

## Broadening Participation - Equity

### Team Members

Seema Adina

Erin Baker

Ryan Bergstrom

Leigh Graham

Monica Haddad

Matt Warner

### Part I: What is your specific, differentiated, recommendation?

It is our recommendation that all research proposed in the Coastlines and People (CoPe) Program within the National Science Foundation (NSF) should be developed, evaluated, and awarded based on an equity criterion added to the Merit Review criteria in order to address uneven vulnerabilities and engage marginalized communities in coastal regions. By doing so, research has the ability to meaningfully address inequities in coastal systems, build upon the social capital of communities of color and historically marginalized groups, and result in meaningful engagement and change at the local level. In addition, research will also bring legitimacy to traditional and experiential knowledge, improve inclusion and trust between the scientific community, stakeholders and decision makers, and increase community buy-in and policy and planning application. This criterion should *infuse, complement and extend* existing criteria of intellectual merit and broader impacts, and should serve as a central foci in the development of funded research.

The goals of this recommendation include:

- Addressing the uneven vulnerability that exists along coastlines, including exposure to climate change impacts and climate risks; disparities in health and wellbeing; inequitable economic opportunities; vulnerabilities in the built environment and transit (e.g., housing, infrastructure, public transportation); and historical legacies of vulnerability.
- Shifting what research questions are asked, what research questions are funded, and who benefits from research discoveries;
- Establishing a research conduit that connects CoPe Hubs and local communities.

Examples of how an equity criterion can be implemented include:

- Proposals estimate potential costs and benefits to stakeholders, explicitly accounting for impacts to vulnerable populations and historically marginalized groups. This may involve forecasting potential research outcomes to distant time horizons, and addressing who, where, and what the phenomenon under examination affects.
- Proposals include letter(s) of support from vulnerable community groups;
- Proposals include a plan for translation of research findings for application by end users in communities;
- Representative(s) from communities participate in review panels (complementary to scientific peer review) and are compensated in some way (e.g., travel subsidy, gift card,

monetary payment) for their input.

This approach may sound challenging for single-investigator projects that are addressing basic science questions. *Here is an example of how it could work:* A mechanical engineer may be investigating fluid dynamics questions that underlie designing a better controller for offshore wind turbines. Considered equity impacts could include 1) the effect on land use in tribal areas related to hydropower: a better control algorithm may reduce the need for expanded hydropower, thus reducing the encroachment on traditional lands. Next (2), a controller will likely reduce the system costs of energy. This cost reduction will likely be split between rate-payers and developers. How the cost reduction is split, and which rate payers are likely to benefit, has implications for equity. These equity considerations will likely be clearer if an investigator is part of an interconnected hub of researchers looking at coastal systems, as it enables the investigator to take a broader view of a research project's impacts.

## Part II: What impact or value does it seek to deliver?

Coastlines are highly populated regions where the varied and evolving impacts from climate change and natural hazards are unevenly experienced, with poor communities and communities of color disproportionately bearing the brunt of climate change and hazards' impacts, and experiencing greater risk (Brown and Westway, 2011, Fothergill and Peek, 2004; Fothergill et al., 1999, IPCC, 2014). CoPe-related research has examined how coastal community residents participate in post-disaster recovery and findings indicate that there are several barriers for participation for low-income residents (Graham et al., 2016; Graham 2018; Rumbach et al 2016, Hamideh and Rongerude 2018). Marginalized residents are often unaware of, or excluded from, public participation processes, and/or their knowledge about coastline risks is low or dismissed by coastal scientists, what scholars call the "climate gap" (Gaillard, 2012; Hardy et al., 2017).

Therefore, any scientific research endeavors with transformative aims for our economically vibrant and demographically diverse coastlines must grapple with the reality of disparate impact. Incorporating equity considerations in research projects from the outset ensures that coastal scientists are approaching our most vital research inquiries with an eye toward future application by community partners, policymakers and other stakeholders committed to reducing coastline vulnerabilities. Evaluating proposals not only for their potential to advance scientific knowledge, but also for community buy-in and translational promise ensures that the concerns of coastal communities are incorporated into research projects from the very start.

When integrated into a CoPe hub model, this equity lens for evaluating research creates a pathway to bring community voices into CoPe research projects, ensuring their priorities, culture, and history are reflected in the research design. Exceptional proposals will build on and incorporate traditional knowledge. When linked to a hub model, potential emerges to co-produce research proposals with communities, allowing community leaders to become equal partners on projects, bridging the gap between scientific and experiential knowledge. A co-production model fosters buy-in and builds trust in communities that have been historically marginalized by science.

But a necessary and critical first step is for NSF to evaluate research proposals using an equity lens. This offers a channel for coastal scientists less familiar with direct community engagement to still pursue research advances that reduce coastal inequities and vulnerability.

### Part III: What is the reasoning or supporting evidence behind, if any?

Under the existing development, evaluation, and funding of research proposals within the NSF, a structural bias exists that looks at community input as an afterthought and not a forethought, and no current structure exists to address such bias. A systematic approach to assessing equity-focus in projects will help to overcome implicit bias in the researchers and evaluators. Providing scientists with this perspective will lead to a different set of research questions, increasing creativity and the likelihood of transformative research. Another benefit of asking different questions inspired by an equity lens, is that these questions may be of more interest to potential STEM researchers from traditionally marginalized communities. These researchers, in turn, often ask a different set of questions, thus leading to a virtuous circle of better, more inclusive research.

### References:

- Brown, K., & Westaway, E. (2011). Agency, capacity, and resilience to environmental change: lessons from human development, well-being, and disasters. *Annual review of environment and resources*, 36, 321-342.
- Fothergill, A., Maestas, E. G., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: A review of the literature. *Disasters*, 23(2), 156-173.
- Fothergill, A., & Peek, L. A. (2004). Poverty and disasters in the United States: A review of recent sociological findings. *Natural hazards*, 32(1), 89-110.
- Gaillard, J. C. (2012). The climate gap. *Climate and Development*, 4(4), 261-264.
- Graham, L. (2018). Public Housing Participation in Superstorm Sandy Recovery: Living in a Differentiated State in Rockaway, Queens. *Urban Affairs Review*, 1078087418776438.
- Graham, L., Debucquoy, W., & Anguelovski, I. (2016). The influence of urban development dynamics on community resilience practice in New York City after Superstorm Sandy: Experiences from the Lower East Side and the Rockaways. *Global environmental change*, 40, 112-124.
- Hamideh, S., & Rongerude, J. (2018). Social vulnerability and participation in disaster recovery decisions: public housing in Galveston after Hurricane Ike. *Natural Hazards*, 93(3), 1629-1648.
- Hardy, R. D., Milligan, R. A., & Heynen, N. (2017). Racial coastal formation: The environmental injustice of colorblind adaptation planning for sea-level rise. *Geoforum*, 87, 62-72.
- IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- Rumbach, A., Makarewicz, C., & Németh, J. (2016). The importance of place in early disaster recovery: a case study of the 2013 Colorado floods. *Journal of environmental planning and management*, 59(11), 2045-2063.