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Employment

2024–2025 **Visiting Scholar**, *Flinders University*

2019–2023 **Assistant Professor**, *Nanjing Institute of Geography and Limnology*, Chinese Academy of Sciences

Education

2016–2019 **Ph.D. in Physical Geography**, *University of Chinese Academy of Sciences*

2013–2016 **Master in Physical Geography**, *University of Chinese Academy of Sciences*

2009–2013 **Bachelor in Environmental Engineering**, *Huazhong Agricultural University*

Research Experience

2019–Current **Assistant Professor**, *Nanjing Institute of Geography and Limnology*

- Built a fully coupled model for surface-groundwater interaction in floodplain wetlands.
- Developed a new algorithm for evaluating surface hydrological connectivity with parallel computing technique.
- Explored how convective behaviors and moisture sources determine the variability of precipitation stable isotope.
- Developed a random forest model to predict river isotopes across China at the catchment scale.

2016–2019 **Ph.D. Candidate**, *University of Chinese Academy of Science*

- Built a 2D water environment model for Poyang Lake in China and coupled it with a runoff prediction model.
- Attributed the relative contributions of climate change and anthropogenic activities on the water environment.

First & Corresponding author Publications

[1] Ding, M., Wu, H.*, Lei, R., **Fan, H.***, Li, J., Li, K., Zhu, Q., Wan, R., Fu, C. Riverine Isoscapes Modeling in the Yangtze River Basin, China: Insights Into Basin Processes and Source-Water Contributions. Water Resources Research, 2025, 61(9): e2024WR039587. DOI: 10.1029/2024WR039587.

[2] Shi, W., Wu, W., **Fan, H.***, Sun, Q., Niu, X., Wang, S., Li, S l., Liang, S., Yan, Z.*. Estimating CO_2 and CH_4 fluxes from reservoirs: Model development and site-level study. Journal of Hydrology, 2025: 132794. DOI: 10.1016/j.jhydrol.2025.132794.

[3] **Fan, H.**, Song, F.*, Wu, H.*, Du, Y., Lei, R., Ding, M., Li, K., Li, J., Fu, C. Identifying the pattern of shallow groundwater hydrochemistry and its driving factors in a typical estuarine delta of Poyang Lake watershed, China: Insights into water quality assessment. Journal of Hydrology: Regional Studies, 2024, 56: 102049. DOI:

10.1016/j.ejrh.2024.102049.

[4] Wu, H.*, **Fan, H.***, Li, J.*, Yue, F J., Lian, E., Fu, C., Lei, R., Ding, M., Liu, J., Li, X Y. Reproducing surface water isoscapes of $\delta^{18}O$ and $\delta^{2}H$ across China: A machine learning approach. Journal of Hydrology, 2024, 638: 131565. DOI: 10.1016/j.jhydrol.2024.131565.

[5] Wu, H., **Fan, H.***, Lei, R., Sun, C., Wang, S., Wu, H., Fu, C. Atmospheric processes control the stable isotopic variability of precipitation in the middle – lower reaches of the Yangtze River Basin, East Asian monsoon region. Journal of Hydrology, 2023, 623: 129835. DOI: 10.1016/j.jhydrol.2023.129835.

[6] Xu, J., **Fan, H.***, Luo, M., Li, P., Jeong, T., Xu, L. Transformer Based Water Level Prediction in Poyang Lake, China. Water, 2023, 15(3). DOI: 10.3390/w15030576.

[7] **Fan, H.**, Jiang, M., Xu, L.*, Zhu, H., Cheng, J., Jiang, J. Comparison of Long Short Term Memory Networks and the Hydrological Model in Runoff Simulation. Water, 2020, 12(1). DOI: 10.3390/w12010175.

[8] **Fan, H.**, Xu, L.*, Tao, H., Feng, W., Cheng, J., You, H. Accessing the Difference in the Climate Elasticity of Runoff across the Poyang Lake Basin, China. Water, 2017, 9(2). DOI: 10.3390/w9020135.

[9] **Fan, H.**, Xu, L.*, Wang, X., Jiang, J., Feng, W., You, H. Relationship Between Vegetation Community Distribution Patterns and Environmental Factors in Typical Wetlands of Poyang Lake, China. Wetlands, 2017, 39(1): 75-87. DOI: 10.1007/s13157-017-0903-7.

[10] **Fan, H.**, Xu, L.*, Wang, X., Wu, Y., Jiang, J. Identify the influencing paths of precipitation and soil water storage on runoff: an example from Xinjiang River Basin, Poyang Lake, China. Water Supply, 2017, 18(5): 1598-1605. DOI: 10.2166/ws.2017.224.

First & Corresponding author Publications in Chinese

[1] 丁艺鼎, 范宏翔, 徐力刚, 蒋名亮, 吕海深, 朱永华, 程俊翔. 可解释性长短期记忆模型用于预测湖泊总磷浓度变化. 湖泊科学, 2024, 36(04): 1046-1060. DOI: 10.18307/2024.0415.(in Chinese)
Ding, Y., **Fan, H.***, Xu, L., Jiang, M., Lv, H., Zhu, Y., Cheng, J. The interpretable long-term and short-term memory model was used to predict the change of total phosphorus concentration in lakes. Journal of Lake Sciences, 2024, 36(04): 1046-1060.

[2] 王辉, 雷蕊宇, 樊冬玲, 范宏翔. 基于 MIKE21 的骆马湖汛期总磷模拟及优化调控研究. 环境监测管理与技术, 2023, 35: 65-70. DOI: 10.19501/j.cnki.1006-2009.2023.06.012.(in Chinese)
Wang, H., Lei, R., Fan, D., **Fan, H.***. Simulation and Optimum Control of Total Phosphorus in Flood Season of Luoma Lake Based on MIKE21. The Administration and Technique of Environmental Monitoring, 2023, 35(04): 65-70. DOI: 10.19501/j.cnki.1006-2009.2023.06.012.

[3] 范宏翔, 何菡丹, 徐力刚, 张明睿, 姜加虎. 基于长短记忆模型的鄱阳湖流域径流模拟及其演变的归因分析. 湖泊科学, 2021, 33(03): 866-878. DOI: 10.18307/2021.0319.(in Chinese)
Fan, H., He, H., Xu, L.*, Zhang, M., Jiang, J. Simulation and attribution analysis based on the long-short-term-memory network for detecting the dominant cause of runoff variation in the Lake Poyang Basin. Journal of Lake Sciences, 2021, 33(03): 866-878.

[4] 范宏翔, 徐力刚, 朱华, 鲁照, 曹宇贤, 吴亚坤, 姜加虎. 气候变化和人类活动对鄱阳湖水龄影响的定量区分. 湖泊科学, 2021, 33(04): 1175-1187. DOI: 10.18307/2021.0419.(in Chinese)
Fan, H., Xu, L.*, Zhu, H., Lu, Z., Cao, Y., Wu, Y., Jiang, J. Distinguishing the relative impacts of climate change and anthropogenic activities on variation of water age in the Lake Poyang. Journal of Lake Sciences, 2021, 33(04): 1175-1187.

[5] 范宏翔, 徐力刚, 赵旭, 胡岳峰. 太湖流域典型稻-麦轮作农田区氮素流失过程研究. 生态环境学报, 2015, 24(02): 255-262. DOI: 10.16258/j.cnki.1674-5906.2015.02.012.(in Chinese)
Fan, **H.**, Xu, L.*, Zhao, X., Hu, Y. Study on Nitrogen Loss in Rice-wheat Rotation Farmland in Taihu Basin. Ecology and Environmental Sciences, 2015, 24(02): 255-262. DOI: 10.16258/j.cnki.1674-5906.2015.02.012.

Co-auhtor Publications

[1] Ding, M., Wu, H.*, Zhang, H., Zhu, Q., Lei, R., Li, K., **Fan**, **H.**, Li, J., Fu, C. Identifying seasonal sources and processes controlling nitrate in a typical reservoir-type headwater watershed of Eastern China using stable isotopes. Agriculture, Ecosystems & Environment, 2025, 386: 109615. DOI: 10.1016/j.agee.2025.109615.

[2] Ding, Y., Lü, H.*, Xu, L.*, Horton, R., Jiang, M., Zhu, Y., Cheng, J., **Fan**, **H.**, Su, J. Estimating the groundwater table threshold for mitigating soil salinization in the Songnen Plain of China. Journal of Hydrology: Regional Studies, 2025, 59: 102326. DOI: 10.1016/j.ejrh.2025.102326.

[3] Cheng, J., Xu, L.*, Wang, R., You, H., **Fan**, **H.**, Wu, Y. Comprehensive evaluation of environmental flows in the Yangtze River regulated by two large dams. Ecohydrology & Hydrobiology, 2024, 24. DOI: 10.1016/j.ecohyd.2023.09.004.

[4] Fan, L., Cheng, J.*, Xie, Y.*, Xu, L., Buttler, A., Wu, Y., **Fan**, **H.**, Wu, Y. Spatio-temporal patterns and drivers of CH_4 and CO_2 fluxes from rivers and lakes in highly urbanized areas. Science of The Total Environment, 2024, 918: 170689. DOI: 10.1016/j.scitotenv.2024.170689.

[5] Li, X.*, Yuan, C., Sun, T., **Fan**, **H.** Identifying the spatiotemporal patterns of drought-flood alternation based on IMERG product in the humid subtropical Poyang Lake basin, China. Journal of Hydrology: Regional Studies, 2024, 54: 101912. DOI: 10.1016/j.ejrh.2024.101912.

[6] Liu, Y., He, H.*, Zhou, J., **Fan**, **H.**, Wu, Q., Delang, C. O. Understanding thermal stratification and circulation dynamics in Fuxian Lake: Insights from EFDC simulation study. Ecological Indicators, 2024, 165: 112202. DOI: 10.1016/j.ecolind.2024.112202.

[7] Xiong, C., Li, H.*, **Fan**, **H.**, Askar, A. Historical development, impact mechanism and future trends of nitrogen footprint in Wuxi City, China. Science of The Total Environment, 2024, 934: 173240. DOI: 10.1016/j.scitotenv.2024.173240.

[8] Xu, C., Yuan, C., Li, X.*, Lin, Y., **Fan**, **H.** Projection of disaster-causing risk of extreme precipitation in the Yangtze River Basin based on CMIP6. Hydrology Research, 2023, 54(3): 401-417. eprint: https://iwaponline.com/hr/article-pdf/54/3/401/1193155/nh0540401.pdf. DOI: 10.2166/nh.2023.141.

[9] Li, J., Song, F., Bao, Z., **Fan**, **H.**, Wu, H.*. Insights into Shallow Freshwater Lakes Hydrology in the Yangtze Floodplain from Stable Water Isotope Tracers. Water, 2022, 14(3): 506. DOI: 10.3390/su12219033.

[10] Xu, G., **Fan**, **H.**, Oliver, D. M., Dai, Y., Li, H., Shi, Y., Long, H., Xiong, K., Zhao, Z. Decoding river pollution trends and their landscape determinants in an ecologically fragile karst basin using a machine learning model. Environmental Research, 2022, 214: 113843. DOI: 10.1016/j.envres.2022.113843.

[11] Lei, X., Gao, L.*, Wei, J., Ma, M., Xu, L., **Fan**, **H.**, Li, X., Gao, J., Dang, H., Chen, X., Fang, W. Contributions of climate change and human activities to runoff variations in the Poyang Lake Basin of China. Physics and Chemistry of the Earth, Parts A/B/C, 2021, 123: 103019. DOI: 10.1016/j.pce.2021.103019.

[12] Jiang, M., Xu, L.*, Chen, X., Zhu, H., **Fan**, **H.** Soil Quality Assessment Based on a Minimum Data Set: A Case Study of a County in the Typical River Delta Wetlands. Sustainability, 2020, 12(21): 9033. DOI: 10.3390/su12219033.

[13] Cheng, J., Xu, L.*, **Fan, H.**, Jiang, J. Changes in the flow regimes associated with climate change and human activities in the Yangtze River. River Research and Applications, 2019, 35(9): 1415-1427. DOI: 10.1002/rra.3518.

[14] Cheng, J., Xu, L.*, Feng, W., **Fan, H.**, Jiang, J. Changes in Water Level Regimes in China' s Two Largest Freshwater Lakes: Characterization and Implication. Water, 2019, 11(5). DOI: 10.3390/w11050917.

[15] You, H., **Fan, H.**, Xu, L., Wu, Y., Liu, L., Yao, Z. Poyang Lake Wetland Ecosystem Health Assessment of Using the Wetland Landscape Classification Characteristics. Water, 2019, 11(4). DOI: 10.3390/w11040825.

[16] Zhu, H., Xu, L., Jiang, J., **Fan, H.** Spatiotemporal Variations of Summer Precipitation and Their Correlations with the East Asian Summer Monsoon in the Poyang Lake Basin, China. Water, 2019, 11(8). DOI: 10.3390/w11081705.

[17] Huang, T., Xu, L.*, **Fan, H.** Drought Characteristics and Its Response to the Global Climate Variability in the Yangtze River Basin, China. Water, 2018, 11(1). DOI: 10.3390/w11010013.

[18] You, H., **Fan, H.**, Xu, L., Wu, Y., Wang, X., Liu, L., Yao, Z., Yan, B. Effects of Water Regime on Spring Wetland Landscape Evolution in Poyang Lake between 2000 and 2010. Water, 2017, 9(7). DOI: 10.3390/w9070467.

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[1] 陈远, 范宏翔, 彭凯, 邓建明, 彭霁虹. 基线选择对热浪事件计算方法的影响. 河南师范大学学报(自然科学版), 2025(01): 125-135. DOI: 10.16366/j.cnki.1000-2367.2023.08.31.0002.(in Chinese)
Chen, Y., **Fan, H.**, Peng, K.*, Deng, J., Peng, J. Comparation among differences methods of heat wave events estimation. Journal of Henan Normal University(Natural Science Edition), 2025(01): 125-135. DOI: 10.16366/j.cnki.1000-2367.2023.08.31.0002.

[2] 雷蕊宇, 丁梦瑶, 吴华武, 范宏翔, 李楷文, 祝子淳, 李静, 付丛生. 鄱阳湖平原区多时间尺度大气降水稳定同位素变化及其与水汽来源的关系. 地理科学, 2025: 1-11. DOI: 10.13249/j.cnki.sgs.20231140.(in Chinese)
Lei, R., Ding, M., Wu, H.*, **Fan, H.**, Li, K., Zhu, Z., Li, J., Fu, C. Variation of precipitation stable isotopes at multiple time scales and its associated with moisture sources in the Poyang Lake Plain. Scientia Geographica Sinica, 2025: 1-11. DOI: 10.13249/j.cnki.sgs.20231140.

[3] 李楷文, 丁梦瑶, 范宏翔, 吴华武, 雷蕊宇, 付丛生, 李静, 辛未, 张赐成. 基于氢氧稳定同位素的鄱阳湖流域"五河"新水比例及其滞留时间量化研究. 湖泊科学, 2025, 37(01): 1-13. DOI: 10.18307/2025.0142.(in Chinese)
Li, K., Ding, M., **Fan, H.**, Wu, H., Lei, R., Fu, C., Li, J., Xin, W., Zhang, C.*. Quantifying the young water fraction and residence time of five inflow rivers for Lake Poyang using stable hydrogen and oxygen isotopes. Journal of Lake Sciences, 2025, 37(01): 1-13.

[4] 丁艺鼎, 蒋名亮, 徐力刚, 范宏翔, 吕海深. 基于鲸鱼优化算法的长短期记忆模型水库洪水预报. 湖泊科学, 2024, 36(01): 320-332. DOI: 10.18307/2024.0143.(in Chinese)
Ding, Y., Jiang, M.*, Xu, L., **Fan, H.**, Lv, H. Flood forecasting method for reservoirs based on WOA-LSTM. Journal of Lake Sciences, 2024, 36(01): 320-332.

[5] 毛智宇, 徐力刚, 赖锡军, 王晓龙, 李云良, 李相虎, 蔡永久, 范宏翔, 吴亚坤, 魏凡凯. 基于综合指标法的鄱阳湖生态系统健康评价. 湖泊科学, 2023, 35(03): 1022-1036. DOI: 10.18307/2023.0321.(in Chinese)
Mao, Z., Xu, L.*, Lai, X., Wang, X., Li, Y., Li, X., Cai, Y., **Fan, H.**, Wu, Y., Wei, F. Assessment on ecosystem health of Lake Poyang based on a comprehensive index method. Journal of Lake Sciences, 2023, 35(03): 1022-1036.

[6] 曹宇贤, 徐力刚, 范宏翔, 毛智宇, 程俊翔, 王殿常, 吴亚坤. 1960 年以来气候变化与人类活动对鄱阳湖流域生态径流改变的影响. 湖泊科学, 2022, 34(01): 232-246. DOI: 10.18307/2022.0119.(in Chinese)
Cao, Y., Xu, L.*, **Fan, H.**, Mao, Z., Cheng, J., Wang, D., Wu, Y. Impact of climate change and human activities on the changes of ecological flow indicators in the Lake Poyang Basin since 1960s. Journal of Lake Sciences, 2022, 34(01): 232-246.

[7] 刘星根, 谭志强, 范宏翔. 赣江尾闾碟形湖水体季节性分布特征. 人民长江, 2021, 52(05): 66-72. DOI: 10.16232/j.cnki.1001-4179.2021.05.011.(in Chinese)
Liu, X.*, Tan, Z., **Fan**, **H.** Seasonal distribution of sub-lakes on tail-streams of Ganjiang River. Yangtze River, 2021, 52(05): 66-72. DOI: 10.16232/j.cnki.1001-4179.2021.05.011.

[8] 鲁照, 黄河清, 徐力刚, 范宏翔. 基于熵权的 WQI 法在鄱阳湖水质评价中的应用. 环境监测管理与技术, 2021, 33(04): 30-34. DOI: 10.19501/j.cnki.1006-2009.2021.04.007.(in Chinese)
Lu, Z., Huang, H., Xu, L.*, **Fan**, **H.** Application of WQI Method for Water Quality Evaluation of Poyang Lake Based on Entropy Weight. The Administration and Technique of Environmental Monitoring, 2021, 33(04): 30-34. DOI: 10.19501/j.cnki.1006-2009.2021.04.007.

[9] 张明睿, 郑俊, 徐力刚, 范宏翔, 张德伟. 城市小流域面源污染输出特征及污染负荷分类核算研究. 环境监测管理与技术, 2021, 33(04): 25-29. DOI: 10.19501/j.cnki.1006-2009.2021.04.006.(in Chinese)
Zhang, M., Zheng, J., Xu, L.*, **Fan**, **H.**, Zhang, D. Research on Non-point Source Pollution Output Characteristics and Pollution Load Classification Accounting of Urban Small Watershed. The Administration and Technique of Environmental Monitoring, 2021, 33(04): 25-29. DOI: 10.19501/j.cnki.1006-2009.2021.04.006.

[10] 杜冰雪, 徐力刚, 蒋名亮, 程俊翔, 谭志强, 范宏翔. 2000–2014 年洞庭湖区植物面积变化及其与湖泊水位的关系. 湿地科学, 2020, 18(01): 20-27. DOI: 10.13248/j.cnki.wetlandsci.2020.01.003.(in Chinese)
Du, B., Xu, L.*, Jiang, M., Cheng, J., Tan, Z., **Fan**, **H.** Variation of Vegetation Area in Dongting Lake Area and Relationship between Vegetation Area andWater Level from 2000 to 2014. Wetland Science, 2020, 18(01): 20-27. DOI: 10.13248/j.cnki.wetlandsci.2020.01.003.

[11] 杜冰雪, 徐力刚, 张杰, 范宏翔, 程俊翔, 黄涛, 姜加虎. 鄱阳湖富营养化时空变化特征及其与水位的关系. 环境科学研究, 2019, 32(05): 795-801. DOI: 10.13198/j.issn.1001-6929.2018.10.07.(in Chinese)
Du, B., Xu, L.*, Zhang, J., **Fan**, **H.**, Cheng, J., Huang, T., Jiang, J. The Spatial-Temporal Characteristics of Eutrophication in Poyang Lake and Its Relationship with the Water Level. Research of Environmental Sciences, 2019, 32(05): 795-801. DOI: 10.13198/j.issn.1001-6929.2018.10.07.

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[13] 黄涛, 徐力刚, 范宏翔, 孟元可. 长江流域干旱时空变化特征及演变趋势. 环境科学研究, 2018, 31(10): 1677-1684. DOI: 10.13198/j.issn.1001-6929.2018.05.22.(in Chinese)
Huang, T., Xu, L.*, **Fan**, **H.**, Meng, Y. Temporal and Spatial Variation Characteristics and the Evolution Trends of Droughts in the Yangtze River Basin. Research of Environmental Sciences, 2018, 31(10): 1677-1684. DOI: 10.13198/j.issn.1001-6929.2018.05.22.

[14] 孟元可, 叶许春, 徐力刚, 徐昔保, 范宏翔, 黄涛. 2000–2015 年鄱阳湖区植被净初级生产力变化及驱动因素分析. 湿地科学, 2018, 16(03): 360-369. DOI: 10.13248/j.cnki.wetlandsci.2018.03.013.(in Chinese)
Meng, Y., Ye, X., Xu, L.*, Xu, X., **Fan**, **H.**, Huang, T. Variation of Net Primary Productivity of Vegetation in Poyang Lake Area from 2000 to 2015 and Its Influence Factors. Wetland Science, 2018, 16(03): 360-369. DOI: 10.13248/j.cnki.wetlandsci.2018.03.013.

[15] 程俊翔, 徐力刚, 姜加虎, 谭志强, 喻崎雯, 范宏翔. 洞庭湖流域径流量对气候变化和人类活动的响应研究. 农业环境科学学报, 2016, 35(11): 2146-2153. DOI: 10.11654/jaes.2016-0554.(in Chinese)
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