

Ocean Acidification in the Mid-Atlantic

Our ocean is absorbing roughly 30% of the carbon dioxide (CO_2) that is released into the atmosphere by the burning of fossil fuels. When the excess CO_2 combines with seawater, it forms a weak acid and lowers the pH, a process called *ocean acidification* (OA). More acidic waters cause the protective shells or skeletons of some animals like shellfish and coral to become thinner and more brittle. This makes them more vulnerable to a changing ocean.

The Mid-Atlantic may be especially vulnerable to acidification along the coast (*coastal acidification*), where nutrient run-off from the land and rapid plankton growth further impact seawater chemistry. Industries on the coast, such as shellfish, are economically valuable and provide thousands of jobs. With millions of people living, visiting and working along the region's coasts, protecting coastal waters is critical for the future of these communities.

The Mid-Atlantic Coastal Acidification Network (MACAN), coordinated by the Mid-Atlantic Regional Council on the Ocean (MARCO) and the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS), is one of many regional acidification networks across the United States. MACAN connects scientists, resource managers, and industry partners to work collaboratively on *ocean and coastal acidification* (OCA) monitoring, research and adaptation strategies.

MARACOOS

Ocean Information for a Changing World







Ecological Research

Identifying Impacts

The Mid-Atlantic is home to many ecologically and economically important shellfish and finfish. MACAN encourages work to understand how different water conditions like temperature, oxygen and nutrient levels combine with OCA to impact these species. This helps us get a better picture about which hatcheries, fisheries, and ecosystems may be the most vulnerable.

Improving Experiments

The complexity and variability of our coastal environments impacts our ability to understand the effects of OCA. Researchers are working to improve OA experiments by factoring in real-world variability. Long-term experiments in the field will help us make more accurate predictions about ecosystem changes. These improvements also allow researchers to understand underlying mechanisms of change in organisms and their environments.

Ecosystem Monitoring

Existing mechanisms to monitor regional OCA include ships, buoys, sailing drones, and underwater gliders. MACAN compiled interactive maps of OCA monitoring sites for the Mid-Atlantic Ocean Data Portal. These maps help to identify gaps in monitoring and can inform a regional monitoring plan to improve our understanding of variability and changes in ocean acidity.

Stakeholder Engagement

MACAN hosts an annual webinar series to inform its members and stakeholders about current research, industry perspectives, and monitoring efforts related to OCA. MACAN also conducts stakeholder surveys to identify industry information needs. Survey results help MACAN's partners develop outreach materials and learn about industry concerns and ideas.

How Can You Help?



Reduce nutrient runoff by decreasing fertilizer usage on lawns and gardens and adding native vegetative buffers.



Save electricity: Switch to LED light bulbs and use Energy Star devices and appliances.



Talk about it! Teach your friends and family about acidification and how they can help.



Take advantage of mass transit options in your area to decrease emissions.

