

CHESAPEAKE GLOBAL COLLABORATORY

CRITICAL ENVIRONMENTAL ISSUES FACING OUR PLANET ARE COMPLEX AND IMMEDIATE

In 1925, University of Maryland Center for Environmental Science (UMCES) founder Reginald Truitt recorded daily Chesapeake Bay water temperatures by hand in a small paper notebook. Today, terabytes of environmental data are available from countless sources, from satellites to sensors. Capitalizing on the expertise found at UMCES, we can translate that “Big Data” into bold solutions to our most pressing challenges. After nearly 100 years as a leader in environmental science research, we are now taking problem-solving to the next level.

The Chesapeake Global Collaboratory is a new initiative with the ambitious goal of accelerating solutions to complex problems by bringing a new generation of tools, voices, and approaches to environmental research. It is both a physical and virtual space equipped with state-of-the-art technology where scientists, environmental policy makers, academics, and stakeholders can work together to address our most challenging environmental issues and educate the next generation of problem solvers.



CYBERINFRASTRUCTURE

Providing new, integrated high-performance computing systems, data storage and management, advanced networking capabilities, and software tools.



DATA SCIENCE EXPERTISE

Engaging skilled personnel who provide technical support, training, and guidance to researchers on how to effectively use available resources and tools.



EDUCATION AND TRAINING

Enhancing our existing graduate education programs, providing extensive and innovative new education resources and training for environmental professionals.



SCIENCE COMMUNICATION

Leveraging existing expertise for effective communication of relevant research to non-scientists with a focus on open data approaches.

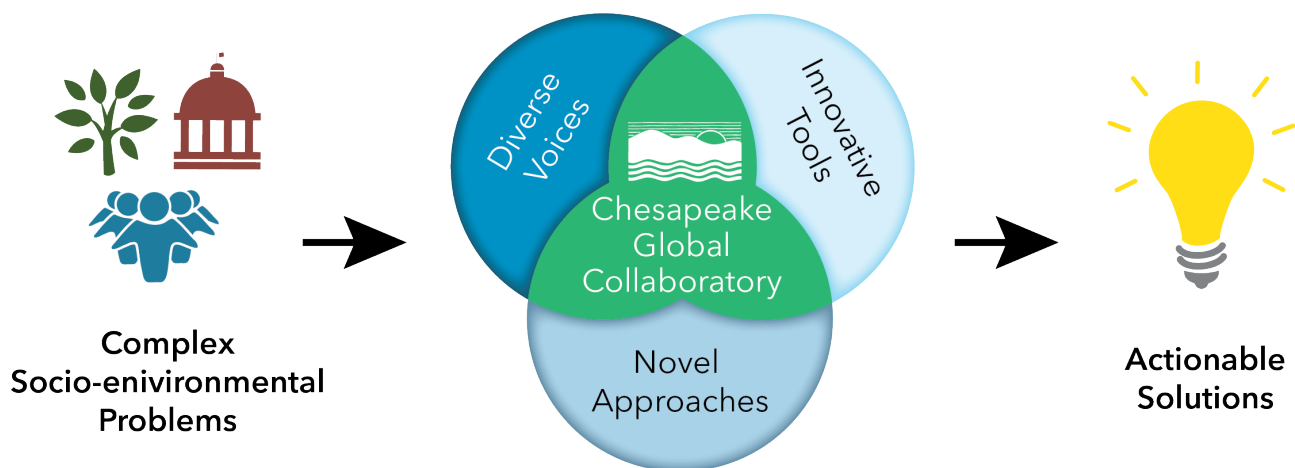


STAKEHOLDER ENGAGEMENT & WORKSHOP FACILITATION

Assisting effective engagement with stakeholders in the co-production, execution, and implementation of actionable science-based solutions.



THE TRANSFORMATIONAL IMPACT OF THE CHESAPEAKE GLOBAL COLLABORATORY



Rapid adaptation and deployment of models will enhance our ability to respond to environmental events. For example, machine learning tools can quickly scrape data from on-line sources to develop a rapid response prediction for an oil spill or harmful algal bloom.

Rapidly sequencing the genetic codes of organisms holds enormous promise to understand which organisms are playing important ecological roles. The data generated from these activities has created a data explosion; new artificial intelligence and machine learning tools will allow us to integrate these data into resource management.

The ability to access and analyze diverse, large data sets using new tools like artificial intelligence and machine learning will enable UMCES to help communities create resilience plans that adapt as conditions change. These assessments could be applied rapidly to aid decision making in coastal and inland areas.

The Chesapeake Global Collaboratory will be at the center of UMCES' next century of scientific discovery, bringing together people, technology, and a shared passion for the environment in the service of our natural world.

The Collaboratory will support research applications by uniting multi-stakeholder groups to utilize innovative tools to analyze "Big Data", leveraging high performance and cloud computing, open data science and geospatial analytics. UMCES has already begun building institutional capacity to support this effort, including the following:

- A new physical space on Chesapeake Bay will provide technology-augmented in-person meeting capabilities, and house high-performance computing resources and data scientists.
- Research funding has been secured from federal funding agencies to provide initial support for data scientists and project management, as well as providing some new diverse voices and novel approaches.

