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

2024

1. **Shi H.**, Jacquemoud S., Jiang J., Zhou M., Fabre S., Richardson A.D., Wang S., Jiang X., Xiao Z. (2024), The PROLIB leaf radiative transfer model: Simulation of the dorsiventrality of leaves from visible to mid-wave infrared, ***Remote Sensing of Environment***, 306, 114140, doi: 10.1016/j.rse.2024.114140.

2023

1. Li J., Zhan X., Xiao Z., **Shi H.**, Jiang J. (2023), Simultaneous Estimation of LAI, PAR, FAPAR and Surface Albedo at Multiple Spatial Scales from Top-of-Atmosphere Satellite Observations with Different Spatial Resolution, ***IEEE Transactions on Geoscience and Remote Sensing***, 61, 4408321, doi: 10.1109/TGRS.2023.3311539.
2. Wu D., Liu S., Wu X., Xu T., Xu Z., He X., **Shi H.** (2023), Evaluation of the intrinsic temperature sensitivity of ecosystem respiration in typical ecosystems of an endorheic river basin, ***Agricultural and Forest Meteorology***, 333, 109393, doi: 10.1016/j.agrformet.2023.109393.
3. **Shi H.**, Jiang J., Jacquemoud S., Xiao Z., Ma M. (2023), Estimating leaf mass per area with leaf radiative transfer model, ***Remote Sensing of Environment***, 286, 113444, doi: 10.1016/j.rse.2022.113444.

2022

1. **Shi H.**, Xiao Z. (2022), A Canopy Radiative Transfer Model Considering Leaf Dorsoventrality, ***IEEE Transactions on Geoscience and Remote Sensing***, 60, 2002711, doi: 10.1109/TGRS.2021.3119315.
2. **Shi H.**, Xiao Z. (2022), Exploring Topographic Effects on Surface Parameters Over Rugged Terrains at Various Spatial Scales, ***IEEE Transactions on Geoscience and Remote Sensing***, 60, 4404616, doi: 10.1109/TGRS.2021.3098607.
3. **Shi H.**, Xiao Z. (2022), SIFT: Modeling Solar-induced Chlorophyll Fluorescence Over Sloping Terrain, ***IEEE Geoscience and Remote Sensing Letter***, 19, 3002405, doi: 10.1109/LGRS.2021.3067879.
4. **Shi H.**, Xiao Z., Wen J., Wu S. (2022), An Optical-Thermal Surface-Atmosphere Radiative Transfer Model Coupling Framework With Topographic Effects, ***IEEE Transactions on Geoscience and Remote Sensing***, 60, 4400312, doi: 10.1109/TGRS.2020.3044061.

2021

1. **Shi H.**, Xiao Z., Wang Q., Wu D. (2021), Multiparameter Estimation From Landsat Observations With Topographic Consideration, ***IEEE Transactions on Geoscience and Remote Sensing***, 59(9), 7353–7369, doi: 10.1109/TGRS.2021.3057377.
2. **Shi H.**, Xiao Z. (2021), The 4SAILT Model: An Improved 4SAIL Canopy Radiative Transfer Model for Sloping Terrain, ***IEEE Transactions on Geoscience and Remote Sensing***, 59(7), 5515–5525, doi: 10.1109/TGRS.2020.3022874.
3. Ma H., Liang S., **Shi H.**, Zhang Y. (2021), An Optimization Approach for Estimating Multiple Land Surface and Atmospheric Variables From the Geostationary Advanced Himawari Imager Top-of-Atmosphere Observations, ***IEEE Transactions on Geoscience and Remote Sensing***, 59(4), 2888–2908, doi: 10.1109/TGRS.2020.3007118.
4. Wu D., Liu S., Wu X., Yang X., Xu T., Xu Z., **Shi H.** (2021), Diagnosing the temperature sensitivity of ecosystem respiration in northern high-latitude regions, ***Journal of Geophysical Research: Biogeosciences***, 126(4), e2020JG005998, doi: 10.1029/2020JG005998.

2020

1. Xiong H., **Shi H.**, Xiao Z. (2020), Consistent retrieval of multiple parameters from GOES-R top of atmosphere reflectance data, ***International Journal of Remote Sensing***, 41(20), 7931–7957, doi: 10.1080/01431161.2020.1766151.
2. Helm L.T., **Shi H.**, Lerdau M.T., Yang X. (2020), Solar-induced chlorophyll fluorescence and short-term photosynthetic response to drought, ***Ecological Applications***, 30(5), e02101, doi: 10.1002/eap.2101.

2019

1. Zhan X., Xiao Z., Jiang J., **Shi H.** (2019), A Data Assimilation Method for Simultaneously Estimating the Multiscale Leaf Area Index From Time-Series Multi-Resolution Satellite Observations, ***IEEE Transactions on Geoscience and Remote Sensing***, 57(11), 9344–9361, doi: 10.1109/TGRS.2019.2926392.
2. **Shi H.**, Xiao Z., X. Tian (2019), Exploration of machine learning techniques in emulating a coupled soil-canopy-atmosphere radiative transfer model for multi-parameter estimation from satellite observations, ***IEEE Transactions on Geoscience and Remote Sensing***, 57(11), 8522–8533, doi: 10.1109/TGRS.2019.2921392.
3. **Shi H.**, Xiao Z., X. Zhan, Ma H., and X. Tian (2019), Evaluation of MODIS and two reanalysis aerosol optical depth products over AERONET sites, ***Atmospheric Research***, 220, 75–80, doi: 10.1016/j.atmosres.2019.01.009.

2018

1. Yang X., **Shi H.**, Stovall A., Guan K., Miao G., Zhang Y., Zhang Y., Xiao X., Ryu Y., Lee J.-E., (2018), FluoSpec 2—An Automated Field Spectroscopy System to Monitor Canopy Solar-Induced Fluorescence, ***Sensors***, 18(7), 2063, doi: 10.3390/s18072063.

2017

1. **Shi H.**, Xiao Z., Liang S., Ma H. (2017), A Method for Consistent Estimation of Multiple Land Surface Parameters From MODIS Top-of-Atmosphere Time Series Data, ***IEEE Transactions on Geoscience and Remote Sensing***, 55(9), 5158–5173, doi: 10.1109/TGRS.2017.2702609.
2. Ma H., Liang S., Xiao Z., **Shi H.** (2017), Simultaneous inversion of multiple land surface parameters from MODIS optical-thermal observations, ***ISPRS Journal of Photogrammetry and Remote Sensing***, 128, 240–254, doi: 10.1016/j.isprsjprs.2017.04.007.

2016

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

2014

1. Dong Y., Jiao Z., Zhang H., Li J., Jiao G., **Shi H.** (2014), Efficient algorithm for improving the hotspot effect of the operational MODIS BRDF product, ***Journal of Remote Sensing***, 18(4), 804–825, doi: 10.11834/jrs.20143229.

Books/Chapters

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

Conference

2023

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

2022

1. **Shi H.**, 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. **Shi H.**, 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. **Shi H.**, Xiao Z., Topographic Effects on Solar-induced Chlorophyll Fluorescence, in ***AGU Fall Meeting Abstracts***, B55Q-12, New Orleans, LA, USA, Dec. 2021.
2. **Shi H.**, Xiao Z., 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. **Shi H.**, Xiao Z., 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. **Shi H.**, Xiao Z., Radiative transfer modeling over sloping terrains, Oral Presentation, in ***The 5th Quantitative Remote Sensing Forum***, Wuhan, China, Jun. 2021. (in Chinese)

2020

1. **Shi H.**, Radiative transfer modeling over rugged terrains, Oral Presentation, in ***Faculty of Geographical Science Annual Conference***, Beijing, China, Dec. 2020. (in Chinese)
2. Wu D., Liu S., Wu X., Xu T., Xu Z., He X., **Shi H.**, 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. **Shi H.**, Xiao Z., 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. Liu N., Xiao Z., **Shi H.**, Zhan X., 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. Xiong H., Xiao Z., **Shi H.**, 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. Jablonski A., Yang X., **Shi H.**, Lerdau M., Characterizing the multi-angular response of solar-induced fluorescence (SIF) using an unmanned aerial vehicle (UAV), in ***AGU Fall Meeting Abstracts***, B31N-2696, Washington, D.C., USA, Dec. 2018.
2. Stovall A.E., Yang X., Nardacci R., **Shi H.**, Shugart H.H., Seasonal structure-function interactions: fusing solar induced fluorescence and terrestrial LiDAR for holistic ecosystem measurement, in ***AGU Fall Meeting Abstracts***, B31N-2696, Washington, D.C., USA, Dec. 2018.

2017

1. Liang S., Xiao Z., **Shi H.**, Ma H., 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