CICEET

Serving the technology needs of coastal managers

About CICEET

Established in 1997, the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) is a partnership of the National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire (UNH). Through strategic partnerships and direct investments, CICEET develops tools for clean water and healthy coasts nationwide. CICEET's toolkit contains dozens of field ready technologies—with many more in the pipeline—that address coastal resource problems in three ways:

- **Detection: tools to detect pollution**
  CICEET has sponsored the development of a wide range of sensors, microbial rapid detection methods, Harmful Algal Bloom (HAB) detection and identification, and technologies to collect, relay, and synthesize data.

- **Recovery: tools to treat pollution and restore habitats**
  These include technologies to restore and protect shorelines, such as a multi-beam bathymetric model to map the ocean floor in high energy coastal environments, *in situ* sediment remediation technologies, and predictive models and methods for seagrass and saltmarsh restoration.

- **Prevention: tools to prevent the impacts of pollution**
  These include a unique stormwater treatment evaluation center, methods to reduce nutrient pollution, and models to predict and prevent the impacts of land use change.

CICEET & NERRS

Collaboration with the National Estuarine Research Reserve Sysem (NERRS) is at the heart of CICEET's mission. The reserves' geographic and ecological diversity provides a living laboratory in which CICEET investigators develop and test effective tools for coastal managers. The local and regional networks the reserves foster are important conduits through which CICEET technologies can reach the people who need them most. At the same time, CICEET supports the goals of the reserves and addresses the needs of the communities they serve.

Here's how:

- **Key Infrastructure:** CICEET invests in the equipment needs of the NERRS, including datalogger upgrades to YSI's extended deployment system, the purchase and evaluation of *in situ* YSI flourometers, and computers to support the GIS capability at every reserve.

- **SWMP Support:** CICEET is an engaged partner in the NERRS System-Wide Monitoring Program (SWMP), part of the national backbone of IOOS, the Integrated Ocean Observing System. Since 1998, CICEET has invested $2,007,736 in SWMP-related infrastructure and technology demonstration and evaluation projects. CICEET also supports the training of reserve personnel in monitoring-related technologies, and contributes to the NERRS' ability to provide timely and accurate water quality data.

- **Needs Assessment:** CICEET works with the NERRS to define the priority technology needs of their local coastal resource managers. These assessments help CICEET design competitive funding programs that focus the expertise of leading researchers on the development, demonstration, and application of innovative tools for coastal management.

- **Focus on NERRS:** CICEET brings the talents of leading researchers to bear on the development of technology to address issues related to the NERRS mission. Every project funded by CICEET's Environmental Technology Development Program (ETD) must have a connection—through research, technology development, demonstration, or outreach—to a NERRS site or its watershed. NERRS personnel often serve as advisors or primary investigators for CICEET projects.

- **Serving NERRS Customers:** CICEET's partnership with the NERRS Coastal Training Program (CTP) helps bridge the distance between available tools and the coastal managers who need them, through outreach, training, and communications materials. For example, the CICEET-sponsored UNH Stormwater Center is a resource for CTP coordinators engaged in helping land use decision makers develop stormwater management programs to protect water quality.

Learn more

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CICEET & Ohio

Old Woman Creek is the only Great Lakes-type, freshwater estuary in the National Estuarine Research Reserve System. It features nearly 600 acres of freshwater marshes, swamp forests, a barrier beach, upland forest, estuarine waters, stream, and nearshore environment. The reserve coordinates research, education, and stewardship programs to promote better understanding and management of Ohio's coasts.

It also is an exceptional living laboratory, where CICEET-sponsored scientists can test solutions to the challenges that coastal resource managers face in a rapidly developing landscape. These research scientists and technology innovators develop tools to prevent or reduce the impacts of development on fragile coastal ecosystems that are important economic and cultural resources for the state.

Investing in Ohio

CICEET has invested more than $900,000 in environmental technology development and application projects related to Ohio's Old Woman Creek Reserve. These projects address the priority needs of Ohio's natural resource managers—particularly the need to monitor and protect water quality. Here are some examples:

Striking a Balance: Agriculture contributes nearly $70 billion to the state's economy each year. At the same time, it generates excess fertilizers and animal waste that can negatively impact aquatic environments. Balancing water quality preservation with economic concerns is essential in Ohio, and to do that, natural resource managers need the right tools. This CICEET project has developed a GIS-based toolkit to help decision makers modify farming and other practices to reduce nutrient loading and preserve water quality.

Solar Power: Can sunlight and estuaries combine to break down pollution? Understanding the role of natural processes is key to designing the appropriate pollution remediation strategies. This CICEET-sponsored project studied light-mediated processes that reduce the toxic effects of pesticides and herbicides in estuaries.

Planning for Great Lakes Coastal Communities: Wetlands play a critical role in the health of a lake's ecosystem and provide habitat for important species of fish and wildlife. Streams that feed wetlands are often under pressure from development, logging, and agricultural activities. This project team is working with local decision makers to evaluate the current and potential impacts of land cover change on natural resources as the first step in developing comprehensive plans.

Building the Toolkit: Local decisions about development, land use, and stormwater management can affect the entire watershed. This project is working with communities in the Lake Erie Basin to implement an effective methodology to incorporate best available resource data into local comprehensive plans.

Pollution Tracker: Understanding the source and path of sediment pollution is key to maintaining a healthy habitat for fish and shellfish. This CICEET project developed an innovative technique that used naturally occurring radioactive particles to track how pollutants travel through estuaries like Ohio's Old Woman Creek. The goal was to provide information pertinent to local, state, and federal agencies in meeting mandated programs for controlling non-point source pollution, protecting and restoring wetlands, and managing the coastal zone.

Great Lakes Watershed Planning: Coastal natural resources are affected by land use changes at the local and regional scale. This project is applying dynamic spatial simulation technologies, water quality and quantity modeling, and web based information retrieval approaches to create a watershed planning support system (WPSS) for the Lake Michigan watershed. WPSS will provide planners with the capacity to inventory existing resources and create land use change scenarios, including the predicted impacts on water and natural resources associated with various policy, regulatory and investment choices.

Learn more

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For more information on this reserve, visit:
nerrs.noaa.gov/OldWomanCreek