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EDUCATION

2024-2025 ***Post Doctoral Research Associate***. Geospatial Sciences Center of Excellence, South Dakota State University, USA

2019-2024 ***Ph. D*** in Geospatial Science & Engineering
Geospatial Sciences Center of Excellence, South Dakota State University, USA

2017-2019 ***M.S.*** in Cartography and Geographic Information Systems
Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China

2012-2016 ***B.S.*** in Cartography and Geographic Information Systems
China University of Mining & Technology, China

AWARDS & HONORS

2024 SDSU Dr. Fritz Gritzner Outstanding Graduate Geography Student Award

2023 Research media reports from LIFE TECHNOLOGY™:
https://www.lifetechnology.com/blogs/life-technology-science-news/algorithm-allows-farmers-to-monitor-crops-in-real-time#:~:text=The%20algorithm%20uses%20data%20from%20various%20sources%20such,can%20identify%20patterns%20and%20trends%20in%20the%20data

2023 Research Spotlight at South Dakota State University
https://www.sdstate.edu/news/2023/09/novel-algorithm-allows-farmers-monitor-crops-real-time
https://phys.org/news/2023-09-algorithm-farmers-crops-real.html

2015-2016 Excellent Student Scholarship; China University of Mining & Technology

INVOLVED PROJECTS

2020-present Developing an enhanced geospatial tool for operationally monitoring crop-specific crop progress and growth conditions in near real-time from Geostationary Satellite Observations and Harmonized Landsat-8 and Sentinel-2 Time Series, United States Department of Agriculture (USDA) (PI: Prof. Xiaoyang Zhang) *Role: Investigation, Algorithm Development, Validation*

2023-present Detection of Species-specific Plant Phenology from Planet-Scope Time Series for Rangeland Management of the Western United States, National Aeronautics and Space Administration (NASA) (PI: Prof. Xiaoyang Zhang) *Role: Data processing, Resources*

2019-2021 Maintenance and Refinement of a Global Land Surface Phenology Product from net primary production (NPP) VIIRS for EOS-MODIS Continuity. NASA (PI: Prof. Xiaoyang Zhang) *Role: Data processing, Validation*

PUBLICATIONS

Published/Accepted

1. Gao, S., Zhang, X.*, **Shen, Y.**, Tran H. K., Ye, Y., Liu, Y., 2025, Improvement of land surface phenology monitoring by fusing VIIRS observations with GOES-16/17 ABI time series. *Remote Sensing of Environment*. 326, 114803. https://doi.org/10.1016/j.rse.2025.114803
2. Liu, Y., Zhang, X. *, Tran H. K., Ye, Y., **Shen, Y.**, An, S., 2025, Heterogeneous land surface phenology challenges the comparison among PlanetScope, HLS, and VIIRS detections in semi-arid rangelands. *Agricultural and Forest Meteorology*. 366, 110497. https://doi.org/10.1016/j.agrformet.2025.110497
3. Tran H. K., Zhang, X. *, Zhang, H. *, **Shen, Y.**, Ye, Y., Liu Y., Gao, S., An, S., 2025, A transformer-based model for detecting land surface phenology from the Harmonized Landsat and Sentinel-2 time series across the United States. *Remote Sensing of Environment*. 320, 114656. https://doi.org/10.1016/j.rse.2025.114656
4. **Shen, Y.** *, Zhang, X. *, Tran H. K., Ye, Y., Gao, S., Liu, Y., An, S., 2025, Near real-time crop mapping at field-scale by blending crop phenometrics with growth magnitude from multiple temporal and spatial satellite observations. *Remote Sensing of Environment*. 318, 114605. https://doi.org/10.1016/j.rse.2025.114605
5. Gao, S.*, Zhang, X.*, Zhang, H. K., **Shen, Y.**, Roy, P. D., Wang, W., Schaaf, C., 2024, A new constant scattering angle solar geometry definition for normalization of GOES-R ABI reflectance times series to support land surface phenology studies. *Remote Sensing of Environment*. 315, 114407. https://doi.org/10.1016/j.rse.2024.114407
6. Liu, Y., Zhang, X.*, **Shen, Y.**, Ye, Y., Gao, S., Tran H. K. 2024, Evaluation of PlanetScope-detected plant-specific phenology using infrared enabled PhenoCam observations in semi-arid ecosystems. *ISPRS Journal of Photogrammetry and Remote Sensing*. 210, 242-259. https://doi.org/10.1016/j.isprsjprs.2024.03.017
7. **Shen, Y.** *, Zhang, X. *, Gao, S., Zhang, H., Schaaf, C., Wang, W., Ye, Y., Liu, Y., 2024, Analyzing GOES-R ABI BRDF-adjusted EVI2 time series by comparing with VIIRS observations over the CONUS, *Remote Sensing of Environment*. 302, 113972. https://doi.org/10.1016/j.rse.2023.113972
8. Román, M.O. *, Justice, C., Paynter, I. *, Boucher, P.B., Devadiga, S., Endsley, A., Erb, A., Friedl, M., Gao, H., Giglio, L., Gray, J.M., Hall, D., Hulley, G., Kimball, J., Knyazikhin, Y., Lyapustin, A., Myneni, R.B., Noojipady, P., Pu, J., Riggs, G., Sarkar, S., Schaaf, C., Shah, D., Tran, K.H., Vermote, E., Wang, D., Wang, Z., Wu, A., Ye, Y., **Shen, Y.**, Zhang, S., Zhang, S., Zhang, X., Zhao, M., Davidson, C., & Wolfe, R. 2024. Continuity between NASA MODIS Collection 6.1 and VIIRS Collection 2 land products. *Remote Sensing of Environment*. 302, 113963. https://doi.org/10.1016/j.rse.2023.113963
9. Tran, K.H., Zhang, X. *, Ye, Y., **Shen, Y.**, Gao, S., Liu, Y., Richardson, A. 2023, A reference dataset of land surface phenology from fused Harmonized Landsat 8/Sentinel-2 with PhenoCam data. *Scientific Data*, 10, 691. https://doi.org/10.1038/s41597-023-02605-1
10. **Shen, Y.**, Zhang, X. *, Yang Z., Ye Y., Wang J., Gao S., Liu Y., Wang, W., Tran H. K., Ju J., 2023, Developing an operational algorithm for near-real-time monitoring of crop progress at field scales by fusing harmonized Landsat and Sentinel-2 time series with geostationary satellite observations, *Remote Sensing of Environment*, 296, 113729. https://doi.org/10.1016/j.rse.2023.113729

11. **Shen, Y.**, Zhang, X. *, Yang, Z., 2022, Mapping corn and soybean phenometrics at field scales over the United States Corn Belt by fusing time series of Landsat 8 and Sentinel-2 data with VIIRS data, *ISPRS Journal of Photogrammetry and Remote Sensing*, 186, 55-69. https://doi.org/10.1016/j.isprsjprs.2022.01.023
12. Zhang, X. *, **Shen, Y.**, Gao, S., Wang, W., Schaaf, C., 2022, Diverse responses of multiple satellite-derived vegetation greenup onsets to dry periods in the Amazon. *Geophysical Research Letters*, 49. https://doi.org/10.1029/2022GL098662
13. Tran, K.H., Zhang, X. *, Ketchpaw, A.R., Wang, J., Ye, Y., **Shen, Y.**, 2022, A novel algorithm for the generation of gap-free time series by fusing harmonized Landsat 8 and Sentinel-2 observations with PhenoCam time series for detecting land surface phenology, *Remote Sensing of Environment*, 282, 113275. https://doi.org/10.1016/j.rse.2022.113275
14. Ye, Y., Zhang, X. *, **Shen, Y.**, Wang, J., Crimmins, T., Scheifinger, H., 2022, An optimal method for validating satellite-derived land surface phenology using in-situ observations from national phenology networks, *ISPRS Journal of Photogrammetry and Remote Sensing*, 194, 74-90. https://doi.org/10.1016/j.isprsjprs.2022.09.018
15. **Shen, Y.**, Zhang, X. *, Wang, W., Nemani, R., Ye, Y., and Wang, J., 2021, Fusing Geostationary Satellite Observations with Harmonized Landsat-8 and Sentinel-2 Time Series for Monitoring Field-Scale Land Surface Phenology, *Remote Sensing*, 13. 21, 4465. https://doi.org/10.3390/rs13214465

In review/revision

1. Zhang, H. *, **Shen, Y.**, Zhang, X., Che, X., Yang, Z., Di, L., Zhang, C., Liu, H., Roy., D., 2025, Robust and timely within season conterminous United States crop type mapping using Landsat Sentinel-2 time series and the transformer architecture. *Remote Sensing of Environment* (under 1st revision).
2. Ye, Y., Zhang, X., Wang, J., Tran, H. K., Liu, Y., **Shen, Y.**, Gao, S., An, S., 2025, Development of an Enhanced Hybrid Piecewise Logistic Model for Detecting Land Surface Phenology in Drylands. *Remote Sensing of Environment* (under 1st revision).
3. An, S., Zhang, X., Henebry, G., Ye, Y., Liu, Y., Tran, K., **Shen, Y.**, Li, F., 2025, Temperature sensitivity of vegetation greenness rate along aridity gradient flips between arid and humid ecoregions. *Nature Communications* (under review).
4. Tran, K., Zhang, X., Ye, Y., Henebry, M. G., Friedl, M., **Shen, Y.**, Liu, Y., An, S., Gao, S., An Insight into Long-Term Continuity in Global Land Surface Phenology: A Comparative Analysis of MODIS and VIIRS Products. *Remote Sensing of Environment* (under review).

CONFERENCE PRESENTATIONS

Oral Presentations

1. Zhang, H. K., **Shen, Y.**, Zhang, X., Yang, Z., She, L. A near real-time crop type mapper for the conterminous United States. IGARSS 2025, Aug. 3-8, Brisbane, Australia.
2. Zhang, X., **Shen, Y.**, Fusion of multiple temporal and spatial resolution time series from satellites and PhenoCam observations for detecting land surface phenology. IGARSS 2025, Aug. 3-8, Brisbane, Australia.
3. **Shen, Y**., Zhang, X., Gao, S., Zhang, H. K., Schaaf C., Wang W., Ye Y., Liu Y., Tran H. K., Investigation of GOES-R ABI EVI2 time series adjusted using different BRDF models. *AGU Fall Meeting 2023*, Dec. 11-15, San Fransico, CA, USA.

4. **Shen, Y.**, Zhang, X., Yang, Z., Gao, S., Ye, Y., Liu, Y., Wang, W., Monitoring Crop Progress at Field Scales in Near-real-time by Fusing Harmonized Landsat and Sentinel-2 Time Series with Geostationary Satellite Observations. *AAG-GPRM Annual Meeting 2023*, Oct. 6-7, Sioux Falls, SD, USA.
5. **Shen, Y.**, Zhang, X., An Operational Algorithm for Monitoring Near-real-time Crop Progress at Field Scales by Fusing Harmonized Landsat and Sentinel-2 Time Series with Geostationary Satellite Observations. *53rd South Dakota State Geography Convention 2023*, Brooking, SD, USA.
6. Gao, S., Zhang, X., **Shen, Y.**, Ye, Y., An, S., Tran, K.H., Liu, Y., Generation and evaluation of the GOES-R ABI land surface phenology in North America. *GPRM Annual Meeting 2023*, Oct. 6-7, Sioux Falls, SD, USA.
7. **Shen. Y.**, Zhang, X., Estimating Various Corn and Soybean Phenometrics at Field Scales by Fusing Time Series of VIIRS and HLS Data Over the US Corn Belt. *52nd South Dakota State Geography Convention 2022*, Brooking, SD, USA.
8. Zhang, X., **Shen, Y.**, Gao, S., Improved Land Surface Phenology Detections from Time Series fused Landsat and Sentinel-2 with Geostationary Satellites, *The 22nd William T. Pecora Memorial Remote Sensing Symposium 2022*, Oct. 24-27, Denver, CO, USA.
9. Zhang, X., Shuai Gao, S., Zhang, H., **Shen, Y.**, Wang, W., Monitoring Land Surface Phenology from Time Series of ABI fused with VIIRS Observations in North and South America, *AOGS 19TH Annual Meeting – Asia Oceania Geosciences Society 2022*, Aug. 1-5, Virtual Symposium.
10. Zhang, X., **Shen, Y.**, Wang, W., Detecting Land Surface Phenology from Advanced Baseline Imager Data in the Amazon Basin, *AOGS 18th Annual Meeting – Asia Oceania Geosciences Society 2021*, Aug. 1-6, Virtual Symposium.

Poster Presentations

11. **Shen, Y.**, Zhang, X., Near real-time mapping of corn and soybean at 30 m pixels by blending crop phenometrics with growth magnitude from multi-source satellite observations. *AGU Fall Meeting 2024*, Dec. 9-13, Washington, D.C., IL, USA
12. Tran, K., Zhang, X., Ye, Y., **Shen, Y.**, Liu, Y., Gao, S., An, S., Evaluation of long-term continuity in global land surface phenology between MODIS and VIIRS sensors. *AGU Fall Meeting 2024*, Dec. 9-13, Washington, D.C., IL, USA
13. Tran, K., Zhang, X., Ye, Y., **Shen, Y.**, Liu, Y., Gao, S., An, S., Development of a new transformer-based model for land surface phenology detection across the United States using the Harmonized Landsat and Sentinel-2 time series. *AGU Fall Meeting 2024*, Dec. 9-13, Washington, D.C., IL, USA
14. Liu, Y., Zhang, X., Tran, K., Ye, Y., **Shen, Y.**, Multi-Scale Land Surface Phenology in Semi-Arid Rangelands Observed from PlanetScope, HLS, and VIIRS. *AGU Fall Meeting 2024*, Dec. 9-13, Washington, D.C., IL, USA
15. Liu, Y., Zhang, X., **Shen, Y.**, Tran, K., Ye, Y., Land surface phenology in semiarid ecosystems: comparing and upscaling PlanetScope phenology detections to HLS and VIIRS phenology products. *AGU Fall Meeting 2023*, Dec. 11-15, San Fransico, CA, USA
16. Tran, K., Zhang, X., Ye, Y., **Shen, Y.**, Gao, S., Liu, Y., Richardson, A., Fusion of Harmonized Landsat 8 and Sentinel-2 observations with near-surface PhenoCam time series for generating a benchmark dataset of land surface phenology. *AGU Fall Meeting 2023*, Dec. 11-15, San Fransico, CA, USA

17. **Shen, Y.**, Zhang, X., Yang, Z., Wang, J., Ye, Y., Wang, W., A novel algorithm for near real-time crop Progress Monitoring at Field Scales by fusing observations from harmonized Landsat and Sentinel-2 and geostationary satellites. *AGU Fall Meeting 2022*, Dec. 12-16, Chicago, IL, USA.
18. Gao, S., Zhang, X. Zhang, H., **Shen, Y.**, Generation of Bidirectional Reflectance Distribution Function Adjusted Advanced Baseline Imager (ABI) EVI2 product for land surface phenology detection. *AGU Fall Meeting 2022*, Dec. 12-16, Chicago, IL, USA.
19. **Shen, Y.**, Zhang, X., Fusing New Generation Geostationary Satellite Observations with Landsat-8 and Sentinel-2 Time Series for Monitoring Land Surface Phenology, *AGU Fall Meeting 2021*, Dec. 13-17, New Orleans, LA, USA.
20. **Shen, Y.**, Zhang, X., Yang, Z., 2020, Mapping Crop Phenological Metrics at Field Scales by Fusing Time Series of VIIRS and HLS over the United States Corn Belt, *AGU Fall Meeting 2021*, Dec. 10-17, Online.
21. Zhang, X., **Shen, Y.**, Zhang, H., Ye, Y., Wang, J., Detection of Land Surface Phenology across Different Ecosystems from Geostationary Operational Environmental Satellites, *AGU Fall Meeting 2021*, Dec. 13-17, New Orleans, LA, USA.
22. Zhang, X., **Shen, Y.**, Zhang, H., Wang, J., Ye, Y., Wang, W., Fusion of Time Series of Geostationary Satellite and VIIRS Observations for Detecting Land Surface Phenology, *AGU Fall Meeting 2020*, Dec. 10-17, Online.

PROFESSIONAL SERVICES

Journal Referee

Remote Sensing of Environment, Journal of Geophysical Research - Biogeosciences, ISPRS Journal of Photogrammetry and Remote Sensing, International journal of applied earth observation and geoinformation, Computers and electronics in agriculture, Geo-spatial Information Science, Remote Sensing, GIScience and Remote Sensing, International journal of digital earth, Agronomy.

Guest Editor

Forests (https://www.mdpi.com/journal/forests/special_issues/ZE1O2R766P)

Teaching/Lab assistant

Lab assistant: Advanced Methods in Geospatial Modeling (GSE/GEOG 760) 2022-2023 Spring
Lecture: Satellite Data Format and Processing 2025 Spring

Mentored students

Peiyu Du, *Ph. D*. Geography and Geospatial Science Department, SDSU 2024-2025
Malik, Naeem Abbas, *Ph. D*. Geography and Geospatial Science Department, SDSU 2024-2025

RELEVANT SKILLS

Computing Skills

- Programming Languages: IDL, R, C, Linux, Python, HPC (cluster)
- Geospatial Data Processing Software: ENVI, ArcGIS