**YUANZHI YAO**, Ph.D.

| Auburn University |
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| SFWS Building, 602 Duncan Drive |
| Telephone: 334-524-7258 |
| Office: 334-844-8066 |
| Email: [yaoyuanzhi@auburn.edu](mailto:yaoyuanzhi@auburn.edu) |

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**EDUCATION:**

**Ph.D.** Dec 2019. Major: Earth system science, School of forestry and wildlife science, Auburn University. “Greenhouse Gas Emissions from Inland Waters in the Conterminous United States: a Process-based Modeling Study”. **Supervisor: Hanqin Tian**

**M.S.** June 2010. Major: Geographical Information Science (GIS), Department of Geography, Sun Yat-sen University. “Research on modeling technology in basin visual simulation based on OpenGL”. Supervisor: Yangbo Chen

**B.S.** June 2008. Major: Geographical Information Science (GIS), Department of Geography, Chengdu University of Technology. “The Design and Implementation for the Fundamental GIS in Chengdu city based on MO”.

**PROFESSIONAL EXPERIENCE:**

**Research Assistant** (August 2015-December 2019), School of Forestry and Wildlife Sciences, Auburn University, AL USA

**Assistant Engineer** (2010 – 2014) Institute of mountain hazard and environment, Chinese Academy of Sciences, Chengdu City.

**RESEARCH INTERESTS:**

* Earth system modeling, Land Surface/Ecosystem Modeling
* Hydrology, Ecohydrology, Water quality
* Ecosystem Ecology, Biogeochemical cycles and GHG emissions
* Geographical Information Science (GIS)
* Topographic analysis
* Geo-computing

**PEER REVIEWED JOURNAL PAPERS:**

**Yao, Y**., Tian, H., Kalin, L., Pan, S., Friedrichs, M. A., Wang, J., & Li, Y. (2021). Contrasting stream water temperature responses to global change in the Mid-Atlantic Region of the United States: A process-based modeling study. **Journal of Hydrology**, 601, 126633.

**Yao, Y.,** Tian, H., Pan, S., Najjar, R. G., Friedrichs, M. A. M., Bian, Z., et al. (2021). Riverine carbon cycling over the past century in the Mid-Atlantic region of the United States. **Journal of Geophysical Research: Biogeosciences**, 126, e2020JG005968. https://doi.org/10.1029/2020JG005968

Petrescu, A. M. R., Qiu, C., Ciais, P., Thompson, R. L., Peylin, P., McGrath, M. J., ... & Dolman, A. J. (2021). The consolidated European synthesis of CH 4 and N 2 O emissions for the European Union and United Kingdom: 1990–2017. **Earth System Science Data**, 13(5), 2307-2362.

Dai, X., Johnson, B. A., Luo, P., Yang, K., Dong, L., Wang, Q., ... & **Yao, Y**. (2021). Estimation of Urban Ecosystem Services Value: A Case Study of Chengdu, Southwestern China. ***Remote Sensing***, 13(2), 207.

Liu, Y., Lu, X., **Yao, Y**., Wang, N., Guo, Y., Ji, C., & Xu, J. (2020). Mapping the risk zoning of storm flood disaster based on heterogeneous data and a machine learning algorithm in Xinjiang, China. ***Journal of Flood Risk Management***, e12671.

Dai, X., Gao, Y., He, X., Liu, T., Jiang, B., Shao, H., & **Yao, Y**. (2020). Spatial-temporal pattern evolution and driving force analysis of ecological environment vulnerability in Panzhihua City. ***Environmental Science and Pollution Research***, 1-16.

Gang, C., Pan, S., Tian, H., Wang, Z., Xu, R., Bian, Z., **Yao, Y** & Shi, H. (2020). Satellite observations of forest resilience to hurricanes along the northern Gulf of Mexico. ***Forest Ecology and Management***, 472, 118243.

Wang, Z., Tian, H., Yang, J., Shi, H., Pan, S., **Yao, Y**., ... & Yang, Q. (2020). Coupling of Phosphorus Processes With Carbon and Nitrogen Cycles in the Dynamic Land Ecosystem Model: Model Structure, Parameterization, and Evaluation in Tropical Forests. ***Journal of Advances in Modeling Earth Systems***, 12(10), e2020MS002123.

Tian, H., Xu, R., Canadell, J. G., Thompson, R. L., Winiwarter, W., Suntharalingam, P., ... & **Yao, Y**. (2020). A comprehensive quantification of global nitrous oxide sources and sinks. ***Nature***, 586(7828), 248-256.

Tian, H., Xu, R., Pan, S., **Yao, Y**., Bian, Z., Cai, W. J., ... & Yang, J. (2020). Long‐Term Trajectory of Nitrogen Loading and Delivery From Mississippi River Basin to the Gulf of Mexico. ***Global Biogeochemical Cycles***, 34(5), e2019GB006475.

Bian, Z., Wang, L., Gu, Y., Pan, Y., **Yao, Y.**, Zhao, J., & Ji, X. Using integrated modelling to understand seasonal vegetation dynamics and its relationship to runoff generation. ***Hydrological Processes***.

St-Laurent, P., Friedrichs, M. A., Najjar, R. G., Shadwick, E. H., Tian, H., & **Yao, Y.** (2020). Relative impacts of global changes and regional watershed changes on the inorganic carbon balance of the Chesapeake Bay. ***Biogeosciences***, *17*(14), 3779-3796.

**Yao, Y.,** Tian, H., Shi, H., Pan, S., Xu, R., Pan, N., & Canadell, J. G. (2020). Increased global nitrous oxide emissions from streams and rivers in the Anthropocene. ***Nature Climate Change***, *10*(2), 138-142.

Friedrichs, M. A., St‐Laurent, P., Xiao, Y., Hofmann, E., Hyde, K., Mannino, A., ... & Xue, J. (2019). Ocean circulation causes strong variability in the Mid‐Atlantic Bight nitrogen budget. ***Journal of Geophysical Research: Oceans***, *124*(1), 113-134.

Signorini, S. R., Mannino, A., Friedrichs, M. A., St‐Laurent, P., Wilkin, J., Tabatabai, A., ... & **Yao, Y**. (2019). Estuarine dissolved organic carbon flux from space: With application to Chesapeake and Delaware Bays. ***Journal of Geophysical Research: Oceans***, *124*(6), 3755-3778.

**Yao, Y.,** & Shi, X. (2015). Alternating scanning orders and combining algorithms to improve the efficiency of flow accumulation calculation. ***International Journal of Geographical Information Science***, *29*(7), 1214-1239.

**Conference Abstracts:**

Gang, C., Tian, H., Pan, S., Shi, H., Wang, Z., **Yao, Y.**, Bian, Z., Pan, N. and Xu, R., 2019, December. Impacts of Land Conversion on Soil Organic Carbon and Nitrogen Stock: Magnitude and Uncertainties. In AGU Fall Meeting 2019. AGU.

Gang, C., Tian, H., Pan, S., **Yao, Y.**, Bian, Z. and Xu, R., 2019, November. Impacts of hurricanes on forest carbon loss in the coastal US between 2000 and 2018. In 2019 CERF Biennial Conference. CERF.

Hinson, K., Friedrichs, M.A., Bhatt, G., Najjar, R.G., Herrmann, M., Tian, H. and **Yao, Y.**, 2019, November. Sensitivity of projected Chesapeake Bay hypoxia to climate model, downscaling method, and watershed model. In 2019 CERF Biennial Conference. CERF.

Pan, S., Bian, Z., **Yao, Y.**, Tian, H., Friedrichs, M.A., Najjar, R.G. and Hofmann, E., 2019, November. Changes in Nitrogen loading from the Chesapeake Bay watershed since 1900: magnitude and attribution. In 2019 CERF Biennial Conference. CERF.

Bian, Z., Pan, S., **Yao, Y.** and Tian, H., 2019, November. Carbon fluxes across terrestrial and aquatic systems: A process-based modeling study in Mobile River Basin. In 2019 CERF Biennial Conference. CERF.

Xu, R., Tian, H., Pan, S., **Yao, Y.**, Cai, W.J., Hopkinson, C.S., Justic, D., Lohrenz, S.E., Lu, C., Ren, W. and Yang, J., 2019, November. Nitrogen loading to the Gulf of Mexico from Mississippi/Atchafalaya River Basin: A process-based modeling assessment. In 2019 CERF Biennial Conference. CERF.

**Yao, Y.**, Tian, H., Pan, S., Xu, R. and Bian, Z., 2019, November. Evaluating the Long-term Effect of Small Dams on Regional Hydrological Response to Climate Change. In 2019 CERF Biennial Conference. CERF.

**Yao, Y.**, Tian, H., Shi, H., Pan, S. and Xu, R., 2018, December. Global nitrous oxide emissions from streams and rivers: A process-based modeling study. In AGU Fall Meeting Abstracts.

Qin, X., Zhang, J., Shi, H., **Yao, Y.**, Pan, S. and Tian, H., 2018, December. Attributing Relative Contributions of Nitrification and Denitrification to Global Nitrous Oxide Production from Soils. In AGU Fall Meeting Abstracts.

Hinson, K., Friedrichs, M.A., Bhatt, G., Herrmann, M., Najjar, R., Tian, H., **Yao, Y.** and St-Laurent, P., 2018, December. Warmer Waters Welcome Increased Nutrient Loading: Linking Effects of Future Climate Change to Chesapeake Bay Hypoxia. In AGU Fall Meeting Abstracts.

Shi, H., Tian, H., **Yao, Y.** and Pan, S., 2018, December. Effects of cyclic freezing-thawing on greenhouse gas emissions in permafrost regions. In AGU Fall Meeting Abstracts.

St-Laurent, P., Friedrichs, M.A., Xiao, Y., Hofmann, E.E., Hyde, K., Mannino, A., Najjar, R., Narvaez, D., Signorini, S.R., Tian, H. and Wilkin, J., **Yao, Y.,** and Xue, J., 2018, December. Ocean Circulation Causes Strong Variability in Mid-Atlantic Bight Net Community Production. In AGU Fall Meeting Abstracts.

Friedrichs, M.A., St-Laurent, P., Najjar, R.G., Shadwick, E.H., Tian, H. and **Yao, Y.**, 2018, December. Impacts of Changes in Watershed Nutrient Inputs and Climate on Carbon Cycling in Chesapeake Bay. In AGU Fall Meeting Abstracts.

Tian, H., Zhang, B., Xu, R., Yang, J., **Yao, Y.**, Pan, S., Lohrenz, S.E., Cai, W.J., He, R., Najjar, R.G. and Friedrichs, M.A., 2017, December. Quantifying and predicting historical and future patterns of carbon fluxes from the North American Continent to Ocean. In AGU Fall Meeting Abstracts.

**Yao, Y.**, Tian, H., Zhang, B., Pan, S., Najjar, R., Friedrichs, M.A. and Hofmann, E.E., 2017, December. The representation of stream water temperature in the dynamic land ecosystem model and its applications to Chesapeake and Delaware Bay Watersheds. In AGU Fall Meeting Abstracts.

Friedrichs, M.A., Kaufman, D.E., Najjar, R., Tian, H., Zhang, B. and **Yao, Y.**, 2016, February. Changes in Chesapeake Bay Hypoxia over the Past Century. In American Geophysical Union, Ocean Sciences Meeting 2016, abstract# AH41A-02.

**Yao, Y**., Tao, H. and Shi, X., 2012, June. Multi-type sweeping for improving the efficiency of flow accumulation calculation. In 2012 20th International Conference on Geoinformatics (pp. 1-4). IEEE.

**REVIEWER for Journals:**

Global Biogeochemical Cycles

Geophysical Research Letters

Environmental Science & Technology

Frontiers of Earth Science

Ecological indicators

Journal of Mountain Science

Journal of hydraulic engineering

Atmospheric Pollution Research

**Academic service**

Youth editor of **The Innovation** of cell press

**PROFESSIONAL MEMBERSHIPS**

American Geophysical Union (AGU)

Ecological Society of America (ESA)

Coastal & Estuarine Research Federation (CERF)

The International Association of Chinese Professional in Geographic Information Science

(CPGIS)