

CoPe Nodes: Enhancing Coastal Resilience through Community-Driven Research and Education

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Nutshell: Connecting Research and Community

We recommend the NSF establish multiple place-based education and research nodes linked to regional CoPe hubs to enhance community capacity for addressing coastal resilience challenges (Figure 1). The nodes will house an education and collaborative engagement specialist or team to:

- (1) identify and develop research agendas based on community input;
- (2) connect interdisciplinary science and concerned existing agencies and organizations to the identified problems;
- (3) sponsor, fund and/or use post-doctoral, graduate, undergraduate, and citizen researchers to support place- and problem-based research; and
- (4) deliver K-12 curriculum and educational workshops to the community and decision-makers and provide a physical space for community learning and engagement with local issues.

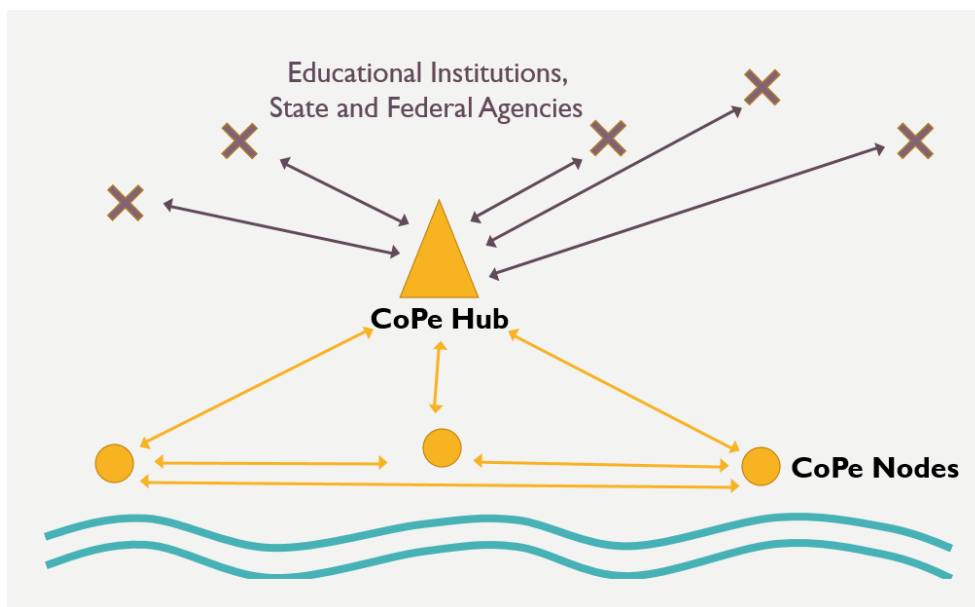


Figure 1: Conceptual framework demonstrating the hierarchical relationships between CoPe Nodes and CoPe Hubs and their relationships with existing state and Federal agencies.

This idea is important because it can educate and engage multiple segments of a community by connecting science to local concerns and experiences. This, in turn, is critical for building intergenerational understandings of coastal challenges, enhancing community capacity to address local coastal challenges, and promoting coastal stewardship.

Specific Recommendation: Place-based Education and Research

The NSF should establish multiple place-based education and engagement “CoPe nodes” within each CoPe hub to enhance the capacity of communities to address local challenges. The nodes will be embedded in communities and house an education specialist or team of specialists to facilitate community-driven research agendas and the creation of education materials and activities for the community. Node locations and activities will prioritize connection with underserved communities, and nodes will be housed in existing institutions, storefronts, or other community spaces that maximize opportunities for community engagement. The nodes will also provide a space for public learning about local coastal challenges. This place-based education and engagement will enhance local capacity to address and adapt to coastal challenges.

Each CoPe node will serve four basic activities. First, through outreach and community engagement, the nodes will identify and develop research agendas based on community input. The goal is to identify research problems that address real coastal resilience challenges as experienced by communities. Second, the CoPe node teams will connect interdisciplinary science and the resources and activities of existing agencies and organizations to the identified problems. For example, community understanding of a local flooding issue may benefit from delivery and communication of FEMA technical resources or scientific studies from an existing university program. Third, the nodes will sponsor and fund postgraduate researchers, and connect with undergraduate institutions and students to support place- and problem-based research. Finally, the nodes will seek to deliver K-12 curriculum and community and decision-maker education workshops, while providing a community space for learning about local issues.

Impact and Value: Enhancing Coastal Resilience

The overarching impact and value of the CoPe Node concept is to provide community-relevant science and education to enhance the capacity of communities to address coastal resilience challenges. As illustrated in Figure 2, locally-identified problems would be funneled into the nodes and then be connected to existing science or research programs to support the development of K-12 education curriculum and community activities. Research may include undergraduate, graduate and postdoc funded projects that address the specific community-driven research agenda. Because the CoPe node is a physical space, the CoPe-sponsored postdoc, for example, can be housed here to

enhance their research. The education specialist team at the CoPe node will also organize the community workshops, “K-grey” education, and interactive education activities at the node. We envision the node to be a vibrant and interactive environment.

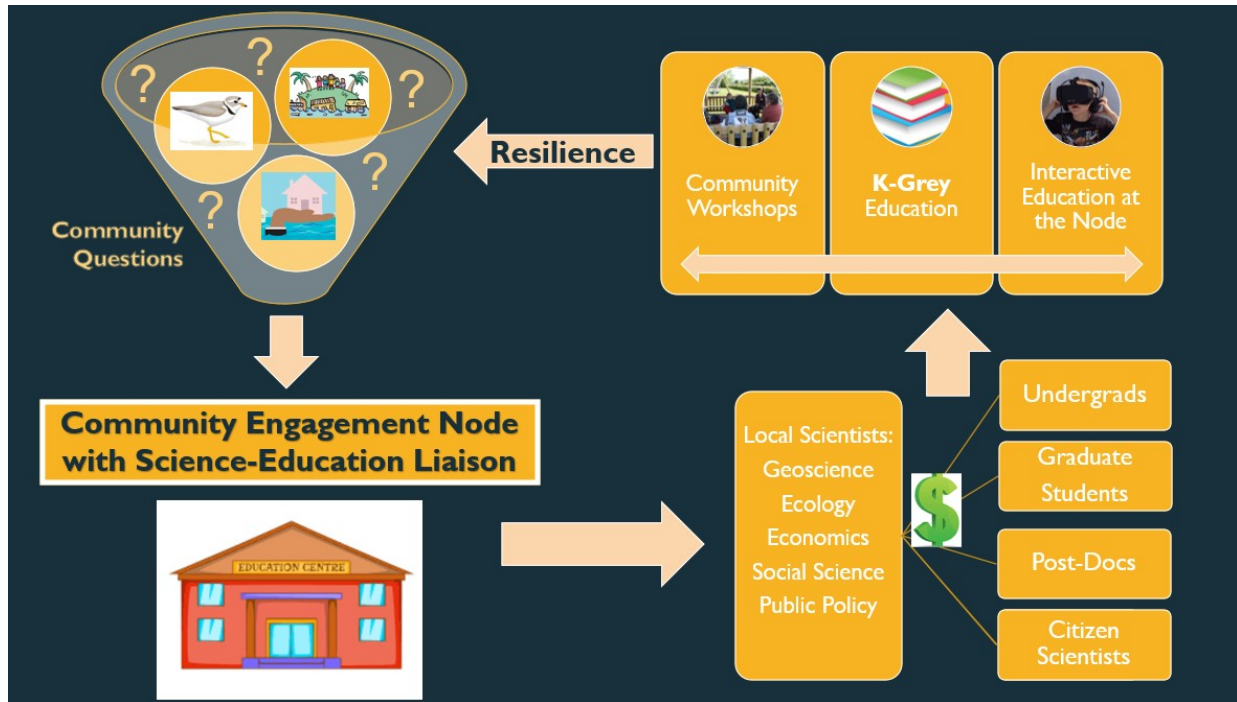


Figure 2: CoPe node conceptual model.

The specific impact and value of the CoPe nodes may include:

- Providing a network of coastal centers that provide a community space for engagement with local issues through education and interpretation;
- Connecting to, leveraging and building trust with existing institutions and agencies (e.g. Sea Grant, NOAA, NGOs, universities);
- Undergraduate and graduate funding for independent research projects; integration into courses;
- Providing a CoPe-funded research ‘home’ for post-graduate students;
- Researchers would gain experience in science communication in the community;
- Local needs would be met with actionable science;
- Development of integrated, locally-relevant K-12 integrated curriculums.
- “K-to-Grey” education through cross-generational outreach and education through community workshops and meetings;
- Development and use of cutting-edge technology and visualizations, with actionable takeaways;
- Formal and informal education: get your hands dirty at the node.

Reasoning: Learning Promotes Engagement and Stewardship

Community-relevant, problem-driven education is fundamental to a community's capacity to address coastal resilience challenges. This recommendation would support education directly relevant to coastal communities by engaging the community in identification of local challenges needing attention. The problems exist, we simply need to go get them.

Education targeted at all generations will also build intergenerational capacity to address community resilience, and promote stewardship of our coastlines. The theory is that CoPe nodes will incubate resilience by building community understanding and problem-solving capacity. We also envision that these nodes will be located in underrepresented and underserved communities, thereby increasing the participation and opportunities for new populations to engage with coastal resilience challenges. And, through early and active engagement of youth, CoPe nodes will promote more students to pursue STEM research.

Overall, focusing on community-driven, problem-based research will drive interdisciplinary research and identification of resilience strategies for communities in need. As more experience and research is gained through the nodes, the CoPe hub will be able to assemble and evaluate outcomes across an increasing number of cases. This work, in turn, may be translated to and promote learning in other hubs, nodes and communities through the identification of effective models, best practices and tools for achieving coastal resilience.