TONG QIU

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Ecosystem Science & Management
Pennsylvania State University
University Park, PA, 16802, USA

EDUCATION

May 2020	**Ph.D., Geography, University of North Carolina at Chapel Hill, NC, USA**
	Dissertation: Characterizing responses of land surface phenology to urbanization, climate change, and extreme weather events using remote sensing and Bayesian models.
	Committee: Drs. Conghe Song (chair and adviser), James S. Clark (Duke), Erika Wise, Diego Riveros-Iregui, and Allen Hurlbert (UNC Biology)
June 2015	**B.Eng., Remote Sensing, Wuhan University, China**
	(Graduated with the Highest Honor, GPA Ranking: 1/229)
	Thesis: Water body extraction based on ZY-3 satellite imagery
	Advisor: Drs. Yue Wang and Zhongqiu Liu

ACADEMIC APPOINTMENTS

2022 –	**Pennsylvania State University**, University Park, PA
	Assistant Professor, Department of Ecosystem Science and Management
	Faculty Associate, Institute for Computational and Data Sciences
	Graduate Faculty, Intercollege Graduate Degree Program in Ecology
2020 – 2022	**Duke University,** Durham, NC
	Postdoc Associate (NASA-AIST 18-0063, NSF-DEB 1754443)
2015 – 2020	**University of North Carolina at Chapel Hill**, Chapel Hill, NC
	Graduate Assistant; Instructor (2019 Fall)

PUBLICATIONS

PUBLISHED JOURNAL ARTICLES

2023

T. Qiu, M.-C. Aravena Acuna, D. Ascoli, Y. Bergeron, M.Bogdziewicz, R. Bonal, T. Boivin, T. Caignard, M. Cailleret, R. Calama, J. J. Camarero, C.-H. Chang-Yang, J. Chave, F. Chianucci, B. Courbaud, A. Cutini, A. Das, N. Delpierre, S. Delzon, M. Dietze, S. Donoso Calderon, L. Dormont, J. M. Espelta, T. Fahey, W. Farfan-Rios, J. Franklin, C. Gehring, G. Gilbert, G. Gratzer, C. Greenberg, A. Guignabert, Q. Guo, A. Hacket-Pain, A. Hampe, Q. Han, J. Holík, K. Hoshizaki, I. Ibañez, J. Johnstone, V. Journé, T. Kitzberger, J. Knops, G. Kunstler, J. Lageard, J. LaMontagne, F. Lefevre, T. Leininger, J.-M. Limousin, J. Lutz, D. Macias, A. Marell, E. McIntire, C. Moore, E. Moran, R. Motta, J. Myers, T. Nagel, M. Noguchi, R. Parmenter, P. Samonil, I. Pearse, I. Perez-Ramos, L. Piechnik, T. Podgorski, J. Poulsen, M. Redmond, C. Reid, K. Rodman, F. Roiguez-Sanchez, J. Sanguinetti, C. L. Scher, B. Seget, S. Sharma, M. Silman, M. Steele, N. Stephenson, J. Straub, S. Sutton, J. Swenson, M. Swift, P. Thomas, M. Uriarte, G. Vacchiano, A. Whipple, T. Whitham, A. Wion, S. Wright, K. Zhu, J. Zimmerman, M. Żywiec, and J. S. Clark. Masting is uncommon in trees that depend on mutualist dispersers in the context of global climate and fertility gradients (2023), *Nature Plants, doi: 10.1038/s41477-023-*

01446-5

- [Behind the paper](#) and News coverage: [Science Daily](#), [Phys.org](#), [EurekAlert!](#), [Science Magazine](#), [Mirage News](#), [Skynews](#), [Earth.com](#), [Outdoor News](#), [Penn State News](#)

T. Qiu, A. Bell, J. J. Swenson, J. S. Clark. Habitat-trait interactions that control response to climate change: North American ground beetles (Carabidae) (2023)*, Global Ecology and Biogeography, doi: 10.1111/geb.13670*

- [Cover article](#) and News coverage: [Science Daily](#), [Phys.org](#), [EurekAlert!](#), [ENN](#), [Mirage News](#), [Earth.com](#), [Penn State News](#), [Duke News](#)

Wu, H., Zhuang, M., Chen, Y., Meng, C., Wu, C., Ouyang, L., Liu, Y., Shu, Y., Tao, Y., **T. Qiu**, and Li, J., 2023. Urban Treetop Detection and Tree-Height Estimation from Unmanned-Aerial-Vehicle Images. *Remote Sensing,* 15(15), p.3779; *doi: 10.3390/rs15153779*

M. Bogdziewicz., Calama R, Courbaud B, Espelta JM, Hacket-Pain A, Journé V, Kunstler G, Steele M, **T. Qiu**, Zywiec M, and J.S. Clark. How to measure mast seeding? (2023)*, New Phytologist* (viewpoint)

M. Bogdziewicz, …, **T. Qiu**, …, J. S. Clark (94 co-author listed alphabetically, I am one of the six authors that co-wrote the paper), Seed size and number on the map of trait syndromes in trees (2023), *Global Ecology and Biogeography, doi: 10.1111/geb.13652*

2022

C. Wu, C. Li, L. Ouyang, H. Xiao, J. Wu, M. Zhuang, X. Bi, J. Li, C. Wang, C. Song, **T. Qiu**, D. Haase, A. hahs, M. Finka. Spatiotemporal evolution of urbanization and its implications to urban planning of the megacity, Shanghai, China (2022), *Landscape Ecology, doi: 10.1007/s10980-022-01578-7*

T. Qiu, R. Andrus, M.-C. Aravena, D. Ascoli, Y. Bergeron, R. Berretti, D. Berveiller, M. Bogdziewicz, T. Boivin, R. Bonal, D. C. Bragg, T. Caignard, R. Calama, J. J. Camarero, C.-H. Chang-Yang, N. L. Cleavitt, B. Courbaud, F. Courbet, T. Curt, A. J. Das, E. Daskalakou, H. Davi, N. Delpierre , S. Delzon, M. Dietze, S. Donoso Calderon, L. Dormont, J. Espelta, T. J. Fahey, W. Farfan-Rios, C. A. Gehring, G. S. Gilbert, G. Gratzer, C. H. Greenberg, Q. Guo, A. Hacket-Pain, A. Hampe, Q. Han, J. Hille Ris Lambers, K. Hoshizaki, I. Ibanez, J. F. Johnstone, V. Journ´e, D. Kabeya, C. L. Kilner, T. Kitzberger, J. M.H. Knops, R. K. Kobe, G. Kunstler, J. G.A. Lageard, J. M. LaMontagne, M. Ledwon, F. Lefevre, T. Leininger, J.-M. Limousin, J. A. Lutz, D. Macias, E. J.B. McIntire, C. M. Moore, E. Moran, R. Motta, J. A. Myers, T. A. Nagel, K. Noguchi, J.-M. Ourcival, R. Parmenter, I. S. Pearse, I. M. Perez-Ramos, L. Piechnik, J. Poulsen, R. Poulton-Kamakura, M. D. Redmond, C. D. Reid, K. C. Rodman, F. Rodriguez-Sanchez, J. D. Sanguinetti, C. L. Scher, W. H. Schlesinger, H. Schmidt Van Marle, B. Seget, S. Sharma, M. Silman, M. A. Steele, N. L. Stephenson, J. N. Straub, I-Fang Sun, S. Sutton, J. J. Swenson, M. Swift, P. A. Thomas, M. Uriarte, G. Vacchiano, T. T. Veblen, A. V. Whipple, T. G. Whitham, A. P. Wion, B. Wright, S. J. Wright, K. Zhu, J. K. Zimmerman, R. Zlotin, M. Zywiec, and J. S. Clark. Limits to reproduction and seed size-number trade-offs that shape forest dominance and future recovery (2022), *Nature Communication,* 13:2381*; doi: 10.1038/s41467-022-30037-9*

- [Editors' Highlights](#) and News coverage: [Science Daily](#), [Terra Daily](#), [Phys.org](#), [EurekAlert!](#), [NSF](#), [Mirage News](#), [True Viral News](#), [AZO Cleantech](#), [Thinking port](#), [Duke News](#)

V. Journe, …, **T. Qiu**, …, J. S. Clark (101 co-author listed alphabetically, I am one of the five authors that co-wrote the paper), Globally, tree fecundity exceeds productivity gradients (2022), *Ecology letters,* 25, no. 6*,* 1471-1482*; doi: 10.1111/ele.14012*

2021

T. Qiu, M. Aravena, R. Andrus, D. Ascoli, Y. Bergeron, R. Berretti, M. Bogdziewicz, T. Boivin, R. Bonal, T. Caignard, R. Calama, C. Julio, C. Clark, B. Courbaud, S. Delzon, C. Donoso, W. Farfan-Rios, C. Gehring, G. Gilbert, C. Greenberg, Q. Guo, R. Hille, K. Hoshizaki, I. Ibanez, V. Journe, C. Kilner, R. Kobe, W. Koenig, G. Kunstler, J. LaMontagne, M. Ledwon, J. Lutz, R. Motta, J. Myers, T. Nagel, C. Nunez, I. Pearse, L. Piechnik, J. Poulsen, R. Poulton-Kamakura, M. Redmond, C. Reid, K. Rodman,

C. Scher, V. Schmidt, B. Seget, S. Sharma, M. Silman, J. Swenson, M. Swift, M. Uriarte, G. Vacchiano, T. Veblen, A. Whipple, T. Whitham, A. Wion, S. Wright, K. Zhu, J. Zimmerman, M. Zywiec, J. S. Clark. Is there tree senescence? The fecundity evidence (2021) *Proceedings of the National Academy of Sciences (PNAS) 118(34)*; doi: *10.1073/pnas.2106130118*

- [From the Cover](#) and News coverage: [TheScientist](#), [News Break](#), [Phys.org](#), [Le Figaro](#), [Mirage News](#), [Green Report](#), [France Inter](#), [Sciences et Avenir](#), [Duke News](#), [WUSTL News](#), [NSF News](#)

T. Qiu, S. Sharma, C. Woodall, J. S. Clark. The niche shifts from trees to fecundity to recruitment that determine species redistribution with climate change (2021), *Frontiers in ecology and evolution*; doi: 10.3389/fevo.2021.719141

M. Jiang, Y. He, Y. Pan, **T. Qiu**, S. Tian. Disaggregating climatic and anthropogenic influences on vegetation changes in Beijing-Tianjin-Hebei region of China (2021), *Science of the total environment 786: 147574; doi: 10.1016/j.scitotenv.2021.147574*

Prior to 2020

T. Qiu, C. Song, J. S. Clark, B. Seyednasrollah, N. Rathnayaka, J. Li. Understanding the continuous phenological development at a daily time step with a Bayesian hierarchical space-time model: impacts of climate change and extreme weathers (2020). *Remote Sensing of Environment 247: 11956; doi: 10.1016/j.rse.2020.111956*

T. Qiu, C. Song, J. Li. Deriving Annual Double-Season Cropland Phenology Using Landsat Imagery (2020). *Remote Sensing*, *12:* 3275; doi: 10.3390/rs12203275

T. Qiu, C. Song, Y. Zhang, H. Liu, and J. M. Vose. Urbanization and climate change jointly shift land surface phenology in the mid-latitude large cities (2020), *Remote Sensing of Environment 236: 111477; doi: 10.1016/j.rse.2019.111477*

Q. Zhang, Y. Wang, S. Tao, R.E. Bilsborrow, **T. Qiu**, C. Liu, S. Sannigrahi, Q. Li, and C, Song, Divergent socioeconomic-ecological outcomes of China's conversion of cropland to forest program in the subtropical mountainous area and the semi-arid Loess Plateau (2020). *Ecosystem Services* 45: 101167*; doi: 10.1016/j.ecoser.2020.101167*

T. Qiu, C. Song, and J. Li, Impacts of urbanization on vegetation phenology over the past three decades in Shanghai, China (2017). *Remote Sensing 9.9: 970; doi:10.3390/rs9090970*

MANUSCRIPTS IN REVISION

T. Qiu, J. S. Clark, K. R. Kovach, P. A. Townsend, J. J. Swenson, *in revision*, *Ecology*

Q. Ma, C. Niu, Q. Ma, T. Hu, X. Luo, X. Tai, **T. Qiu,** Y. Zhang, R. Bales, L. Liu, M. Kelly, and Q. Guo, Overshadowing effects in structurally complex forests reduce tree mortality during drought, *in revision*, *Nature Communications*

MANUSCRIPT IN PROGRESS

T. Qiu, C. Song. Projecting future land surface phenology in the Continental United States, *Manuscript ready upon request*

T. Qiu, A. R. Kemanian, C. Song. Climate change affects crop yield through the alternation of crop phenology, *Results ready upon request*

CONFERENCE ARTICLE AND OTHER PUBLICATIONS

J.J. Swenson, **T. Qiu**, A. Schwantes, C. Kilner, C. Nunez. L. Scher, S. Sharma, and J.S. Clark. Community reorganizing response to climate change: species interactions, state-space model, and food webs. *2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*

GRANTS

<u>Extramural Grants</u>

Determining forest recruitment change through the integration of NASA Earth observation data and predictive modeling, *NASA ROSES*, lead PI: **T. Qiu**, Other PIs: J. S. Clark, M. E. McDill, 01/01/2024-12/31/2027, $1,012,073 from NASA and an additional $454,700 cost-share from PA Department of Conservation and Natural Resources (DCNR)

Improving predictions of forest management effects on the abiotic environment and its implications for wildlife habitat suitability. *USDA McIntire-Stennis Grant*, lead PI: Julian Avery, other PIs: **T. Qiu**, D. Miller, 10/1/2022 – 10/1/2024, $199,788 (direct cost only)

<u>Submitted Grants</u>

Continent-wide biodiversity forecasts: the interactions between climate and habitat conditions, *NASA ROSES*, <u>submitted</u>, sole PI: **T. Qiu**, collaborators: J. S. Clark, P. A. Townsend

Combining terrestrial and airborne LiDAR to evaluate forest regeneration potential in central PA, *USDA McIntire-Stennis Grant*, <u>submitted</u>, sole PI: **T. Qiu**, collaborators: M. E. McDill, Brent Harding

<u>Internal Grants and Awards from Penn State</u>

Developing climate-smart agricultural practices under global climate change, *Institute for Sustainable Agricultural, Food, and Environmental Science (SAFES) Broadening Opportunities and Teams (BOAT) seed grant*, sole PI: **T. Qiu**, collaborators: A. R. Kemanian, 02/01/2023 – 09/31/2024, $8,500.

Forest biodiversity modeling through the synthesis of hyperspectral, LiDAR, and tree inventories within a deep learning framework, *Institute for Computing and Data Sciences (ICDS) seed grant*, lead PI: **T. Qiu**, Other PIs: M. Yu, 07/01/2023 – 08/31/2024, $30,000 (with an additional $22,000 cost-share from the College of Agricultural Sciences and ESM).

Understanding 21st century forest regeneration: the bridge from habitat to forest trees to vertebrate community in a changing climate, *Bridges Large Research Grant at the Department of Ecosystem Science and Management*, lead PI: **T. Qiu**, Other PIs: J. Avery, F. Buderman, P. Drohan, J. Duncan, L. Leites, M. McDill, D. Miller, 04/15/2023 – 06/30/2023, $50,000 (with an additional $43,177 match from faculty fund).

TEACHING EXPERIENCE

<u>PENNSYLVANIA STATE UNIVERSITY</u>

2023 Fall: Instructor of Record

<u>FOR/SOIL/WFS:</u> Advance GIS and Remote Sensing (Fall 2023, 11 graduate students)
<u>Course evaluation:</u> TBD
- Ecological applications in R and Google Earth Engine (GEE)

2023 Spring: Instructor of Record

<u>FOR 455:</u> Remote Sensing and Spatial Data Handling (Spring 2023, 23 undergraduates)
<u>Course evaluation:</u> median 6/7, mode 7/7, *report available upon request.*
- Forestry applications in ArcGIS Pro and FUSION

<u>UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL</u>

2019: Instructor of Record

<u>GEOG 391:</u> Quantitative methods for geographers (Fall 2019, 25 students)
- Teaching the concepts of fundamental statistics and their applications, including descriptive statistics, data visualization, probability theory, probability distribution, point estimation, hypothesis testing, ANOVA, and basic spatial statistics.

- Creating slides and notes from scratch
- Designing in-class activities (e.g., simulation games and on-line visualization) to help students better understand statistical concepts.
- Designing and grading five homework, two mid-terms, and one final exam.

Course evaluation: mean 4.45/5.0, *report available upon request.*

2018 – 2019: Teaching Assistant

GEOG 477: Introduction to Remote Sensing (Fall 2018)
GEOG 577: Advance Remote Sensing (Spring 2018)
GEOG 370: Introduction to Geographic Information (Spring 2019)

2019: Recitation Instructor *(teaching the usage of ArcGIS and leading problem-solving recitations)*

GEOG 370: Introduction to Geographic Information (Spring 2019)

GUEST LECTURE

ECLGY 515: Advances in Ecology (Fall 2022, Penn State)
ENVI 558: Image classification on GEE (Fall 2020, Fall 2021, Fall 2022, Duke)
GEOG 370: Introduction to geographic information (Spring 2019, UNC)
GEOG 577: Advanced Remote Sensing (Spring 2018, Spring 2019, UNC)
GEOG 441: Introduction to Watershed Systems (Spring 2016, UNC)

INVITED TALKS

2023   **T. Qiu**. Understanding the regeneration potential of forests under global change, Oct. 3rd, Sino-Ecologists Association Overseas **(virtual)**

2023   **T. Qiu**. How remote sensing can help us advance the understanding of biodiversity change, Sep. 27th, Center for Artificial Intelligence Foundations and Engineered Systems, Penn State

2023   **T. Qiu**. Understanding the regeneration potential of forests under global change, Sep. 19th, Department of Biology, New Jersey Institute of Technology

2023   **T. Qiu**. Climate-habitat interactions that control biodiversity change: synthesizing NEON AOP with ground observations. National Ecological Observatory Network (NEON) virtual science seminar series, Sep. 12th **(virtual)**

2023   **T. Qiu**. Winners or losers under climate change? It depends on habitat. Penn State Climate Solutions Symposium, May. 22nd – 23rd, **(talk and panelist)**

2023   **T. Qiu**. Response of forest ecosystem functions to climate change. Penn State Department of Meteorology and Atmospheric Science, Dynamic Climate Seminar, Feb. 18th

2022   **T. Qiu**. Combined LiDAR and Hyperspectral imagery in understanding biodiversity and forest reproduction, Peking University, July 5th **(virtual)**

2022   **T. Qiu**, Usage of joint species modeling in understanding regeneration niche shifts. Ecological Society of American (ESA) Statistical Section and Ecological Forecasting Initiative (EFI) Seminar, Jan 28th, **(virtual, link).**

2022   **T. Qiu**. What drives the variations of seed production of global forest trees? The GeoInsider Webinar, May. 8th **(virtual)**

2020   **T. Qiu**, Tracking and forecasting the seasonal rhythms of terrestrial ecosystem: insights from remote sensing, Duke University, University Program in Ecology, Durham, NC, Sep 8th

2019   **T. Qiu,** The combined effects of urbanization and climate change on vegetation phenology in the northern mid-latitude large cities, UNC Geography Graduate Research Colloquium,

Chapel Hill, NC, Mar. 21st

SCHOLARLY PRESENTATIONS

<u>SELECTED CONFERENCE PRESENTATIONS</u> (only first author presentations are included)

2023   **T. Qiu**. How remote sensing help us understand biodiversity change. Insect-NET: AI for Ecological and Agricultural Science Symposium, Sep 15th, **(talk)**

2023   **T. Qiu**, J. S. Clark. The timing of spring green-up affects tree reproduction in the temperate and boreal forests, Ecological Society of America annual meeting, Aug. 6th – 11st, **(talk)**

2023   **T. Qiu**. Winners or losers under climate change? It depends on habitat. Predictive Ecology: Temporal, Spatial, or Phylogenetic Forecasting, Jun. 5th – 9th, **(poster)**

2022   **T. Qiu**, A. Bell, J. J. Swenson, J. S. Clark. Habitat-trait interactions that control response to climate change: North American ground beetles (Carabidae), American Geophysical Union Fall meeting, Dec. 12th – 16th, **(talk)**

2022   **T. Qiu**, A. Bell, J. J. Swenson, J. S. Clark. Habitat-trait interactions that control response to climate change: North American ground beetles (Carabidae), Ecological Society of America annual meeting, Aug. 14th – 19th, **(talk)**

2021   **T. Qiu**, J. S. Clark, P. R. Townsend, J. J. Swenson, Combined LiDAR and hyperspectral imagery for landscape forest reproduction across the United States, American Geophysical Union Fall meeting, Dec 13st – 17th **(virtual poster, link)**

2021   **T. Qiu**, J. J. Swenson, J. S. Clark, Combined LiDAR and hyperspectral Imagery in tree reproduction and ground beetle's abundance modeling, NASA Biodiversity Forecast Team Meeting, Oct 19th – 21st **(virtual poster)**

2021   **T. Qiu,** B. Courbaud, V. Journe, G. Kunstler, C. L. Scher, J. J. Swenson, J. S. Clark, Global analysis of reproductive investment in trees: effects of soil nutrients, species traits, and phylogeny, Ecological Society of America annual meeting, Aug. 2rd – 5th, **(virtual talk)**

2020   **T. Qiu,** C. Kilner, J. J. Swenson, J. S. Clark, Dynamic response of ground beetles to climate change and habitat characteristics, American Geophysical Union Fall meeting, Dec 11st – 16th **(virtual talk)**

2020   **T. Qiu,** C. L. Scher, M. E. Swift, J. J. Swenson, J. S. Clark, Capturing emergent interactions that govern food web dynamics with climate change, Ecological Society of America annual meeting, Aug 3rd – 6th, **(virtual talk)**

2019   **T. Qiu,** C. Song, B. Seyednasrollah, N. Rathnayaka, A Bayesian hierarchical space-time model in characterizing the impacts of climate change and extreme weather events on land surface phenology, American Geophysical Union Fall meeting, Dec 9th – 13th **(Poster)**

2019   **T. Qiu,** Extraction of Water Bodies using remotely sensed spectral signature: A case study in Wuhan City, Winston Salem, NC, Feb 27th – Mar 1st, G. Herbert Stout Award **(invited talk)**

2018   **T. Qiu,** C. Song, Y. Zhang, and H. Liu, Characterizing the impacts of urbanization and climate change on land surface phenology in the Northern Hemisphere. American Geophysical Union Fall Meeting, Washington, DC, Dec. 10th – 14th **(poster)**

2018   **T. Qiu,** The usage of remote sensing in understanding our environment, for UNC-CH and UNC-G Joint Geography Colloquium, Chapel Hill, NC, Oct. 26th **(invited talk)**

2018   **T. Qiu,** C. Song, Y. Zhang, and H. Liu, How urban vegetation responded to land use change and climate change? UNC 6th Annual Climate Change & Resilience Symposium, Chapel

Hill, NC, Apr. 12th (**poster**)

2018   **T. Qiu,** C. Song, Using Google Earth Engine to estimate impervious surface area in the U.S. big cities. 1st UNC Google Earth Engine Symposium, Chapel Hill, NC, Jul. 27th (**talk**)

2017   **T. Qiu,** C. Song, Understanding the effects of urban expansion on spatio-temporal variations of vegetation phenology at global scale from 1993 to 2014. American Geophysical Union 2017 Fall Meeting, New Orleans, LA, Dec. 11th – 15th (**talk**)

2017   **T. Qiu,** C. Song, J. Li, Spatial-temporal patterns of landscape phenology in the urban vegetation and the surrounding agricultural regions. 2017 Annual Meeting of the American Association of Geographers, Boston, MA, Apr. 5th – 9th (**talk**)

2017   **T. Qiu,** C. Song, J. Li, Impacts of landscape metrics on vegetation phenology over the past three decades. UNC 3rd Annual Climate Change & Resilience Symposium, Chapel Hill, NC, Mar. 21st (**poster**)

2016   **T. Qiu,** C. Song, J. Li, Characterizing urbanization effects on landscape phenology along a rural-urban gradient using Landsat time series data. American Geophysical Union 2016 Fall Meeting, San Francisco, CA, Dec. 12nd – 16th (**poster**)

2016   **T. Qiu,** C. Song, J. Li, Detecting spatial and temporal variation of urban phenology over the past three decades using Landsat time series data. 2nd Congress of the Society of Urban Ecology, Shanghai, China, Jul. 7th – 11th (**talk**)

HONORS & AWARDS

2019	Graduate Student Transportation Grant, UNC-Chapel Hill
2019	Finalist for 3-minute Thesis Competition, UNC-Chapel Hill
2019	James Carlton Ingram Summer Research Fellowship, UNC-Chapel Hill
2019	G. Herbert Stout Award for Innovative Use of GIS
2016/17/18/19	Conference Travel Award (*five times*), Dept. of Geography, UNC-Chapel Hill
2017	Finalist in Student Honors Paper, AAG Remote Sensing Specialty Group
2016	Best Student Paper, Second Congress of the Society for Urban Ecology
2016	Best Undergraduate Thesis (3%), Hubei Province of China
2015	Presidential Fellowship, equivalent to Full-ride Scholarship (0.4%), Wuhan University
2015	Geoway Remote Sensing Academic Star (0.4%), Wuhan University
2012/13/14	National Fellowship (2%, *three times*), Ministry of Education of China
2012/13/14	First-Class Scholarship (5%, *three times*), Wuhan University
2013/14	Pacemaker for Outstanding Student (0.4%, *two times*), Wuhan University
2012/13/14	Outstanding Student (5%, *three times*), Wuhan University
2013/14	Outstanding Engineer Fellowship (10%, awarded a summer school study in the U.K.)
2013	Best Group Presentation (10%), The University of Cambridge
2012	National Undergraduate Innovative Fellowship (2%), Wuhan University

PROFESSIONAL DEVELOPMENT

Workshop

2023   Continent-wide forest recruitment change (May 1st – May 4th, SERC, US)
2022   Bottom-up controls on consumers & food webs (November 16th – 18th, INRAE, Grenoble)

SERVICE

<u>MENTORING</u>
Postdoctoral scholar:
    Dr. Xiaolu Li (2023 –)
Ph.D. Students Adviser:
    Ms. Hanshi Chen (Ecology, 2023 –)
    Ms. Wei Yu (Ecosystem Science and Management, 2023 –)

<u>GRADUATE COMMITTEE</u>
Casey W. Hamilton (Geography, Ph.D. Committee Member)
Samantha A Allbee (Ecology, MA Committee)

<u>SERVICE TO THE DISCIPLINE</u>
2023 –   Elected Vice Chair, Statistical Ecology Section, Ecological Society of America

<u>SERVICE TO PENN STATE</u>
2023 –   Qualify Exam Committee, Intercollege Graduate Degree in Ecology, Penn State
2023 –   Scholarship Committee, Department of Ecosystem Science and Management

<u>Ad-hoc JOURNAL REVIEWER</u>
PNAS (2), Remote sensing of environment (5), Agricultural and Forest Meteorology (8), ISPRS Journal of Photogrammetry and Remote sensing (1), Journal of Ecology (1), Ecological Applications (1), Remote sensing (22), Forests (22), Science of the Total Environment (3), Global and Planetary Change (1), Frontiers in Environmental Science (1), Frontiers in Ecology and Evolution (1), Journal of Forestry Research (1), Journal of Marine Science and Engineering (1), Plos One (2), Sustainability (1), PeerJ (1), Frontiers in Artificial Intelligence (1)