THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
100 Cambridge Street, Suite 900, Boston, MA 02114 ◦ (617) 626-1200

October 18, 2024

Nicholas Needle
NOAA Coastal Management Fellowship Coordinator

RE: Massachusetts Proposal for 2025-2027 NOAA Coastal Management Fellowship

Dear Mr. Needle,

On behalf of the Massachusetts Office of Coastal Zone Management (CZM), I am very pleased to provide this proposal for the 2025-2027 NOAA Coastal Management Fellowship. CZM's project entitled "MyCoast: Massachusetts - Expanding awareness of coastal flooding to increase coastal resilience" addresses the "Resilient Coastal Communities" focus area. A fellow would add needed capacity to our StormSmart Coasts Program and would learn from staff and gain professional experience in the field of coastal resilience.

Thank you for your consideration. We are eager to work with another talented fellow. Please contact me or Julia Knisel, Coastal Shoreline and Floodplain Manager, if you or the selection committee have any questions.

Sincerely,

Alison Brizius
Director

MA CZM Coastal Management Fellowship Project Proposal

MyCoast: Massachusetts -
Expanding awareness of coastal flooding to increase coastal resilience

Background and Introduction

The 78 coastal communities in Massachusetts experience damaging coastal storms and rising sea levels along more than 1,500 miles of shoreline. The StormSmart Coasts Program of the Massachusetts Office of Coastal Zone Management (CZM) has been working with coastal communities and other partners to address challenges of coastal flooding, erosion, and other climate change impacts. Information on vulnerabilities is critical to making informed response and management decisions.

CZM has a long history with assessing storm damage along the coast. Following Hurricane Bob in 1991, CZM created a Massachusetts Rapid Response Coastal Storm Damage Assessment Team (Storm Team) of public officials who "phoned in" on-the-ground storm reports for "hot spot" locations to the State Emergency Operations Center. CZM created an online form, StormReporter, in 2009 to standardize Storm Team reporting and archive data. Observations and photos include erosion of beaches, dunes, and banks, flooding of roadways and around buildings, and damages to seawalls and beach access stairs, and more (Figure 1). Beginning in 2011-2013, the MyCoast platform was optimized and expanded with mobile applications to provide more rapid delivery and archival of coastal storm damage observations (Figure 2). The Storm Team has also expanded over the years to include a more robust network of trained state, federal, and local agency personnel.

In addition to supporting Storm Team operations, MyCoast enables the public to help provide crucial data on coastal storm damages, King Tide flooding, and more. This broad-based collection and sharing of photos and observations—through mobile applications and online reporting using four MyCoast tools—helps fill gaps and advance knowledge about coastal storm damages, higher than normal tides, shoreline change, and the condition of coastal resilience projects across Massachusetts (Figure 3). As of October 2024, there are over 1,450 Massachusetts users in the MyCoast network and 8,549 reports with 17,584 photographs have been submitted.

There are many applications of MyCoast data. Working directly with the Massachusetts Emergency Management Agency during moderate to major coastal storm events, (near) real-time information informs emergency response decisions as well as recovery efforts. The Massachusetts Department of Environmental Protection uses MyCoast data to determine if emergency regulations are needed for storm recovery. Reports are also used following a storm during the preliminary damage assessment process, which helps determine the state's potential eligibility for federal disaster assistance. Storm photos and observations have also helped the National Weather Service fine-tune their forecasts and even assisted in the refinement of flood definitions for Massachusetts coastal communities.

Citizen science contributions to MyCoast, combined with growing support of the Storm Team, will more effectively capture (near) real-time information relating to extreme high tides and coastal storm impacts, and longer-term data on shoreline change and living shoreline projects. With this valuable

information, the state and communities are better prepared to evaluate impacts of coastal storms and sea level rise on the shoreline and make coastal management decisions. CZM's Coastal Resilience Grant Program provides financial and technical support to communities for evaluating, planning, designing, and implementing actions to adapt to their vulnerabilities. CZM is also working on a ResilientCoasts initiative to develop a comprehensive, state-wide strategy for coastal resilience. Expansion of the MyCoast network and data will support engagement with both opportunities. A NOAA Coastal Management Fellow will increase the capacity of CZM's StormSmart Coasts Program and learn about and enhance MyCoast and coastal resilience efforts. CZM has benefited greatly from fellows in the past and has a strong commitment to, and proven track record of, providing fellows with a professional work experience and environment.

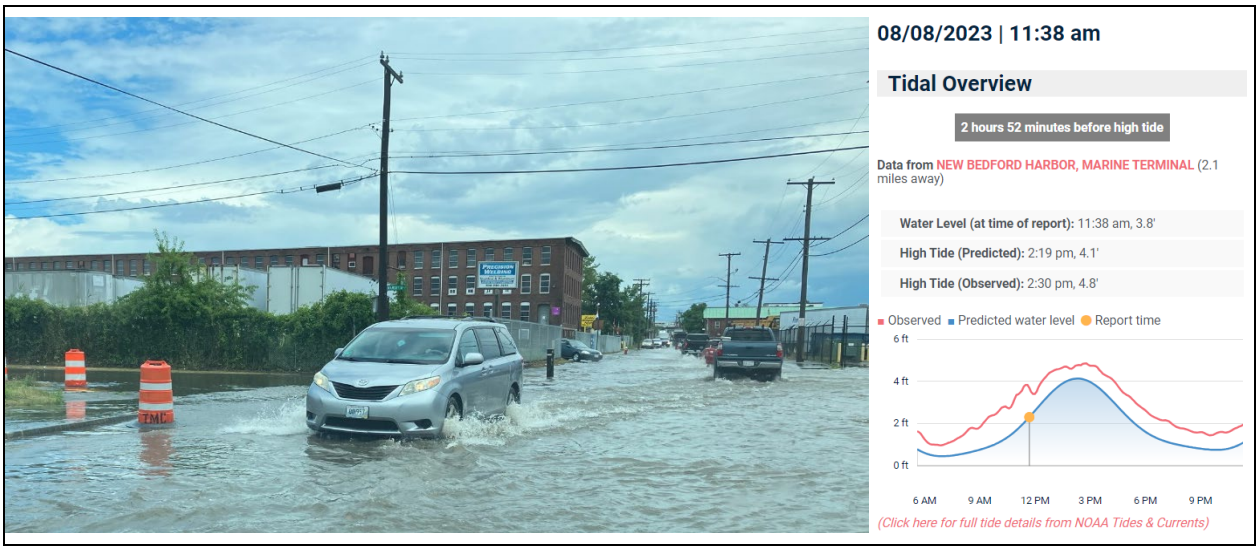


Figure 1. Flooding of roads in New Bedford with a minor coastal storm (photo courtesy of MyCoast).

Goal and Objective

A goal of this fellow project is to increase coastal resilience in communities that are vulnerable to coastal storms and sea level rise through the application of MyCoast. Preliminary outcomes and an objective are described below. The fellow will help refine and build out this model for the project.

Short-Term Outcome: Residents in at least three EJ communities are aware of King Tides and coastal storms that result in local impacts to natural resources, infrastructure, and buildings.

Long-Term Outcome: Coastal communities develop approaches to manage vulnerabilities to coastal storms and sea level rise and implement coastal resilience projects.

Objective: By using MyCoast, citizen scientists will be aware of local water levels that result in flooding and erosion impacts in their neighborhoods.

Figure 2. MyCoast mobile app for submitting photos and observations of flooding and other impacts.

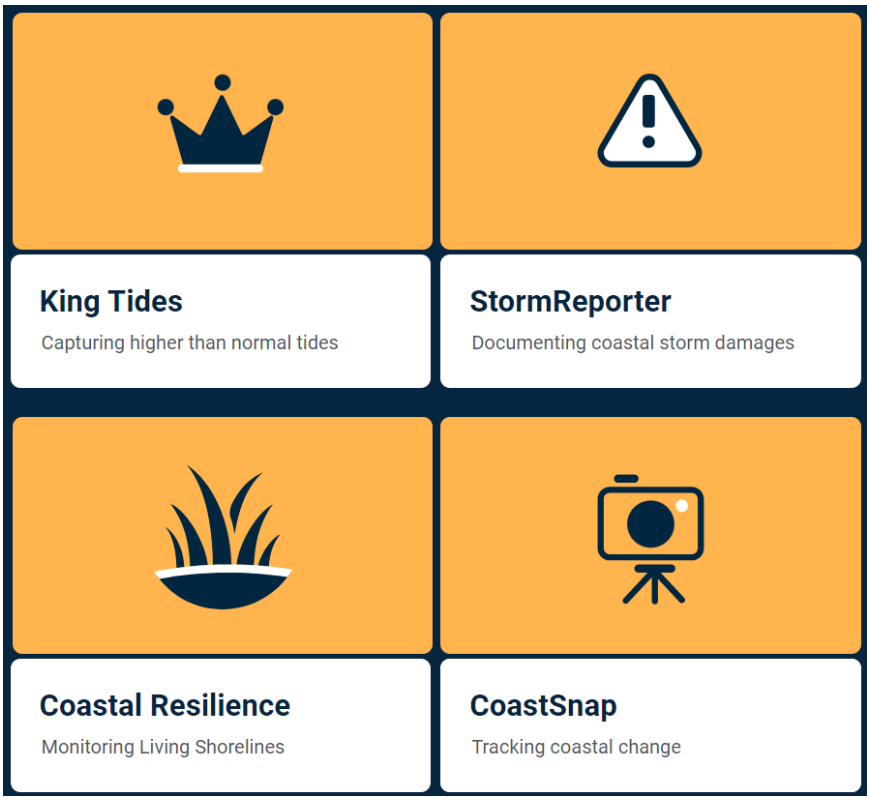
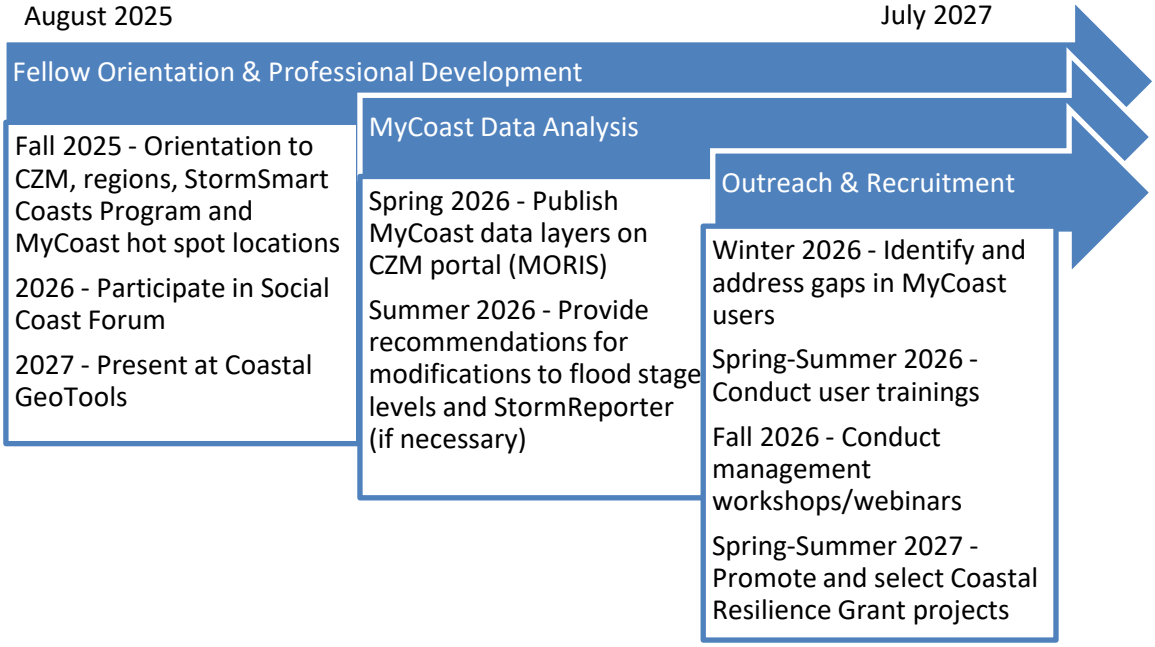


Figure 3. MyCoast tools for Massachusetts.

Milestones and Outcomes



Project Description

The primary activities of this project (outlined below) require fundamental understanding of coastal hazards, basic GIS skills, and an appreciation for citizen science. Skills, interests, and career goals of the fellow will help refine the activities and identify other opportunities to advance the desired outcomes of the project.

1. MyCoast data analysis:
    - Perform quality control on MyCoast data and publish data layers (2011-2024 and, possibly, 2009-2011) on the Massachusetts Ocean Resource Information System (MORIS).
    - Investigate water level thresholds that are resulting in minor, moderate, and major flooding, erosion, and damages to infrastructure and buildings.
    - Assess how partners are using MyCoast data and identify potential new applications.
    - Propose StormReporter form modifications (if necessary).
2. Outreach on management applications:
    - Support ResilientCoasts community engagement.
    - Brief the Massachusetts Emergency Management Agency and Emergency Support Function Team on MyCoast data analysis and real-time access to data.
    - Conduct workshops for local officials and volunteers on MyCoast platform and available data (e.g., Massachusetts Association of Conservation Commission conference).
    - Host webinars for eligible CZM Coastal Resilience Grant applicants focused on adaptation in vulnerable areas.
3. Storm Team and volunteer reporter recruitment:
    - Identify where capacity exists within the MyCoast network and where there is a need to expand temporal and geographic coverage (e.g., EJ neighborhoods and tidal rivers) to better document impacts of King Tides and coastal storms (Figure 4).
    - Coordinate efforts with partners who are using and promoting MyCoast (e.g., Sea Grant Programs, Stone Living Lab, and Salem Sound Coastwatch).
    - Connect with municipal staff, community organizations, and neighborhood groups and conduct MyCoast trainings.

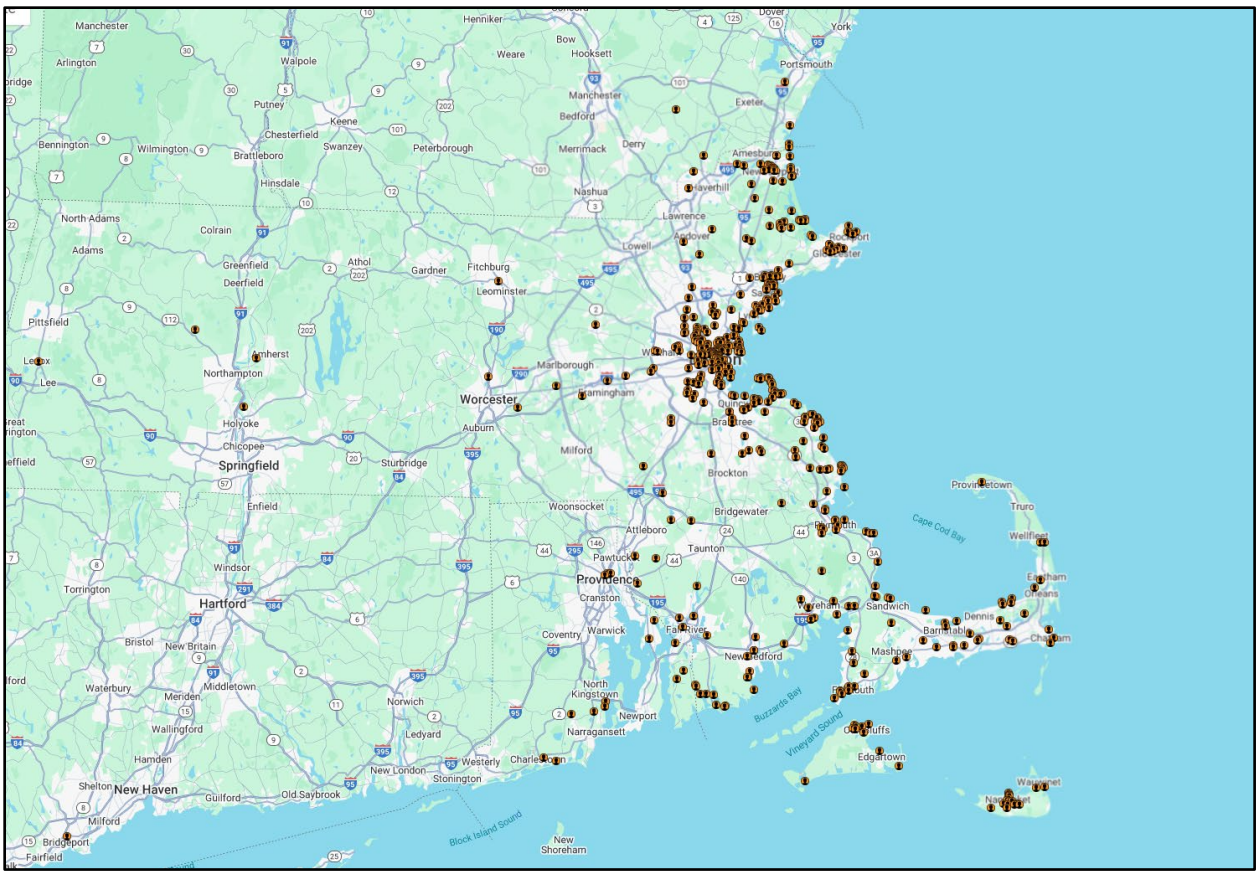


Figure 4. Over 1,450 MyCoast users in Massachusetts.

Diversity, Equity, Inclusion, and Justice

First, CZM will welcome a fellow who will support a diverse and inclusive CZM team. In addition, CZM has been working proactively to increase coastal resilience in Environmental Justice (EJ) communities through a variety of initiatives. The fellow project aligns with the EEA Environmental Justice Policy and Environmental Justice Strategy. CZM's focus within the strategy related to the fellow project includes the following actions:

- *Enhance communication activities to expand information access for EJ populations,*
- *Better integrate EJ populations into outreach, environmental monitoring, and citizen volunteering activities,*
- *Strengthen technical assistance to proactively address EJ issues, and*
- *Engage directly with EJ populations to strengthen access to and use of CZM tools, products, and grants.*

All five of CZM's regions have EJ populations that are exposed to coastal flooding and other impacts from coastal storms and sea level rise. Nine coastal communities within these regions have the majority (over 50%) of their population in EJ block groups (i.e., Aquinnah, Boston, Chelsea, Everett, Fall River, Lynn, New Bedford, Quincy, and Revere). These nine communities will be a priority of outreach and engagement efforts to increase users of the MyCoast mobile application, send notifications of coastal

flooding events, increase reports of impacts (e.g., geographic area and frequency), and use the MyCoast data to support applications to CZM's Coastal Resilience Grant Program.

Fellow Mentoring

CZM has hosted and mentored ten fellows since the fellowship program began in 1996 and will serve as the host agency for the 2025 fellow in Massachusetts. Former fellows with CZM have investigated emerging issues related to coastal hazards, coastal and marine habitats, water quality, and resilience and have helped address management challenges often through the development of tools and guidance for communities. Six current CZM staff have been involved with the fellowship program as mentors, fellows, and both. CZM's 11th fellow will be a member of the StormSmart Coasts team of five coastal geologists and coastal resilience specialists who provide information, strategies, and tools to help communities address the challenges of erosion, flooding, and sea level rise. The fellow will also support the Storm Team and work closely with CZM Regional Coordinators and GIS and outreach staff on the project. CZM highly values the fellowship opportunity and will ensure the fellow is fully integrated with programs and staff for educational purposes and professional development.

The mentor for the fellow will be Julia Knisel, CZM's Coastal Shoreline and Floodplain Manager. Julia joined CZM in 2006 and has supported four fellows with the StormSmart Coasts team, serving as the mentor for two fellows who are now full-time staff with CZM. As a member and leader of the StormSmart Coasts team for over 18 years, mentor (2013 and 2022), and fellow (2002), Julia has knowledge and insight to share with the fellow and a commitment to ensure a successful two-year fellowship experience. Julia will be the point of contact for NOAA and provide mentoring and day-to-day supervision of the fellow. The fellow will attend weekly StormSmart Coasts team meetings, monthly all-staff meetings, and participate in various training opportunities and staff retreats. CZM promotes career development and advancement of fellows. Past fellows have valued opportunities to learn about coastal management across all program areas, apply technical knowledge, connect with community and nonprofit partners, and develop better organizational and public speaking skills. They have also enjoyed the attractions of the greater Boston area and New England. CZM looks forward to continued success for both our agency and the new fellow.

Office Environment

CZM has a hybrid work environment with a main office in downtown Boston. CZM's 30 staff have the flexibility to work partly at the office and partly remotely. Hybrid work has reduced commuting time and costs for staff. The office was recently renovated and there are policies, tools (e.g., Microsoft Teams and SharePoint), and practices that support the hybrid work model. Staff use an online system to reserve shared workspaces and meeting rooms. CZM will provide the fellow with a laptop, software, phone, and general office supplies. If any accommodation or support is needed, CZM will identify appropriate resources to address it. The StormSmart Coasts team and other staff will orient the fellow to CZM and the five coastal regions and provide opportunities for training, brainstorming, and building of relationships. Between in-person meetings and site visits, the mentor will maintain close communication with the fellow via email, chat, and text messages, phone calls, and video conferencing to provide

guidance. Networking opportunities including meetings with other agencies, community workshops, and conferences with other partners will also be identified and supported.

Project Partners

Many partnerships across government agencies, coastal communities, nonprofit organizations, academia, and consulting firms have contributed to the success of MyCoast since its initial launch in 2009. The National Weather Service, Northeastern Regional Association of Coastal and Ocean Observing Systems, and Northeast Regional Ocean Council all supported early efforts to build and expand MyCoast. The MyCoast developer, Blue Urchin, continues to maintain the platform (and is led by a former fellow with CZM). The fellow project is an excellent opportunity to add capacity and strengthen existing collaboration on MyCoast with Sea Grant Programs at the Woods Hole Oceanographic Institution (WHOI) and in Rhode Island. WHOI Sea Grant staff help report coastal storm and King Tide impacts, conduct outreach, and recruit volunteer reporters. They have also been installing CoastSnap camera mounts to monitor beach profile changes. RI Sea Grant has been conducting outreach and exploring how to analyze and interpret coastal storm data. They are also increasing engagement with vulnerable communities. Both Sea Grant Programs are excited to partner with the fellow and further integrate efforts. The mentor will ensure the fellow connects with these and other relevant partners throughout the project.

Cost-Share Description

CZM will provide the cash match for the fellow using state capital funding. The $15,000 match requirement will come from Capital Investment Plan item EO50 (Critical Coastal Infrastructure and Resilience Grants). CZM will ensure that the fellow receives all necessary support and utilizes professional development funds to complete the project and have a successful fellowship experience.

Strategic Focus Area

This fellow project directly addresses the *Resilient Coastal Communities* focus area. Storm Team members and volunteer reporters, or citizen scientists, help expand understanding of coastal storm and climate impacts with their photos and observations. MyCoast reports contribute to timely awareness and response efforts as well as long-term risk management in communities with vulnerable natural resources, infrastructure, buildings, and residents. CZM welcomes a fellow to help lead this important work with the StormSmart team and kickstart a career in coastal management.