HANYU SHI

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EMPLOYMENTS

Southwest University, Chongqing, China 2022.03 – Present
Professor

Beijing Normal University, Beijing, China 2018.07 – 2019.08
Research Assistant

EDUCATION

Beijing Normal University, Beijing, China 2019.09 – 2022.01
Ph.D. in Remote Sensing
Thesis: Radiative transfer modeling and parameter estimation over rugged terrains

University of Virginia, Charlottesville, VA, USA 2017.07 – 2018.06
Ph.D. student in Ecology

Beijing Normal University, Beijing, China 2014.09 – 2017.06
M.S. in Remote Sensing
Thesis: Consistent estimation of multiple parameters from top of atmosphere satellite data

Beijing Normal University, Beijing, China 2010.09 – 2014.07
B.S. in Remote Sensing
Thesis: Inter-comparison of several atmospheric radiative transfer models

RESEARCH PROJECTS

- **National Natural Science Foundation of China**
  Mountain Vegetation Canopy Modeling and Leaf Area Index Estimation with Remote Sensing Approach, 2023.01–2026.12. (**PI**)
- **Open Fund of State Key Laboratory of Remote Sensing Science**
  Application and specific absorption coefficients calibration of the FASPECT leaf radiative transfer model, 2021.08–2023.07.
- **National Natural Science Foundation of China**
  Consistent estimation of surface parameters from multi-temporal and multi-spatial top of atmosphere satellite data, 2018.01–2021.12.
- **Training Program of Innovation and Entrepreneurship for Undergraduates in Beijing**
  Estimating leaf inclination angle distribution from multi-angle field images, 2012–2013.

PUBLICATIONS

Articles

2023

1. J. Li, X. Zhan, Z. Xiao, **H. Shi**, J. Jiang, "Simultaneous Estimation of LAI, PAR, FAPAR and Surface Albedo at Multiple Spatial Scales from Top-of-Atmosphere Satellite Observations with Different Spatial Resolution," ***IEEE Trans. Geosci. Remote Sens.***, vol. 61, Art no. 4408321, 2023, doi: 10.1109/TGRS.2023.3311539.
2. D. Wu, S. Liu, X. Wu, T. Xu, Z. Xu, X. He, **H. Shi**, "Evaluation of the intrinsic temperature sensitivity of ecosystem respiration in typical ecosystems of an endorheic river basin," ***Agric. For. Meteorol.***, vol. 333, Art no. 109393, Apr. 2023, doi: 10.1016/j.agrformet.2023.109393.

3. **H. Shi**, J. Jiang, S. Jacquemoud, Z. Xiao, and M. Ma, "Estimating leaf mass per area with leaf radiative transfer model," ***Remote Sens. Environ.***, vol. 286, Art no. 113444, Mar. 2023, doi: 10.1016/j.rse.2022.113444.

2022

1. **H. Shi** and Z. Xiao, "A Canopy Radiative Transfer Model Considering Leaf Dorsoventrality," ***IEEE Trans. Geosci. Remote Sens.***, vol. 60, Art no. 2002711, 2022, doi: 10.1109/TGRS.2021.3119315.
2. **H. Shi** and Z. Xiao, "Exploring Topographic Effects on Surface Parameters Over Rugged Terrains at Various Spatial Scales," ***IEEE Trans. Geosci. Remote Sens.***, vol. 60, Art no. 4404616, 2022, doi: 10.1109/TGRS.2021.3098607.
3. **H. Shi** and Z. Xiao, "SIFT: Modeling Solar-induced Chlorophyll Fluorescence Over Sloping Terrain," ***IEEE Geosci. Remote Sens. Lett.***, vol. 19, Art no. 3002405, 2022, doi: 10.1109/LGRS.2021.3067879.
4. **H. Shi**, Z. Xiao, J. Wen, and S. Wu, "An Optical-Thermal Surface-Atmosphere Radiative Transfer Model Coupling Framework With Topographic Effects," ***IEEE Trans. Geosci. Remote Sens.***, vol. 60, Art no. 4400312, 2022, doi: 10.1109/TGRS.2020.3044061.

2021

1. **H. Shi**, Z. Xiao, Q. Wang, and D. Wu, "Multiparameter Estimation From Landsat Observations With Topographic Consideration," ***IEEE Trans. Geosci. Remote Sens.***, vol. 59, no. 9, pp. 7353-7369, Sep. 2021, doi: 10.1109/TGRS.2021.3057377.
2. **H. Shi** and Z. Xiao, "The 4SAILT Model: An Improved 4SAIL Canopy Radiative Transfer Model for Sloping Terrain," ***IEEE Trans. Geosci. Remote Sens.***, vol. 59, no. 7, pp. 5515–5525, Jul. 2021, doi: 10.1109/TGRS.2020.3022874.
3. H. Ma, S. Liang, **H. Shi**, and Y. Zhang, "An Optimization Approach for Estimating Multiple Land Surface and Atmospheric Variables From the Geostationary Advanced Himawari Imager Top-of-Atmosphere Observations," ***IEEE Trans. Geosci. Remote Sens.***, vol. 59, no. 4, pp. 2888–2908, Apr. 2021, doi: 10.1109/TGRS.2020.3007118.
4. D. Wu, S. Liu, X. Wu, X. Yang, T. Xu, Z. Xu, and **H. Shi**, "Diagnosing the temperature sensitivity of ecosystem respiration in northern high-latitude regions," ***J. Geophys. Res.-Biogeosci.***, vol. 126, no. 4, Art no. e2020JG005998, Apr. 2021, doi: 10.1029/2020JG005998.

2020

1. H. Xiong, **H. Shi**, and Z. Xiao, "Consistent retrieval of multiple parameters from GOES-R top of atmosphere reflectance data," ***Int. J. Remote Sens.***, vol. 41, no. 20, pp. 7931–7957, Oct. 2020, doi: 10.1080/01431161.2020.1766151.
2. L. T. Helm, **H. Shi**, M. T. Lerdau, and X. Yang, "Solar-induced chlorophyll fluorescence and short-term photosynthetic response to drought," ***Ecol. Appl.***, vol. 30, no. 5, Art. no. e02101, Jul. 2020, doi: 10.1002/eap.2101.

2019

1. X. Zhan, Z. Xiao, J. Jiang, and **H. Shi**, "A Data Assimilation Method for Simultaneously Estimating the Multiscale Leaf Area Index From Time-Series Multi-Resolution Satellite Observations," ***IEEE Trans. Geosci. Remote Sens.***, vol. 57, no. 11, pp. 9344–9361, Nov. 2019, doi: 10.1109/TGRS.2019.2926392.
2. **H. Shi**, Z. Xiao, and X. Tian, "Exploration of machine learning techniques in emulating a coupled soil-canopy-atmosphere radiative transfer model for multi-parameter estimation from satellite observations," ***IEEE Trans. Geosci. Remote Sens.***, vol. 57, no. 11, pp. 8522–8533, Nov. 2019, doi: 10.1109/TGRS.2019.2921392.
3. **H. Shi**, Z. Xiao, X. Zhan, H. Ma, and X. Tian, "Evaluation of MODIS and two reanalysis aerosol optical depth products over AERONET sites," ***Atmos. Res.***, vol. 220, pp. 75–80, May 2019, doi: 10.1016/j.atmosres.2019.01.009.

2018

1. X. Yang, **H. Shi**, A. Stovall *et al.*, "FluoSpec 2—An Automated Field Spectroscopy System to Monitor Canopy Solar-Induced Fluorescence," ***Sensors***, vol. 18, no. 7, Art no. 2063, Jun. 2018, doi: 10.3390/s18072063.

2017

1. **H. Shi**, Z. Xiao, S. Liang, and H. Ma, "A Method for Consistent Estimation of Multiple Land Surface Parameters From MODIS Top-of-Atmosphere Time Series Data," ***IEEE Trans. Geosci. Remote Sens.***, vol. 55, no. 9, pp. 5158–5173, Sep. 2017, doi: 10.1109/TGRS.2017.2702609.
2. H. Ma, S. Liang, Z. Xiao, and **H. Shi**, "Simultaneous inversion of multiple land surface parameters from MODIS optical–thermal observations," ***ISPRS-J. Photogramm. Remote Sens.***, vol. 128, pp. 240–254, Jun. 2017, doi: 10.1016/j.isprsjprs.2017.04.007.

2016

1. **H. Shi**, Z. Xiao, S. Liang, and X. Zhang, "Consistent estimation of multiple parameters from MODIS top of atmosphere reflectance data using a coupled soil-canopy-atmosphere radiative transfer model," ***Remote Sens. Environ.***, vol. 184, pp. 40–57, Oct. 2016, doi: 10.1016/j.rse.2016.06.008.

2014

1. Y. Dong, Z. Jiao, H. Zhang, J. Li, G. Jiao, and **H. Shi**, "Efficient algorithm for improving the hotspot effect of the operational MODIS BRDF product," ***J. Remote. Sens.***, vol. 18, no. 4, pp. 804–825, 2014, doi: 10.11834/jrs.20143229.

Books/Chapters

1. Z. Xiao, **H. Shi**, S. Liang, "Retrieval of leaf area index and fraction of absorbed photosynthetically active radiation," in ***Global Land and Ocean Surface Remote Sensing Products Generation and Application***, S. Liang, J. Zhang, L. Chen, X. Zhao, J. Yang, Ed. Beijing: Science Press, 2017. (in Chinese)

Conference

2023

1. **H. Shi**, "Vegetation radiative transfer modeling with leaf dorsiventrality," Oral Presentation, in ***The 6th Quantitative Remote Sensing Forum***, Chengdu, China, Jun. 2022. (in Chinese)

2022

1. **H. Shi**, "Estimating leaf mass per area with leaf radiative transfer model," Oral Presentation, in ***School of Geographical Sciences Annual Conference***, Chongqing, China, Dec. 2022. (in Chinese)
2. **H. Shi**, "Modeling and Analyzing Topographic Effects on Solar-induced Chlorophyll Fluorescence," Oral Presentation, in ***The 7th National Digital Mountain Symposium***, Guiyang, China, Sep. 2022. (in Chinese)

2021

1. **H. Shi** and Z. Xiao, "Topographic Effects on Solar-induced Chlorophyll Fluorescence," in ***AGU Fall Meeting Abstracts***, vol. B55Q-12, New Orleans, LA, USA, Dec. 2021.
2. **H. Shi** and Z. Xiao, "4SAID: A canopy radiative transfer model considering leaf dorsoventrality," Oral Presentation, in ***The 1st National Remote Sensing Bulletin Youth Scientist Forum & 6th Graduate Forum on Remote Sensing and Geographic Infromation Science***, Beijing, China, Oct. 2021. (in Chinese)
3. **H. Shi** and Z. Xiao, "Exploring topographic effects on mutliscale surface parameters," Oral Presentation, in ***The 7th Young Scientist Forum on Earth Science***, Guiyang, China, Jul. 2021. (in Chinese)
4. **H. Shi** and Z. Xiao, "Radiative transfer modeling over sloping terrains," Oral Presentation, in ***The 5th Quantitative Remote Sensing Forum***, Wuhan, China, Jun. 2021. (in Chinese)

2020

1. **H. Shi**, "Radiative transfer modeling over rugged terrains," Oral Presentation, in ***Faculty of Geographical Science Annual Conference***, Beijing, China, Dec. 2020. (in Chinese)
2. D. Wu et al., "Diagnosing temperature sensitivity of respiration at multiple spatial scale in the northern high-latitude regions," in ***EGU General Assembly 2020***, Vienna, Austria, May 2020. doi: 10.5194/egusphere-egu2020-7396.

2019

1. **H. Shi** and Z. Xiao, "Updates of the 6S radiative transfer model: a case study of 6S+PROSAIL," in ***International Geoscience and Remote Sensing Symposium***, Yokohama, Japan, Jul. 2019, pp. 2879–2882. doi: 10.1109/IGARSS.2019.8899146.
2. N. Liu, Z. Xiao, **H. Shi**, and X. Zhan, "A method for estimating leaf area index from Landsat data based on DART model and Gaussian process," in ***International Geoscience and Remote Sensing Symposium***,

Yokohama, Japan, Jul. 2019, pp. 6550–6553. doi: 10.1109/IGARSS.2019.8900564.

3. H. Xiong, Z. Xiao, and **H. Shi**, "A method for multi-parameter consistent estimation from GOES-R top of atmosphere reflectance data," in ***International Geoscience and Remote Sensing Symposium***, Yokohama, Japan, Jul. 2019, pp. 7809–7812. doi: 10.1109/IGARSS.2019.8899147.

2018

1. A. Jablonski, X. Yang, **H. Shi**, and M. Lerdau, "Characterizing the multi-angular response of solar-induced fluorescence (SIF) using an unmanned aerial vehicle (UAV)," in ***AGU Fall Meeting Abstracts***, vol. B31N-2696, Washington, D.C., USA, Dec. 2018.
2. A. E. Stovall, X. Yang, R. Nardacci, **H. Shi**, and H. H. Shugart, "Seasonal structure-function interactions: fusing solar induced fluorescence and terrestrial LiDAR for holistic ecosystem measurement," in ***AGU Fall Meeting Abstracts***, vol. B31N-2696, Washington, D.C., USA, Dec. 2018.

2017

1. S. Liang, Z. Xiao, **H. Shi**, and H. Ma, "A data assimilation approach for simultaneously estimating a suite of land surface variables from satellite data," in ***International Geoscience and Remote Sensing Symposium***, Fort Worth, Texas, USA, Jul. 2017, pp. 3973–3975. doi: 10.1109/IGARSS.2017.8127870.

Honors and Awards

- Excellent Achievements of China's Remote Sensing in 2022, *2nd Prize*, 2023
- Graduate Academic Innovation Award, *Grand Prize*, 2022
- Zhou Tingru Scholarship, 2022
- LiYun Scholarship, *1st Prize*, 2021
- Outstanding Presentation Award, *1st Prize*, The 1st National Remote Sensing Bulletin Youth Scientist Forum, 2021
- National Scholarship, 2021
- Li Xiaowen Young Scientist Award in Remote Sensing, 2021
- Outstanding Presentation Award, Faculty of Geographical Science Annual Conference, 2020
- Academic Scholarship, *1st Prize*, 2020
- LiYun Scholarship, *1st Prize*, 2019
- National Scholarship, 2019
- College Graduate Excellence Award of Beijing, 2017
- Outstanding Graduate of Beijing Normal University, 2017
- LiYun Scholarship, *2nd Prize*, 2016
- National Scholarship, 2016
- National Scholarship, 2015
- Beijing Normal University Computer Programming Contest, *3rd Prize*, 2014
- Beijing Normal University Mathematical Contest in Modeling, *2nd Prize*, 2013
- ESRI China GIS Software Developer Contest, ENVI/IDL Group, Merit Award, 2013
- Beijing Normal University College Student Curricular Academic Science and Technology Works Competition, *3rd Prize*, 2013
- Beijing Normal University Computer Programming Contest, *3rd Prize*, 2013
- Beijing Normal University College Student Curricular Academic Science and Technology Works Competition, *3rd Prize*, 2012
- National Encouragement Scholarship, 2011
- Honor Scholarship, *1st Prize*, 2011

Skills

- Programming Languages: Fortran, Python, C/C++, Linux/Shell, Matlab, PBS, LaTeX, IDL
- UAS pilot: licensed from 2018-2020

Open source contribution & Personal Website

- `https://Hanyu-Shi.github.io`
- `https://github.com/Hanyu-Shi`

- https://figshare.com/authors/_/4026737
- https://orcid.org/0000-0001-9954-7062
- IEEE Member