Vanessa Vazquez is writing her own story

Vazquez is part of UCI’s new CLIMATE Justice Initiative, which seeks to change the story of who gets to be a scientist.

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Vanessa Vazquez is doing something no one in her family has done before.

Picture Credit:
Lucas Van Wyk Joel

Last September, Vanessa Vazquez sat in the car with her brother Alberto and her sister Melissa, and she gripped the steering wheel as she left her home in New York City. One word hung in the air in front of her: “California.”

The word would guide the trio across North America over the next six days as they stopped to see the St. Louis Arch, the Big Texan steak ranch and brewery and the Grand Canyon in Arizona. “My favorite memory is sharing a hotel room with my siblings,” said Vazquez, who likes to decorate her face with little stick-on jewels. “We goofed around a lot.”

Perhaps the biggest adventure still lay ahead in California at UCI, where Vazquez was to enroll in graduate school as a Ph.D. student in the Department of Earth System Science. Now working under Professor Kathleen Johnson, Vasquez is planning to study the fate of environmental contaminants in soil, air and water.

Vazquez is the first person in her family to enroll in graduate school, and she’s also one of UCI’s very first climate justice fellows. As one of 11 Ph.D. fellows, she is part of the new CLIMATE Justice Initiative (CJI) – an NSF-funded initiative spearheaded by Johnson and Dr. Connie McGuire, Director of Community Relationships for the UCI Research Justice Shop. Since receiving funding in January 2023, Johnson and McGuire have assembled a team of partners that includes community-based organization mentors, postdoctoral scholars, an academic coordinator and co-principal investigators to co-design and co-implement the training program.

With training from McGuire and the Research Justice Shop, Vazquez and the other fellows are learning to develop an equitable and reciprocal relationship with the people and the places involved in their research. Often, Johnson explained, scientists will do research in a place without giving much – if any – credit to the people in a place who made that work possible in the first place. “We’re changing the vision of how we work with communities,” said Johnson, who emphasized that CJI seeks to “foster an inclusive and collaborative working environment that welcomes diverse perspectives, backgrounds and life experiences.”

“We founded RJS to support spaces for the integration of different forms of expertise derived from both techno-scientific knowledge and community or experiential knowledge,” said McGuire. “The CJI research teams, composed of doctoral and post-baccalaureate fellows, a CJI postdoctoral scholar and a community-based organization mentor, work together on research projects that have been co-designed

with the questions, concerns and needs of the community partner organizations at the center of the research design."

Some teams are continuing research projects established through years of collaboration between McGuire, Johnson and other UCI researchers and community partner organizations. This includes work with Orange County Environmental Justice (OCEJ) on concerns about water and soil contamination, and Sacred Places Institute for Indigenous Peoples on Indigenous people's access to land managed by the University of California. Other project teams are starting new research projects that address emergent or newly-identified climate justice-related problems such as extreme heat in Santa Ana with GREEN-MPNA – a grassroots community-based organization in Orange County and a long-time partner of the Research Justice Shop.

CJI funds both Ph.D. students and post-baccalaureates for a year so they can co-design projects with local organizations. The fellows' projects are manifold: post-baccalaureate fellow Andrea Delgado is working with a team studying air pollution in Santa Ana with GREEN-MPNA, while Mariana Torres, another post-bac fellow, is working with a team studying kelp forests at Crystal Cove State Park.

One primary aim of CJI is to change the identity of the Earth sciences and who gets to become an Earth scientist; among STEM fields, the Earth sciences often rank as the least diverse. Vazquez hails from a Latinx background, which is one of the groups most underrepresented in the geosciences. "I want to change the story of what's considered possible for myself, and everyone," she said.

When she was an undergraduate at Vassar College, she took part in the National Science Foundation's Research Experiences for Undergraduates (REU) program. While in the program, she joined other Latinx students from across the U.S. for a research excursion to Mexico's Yucatán Peninsula. The group spent four weeks taking groundwater samples to help local municipalities understand groundwater flow patterns. "We wanted to use geochemistry to tell you about groundwater flow pathways," said Vazquez. The trip also helped Vazquez realize that becoming a scientist was an option for her. "All of us were Latinx people," said Vazquez. "It helped me feel like I could be a scientist."

That's when she knew she wanted to go to graduate school to continue studying water – but this time to study water quality, so she could have a positive impact on public health. Her REU funded her attendance at the 2021 Fall Meeting of the

American Geophysical Union in New Orleans, which set her on a path to meet Johnson.

At UCI, Vazquez is changing the story not only of what the face of the geosciences looks like, but how scientists can work with communities in new, equitable ways. As a fellow, she's collaborating with OCEJ to develop a project aimed at monitoring water supplies in Orange County for levels of so-called forever chemicals, or PFAS (short for per- and polyfluoroalkyl substances), which the U.S. Environmental Protection Agency recently deemed hazardous because of their links to diseases like cancer.

"For the past few months, Vanessa and the team have become well-versed in PFAS, their current regulatory standing and how they impact OC residents, all while brainstorming how best to inform residents of the PFAS issue," said Keila Villagas, Water Justice Director at OCEJ. "My hope in terms of outcomes is that we have the support to produce educational materials, be prepared to speak to residents and answer any questions around PFAS and what residents can do to protect themselves, and, lastly, to analyze the water test results to help us understand the health of our resident's tap water and what they need to have access to clean and safe drinking water."

It can take time to establish working relationships with new groups and communities, especially as someone coming in from the outside. That's why Vazquez's top priority is not to tell Orange County communities what to do, but to empower them to seek and create the change they want to see for themselves.

"Change can happen, and it can come from the people from those places," said Vazquez.

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