

**Xueying Yu**

Department of Earth System Science, Stanford University, 473 Via Ortega, Stanford, CA, US, 94305  
[xyx@stanford.edu](mailto:xyx@stanford.edu) +1-651-4686950

**Education**

---

<b>Ph.D. in Land and Atmospheric Science</b>	2017–2022
University of Minnesota-Twin Cities, Department of Soil Water and Climate	
<b>M.S. in Meteorology</b>	2014–2017
Nanjing University, School of Atmospheric Sciences	
<b>B.S. in Atmospheric Science</b>	2010–2014
Nanjing University, School of Atmospheric Sciences	

**Research Interests**

---

Carbon Cycle; Remote Sensing; Data Assimilation; Climate Change and Disasters

**Awards and Honors (†Funded Proposal)**

---

†Doctoral Dissertation Fellowship (University of Minnesota; \$25,000, declined)	2022–2023
<i>Characterizing Methane Emissions from Point Sources to the Global Budget</i>	
†NASA Earth and Space Science Fellowship (\$135,000)	2018–2021
<i>Constraining and Projecting Wetland Methane Emissions in the Northern US</i>	
ACOM Travel Fund (NCAR FASCINATE workshop)	09/2019
ACOM Travel Fund (Fundamentals of Atmospheric Chemistry and Aerosol Modeling)	08/2018
Graduate Fellowship of LAAS Graduate Program (\$23,509)	2017–2018
Outstanding Graduate Student Award of Nanjing University	2017
Outstanding Graduate Student Award of School of Atmospheric Sciences	2017
Academic Scholarship for Graduate Studies of 2016	2016
Academic Scholarship for Graduate Studies of 2015	2015
Academic Scholarship for Graduate Studies of 2014	2014
People Scholarship	2013

**Research**

---

<b>Postdoctoral Scholar</b>	2022–present
-----------------------------	--------------

*Global Carbon Project*

Department of Earth System Science, Stanford University, US

Advisor: Rob Jackson

- Develop inverse modeling framework of methane, methane isotopes, and ethane
- Develop methane isotope simulations in Chemical Transport Model
- Quantify the global methane budget and interpret drivers of unexpected sources

<b>Research Assistant</b>	2017–2022
---------------------------	-----------

*Greenhouse Gas Emissions in the Midwest*

Department of Soil Water and Climate, University of Minnesota-Twin Cities, US

Advisor: Dylan B. Millet

- Optimized the global methane budget and oxidation chain via space observations
- Evaluated satellite's capabilities to map methane emissions via Observing System Simulation Experiments
- Optimized the methane budget in the US Midwest by aircraft-based inversions
- Quantified point source emissions using an aircraft-based mass-balance approach

<b>Visiting Student (remote)</b> Department of Mechanical Engineering, University of Colorado at Boulder, US Advisor: Daven K. Henze <ul style="list-style-type: none"> <li>Improved methane 4D-Var inverse scheme in the GEOS-Chem adjoint model</li> </ul>	2020–2022
<b>Research Assistant</b> <i>Heavy Precipitation Prediction for Major Urban Regions in Eastern China under the Background of Global Climate Change</i> School of Atmospheric Sciences, Nanjing University, China Advisor: Xing Chen <ul style="list-style-type: none"> <li>Performed typhoon-related synoptic weather typing</li> <li>Projected changes in extreme rainfall pattern on century scale based on CMIP5</li> </ul>	2014–2017
<b>Summer Research</b> <i>Energy Budget in Atmospheric Boundary Layer</i> School of Atmospheric Sciences, Nanjing University, China Advisor: Ning Zhang <ul style="list-style-type: none"> <li>Explored urban effect on energy budget based on eddy covariance system</li> </ul>	07–09/2013
<b>Elite Program for Future Research</b> School of Life Sciences, Nanjing University, China <ul style="list-style-type: none"> <li>Took elite courses to strengthen science and programming fundamentals</li> <li>Received laboratory training for chemistry and life sciences</li> </ul>	2010–2011
<b>Teaching</b>	
<hr/> <b>Undergraduate Student Mentor</b> Graduate Student Mentorship Initiative (GSMI) Program, Científico Latino, US	2021–present
<b>STEM Undergraduate Mentor</b> University of Minnesota, US	03–06/2021
<b>University of Minnesota Preparing Future Faculty Program</b> <ul style="list-style-type: none"> <li>Received professional training of teaching</li> <li>Developed a course syllabus and gave example classes</li> </ul>	2019
<b>Teaching Assistant</b> <i>Statistical Weather Prediction</i> School of Atmospheric Sciences, Nanjing University, China	02–07/2016
<b>Professional Training</b>	
<hr/> <b>Virtual Training Sessions on Satellite Applications</b> AMS Satellite Meteorology, Oceanography and Climatology (SatMOC) Committee	06–08/2021
<b>Frontiers of Atmospheric Science and Chemistry: Integration of Novel Applications and Technological Endeavors (FASCINATE) Workshop</b> Atmospheric Chemistry Observations & Modeling, National Center for Atmospheric Research (NCAR), US	09/2019
<b>Fundamentals of Atmospheric Chemistry and Aerosol Modeling Workshop</b> Atmospheric Chemistry Observations & Modeling, NCAR, US	08/2018

**Local Disaster Weather Forecaster Intern** 07/2015

Beijing Meteorological Bureau, Beijing, China

- Produced and disseminated reports of local disaster weather forecast
- Supported severe weather monitoring and warning systems
- Recorded daily weather conferences

**Weather Forecaster Intern** 07/2013

Jiangsu Meteorological Bureau, Jiangsu, China

- Applied radar and satellite data to daily weather forecasting
- Supported daily weather forecasting
- Reorganized 2010–2012 disaster weather files of Jiangsu province

**Data Analyst Intern** 01/2012

Chifeng Meteorological Bureau, Inner Mongolia, China

- Collected and organized meteorological data from eight weather stations
- Charted and analyzed weather maps
- Wrote scripts for television and broadcast interviews

---

**Service and Outreach****Conference Session Co-chair***AGU 2023 Fall Meeting*, Methane Mitigation through Improved Understanding of Methanogenesis, Methanotrophy, and Atmospheric Methane Removal*AGU 2022 Fall Meeting*, The Global Methane Cycle**Manuscript Peer Reviewer**

Atmospheric Measurement Techniques; Agricultural and Forest Meteorology; Atmospheric Chemistry and Physics; Communications Earth &amp; Environment; Frontiers in Earth Science; Geoscientific Model Development; Nature

**Grant Review**

Atmospheric Chemistry, Carbon Cycle and Climate (AC4) Program, NOAA (2023); the Council of Graduate Students (COGS) Grant, University of Minnesota (2021)

**Conference Presentation Judge**

Stanford School of Sustainability Research Review (2023); AGU Fall Meeting Outstanding Student Presentation Awards (2022); Minnesota State Science &amp; Engineering Fair Grand Award (2021)

**Core Team Member of META Workshop** 2022–present

Methane Emissions Technology Alliance (META), Stanford University, US

**Student Member of AMS Board on Atmospheric Biogeosciences** 2020–2022**Seminar Organizer, Graduate Student Academic Community** 2014–2017

School of Atmospheric Sciences, Nanjing University, China

---

**Peer-Reviewed Publications**

Yu, X., Millet, D. B., Henze, D. K., Turner, A. J., Delgado, A. L., Bloom, A. A., and Sheng, J.: A high-resolution satellite-based map of global methane emissions reveals missing wetland, fossil fuel, and monsoon sources. *Atmospheric Chemistry and Physics*, 23, 3325–3346, 10.5194/acp-23-3325-2023, 2023. Available at: <https://acp.copernicus.org/articles/23/3325/2023>.

Hu, C., Xiao, W., Griffis, T., Xiao, Q., Wang, S., Zhang, Y., Wang, W., Zhu, L., Chen, X., **Yu, X.**, and Lee, X.: Estimation of anthropogenic CH<sub>4</sub> and CO<sub>2</sub> emissions in Taiyuan-Jinzhong region: One of the world's largest emission hotspots. *Journal of Geophysical Research: Atmospheres*, 128, e2022JD037915, 10.1029/2022JD037915, 2023. Available at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022JD037915>.

Chen, Z., Jacob, D., Nesser, H., Sulprizio, M., Lorente, A., Varon, D., Lu, X., Shen, L., Qu, Z., Penn E., and **Yu, X.**: Methane emissions from China: a high-resolution inversion of TROPOMI satellite observations, *Atmospheric Chemistry and Physics*, 22(16), 10809–10826, 10.5194/acp-22-10809-2022, 2022. Available at: <https://acp.copernicus.org/articles/22/10809/2022>.

**Yu, X.**, Millet, D. B., and Henze, D. K.: How well can inverse analyses of high-resolution satellite data resolve heterogeneous methane fluxes? Observing system simulation experiments with the GEOS-Chem adjoint model (v35), *Geoscientific Model Development*, 14(12), 7775–7793, 10.5194/gmd-14-7775-2021, 2021. Available at: <https://gmd.copernicus.org/articles/14/7775/2021>.

**Yu, X.**, Millet, D. B., Wells, K. C., Henze, D. K., Cao, H., Griffis, T. J., Kort, E. A., Plant, G., Deventer, M. J., Kolka, R. K., Roman, D. T., Davis, K. J., Desai, A. R., Baier, B. C., McKain, K., Czarnetzki, A. C., and Bloom, A. A.: Aircraft-based inversions quantify the importance of wetlands and livestock for Upper Midwest methane emissions, *Atmospheric Chemistry and Physics*, 21, 951–971, 10.5194/acp-21-951-2021, 2021. Available at: <https://acp.copernicus.org/articles/21/951/2021>.

Gonzalez, A., Millet, D. B., **Yu, X.**, Wells, K. C., Griffis, T. J., Baier, B. C., Campbell, P. C., Choi, Y., DiGangi, J. P., Gvakharia, A., Halliday, H., Kort, E. A., McKain, K., Nowak, J., and Plant, G.: Fossil vs. non-fossil CO sources in the US: New airborne constraints from ACT-America and GEM, *Geophysical Research Letters*, 48, e2021GL093361, 10.1029/2021GL093361, 2021. Available at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GL093361>.

Hu, C., Griffis, T., Frie, A., Baker, J., Wood, J., Millet, D., Yu, Z., **Yu, X.**, and Czarnetzki, A.: A multi-year constraint on ammonia emissions and deposition within the U.S. Corn Belt. *Geophysical Research Letters*, 48, e2020GL090865, 10.1029/2020GL090865, 2021. Available at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020GL090865>.

**Yu, X.**, Millet, D. B., Wells, K. C., Griffis, T. J., Chen, X., Baker, J. M., Conley, S. A., Smith, M. L., Gvakharia, A., Kort, E. A., Plant, G., and Wood, J. D.: Top-down constraints on methane point source emissions from animal agriculture and waste based on new airborne measurements in the U.S. Upper Midwest, *Journal of Geophysical Research: Biogeosciences*, 125, e2019JG005429, 10.1029/2019jg005429, 2020. Available at: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019JG005429>.

---

### Translations

*The Atmosphere: An Introduction to Meteorology*. By F. K. Lutgens and E. J. Tarbuck (2013). Translation into Chinese by X. Chen, Y. Huang, H. Hui, N. Wang, **X. Yu**, Y. Meng, and S. Chen (2016). Published by Pearson Education Asia Limited and Publishing House of Electronics Industry.

- Translated Chapter 12 *Weather analysis and forecasting*.

---

### Dataset

---

Millet, D. B., Conley, S. A., Gvakharia, A., Kort, E. A., Plant, G., Smith, M. L., and **Yu, X.**: *Airborne measurements from the GEM study*. Retrieved from the Data Repository for the University of Minnesota, 2010. Available at: <https://doi.org/10.13020/f50r-zh70>.

---

### Model Development and Simulation Archive

---

**Yu, X.**, Millet, D. B., and Henze, D. K.: *Code updates of GEOS-Chem Adjoint v35 for TROPOMI methane 4D-Var inversion*. Retrieved from the Data Repository for the University of Minnesota, 2021. Available at: <https://doi.org/10.13020/g5xc-nj81>.

Millet, D. B., Gonzalez, A., and **Yu, X.**: *Gonzalez 2021 tagged CO model archive*. Retrieved from the Data Repository for the University of Minnesota, 2021. Available at: <https://doi.org/10.13020/p2ze-1y93>.

---

### Invited Seminars

---

2023 Orbio Earth  
2023 Scripps Institution of Oceanography, University of California, San Diego  
2023 Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado  
2023 The State University of New York (SUNY) at Albany  
2023 Lamont-Doherty Earth Observatory, Columbia University  
2023 Purdue University  
2023 University of Wyoming  
2023 National Center for Atmospheric Research (NCAR)  
2022 Tsinghua University  
2022 University of Minnesota  
2022 University of Minnesota  
2021 Pacific Northwest National Laboratory (PNNL)  
2020 National Center for Atmospheric Research (NCAR)  
2020 University of Colorado at Boulder

---

### Selected Oral Conference Presentations

---

2023 10<sup>th</sup> Young Scientist Workshop, Nanjing University  
2022 AGU 2022 Fall Meeting, Session on remote sensing of CH<sub>4</sub> and CO<sub>2</sub> from space  
2022 10<sup>th</sup> International GEOS-Chem Meeting (Carbon Gases), Washington University at St. Louis  
2022 AMS 102<sup>nd</sup> Annual Meeting, 24<sup>th</sup> Conference on Atmospheric Chemistry  
2022 AMS 102<sup>nd</sup> Annual Meeting, 24<sup>th</sup> Conference on Atmospheric Chemistry  
2021 AGU 2021 Fall Meeting, Session on remote sensing of CH<sub>4</sub> and CO<sub>2</sub> from space  
2021 AGU 2021 Fall Meeting, Session on quantifying air pollutant and greenhouse gas emissions  
2021 AMS 101<sup>st</sup> Annual Meeting, 23<sup>rd</sup> Conference on Atmospheric Chemistry  
2020 1<sup>st</sup> GEOS-Chem Europe User's Meeting  
2020 ACT-America Workshop, Pennsylvania State University  
2018 AGU 2018 Fall Meeting, Session on the global methane cycle

---

### Selected Conference Posters

---

2023 Stanford Data Science Conference  
2021 AMS 5<sup>th</sup> Conference on Atmospheric Biogeosciences  
2020 AGU 2020 Fall Meeting, Session on remote sensing of CH<sub>4</sub> and CO<sub>2</sub> from space  
2019 AGU 2019 Fall Meeting, Session on regional budgets, trends, and drivers of greenhouse gases  
2019 Frontiers of Atmospheric Science and Chemistry, NCAR  
2019 9<sup>th</sup> International GEOS-Chem Meeting, Harvard University