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Yi Yin

Department of Environmental Studies, New York University
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ACADEMIC APPOINTMENT

2023–present	Associate Professor (tenure-track), Department of Environmental Studies, New York University
2018–2023	Research Scientist, Department of Environmental Science and Engineering, California Institute of Technology
2016–2017	NASA Postdoctoral Program Fellow, Jet Propulsion Laboratory
2013–2016	Postdoc, Laboratoire des Sciences du Climat et de l'Environnement, France
2013	Visiting Scholar, Macquarie University, Australia

EDUCATION

2006–2012	Ph.D. in Physical Geography, Peking University, Beijing, China
2007–2009	Joint Ph.D. Program, Leibniz Universität Hannover, Hannover, Germany
2002–2006	B.S. in Physical Geography, Beijing Normal University, Beijing, China

RESEARCH INTERESTS

My research integrates satellite remote sensing, atmospheric inversions, and ecosystem modeling to advance understanding of (1) the global carbon and methane cycles and their climate feedbacks; (2) wildfire dynamics from tropical ecosystems to the wildland-urban interface; and (3) urban heat disparities and decision-relevant adaptation strategies. My work bridges top-down and bottom-up approaches to address questions from the neighborhood to the globe.

PUBLICATIONS

85 peer-reviewed publications; 16 as first, co-first, or senior author; h-index 45; total citations 9895 (as of May. 18, 2026 on Google Scholar)

*denotes corresponding author from our lab, $^{+}$indicates equal contributions, ^{U}denotes undergraduate students supervised, ^{G}indicates graduate students supervised, ^{P}indicates post-doc supervised, ^{V}indicates visiting students

Manuscripts Submitted/ Under Review

Anamika Shreevastava^{P}, Hannah Druckenmiller, Quentin Dehaene, Alexander Halsey, Cheolhee Yoo, Sai Prasanth, Glynn Hulley, Christian Frankenberg, and **Yi Yin**. Cooling where it counts: A Spatial Framework for Cost-Effective Urban Heat Mitigation Investments, in revision, *Nature Communications*.

Xinlei Liu^{P}, Qingyu Wang^{P}, **Yi Yin***. Extreme wildfires disproportionately reach the wildland-urban interface in California, in review.

Qingyu Wang^{P}, Manasvin Anand^{G}, Xinlei Liu^{P}, Yujie Wang, **Yi Yin***. A paired C3/C4 natural experiment identifies a large CO_2 fertilization contribution to US soybean yield growth over the last four decades, submitted.

Yuanhang Yang, Jiabo Yin, Louise Slater, Solmon Hailu Gebrechorkos, Chiyuan Miao, **Yi Yin**, Pan Liu. Compound wildfire-drought events decouple vegetation resistance from ecosystem recovery. submitted.

Yitong Yao, Yujie Wang, **Yi Yin**, Jeffrey D. Wood, Christian Frankenberg. Accounting for drought legacy effect improves model predictive skills in tracking carbon and water fluxes. EGUsphere preprint, https://doi.org/10.5194/egusphere-2025-5684

Junnan Qi, Zhou Huang, Ganmin Yin, Fei Suo, Shuliang Ren, Xiaoqin Yan, Yi Bao, **Yi Yin**, and Bin Chen. Classification-Based Greenspace Exposure Assessment Reveals the Compensatory Role of Urban Cropland in Greenspace Equity, accepted, *Earth's Future*.

To be Submitted

Yi Yin*, Newton Nguyen, Qingyu Wang^{P}, Alex Turner, Frederic Chevallier, Christian Frankenberg. Natural Variability in Stratosphere-Troposphere Exchange: An Underappreciated Driver of Global Methane Growth Rates. to be submitted.

Liyin He^{+}, Shangyi Guo^{G}, Anamika Shreevastava^{P}, **Yi Yin**$^{+*}$. Impervious surfaces outweigh green space in shaping intra-city heat disparities across US cities, to be submitted.

Peer-reviewed Publications

2025 Shreevastava A.^{P*}, Hulley G., Prasanth S., Chakraborty T., Aguilera D., Sanders K., **Yin Y.** (2025). Contemporary income inequality outweighs historic redlining in shaping intra-urban heat disparities in Los Angeles. *Nature Communications*. https://doi.org/10.1038/s41467-025-59912-x

Wei H.^{V}, Chen B., **Yin Y.**, Wu S., Zhang T., Xu B. (2025). Vertical contrast of trees and buildings determines urban land surface temperature. *Landscape and Urban Planning*. https://doi.org/10.1016/j.landurbplan.2025.105448

Wei H.^{V}, Chen B., **Yin Y.**, Wu S., Zhang T., Tu Y., Xu B. (2025). Distinct dominant factors of spatially heterogeneous urban tree cooling identified in cities across China. *Ecological Indicators*. https://doi.org/10.1016/j.ecolind.2025.114204

Yin C.^{V}, Xiao X., Pan L., Chen R., **Yin Y.**, Qin Y., Shi W., Van de Voorde T., Yin S., Yao Y., Pan B., Jia N., Guo X., Meng F. (2025). Concurrent increases of impervious surface area and vegetation greenness and productivity in China's Yangtze River Delta. *Earth's Future*. https://doi.org/10.1029/2025EF006652

2024 Wang Y., Braghiere R.K., **Yin Y.**, Yao Y., Hao D., Frankenberg C. (2024). Beyond the visible: Accounting for ultraviolet and far-red radiation in vegetation productivity and surface energy budgets. *Global Change Biology*. https://doi.org/10.1111/gcb.17346

Frankenberg C., Bar-On Y.M., **Yin Y.**, Wennberg P.O., Jacob D.J., Michalak A.M. (2024). Data drought in the humid tropics: How to overcome the cloud barrier in greenhouse gas remote sensing. *Geophysical Research Letters*. https://doi.org/10.1029/2024GL108791

Byrne B., Liu J., Bowman K.W., **Yin Y.**, Yun J., Ferreira G.D., Ogle S.M., Baskaran L., He L., Li X., Xiao J., Davis K.J. (2024). Regional inversion shows promise in capturing extreme-event-driven CO_2 flux anomalies but is limited by atmospheric CO_2 observational coverage. *Journal of Geophysical Research: Atmospheres*, 129, e2023JD040006. https://doi.org/10.1029/2023JD040006

Yao Y., Humphrey V., Konings A.G., Wang Y., **Yin Y.**, Holtzman N., Wood J.D., Bar-On Y., Frankenberg C. (2024). Investigating diurnal and seasonal cycles of Vegetation Optical Depth retrieved from GNSS signals in a broadleaf forest. *Geophysical Research Letters*. https://doi.org/10.1029/2023GL107121

Lin X., Peng S., Ciais P., Hauglustaine D., Lan X., Liu G., Ramonet M., Xi Y., **Yin Y.**, Zhang Z., Bösch H., Bousquet P., Chevallier F., Dong B., Gerlein-Safdi C., Halder S., Parker R.J., Poulter B., Pu T., Remaud M., Runge A., Saunois M., Thompson R.L., Yoshida Y., Zheng B. (2024). Recent methane surges reveal heightened emissions from tropical inundated areas. *Nature Communications*. https://doi.org/10.1038/s41467-024-55266-y

2023 **Yin Y.**, He L., Wennberg P., Frankenberg C. (2023). Unequal exposure to heatwaves in Los Angeles: Impact of uneven green spaces. *Science Advances*. https://doi.org/10.1126/sciadv.ade8501

Wang Y.$^{+}$, **Yin Y.**$^{+}$ (2023). Agriculture in silico: Perspectives on radiative transfer optimization using vegetation modeling. *Crop and Environment*. https://doi.org/10.1016/j.crope.2023.07.003

He L., Rosa L., Lobell D.B., Wang Y., **Yin Y.**, Doughty R., Yao Y., Berry J.A., Frankenberg C. (2023). The weekly cycle of photosynthesis in Europe reveals the negative impact of particulate pollution on ecosystem productivity. *Proceedings of the National Academy of Sciences*. https://doi.org/10.1073/pnas.2306507120

Wang Y., Braghiere R.K., Longo M., Norton A.J., Köhler P., Doughty R., **Yin Y.**, Bloom A., Frankenberg C. (2023). Modeling global vegetation gross primary productivity, transpiration and hyperspectral canopy radiative transfer simultaneously using a next generation land surface model—CliMA Land. *Journal of Advances in Modeling Earth Systems*. https://doi.org/10.1029/2021MS002964

Ma S., Bloom A.A., Watts J.D., Quetin G.R., Donatella Z., Euskirchen E.S., Norton A.J., **Yin Y.**, Levine P.A., Braghiere R.K., Parazoo N.C., Worden J.R., Schimel D.S., Miller C.E. (2023). Resolving the carbon-climate feedback potential of wetland CO_2 and CH_4 fluxes in Alaska. *Global Biogeochemical Cycles*. https://doi.org/10.1029/2022GB007524

2022 Peng S., Lin X., Thompson R., Xi Y., Liu G., Hauglustaine D., Lan X., Poulter B., Ramonet M., Saunois M., **Yin Y.**, Zhang Z., Zheng B., Ciais P. (2022). Wetland emission and atmospheric sink explain methane growth in 2020. *Nature*. https://doi.org/10.1038/s41586-022-05447-w

He L., Byrne B., **Yin Y.**, Liu J., Frankenberg C. (2022). Remote-sensing derived trends in gross primary production explain increases in the CO_2 seasonal cycle amplitude. *Global Biogeochemical Cycles*. https://doi.org/10.1029/2021GB007220

He L., Jing W., Wang Y., Shang Q., Liu J., **Yin Y.**, Frankenberg C., Jiang J., Li Z., Yung Y. (2022). Marked impacts of pollution mitigation on crop yields in China. *Earth's Future*. https://doi.org/10.1029/2022EF002936

Worden J., Cusworth D., Qu X., **Yin Y.**, Zhang Y., Bloom A.A., Ma S., Byrne B.K., Scarpelli T., Maasakkers J.D., Crisp D., Duren R., Jacob D.J. (2022). The 2019 methane budget and uncertainties at 1° resolution and each country through Bayesian integration of GOSAT total column methane data and a priori inventory estimates. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-22-6811-2022

2021 **Yin Y.**, Chevallier F., Ciais P., Bousquet P., Saunois M., Zheng B., Worden J., Bloom A., Parker R., Jacob D., Dlugokencky E., Frankenberg C. (2021). Accelerating methane growth rate from 2010 to 2017: leading contributions from the tropics and East Asia. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-21-12631-2021

Chang J., Peng S., **Yin Y.**, Ciais P., Havlik P., Herrero M. (2021). The key role of production efficiency changes in livestock methane emission mitigation. *AGU Advances*. https://doi.org/10.1029/2021AV000391

Frankenberg C., **Yin Y.**, Byrne B., He L., Gentine P. (2021). Comment on "Recent global decline of CO_2 fertilization effects on vegetation photosynthesis." *Science*. https://doi.org/10.1126/science.abg2947

Byrne B., Liu J., Lee M., **Yin Y.**, Bowman K.W., Miyazaki K., Norton A.J., Joiner J., Pollard D.F., Griffith D.W.T., Velazco V.A., Deutscher N.M., Jones N.B., Paton-Walsh C. (2021). The carbon cycle of southeast Australia during 2019–2020: Drought, fires, and subsequent recovery. *AGU Advances*. https://doi.org/10.1029/2021AV000469

Zhao Z., Li W., Ciais P., Santoro M., Cartus O., Peng S., **Yin Y.**, Yue C., Yang H., Yu L., Zhu L., Wang J. (2021). Fire enhances forest degradation within forest edge zones in Africa. *Nature Geoscience*. https://doi.org/10.1038/s41561-021-00763-8

Xu L., Saatchi S., Yang Y., Yu Y., Pongratz J., Bloom A., Bowman K., Worden J., Liu J., **Yin Y.**, Domke G., McRoberts R.E., Woodall C., Nabuurs G.-J., de-Miguel S., Keller M., Harris N., Maxwell S., Schimel D. (2021). Changes in global terrestrial live biomass over the 21st century. *Science Advances*. https://doi.org/10.1126/sciadv.abe9829

Cusworth D., Bloom A., Ma S., Miller C., Bowman K., **Yin Y.**, Maasakkers J.D., Zhang Y., Scarpelli T.R., Qu Z., Jacob D.J., Worden J.R. (2021). A Bayesian framework for deriving sector-based methane emissions from top-down fluxes. *Communications Earth & Environment*. https://doi.org/10.1038/s43247-021-00312-6

Ciais P., Yao Y., Gasser T., Baccini A., Wang Y., Lauerwald R., Peng S., Bastos A., Li W., Raymond P.A., Canadell J.G., Peters G.P., Andres R.J., Chang J., Yue C., Dolman A.J., Haverd V., Hartmann

J., Laruelle G., Konings A.G., King A.W., Liu Y., Luyssaert S., Maignan F., Patra P.K., Peregon A., Regnier P., Pongratz J., Poulter B., Shvidenko A., Valentini R., Wang R., Broquet G., **Yin Y.**, Zscheischler J., Guenet B., Goll D.S., Ballantyne A.P., Yang H., Qiu C., Zhu D. (2021). Empirical estimates of regional carbon budgets imply reduced global soil heterotrophic respiration. *National Science Review*. https://doi.org/10.1093/nsr/nwaa145

Köhler P., Fischer W.W., Rossman G.R., Grotzinger J.P., Doughty R., Wang Y., **Yin Y.**, Frankenberg C. (2021). Mineral luminescence observed from space. *Geophysical Research Letters*. https://doi.org/10.1029/2021GL095227

Stavert A., Saunois M., Canadell J., Poulter B., Jackson R.B., Regnier P., Lauerwald R., Raymond P.A., Allen G.H., Patra P.K., Bergamaschi P., Bousquet P., Chandra N., Ciais P., Gustafson A., Ishizawa M., Ito A., Kleinen T., Maksyutov S., McNorton J., Melton J.R., Müller J., Niwa Y., Peng S., Riley W.J., Segers A., Tian H., Tsuruta A., **Yin Y.**, Zhang Z., Zheng B., Zhuang Q. (2021). Regional trends and drivers of the global methane budget. *Global Change Biology*. https://doi.org/10.1111/gcb.15901

Ma S., Worden J., Bloom A., Zhang Y., Poulter B., Cusworth D., **Yin Y.**, Pandey S., Maasakkers J.D., Lu X., Shen L., Sheng J., Frankenberg C., Miller C.E., Jacob D.J. (2021). Satellite constraints on the latitudinal distribution and temperature sensitivity of wetland methane emissions. *AGU Advances*. https://doi.org/10.1029/2021AV000408

2020 **Yin Y.**, Bloom A., Worden J., Saatchi S., Yang Y., Williams M., Liu J., Jiang Z., Worden H., Bowman K., Frankenberg C., Schimel D. (2020). Fire decline in the dry tropical ecosystems enhances decadal land carbon sink. *Nature Communications*. https://doi.org/10.1038/s41467-020-15852-2

Yin Y., Byrne B., Liu J., Wennberg P., Davis K., Magney T., Köhler P., He L., Jeyaram R., Humphrey V., Gerken T., Feng S., Digangi J., Frankenberg C. (2020). Cropland carbon uptake delayed and reduced by 2019 Midwest floods. *AGU Advances*. https://doi.org/10.1029/2019AV000140

Byrne B., Liu J., Bloom A.A., Bowman K.W., Butterfield Z., Joiner J., Keenan T.F., Keppel-Aleks G., Parazoo N.C., **Yin Y.** (2020). Contrasting regional carbon cycle responses to seasonal climate anomalies across the East-West divide of temperate North America. *Global Biogeochemical Cycles*. https://doi.org/10.1029/2020GB006598

Nguyen N., Turner A., **Yin Y.**, Prather M., Frankenberg C. (2020). Effects of chemical feedbacks on decadal methane emissions estimates. *Geophysical Research Letters*. https://doi.org/10.1029/2019GL085706

Liu J., Wennberg P.O., Parazoo N.C., **Yin Y.**, Frankenberg C. (2020). Observational constraints on the response of high-latitude northern forests to warming. *AGU Advances*. https://doi.org/10.1029/2020AV000228

Bloom A., Bowman K., Liu J., Konings A., Worden J., Parazoo N., Meyer V., Reager J., Worden H., Jiang Z., Quetin G., Smallman T., Exbrayat J., **Yin Y.**, Saatchi S., Williams M., Schimel D. (2020). Lagged effects regulate the inter-annual variability of the tropical carbon balance. *Biogeosciences*. https://doi.org/10.5194/bg-17-6393-2020

He L., Magney T., Dutta D., **Yin Y.**, Köhler P., Grossmann K., Stutz J., Dold C., Hatfield J., Guan K., Peng B., Frankenberg C. (2020). From the ground to space: Using solar-induced fluorescence to estimate crop productivity. *Geophysical Research Letters*. https://doi.org/10.1029/2020GL087474

He L., Wood J.D., Sun Y., Magney T., Dutta D., Köhler P., Zhang Y., **Yin Y.**, Frankenberg C. (2020). Tracking seasonal and interannual variability in photosynthetic downregulation in response to water stress at a temperate deciduous forest. *Journal of Geophysical Research: Biogeosciences*. https://doi.org/10.1029/2018JG005002

Saunois M., Stavert A.R., Poulter B., Bousquet P., et al. (2020). The Global Methane Budget 2000–2017. *Earth System Science Data*. https://doi.org/10.5194/essd-12-1561-2020

2019 **Yin Y.**, Bowman K., Bloom A., Worden J. (2019). Detection of fossil fuel emission trends in the presence of natural carbon cycle variability. *Environmental Research Letters*. https://doi.org/10.

1088/1748-9326/ab2dd7

Gaubert B., Stephens B.B., Basu S., Chevallier F., Deng F., Kort E.A., Patra P.K., Peters W., Rödenbeck C., Saeki T., Schimel D., Van der Laan-Luijkx I., Wofsy S., **Yin Y.** (2019). Global atmospheric CO_2 inverse models converging on neutral tropical land exchange but diverging on fossil fuel and atmospheric growth rate. *Biogeosciences*. https://doi.org/10.5194/bg-16-117-2019

Jiang P., Liu H., Piao S., Ciais P., Wu X., **Yin Y.**, Wang H. (2019). Enhanced growth after extreme wetness compensates for post-drought carbon loss in dry forests. *Nature Communications*. https://doi.org/10.1038/s41467-018-08229-z

Zheng B., Chevallier F., **Yin Y.**, Ciais P., Fortems-Cheiney A., Deeter M.N., Parker R.J., Wang Y., Worden H.M., Zhao Y. (2019). Global atmospheric carbon monoxide budget 2000–2017 inferred from multi-species atmospheric inversions. *Earth System Science Data*. https://doi.org/10.5194/essd-11-1411-2019

Pandey S., Houweling S., Krol M., Aben I., Nechita-Banda N., Thoning K., Röckmann T., **Yin Y.**, Segers A., Dlugokencky E. (2019). Influence of atmospheric transport on estimates of variability in the global methane burden. *Geophysical Research Letters*. https://doi.org/10.1029/2018GL081092

Bastos A., Ciais P., Chevallier F., Rödenbeck C., Ballantyne A.P., Maignan F., **Yin Y.**, Fernández-Martínez M., Friedlingstein P., Peñuelas J., Piao S.L., Sitch S., Smith W.K., Wang X., Zhu Z., Haverd V., Kato E., Jain A.K., Lienert S., Lombardozzi D., Nabel J.E.M.S., Peylin P., Poulter B., Zhu D. (2019). Contrasting effects of CO_2 fertilization, land-use change and warming on seasonal amplitude of Northern Hemisphere CO_2 exchange. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-19-12361-2019

2018 **Yin Y.**, Ciais P., Chevallier F., Li W., Bastos A., Piao S., Wang T., Liu H. (2018). Changes in the response of the Northern Hemisphere carbon uptake to temperature over the last three decades. *Geophysical Research Letters*. https://doi.org/10.1029/2018GL077316

Zheng B., Chevallier F., Ciais P., **Yin Y.**, Deeter M.N., Worden H.M., Wang Y., Zhang Q., He K. (2018). Rapid decline in carbon monoxide emissions and export from East Asia between years 2005 and 2016. *Environmental Research Letters*. https://doi.org/10.1088/1748-9326/aab2b3

Wang T., Liu D., Piao S., Wang Y., Wang X., Guo H., Lian X., Burkhart J.F., Ciais P., Huang M., Janssens I., Li Y., Liu Y., Peñuelas J., Peng S., Yang H., Yao Y., **Yin Y.**, Zhao Y. (2018). Emerging negative impact of warming on summer carbon uptake in northern ecosystems. *Nature Communications*. https://doi.org/10.1038/s41467-018-07813-7

Li W., Ciais P., Wang Y., **Yin Y.**, Peng S., Zhu Z., Bastos A., Yue C., Ballantyne A.P., Broquet G., Canadell J.G., Cescatti A., Chen C., Cooper L., Friedlingstein P., Le Quéré C., Myneni R.B., Piao S. (2018). Recent changes in global photosynthesis and terrestrial ecosystem respiration constrained from multiple observations. *Geophysical Research Letters*. https://doi.org/10.1002/2017GL076622

Krol M., de Bruine M., Killaars L., Ouwersloot H., Pozzer A., **Yin Y.**, Chevallier F., Bousquet P., Patra P., Belikov D., Maksyutov S., Dhomse S., Feng W., Chipperfield M.P. (2018). Age of air as a diagnostic for transport timescales in global models. *Geoscientific Model Development*. https://doi.org/10.5194/gmd-11-3109-2018

Wang Y., Broquet G., Ciais P., Chevallier F., Vogel F., Wu L., **Yin Y.**, Wang R., Tao S. (2018). Potential of European $^{14}CO_2$ observation network to estimate the fossil fuel CO_2 emissions via atmospheric inversions. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-18-4229-2018

Lin X., Ciais P., Bousquet P., Ramonet M., **Yin Y.**, Balkanski Y., Cozic A., Delmotte M., Evangeliou N., Indira N.K., Locatelli R., Peng S., Piao S., Saunois M., Swathi P.S., Wang R., Yver-Kwok C., Tiwari Y.K., Zhou L. (2018). Simulating CH_4 and CO_2 over South and East Asia using the zoomed chemistry transport model LMDzINCA. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-18-9475-2018

Zheng B., Chevallier F., Ciais P., **Yin Y.**, Wang Y. (2018). On the role of the flaming to smoldering transition in the seasonal cycle of African fire emissions. *Geophysical Research Letters*. https://doi.

org/10.1029/2018GL079092

2017 Yue C., Ciais P., Bastos A., Chevallier F., **Yin Y.**, Rödenbeck C., Park T. (2017). Vegetation greenness and land carbon-flux anomalies associated with climate variations: a focus on the year 2015. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-17-13903-2017

Wang Y., Broquet G., Ciais P., Chevallier F., Vogel F., Kadygrov N., Wu L., **Yin Y.**, Wang R., Tao S. (2017). Estimation of observation errors for large-scale atmospheric inversion of CO_2 emissions from fossil fuel combustion. *Tellus B: Chemical and Physical Meteorology*. https://doi.org/10.1080/16000889.2017.1325723

Wu X., Liu H., Li X., Piao S., Ciais P., Guo W., **Yin Y.**, Poulter B., Peng C., Viovy N., Vuichard N., Wang P., Huang Y. (2017). Higher temperature variability reduces temperature sensitivity of vegetation growth in Northern Hemisphere. *Geophysical Research Letters*. https://doi.org/10.1002/2017GL073285

Sun Y., Peng S., Goll D.S., Ciais P., Guenet B., Guimberteau M., Hinsinger P., Janssens I.A., Peñuelas J., Piao S., Poulter B., Violette A., Yang X., **Yin Y.**, Zeng H. (2017). Diagnosing phosphorus limitations in natural terrestrial ecosystems in carbon cycle models. *Earth's Future*. https://doi.org/10.1002/2016EF000472

Cheng Y., Liu H., Wang H., Piao S., **Yin Y.**, Ciais P., Wu X., Luo Y., Zhang C., Song Y., Gao Y., Qiu A. (2017). Contrasting effects of winter and summer climate on alpine timberline evolution in monsoon-dominated East Asia. *Quaternary Science Reviews*. https://doi.org/10.1016/j.quascirev.2017.06.007

2016 **Yin Y.**, Ciais P., Chevallier F., Van der Werf G., Fanin T., Broquet G., Boesch H., Cozic A., Hauglustaine D., Szopa S., Wang Y. (2016). Variability of fire carbon emissions in Equatorial Asia and its non-linear sensitivity to El Niño. *Geophysical Research Letters*. https://doi.org/10.1002/2016GL070971

Xu C., Liu H., Williams P., **Yin Y.**, Wu X. (2016). Trends toward an earlier peak of the growing season in Northern Hemisphere mid-latitudes. *Global Change Biology*. https://doi.org/10.1111/gcb.13224

Feng M., Wang Q., Hao Q., **Yin Y.**, Song Z., Wang H., Liu H. (2016). Determinants of soil erosion during the last 1600 years in the forest–steppe ecotone in Northern China reconstructed from lacustrine sediments. *Palaeogeography, Palaeoclimatology, Palaeoecology*. https://doi.org/10.1016/j.palaeo.2016.02.004

Ostler A., Sussmann R., Patra P., Houweling S., de Bruine M., Stiller G., Haenel F., Plieninger J., Bousquet P., **Yin Y.**, Saunois M., Walker K.A., Deutscher N.M., Griffith D.W.T., Blumenstock T., Hase F., Warneke T., Wang Z., Kivi R., Robinson J. (2016). Model-TCCON comparisons of column-averaged methane with a focus on the stratosphere. *Atmospheric Measurement Techniques*. https://doi.org/10.5194/amt-9-4843-2016

Li B., Gasser T., Ciais P., Piao S., Tao S., Yves B., Hauglustaine D., Boisier J., Chen Z., Huang M., Li L., Li Y., Liu H., Liu J., Peng S., Shen Z., Sun Z., Wang R., Wang T., Yin G., **Yin Y.**, Zeng H., Zeng Z., Zhou F. (2016). The contribution of China's emissions to global climate forcing. *Nature*. https://doi.org/10.1038/nature17165

2015 **Yin Y.**, Chevallier F., Ciais P., Broquet G., Fortems-Cheiney A., Pison I., Saunois M. (2015). Decadal trends in global CO emissions as seen by MOPITT. *Atmospheric Chemistry and Physics*. https://doi.org/10.5194/acp-15-13433-2015

Yin Y., Liu H., Hao Q. (2015). The role of fire in the late Holocene forest decline in semi-arid North China. *The Holocene*. https://doi.org/10.1177/0959683615596820

Liu H., **Yin Y.**, Wang Q., He S. (2015). Climatic effects on plant species distribution within the forest-steppe ecotone in northern China. *Applied Vegetation Science*. https://doi.org/10.1111/avsc.12139

Hu G., Liu H., **Yin Y.**, Song Z. (2015). The role of legumes in plant community succession of

degraded grasslands in northern China. *Land Degradation and Development*. https://doi.org/10.1002/ldr.2382

2014 Yang H., Piao S., Zeng Z., Ciais P., **Yin Y.**, Friedlingstein P., Sitch S., Ahlström A., Guimberteau M., Huntingford C., Levis S., Levy P.E., Huang M., Li Y., Li X., Lomas M.R., Peylin P., Poulter B., Viovy N., Zaehle S., Zeng N., Zhao F., Wang L. (2014). Multi-criteria evaluation of discharge simulation in Dynamic Global Vegetation Models. *Journal of Geophysical Research: Atmospheres*. https://doi.org/10.1002/2015JD023129

Liu H., **Yin Y.**, Hao Q., Liu G. (2014). Sensitivity of temperate vegetation to Holocene development of East Asian monsoon. *Quaternary Science Reviews*. https://doi.org/10.1016/j.quascirev.2014.06.006

Hao Q., Liu H., **Yin Y.**, Wang H., Feng M. (2014). Varied responses of forest at its distribution margin to Holocene monsoon development in northern China. *Palaeogeography, Palaeoclimatology, Palaeoecology*. https://doi.org/10.1016/j.palaeo.2014.05.020

Peng S., Piao S., Zeng Z., Ciais P., Zhou L., Li L., Myneni R., **Yin Y.**, Zeng H. (2014). Afforestation in China cools local land surface temperature. *Proceedings of the National Academy of Sciences*. https://doi.org/10.1073/pnas.1315126111

2013 Liu H.*, **Yin Y.***, Piao S., Zhao F., Engels M., Ciais P. (2013). Disappearing lakes in semi-arid northern China: drivers and environmental impacts. *Environmental Science and Technology*. https://doi.org/10.1021/es305298q

Liu G., Liu H., **Yin Y.** (2013). Global patterns of NDVI-indicated vegetation extremes and their sensitivity to climate extremes. *Environmental Research Letters*. https://doi.org/10.1088/1748-9326/8/2/025009

Liu G., **Yin Y.**, Liu H., Hao Q. (2013). Quantifying regional vegetation cover variability in North China during the Holocene: implications for climate feedback. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0071681

Liu H., **Yin Y.** (2013). Response of forest distribution to past climate change: An insight into future predictions. *Chinese Science Bulletin*. https://doi.org/10.1007/s11434-013-6032-7

Liu H., Williams A.P., Allen C.D., Guo D., Wu X., Anenkhonov O.A., Liang E., Sandanov D.V., **Yin Y.**, Qi Z., Badmaeva N.K. (2013). Rapid warming accelerates tree growth decline in semi-arid forests of Inner Asia. *Global Change Biology*. https://doi.org/10.1111/gcb.12217

2012 **Yin Y.**, Liu H., Liu G., Hao Q., Wang H. (2012). Vegetation responses to mid-Holocene extreme drought events and subsequent long-term drought on the southeastern Inner Mongolian Plateau, China. *Agricultural and Forest Meteorology*. https://doi.org/10.1016/j.agrformet.2012.10.005

Song Z., Liu H., Si Y., **Yin Y.** (2012). The production of phytoliths in China's grasslands: implications to the biogeochemical sequestration of atmospheric CO_2. *Global Change Biology*. https://doi.org/10.1111/gcb.12017

2011 **Yin Y.**, Liu H., He S., Zhao F., Wang H., Liu G., Wu X. (2011). Patterns of local and regional grain size distribution and their application to Holocene climate reconstruction in semi-arid Inner Mongolia, China. *Palaeogeography, Palaeoclimatology, Palaeoecology*. https://doi.org/10.1016/j.palaeo.2011.05.011

Zhao F., Liu H., **Yin Y.**, Hu G., Wu X. (2011). Vegetation succession prevents dry lake beds from becoming dust sources in the semi-arid steppe region of China. *Earth Surface Processes and Landforms*. https://doi.org/10.1002/esp.2114

Wang H., Liu H., Zhao F., **Yin Y.**, Zhu J., Snowball I. (2011). Early- and mid-Holocene palaeoenvironments as revealed by mineral magnetic, geochemical and palynological data of sediments from Bai Nuur and Ulan Nuur, southeastern Inner Mongolia Plateau, China. *Quaternary International*. https://doi.org/10.1016/j.quaint.2011.06.014

2010 Liu H., **Yin Y.**, Zhu J., Zhao F., Wang H. (2010). How did the forest respond to Holocene climate

drying at the forest-steppe ecotone in northern China? *Quaternary International*. https://doi.org/10.1016/j.quaint.2010.05.003

2009 Wang H., Liu H., Zhu J., **Yin Y.** (2009). Holocene environmental changes as recorded by mineral magnetism of sediments from Anguli-nuur Lake, southeastern Inner Mongolia Plateau, China. *Palaeogeography, Palaeoclimatology, Palaeoecology*. https://doi.org/10.1016/j.palaeo.2009.10.020

2008 Liu H., **Yin Y.**, Ren J., Tian Y., Wang H. (2008). Climatic and anthropogenic controls of topsoil features in the semi-arid East Asian steppe. *Geophysical Research Letters*. https://doi.org/10.1029/2007GL032980

2007 Ren J., Liu H., **Yin Y.**, He S. (2007). Drivers of greening trend across vertically distributed biomes in temperate arid Asia. *Geophysical Research Letters*. https://doi.org/10.1029/2007GL029435

GRANTS

Active

2026 **Burroughs Wellcome Fund Climate Change and Human Health Seed Grants.** Moving Into Harm's Way? Paradox of Domestic Migration, Climate Extremes, and Health System Readiness. *PI.* $50k

2025–2026 **LMU-NYU Research Cooperation Program.** Natural Ecosystem Disturbances: Legacy Effects on Biogeochemical Cycles and Succession. *PI.* $16k

2025–2026 **NYU Teaching Advancement Grant.** Reshaping ES100 – Environmental System Science for Scientific Foundation and Interdisciplinary Studies. *PI.* $4k

2025–2026 **NYU Goddard Impact Awards.** City Pulse: Urban Stress Modeling Project. *Co-PI.* $20k

2025–2026 **NYU Research Catalyst.** Concrete Jungle? Not Quite: Characterizing the Biodiversity of NYC. *Co-PI.* $15k

2024–2027 **NASA Orbiting Carbon Observatory 2/3 Science Team.** Optimizing Carbon Observations: Long-Term Understanding and Synthesis. *Co-I.* $670k total; $325k to NYU

Pending

2026 **NSF Fire Science Innovations through Research and Education.** Collaborative Research: FIRE-WUI: Who Rebuilds and What's in the Smoke: Wildfire Structural Damage, Toxic Emissions, and Recovery Trajectory. *PI.* $1,052k

2026 **NASA User-Centered Applications with Large Earth Foundation Models.** A National Framework for Near-Real-Time Wildfire Damage Assessment and Risk Prediction. *PI.* $498k

2026 **NASA ISRO Synthetic Aperture Radar Mission** FIRE-DEPTH: Quantifying Burning Depth, Fuel Consumption, and Post-Fire Carbon Trajectories in Tropical Peatlands with NISAR. *PI.* $973k

2025 **NASA Carbon Cycle Science.** Refining Carbon Estimates by Mapping Grassy Trees in Disturbed Tropical Forests. *Co-I.* $753k

2025 **NASA Responsive Science Initiatives Research.** Unraveling uncertainties in downscaling Earth system models for high-resolution urban climate projections. *Co-I.* $120k; rated selectable

Completed

2024–2025 **NYU Climate Change Initiative Seed Grant.** Mismatch Between Migration Patterns and Climate Livability in the Sun Belt. *PI.* $20k

2024–2025 **NYU 19 Washington Square North Faculty Fellowship.** Climate Under Construction: Tracing the Heat in Abu Dhabi's Expanding Landscape. *Co-PI.* $30k

2021–2024 **NASA Orbiting Carbon Observatory 2/3 Science Team.** An integrated top-down and bottom-up view from OCO-2/3: Jointly utilizing SIF & atmospheric CO_2 to advance our knowledge of the carbon cycle. *Co-I.* $600k

2020–2024 **NASA Carbon Monitoring System.** Quantifying and partitioning the global methane budget using satellite and ground-based measurements of CH_4 and tracers of its sources and sinks. *Co-I.* $277k

2022–2025 **NASA Carbon Monitoring System.** Carbon Monitoring System Across Mexico. *Co-I.* $150k

2021–2024 **Caltech Center for Evolutionary Science.** Evolution of regenerative agriculture. *PI.* $20k

2021–2023 **NASA Carbon Cycle Science.** Bridging the gap between carbon cycle models and remote sensing observations. *Co-I.* $756k

2020–2024 **NASA ECOSTRESS Science Team.** Exploring diurnal cycles to evaluate vegetation responses to heat and drought stress. *Science-PI.* $364k

SELECTED TALKS

2026 Natural Variability in Stratosphere-Troposphere Exchange: An Underappreciated Driver of Global Methane Growth Rates. *Invited Seminar, Department of Climate and Space Sciences (CLaSP), University of Michigan.*

Historical Legacies and Modern Risks: Extreme Heat Disparity across U.S. Cities and Wildfire Risk Amplification at Urban Edges. *Invited Seminar, Department of Ecology, Evolution and Environmental Biology (E3B), Columbia University.*

2025 Advancing Understanding and Prediction of Drought-Heat-Wildfire Extremes. *AGU Fall Meeting (Invited Talk).*

Urban Heat Inequities in U.S. Cities: From Historical Roots to Future Risks. *Invited Seminar, NYU Urban Research Seminar Series.*

2024 Key Driving Factors for the Accelerating Methane Growth Rates. *Invited Seminar, Department of Ecology and Evolutionary Biology, Cornell University.*

Unequal Exposure to Heat Extremes: Case Studies in Los Angeles and New York City. *Invited Seminar, School of Earth and Environmental Sciences, Queens College, CUNY.*

Accelerating Methane Growth Rates in Recent Years: what are the key driving factors? *Invited Seminar, Department of Atmospheric and Oceanic Sciences, UCLA.*

2023 Climate extremes and ecosystem resilience. *Invited Seminar, Department of Environmental Studies, NYU*

2022 Global fire dynamics and impacts on the land carbon sink. *Invited Seminar, Sino-Ecologists Association Overseas (virtual).*

2021 Climate extremes and ecosystem disturbances: a carbon cycle perspective. *Invited Seminar, Department of Global Ecology, Carnegie Institute for Science (virtual).*

2020 Cropland carbon uptake delayed and reduced by 2019 Midwest floods. *AGU Fall Meeting (virtual).*

Exploring diurnal cycles to evaluate vegetation responses to heat and drought stress. *ECOSTRESS Science Team Meeting, Ventura, CA.*

ExploSIF: Exploiting OCO-2 fluorescence potential for carbon cycle research. *OCO 2/3 Science Team Meeting, Pasadena, CA.*

2019 Global atmospheric carbon monoxide budget 2000–2017 inferred from multi-species atmospheric inversions. *AGU Fall Meeting, San Francisco, CA.*

Cropland carbon uptake delayed and reduced by 2019 Midwest floods. *NASA OCO 2/3 Science Team Meeting, Boulder, CO.*

Recent acceleration of methane growth rate: leading contributions from tropical wetlands and East Asia. *NOAA ESRL Global Monitoring Annual Conference, Boulder, CO.*

2018 Recent acceleration of methane growth rate: new insight from multi-species atmospheric inversions. *Integrated Global Greenhouse Gas Information System (IG3IS)/TRANSCOM, Lund, Sweden.*

The contribution of fire decline to the global carbon budget. *Committee on Space Research (COSPAR)*

Scientific Assembly, Pasadena, CA.

2017 Amazon methane emissions inferred from lower troposphere retrievals using SCIAMACHY & TES. *AGU Fall Meeting, New Orleans, LA.*

2016 Decadal decline in global atmospheric carbon monoxide as a result of reduction in fossil fuel emissions and biomass burning. *Invited Seminar, California Institute of Technology, CA.*

Variability of fire carbon emissions in equatorial Asia and its nonlinear sensitivity to El Niño. *AGU Fall Meeting, San Francisco, CA.*

Modeling phosphorus cycle in the soil with ORCHIDEE. *International Institute for Applied Systems Analysis, Vienna, Austria.*

2015 Atmospheric carbon monoxide inversion and applications. *Invited Seminar, Jet Propulsion Laboratory, Pasadena, CA.*

Modeling phosphorus cycle in the soil. *Centre for Ecological Research and Forestry Applications, Barcelona, Spain.*

2013 Fire emission estimates from atmospheric inversions of carbon monoxide. *Invited Seminar, Vrije Universiteit Amsterdam, Netherlands.*

2012 Representative range of topsoil and lake sediment pollen composition on regional vegetation simulated with remote sensing. *International Palynological Conference, Tokyo, Japan.*

TEACHING

Courses Taught

Fall 2025 ES100: Environmental System Science (Departmental Core Undergraduate Course, Fully redesigned syllabus and recitation activities, Enrollment: 120), *NYU*

Fall 2024 ES100: Environmental System Science (Departmental Core Undergraduate Course, co-taught, Enrollment: 120), *NYU*

Spring 2024 Exploring Earth: Remote Sensing and Spatial Analysis (New Course Development, Enrollment: 21), *NYU*

Spring 2022 Earth's Biogeochemical Cycles (Graduate Course, Enrollment: 13), *Caltech*

Teaching Recognition & Support

2025 NYU Arts & Science Teaching Innovation Award

2025–2026 NYU Teaching Advancement Grant supports course redesign to strengthen scientific foundations, interdisciplinary integration, and experiential learning

Guest Lectures

2025 Finding the research question, Interdisciplinary Environmental Research Design (PhD Course), NYU.

2025 Thermal Remote Sensing & Urban Applications, Theory and Application of Remote Sensing (Graduate Course), Cornell University.

2024 The Role of Fire in the Global Biogeochemical Cycles, Earth's Biogeochemical Cycles (Undergraduate Course), NYU.

2024 The Role of Fire in the Earth System, Introduction to Earth System Science (Undergraduate Course), PKU.

MENTORING

Postdoctoral Scholars

2025–present Xinlei Liu (NYU)

2025–present Qingyu Wang (NYU)

2023–2025 Anamika Shreevastava (Caltech & NYU) — *now Assistant Professor, Tandon/NYU*

2022–2024 Yitong Yao (Caltech, co-advised) — *now Assistant Professor, Tsinghua Shenzhen Graduate School*

PhD Advisees

2024–2025 Hong Wei (Tsinghua University, visiting student)

2018–2022 Liyin He (Caltech, co-advised) — *now Assistant Professor, Duke University*

2019–2022 Newton Nguyen (Caltech, co-advised) — *now Postdoc, Stanford University*

PhD Committee

2025–present Udyama Chirammal Ramakrishnan (Tandon/NYU)

2024–present Elena Diez Pastor (University of Delaware)

Master's Students

2024–present Shangyi Guo (Center for Urban Science + Progress, NYU)

2024–present Hoon Cho (Computer Science, NYU)

2024–2025 Manasvin Anand (Center for Data Science, NYU)

2024 Musonda Sinkala (Center for Data Science, NYU)

Undergraduate Students

2024–present Ashley Torres (Environmental Studies, NYU) — *Dean's Undergraduate Research Fund*

2024–2025 Maya Humston (Environmental Studies, NYU)

2026–present Elinor Adams (Gallatin School of Individualized Study, NYU)

SELECTED HONORS AND AWARDS

2025 NYU Arts & Science Teaching Innovation Award

2016 NASA Postdoctoral Program (NPP) Fellowship

2012 International Palynological Conference Award, Tokyo, Japan

2011 Best Presentation, Annual Ecology Forum, Peking University

2007–2009 National Graduate Scholarship, China

ACADEMIC SERVICES

Editorial and National Service

2024–present Associate Editor, *Science Advances*

2020–present NASA OCO Science Team (Competitive Selection)

2023–2025 NASA Carbon-I Earth System Explorer Mission Science Team, Target Mode Lead

2021–2025 NASA Grant Review Panelist

2020–2024 NASA ECOSTRESS Science Team (Competitive Selection)

2024 NSF Grant Reviewer

Peer Review

Nature, Nature Climate Change, Nature Sustainability, Nature Geoscience, Nature Communications, Proceedings of the National Academy of Sciences (PNAS), Scientific Data, Geophysical Research Letters, Journal of Advances in Modeling Earth Systems (JAMES), Frontiers in Big Data, Journal of Geophysical Research, Global Change Biology, Ecology, Global and Planetary Change, Geoscientific Model Development, Earth System Dynamics, Atmospheric Research, CATENA, Scientific Reports, Annals of the New York Academy of Sciences, Journal of Environmental Management, Land Degradation and Development, Journal of Photogrammetry and Remote Sensing, Carbon Balance and Management, Environmental Research Letters.

University and Departmental Service

2023–present	Steering Committee for Foundations of Scientific Inquiry, NYU Arts & Science
2025–present	Environmental Studies Undergraduate Curriculum Committee
2025–present	Sciences Divisional Faculty Learning Community on Generative AI, NYU Arts & Science
2023–2024	Environmental Studies PhD Program Committee
2024–2025	Environmental Studies Tenure-track Faculty Search Committee

SELECTED OUTREACH AND MEDIA

2025	**When Cities Get Hotter: From New York to Abu Dhabi.** (Public Talk at NYU Abu Dhabi Institute)
2024	**Nature Justice In Cities**: Conversation between Academia and Activist (Moderator, NYU)
2023	**Unequal Exposure to Heatwaves in Los Angeles: Impact of Uneven Green Spaces.** (Public Talk at California Center for Climate Change Education at West LA College)
2020	**Bay-area Cultural Forum**: California Wildfire–the Escalating Consequences of a Warming Climate (Virtual)
	Caltech Highlights: Flooding stunted 2019 cropland growing season, resulting in more CO_2
	NASA News: Flooding stunted 2019 cropland growing season, resulting in more atmospheric CO_2
	NASA Earth Observatory Images: Faint Glow, Clear Signal from Plants
2018	**Communicating Climate Science with the Public**: Climate Change and What Can We Do? (Pasadena City Hall)
2016	**Washington Post**: How the Earth will pay us back for our carbon emissions with more carbon emissions
2014	**Special Report to the European Commission** On the possibility of developing a service providing optimized CO emissions for the Copernicus Atmosphere Monitoring Service.