (Spring 2012); Mechanics of Materials (Spring 2012); Introduction to Engineering Design (Spring 2012-2014)*

Auburn University: *Teaching Assistant (2009)-Introduction to renewable resources*

STUDENT ADVISED/MENTORED

Graduate Students supervised or served as committee members (advisees are underlined)

Current Ph.D. Students: Afshin Shayeghi (Ph.D. Geography, 2022-).

Committee members: Akpoezi R. Ononeme (MS, Geography, OU), Aiyesha Ghani (Geography, OU), Jamshid Jalali (MS), Shadi Fathollahifard (Ph.D. Geography, OU), Nastaran Abdoli (Ph.D., Geography, OU), Hananeh Omid (Ph.D., Geography, OU), Baihong Pan (Ph.D. Biology, OU), Ali Shojaeian (Ph.D., Civil Engineering, OU), Sadiksha Rai (Ph.D., Meteorology, OU), Aman Bhatta (Ph.D., Environment and Sustainability, University of Michigan), Jorge Andrés Celis (Ph.D. 2023, OU), Kritika Pathak (MS 2023, OU).

Undergraduate students Mentored

University of Oklahoma: Richard Garcia (Spring 2023), Ryan Penic (Spring 2023), Tim White (Spring 2023), Sujal Shrestha (Fall 2023)

University of Michigan: Shon Harris, Julia Stuart, & Reese Jia Er Siew

SUNY-ESF: Andrew Sussman, John Marrs, and Prakhyat Thapa

Other mentorship experience: STEM Mentor/Elementary school teacher (Jan 2015 – May 2015)

FIELD/SUMMER EXPERIENCE

- *Research/Field Tech* (SapFlux & weather station), University of Illinois (Jun - Aug 2014)
- *Conservation Science Intern*, World Wildlife Fund for Nature, Washington, DC (Jun - Aug 2013)
- *Research Aide*, SUNY-ESF (Jun -Aug 2012)
- *International Corps Member*, EarthCorps, Seattle, WA (Jun-Dec 2007)

AWARDS AND HONORS

- Research Achievement Award, USDA-ARS (2021)
- Outstanding reviewer (2018), *Journal of Hydrological Engineering (ASCE)*
- ERE Departmental Award for Academic Excellence (2014), SUNY-ESF
- 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
- SUNY-ESF graduate student travel Awards (\$250 and \$500), SUNY-ESF, 2012-2013
- Merit Scholarship, Tribhuvan University (2002-2006)
- BSc Entrance Topper (science stream), Tribhuvan University (2002-2006)

AWARDS WON BY STUDENTS

Julia Stuart, 2018 South Asia Fellow (~\$3000), International Institute at the University of Michigan

Julia Stuart, 2021, Hugh G. Rumler Prize (outstanding senior), University of Michigan

Afshin Shayeghi (First Prize, \$1000), GIS Day poster, University of Oklahoma)

Afshin Shayeghi (Graduate Student Senate grant, \$750, University of Oklahoma)

Sujal Shrestha (Undergraduate Research Award, \$900, University of Oklahoma)

SELECTED CONFERENCE PROCEEDINGS AND EDITORIAL

1. Mallick K Baldocchi, et al. with **Bhattacharai N** 2023. Consort of Conductances: The Missing Biophysical Link in Thermal Remote Sensing of Terrestrial Evaporation and Inclusion for the Future LST Missions. European Space Agency- ESRIN, Italy.
2. Reddy PK, **Bhattacharai N**, & Sen S, 2023. Understanding Evapotranspiration Variability between the Eastern and Western Himalayas. EGU General Assembly 2023 [Link]
3. Belfiore OR, Kustas WP, et al. with **Bhattacharai N** 2023. Estimating ET by using canopy conductance models with Sentinel-2 data in irrigated crops in California and Australia. A European vision for hydrological observations and experimentation, Naples, Italy, 12–15 Jun 2023, GC8-Hydro-58 [Link].
4. **Bhattacharai N**, Kustas WP, et al. 2021. Synergistic use of spectral information from Landsat & Sentinel-2 data for modeling near real-time crop water status across California vineyards. AGU Fall meetings 2021.
5. Mallick K, Hu T, Yun B, **Bhattacharai N**, et al. Thermal and shortwave infrared remote sensing of ecosystem processes: Opportunities, synergies, and challenges. IEEE InGARSS 2021 (Accepted - *Peer-reviewed*)
6. **Bhattacharai N** & Wagle P, Recent advances in remote sensing of evapotranspiration. *Remote Sensing*. 2021; 13(21):4260. [link]
7. Kustas WP, **Bhattacharai N**, et al. Daily evapotranspiration estimates from application of Shuttleworth-Wallace model with Sentinel-2 surface reflectance data over California vineyards. AGU Fall Meetings 2021 [Link]
8. **Bhattacharai N**, Mallick K, & Jain M, 2019. Sensitivity of four contextual remote sensing-based SEB models to spatial domain, *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLII-3/W6, 3-7 (*Peer-reviewed*).
9. **Bhattacharai N**, Quackenbush LJ, Im J, & Shaw, SB, Automation of Endmember Pixel Selection in SEBAL/METRIC Model. AGU Fall Meetings Abstracts, December 14-18, 2015, San Francisco, CA.
10. **Bhattacharai N**, Quackenbush LJ, & Shaw, SB 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.
11. **Bhattacharai N** & Quackenbush LJ 2013. A data fusion approach for monitoring remotely sensed seasonal ET. AGU Fall Meetings Abstracts, December 9-13, 2013, San Francisco, CA.
12. **Bhattacharai N**, Quackenbush LJ, 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) Annual Conference, March 19-23, 2012, Sacramento, CA.
13. **Bhattacharai N**, Quackenbush LJ, Calandra L, Im J, & Teale S, 2011. Spectral analysis of Scotch pine infested by Sirex Noctillo. Proceedings of ASPRS Annual Conference, May 1-5, 2011, Milwaukee, WI.

THESIS/DISSERTATION

Ph.D. Dissertation (2015, SUNY-ESF): Single-source surface energy balance algorithms to estimate evapotranspiration from satellite-based remotely sensed data.

MS Thesis (2010, Auburn University): Use of Remotely Sensed Data to Quantify Plant Water Use from Irrigated Lands in Wolf Bay Watershed Area.

SELECTED INVITED TALKS

1. Leveraging Big Data and Analytics to address global sustainability challenges: a focus on agricultural water sustainability, Ohio State University, Columbus, OH (Mar 2022).
2. Water security under climate change: an interdisciplinary approach to understanding the feedbacks between agricultural, climate, & human systems, University of Oklahoma, Norman, OK (Feb 2022).

3. Remote Sensing Tools for Modeling Crop Water Use and Understanding the Feedbacks between Crop, Climate, Water, and Human Systems, University of Houston, Houston, TX (Jan 2022).
4. Remote Sensing for Sustainable Agriculture: From Evapotranspiration Modeling to Understanding Crop-Climate-Human Interactions, Lawrence Berkeley National Lab, Berkeley, CA (Jun 2020).
5. Remote sensing approach to estimate crop water use and stress across agricultural lands in India. Western Michigan University, Kalamazoo, MI (Jan 2020).
6. Biophysical and Socioeconomic Complexities of Global Environmental Change. College of William and Mary, Williamsburg, VA (Oct 2019).

CONFERENCE PRESENTATIONS

1. A multi-sensor and multi-model synergy to enhance real-time monitoring of evapotranspiration at 10m spatial resolution to support sustainable irrigation water management. AGU Fall Meetings 2023.
2. Assessing the utility of evapotranspiration products in monitoring agricultural responses to changing climate (Poster presented by Ph.D. student Afshin Shayeghi at the AGU Fall meetings 2023)
3. A Deep Learning-Based Ensemble Surface Energy Balance Modeling Approach to Monitor Crop Water Use & Water Stress in drylands, AGU Frontiers in Hydrology, June 20, 2022, San Juan, PR
4. Synergistic use of spectral information from Landsat and Sentinel-2 data for modeling near real-time crop water status across California vineyards, December 15, 2021, AGU Fall Meetings, New Orleans, LA
5. Warming Temperatures Lead to Increased Groundwater Depletion in India, Dec 11, 2019, AGU Fall Meetings, San Francisco, CA.
6. Understanding the impacts of groundwater depletion and climate shocks on irrigation decisions in India. AGU Fall Meeting, Dec 10-14, 2018, Washington, DC.
7. An automated multi-model based evapotranspiration estimation framework for understanding crop-climate interactions in India. AGU Fall Meeting, Dec 11-15, 2017, New Orleans, LA.
8. Understanding the climate-included variations in the seasonal water demands of irrigated crops in Northern India. AGU Fall Meeting, Dec 11-16, 2016, San Francisco, CA.
9. Introduction of automated calibration approaches to the surface energy balance-based ET algorithm, ASPRS Annual Conference, Mar 23-27, 2014, Louisville, KY.
10. Comparison of four single-source surface energy balance-based models for estimating remotely sensed daily ET. ASABE 2014 International Symposium on ET. Apr 7-11, 2014, Raleigh, NC.
11. Application of remote sensing and surface energy balance algorithms in estimating ET in the southeastern US. 24th ASPRS 2013 annual conference, Mar 24-28, 2013, Baltimore, MD.
12. Using remote sensing and geospatial techniques in hydrological applications. NYGeoCon. NYGIS Association, Nov12-13, 2013, Saratoga Springs, NY.
13. Calibration of the InVEST water yield model- An automated approach, World Wildlife Fund-US, Aug 9, 2013, Washington, DC.
14. A coupled multi-sensor fusion & SEB algorithm approach to derive spatially-distributed seasonal ET. 22nd GIS/SIG Annual Spatial/Digital Mapping Conference, Apr 2013, NY.
15. An automated object-based approach to detect Sirex-infestation in pines. 23rd ASPRS 2012 annual conference, Mar 19-23, 2012, Sacramento, CA.

PROFESSIONAL SERVICES

Editor: Editorial Board member of *GIScience & Remote Sensing* (Taylor & Francis); Invited Guest Editor for *Remote Sensing* (MDPI) Special Issue on Remote Sensing of Evapotranspiration II

Peer reviewer (~125 articles for over 36 journals):

Nature Food, Remote Sensing of Environment; Environmental Research Letters; Journal of Geophysical Research-Atmospheres; Water Resources Research; Journal of Hydrology; Journal of Hydrometeorology; Earth's Future;

ISPRS Journal of Photogrammetry & Remote Sensing; IEEE TGRS; IEEE Geoscience & Remote Sensing Letters; IEEE-JSTARS; International Journal of Applied Earth Observation & Geo-information; Journal of Hydrologic Engineering; Scientific Reports; Agricultural & Forest Meteorology; International Journal of Remote Sensing; Science of the Total Environment; Hydrological Processes; Remote Sensing; Stochastic Environmental Research & Risk Assessment; GIScience & Remote Sensing; PLoS ONE; Hydrology; Water; Transactions of the ASABE; Applied Water Science; Sustainability; Sensors; Remote Sensing Letters; Land Use Policy; Computers & Geosciences; Environmental Processes; Irrigation & Drainage Engineering; Hydrological Sciences Journal; Environmental Modelling & Software; Advances in Space Research; Agricultural Water Management

Search Committee: Remote Sensing and Hydrology Faculty positions at the University of Oklahoma (2)

Proposal Reviewer: Served in NASA proposal (2020 and 2023) review panel; External project Advisor for International Initiative for Impact Evaluation (3ie; 2016-2018); proposal reviewer for the Citrus Research Board (2021). NASA postdoctoral program proposal reviewer (2023-)

Scholarship panel: Scholarship selection panel of the American Society for Photogrammetry and Remote Sensing (ASPRS, 2022-).

Professional Memberships: American Geophysical Union (AGU), American Society for Photogrammetry and Remote Sensing (ASPRS, 2010-2017), European Geophysical Union (EGU -2018), American Society of Agricultural & Biological Engineers (2014).

COMPUTER SKILLS

Github Page

- Fluent in multiple programming platforms including R, Matlab, Python, & Google Earth Engine (GEE)
- Experienced user of High-Performance Computing (HPCs)/Clusters and Stata
- GIS/Remote Sensing software, such as ArcGIS, QGIS, ENVI, ERDAS Imagine
- Basic knowledge of C/C++ and Visual Basic
- knowledge of other software, such as AutoCAD, HEC-HMS, SAS, SigmaPlot, SSH, Unix shell scripts, Git, and SQL Server.