

Areidy Beltran-Peña

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EDUCATION

University of California, Berkeley

Ph.D. Environmental Science, Policy, and Management, Designated Emphasis in Development Engineering August 2023

Focus on global and regional climate risk modeling for water resources and food systems.

- Awarded seven research grants, including four prestigious national fellowships:
 - U.S. Department of Energy Office of Science Graduate Student Research Fellowship
 - National Academies of Sciences, Engineering, and Medicine Ford Foundation Dissertation Fellowship
 - U.S. Department of State Foreign Language and Area Studies Fellowship
 - National Science Foundation Innovations in Food, Energy, and Water Systems Fellowship

M.S. in Earth and Planetary Science

May 2017

Emphasis on climate mitigation solutions and renewable energy systems.

B.S. in Environmental Earth Science

May 2015

Minor in Global Poverty and Practice.

ACADEMIC RESEARCH EXPERIENCE & TRAINING

Stanford University Doerr School of Sustainability (SDSS), Department of Earth System Science

Stanford, CA

SDSS Dean's Postdoctoral Fellow

Aug 2023 – Present

- Performing research on the natural and societal impacts of hydroclimate variability on global and regional freshwater resources as part of the Climate and Earth System Dynamics Group.
- Assessing sectoral water competition and exploring sustainable management strategies amid climate change to boost resilience.

Lawrence Berkeley National Laboratory, Department of Climate Sciences

Berkeley, CA

Affiliate Postdoctoral Fellow

Aug 2023 – Present

Graduate Student Researcher

Jan 2022 – Jun 2023

- Trained to leverage and process data from the Energy Exascale Earth System Model (E3SM) and the Community Earth System Model (CESM2) for hydroclimate research through the U.S. Department of Energy Office of Science Graduate Student Research Fellowship.

Carnegie Institution for Science, Department of Global Ecology

Stanford, CA

Visiting Scholar

Jul 2023 – Present

Visiting Graduate Student

Jan 2022 – Jul 2023

- Created an integrated assessment model to evaluate the future of food security and adaptation potential in Africa under a 3°C warmer climate funded by the Ford Foundation Dissertation Fellowship from the National Academies of Sciences, Engineering, and Medicine.

National Center for Atmospheric Research, Mesa Laboratory

Boulder, CO

Community Earth System Model (CESM) Tutorial Participant

Jul 2023

- Acquired comprehensive knowledge of the intricate mechanisms underlying the Community Earth System Model (CESM), encompassing the intricate processes involved in the creation and integration of atmospheric, terrestrial, oceanic, and sea ice models. Additionally, gained proficiency in executing CESM simulations, allowing for Earth system predictions across a range of resolutions.

NASA Jet Propulsion Laboratory, NASA Center for Climate Science Summer School

Pasadena, CA

- Participated in NASA's training program on using satellite observations to evaluate and improve climate models.

Aug 2019

- Worked on a case study that focused on India's depleting water storage using GRACE satellite data.

Tuck School of Business at Dartmouth College

Hanover, NH

- Completed the Tuck Business Bridge Pre-MBA Program, taught by MBA faculty, which delved deeply into marketing, management, finance, microeconomics, accounting, and strategy.

Summer 2017

Columbia University School of International and Public Affairs

Paris, France

- Attended the Alliance Summer School in Science and Policy

Jun 2016

U.S. Department of State, Critical Language Scholarship Program

Malang, Indonesia

- Sponsored to participate in an immersive and intensive Indonesian language and cultural program. Gained intercultural fluency in a region essential to America's global engagement.

Summer 2015

U.S. Department of State, Benjamin A. Gilman International Scholarship Program

New Delhi, India

- Gained beginning fluency in the Hindi language through a semester-long study abroad program.

Fall 2013

PROFESSIONAL WORK EXPERIENCE

Environmental Resources Management

Project Scientist- Environmental Consultant II

San Francisco, CA

Feb 2018 – Jul 2019

- Performed phase I and phase II environmental site assessments and developed follow-up corrective actions to ensure compliance with federal, state, and local regulations.
- Prepared the pollution prevention permit compliance program for the Caltrain system under the Water Resources Control Board Phase II Small Municipal Separate Storm Sewer Systems (MS4) Permit.

Intertek-Professional Service Industries

Environmental and Geotechnical Staff Scientist

Oakland, CA

Sep 2015 – Aug 2016

- Conducted due environmental diligence and geotechnical investigations including- contamination and remediation services, compliance permitting for hazardous materials, groundwater monitoring programs, indoor air quality surveys, seismic hazard analysis, and foundation and slope evaluations.

TEACHING ACTIVITIES

University of California Berkeley

Graduate Student Instructor

Berkeley, CA

- **Introduction to Culture and Natural Resource Management (ESPM 50AC).** Lectured and graded for a 6-week long course with ~326 students of which I was responsible for 70. Summer 2020
- **Introduction to Environmental Research Methods (ESPM 100ES).** Lectured, graded, and lesson planned for a 4-month long course with ~60 students. Spring 2019

LEADERSHIP EXPERIENCE

International Mountain Conference

Innsbruck, Austria

Sep 2022

- Planned and co-led a 3-hour synthesis workshop at the International Mountain Conference titled, "Future mountains with low-to-no-snow and ice (L2NS) – a community perspective" in collaboration with an international team of scientists. This session brought together a diverse set of researchers and stakeholders to exchange successes and failures from regions around the world where L2NS is or will be a future reality and discussed how to overcome uncertainties in estimating the warming level and time horizon of L2NS emergence.

United Nations Framework Convention on Climate Change Conference of Parties 25

Madrid, Spain

Dec 2019

- Organized a 2-hour side-event for the Italian Ministry for the Environment, Land and Sea, delivering an engaging presentation on "Climate Change and the Global Water-Energy-Food Nexus" to a diverse global audience.

University of California Office of the President

Carbon Neutrality Initiative Systemwide Fellow

Oakland, CA

Academic Years

2016 – 2017

& 2018 – 2019

- Spearheaded the design of the UC-wide sustainability learning objectives in support of the UC Global Climate Leadership Council's 2025 carbon neutrality goal. UCLA is currently referencing the report generated by this project as a roadmap while strategizing the incorporation of campus-wide sustainability learning outcomes in their next AASHE STARS (Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment, and Rating System) submission.

Fundación Cántaro Azul

Pachamama Project Team Lead

Chiapas, Mexico

Summer 2014

- Collaborated with Fundación Cantaro Azul to identify and implement enhancements to an ultraviolet water filtration system aimed at improving access to clean water, sanitation, and hygiene in rural indigenous communities.

Community Water Center

Undergraduate Intern

Visalia, CA

Spring 2014

- Led a team of four engineering undergraduate students on a project in collaboration with the nonprofit organization, Community Water Center, in the Central Valley. We tested and monitored the water quality (for nitrate contamination) of 40 households in Visalia, CA dependent on domestic wells for drinking water and provided residents with real-time evidence regarding their household water quality.

PUBLICATIONS

- **Beltran-Peña A, Rhoades A, Diffenbaugh N.** Agricultural implications of a low snow future under a 3°C warmer climate in California. *In progress.*
- **Beltran-Peña A, Rhoades A, Giroto M, Michalak A, Fung I, Burakowski E, Inda-Diaz H, D'odorico P.** Future implications of hydroclimate variability and reduced snowpack in the Sierra Nevada on California's water availability. *Submitted November 2023.*
- **Beltran-Peña A and D'Odorico P (2022).** Future food security in Africa under climate change. *Earth's Future.* 10, e2022EF002651. <https://doi.org/10.1029/2022EF002651>. Featured in an [EOS Research Spotlight](#).
- **Beltran-Peña A, Rosa L, D'Odorico P (2020).** Global food self-sufficiency in the 21st century under sustainable intensification of agriculture. *Environmental Research Letters.* <https://doi.org/10.1088/1748-9326/ab9388>.

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- Rosa L, Chiarelli DD, Sangiorgio M, **Beltran-Peña A**, Rulli MC, D'Odorico P & Fung I (2020). Potential for sustainable irrigation expansion in a 3C warmer climate. *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.2017796117>. Cited in the [2023 U.S. Economic Report of the President](#).
 - Jenkins W, Rosa L, Schmidt J, Band L, **Beltran-Peña A**, Clarens A, Doney S, Glassie A, Quinn J, Rulli MC, Shobe W, Szeptycki L, D'Odorico P. Values-based scenarios of water security: rights to water, rights of water, and commercial water rights (2021). *BioScience*, 20, pp. 1-14.

SELECTED PRESENTATIONS

- **Beltran-Peña A** et al., (2023) “Climate Change Impact Assessment on Water Resources and Agriculture – A Global to Regional Perspective with Insights from Africa and California”, *Invited Talk*, American Geophysical Union, San Francisco, CA.
- **Beltran-Peña A** and D'Odorico P. (2023) “Global food self-sufficiency under climate change and sustainable irrigation expansion”. *Poster*. World Climate Research Program Open Science Conference, Kigali, Rwanda. *Sponsored by NASA, NOAA, NSF*
- **Beltran-Peña A** (2022) “Assessing the impacts of climate change on Sierra Nevada snow hydrology and California's agricultural systems”, *Oral Presentation*, International Mountain Conference, Innsbruck, Austria.
- **Beltran-Peña A** (2022) “Evaluating the hydrological impacts of climate change on food systems through integrated assessment models”, *Invited Seminar*, Carnegie Institution for Science, Stanford, CA.
- **Beltran-Peña A** and D'Odorico P. (2021) “The future of food security in Africa under climate and societal change”, *Poster Presentation*, American Geophysical Union, Online.
- **Beltran-Peña A** and Rosa L. (2019) “Climate change and the global water-energy-food nexus”, *Oral Presentation*, United Nations Framework Convention on Climate Change Conference of Parties 25, Madrid, Spain.
- **Beltran-Peña A** et al., (2019) “Evaluating the Effects of Climate Change and Sustainable Irrigation Intensification on Global Food Security”, *Oral Presentation*, American Geophysical Union, San Francisco, CA.
- **Beltran-Peña A** et al., (2019) “An Investigation of Land Water Storage Variability as a Function of Climate Change and Human Activities Over India Using Satellite Remote Sensing”, *Oral Presentation*, NASA Jet Propulsion Laboratory Center for Climate Sciences, Pasadena, CA.
- **Beltran-Peña A** (2017) “The Implications of Geologic Properties and Seismic Activity in the Arctic Region on Undiscovered Oil and Gas Field Exploration”, *Oral Presentation*, UC Berkeley Department of Earth and Planetary Science, Berkeley, CA.
- **Beltran-Peña A** (2017) “Introduction of UC Sustainability Learning Outcomes”, *Poster Presentation*, California Higher Education Sustainability Conference, UC Santa Cruz, Santa Cruz, CA.

DIVERSITY OUTREACH

- **Beltran-Peña A** (2022) “STEM Careers and Pathways: Perspectives of First-gen Professionals Leading the Way”, *Alumni Panel*, Educational Opportunity Program STEM, UC Berkeley, Berkeley, CA. **Invited.**
- **Beltran-Peña A** (2020) “First-Gen Journey to a PhD Pathway: Mitigating the Impacts of Climate Change”, *Oral Presentation*, Cal New Experiences for Research and Diversity in the Sciences, Berkeley, CA. **Invited.**
- **Beltran-Peña A** (2020) “Oportunidades Professional Development Summit Graduate Panel”, *Invited Graduate Student Panelist*, Chicano Latino Youth Leadership Project, Online. **Invited.**
- **Beltran-Peña A** (2017) “Keys to Success and Survival in Graduate School”, *Guest Speaker*, Spring Northern California Forum for Diversity in Graduate Education, UC Merced, CA. **Invited.**
- **Beltran-Peña A** (2016) “Sharing Wisdom Across Generations- Careers in Engineering and STEM”, *Invited Panelist*, UC Berkeley Chicano Latino Student Development Office and Alumni Association, UC Berkeley, CA. **Invited.**

RESEARCH INTERESTS

- Water-Energy-Food Nexus, Hydroclimate, Earth System Modeling, Climate Change Impacts, Hydrology, Freshwater Resources, Climate Extremes, Climate Risk, Inter-sectoral Water Resource Management, Food Security, Land - Atmosphere Interactions, Global Environmental Change, Satellite Remote Sensing, Data Science, Development Engineering, Land-Use Change, Sustainable Agriculture, Sustainability, Climate Mitigation and Adaptation

SKILLS

- **Languages:** Fluent in English (native), Spanish (native), and Italian. Elementary proficiency in Bahasa Indonesia and French.
- **Data Science:** Proficient in big data analysis and visualization using Python, Unix, Linux Shell scripts, ArcGIS Pro, Microsoft Excel, Microsoft PowerPoint, and Tableau.
- **Earth Science:** Experience processing data from climate and Earth system models in NetCDF format, as well as applying geospatial and statistical analysis techniques.
- **Science Communication:** Able to effectively convey complex technical concepts to diverse scientific and non-scientific audiences.
- **Design:** Experienced in utilizing design tools (Adobe Photoshop, Adobe Lightroom, Canva) and User Interface design with close attention to detail (typography).
- **Interests:** Traveling, hiking, photography, language learning, Latin dancing, watching Broadway musicals.

AWARDS & FELLOWSHIPS

- 2023 – 2025 ▪ Stanford Doerr School of Sustainability Dean’s Postdoctoral Fellowship
- 2022 – 2023 ▪ U.S. Department of Energy Office of Science Graduate Student Research Program
- 2021 – 2022 ▪ Ford Foundation Dissertation Fellowship
- 2020 – 2021 ▪ Foreign Language and Area Studies (FLAS) Fellowship for Italian Language
- 2020 – 2021 ▪ UC Berkeley Institute of European Studies Grant for the Study of Italian Language and Culture
- 2019 – 2020 ▪ NSF Innovations in Food Energy and Water Systems (InFEWS) Fellowship
- 2018 – 2019 ▪ The National GEM Consortium University Fellow
- 2018 – 2019 ▪ UC Berkeley Department of Environmental Science Policy and Management Starter Grant
- 2016 – 2017 ▪ University of California Graduate Opportunity Masters Fellowship
- 2016 – 2017 ▪ University of California Office of the President Carbon Neutrality Initiative Fellow
- 2017, -21, -22, -23 ▪ Hispanic Scholarship Fund Scholar (four time award winner)
- 2015 ▪ U.S. Department of State Critical Language Scholarship - Indonesia
- 2015 ▪ Educational Opportunity Program Achievement Award Scholarship Recipient
- 2012 – 2015 ▪ Cal New Experiences for Research and Diversity in the Sciences (Cal NERDS) Fellow
- 2014 ▪ UC Berkeley Rudd Family Foundation Big Ideas Third Place Contest
- 2014 ▪ IES Abroad Photo Contest 1st Place Winner
- 2014 ▪ Institute of International Education 5th Annual Photo Contest Winner
- 2013 ▪ U.S. Department of State Benjamin A. Gilman International Scholarship - India
- 2013 ▪ International Education Abroad Travel Scholarship Recipient
- 2013 ▪ University of California Education Abroad Program Scholarship Recipient
- 2013 ▪ Blum Center for Developing Economies Global Poverty and Practice Fellowship
- 2012 – 2013 ▪ National Science Foundation California Alliance for Minority Participation Fellowship
- 2012 – 2015 ▪ UC Berkeley’s Earth and Planetary Science Department -Charles H. Ramsden Scholarship
- 2012 ▪ Award for Outstanding Participation and Service to the Community by The Native American Recruitment and Retention Center and The American Indian Science and Engineering Society
- 2010 ▪ Ronald McDonalds House of Charities HACER Scholarship Recipient
- 2010 ▪ President of the United States Award for Educational Excellence (signed by President Obama)
- 2010 ▪ U.S. Department of Treasury National Financial Capability Challenge Top Scorer Award
- 2010 ▪ California Scholarship Federation Life Membership and Highest Honor for Superior Scholarship and Service
- 2010 ▪ Academic Excellence First Honors Bishop Amat Memorial High School
- 2010 ▪ International Baccalaureate Diploma Recipient
- 2010 ▪ First Honors French 1, French 2, French 3, and IB French, AP Spanish

SELECTED MEDIA COVERAGE

- UC Berkeley College of Natural Resources (2023). “Student Spotlight: Areidy Beltran-Peña”. September 14, 2023 <https://nature.berkeley.edu/news/2023/09/student-spotlight-areidy-beltran-pe>
- Sidder, A. (2022), Food deficits in Africa will grow in a warmer world, Eos, 103, <https://doi.org/10.1029/2022EO220482>. Published on 5 October 2022.
- New Europe. “*Global food security is being exacerbated by the war in Ukraine*”. June 22, 2022. (Research highlight)
- Youth 4 Nature Blog. “*Perspectives in Nature and Climate*”. June 23, 2021 <https://www.youth4nature.org/blog/areidy-perspectives-in-nature-climate>
- The Daily Californian. “*UC Berkeley doctoral candidate awarded 2 national fellowships*”. June 8, 2021 <https://www.dailycal.org/2021/06/08/uc-berkeley-doctoral-candidate-awarded-2-national-fellowships/>
- UC Berkeley Rausser College of Natural Resources. “*Areidy Beltran awarded two national fellowships*”. June 2, 2021 <https://nature.berkeley.edu/news/2021/06/areidy-beltran-awarded-department-energy-scgsr-fellowship>
- U.S. Department of Energy. “*DOE’s Office of Science Graduate Student Research (SCGSR) Program selects 78 outstanding U.S. graduate students*”. April 29, 2021 <https://www.energy.gov/science/articles/does-office-science-graduate-student-research-scgsr-program-selects-78-outstanding>