

Song Shu, Ph.D.

Assistant Professor

Department of Geography and Planning, Appalachian State University

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Research Interests

- Satellite radar and laser altimetry, drone remote sensing, LiDAR, hyperspectral image analysis
- Lake and river hydrology, snow accumulation, water resources, soil erosion
- Cryosphere, global climate change, urbanization

Education

- 2013 – 2019** Ph.D. in Department of Geography & GIScience, University of Cincinnati (UC), USA
- 2010 – 2013** M.S. in Department of Geography, East China Normal University (ECNU), China
- 2006 – 2010** B. S. in Department of Geography, East China Normal University (ECNU), China

Appointments

- 08/2019 - present** Assistant Professor, Department of Geography and Planning, Appalachian State University
- 08/2018 – 08/2019** Adjunct Instructor, Department of Geography & GIScience, University of Cincinnati
- 01/2018 – 05/2018** Adjunct Instructor, Department of History & Geography, Northern Kentucky University
- 05/2017 – 01/2018** Research Assistant, Department of Geography & GIScience, University of Cincinnati
- 08/2013 – 05/2016** Teaching Assistant, Department of Geography & GIScience, University of Cincinnati
- 09/2010 – 06/2013** Teaching Assistant, Department of Geography, East China Normal University

Referred Publications

Published

24. **Shu, S.**, Liu, H., Beck, R.A., Frappart, F., Korhonen, J., Lan, M., Xu, M., Yang, B., & Huang, Y. (2021). Evaluation of historic and operational satellite radar altimetry missions for constructing consistent long-term lake water level records. *Hydrol. Earth Syst. Sci.*, 25, 1643-1670 (IF: 5.15) <https://doi.org/10.5194/hess-25-1643-2021>
23. Xu, M., Liu, H., Beck, R., Lekki, J., Yang, B., Liu, Y., **Shu, S.**, Wang, S., Tokars, R., Anderson, R., Reif, M., & Emery, E. (2021). Implementation Strategy and Spatiotemporal Extensibility of Multipredictor Ensemble Model for Water Quality Parameter Retrieval with Multispectral Remote Sensing Data. *IEEE Transactions on Geoscience and Remote Sensing*, 1-16 (IF: 5.86) <https://doi.org/10.1109/TGRS.2020.3045921>
22. Wang, S., Alexander, P., Wu, Q., Tedesco, M., & **Shu, S.** (2021). Characterization of ice shelf fracture features using ICESat-2 – A case study over the Amery Ice Shelf. *Remote Sensing of Environment*, 255, 112266 (IF: 9.09) <https://doi.org/10.1016/j.rse.2020.112266>
21. Yang, B., Liu, H., Kang, E.L., **Shu, S.**, Xu, M., Wu, B., Beck, R., Hinkel, K., & Yu, B. (2020). "Spatio-temporal Cokriging Method for Assimilating and Downscaling Multi-scale Remote Sensing Data." *Remote*

Sensing of Environment, 112190 (IF: 9.09) <https://doi.org/10.1016/j.rse.2020.112190>,

20. **Shu, S.**, Liu, H., Frappart, F., Kang, E.L., Yang, B., Xu, M., Huang, Y., Wu, B., Yu, B., Wang, S., Beck, R., & Hinkel, K. (2020). "Improving Satellite Waveform Altimetry Measurements with a Probabilistic Relaxation Algorithm." *IEEE Transactions on Geoscience and Remote Sensing*, 1-16 (IF: 5.86) <https://doi.org/10.1109/TGRS.2020.3010184>
19. **Shu, S.**, Liu, H., Beck, R.A., Frappart, F., Korhonen, J., Xu, M., Yang, B., Hinkel, K.M., Huang, Y., and Yu, B., (2020). "Analysis of Sentinel-3 SAR altimetry waveform retracking algorithms for deriving temporally consistent water levels over ice-covered lakes." *Remote Sensing of Environment*, 239: 111643 (IF:9.09). <https://doi.org/10.1016/j.rse.2020.111643>
18. Wu, B., Yu, B., **Shu, S.**, Wu, Q., Zhao, Y., & Wu, J. (2020). A spatiotemporal structural graph for characterizing land cover changes. *International Journal of Geographical Information Science*, 1-29 (IF: 3.73) <https://doi.org/10.1080/13658816.2020.1778706>
17. Zhao, Y., Wu, B., Wu, J., **Shu, S.**, Liang, H., Liu, M., Badenko, V., Fedotov, A., Yao, S., & Yu, B. (2020). Mapping 3D visibility in an urban street environment from mobile LiDAR point clouds. *GIScience & Remote Sensing*, 57, 797-812 (IF: 5.97) <https://doi.org/10.1080/15481603.2020.1804248>
16. Chen, H., Huang, Y., Wang, S., **Shu, S.**, Yu, B., & Wu, J. (2020). Vertical Accuracy Analysis of ASTER GDEM V2 in Byrd Glacier, Antarctica. *Journal of Remote Sensing (Chinese)*, 24-8 (IF:1.58) <http://dx.doi.org/10.11834/jrs.20208361>
15. Xu, M., Liu, H., Beck, R., Lekki, J., Yang, B., **Shu, S.**, Liu, Y., Benko, T., Anderson, R., Tokars, R., Johansen, R., Emery, E., & Reif, M. (2019). Regionally and Locally Adaptive Models for Retrieving Chlorophyll-a Concentration in Inland Waters From Remotely Sensed Multispectral and Hyperspectral Imagery. *IEEE Transactions on Geoscience and Remote Sensing*, 1-17 (IF: 5.86) <https://doi.org/10.1109/TGRS.2019.2892899>
14. Xu, M., Liu, H., Beck, R., Lekki, J., Yang, B., **Shu, S.**, Kang, E.L., Anderson, R., Johansen, R., Emery, E., Reif, M., & Benko, T. (2019). A spectral space partition guided ensemble method for retrieving chlorophyll-a concentration in inland waters from Sentinel-2A satellite imagery. *Journal of Great Lakes Research*, 45, 454-465 (IF:1.93) <https://doi.org/10.1016/j.jglr.2018.09.002>
13. Beck, R., Xu, M., Zhan, S., Johansen, R., Liu, H., Tong, S., Yang, B., **Shu, S.**, Wu, Q., Wang, S., Berling, K., Murray, A., Emery, E., Reif, M., Harwood, J., Young, J., Nietch, C., Macke, D., Martin, M., Stillings, G., Stumpf, R., Su, H., Ye, Z., & Huang, Y. (2019). Comparison of satellite reflectance algorithms for estimating turbidity and cyanobacterial concentrations in productive freshwaters using hyperspectral aircraft imagery and dense coincident surface observations. *Journal of Great Lakes Research*, 45, 413-433 (IF:1.93) <https://doi.org/10.1016/j.jglr.2018.09.001>
12. **Shu, S.**, Liu, H., Frappart, F., Huang, Y., Wang, S., Hinkel, K.M., Beck, R.A., Yu, B., Jones, B.M., Arp, C.D., Wang, L., & Ye, Z. (2018). Estimation of snow accumulation over frozen Arctic lakes using repeat ICESat laser altimetry observations – A case study in northern Alaska. *Remote Sensing of Environment*, 216, 529-543 (IF:9.09) <https://doi.org/10.1016/j.rse.2018.07.018>
11. Liu, H., & **Shu, S.** (2018). Derivation of Reliable Surface Elevation Measurements from ICESAT/GLAS Waveforms by Incorporating Spatial Contextual Information. In, *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium* (pp. 7438-7440) <https://doi.org/10.1109/IGARSS.2018.8517985>

10. Johansen, R., Beck, R., Nowosad, J., Nietch, C., Xu, M., **Shu, S.**, Yang, B., Liu, H., Emery, E., Reif, M., Harwood, J., Young, J., Macke, D., Martin, M., Stillings, G., Stumpf, R., & Su, H. (2018). Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne hyperspectral imagery and dense surface observations. *Harmful Algae*, 76, 35-46 (IF: 3.71) <https://doi.org/10.1016/j.hal.2018.05.001>
9. Beck, R., Xu, M., Zhan, S., Liu, H., Johansen, R.A., Tong, S., Yang, B., **Shu, S.**, Wu, Q., Wang, S., Berling, K., Murray, A., Emery, E., Reif, M., Harwood, J., Young, J., Martin, M., Stillings, G., Stumpf, R., Su, H., Ye, Z., & Huang, Y. (2017). Comparison of satellite reflectance algorithms for estimating phycocyanin values and cyanobacterial total biovolume in a temperate reservoir using coincident hyperspectral aircraft imagery and dense coincident surface observations. *Remote Sensing*, 9 (IF: 4.51) <https://doi.org/10.3390/rs9060538>
8. Ye, Z., Liu, H., Chen, Y., **Shu, S.**, Wu, Q., & Wang, S. (2017). Analysis of water level variation of lakes and reservoirs in Xinjiang, China using ICESat laser altimetry data (2003–2009). *PLoS ONE*, 12(9). doi: 10.1371/journal.pone.0183800 (IF: 2.74) <https://doi.org/10.1371/journal.pone.0183800>
7. Beck, R., Zhan, S., Liu, H., Tong, S., Yang, B., Xu, M., Ye, Z., Huang, Y., **Shu, S.**, Wu, Q., Wang, S., Berling, K., Murray, A., Emery, E., Reif, M., Harwood, J., Young, J., Nietch, C., Macke, D., Martin, M., Stillings, G., Stumpf, R., & Su, H. (2016). Comparison of satellite reflectance algorithms for estimating chlorophyll-a in a temperate reservoir using coincident hyperspectral aircraft imagery and dense coincident surface observations. *Remote Sensing of Environment*, 178, 15-30 (IF:9.09) <https://doi.org/10.1016/j.rse.2016.03.002>
6. Wang, L., Liu, H., Wang, S., & **Shu, S.** (2015). “Antarctica 2013/2014 Seasonal melt extent and duration [in *State of the Climate in 2014*.]”. Bulletin of the American Meteorological Society (BAMS), 96(7): S155-S157. (IF: 9.38) <http://dx.doi.org/10.1175/2015BAMSStateoftheClimate.1>
5. Wang, L., Liu, H., Wang, S., & **Shu, S.** (2014). “Antarctica 2012/2013 Seasonal melt extent and duration [in *State of the Climate in 2013*.]”. Bulletin of the American Meteorological Society (BAMS), 95(7): S149-S150. (IF: 9.38) <https://doi.org/10.1175/2014BAMSStateoftheClimate.1>
4. Yu, B., **Shu, S.**, Liu, H., Wu, J., & Chen, Z. (2014). Object-based Spatial Cluster Analysis of Urban Landscape Pattern Using Nighttime Light Satellite Images: A Case Study of China, *International Journal of Geographical Information Science*, 28(11), 2328-2355. (IF: 3.73) <https://doi.org/10.1080/13658816.2014.922186>
3. Wu, B., Yu, B., Yue, W., **Shu, S.**, Tan, W., Hu, C., Huang, Y., Wu, J., & Liu, H. (2013). “A Voxel-Based Method for Automated Identification and Morphological Parameters Estimation of Individual Street Trees from Mobile Laser Scanning Data”, *Remote Sensing*, 5(2), 584-611. (IF: 4.51) <https://doi.org/10.3390/rs5020584>
2. Hu, Z., Wu, J., Wu, B., **Shu, S.**, & Yu, B. (2012). Simulating and mapping the variations of solar radiation at the Lujiazui region of Shanghai using Airborne LiDAR data. In, *Key Engineering Materials* (pp. 511-516) (IF: 0.39) <https://doi.org/10.4028/www.scientific.net/KEM.500.511>
1. **Shu, S.**, Yu, B., Wu, J., & Liu, H. (2011). “Methods for Deriving Urban Built-up Area Using Night-light Data: Assessment and Application”, *Remote Sensing Technology and Application*. 26(2), 169-176. (CSCD, In Chinese) (IF: 1.19) <http://www.rsta.ac.cn/CN/10.11873/j.issn.1004-0323.2011.2.169>

In Review/Revision

4. Huang, Y., Song, Z., Yang, H., Yu, B., Liu, H., Che, T., Chen, J., Wu, J., **Shu, S.**, Peng, X., & Zheng, Z (2021). "Snow Cover Detection in Mid-Latitude Mountainous and Polar Regions Using Nighttime Light Data", *Remote Sensing of Environment* (IF:9.09)
3. Wu, B., Yu, B., **Shu, S.**, Liang, H., Zhao, Y., & Wu, J. (2021). "Investigating spatial distribution of visual quality inside urban streets using mobile LiDAR data", *Computers, Environment and Urban Systems* (IF: 4.66)
2. Wang, C., Yu, B., Chen, Z., Liu, Y., Song, W., Li, X., Yang, C., Small, C., **Shu, S.**, and Wu, J., (2021). "Evolution of Urban Spatial Clusters in China: A Dynamic Graph-based Method from Nighttime Light Remote Sensing", *Annals of the Association of American Geographers* (IF: 2.76).
1. Yang, B., Liu, H., Kang, E.L., Hawthorne, T.L., Tong, S., **Shu, S.**, (2021). "Assessing traffic volume impacts on urban heat island: A case study of Beijing 2008 Olympics", *Geophysical Research Letters* (IF: 4.34)

In Preparation

5. **Shu, S.**, Yu, O., Schoonover, C., Liu, F., Ekstrand, J., & Liu, H. Influences of Ground Control Points on UAV-based Snow Depth Retrieval
4. Xu, M., Liu, H., Mitchell, D., Lu, Y., Beck, R., Cohen, S., **Shu, S.**, & Dimova, N. Spatially transferable multi-predictor ensemble model for river turbidity assessment at a basin scale using Landsat 8 multispectral imagery.
3. Zhao, Y., Wu, B., **Shu, S.**, Yu, B., & Wu, J., Evaluation of ICESat-2 Surface Heights in Urban Environments Using Airborne LiDAR Point Cloud Data.
2. Wang, S., Liu, H., Jezek, K., Yu, B., Wang, L., Huang, Y., **Shu, S.**, Beck, R., & Ward, D. Half-century ice velocity records reveal the instability development process of Larsen Ice Shelf.
1. Wang, S., Liu, H., **Shu, S.**, Wu, Q., Huang, Y., Ward, D., & Beck, R. Integrating multi-source remote sensing data to investigate the decadal changes of Larsen B outlet glaciers following ice shelf collapse.

Grants

Awarded

- "UAV-based Soil Erosion Monitoring for the Removal of Ward's Mill Dam", *Chancellor's Innovation Scholars Program 2020 – 2021*, Appalachian State University, **PI. \$10,000.** 2020 – 2021
- *CAS Research/Proposal Development Summer Grant*, Appalachian State University, **Sole PI. \$5,000.** 2021 Summer
- "Use of UAV-Based Thermal Infrared (TIR) Remote Sensing in Building Energy Performance Analysis", *Appalachian Energy Center Internal Grant*, Appalachian Energy Center, **Co-PI. \$4,999.** December 2020 – June 2021
- "UAV-Based Soil Erosion Monitoring and Assessment", *Conducting Complex Research Together (CONCERT) Grants*, Appalachian State University's Research Institute for Environment, Energy, and Economics (RIEEE), **Co-PI. \$4,897.** January 2020 – May 2020

Pending

Not Awarded

- "Mapping Bathymetry and Monitoring Water Level and Storage Dynamics of Arctic Thermokarst Lakes with ICESat-2 Observations and Multispectral Satellite Images", *NASA Research Opportunities in Space*

and Earth Science (ROSES-2019), **Institutional PI. \$441,072.** April 2020 – April 2023.

- "Monitoring Snow Accumulation Surrounding Boone with Unmanned Aerial Vehicle, Airplane, and Satellite Elevation Observations ", *Conducting Complex Research Together (CONCERT) Grants*, Appalachian State University's Research Institute for Environment, Energy, and Economics (RIEEE), **PI. \$5,479.**, January 2021 – September 2021
- "Monitoring Snow Accumulation in Appalachian Mountain Regions with Unmanned Aerial Vehicle (UAV), Airplane, and Satellite Surface Elevation Observations", *University Research Council Grants*, Appalachian State University, **PI, \$5,000.** 2020-2021
- "Comparative Analysis of Unmanned Aerial Vehicle (UAV) Surveying Accuracy", *Chancellor's Innovation Scholars Program 2019 – 2020*, Appalachian State University, **Co-PI. \$10,000.** 2019 – 2020
- "Estimating Mountain Snow Accumulation using NASA ICESat-2 Satellite Laser Altimetry Observations", *ORAU Ralph E. Powe Junior Faculty Enhancement Award*, **Sole PI. \$10,000.** 2020 – 2021
- *CAS Research/Proposal Development Summer Grant*, Appalachian State University, **Sole PI. \$5,000.** 2020 Summer

Conference and Invited Presentations

Liu, H., Xu, X., & **Shu, S.** "Mapping Bathymetry of Arctic Lakes with ICESat-2 Observations and Multispectral Satellite Images" IEEE International Geoscience and Remote Sensing Symposium 2020.

Shu, S., "A General Introduction to ICESat-2 Satellite Mission, Data Products and Processing Tools", Webinar invited by Dr. Hongxing Liu at Department of Geography, University of Alabama, Tuscaloosa 2020.

Shu, S., Liu, H., Beck, R.A., and Frappart, F., (2019). "Analysis of Sentinel-3 SAR altimetry waveform retracking algorithms for deriving temporally consistent water levels over ice-covered lakes" American Geophysical Union Annual Meeting, San Francisco, CA, USA, December 2019.

Liu, H., & **Shu, S.**, "Derivation of Reliable Surface Elevation Measurements from ICESAT/GLAS Waveforms by Incorporating Spatial Contextual Information" IEEE International Geoscience and Remote Sensing Symposium 2018

Shu, S., & Liu, H. (2018). "Waveform Analysis of Sentinel-3 SAR Altimetry in the Retrieval of Water Levels over Seasonally-frozen Lakes", AAG Annual Meeting 2018, New Orleans, Louisiana, USA, April, 2018.

Shu, S., Liu, H., & Frappart, F., (2017). "Improving Satellite Waveform Altimetry Measurements with a Probabilistic Relaxation Algorithm", AAG Annual Meeting, Boston, USA, April, 2017.

Shu, S. (2017) The Department of Geography Colloquium, "Estimation of the Arctic Snow Depth using Satellite Laser Altimetry Observations", University of Cincinnati, Ohio, USA, February, 2017.

Shu, S., Liu, H., Frappart, F., Kang, L.E., Wang, L., & Hinkel, K.M. (2016). "Improving ICESat-1 Altimetric Measurements Using Probabilistic Relaxation Algorithm", AAG Annual Meeting 2016, San Francisco, California, USA, April, 2016.

Shu, S., Liu, H., Hinkel, K.M., Beck, R.A., Wang, L., Jones, B.M., Ye, Z., & Yu, B. (2015). "Snow Depth and Lake Elevation Variability of Alaskan Arctic Coastal Plain Derived from ICESat-1 Laser Altimetry", AAG Annual Meeting, Chicago, Illinois, USA, April, 2015. (**Winner, first Place**)

Shu, S., Liu, H., Hinkel, K.M., Beck, R.A., & Wang, L. (2014). "Spatio-temporal Variability of Ice and Snow

Surface Elevation in Alaskan Arctic Lakes from ICESat Altimetry Observations, 2003-2009", AAG Annual Meeting, Tampa, Florida, USA, April, 2014.

Liu, H., Yang, B., & **Shu, S.** (2013). "*Spatio-temporal analysis of surface temperature and water level variability of thermokarst lakes on the Arctic Coastal Plain of northern Alaska using multiscale satellite thermal images and ICESat laser altimetry*", AGU Annual Meeting, San Francisco, USA, December, 2013.

Shu, S., Yu, B., Liu, H., & Wu, J., (2012). "*Object-based Spatial Cluster Analysis of Urban Landscape Pattern Using Nighttime Light Satellite Images: A Case Study of China*", AAG Annual Meeting, New York, USA, February, 2012.

Research Experience

- 2020 – 2020 Co-PI, "*UAV-Based Soil Erosion Monitoring and Assessment*", *Conducting Complex Research Together (CONCERT) Grants*, Appalachian State University's Research Institute for Environment, Energy, and Economics (RIEEE) (PI: Dr. OK-Youn Yu, Fangxiao Liu)
- 2016 – 2018 Research Assistant, NASA project "*Algorithm development and comparison for deriving water quality parameters for inland lakes and rivers from multispectral and hyperspectral images*" (PI: Dr. Hongxing Liu), University of Cincinnati
- 2016 – 2017 Research Assistant, USDA project "*Application of Airborne LiDAR Remote Sensing of Forest Canopy Structure and Fragmentation with Oil/Gas development in the Appalachian Region*" (PI: Dr. Hongxing Liu), University of Cincinnati
- 2014 – 2015 Research Assistant, NSF project "*Toward a Circumarctic Lakes Observation Network (CALON): Multiscale observations of lacustrine systems*" (PI: Dr. Hongxing Liu), University of Cincinnati
- 2012 – 2013 Research Assistant, project "*Spatio-temporal analysis of urban clusters in the Yangtze River Delta using nighttime light data and object-based method.*" (PI: Dr. Bailang Yu), East China Normal University
- 2011 – 2012 Research Assistant, project "*Geographic Information System of Monitoring and Controlling the Gasoline Evaporation in Typical Cities of China.*" (PI: Dr. Bailang Yu), East China Normal University
- 2011 – 2012 Research Assistant, the project "*Identification and morphological parameters estimation of individual street trees from Vehicle-borne Laser Scanning data.*" (PI: Dr. Bailang Yu), East China Normal University

Teaching

Course Taught at Appalachian State University

GHY 3310 *Environmental Remote Sensing*. Fall 2019, 2020; Spring 2019, 2020, 2021

GHY 3812 *Introduction to GIS*. Fall, 2019, 2020; Spring 2019, 2020, 2021

GHY 4810 *Digital Image Processing*. Spring 2020, 2021

Course Taught at Northern Kentucky University

GEOG419 *Introduction to Remote Sensing*. Spring 2018.

Course Taught at University of Cincinnati

GEOG 1044 *Natural Disasters and Hazards*. Summer 2019, 2018, 2017, 2016

GEOG 1040 *Earth from Space*. Summer 2019

GEOG 6091 Advanced GIS. Fall 2018
GEOG 6071 *Introduction to GIS*. Summer 2018
GEOG 6085 *Spatial Statistics II*. Spring 2016, 2015 (Teaching Assistant)
GEOG 3033 *Advanced Environmental Geography*. Fall 2014 (Teaching Assistant)
GEOG 6051 *Urban Habitat*. Fall 2014 (Teaching Assistant)
GEOG 2062 *People and Environment II*. Spring 2014 (Teaching Assistant)
GEOG 6074 *Computer Cartography*. Fall 2013 (Teaching Assistant)

Mentoring

Current Graduate Thesis at Appalachian State University

Alex O'Neill Expected Graduation: Fall 2020. Thesis: *A Modeling Approach to Hazard Analysis in High Mountain Regions: A Case Study of the Sagarmatha National Park, Nepal*.

Current Undergraduate Student Thesis at Appalachian State University

Anton Hengst Expected Graduation: Fall 2020. Thesis: *Sub-Annual to Annual Dynamics of Alaskan Ice-Marginal Lakes from Automated Image Classification Using Google Earth Engine*

University Service

Department of Geography and Planning, Appalachian State University

2020 – Present Member, Department Personnel Committee
2020 – Present Member, Graduate Exam Committee
2019 – Present Member, Speaker Committee
2019 – Present Advisor, Appalachian Geographical Society

Professional Service

Journal Reviewer

Remote Sensing of Environment
GIS & Remote Sensing
Journal of Oceanology
Remote Sensing
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Wetland
Southeastern Geographer
International Journal of Remote Sensing

Journal Themed Issues

2020 – 2021 Guest Editor, *Remote Sensing*, Special Issue – [Radar Based Water Level Estimation](#) (With Frédéric Frappart, Isabel Vigo, Joana Fernandes, David García-García, José Darrozes, Fabien Blarel, Cassandra Normandin)

Other Service Activities

2019 Judge for the Outstanding Student Presentation Awards (OSPA) of American Geophysical Union Annual Meeting 2019 at San Francisco, CA

Awards and Honors

- 04/2018 **The Robert Bruce McNee Award for Outstanding Academic Achievements** in Department of

Geography and Geographic Information Science, University of Cincinnati

- 04/2017 **Finalist of Student Paper Competition** in AAG Remote Sensing Specialty Group, “*Improving Satellite Waveform Altimetry Measurements with a Probabilistic Relaxation Algorithm*”, AAG Annual Meeting 2017, Boston, U.S.
- 2016 – 2017 **Graduate School Dean’s Fellowship**, University of Cincinnati
- 04/2015 **First Place Award** in R.S. Tarr Student Illustrated Paper Competition in AAG Cryosphere Specialty Group, “*Snow Depth and Lake Elevation Variability of Alaskan Arctic Coastal Plain Derived from ICESat-1 Laser Altimetry*”, AAG Annual Meeting 2015, Chicago, Illinois, U.S.
- 06/2013 Shanghai Outstanding Graduate Student Award
- 02/2012 **Third Place Award** in AAG GIS Specialty Group, “*Object-based Spatial Cluster Analysis of Urban Landscape Pattern Using Nighttime Light Satellite Images: A Case Study of China*”, AAG Annual Meeting 2012, New York, U.S.
- 2012 Excellent Student Award of East China Normal University
- 2012 “Wisdom” Scholarship for excellent graduate students in East China Normal University
- 2011 Excellent Student Award in Department of Geography, East China Normal University
- 2008 Excellent Student Award of East China Normal University
- 2008 Second-level Outstanding Scholarship of East China Normal University
- 2007 Third-level Outstanding Scholarship of East China Normal University

Society Membership

2013 – present American Association of Geographers (AAG)

2019 – present American Geophysical Union (AGU)

Professional Skills

Programming language: C#, Matlab, VB.NET, C++, R, SAS, ArcObjects, Python, ENVI IDL

Professional software: ArcGIS, ENVI, eCognition, SPSS, SAS, Microsoft Visual Studio, Microsoft Office, CorelDraw, Orange