

Jonathan A. Wang

Curriculum Vitae (Last updated 6/20/2023)

www.jonwangetal.com | [Google Scholar](#) | [ORCID](#) | [Web of Science](#)

jon.wang@utah.edu | Salt Lake City, UT | (650) 861-2999

EDUCATION

Ph.D.	2019	<i>Earth and Environment</i>	Boston University
B.S.	2010	<i>Geology-Biology</i>	Brown University

RESEARCH INTERESTS

Impacts of climate change, disturbance, and human activity on land cover, terrestrial ecology, and the carbon cycle using high-performance computing and remote sensing.

ACADEMIC APPOINTMENTS

2023 – Present	Assistant Professor. <i>School of Biological Sciences.</i> University of Utah
2019 – 2022	Postdoctoral Scholar. <i>Earth System Science</i> University of California, Irvine, CA
2014 – 2019	NSF Graduate Research Fellow. <i>Earth and Environment</i> Boston University, Boston, MA

REFEREED PUBLICATIONS

([Google Scholar Profile](#)) ([Web of Science Profile](#))

Google Scholar h-index: 13, citations: 972. Web of Science h-index: 12, citations: 658.

2023

- 28) Qu, S., Ryu, Y., Liu, J., & **Wang, J. A.** (2023). Greening rate in North Korea doubles South Korea. *Environmental Research Letters*.
- 27) Hemes, K.S., Norlen, C.A., **Wang, J.A.**, Goulden, M., & Field, C. (2023). The magnitude and pace of photosynthetic recovery after wildfire in California ecosystems. *Proceedings of the National Academy of Sciences*. [doi: <https://doi.org/10.1073/pnas.2201954120>]
- 26) Klotz, L., Sonnentag, O., Wang, Z., **Wang, J.A.**, & Kang, M. (2023). Oil and natural gas wells across the NASA ABoVE domain: fugitive methane emissions and broader environmental impacts. *Environmental Research Letters*. [doi: <https://doi.org/10.1088/1748-9326/acbe52>]

2022

-
- 25) Anderegg, W. R., Trugman, A. T., **Wang, J.A.**, & Wu, C. (2022). Open science priorities for rigorous nature-based climate solutions. *PLoS Biology*, 20(12), e3001929. [doi: <https://doi.org/10.1371/journal.pbio.3001929>]
- 24) Foster, A. C., **Wang, J. A.**, Frost, G. V., Davidson, S. J., Hoy, E., Turner, K. W., ... & Goetz, S. (2022). Disturbances in North American boreal forest and Arctic tundra: impacts, interactions, and responses. *Environmental Research Letters*, 17(11), 113001 [doi: <https://doi.org/10.1088/1748-9326/ac98d7>]
- 23) Coffield, S. R., Vo, C. D., **Wang, J. A.**, Badgley, G., Goulden, M. L., Cullenward, D., ... & Randerson, J. T. (2022). Using remote sensing to quantify the additional climate benefits of California forest carbon offset projects. *Global Change Biology*, 28(22), 6789-6806 [doi: <https://doi.org/10.1111/gcb.16380>]
- 22) Murray-Tortarolo, G., Poulter, B., Vargas, R., Hayes, D., Michalak, A. M., Williams, C., Windham-Myers, L., **Wang, J.A.**, ... & Chatterjee, A. A process-model perspective on recent changes in the carbon cycle of North America. *Journal of Geophysical Research: Biogeosciences*, e2022JG006904. [doi: <https://doi.org/10.1029/2022JG006904>]
- 21) **Wang, J.A.**, Knight, C., Goulden, M.L., Battles, J.B. & Randerson, J.T. (2022) Losses of tree cover in California driven by increasing fire disturbance and climate stress. *AGU Advances*, 3(4), e2021AV000654. [doi: <https://doi.org/10.1029/2021AV000654>]
Covered in the [LA Times](#), [SF Chronicle](#), [SD Union Tribune](#), and [Eos](#).
- 20) Friedl M.A., Woodcock C.E., Olofsson P., Zhu Z., Loveland T., Stanimirova R., Arevalo P., Bullock E., Hu K-T., Zhang Y., Turlej K., Tarrío K., McAvoy K., Gorelick N., **Wang J.A.**, Barber C.P. & Souza C (2022). Medium Spatial Resolution Mapping of Global Land Cover and Land Cover Change Across Multiple Decades From Landsat. *Frontiers in Remote Sensing*, 3:894571. [doi: <https://doi.org/10.3389/frsen.2022.894571>]
- 19) Zhang, Y.T., Woodcock, C.E., Chen, S., **Wang, J.A.**, Sulla-Menashe, D., Zuo, Z., Olofsson, P., Wang, Y., & Friedl, M.A. (2022) Mapping causal agents of disturbance in boreal and arctic ecosystems of North American using time series of Landsat data. *Remote Sensing of Environment*, 272, 112935 [doi: <https://doi.org/10.1016/j.rse.2022.112935>]
- 18) Nelson, P.R., Maguire, A.J. Pierrat, Z., Orcutt, E.L., Yang, D., Serbin, S., Frost, G.V., Macander, M.J., Magney, T.S., Thompson, D.R., **Wang, J.A.**, Oberbauer, S.F., ... Velez-Reyes, M., & Huemmrich, K.R. (2022). Remote Sensing of Tundra Ecosystems using High Spectral Resolution Reflectance: Opportunities and Challenges. *Journal of Geophysical Research: Biogeosciences*, 127(2), e2021JG006697. [doi: <https://doi.org/10.1029/2021JG006697>]
- 17) Seider, J.H., Lantz, T.C., Hermosilla, T., Wulder, M.A., & **Wang, J.A.** (2022). Biophysical determinants of shifting tundra vegetation productivity in the Beaufort Delta region of Canada. *Ecosystems*, 1-20 [doi: <https://doi.org/10.1007/s10021-021-00725-6>]

- 16) Knight, C., Tompkins, R.E., **Wang, J.A.**, York, R., Goulden, M.L., & Battles, J.B. (2022). Accurate tracking of forest activity key to multi-jurisdictional management goals: A case study in California. *Journal of Environmental Management*, 302, 114083 [doi: <https://doi.org/10.1016/j.jenvman.2021.114083>]

2021

- 15) Watts, J. D., Natali, S. M., Minions, C., Risk, D., Arndt, K., ... **Wang, J.A.**, ..., & Edgar, C. (2021). Soil respiration strongly offsets carbon uptake in Alaska and Northwest Canada. *Environmental Research Letters*, 16(8), 084051. [doi: <https://doi.org/10.1088/1748-9326/ac1222>]
- 14) Madani, N., Parazoo, N.C., Kimball, J.S., Chatterjee, A., Watts, J.D., Saatchi, S., Liu, Z., Endsley, A., Tagesson, T., Rogers, B.M., Xu, A., **Wang, J.A.**, Magney, T., & Miller, C.E. (2021). The Impacts of Climate and Wildfire on Ecosystem Gross Primary Productivity in Alaska. *Journal of Geophysical Research – Biogeosciences*, 126(6), e2020JG006078 [doi: <https://doi.org/10.1029/2020JG006078>]
- 13) **Wang, J.A.**, Farina, M., Baccini, A., Randerson, J.T., & Friedl, M.A. (2021). Disturbance suppresses the aboveground carbon sink in North American boreal forests. *Nature Climate Change*, 11, 435-441. [doi: <https://doi.org/10.1038/s41558-021-01027-4>]
Interview in [Science Friday](#) and [Radio-Canada](#)
- 12) Miles, N.L., Davis, K.J., Richardson, S.J., Lauvaux, T., Martins, D.K., Deng, A.J., Balashov, N., Gurney, K.R., Liang, J., Roest, G., **Wang, J.A.**, & Turnbull, J.C. (2021). The influence of near-field fluxes on seasonal carbon dioxide enhancements: results from the Indianapolis Flux Experiment (INFLUX). *Carbon Balance and Management*, 16(4) [doi: <https://doi.org/10.1186/s13021-020-00166-z>]

2020

- 11) Lauvaux, T., Gurney, K. R., Miles, N. L., Davis, K. J., Richardson, S. J., Deng, A., Nathan, B. J., Oda, T., **Wang, J. A.**, Hutyra, L., & Turnbull, J. (2020). Policy-Relevant Assessment of Urban CO₂ Emissions. *Environmental Science & Technology*, 54(16), 10237-10245 [doi:<https://doi.org/10.1021/acs.est.0c00343>]
- 10) O'Brien, D.T., Gridley, B., Trlica, A, **Wang, J.A.**, & Shrivastava, A. (2020). Urban Heat Islets: Street Segments, Land Surface Temperatures, and Medical Emergencies During Heat Advisories. *American Journal of Public Health*, 110(7), 994-1001. [doi: <https://doi.org/10.2105/AJPH.2020.305636>]
- 9) **Wang, J. A.**, Sulla-Menashe, D., Woodcock, C. E., Sonnentag, O., Keeling, R. F., & Friedl, M. A. (2020). Extensive land cover change across Arctic-boreal northwestern North America from disturbance and climate forcing. *Global Change Biology*, 26(2), 807-822. [doi: <https://doi.org/10.1111/gcb.14804>]

2019

- 8) **Wang, J. A.**, & Friedl, M. A. (2019). The role of land cover change in Arctic-boreal greening and browning trends. *Environmental Research Letters*. 14, 125007. [doi: <https://doi.org/10.1088/1748-9326/ab5429>]

2018

-
- 7) Sargent, M., Barrera, Y., Nehrkorn, Y., Hutyra, L.R., Gately, C.K., Jones, T., McKain, M., Sweeney, C., Hegarty, J., Hardiman, B., **Wang, J.A.** & Wofsy, S.C. (2018). Anthropogenic and biogenic CO₂ fluxes in the Boston urban region. *Proceedings of the National Academy of Sciences*, 115(29), 7491-7496. [doi: <https://doi.org/10.1073/pnas.1803715115>]
 - 6) Klosterman, S., Melaas, E., **Wang, J.A.**, Martinez, A., Frederick, S., O'Keefe, J., Orwig, D.A., Wang, Z., Sun, Q., Schaaf, C., Friedl, M., & Richardson, A.D. (2018). Fine-scale perspectives on landscape phenology from unmanned aerial vehicle (UAV) photography. *Agricultural and Forest Meteorology*, 248, 397-407. [doi: <https://doi.org/10.1016/j.agrformet.2017.10.015>]

2017

- 5) Trlica, A., Hutyra, L. R., Schaaf, C. L., Erb, A., & **Wang, J. A.** (2017). Albedo, land cover, and daytime surface temperature variation across an urbanized landscape. *Earth's Future*, 5(11), 1084-1101. [doi: <https://doi.org/10.1002/2017EF000569>]
 - 4) Hardiman, B. S.*, **Wang, J. A.***, Hutyra, L. R., Gately, C. K., Getson, J. M., & Friedl, M. A. (2017). Accounting for urban biogenic fluxes in regional carbon budgets. *Science of The Total Environment*, 592, 366-372. [doi: <https://doi.org/10.1016/j.scitotenv.2017.03.028>]
- * These authors contributed equally to this work.
- 3) **Wang, J. A.**, Hutyra, L. R., Li, D., & Friedl, M. A. (2017). Gradients of atmospheric temperature and humidity controlled by local urban land-use intensity in Boston. *Journal of Applied Meteorology and Climatology*, 56(4), 817-831. [doi: <https://doi.org/10.1175/JAMC-D-16-0325.1>]

2016

- 2) Melaas, E. K., **Wang, J. A.**, Miller, D. L., & Friedl, M. A. (2016). Interactions between urban vegetation and surface urban heat islands: a case study in the Boston metropolitan region. *Environmental Research Letters*, 11(5), 054020. [doi: <https://doi.org/10.1088/1748-9326/11/5/054020>]
- 1) Fournier-Level, A., Perry, E. O., **Wang, J. A.**, Braun, P. T., Migneault, A., Cooper, M. D., Metcalf, J.E. & Schmitt, J. (2016). Predicting the evolutionary dynamics of seasonal adaptation to novel climates in *Arabidopsis thaliana*. *Proceedings of the National Academy of Sciences*, 113(20), E2812-E2821. [doi: <https://doi.org/10.1073/pnas.1517456113>]

DATA PRODUCTS

- 6) Zhang, Y., Woodcock, C.E., Chen, S., **Wang, J.A.**, Sulla-Menashe D., Zuo Z., Olofsson P., Wang Y., and M.A. Friedl. (2022) ABoVE: Landsat-derived Annual Disturbance Agents Across ABoVE Core Domain, 1987-2012. *ORNL DAAC, Oak Ridge, Tennessee, USA*. [doi: <https://doi.org/10.3334/ORNLDAAC/1924>]

- 5) **Wang, J.A.** (2022). Fractional vegetation cover in California, 1985 – 2021. *Harvard Dataverse, V1*. [doi: <https://doi.org/10.7910/DVN/KMBYYM>]
- 4) **Wang, J.A.** (2022). Disturbance Agents in California, 1985 – 2021. *Harvard Dataverse, V1*. [doi: <https://doi.org/10.7910/DVN/CVTNLY>]
- 3) **Wang, J.A.**, Farina, M., Baccini, A., and M.A. Friedl. (2021). ABoVE: Annual 30 m aboveground biomass density across the boreal Core Domain (1984-2014). *ORNL DAAC, Oak Ridge, Tennessee, USA*. [doi: <https://doi.org/10.3334/ORNLDAAC/1808>]
- 2) **Wang, J.A.**, D. Sulla-Menashe, C.E. Woodcock, O. Sonnentag, R.F. Keeling, and M.A. Friedl. (2019). ABoVE: Landsat-derived Annual Dominant Land Cover Across ABoVE Core Domain, 1984-2014. *ORNL DAAC, Oak Ridge, Tennessee, USA*. [doi: <https://doi.org/10.3334/ORNLDAAC/1691>]
- 1) **Wang, J.A.** (2019). Land surface temperature and urban heat island effects on air temperature and vapor pressure deficit in Boston, MA. *Harvard Dataverse, V1* [doi: <https://doi.org/10.7910/DVN/J8EDZN>]

NON-REFEREED PUBLICATIONS

- 1) Kaushik, A., Graham J., Dorheim K., Kramer R., **Wang, J.A.**, and Byrne B. (2020). The future of the carbon cycle in a changing climate. *Eos*, 101 [doi: <https://doi.org/10.1029/2020EO140276>]

GRANTS AND FELLOWSHIPS

2023-25	NASA Terrestrial Ecology (ABoVE Phase 3, PI) <i>Quantifying Disturbance and Global Change Impacts on Multi-decadal Trends in Aboveground Biomass and Land Cover across Arctic-boreal North America</i>	\$714,000
2019	AGU Chapman Conference Travel Support	\$1,000
2018	ABoVE Science Team Meeting Student Travel Support	\$1,000
2017	BU Biogeoscience Student Research and Travel Award	\$500
2017	BU Graduate Student Organization Research Grant	\$500
2015	BU Biogeoscience Student Research and Travel Grant	\$500
2014-19	NSF Graduate Research Fellowship Program <i>A High-Resolution Examination of the Effect of Urban Heating on Ecosystem Phenology.</i>	\$122,000

INVITED SEMINARS

2022

-
- | | | |
|-----|--|-------------------------|
| 14) | How wildfires are transforming terrestrial ecosystems and the carbon cycle: cases in Canada and California | University of Hong Kong |
| 13) | How wildfires are transforming terrestrial ecosystems and the carbon cycle: cases in Canada and California | University of Utah |

- 12) Understanding impacts of global change on boreal plant ecology, disturbance, and the carbon cycle with remote sensing University of Utah

2021

-
- 11) Disturbance suppresses the aboveground carbon sink in North American boreal forests Woodwell Climate Research Center
- 10) A semi-automated approach to disturbance and vegetation classification across California CA Natural Resources Agency
- 9) Spaceborne insights into Earth's changing carbon cycle: a multi-scalar triptych Washington Univ. in St. Louis
- 8) Disturbance suppresses the aboveground carbon sink in North American boreal forests. Jet Propulsion Laboratory
- 7) How fires, urbanization, and forest management are reshaping Earth's carbon-climate system: A remote sensing triptych Concordia Univ.

2020

-
- 6) Time series remote sensing perspectives on the influence of land cover change on ecosystem function: studies in urban and Arctic-Boreal ecosystems Jet Propulsion Laboratory
- 5) Time series remote sensing perspectives on the influence of land cover change on ecosystem function: studies in urban and Arctic-Boreal ecosystems Univ. California, Santa Barbara

2019

-
- 4) Interactions among Land Cover, Disturbance, and Productivity Across Arctic-boreal Ecosystems of Northwestern North America from Remote Sensing USGS (EROS Center)
- 3) Interactions among Land Cover, Disturbance, and Productivity Across Arctic-boreal Ecosystems of Northwestern North America from Remote Sensing Univ. California, Irvine

2018

-
- 2) Regional shifts in productivity and plant functional types resulting from long-term trends in Arctic and boreal land cover change Univ. de Quebec à Montréal
- 1) Regional shifts in productivity and plant functional types resulting from long-term trends in Arctic and boreal land cover change McGill University

CONFERENCE PRESENTATIONS

2023

- 27) Session Co-Convener **Amer. Geophysical Union Fall Meeting** (San Francisco, CA)
The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change
- 26) Poster **Ecological Society of America Annual Meeting** (Portland, OR)
- 25) Oral **NASA ABoVE Science Team Meeting 9** (San Diego, CA)

2022

- 24) Poster **Amer. Geophysical Union Fall Meeting** (Chicago, IL)
Advances in Remote Sensing for Monitoring Biodiversity Change: Integrating Data and Models Across Scales and Technologies V

2021

- 23) Session Co-Convener **Amer. Geophysical Union Fall Meeting** (New Orleans, LA)
Understanding Natural and Anthropogenic Disturbances in Biogeochemistry and Carbon-water Coupling
- 22) Session Chair **Amer. Geophysical Union Fall Meeting** (New Orleans, LA)
Forest Disturbance and Resulting Changes in Structure, Composition, and Biogeochemistry I and II
- 21) Oral (Invited) **Amer. Geophysical Union Fall Meeting** (New Orleans, LA)
The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change I
- 20) Oral **Amer. Geophysical Union Fall Meeting** (New Orleans, LA)
Forest Disturbance and Resulting Changes in Structure, Composition, and Biogeochemistry II
- 19) Oral **International Boreal Forest Research Association** (Virtual)
Changing Carbon Cycle Dynamics of Boreal Ecosystems
- 18) Oral **NASA ABoVE Science Team Meeting 7** (Virtual)
- 17) Oral **Amer. Assoc. of Geographers Annual Meeting** (Virtual)
GIScience and Hazards in the Era of Big Data

2020

- 16) Session Co-Convener & Chair **Amer. Geophysical Union Fall Meeting** (Virtual)
Immense Pressures and High Expectations: Managing forest ecosystems for multiple benefits under human activities, climate change, and disturbance
- 15) Poster **Amer. Geophysical Union Fall Meeting** (Virtual)
Forest Disturbance in the Context of Shifting Climate: Understanding Disturbances and Their Interactions As Agents of Forest Change II
- 14) Poster **Ecological Society of America Annual Meeting** (Virtual)
- 13) Poster **NASA ABoVE Science Team Meeting 6** (Virtual)

2019

- 12) Oral **Amer. Geophysical Union Fall Meeting** (San Francisco, CA)

The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change I

11) Oral **Amer. Geophysical Union Chapman Conf.** (San Diego, CA)
Climate-Carbon Feedbacks: Critical Processes and Scales III

10) Poster **NASA ABoVE Science Team Meeting 5** (San Diego, CA)

2018

9) Oral **Amer. Geophysical Union Fall Meeting** (Washington, DC)
The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change IV

8) Oral (Invited) **Amer. Geophysical Union Fall Meeting** (Washington, DC)
Student Engagement to Enhance Development: Outstanding Student Presentation Award Winners from 2017 Fall Meeting II

7) Oral (Invited) **Permafrost Carbon Network 8th Meeting** (Washington, DC)
Vegetation/Hydrology

6) Oral (Invited) **National Academies of Sciences Workshop** (Washington, DC)
Understanding northern latitude greening and browning

5) Poster **ForestSAT** (Washington, DC)

4) Poster **NASA ABoVE Science Team Meeting 4** (Seattle, WA)

2017

3) Oral **Amer. Geophysical Union Fall Meeting** (New Orleans, LA)
The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change IV

2016

2) Oral **Amer. Geophysical Union Fall Meeting** (San Francisco, CA)
Urban Areas and Global Change III

2015

1) Poster **Amer. Geophysical Union Fall Meeting**, (San Francisco, CA)
Understanding and Attributing Greenhouse Gas Fluxes from Urban Systems and Major Hotspots

SCIENCE COMMUNICATION and OUTREACH

2023

10) All Things Considered California lost more than 36 million trees in the last year alone [\[link\]](#)

9) High Country News In a warming world, California's trees keep dying [\[link\]](#)

2022

-
- 8) S.D. Union Tribune Southern California forests are shrinking from wildfire and drought, study finds [\[link\]](#)
 - 7) S.F. Chronicle These maps show how alarmingly fast California is losing trees as climate warms [\[link\]](#)
 - 6) L.A. Times California fires are so severe some forests might vanish forever [\[link\]](#)

2021

-
- 5) NASA NCCS Scientists Measure Impacts of Fire and Other Disturbances on North American Boreal Forest Biomass. [\[link\]](#)
 - 4) Radio-Canada La dégradation des forêts, une source de carbone plus importante que le déboisement. [\[link\]](#)
 - 3) Science Friday Arctic Wildfires Are Burning An Important Carbon Sink. [\[link\]](#)
 - 2) Phys.org The Arctic's greening, but it won't save us. [\[link\]](#)
 - 1) BU The Brink Northern Forest Fires Could Accelerate Climate Change. [\[link\]](#)

TEACHING EXPERIENCE

2021

-
- | | | | |
|----|---------------|----------------|----------|
| 5) | Guest Lecture | Remote Sensing | UC Davis |
|----|---------------|----------------|----------|

2020

-
- | | | | |
|----|---------------|--------------------------------------|---------------------|
| 4) | Intern Mentor | CA Cent. for Ecosys. Clim. Solutions | UC Irvine |
| 3) | Guest Lecture | Advanced Earth Observation | Univ. of Washington |

2019

-
- | | | | |
|----|---------------|-----------------------------------|------|
| 2) | Coding Mentor | Student Airborne Research Program | NASA |
|----|---------------|-----------------------------------|------|

2015-2019

-
- | | | | |
|----|------------------|-------------------------|--------------|
| 1) | Grader and Tutor | Multivariate Statistics | Boston Univ. |
|----|------------------|-------------------------|--------------|

ACADEMIC SERVICE

- 3) 2019-20 Outstanding Student Presentation Award - Judge Amer. Geophysical Union Fall Meeting
- 2) 2015-17 Graduate Student Representative Boston University
Dept Earth and Environment
- 1) 2014-16 Journal Club Coordinator Boston University

Manuscript Reviewer for:

Global Change Biology, Remote Sensing of Environment, Environmental Research Letters, Agricultural and Forest Meteorology, Remote Sensing Applications: Society and Environment, Landscape and Urban Planning, Nature Geoscience, Nature Communications: Earth and Environment, Geophysical Research Letters
 35 Verified Reviews. [\[Web of Science Profile\]](#)

MEMBERSHIPS

American Geophysical Union (AGU)
American Association of Geographers (AAG)
Ecological Society of America (ESA)
Out in Science, Technology, Engineering, and Mathematics (oSTEM)

AWARDS and HONORS

2022	IOP Outstanding Reviewer Award
2021	IOP Trusted Reviewer
2020	IOP Outstanding Reviewer Award
2017	American Geophysical Union Outstanding Student Paper Award
2014	National Science Foundation Graduate Research Fellow

SKILLS

Programming and Analysis

R, Python, GDAL, High performance computing, git, ENVI, QGIS, Google Earth Engine

Office Software

Microsoft Word, Powerpoint, Excel, and Access; Adobe Photoshop and Illustrator

Statistical

Bayesian modeling, machine learning, multivariate analysis, time series analysis