Robert Fofrich, Ph.D.
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CURRENT POSITION

2025-current — *Postdoctoral Research Associate*,
Department of Geography,
Dartmouth College
Advisor: Justin Mankin

RESEARCH INTERESTS

I aim to develop sustainable, equitable, and economically viable solutions to mitigate the drivers and risks of anthropogenic climate change. Within this framework, I address critical challenges, including climate attribution, decarbonization, carbon removal solutions, and climate risk management.

EDUCATION

2022 — *Ph.D., Earth System Science*
University of California, Irvine
Advisor: Steven J. Davis (now at Stanford)
Dissertation: Constraints to Climate Change Mitigation and Adaptation

2019 — *M.S., Earth System Science*
University of California, Irvine

2016 — *B.S., Earth System Science*
University of California, Irvine

2014 — *A.A., Liberal Arts & Science: Math, Sciences & Computer Science, magna cum laude*
West Los Angeles College

RESEARCH EXPERIENCE

2023-2025 — *University of California President's Postdoctoral Fellow*,
Institute of the Environment and Sustainability,
University of California, Los Angeles (UCLA)
Advisor: Elsa Ordway

2022-2022 — *Postdoctoral Associate*,
Earth & Planetary Sciences and Climate Impact Lab,
Rutgers University, New Brunswick
Advisors: Robert Kopp and Kelly McCusker

2016-2022 — *Graduate Researcher*,
Department of Earth System Science,
University of California, Irvine
Advisor: Steven J. Davis (now at Stanford)

2015-2016 — *Undergraduate Researcher*,
Center for Climate Sciences,
NASA Jet Propulsion Laboratory
Advisor: Mika Tosca

2014-2015 *Undergraduate Researcher*,
Center for Environmental Biology,
University of California, Irvine
Advisor: Sarah Kimball

*PEER-REVIEWED PUBLICATIONS (*Indicates advisee or student)*

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Published

R Fofrich, L Liebermann*, F Moore, C Shearer, and SJ Davis. *Ownership of Power Plants Stranded by Climate Mitigation.* Nature Sustainability (2025)

S Seibel, R Luarkie, D Cardenas, C Mayer, R Sanchez, M Danneberg, BM Panek, A Bond, Z Gordan, D Morishige, K Hadrick, G Stahnke, **R Fofrich**, SJ Davis, R Tallman, B Bowser, and M Bazilian. *A Path Towards Tribal Energy Sovereignty.* Science (2025)

A Alotaiq, K Collet, **R Fofrich**, D Wallom, and M McCulloch. *Electricity Climate-Compatibility Index: Measuring Global Progress Towards Decarbonizing the Electricity Sector*. Journal of Economy and Technology (2024)

R Fofrich, D Tong, K. Calvin, H Sytze de Boer, J Emmerling, O Fricko, S Fujimori, G Luderer, J Rogelj, and SJ Davis. *Early Retirement of Power Plants in Climate Mitigation Scenarios*. Environmental Research Letters (2020)

C Shearer, D Tong, **R Fofrich**, and SJ Davis, *Committed Emissions of the U.S. Power Sector, 2000–2018*. AGU Advances (2020)

C Shearer, **R Fofrich**, and SJ Davis, *Future CO_2 Emissions and Electricity Generation from Proposed Coal-Fired Power Plants in India.* Earth's Future (2017)

Submitted & forthcoming

R Fofrich, A Chiu*, and E Ordway. *Climate and Ecological Constraints of Cultivating Bioenergy Crops for Climate Mitigation in Tropical Regions.* (revised and resubmitted, second round – PNAS Nexus)

R Fofrich, L Sloat, N Diffenbaugh, F Moore, N Mueller, and SJ Davis. *Crop Migration in Response to Future Climate Change.* (in revision – Environmental Research Letters)

E Ordway, B Egoh, S Biswas, K Dutko, V Deblauwe, **R Fofrich**, L Ayompe, H Souter, E Wesner, and S Worden. *Global Change Impacts on the Dja Reserve: Land-Use and Climate Change* (submitted)

R Fofrich, K McCusker, B Malevich, and R Kopp. *GDNat: a Global, Daily, High-Resolution, Natural-Forcing-Only Temperature Data Set for Attribution Research*. (submitted)

SKILLS

Research: Expertise in climate change mitigation pathways, carbon accounting, decarbonization strategies, carbon offset programs, and measuring emissions from energy and agriculture infrastructure. Experience with remote sensing and in situ carbon monitoring (e.g., Climate Trace,

	Carbon Mapper, OCO-2, TROPOMI-SIF), natural CO_2 fluxes and storage, net-zero strategies, and climate risk assessment. Experienced in leading cross-disciplinary, policy-relevant research projects that align with global decarbonization goals.
Data Analysis:	Advanced proficiency in MATLAB, Python (e.g., Pandas, NumPy, SciPy, xclim, Dask, xarray), MS Excel, and ArcGIS. Demonstrated expertise in managing large datasets, spatially analyzing emissions data, and applying statistical and geospatial methods to monitor compliance with climate change mitigation scenarios. Skilled in processing satellite observations, emissions inventories, and site-specific data to identify pollution sources and support regulatory frameworks.
Writing:	Experienced in authoring peer-reviewed articles, technical reports, and public-facing research briefs. Skilled at synthesizing and summarizing complex scientific findings for both expert and non-expert audiences. Committed to scientific accuracy, transparency, and reproducibility.
Presentation:	Proficient in developing engaging and accessible visual content using Python, MATLAB, Adobe Illustrator, and MS PowerPoint. Demonstrated ability to convey complex climate science to diverse audiences, including policymakers, stakeholders, and interdisciplinary teams.
Language:	Fluent in English and Spanish.
Other:	Extensive experience mentoring undergraduate, graduate, and postdoctoral researchers. Proven ability to lead collaborative research teams across institutions and disciplines. Comfortable interacting with media, policymakers, external partners, and community stakeholders. Skilled in project coordination and stakeholder engagement. Experienced in authoring research grants.

SCIENTIFIC PRESENTATIONS

2025	**Invited talk,** *Pursuing a Postdoc Proactively*, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
	GDNat: a Global, Daily, High-Resolution, Natural-Forcing-Only Temperature Data Set for Attribution Research, European Geosciences Union, Vienna, Austria
	Keynote address, **Invited talk,** *The Role of Community Colleges in the Fight Against Climate Change,* Los Angeles Community College Regional Consortium Conference annual meeting, Los Angeles, CA
	Invited talk, *Bridging Climate Science & Sustainability: Transdisciplinary Models for Climate Change Mitigation*, IE University, Madrid, Spain
2024	*GDNat: a Global, Daily, High-Resolution, Natural-Forcing-Only Temperature Data Set for Attribution Research*, American Geophysical Union Fall Meeting, Washington, D.C.
	Invited talk, *Confronting Climate Change Mitigation Challenges*, Carbon Cycle and Ecosystems, National Aeronautics and Space Administration - Jet Propulsion Laboratory (NASA-JPL), Pasadena, CA
	Challenges to Mitigating Climate Change Drivers and Associated Risks of Surpassing Lower Emission Targets, Institute for Digital Research and Education, University of California, Los Angeles, CA

	Climate Risks to Tropical Ecosystems, Department of Ecology and Evolutionary Biology, University of California, Los Angeles, CA
	Navigating Climate Change Transition Risks, Institute for Digital Research and Education, University of California, Los Angeles, CA
2023	*Ecological and Climate Mitigation Tradeoffs from Cultivating Energy Crops in Tropical Regions,* American Geophysical Union Fall Meeting, San Francisco, CA
	Harnessing High-Performance Computing Across STEM Disciplines, Institute for Digital Research and Education, University of California, Los Angeles, CA
	Keynote address, **Invited talk,** *Why Do We Need Green and Blue Jobs?*, California Center for Climate Change Education, West Los Angeles College, Culver City, CA
2020	*Agricultural migration to avoid future climate change*, American Geophysical Union Fall Meeting, Virtual Meeting
	Invited talk, *Decarbonizing Contemporary Society*, Climate Solutions Conference, UCI Ridge to Reef & Newport Bay Conservancy, Costa Mesa, CA
2019	*Early Retirement of Power Plants in Climate Mitigation Scenarios*, American Geophysical Union Fall Meeting, San Francisco, CA
	Invited talk, *Infrastructural Inertia in Energy-Emissions Scenarios*, University of California Office of the President - Global Climate Leadership Council, Global Climate Leadership Council Annual Meeting, Irvine, CA
	Ecosystem Climate Migrations in the Anthropocene, Decolonizing Ecology and Indigenous Land Co-Management Conference, Irvine, CA
2018	*Infrastructural Inertia in Energy-Emissions Scenarios*, American Geophysical Union Fall Meeting, Washington, D.C.
	Invited talk, *What Community College Can Do For You*, Creative Edge Conference, West Los Angeles College, Culver City, CA
	Infrastructural Inertia in Energy-Emissions Scenarios, Carnegie Institution for Science, Carnegie Science Global Ecology. Energy symposium, Palo Alto, CA
2017	*Future CO2 emissions and electricity generation from proposed coal-fired power plants in India*, American Geophysical Union Fall Meeting, New Orleans, LA
	Climate Change Challenges, UCI Dept. Earth System Science and Dept. of Ecology & Evolutionary Biology. Environmental Research Symposium, Irvine, CA
2015	*A global database of smoke injection heights from landscape fires: an analysis of 2009-2010*, Jet Propulsion Laboratory Summer Research Fellowship Symposium, National Aeronautics and Space Administration - Jet Propulsion Laboratory (NASA-JPL) SURF Symposium, Pasadena, CA

TEACHING

Guest Lecturer

2024, 2025	Natural Climate Solutions, Dept. Geography, University of California, Los Angeles

Teaching Assistant

2020, 2021	Sustainable Energy, Dept. of Earth System Science, University of California, Irvine
	Intro to the Cryosphere, Dept. of Earth System Science, University of California, Irvine

2019	Sustainable Food and Water Systems, Dept. of Earth System Science, University of California, Irvine
2017	Fundamentals of Geographic Information Systems, Dept. of Earth System Science, University of California, Irvine
2016	Introduction to Earth System Science, Dept. of Earth System Science, University of California, Irvine

Instructor

2010 - 2012	Health and Safety, American Red Cross, Greater Los Angeles, CA

MENTORING

Research Supervision

Cate O'Bryon (undergrad, UCLA) (Sept. 2024 – April 2025)
Alcen Chiu (undergrad, UCLA) (Jan. 2023 – June 2024)
Daniel Blanco (Ph.D. student, Rutgers University) (July 2022 – Jan. 2023)
Lauren Liebermann (undergrad, UC Irvine) (Sept. 2021 – Feb. 2022)

Undergraduate Student Mentoring

Anna Ho (undergrad, UC Irvine) (Nov. 2025 – current)
Isabelle Gomez (undergrad, UCLA) (Jan. 2025 – June 2025)
Brandon Ng (undergrad, UC Irvine) (Oct. 2024 – June 2025)
London Perkins (undergrad, UC Irvine) (Oct. 2024 – June 2025)
Aaron Wang (undergrad, UC Irvine) (Oct. 2024 – June 2025)
Mathew Ye (undergrad, UCLA) (Sept. 2024 – Dec. 2024)
Phoebe Caudill (undergrad, UC Irvine) (Oct. 2023 – June 2024)
Sarah Mey (undergrad, UC Irvine) (Oct. 2022 – June 2023)
Angelica Loya (undergrad, UC Irvine) (Oct. 2021 – June 2022)
Monet Bridgewater (undergrad, UC Irvine) (Oct. 2022 – June 2022)
Jordyn Rodwell (undergrad, UC Irvine) (Feb. 2017 – June 2017)

Graduate Student Mentoring

Marina Fennel (Ph.D. student, UC Irvine) (Sept. 2021 – June 2022)
Kyle Manley (Ph.D. student, UC Irvine) (Sept. 2020 – June 2022)
Matea Djokic (Ph.D. student, UC Irvine) (Sept. 2020 – August 2021)
Ariane Jong (Ph.D. student, UC Irvine) (Sept. 2020 – August 2021)
Gracie Wong (Ph.D. student, UC Irvine) (Sept. 2019 – August 2020)

ACADEMIC SERVICE

2025 - current	Engagement Committee Chair **National Postdoctoral Association (NPA)**
2024 - 2025	Task Force on a Vision for American Science & Technology **Science & Technology Action Committee**
2023 - 2025	Committee for Anti-Racism and Equity (CARE) **Department of Ecology and Evolutionary Biology, UCLA**
2023 - 2024	Diversity Task Force **National Postdoctoral Association (NPA)**
2022 - 2024	Postdoc Council

	National Postdoctoral Association (NPA)
2020 - 2022	Speaker Series Search Committee **Department of Earth System Science, University of California Irvine**
2019 - 2020	Graduate Student Representative **Department of Earth System Science, University of California Irvine**
2019 - 2021	Conservation and Outreach Chair **The Orange County Chapter of the Society for Conservation Biology**
2017 - 2019	Science educator, Community Engagement **Climate Solutions Annual Conference**
2012 - 2014	Cofounder and Vice President **American Chemical Society (West Los Angeles Chapter)**

FELLOWSHIPS, SCHOLARSHIPS, & GRANTS

2023	**University of California President's Postdoctoral Fellowship (2023 & 2024)** University of California Office of the President
	The Institute for Digital Research and Education (IDRE) Postdoctoral Fellowship University of California, Los Angeles
2020	**Rose Hills Foundation Science & Engineering Fellowship (2020 & 2021)** University of California, Irvine
2017	**Ridge to Reef Fellowship (2017 & 2018)** National Science Foundation Research Traineeship, University of California, Irvine
	Long Institute Graduate Student Grant Long US-China Institute, University of California, Irvine
2016	**Reward Opportunity Advancing Distinguished Students (ROADS) Scholarship** University of California, Irvine
2015	**Juan Francisco Lara Endowed Scholarship** University of California, Irvine
	Long Institute Graduate Student Grant Long US-China Institute, University of California, Irvine
	Ecological Preserve Restoration Grant Green Initiative Fund, University of California, Irvine
2014	**AFT 1521 Foundation Scholarship** Los Angeles Community College Guild, Los Angeles
2013	**Academic Senate Scholarship,** West Los Angeles College, Culver City
	David Rodriguez Memorial Scholarship West Los Angeles College, Culver City
2012	**Riding the Roadmap to Transfer Fellowship (2012 & 2013)** National Science Foundation - West Los Angeles College, Culver City

AWARDS

2020	**Outstanding Contributions to the Department Award** Department of Earth System Science, University of California, Irvine
2014	**Jet Propulsion Laboratory Undergraduate Scholar** NASA Jet Propulsion Laboratory, Pasadena

Irving R. Tannenbaum Memorial Award,
West Los Angeles College, Culver City

2013 **Morris J. Heldman Chemistry Award,**
West Los Angeles College, Culver City

JOURNAL REFEREE

Nature Climate Change; Environmental Research: Food Systems; Environmental Research: Letters; Environmental Research: Communications; Environmental Research: Climate; Environmental Research: Energy; Environmental Science & Technology; Environmental Sciences Europe; Energy and Climate Change; Scientific Reports; Cleaner and Circular Bioeconomy

PROFESSIONAL & HONOR ASSOCIATIONS

American Geophysical Union (AGU)
European Geosciences Union (EGU)
Society for Conservation Biology
National Postdoctoral Association (NPA)
American Association for the Advancement of Science (AAAS)
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)
Society for Leadership and Success, University of California, Irvine
Sigma Xi
Phi Theta Kappa
Alpha Gamma Sigma