MACH and its Evaluation Model

MACH is a complex collaborative research endeavor involving thirteen institutions as well as their non-profit, public sector, and other partners working to generate integrated transdisciplinary and co-produced research that informs the field and is both useful for, and used by, those responsible for climate response and resiliency decision making in the project's target region ranging from Philadelphia through New York City.

The MACH evaluation includes:

- ✓ Debriefing Interviews with Key Personnel

To gain an understanding of decision making and emerging shifts in practice, the factors catalyzing and informing those shifts, and desired effects on the project and its participants, the evaluators interview those involved to ensure the evaluation and analysis remain context-aware.

- ✓ Principles Focused Evaluation

Tracing the evolution of the MACH principles of engagement and how they shape the project, its implementation and outcomes, largely through artifact anaysis and participant observation.

- ✓ Social Network Analysis

Documenting who is involved in MACH, whether and how they engage with one another, and how that engagement supports and contributes to MACH-related activities.

- ✓ Program evaluation of MACH's BI activities including:
    - Community College Program

Exploring whether, how, and how well the 2YC program activities are meeting the learning goals participating faculty establish for their students as well as MACHs BI program goals to enhance public knowledge and positively impact student interest in environmental STEM education and careers.

    - Documentary Film Program

Documenting the impact that engaging in the film making has on the interests and goals of participating students and gathering insights on audience impact of completed/distributed films.

    - Workforce Development Strategy and MACH Studio Activities

Exploring how MACH is supporting participants professional development and career goals and preparation: particularly graduate students, post docs, and early career faculty and their peers working in sectors outside of higher education.

The results of these evaluation activities are synthesized to generate key learning across areas of particular importance for MACHs success in achieving project goals.

Key Learning in Year 4

BI and Workforce Development: Learning by Doing

- ✓ MACH provides outstanding opportunities for early career team members to develop research, co-production, translation, and leadership skills by participating in and, importantly, taking leadership of MACH research projects and other activities.
- ✓ MACH's BI activities reach the broader community and often help early career research team members explore a broader range of potential career paths (e.g. teaching, non-profit, public- and private-sector opportunities) and expand their partnership building and science communication skills.

To continue to build on that success,

- ➢ Early career researchers express interest in more formal training in research leadership and the skills needed for successful convergence research.
- ➢ Advisory body members have expressed deep interest and commitment to engaging with early career team members as they continue to develop and longer term career goals.

Continued Growth in Co-Production

- ✓ Artifact analysis affirms that MACH has generated an impressive pool of useful, co-produced, transdisciplinary research through principle-aligned activities.
    - Principles focused evaluation highlighted the strength of MACH's use of the "two loop-back processes" to ensure insights and learning are effectively exchanged between researchers and stakeholders. In particular, early career team members have extensive opportunities to develop and practice translation and science communication skills through voluntary involvement in BI programming.
    - Continued evolution and implementation of the project's commitment to and operationalization of open data policies are well aligned with the principle, "Data and information should be made available to stakeholders in formats that are transparent, meaningful, accessible, and understandable."
- ➢ To complement growing translation and science communication skills addressing the first loop-back process to ensure stakeholders have and understand the evolving research - in ways that can also strengthen co-production requires robust implementation of the second loop-back process to ensure researchers also hear from and enact adaptations informed by stakeholder insights.
- ➢ Project leadership have identified enhanced integration across project teams over the remaining two years as central to the project's ultimate success. Learning from the Y4 evaluation should help identify priorities to guide that effort.

To learn more about MACH, visit https://coastalhub.org/

To learn more about the external evaluation team from the Science Education Resource Center (SERC), visit us at https://serc.carleton.edu/serc/about/evaluation.html