

UÜBER* Hub of Innovation

**Where UU= Underrepresented and underserved
(includes environmental justice communities, inland communities, and other vulnerable groups)*

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According to a U.S. Census Bureau Population Division analysis¹ of county characteristics for 2016, the population of coastline counties are more ethnically and racially diverse than the United States overall population. Understanding the differential use of coastal resources and hazard vulnerability of populations from the various social, economic, and demographic backgrounds that compose diverse communities is critical for successful coastal management and building resilient communities. However, underrepresented and underserved (UU) communities, including minority, low-income, and/or environmental justice communities, are more vulnerable to the impacts of coastal hazards, face greater barriers to accessing coastal resources, and are underrepresented in research, policy-making, and planning careers in the coastal and marine sector. As a result, solutions for building coastal resilience, such as adaptation and hazards planning, often overlook the unique needs and perspectives of the communities disproportionately impacted by coastal stressors. For example, low-income communities in Puerto Rico have had less access to resources and a slower recovery from the impacts of Hurricane Maria. A year after the storm, residents still live with temporary blue tarps provided by FEMA, exemplifying how short-term solutions generate long-term problems. These reactionary responses to coastal disasters are a breeding ground for poor decision-making, and CoPe can encourage and facilitate better community engagement now. We could miss a huge opportunity for innovation in interdisciplinary CoPe projects and cross-cutting research if we continue perpetuating the same lack of diversity within the scientific community.

Thus, the vision for the UÜBER CoPe hub is to remove barriers to inclusion in coastal and marine research, policy, and planning, with a specific goal of targeted engagement and capacity building of UU communities. We propose that the UÜBER hub should be a model for all other CoPe hubs to make sure that diversity and inclusion is not an afterthought in the design and implementation of coastal research and training. Diversity leads to better solutions and more innovation. Published papers have found that diverse workplaces and industry business are more productive, generate more innovative products, and are more lucrative. Additionally, a model of engaged-research that empowers UU communities to engage in research design and execution helps develop long-term relationships and capacity to develop sustainable solutions. Connecting to communities through their networks, such as existing community leaders, non-profits, cultural groups, and faith-based organizations, leverages existing assets of the community and what's familiar. Furthermore, the orientation of the investment plans should change from immediate aid and short-term responses towards providing tools for the empowerment of the communities.

There are three specific, and equally important recommendations that should be implemented to begin developing a pathway to remove barriers. First, there should be training for UU students, including a targeted focus for students at minority serving institutions (MSI), two-year and/or community colleges. Mentoring should be provided by professionals in academic, government agency, and industry. Existing agency fellowship models that increase diversity in STEM should also be leveraged, such as NSF Research Experiences for Undergraduates, NOAA EPP, NIH internships, EPA opportunities, and

¹ <https://www.census.gov/library/stories/2018/08/coastal-county-population-rises.html>

SeaGrant fellowships. Training and professional development should also provide opportunities to train not just researchers and undergraduate students, but also opportunities to build skills for management and administrative roles (e.g., among UU postdoctoral researchers) and introduce youth in middle and high school to coastal research and policy via internship or other programs.

The second recommendation is to develop citizen science projects for community-based monitoring and synthesis, with an emphasis on reaching UU communities throughout the country. Citizen science projects may take a variety of forms and can be developed around research topics identified by community needs or data collected by other coastal hubs. For example, projects might focus on capturing traditional knowledge and oral histories in addition to other types of data collection for monitoring physical, biological, and chemical indicators important for understanding coastal change. The citizen science projects would also include K-12 teacher training to inspire the next generation of science-based thinking.

A third recommendation is to create a diverse hub advisory board that leverages existing excellence. Ideally, the leadership, management, and administration at all hubs would reflect the diverse communities who live, work, and recreate in coastal communities and others who benefit from the rich, indirect benefits from a thriving coast. While this may not initially be achievable across all hubs, setting up advisory councils that reflect this diversity is certainly feasible and crucial for promoting innovation creating a culture of inclusion at the onset. We are confident that this board can provide a unique perspective on how to best engage diverse communities and in evaluating Hub research proposals.

The UÜBER* CoPE hub will be a seed for research innovation and a crucial step toward building hubs that reflect the diversity of our coastlines and many other UU communities as well as recognition of the heritage and knowledges that not only improve and enrich the social and cultural values but also other ways of solving problems. All of these recommendations should be prioritized equally to truly build a sustainable pathway for achieving our vision of removing barriers. Additionally, these recommendations must be implemented in such a way that participant time is valued and makes participation feasible. This would be done by providing incentives, such as paid internships, grants for teachers, and stipends or accolades for participation on the hub board. This hub model would inform all the hubs, and likewise, data and research from the other hubs will be integrated into the programs and training opportunities being developed out of this hub.