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) **May 2016 – Jul 2016**
The National Academies of Sciences, Engineering, and Medicine, Washington, DC

Fisher Museum Interactive Education Fellow **Jan 2016**
Harvard Forest, Petersham, MA

Research Analyst Intern **Jun 2015 – Aug 2015**
Joint U.S.-China Collaboration on Clean Energy (JUCCCE), Shanghai, China

Intern, Center for Earth and Planetary Studies (CEPS) **May 2014 – Aug 2014**
Smithsonian National Air and Space Museum Washington, DC

High School Intern, Hydrological Sciences Laboratory **Jun 2013 – Aug 2013**
NASA Goddard Space Flight Center Greenbelt, MD

TEACHING EXPERIENCE

Columbia University, New York, NY
Foundational Track Certification, Teaching Development Program **Jan 2021 – Aug 2025**
Teaching Assistant, Research Computing for the Environmental Sciences **Sep – Dec 2022**
Teaching Assistant, The Earth's Environmental System: The Climate System **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*) **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.

2. (*Under* review) 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, *EGUsphere [preprint],* https://doi.org/10.5194/egusphere-2025-2934.

3. 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.

4. 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.

5. 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.

6. **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.**

7. 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.

8. 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.**

9. **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.**

10. 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.

11. 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.**

12. 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.**

INVITED SEMINARS

1. **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.

2. **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

3. **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.

4. **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.

5. **Juang, C.S.**, Seager, R., Williams, A.P. (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.

6. **Juang, C.,** Seager, R., Williams, A.P. (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.

7. **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 (PACLIM).* Pacific Grove, CA. 26 February.

8. **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.

9. 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.

10. Jones, T., **Juang, C.**, Louden, 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.

11. **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.

12. 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.

13. **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.**

14. **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.

15. **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.

16. **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.

17. **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.

18. **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.

19. **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.

20. 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.

21. **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.

22. **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

Steering Committee **Feb 2021 – Present**
Asian American and Pacific Islanders in Geosciences

Co-Founder **Oct 2020 – Present**
SpaceInterns.org

Executive Board **Jun 2020 – Jul 2023**
Brooke Owens Fellowship

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**
Earth's Future, Agricultural and Forest Meteorology, Fire Ecology, Forest Ecology and Management, and *Geophysical Research Letters*

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

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 **May 2023**
Steering Committee Organizing Team, AAPI Heritage Month 2022 **May 2022**
Undergraduate Student Mentor **Feb 2022**
Steering Committee Organizing Team, AAPI Heritage Month 2021 **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**
Mentor, 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; 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 (AAPIiG), Steering Committee, since 2021
Space Generation Advisory Council (SGAC), member since 2017
Earth Science Women's Network (ESWN), member since 2020