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个人总结

姚飞博士现任英国爱丁堡大学地球科学学院和英国国家对地观测中心研究科学家。他长期致力于环境与地球科学领域交叉学科研究，重点关注大气成分变化的社会经济驱动及其对能源、环境与健康的影响。截至 2025 年 3 月，他已在国际顶级期刊上发表 17 篇学术论文，其中第一/通讯作者 8 篇。其研究成果为理解和应对全球气候变化、改善空气质量、促进公共健康及推动可再生能源发展等方面提供了重要的科学依据。

工作经历

研究科学家/Research Scientist, 英国国家对地观测中心, 爱丁堡大学	2023.04 – 至今
博士后/Postdoctoral Research Associate, 地球科学学院, 爱丁堡大学	2022.03 – 2023.03
研究顾问/Research Consultant (兼职), 爱丁堡创新中心, 爱丁堡大学	2021.10 – 2022.02

教育背景

爱丁堡大学, 大气与环境科学哲学博士学位	2018.09 – 2022.03
北京大学, 地理学（城市与区域规划）理学硕士学位	2015.08 – 2018.07
华东师范大学, 地理信息系统理学学士学位	2011.09 – 2015.07

科研项目

在研 (1)

1. 英国自然环境研究理事会, 2018.04 – 至今. **骨干**.

结题 (11)

11. 英国航天局和地球观测仪器中心. 2024.01 – 2025.03. 参与.
10. 爱丁堡大学地球科学学院全球变化和 IT 基金. 2023.01 – 2024.07. **主持**.
9. Google 云平台研究积分项目和 Google 地球引擎提升计划. 2022.10 – 2024.01. **主持**.
8. 地球观测仪器中心. 2022.04 – 2022.11. **骨干**.
7. 爱丁堡大学地球科学学院 IT 基金. 2021.01 – 2021.07. **主持**.
6. 深圳市科技计划项目 (No. JCYJ20170412150910443). 2017.07 – 2020.07. 参与.
5. 北京大学深圳研究生院院长基金 (No. 201607). 2017.01 – 2017.06. **主持**.
4. 北京大学深圳研究生院院长基金 (No. 2015017). 2016.01 – 2016.06. **主持**.
3. 北京大学深圳研究生院院长基金 (No. 2015022). 2016.01 – 2016.06. 参与.
2. 国家大学生创新创业训练计划 (No. 201410269099). 2014.10 – 2015.06. **主持**.
1. 国家大学生创新创业训练计划 (No. 201410269093). 2014.10 – 2015.06. 参与.

教学及其他公共服务

- 爱丁堡大学课程助教: *Earth's Atmospheric Composition* (Spring 2020, 2021), *Visual Analytics* (Spring 2019), *Welcome Week Computing Induction* (Autumn 2019).
- 学术期刊审稿: *Environmental Science & Technology*, *Remote Sensing of Environment*, *ISPRS Journal of Photogrammetry and Remote Sensing*, *Sustainable Cities and Society*, *Atmospheric Environment*, etc.

荣誉奖励 (节选)

5. 国家奖学金, 2013, 2016, 2017.
4. 北京大学优秀毕业生, 2018.
3. 北京大学学术创新奖, 2016, 2017.
2. 第十届国际中国规划学会年会最佳学生论文奖, 2016.
1. 上海市优秀毕业生, 2015.

文章发表 (*: 通讯作者; #: 共同一作)

返修, 在审, 在投及撰稿中 (4 篇, 包括第一/通讯 3 篇)

21. Zheng, Z., Liu, J.* and **Yao, F.***, 2025. Estimating $PM_{2.5}$ concentrations from multi-view smartphone photographs: A large-scale spatiotemporally registered image–$PM_{2.5}$ corpus and a local feature fusion approach. In preparation.

20. Yin, K.#, **Yao, F.#**, Luo, N., Yi, B.* and Lu, X.*, 2025. Substantial reduction of solar photovoltaic potential in China by an extreme dust event. Submitted.
19. Wang, H., Maslanka, W., Palmer, P.I.*, Wooster, M.J., Wang, H., Yao, F., Feng, L., Wu, K., Lu, X.* and Fan, S.*, 2025. Using Geostationary–Derived Sub–Daily FRP Variability vs. Prescribed Diurnal Cycles: Impacts of African Fires on Tropospheric Ozone. Submitted.
18. **Yao, F.***, Palmer, P.I., Liu, J., Chen, H. and Wang, Y., 2025. Attribution of Solar Energy Yield Gaps due to Transboundary Particulate Matter Pollution Associated with Trade Across Northeast Asia. In minor revision.

已刊 *(17 篇, 包括第一/通讯 8 篇, 其中超半数为中科院 Q1/TOP/Nature Index)*

17. Liu, J.#, **Yao, F.#**, Chen, H.* and Zhao, H.*, 2025. Quantifying the source—receptor relationships of $PM_{2.5}$ pollution and associated health impacts among China, South Korea, and Japan: A dual perspective and an interdisciplinary approach. *Environmental Health Perspectives*, 133(3-4), p.047011. doi: 10.1289/EHP14550.
16. Wang, Y., Wang, H., **Yao, F.***, Stouffs, R. and Wu, J.*, 2024. An integrated framework for jointly assessing spatiotemporal dynamics of surface urban heat island intensity and footprint: China, 2003–2020. *Sustainable Cities and Society*, 112, p.105601. doi: 10.1016/j.scs.2024.105601.
15. Marvin, M.R.*, Palmer, P.I., Yao, F., Latif, M.T. and Kahn, M.F., 2024. Uncertainties from biomass burning aerosols in air quality models obscure public health impacts in Southeast Asia. *Atmospheric Chemistry and Physics*, 24(6), pp.3699–3715. doi: 10.5194/acp-24-3699-2024.
14. **Yao, F.*** and Palmer, P.I., 2022. Source Sector Mitigation of Solar Energy Generation Losses Attributable to Particulate Matter Pollution. *Environmental Science & Technology*, 56(12), pp.8619–8628. doi: 10.1021/acs.est.2c01175.
13. Wu, J.*, Wang, Y., Liang, J. and Yao, F., 2021. Exploring common factors influencing $PM_{2.5}$ and O_3 concentrations in the Pearl River Delta: Tradeoffs and synergies. *Environmental Pollution*, 285, p.117138. doi: 10.1016/j.envpol.2021.117138.
12. Liu, J.*, Li, J. and Yao, F., 2022. Source-receptor relationship of transboundary particulate matter pollution between China, South Korea and Japan: Approaches, current understanding and limitations. *Critical Reviews in Environmental Science and Technology*, 52(21), pp.3896-3920. doi: 10.1080/10643389.2021.1964308.
11. Mogno, C.*, Palmer, P.I., Knote, C., Yao, F. and Wallington, T.J., 2021. Seasonal distribution and drivers of surface fine particulate matter and organic aerosol over the Indo-Gangetic Plain. *Atmospheric Chemistry and Physics*, 21(14), pp.10881-10909. doi: 10.5194/acp-21-10881-2021.
10. **Yao, F.*** and Palmer, P.I., 2021. A model framework to reduce bias in ground-level $PM_{2.5}$ concentrations inferred from satellite-retrieved AOD. *Atmospheric Environment*, 248, p.118217. doi: 10.1016/j.atmosenv.2021.118217.
9. Guo, H., Zhan, Q., Ho, H.C., Yao, F., Zhou, X., Wu, J. and Li, W.*, 2020. Coupling mobile phone data with machine learning: How misclassification errors in ambient $PM_{2.5}$ exposure estimates are produced? *Science of The Total Environment*, 745, p.141034. doi: 10.1016/j.scitotenv.2020.141034.
8. Guo, H., Li, W.*, Yao, F., Wu, J., Zhou, X., Yue, Y. and Yeh, A.G., 2020. Who are more exposed to $PM_{2.5}$ pollution: A mobile phone data approach. *Environment international*, 143, p.105821. doi: 10.1016/j.envint.2020.105821.
7. Wu, J., Liang, J., Zhou, L., Yao, F. and Peng, J.*, 2019. Impacts of AOD Correction and Spatial Scale on the Correlation between High-Resolution AOD from Gaofen-1 Satellite and In Situ $PM_{2.5}$ Measurements in Shenzhen City, China. *Remote Sensing*, 11(19), p.2223. doi: 10.3390/rs11192223.
6. **Yao, F.**, Wu, J.*, Li, W.* and Peng, J., 2019. A spatially structured adaptive two-stage model for retrieving ground-level $PM_{2.5}$ concentrations from VIIRS AOD in China. *ISPRS Journal of Photogrammetry and Remote Sensing*, 151, pp.263-276. doi: 10.1016/j.isprsjprs.2019.03.011.
5. **Yao, F.**, Wu, J.*, Li, W. and Peng, J., 2019. Estimating Daily $PM_{2.5}$ Concentrations in Beijing using 750-M VIIRS IP AOD Retrievals and a Nested Spatiotemporal Statistical Model. *Remote Sensing*, 11(7), p.841. doi: 10.3390/rs11070841.
4. **Yao, F.**, Si, M., Li, W.* and Wu, J.*, 2018. A multidimensional comparison between MODIS and VIIRS AOD in estimating ground-level $PM_{2.5}$ concentrations over a heavily polluted region in China. *Science of the Total Environment*, 618, pp.819-828. doi: 10.1016/j.scitotenv.2017.08.209.
3. Wang, Z., Yao, F., Li, W. and Wu, J.*, 2017. Saturation Correction for Nighttime Lights Data Based on the Relative NDVI. *Remote Sensing*, 9(7), p.759. doi: 10.3390/rs9070759.
2. Wu, J., Yao, F., Li, W.* and Si, M., 2016. VIIRS-based remote sensing estimation of ground-level $PM_{2.5}$ concentrations in Beijing–Tianjin–Hebei: A spatiotemporal statistical model. *Remote Sensing of Environment*, 184, pp.316-328. doi: 10.1016/j.rse.2016.07.015.
1. **Yao, F.**, Ye, K. and Zhou, J.*, 2015. Automatic image classification and retrieval by analyzing plant leaf features. *Journal of Zhejiang A&F University*, 32(3), pp.426-433. doi: 10.11833/j.issn.2095-0756.2015.03.015.

未经同行评议非正式文献 *(1 篇)*

1. **Yao, F.**, 2017. Impacts of ”source” and ”sink” landscape patterns on ground–level $PM_{2.5}$ concentrations in Beijing–Tianjin–Hebei, China. *Won the First Prize in the 25th Challenge Cup at Peking University.*

学术会议 (节选)

11. 美国地球物理学会年会, 美国华盛顿哥伦比亚特区, 2024.12.09–13.
    口头汇报: Impacts of Air Pollutant Emissions on Solar Energy Generation.
    墙报展示: Mapping Asian anthropogenic NO_x emissions using GEMS NO_2 and the Adjoint of GEOS-Chem.
10. 英国国家对地观测大会, 英国约克, 2014.09.10–12.
    口头汇报: Inverse modelling of SO_2 and NO_x emissions over Asia using GEMS geostationary satellite observations.
    主旨演讲: Commerce, pollution, and solar energy yield gaps.
9. 欧空局 ATMOS 2024 会议, 意大利博洛尼亚, 2024.07.01–05.
    口头汇报: Estimating hourly nitrogen oxide emissions across Asia using GEMS geostationary satellite data. link.
    墙报展示: Automated Detection and Attribution of Methane Super-Emitters Using Sentinel-2 Satellite Data and Deep Learning.
8. 欧洲地球科学联合会年会, 奥地利维也纳, 2024.04.14–19.
    亮点口头汇报: Impacts of Air Pollutant Emissions on Solar Energy Generation. doi: 10.5194/egusphere-egu24-4715.
    亮点墙报展示: Estimating Hourly Nitrogen Oxide Emissions Across Asia Using Data from the GEMS Geostationary Satellite. doi: 10.5194/egusphere-egu24-3198.
7. 苏格兰地球科学联盟年会, 英国阿伯丁, 2023.05.16–17.
    口头汇报: How do air pollutant emissions influence solar energy generation?
6. 北京大学蔚蓝空间大气科学研究生论坛第 51 期报告 (邀请), 线上, 2022.07.31.
    口头汇报: Source Sector Mitigation of Solar Energy Generation Losses Attributable to Particulate Matter Pollution.
5. 北京大学蔚蓝空间大气科学研究生论坛第 24 期报告 (邀请), 线上, 2021.05.30.
    口头汇报: A model framework to reduce bias in ground-level $PM_{2.5}$ concentrations from satellite-retrieved AOD.
4. 第 1 届 GEOS-Chem 欧洲会议, 线上, 2020.09.01–02.
    墙报展示: A model framework to reduce bias in ground-level $PM_{2.5}$ concentrations from satellite-retrieved AOD.
3. 第 9 届 GEOS-Chem 国际会议, 美国马萨诸塞州剑桥市, 2019.05.06–09.
    墙报展示: $PM_{2.5}$ over China inferred from MAIAC AOD and GEOS-Chem: preliminary results.
2. Palmer 课题组组会, 英国爱丁堡, 2019.02.15.
    口头汇报: AWS Cloud for Atmospheric Scientists.
1. 第十届国际中国规划学会年会, 中国北京, 2016.06.30–07.03.
    口头汇报: Remote sensing estimation of ground-level $PM_{2.5}$ concentrations in Beijing-Tianjin-Hebei: A spatiotemporal statistical model.