

CAROLINE S. JUANG

NASA Postdoctoral Program Fellow, NASA Jet Propulsion Laboratory

<https://orcid.org/0000-0002-5963-7888>

EDUCATION

Ph.D. in Earth and Environmental Sciences Aug 2025

Columbia University, Graduate School of Arts & Sciences, New York, NY

Dissertation: *Wildfires, Aridity, and the Pacific: Drivers of enhanced wildfire activity across the western United States since the 1980s*

Advisor: Dr. A. Park Williams

Dissertation Committee: Dr. Richard Seager, Dr. Dorothy Peteet

M.Phil. (2022), M.A. (2021)

A. B. in Earth & Planetary Sciences May 2017

Minor in Environmental Science & Public Policy

Harvard University, Cambridge, MA

Honors Thesis: *A Model of 25 Years of Carbon Exchange and its Factors in the Harvard Forest;* recommended for Honors distinction.

Advisors: Dr. Steven Wofsy, Dr. J. William Munger

PROFESSIONAL EXPERIENCE

NASA Postdoctoral Program Fellow Jan 2026 – Present
NASA Jet Propulsion Laboratory, Pasadena, CA

NSF GRFP Fellow Sep 2021 – Aug 2025
Columbia University, New York, NY

Graduate Research Assistant Sep 2019 – Aug 2025
Columbia University, New York, NY

Scientific Expert Jun 2022 – Sep 2022
Howard Hughes Medical Institute (HMMI), New York, NY

Executive Board Jun 2020 – Jul 2023
Brooke Owens Fellowship, New York, NY

Associate Scientific Analyst/ Landslide Citizen Science Project Coordinator Sep 2017 – Apr 2019
SSAI/ NASA's Goddard Space Flight Center, Greenbelt, MD

Brooke Owens Fellow/ Business Development Intern Jun 2017 – Aug 2017
Bryce Space and Technology, Alexandria, VA

Undergraduate Senior Thesis Researcher, Wofsy-Munger Lab Sep 2016 – May 2017
Harvard University, Cambridge, MA

Research Assistant, Seltzer Lab Jan 2017 – May 2017
Harvard University, Cambridge, MA

Lloyd V. Berkner Space Policy Intern, Space Studies Board (SSB) The National Academies of Sciences, Engineering, and Medicine, Washington, DC	May 2016 – Jul 2016
Fisher Museum Interactive Education Fellow Harvard Forest, Petersham, MA	Jan 2016
Research Analyst Intern Joint U.S.-China Collaboration on Clean Energy (JUCCCE), Shanghai, China	Jun 2015 – Aug 2015
Intern, Center for Earth and Planetary Studies (CEPS) Smithsonian National Air and Space Museum	May 2014 – Aug 2014 Washington, DC
High School Intern, Hydrological Sciences Laboratory NASA Goddard Space Flight Center	Jun 2013 – Aug 2013 Greenbelt, MD

TEACHING EXPERIENCE

Columbia University, New York, NY Foundational Track Certification, Teaching Development Program Teaching Assistant, Research Computing for the Environmental Sciences Teaching Assistant, The Earth's Environmental System: The Climate System	Jan 2021 – Aug 2025 Sep – Dec 2022 Jan – Apr 2021
Pratt Institute, New York, NY Guest Lecturer, "Speculating the Environment"	Feb 2023
New York University, New York, NY Guest Lecturer, "Topics in Environmental Science: Climate Change"	Aug 2021

GRANTS

PI , "Disentangling Hydroclimate Drivers on Wildfire and Post-Fire Debris Flow Potential in Southern California under Climate Change", NASA Postdoctoral Program (NPP), \$184,000	2025 – Present
Co-I , "Towards a Sustainable Wildfire Future in the Western United States using Predictive Modeling", NSF Graduate Research Fellowship (NSF GRFP), \$138,000	2021 – 2025
Co-I , "Building resilience to wildfires in the western United States: Predictive modeling in a coupled climate and human system", Future Investigators in NASA Earth and Space Science and Technology Grant (NASA FINESST), \$135,000	2020 – 2023

HONORS AND AWARDS

Art Contest Winner, Planet Labs "Art on Satellites" Program (Art was launched to space)	2022
NASA/New York Space Grant - Opportunity Grant, for SpaceInterns.org (\$500)	2021
Fellowship Finalist, Paul & Daisy Soros Fellowships for New Americans	2020
Outreach Award, Earth Sciences Division (HBG) Annual Peer Awards, NASA GSFC	2019
Future Space Leaders Foundation Fellowship Grant (\$2500)	2019
Accepted Panelist, 70th IAC 10th Anniversary Next Generation Plenary, SGAC and IAF	2019
Scholarship Logo Competition Winner, Space Generation Congress 2020, SGAC (\$250)	2019

NASA@work Challenge Winner, NASA	2018
Scholarship Logo Competition Winner, Space Generation Congress 2018, SGAC (\$250)	2017
Brooke Owens Fellowship	2017
David McCord Prize for Achievement in Arts, Harvard University (\$100)	2017
Harvard China Student Internship Program Grant, Harvard University	2015
Scholarship Essay Contest Winner, OCA-Asian Pacific American Advocates-Long Island	2012

PEER-REVIEWED PUBLICATIONS

1. (*Under review*) Cawse-Nicholson, K., Borbas, E.E., Czyz, E.A., Grant, K.T., Hatch, B., Hully, G., Juang, C., Loveless, M., Stork, N., and Hook, S. A quarter-century record of hourly Land Surface Temperature over the United States: long term trends.
2. **Juang, C.S.**, Williams, A.P., & Seager, R. (2026). Contribution of La-Niña-like Pacific Ocean trend in sea-surface temperatures to western United States wildfire area, 1984-2022. *Earth's Future*, 14 (9), e2025EF006820, <https://doi.org/10.1029/2025EF006820>.
3. Jacobson, T.W.P., Seager, R., Clarke, H., Cook, B. I., & **Juang, C. S.** (2026). Opposing contributions of the tropical Pacific to recent burned forest area trends in Eastern Australia and the Southwestern United States. *Environmental Research Letters*, 21, 094032. <https://doi.org/10.1088/1748-9326/ae6791>.
4. Madakumbura, G.M., Williams, A.P., Short, K. C., Moritz, M. A., Wang, B., and **Juang, C. S.** (2026). Evolving Fire Frequency in the Western United States and Its Links to Human Influence. *Earth's Future*, 14, e2025EF007077, <https://doi.org/10.1029/2025EF007077>. **Media coverage in AGU Eos.**
5. Williams, A.P., Hansen, W. D., **Juang, C. S.**, Abatzoglou, J. T., Radeloff, V. C., Wang, B., Hall, J., Buch, J., and Madakumbura, G. D. (2026). The Western United States Large Forest-Fire Stochastic Simulator (WULFFSS) 1.0: A monthly gridded forest-fire model using interpretable statistics, *Geoscientific Model Development*, 19, 1157–1191, <https://doi.org/10.5194/gmd-19-1157-2026>.
6. Williams, A.P., **Juang, C.S.**, Short, K.C. (2025). The Western United States MTBS-Interagency database of large wildfires, 1984–2024 (WUMI2024a). *Earth System Science Data*, 17, 7359-7372. <https://doi.org/10.5194/essd-17-7359-2025>.
7. He, Q., Williams, A.P., Johnston, M. R., **Juang, C.S.**, Wang, B. (2025). Influence of Time-Averaging of Climate Data on Estimates of Atmospheric Vapor Pressure Deficit and Inferred Relationships With Wildfire Area in the Western United States. *Geophysical Research Letters*, 52, e2024GL113708. <https://doi.org/10.1029/2024GL113708>.
8. Buch, J., Williams, A.P., **Juang, C.S.**, Hansen, W. D., & Gentine, P. (2023). SMLFire1. 0: a stochastic machine learning (SML) model for wildfire activity in the western United States. *Geoscientific Model Development*, 16, 3407-3433. <https://doi.org/10.5194/gmd-16-3407-2023>.
9. **Juang, C.S.**, Williams, A.P., Abatzoglou, J.T., Balch, J.T., Hurteau, M.D., & Moritz, M.A. (2022). Rapid Growth of Large Forest Fires Drives the Exponential Response of Annual Forest-Fire Area to Aridity in the Western United States. *Geophysical Research Letters*, 49, e2021GL097131. <https://doi.org/10.1029/2021GL097131>. **Media coverage in BBC News Podcast.**

10. Williams, A. P., Livneh, B., McKinnon, K.A., Hansen, W.D., Mankin, J.S., Cook, B.I., Smerdon, J.E., Varuolo-Clarke, A.M., Bjarke, N.R., **Juang, C.S.**, & Lettenmaier, D. (2022). Growing impact of wildfire on western US water supply. *Proceedings of the National Academy of Sciences*, 119 (10), e2114069119, <https://doi.org/10.1073/pnas.2114069119>.
11. Abatzoglou, J.T., **Juang, C.S.**, Williams, A.P., Kolden, & Westerling, A.L. (2021). Increased synchronous fire danger in forests of the western United States. *Geophysical Research Letters*, 48, e2020GL091377. <https://doi.org/10.1029/2020GL091377>. **Media coverage in AGU Eos.**
12. **Juang, C.S.**, Stanley, T.A. & Kirschbaum, D.B. (2019). Using citizen science to expand the global map of landslides: Introducing the Cooperative Open Online Landslide Repository (COOLR). *PLoS ONE*, 14, e0218657. <https://doi.org/10.1371/journal.pone.0218657>. **Media coverage in NASA Earth Observatory.**
13. Yu, C.C., Qiu, W., **Juang, C.S.**, Mansukhani, M. M., Halmos, B., & Su, G. H. (2017). Mutant allele specific imbalance in oncogenes with copy number alterations: occurrence, mechanisms, and potential clinical implications. *Cancer letters*, 384, 86-93.
14. National Academies of Sciences, Engineering, and Medicine (2017). *Assessment of the National Space Foundation's 2015 Geospace Portfolio Review*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24666>. **Space Studies Board Intern. Conducted literature review.**
15. National Academies of Sciences, Engineering, and Medicine (2016). *Extending Missions: NASA's Space Science Mission Extensions and the Senior Review Process*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/23624>. **Space Studies Board Intern. Authored Appendix section.**

SEMINARS

1. **Juang, C.** (2026). Global to local perspectives of western United States wildfire activity and its drivers, and opportunities for NASA data. **Speaker**, *NASA Jet Propulsion Laboratory (JPL) Carbon Club Seminar*. Pasadena, CA. 14 May.
2. **Juang, C.** (2026). Global to local perspectives of western United States wildfire activity and its drivers, and opportunities for NASA data. **Invited speaker**, *NASA Goddard Space Flight Center (GSFC) Biogeosciences Brown Bag Seminar*. Virtual. 12 May.
3. **Juang, C.** (2024). Characterizing the climate drivers of burned area in the western US, 1984-present. **Invited speaker**, *NASA Goddard Institute of Space Studies (GISS) Lunch Seminar*. New York, NY. 15 May.
4. **Juang, C.** (2022). Importance of Space to Monitor Environmental Change for Global Sustainability. **Invited panelist and presenter**, *United Nations Panel Discussion by the Costa Rican Mission and Secure World Foundation, "For the benefit of humankind: Understanding how space activities improve life on Earth"*. New York, NY. 21 October.

CONFERENCE PRESENTATIONS

5. **Juang, C.S.**, Pascolini-Campbell, M., Lee, C.M., Suselj, K., & Ferraz, A. (2026) Assessing pre-fire fuel stress and post-fire fuel recovery in southern California forests using ECOSTRESS. *Poster*

- presentation at the 2026 ECOSTRESS Science and Applications Team Meeting. Pasadena, CA. 18-20 August.*
6. **Juang, C.S., Williams, A.P. (2024)** What is the Role of Internal Variability on Western US Wildfire? *Poster presentation at the 2024 American Geophysical Union Fall Meeting. Washington, DC. 9-15 December.*
 7. **Juang, C.S. & Williams, A.P. (2023).** Characterizing Present-Day fire for the Future: Four Decades of Wildfire Activity in Western US Forests Driven by Trends in Warming, Drying, and a La-Niña-like tropical Pacific Ocean state [GC34D-01]. ***Invited oral presentation at the 2023 American Geophysical Union Fall Meeting. San Francisco, CA. 11-15 December.***
 8. **Juang, C.S., Williams, A.P. & Seager, R. (2023).** Quantifying the contribution to western United States wildfire area burned due to trends in the El Niño Southern Oscillation and the Pacific Decadal Oscillation [H33I-1896]. *Poster presentation at the 2023 American Geophysical Union Fall Meeting. San Francisco, CA. 11-15 December.*
 9. **Juang, C., Williams, A.P., & Seager, R. (2023).** Quantifying the contribution to western United States wildfire area burned due to trends from El Niño Southern Oscillation. *Poster presentation at the 17th Annual Graduate Climate Conference. Woods Hole, MA. 2-4 November.*
 10. **Juang, C.S., Williams, A.P., & Seager, R. (2023).** Quantifying the contribution to western United States wildfire area burned due to trends from El Niño-Southern Oscillation. *Oral presentation at the 2023 Pacific Climate Workshop (PACCLIM). Pacific Grove, CA. 26 February.*
 11. **Juang, C.S., Williams, A.P., & Seager, R. (2022).** How Sensitive is Future Western United States Wildfire Activity to Uncertainty in the El Niño-Southern Oscillation? [GC23C-07]. *Oral presentation at the 2022 American Geophysical Union Fall Meeting. Chicago, IL. 13 December.*
 12. Rotola, G., Petrillo, D., Gazarik, M., **Juang, C.**, Kerolle, M., Rao, S. (2022). New Generations in Space Leading the Global Fight Against Climate Change [SPEC-04]. ***Invited panelist, debate and workshop by the Space Generation Advisory Council (SGAC) at AIAA ASCEND conference. Las Vegas, NV. 25 October.***
 13. Jones, T., **Juang, C.**, Loudon, E. (2022). Astrophysics and the Space Industry: Idea Exchanges for the Future [MICRO-30]. ***Invited panelist, fireside chat at AIAA ASCEND conference. Las Vegas, NV. 25 October.***
 14. **Juang, C.S. & Williams, A.P. (2021).** Connecting Exponentially-Increasing Burned Area to Fire Spread in Western United States Forests. [U43D-10]. *Oral presentation at the 2021 American Geophysical Union Fall Meeting. New Orleans, LA. 16 December.*
 15. Aerospace Diversity and Inclusion Task Force (2020). Spaces for All Humankind: Facilitating Diverse and Inclusive Aerospace Events. ***Moderator and organizer for a panel presentation and roundtable discussion at SmallSat Symposium 2020. Logan, UT. 2 August.***
 16. **Juang, C. (2019).** 10th Anniversary Next Generation Plenary: Harnessing citizen science for the future of Earth Observation. ***Competition winner presenter and panelist at the 70th International Astronautical Congress. Washington, DC. 20-25 October 2019. Awarded Future Space Leaders Fellowship for conference travel. Media coverage by DW.***

17. **Juang, C., Stanley, T., & Kirschbaum, D. (2019).** Landslide Reporter's First Year: Contributions and Collaborations in Global Landslide Citizen Science. *Oral presentation at the Citizen Science Association 2019 Conference*. Raleigh, NC. 13-17 March.
18. **Juang, C., Stanley, T., Amatya, P. M., Emberson, R., & Kirschbaum, D. (2018).** Interconnected Methods for Landslide Hazard Assessment. [NH31E-1021]. *Poster presentation at the 2018 Fall Meeting, American Geophysical Union*. Washington, DC. 10-14 December.
19. **Juang, C., Stanley, T., Kirschbaum, D., & Shute, J. (2018).** Local Landslides, Global Perspective: Enhancing our Global Landslide Catalog with New Citizen Science Data and Inventories. [PA23C-11]. *eLightning presentation at the 2018 Fall Meeting, American Geophysical Union*. Washington, DC. 10-14 December.
20. **Juang, C., T. Stanley, & Kirschbaum, D. (2018).** Cooperative Open Online Landslide Repository (COOLR) to Enhance Disaster Research and Prediction. [IAC-18,B1,6-GTS.1,3,x47268]. *Presented at the 69th International Astronautical Congress 2018*. Bremen, Germany. 1-5 October.
21. **Juang, C. (2018).** Launching Landslide Citizen Science with Esri. *Lightning presentation given at the NASA Special Interest Group, Esri User Conference 2018*. 9-14 July.
22. **Juang, C., Stanley, T., Kirschbaum, D., & Shute, J. (2018).** NASA Landslide Viewer. [Application]. *Presented in the Map Gallery at the 2018 Esri Federal GIS Conference*. Washington, DC. 20-21 March.
23. Stanley, T., **Juang, C., & D. B. Kirschbaum (2017).** Citizen science, GIS, and the global hunt for landslides. [IN24B-03]. *Presented at the 2017 Fall Meeting, American Geophysical Union*. New Orleans, LA. 11-15 December.
24. **Juang, C. (2017).** A Model of 25 Years of Carbon Exchange and its Factors in the Harvard Forest. *Presented at the Fall 2017 Virtual Poster Showcase, American Geophysical Union, Washington, DC*.
25. **Juang, C. (2017).** A Model of 25 Years of Carbon Exchange and its Factors in the Harvard Forest. *Honors senior thesis presented at the Department of Earth and Planetary Sciences 2017 Senior Thesis Presentations*. Cambridge, MA. 1 May.

SERVICE TO COMMUNITY

LEADERSHIP IN SERVICE

Advisory Board The Asian Aerospace and Aviation Organization (TAAAO)	May 2025 – Present
Steering Committee Asian American and Pacific Islanders in Geosciences (AAPIIG)	Feb 2021 – Present
Co-Founder SpaceInterns.org	Oct 2020 – Present
Executive Board Brooke Owens Fellowship	Jun 2020 – Jul 2023

First-Year Chair, DEES Graduate Student Committee **May 2020 – May 2021**
Columbia University, New York, NY

Conference Operations and Publications Team **Nov 2018 – Jun 2019**
8th Space Generation Fusion Forum, Space Generation Advisory Council

Co-Chair, Historian **Sep 2014 - May 2017**
Harvard Environmental Action Committee, Harvard University, Cambridge, MA

CONTRIBUTIONS TO SERVICE

Ad hoc manuscript reviewer **Oct 2023 – Present**
Agricultural and Forest Meteorology, Earth's Future, Fire Ecology, Forest Ecology and Management, Geophysical Research Letters, Journal of Geophysical Research: Atmospheres

Colloquium Organizing Committee **Jul 2022 – Jul 2023**
Lamont-Doherty Earth Observatory, Palisades, NY

DEES Graduate Student Committee **Sep 2019 – 2021**
Lamont-Doherty Earth Observatory, Palisades, NY

Webmaster; Alumni Mentor; Fellowship Guidebook Editor; Logo Designer **Oct 2017 – Jun 2020**
Brooke Owens Fellowship

Aerospace Diversity & Inclusion Task Force **Mar 2020 – Dec 2020**
Ad-hoc team; Conference presentation at SmallSat Symposium 2020, Las Vegas, NV

Abstract Judge (Invited), “Technical Track” Session **Nov 2019 – Jan 2020**
36th Space Symposium, Colorado Springs, CO

Volunteer Designer (Invited) x4, Girls’ Science Day, Women in Science at Columbia **2019 – 2022**
Columbia University, New York, NY

Volunteer Designer for Awards and Conference Materials (Invited) **Nov 2018 – 2023**
Space Generation Advisory Council

Conference Rapporteur **Oct 2018 – Dec 2018**
Space Generation Congress 2018, Colorado Springs, CO

SELECTED STEM OUTREACH EVENTS AND MENTORING

NASA Jet Propulsion Laboratory, Volunteer Exhibitor, “Explore JPL” 2026 **Oct 2026**
Co-Mentor of F. Alhezaimi (JPL Undergraduate MOSAICS Internship) **May – Aug 2026**
Co-Mentor of J. Fuery (JPL Undergraduate MOSAICS Internship) **May – Aug 2026**

Asian Americans and Pacific Islanders (AAPI) in Geosciences
Panelist [Invited], AAPI Heritage Month Workshop: “Exploring Personal Heritage in Academic and Professional Paths” **May 2024**
Steering Committee Organizing Team, AAPI Heritage Month 2023 **Mar – May 2023**
Steering Committee Organizing Team, AAPI Heritage Month 2022 **Mar – May 2022**
Undergraduate Student Mentor **Feb 2022**

Steering Committee Organizing Team, AAPI Heritage Month 2021	Mar – May 2021
Space Generation Advisory Council	
Panelist [Invited], U.S. Task Force “Space for Climate Action”	Jul 2023
Lamont-Doherty Earth Observatory, New York, NY	
Panelist, “Graduate Student Panel” for LDEO Intern Program	Jul 2023
Featured Artist; Graduate Student Panelist, 2022 LDEO Open House	Oct 2022
Panelist, “Actors from Witnesses” Art Exhibit, Earth Institute/Mana Contemporary	Apr 2021
Mentor, Lamont Summer Intern Program	Jul 2020
Brooke Owens Fellowship	
Alumni Panelist [Invited], Brooke Owens Fellowship Summit	Jul 2023
Moderator [Invited], Space Law Panel, Brooke Owens Fellowship Summit	Jul 2023
Session Organizer, Grad School Bootcamp	2020
Brookie Alumni Mentor	Sep 2019 – Sep 2020
Brookie Alumni Mentor	Sep 2018 – Sep 2019
Students for the Exploration and Development of Space (SEDS)	
Panelist, “Applying for Fellowships”, 2023 Virtual Graduate School Application Bootcamp	Jun 2023
Panelist, “Applying for Fellowships”, 2022 Virtual Graduate School Application Bootcamp	Jun 2022
Panelist, “Applying for Fellowships”, 2021 Virtual Graduate School Application Bootcamp	Jun 2021
Mentor, 2019 Virtual Graduate School Application Bootcamp	2019
New York Academy of Sciences, New York, NY	
Panelist [Invited], “Chat with a Scientist” Panel with NYAS, Queens Library, and CIV:LAB	Apr 2022
The Ohio State University, Columbus, OH	
Panelist [Invited], “WALL-E, Science Fiction vs. Science Fact”, Department of Astronomy	May 2021
Speaker [Invited], “Citizen Science, Natural Hazards, and Space!”, Astronomical Society	Apr 2021
Panelist [Invited], “Women in Space” Panel, Department of Astronomy	2020
NASA Goddard Space Flight Center, Greenbelt, MD	
Group Administrator, “Do NASA Science” Facebook Group	2019 – 2021
Co-Mentor of J. Green (NASA Undergraduate Summer Intern Program)	Jun 2018 – Aug 2018
Volunteer NASA Exhibitor, USA Science and Engineering Fair, Washington, DC	Apr 2017
Volunteer NASA Exhibitor, Earth Day in Union Station, Washington, DC	Apr 2017
Volunteer NASA Exhibitor, AwesomeCon, Washington, DC	Mar 2017
Harvard Club of DC Mentorship Program	
Alumni Undergraduate Student Mentor	2018 – 2019

SKILLS

Computational: Proficiency in Python, MATLAB, and R.

Technical: Proficiency in statistical modeling and geospatial tools and analysis (Python Xarray, GeoPandas; QGIS; Esri ArcMap, ArcScene.).

Design: Fluency in graphics, illustration, and creative design (HTML/CSS; Adobe Photoshop, Illustrator; and related image, publication, and video software).

AFFILIATIONS/MEMBERSHIPS

American Geophysical Union (AGU), member since 2018

Asian Americans and Pacific Islanders in Geoscience (AAPiG), Steering Committee, since 2021

Space Generation Advisory Council (SGAC), member since 2017

Earth Science Women's Network (ESWN), member since 2020