Tianjia Liu

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EDUCATION

Harvard University, Cambridge, MA
Ph.D., Earth and Planetary Sciences   May 2022
S.M., Environmental Science and Engineering   November 2020
Thesis: Modeling the Impact of Human-Driven Fires on Air Quality from Regional and Global Perspectives

Columbia University, New York, NY
B.A., Environmental Science, *magna cum laude* and *departmental honors*   May 2017

RESEARCH INTERESTS

I am an interdisciplinary environmental scientist who uses a combination of remote sensing, GIS, statistics/machine learning, and atmospheric modeling to understand modern human-fire relationships, the role of fire in the Earth system, and the impacts of extreme events on planetary health. My research lies at the intersection of atmospheric science, geography, and public health, with special focus on India, Equatorial Asia, and North America.

RESEARCH EXPERIENCE

NOAA C&GC Postdoctoral Fellow, *University of California, Irvine*   August 2022 – present
 Host: James T. Randerson
Postdoctoral Fellow, *Harvard University*   June 2022
 Advisor: Loretta J. Mickley
Graduate Research Assistant, *Harvard University*   August 2017 – May 2022
 Advisors: Loretta J. Mickley and Daniel J. Jacob
Summer Student Fellow, *Woods Hole Oceanographic Institution*   May – August 2016
 Advisors: Raymond W. Schmitt and Laifang Li
Undergraduate Research Assistant, *Columbia University*   September 2015 – August 2017
 Advisors: Ruth S. DeFries and Miriam E. Marlier
Undergraduate Research Assistant, *Lamont-Doherty Earth Observatory*   May 2014 – June 2016
 Advisors: Jerry F. McManus, Jonathan E. Nichols, and Dorothy M. Peteet

HONORS AND AWARDS

NOAA Climate and Global Change (C&GC) Postdoctoral Fellowship	2022–2024
ACCESS XVII (Atmospheric Chemistry Colloquium for Emerging Senior Scientists) Participant	2023
Graduate Student Associate, Mittal Institute, Harvard University	2021–2022
Civil and Environmental Engineering Rising Stars, MIT	2021
Bok Center Certificate of Distinction in Teaching, Harvard University	2019, 2021
NSF Graduate Research Fellowship (GRFP)	2017–2022
Phi Beta Kappa, Columbia University	2017
Departmental Honors (Earth and Environmental Sciences), Columbia University	2017
AGU Outstanding Student Paper Award, Ocean Sciences	2017
Young Investigator Award (Earth and Environmental Sciences), Columbia University	2016

PEER-REVIEWED PUBLICATIONS

h-index: 14, citations: 1433 (as of April 2024, Google Scholar); as first author (10), as co-author (14)
(Note: advisees are underlined)

First-author papers

[24] **Liu, T.**, J.T. Randerson, Y. Chen, D.C. Morton, E.B. Wiggins, P. Smyth, E. Foufoula-Georgiou, R. Nadler, and O. Nevo. Systematically tracking the hourly progression of large wildfires using GOES satellite observations. *Earth Sys. Sci. Data*, **16**, 1395-1424.
https://doi.org/10.5194/essd-16-1395-2024

[16] **Liu, T.**, L.J. Mickley, P.N. Patel, R. Gautam, M. Jain, S. Singh, Balwinder-Singh, R.S. DeFries, and M.E. Marlier (2022). Cascading delays in the monsoon rice growing season and post-monsoon agricultural fires likely exacerbate air pollution in north India. *J. Geophys. Res. Atmos.*, **127**, e2022JD036790.
https://doi.org/10.1029/2022JD036790

[12] **Liu, T.**, L.J. Mickley, and J.L. McCarty (2021). Global search for temporal shifts in fire activity: potential human influence on southwest Russia and north Australia fire seasons. *Environ. Res. Lett.*, **16**(4), 044023.
https://doi.org/10.1088/1748-9326/abe328

[11] **Liu, T.** and M.A. Crowley (2021). Detection and impacts of tiling artifacts in MODIS burned area classification. *IOP SciNotes*, **2**, 014003.
https://doi.org/10.1088/2633-1357/abd8e2

[9] **Liu, T.**, L.J. Mickley, R. Gautam, M.K. Singh, R.S. DeFries, and M.E. Marlier (2021). Detection of delay in post-monsoon agricultural burning across Punjab, India: potential drivers and consequences for air quality. *Environ. Res. Lett.*, **16**(1), 014014.
https://doi.org/10.1088/1748-9326/abcc28

[8] **Liu, T.**, L.J. Mickley, S. Singh, M. Jain, R.S. DeFries, and M.E. Marlier (2020). Crop residue burning practices across north India inferred from household survey data: bridging gaps in satellite observations. *Atmos. Environ. X*, **8**, 100091.
https://doi.org/10.1016/j.aeaoa.2020.100091
Dataverse: https://doi.org/10.7910/DVN/JUMXOL (SAGE-IGP agricultural fire emissions)

[7] **Liu, T.**, L.J. Mickley, M.E. Marlier, R.S. DeFries, M.F. Khan, M.T. Latif, and A. Karambelas (2020). Diagnosing spatial biases and uncertainties in global fire emissions inventories: Indonesia as regional case study. *Remote Sens. Environ.*, **237**, 111557.
https://doi.org/10.1016/j.rse.2019.111557
• Special issue on "Remote Sensing of Land Change Science with Google Earth Engine"

[5] **Liu, T.**, M.E. Marlier, A. Karambelas, M. Jain, S. Singh, M.K. Singh, R. Gautam, and R.S. DeFries (2019). Missing emissions from post-monsoon agricultural fires in northwestern India: regional limitations of MODIS burned area and active fire products. *Environ. Res. Commun.*, **1**(1), 011007.
https://doi.org/10.1088/2515-7620/ab056c
• Highlighted by Ladies of Landsat #ManuscriptMonday on December 23, 2019

[4] **Liu, T.**, R.W. Schmitt, and L. Li (2018). Global search for autumn-lead sea surface salinity predictors of winter precipitation in southwestern United States. *Geophys. Res. Lett.*, **45**(16), 8445-8454.
https://doi.org/10.1029/2018GL079293

[2] **Liu, T.**, M.E. Marlier, R.S. DeFries, D.M. Westervelt, K.R. Xia, A.M. Fiore, L.J. Mickley, D.H. Cusworth, and G. Milly (2018). Seasonal impact of regional outdoor biomass burning on air pollution in three Indian cities: Delhi, Bengaluru, and Pune. *Atmos. Environ.*, **173**, 83-92.
https://doi.org/10.1016/j.atmosenv.2017.10.024

Co-authored papers

[23] Feng, X., L.J. Mickley, M.L. Bell, **T. Liu**, J.A. Fisher, and M. Val Martin. Improved estimates of smoke exposure during Australia fire seasons: Importance of quantifying plume injection heights. *Atmos. Chem. Phys.*, **24**, 2985-3007.
https://doi.org/10.5194/acp-24-2985-2024

[22] Kelp, M., T. Fargiano, S. Lin, **T. Liu**, J.R. Turner, J. N. Kutz, and L.J. Mickley. Data-driven placement of $PM_{2.5}$ air quality sensors in the United States: an approach to target urban environmental injustice. *GeoHealth*, **7**, e2023GH000834.
https://doi.org/10.1029/2023GH000834
• Special issue on "Geospatial data applications for environmental justice"

[21] Singh, A., S.S. Raj, U. Panda, S.M. Kommula, C. Jose, **T. Liu**, S. Huang, B. Swain, M.L. Pöhlker, E. Reyes-Villegas, N. Ojha, A. Vaishya, A. Bigi, R. Ravikrishna, Q. Zhu, L. Shi, J. Allen, S.T. Martin, G. McFiggans, M.O. Andreae, U. Pöschl, H. Coe, F. Bianchi, H. Su, V. P. Kanawade, P. Liu, and S.S. Gunthe (2023). Rapid growth and high cloud-forming potential of anthropogenic sulfate aerosol in a thermal power plant plume during COVID lockdown in India. *NPJ Clim. Atmos. Sci.*, **6**, 109.
https://doi.org/10.1038/s41612-023-00430-2

[20] Gautam, R., P.N. Patel, M.K. Singh, **T. Liu**, L.J. Mickley, H. Jethva, and R.S. DeFries (2023). Extreme smog challenge of northern India intensified by increasing lower tropospheric stability. *Geophys. Res. Lett.*, **50**, e2023GL103105.
https://doi.org/10.1029/2023GL103105

[19] Dang, R., D.J. Jacob, V. Shah, S.D. Eastham, T.M. Fritz, L.J. Mickley, **T. Liu**, Y. Wang, and J. Wang (2023). Background nitrogen dioxide (NO_2) over the United States and its implications for satellite observations and trends: effects of nitrate photolysis, aircraft, and open fires. *Atmos. Chem. Phys.*, **23**, 6271-6284.
https://doi.org/10.5194/acp-23-6271-2023

[18] Kelp, M., M. Carroll, **T. Liu**, R.M. Yantosca, H.E. Hockenberry, and L.J. Mickley (2023). Prescribed burns as a tool to mitigate future wildfire smoke exposures: Lessons for states and environmental justice communities. *Earth's Future.*, **11**, e2022EF003468.
https://doi.org/10.1029/2022EF003468

[17] Crowley, M.A., C.A. Stockdale, J.M. Johnston, M.A. Wulder, **T. Liu**, J.L. McCarty, J.T. Rieb, J.A. Cardille, and J.C. White (2023). Towards a whole-system framework for wildfire monitoring using Earth observations. *Glob. Chang. Biol.*, **29**, 1423-1436.
https://doi.org/10.1111/gcb.16567

[15] Lan, R., S.D. Eastham, **T. Liu**, L.K. Norford, and S.R.H. Barrett. Air quality impacts of crop residue burning in India and mitigation alternatives (2022). *Nat. Commun.*, **13**, 6537.
https://doi.org/10.1038/s41467-022-34093-z

[14] Kommula, S., U. Panda, A. Sharma, S.S. Raj, E. Reyes Villegas, **T. Liu**, J. Allan, C. Jose, M. Pöhlker, R. Raghunathan, P. Liu, H. Su, S. Martin, U. Pöschl, G. McFiggans, H. Coe, and S. Gunthe (2021). Chemical characterization and source apportionment of organic aerosols in the coastal city of Chennai, India: Impact of marine air masses on aerosol chemical composition and potential for SOA formation. *ACS Earth and Space Chem.*, **5**(11), 3197-3209.
https://doi.org/10.1021/acsearthspacechem.1c00276

[13] Zhou, X., K. Josey, L. Kamareddine, M.C. Caine, **T. Liu**, L. Mickley, M. Cooper, and F. Dominici (2021). Excess of COVID-19 cases and deaths due to fine particulate matter exposure during the 2020 wildfires in the United States. *Sci. Adv.*, **7**(33), eabi8789.
https://doi.org/10.1126/sciadv.abi8789

[10] Gunthe, S.S., P. Liu, U. Panda, S.S. Raj, A. Sharma, E. Derbyshire, E. Reyes-Villegas, J. Allan, Y. Chen, X. Wang, S. Song, M.L. Pöhker, L. Shi, Y. Wang, S.M. Kommula, **T. Liu**, R. Ravikrishna, G. McFiggans, L.J. Mickley, S.T. Martin, U. Pöschl, M.O. Andreae, and H Coe (2021). Enhanced aerosol particle growth sustained by high continental chlorine emission in India. *Nat. Geosci.*, **14**(2), 77–84.
https://doi.org/10.1038/s41561-020-00677-x

[6] Marlier, M.E., **T. Liu**, K. Yu, J.J. Buonocore, S.N. Koplitz, R.S. DeFries, L.J. Mickley, D.J. Jacob, J. Schwartz, B.S. Wardhana, and S.S. Myers (2019). Fires, smoke exposure, and public health: an integrative framework to maximize health benefits from peatland restoration. *GeoHealth*, **3**(7), 178-189.
https://doi.org/10.1029/2019GH000191

[3] Cusworth, D.H., L.J. Mickley, M.P. Sulprizio, **T. Liu**, M.E. Marlier, R.S. DeFries, S.K. Guttikunda, and P. Gupta (2018). Quantifying the influence of agricultural fires in northwest India on urban air pollution in Delhi, India. *Environ. Res. Lett.*, **13**(4), 044018.
https://doi.org/10.1088/1748-9326/aab303

[1] Koplitz, S.N., L.J. Mickley, M.E. Marlier, J.J. Buonocore, P.S. Kim, **T. Liu**, M.P. Sulprizio, R.S. DeFries, D.J. Jacob, J. Schwartz, and S.S. Myers (2016). Public health impacts of the severe haze in Equatorial Asia in September–October 2015: demonstration of a new framework for informing fire management strategies to reduce downwind smoke exposure. *Environ. Res. Lett.*, **11**(9), 094023.
https://doi.org/10.1088/1748-9326/11/9/094023
• Editors' Highlights of 2016 in *Environmental Research Letters*

In Revision, In Review, In Prep.

[25] **Liu, T.**, F.M. Panday, M.C. Caine, M. Kelp, D.C. Pendergrass, and L.J. Mickley. Is the smoke aloft? Caveats regarding the use of the Hazard Mapping System (HMS) smoke product as a proxy for surface smoke presence across the United States. (*in revision* at *Int. J. Wildland Fire*)
EarthArXiv: https://doi.org/10.31223/X51963

[26] Madrigano, J., D. Yan, **T. Liu**, E. Bonilla, N. Yulianti, L.J. Mickley, and M.E. Marlier. Air Pollution and Blood Pressure: Evidence from Indonesia. (*in review* at *GeoHealth*)

[27] Chung, K., **T. Liu**, M. Kelp, and L.J. Mickley. SMRT-Fire: Smoke Management Risk Tool for Wildland Fires. (*in prep.*)

[28] Odwuor, A., **T. Liu**, A. Delgado, J.T. Randerson, and C.I. Czimczik. Investigating the progression of large wildfires and allocation of firefighting resources during the 2021 California wildfire season. (*in prep.*)

BOOK CHAPTERS

[1] Crowley, M.A.* and **T. Liu*** (2023). "Active Fire Monitoring." *Cloud-based Remote Sensing with Google Earth Engine: Fundamentals and Applications. Springer*, 1005-1022.
https://doi.org/10.1007/978-3-031-26588-4
- Website: https://eefabook.org
- Video walkthrough (October 23, 2023)
* co-first authors

PRESENTATIONS
[Links to abstracts and posters]

Invited Talks

[22] Mini-symposium on Wildland Fire Modeling, SIAM Conference on Mathematics of Planet Earth (MPE24), Portland, OR, June 11, 2024 (*upcoming*)

[21] MIT, Department of Civil and Environmental Engineering Seminar, Cambridge, MA, April 1, 2024

[20] Duke University, Division of Earth and Climate Sciences Seminar, Nicholas School of the Environment, Durham, NC, March 28, 2024

[19] University of Utah, Department of Atmospheric Sciences Seminar, Salt Lake City, UT, February 27, 2024

[18] University of British Columbia, Department of Geography Seminar, Vancouver, BC, January 16, 2024

[17] "Measuring Wildfire-Fuel Treatment Outcomes at Large Scales" Workshop, 10th Annual International Fire Ecology and Management Congress, Monterey, CA, December 4, 2023

[16] EPA Model Applications Weekly Meeting, virtual, November 15, 2023

[15] BBURNED Fire Emissions Workshop, virtual, November 9, 2023

[14] ECHO Lab, Stanford University, Stanford, CA, October 16, 2023

[13] NASA NEX Weekly Technical Tag-Up Meeting, virtual, October 5, 2023

[12] American Geophysical Union Atmospheric Science Early Career Webinar, virtual, August 22, 2023

[11] ACCESS XVII (Seventeenth Atmospheric Chemistry Colloquium for Emerging Senior Scientists), Brookhaven National Laboratory, Upton, NY, July 29, 2023

[10] USFS NOAA Fire Weather Research Memorandum of Understanding (MOU) Working Group Meeting, virtual, July 25, 2023

[9] University of Southern California, Department of Earth Sciences Seminar, Los Angeles, CA, March 27, 2023

[8] Geo for Good Lightning Talk Series #1, Google, virtual. April 8, 2021

[7] MIT CEE Rising Stars Workshop, Cambridge, MA, October 28, 2021

[6] Indonesian Disaster Relief Agency (BNPB), Jakarta, Indonesia, August 15, 2019

[5] World Resources Institute (WRI), Jakarta, Indonesia, August 14, 2019

[4] World Wildlife Fund (WWF), Jakarta, Indonesia, August 14, 2019

[3] Greenpeace, Jakarta, Indonesia, August 13, 2019

[2] Katadata Forum, Jakarta, Indonesia, August 13, 2019

[1] Union eLightning Talk, American Geophysical Union Fall Meeting, New Orleans, LA, December 12, 2017

Selected Conference Presentations

[14] **Liu, T.**, J.T. Randerson, Y. Chen, D. Morton, E. Wiggins, P. Smyth, and E. Foufoula-Georgiou. Active Fire Line as a Key Control on Hourly Fire Growth for Predictive Modeling. American Geophysical Union Fall Meeting, San Francisco, CA, December 13, 2023. (Poster)

[13] **Liu, T.**, J.T. Randerson, Y. Chen, D. Morton, E. Wiggins, P. Smyth, and E. Foufoula-Georgiou. Developing an Hourly Fire Progression Database for Large California Wildfires: Application for Modeling Fire Spread Rates.
- AMS 14th Fire and Forest Meteorology Symposium, Minneapolis, MN, May 2, 2023. (Talk)
- Gordon Research Conference in Atmospheric Chemistry, Newry, ME, August 2, 2023. (Poster)

[12] **Liu, T.**, L.J. Mickley, P.N. Patel, R. Gautam, M. Jain, S. Singh, Balwinder-Singh, R.S. DeFries, and M.E. Marlier. Cascading delays in the monsoon rice growing season and post-monsoon agricultural fires likely exacerbate air pollution in North India. American Geophysical Union Fall Meeting, Chicago, IL, December 16, 2022. (Talk)

[11] **Liu, T.**, F.M.S. Panday, M. Caine, M. Kelp, D. Pendergrass, and L.J. Mickley. Assessment of digitized satellite wildfire smoke plumes with airport observations across the contiguous United States and Alaska from 2008-2021. American Geophysical Union Fall Meeting, Chicago, IL, December 15, 2022. (Poster)

[10] **Liu, T.**, F.M.S. Panday, M. Caine, M. Kelp, D. Pendergrass, and L.J. Mickley. Smoke in the western United States: a comparison between satellite and airport observations. 10th International GEOS-Chem Meeting (IGC10), St. Louis, MO, June 7, 2022. (Poster)

[9] **Liu, T.**, L.J. Mickley, and J.L. McCarty. Human-driven temporal shifts in fire activity: southwest Russia and north Australia as case study regions. American Geophysical Union Fall Meeting, December 8, 2020. (Talk)

[8] **Liu, T.**, L.J. Mickley, S. Singh, M. Jain, R.S. DeFries, and M.E. Marlier. Revised estimates of agricultural fire emissions for Punjab, India: bridging gaps in satellite observations using household survey data. American Geophysical Union Fall Meeting, San Francisco, CA, December 10, 2019. (Poster)

[7] **Liu, T.**, L.J. Mickley, M.E. Marlier, R.S. DeFries, M.F. Khan, M.T. Latif, and A. Karambelas. Diagnosing spatial biases and uncertainties in global fire emissions inventories: Indonesia as regional case study. 9th International GEOS-Chem Meeting (IGC9), Cambridge, MA, May 6, 2019. (Poster)

[6] **Liu, T.**, M. Lin, L.J. Mickley, P.J. Huybers, R. Gautam, M.K. Singh, DeFries R.S., and M.E. Marlier. Consequences for regional air quality from temporal shifts in post-monsoon agricultural burning associated with the double-crop cycle of Punjab, India. American Geophysical Union Fall Meeting, Washington D.C., December 12, 2018. (Talk)

[5] **Liu, T.**, M.E. Marlier, A.N Karambelas, M. Jain, and R.S. DeFries. A multi-sensor burned area algorithm for crop residue burning in northwestern India: validation and sources of error. American Geophysical Union Fall Meeting, New Orleans, LA, December 12, 2017. (Talk)

[4] **Liu, T.**, M.E. Marlier, R.S. DeFries, A. Karambelas, D.M. Westervelt, K.R. Xia, A.M. Fiore, L.J. Mickley, and D.H. Cusworth. Contributions of winter outdoor biomass burning to air quality in Delhi and reevaluation of agricultural burned area in northwest India. Planetary Health/GeoHealth Inaugural Meeting, Boston, MA, April 29, 2017. (Poster)

[3] **Liu, T.**, R.W. Schmitt, and L. Li. Global salinity predictors of western United States precipitation. American Geophysical Union Fall Meeting, San Francisco, CA, December 16, 2016; Woods Hole Oceanographic Institution, Department of Physical Oceanography, August 18, 2016. (Talk)

[2] **Liu, T.**, J.F. McManus, K. Costa, and T. Liu. A glacial-interglacial record of the North Pacific biological pump for the past 600,000 years. Ocean Sciences Meeting, New Orleans, LA, February 23, 2016. (Poster)

[1] **Liu, T.**, J.E. Nichols, D.M. Peteet, C.M. Moy, J. Crusius, and A.W. Schroth. Leaf wax *n*-alkane distributions, stable isotope ratios, paleovegetation, and dust flux to reconstruct North Pacific climate during the last 2,000 years. American Geophysical Union Fall Meeting, San Francisco, CA, December 18, 2014. (Poster)

OTHER ATTENDED CONFERENCES AND WORKSHOPS

Climate and Wildfire Related Air Quality and Public Health Impacts Workshop, *Invited* (UCLA, Los Angeles, CA, *upcoming*)	May 2024
7th International Fire Behavior and Fuels Conference (Boise, ID) Lightning Talk on "Leveraging geostationary satellite observations for hourly mapping of large wildfire progression"	April 2024
Geo for Good Summit (Google, Mountain View, CA) Lightning Talk in "Climate Change Adaptation" session	October 2023
Geo for Good Summit (Google, Mountain View, CA)	October 2022
Geo for Good Summit (Google, virtual)	November 2021
Geo for Good Summit (Google, virtual)	October 2020
13th Graduate Climate Conference (Woods Hole, MA)	November 2019
Geo for Good Summit (Google, Sunnyvale, CA) Demo Pod on "SMOKE Policy Tool for Indonesian Fires"	September 2019
Air Pollution Extremes Workshop (Columbia University, New York, NY)	November 2018
Google Earth Engine User Summit (Google, Dublin, Ireland)	June 2018
Google Earth Engine Advanced Workshop (Google, Cambridge, MA)	March 2018
"Fire Prediction Across Scales" Conference (Columbia University, New York, NY)	October 2017

FUNDING

Grants

Liu, T., J.E. Nichols, and D.M. Peteet. Calibration of Fatty Alcohols as a Paleotemperature Proxy. LDEO Climate Center, April 2015, $9,140

Travel Awards

GSAS Professional Development Fund, Harvard University	September 2019
WHOI Summer Student Fellow Travel Award	November 2016

PROFESSIONAL SERVICE AND AFFILIATIONS

Moderator at "Greenhouse Gas Emissions from Wildland Fires: Toward Improved Monitoring, Modeling, and Management" workshop, National Academies of Sciences, Engineering, and Medicine, Washington D.C. (September 13-15, 2023)

Session Convener at American Geophysical Union Fall Meeting (December 2019-20, 2022-23)
"Air Pollution Extremes in South and Southeast Asia: Observations, Modeling, and Impact Studies"
 - co-convener in 2019 & 2022, primary convener in 2020, OSPA chair in 2022-2023
"Prescribed Fires and Land Management in North America"
 - co-convener in 2023

OSPA Judge at American Geophysical Union Fall Meeting (December 2022-23)

Peer reviewer for *Remote Sens. Environ.*, *Proc. Natl. Acad. Sci.*, *Environ. Res. Lett.*, *Environ. Sci. Technol.*, *Sci. Data*, *Int. J. Wildland Fire*, *Water Resour. Res.*, *Commun. Earth Environ.*, *Sci. Rep.*, *Remote Sens.*, *Environ. Pollut.*, *Environ. Res. Commun.*, *Elementa*, *Int. J. Appl. Earth Obs. Geoinf.*, and *Int. J. Digit. Earth*

Member of American Geophysical Union (2014 – present), American Meteorological Society (2023 – present), Association for Fire Ecology (2023 – present), Phi Beta Kappa (2017 – present)

MENTORING

Andrea Delgado, UC Irvine, Fall 2023 – present
  - UC Irvine, CLIMATE Justice Initiative: "Analyzing structural damages and stress on firefighting resources during severe fire seasons in California"

Karina Chung, Harvard University, Summer 2023 – present
  - Harvard, Program for Research in Science and Engineering (PRISE) and Harvard College Research Program (HCRP): "SMRT-Fire: Smoke Management Risk tool for wildland fires"

Marie Panday, University of Maryland, Summer 2021
  - Harvard, OEB REU: "U.S. trends in wildfire smoke derived from satellite and airport data from 2010-2020"

Miah Caine, Harvard University, Summer 2020 – Spring 2021
  - Harvard, HUCE Summer Undergraduate Research Program and Harvard College Research Program (HCRP): "Agreement between the HMS product and ground-level smoke in the Pacific Northwest"

Kent Toshima, Harvard University, Summer 2020 – Summer 2021
  - Harvard, HUCE Summer Undergraduate Research Program: "Application of deep learning to detection of wildfire smoke in HMS over North America"

Caroline Liang, Harvard University, Summer 2020
  - Harvard, EPS Short-Term Summer Student Program: "Tracking locust outbreaks"

TEACHING EXPERIENCE

Teaching Fellow at Harvard University for SPU 12/GENED 1098: Natural Disasters
Spring 2019, Spring 2020, Fall 2020
  - Led weekly 2-hour lab sections (computer-based labs using ArcGIS + practical experiment labs); other responsibilities included exam review/proctoring, creating exam questions, holding weekly office hours, and grading
  - Developed GIS labs for open-source software: QGIS and Google Earth Engine
  - Updated existing labs for online learning and created two new labs (on fires and COVID-19)
  - Led trainings on labs for other TFs/TAs in August 2020
  - Received the Bok Center Certificate of Distinction in Teaching in September 2019, April 2021

LEADERSHIP AND OUTREACH

Activities

Postdoc representative, ESS Inclusive Excellence Committee, UC Irvine   2023 – present

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Lead organizer, ACMG Undergraduate Research Symposium, Harvard University	Summer 2020, 2021
EPS Day co-organizer, Harvard University	May 2019
Participant, Science-A-Thon	October 2018, 2019
Speaker ambassador, Inaugural Planetary Health/ GeoHealth Meeting	April 2017
Blog content manager, writer, and reviewer, Columbia Science Review	February 2014 – December 2016
Volunteer, Columbia Astronomy Public Outreach, Columbia University	February – July 2016
Volunteer, Discovery Science Center, Santa Ana, CA	2012 – 2013
Creator, writer, "The Cosmos", astronomy blog	2012 – 2013

Articles

Liu, T. "A Bird's-Eye View of Earth: Petabytes of Satellite Data at Our Fingertips." *Science in the News*, Harvard University. April 14, 2020. [Link]

Liu, T. "Living in a World of Extreme Droughts, Floods, and Storms." *Science in the News*, Harvard University. September 27, 2019. [Link]

Liu, T., M.E. Marlier, J.J. Buonocore, L.J. Mickley, and R.S. DeFries. "We built an app to detect areas most vulnerable to life-threatening haze." *The Conversation Indonesia*. September 9, 2019. [Link]

Liu, T. "It's Time to Value Disappearing Wetlands." *Columbia Science Review*, Columbia University. Spring 2016. [Link]

Liu, T. "Finding Serenity Through Research." *Columbia to the Core*, Columbia University. July 15, 2015. [Link]

Selected Press Coverage and Media Outreach

The Times-Picayune/The New Orleans Advocate (October 24, 2023) [article]

Lakshmi Mittal and Family South Asia Institute, Harvard University. [Research Profile (May 4, 2022), Newsletter (July 8, 2021)]

"The Health Impact from Peatland and Forest Fires," Katadata Forum (August 13, 2019). Jakarta, Indonesia. [Katadata Microsite, local press coverage from ∼30 news agencies, including *CNN Indonesia* (In Bahasa Indonesia)]