**Manzhu Yu**

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**EDUCATION**

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| --- | --- |
| Aug 2012 – Dec 2017 | Ph.D. in Earth Systems and Geoinformation Science, George Mason University |
| Aug 2008 – Jun 2012 | B.S. in Remote Sensing Science and Technology, Wuhan University |

**PROFESSIONAL APPOINTMENTS**

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| July 2019 – Present | Assistant Professor, Department of Geography, College of Earth and Mineral Sciences, Pennsylvania State University |
| Feb 2018 – Jun 2019 | Postdoc Research Associate, NSF Spatiotemporal Innovation Center, George Mason University |

**PROFESSIONAL SERVICES**

Editorial Experience*Editorial board for International Journal of Digital Earth* (2023–Present)

 *Associate Editor for Frontiers in Environmental Science* (2023–Present)

 *Topic Editor for Atmosphere* (2021–Present)

 *Guest Editor for**Remote Sensing* (2024–Present)

2020-present Penn State Representative, University Consortium for Geographic Information Science (UCGIS)

2020-2022 Program Committee, DeepSpatial (ACM SIGKDD Workshop on Deep Learning for Spatiotemporal Data, Applications, and Systems)

2016-2019 Member, Organizing committee, AAG Spatiotemporal Symposium

**PUBLICATIONS *(\* student advisee)***

***Journal Articles:***

**Yu, M.**, Zhang, S. ***\****, Ning, H., Li, Z., & Zhang, K. (2024). Assessing the 2023 Canadian wildfire smoke impact in Northeastern US: Air quality, exposure and environmental justice. *Science of The Total Environment*, *926*, 171853.

**Yu, M.**, Huang, Q., & Li, Z. (2024). Deep learning for spatiotemporal forecasting in Earth system science: a review. *International Journal of Digital Earth*, *17*(1), 2391952.

Masrur, A.\*, **Yu, M.**, & Taylor, A. (2024). Capturing and interpreting wildfire spread dynamics: attention-based spatiotemporal models using ConvLSTM networks. *Ecological Informatics*, *82*, 102760.

Zhang, S.\*, & **Yu, M**. (2024). Enhanced urban PM2.5 prediction: Applying quadtree division and time-series Transformer with WRF-Chem. *Atmospheric Environment*, 120758.

Yang, S., Huang, Q., & **Yu, M.** (2024). Advancements in Remote Sensing for Active Fire Detection: A Review of Datasets and Methods. *Science of the Total Environment*, *943*, 173273.

Golosov, N., Wang, S., **Yu, M.**, Karle, N. N., Ideki, O., Abdul-Hamid, B., & Blaszczak-Boxe, C. (2024). Socioeconomic and sociodemographic correlations to COVID-19 variability in the United States in 2020. *Frontiers in Public Health*, *12*, 1359192.

Hu, W., Cervone, G., Trusel, L., & **Yu, M.** (2024). Arctic accessibility: recent trend in observed ship tracks and validation of arctic transport accessibility model. *Annals of GIS*, 1-20.

Lu, M., Jin, C., **Yu, M.**, Zhang, Q., Liu, H., Huang, Z., & Dong, T. (2024). MCGLN: A multimodal ConvLSTM-GAN framework for lightning nowcasting utilizing multi-source spatiotemporal data. *Atmospheric Research*, *297*, 107093.

Lu, M., Zhang, J., **Yu, M.**, Liu, H., He, C., Dong, T., & Mao, Y. (2024). ER-MACG: An Extreme Precipitation Forecasting Model Integrating Self-Attention Based on FY4A Satellite Data. *Remote Sensing*, *16*(20), 3911.

Wu, M., Huang, Q., Sui, T., Peng, B., & **Yu, M.** (2024). A Remote Sensing Spectral Index Guided Bitemporal Residual Attention Network for Wildfire Burn Severity Mapping. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.

Guo, C., Ge, E., **Yu, M.**, Li, C., Lao, X., Li, S., ... & Zhang, K. (2024). Impact of heat on emergency hospital admissions related to kidney diseases in Texas: Uncovering racial disparities. *Science of The Total Environment*, *909*, 168377.

**Yu, M.**, Masrur, A. ***\****, & Blaszczak-Boxe, C. (2023a). Predicting hourly PM2. 5 concentrations in wildfire-prone areas using a SpatioTemporal Transformer model. *Science of The Total Environment*, *860*, 160446.

**Yu, M.**, Zhang, S. ***\****, Zhang, K., Yin, J., Varela, M., & Miao, J. (2023b). Developing high-resolution PM2. 5 exposure models by integrating low-cost sensors, automated machine learning, and big human mobility data. *Frontiers in Environmental Science*, *11*, 1223160.

Lu, M., Li, Y., **Yu, M.**, Zhang, Q., Zhang, Y., Liu, B., & Wang, M. (2023). Spatiotemporal Prediction of Radar Echoes Based on ConvLSTM and Multisource Data. *Remote Sensing*, *15*(5), 1279.

Blaszczak-Boxe, C. S., Karle, N. N., Wang, S., **Yu, M.**, Golosov, N., Riyad, M., ... & Sen, P. (2023). Environmental Assessment and Monitoring of Heavy Metals in New York City Potable Water Systems: Case Study at Medgar Evers College, Correlation Analysis, and Public Health Impacts. *Water*, *15*(24), 4233.

Masrur, A.\*, **Yu, M.**, Mitra, P., Peuquet, D., & Taylor, A. (2022). Interpretable machine learning for analysing heterogeneous drivers of geographic events in space-time. *International Journal of Geographical Information Science*, *36*(4), 692–719.

Yang, J.\*, **Yu, M.**, Liu, Q., Li, Y., Duffy, D. Q., & Yang, C. (2022). A high spatiotemporal resolution framework for urban temperature prediction using IoT data. *Computers & Geosciences*, *159*, 104991.

Luo, W., Liu, Z., Zhou, Y., Zhao, Y., Li, Y. E., Masrur, A., **Yu, M.**, & others. (2022). Investigating linkages between spatiotemporal patterns of the COVID-19 Delta variant and public health interventions in Southeast Asia: Prospective space-time scan statistical analysis method. *JMIR Public Health and Surveillance*, *8*(8), e35840.

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Lu, M., Zhang, Y., Chen, M., **Yu, M.**, & Wang, M. (2022). Monitoring Lightning Location Based on Deep Learning Combined with Multisource Spatial Data. *Remote Sensing*, *14*(9), 2200.

Di, Y., Lu, M., Chen, M., Chen, Z., Ma, Z., & **Yu, M.** (2022). A quantitative method for the similarity assessment of typhoon tracks. *Natural Hazards*, 1-16.

**Yu, M.**, & Liu, Q. (2021). Deep learning-based downscaling of tropospheric nitrogen dioxide using ground-level and satellite observations. *Science of the Total Environment*, *773*, 145145.

**Yu, M.**, Xu, F., Hu, W., Sun, J., & Cervone, G. (2021). Using Long Short-Term Memory (LSTM) and Internet of Things (IoT) for Localized Surface Temperature Forecasting in an Urban Environment. *IEEE Access*, *9*.

Scheele, C., **Yu, M.** (corresponding author), & Huang Q. (2021). Geographic context-aware text mining: enhance social media message classification for situational awareness by integrating spatial and temporal features, *International Journal of Digital Earth*, DOI: 10.1080/17538947.2021.1968048.

Lu, M., Lao, T., **Yu, M.**, Zhang, Y., Zheng, J., & Li, Y. (2021). PM2. 5 Concentration Forecasting over the Central Area of the Yangtze River Delta Based on Deep Learning Considering the Spatial Diffusion Process. *Remote Sensing*, *13*(23), 4834.

Lu, M., Zhang, Y., Chen, M., **Yu, M.,** Ma, Z., Zheng, J., & Wang, M. (2021). Lightning Strike Location Identification Based on 3D Weather Radar Data. *Frontiers in Environmental Science*, 329.

Liu, Q., Harris, J. T., Chiu, L. S., Sun, D., Houser, P. R., **Yu, M.**, Duffy, D. Q., Little, M. M., & Yang, C. (2021). Spatiotemporal impacts of COVID-19 on air pollution in California, USA. *Science of the Total Environment*, *750*, 141592.

Zhan, Z., Zheng, L., Wei, M., **Yu, M.**, & Jian, W. (2021). Aerial Image Color Balancing Based on Rank-Deficient Free Network. *IEEE Access*, *11*, 18838-18854.

**Yu, M.**, Bambacus, M., Cervone, G., Clarke, K., Duffy, D., Huang, Q., Li, J., Li, W., Li, Z., Liu, Q., & others. (2020). Spatiotemporal event detection: A review. *International Journal of Digital Earth*, 1–27.

**Yu, M.** (2020). A Graph-Based Spatiotemporal Data Framework for 4D Natural Phenomena Representation and Quantification–An Example of Dust Events. ISPRS International Journal of Geo-Information, 9(2), 127.

Masrur, A.\*, **Yu, M.**, Luo, W., & Dewan, A. (2020). Space-time patterns, change, and propagation of COVID-19 risk relative to the intervention scenarios in Bangladesh. *International Journal of Environmental Research and Public Health*, *17*(16), 5911.

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Li, Y., Jiang, Y., Yang, C., **Yu, M.**, Kamal, L., Armstrong, E. M., Huang, T., Moroni, D., & McGibbney, L. J. (2020). Improving search ranking of geospatial data based on deep learning using user behavior data. *Computers & Geosciences*, *142*, 104520.

Li, Y., **Yu, M.**, Xu, M., Yang, J., Sha, D., Liu, Q., & Yang, C. (2020). Big data and cloud computing. *Manual of digital earth*, 325-355.

**Yu, M.**, Huang, Q., Qin, H., Scheele, C., & Yang, C. (2019). Deep learning for real-time social media text classification for situation awareness–using Hurricanes Sandy, Harvey, and Irma as case studies. *International Journal of Digital Earth*, 1-18.

**Yu, M.**, Yang, C., & Jin, B. (2018). A framework for natural phenomena movement tracking–Using 4D dust simulation as an example. *Computers & geosciences*, *121*, 53-66.

**Yu, M.**, Yang, C., & Li, Y. (2018). Big data in natural disaster management: a review. *Geosciences*, *8*(5), 165.

**Yu, M.**, & Yang, C. (2017). A 3D multi-threshold, region-growing algorithm for identifying dust storm features from model simulations. *International Journal of Geographical Information Science*, *31*(5), 939-961.

**Yu, M.**, & Yang, C. (2016). Improving the non-hydrostatic numerical dust model by integrating soil moisture and greenness vegetation fraction data with different spatiotemporal resolutions. *Plos one*, *11*(12), e0165616.

***Book Chapter:***

Masrur, A.\*, & **Yu, M.** (2023). Spatiotemporal attention ConvLSTM networks for predicting and physically interpreting wildfire spread. In *Artificial intelligence in earth science* (pp. 119-156). Elsevier.

**Yu, M.**, Shen, T., & Cervone, G. (2022). A comparative study of deep learning-based time-series forecasting techniques for fine-scale urban extreme heat prediction using Internet of Things observations. In *Nanotechnology-Based Smart Remote Sensing Networks for Disaster Prevention* (pp. 253-271). Elsevier.

**Yu, M.**, & Sun, M. (2018). Geospatial Data Discovery, Management, and Analysis at National Aeronautics and Space Administration (NASA). In *Federal Data Science* (pp. 177-191). Academic Press.

Yang, C., Sun, M., Liu, K., Huang, Q., Li, Z., Gui, Z., Jiang, Y., Xia, J., **Yu, M.**, Xu, C., Lostritto, P., & Zhou, N. (2015). Contemporary Computing Technologies for Processing Big Spatiotemporal Data. In M.-P. Kwan, D. Richardson, D. Wang, & C. Zhou (Eds.), *Space-Time Integration in Geography and GIScience: Research Frontiers in the US and China* (pp. 327–351). Springer Netherlands.

Huang, Q., Xia, J., **Yu, M.**, Benedict, K., & Bambacus, M. (2013). Cloud-enabling dust storm forecasting. In *Spatial Cloud Computing: A Practical Approach* (pp. 161-176). CRC Press.

**Yu, M.**, Fu, P., Zhou, N., & Xia, J. (2013). ArcGIS in the cloud. In *Spatial cloud computing: A practical approach* (pp. 111-124). CRC Press.

Huang, Q., Xia, J., **Yu, M.**, Benedict, K., & Bambacus, M. (2013). Cloud-enabling dust storm forecasting. In *Spatial Cloud Computing: A Practical Approach* (pp. 161–176). CRC Press.