



# THE FUTURE OF COASTAL PROCESSES RESEARCH

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**CP52A: Resilient Coasts: Assessing and Managing Ocean-Related Risks**

**2026 AGU Ocean Sciences Meeting, Glasgow, Scotland  
February 27, 2026**



San Francisco Chronicle



California King Tides Project



San Francisco Chronicle

## Pacific Northwest coastal Tribes face barriers in adapting<sup>1</sup>

Changes in storm severity and wildfire risk are impacting fisheries of economic and cultural importance.

## Risk of landslide and coastal erosion<sup>2</sup>

5,900 tons of riprap placed along rail lines to stabilize potential runoff that may obstruct transportation and commerce.

### land every year<sup>3</sup>

Community has already spent \$160 million and estimates vary from \$100-400 million and rising to relocate.

## 1 of Mississippi has closed due to toxic algae<sup>13</sup>

Harmful Algal Blooms (HAB) have been reported in every U.S. coastal state, and their occurrence may be on the rise.

### Tsunami warning puts focus on evacuation plan<sup>4</sup>

A powerful reminder of the need for research and training to increase preparedness and response.

### be beach the of the

Accelerating the Michigan is June and infrastructure.



Infrastructure Challenges



Safety Challenges



Economic Challenges

### Toxic blooms on Lake Erie<sup>5</sup>

Still a problem 10 years after Toledo issued a 'do not drink' order.<sup>6</sup>

### Jersey Shore towns see more sunny day floods as seas rise<sup>7</sup>

USACE wants to elevate 6,000 NJ homes.

### Climate change and flooding a threat to national security<sup>8</sup>

Sea level rise and heavier rains pose logistical challenges to Norfolk naval base.

### Back-to-back hurricanes wreak havoc on supply chains<sup>9</sup>

Widespread flooding and infrastructure damage disrupted automotive, retail, pharmaceuticals, and agriculture industries.

### Gulf shrimp prices reveal hidden economic impact of dead zones<sup>10</sup>

Hypoxic dead zones in the Gulf drive up the price of large shrimp relative to smaller sizes, causing economic ripples that can affect consumers.

### Puerto Rico is eroding under rising seas, stronger storms, and development<sup>11</sup>

These coastlines are vital to the culture, economy, and local food security of the island.

# Coastal Challenges In the News

Examples of news article headlines of coastal challenges from across the U.S. and its territories including infrastructure damage, safety hazards, and economic losses, highlighting the urgent need for science-based strategies to build resilience in vulnerable coastal communities.

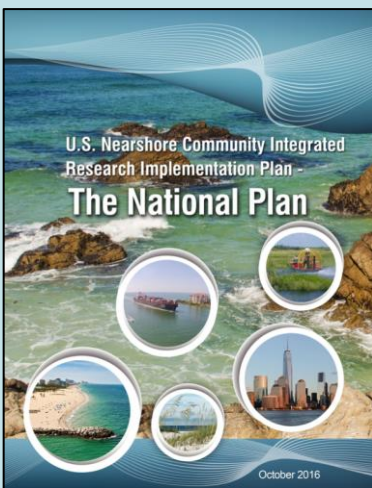
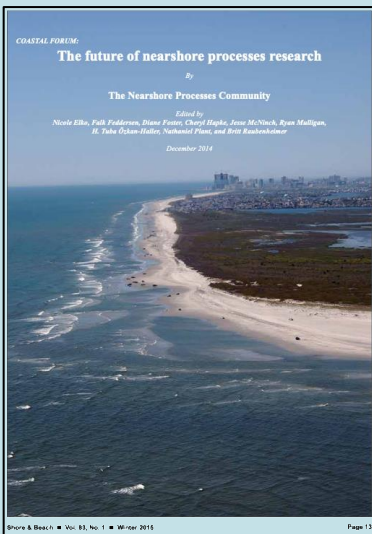
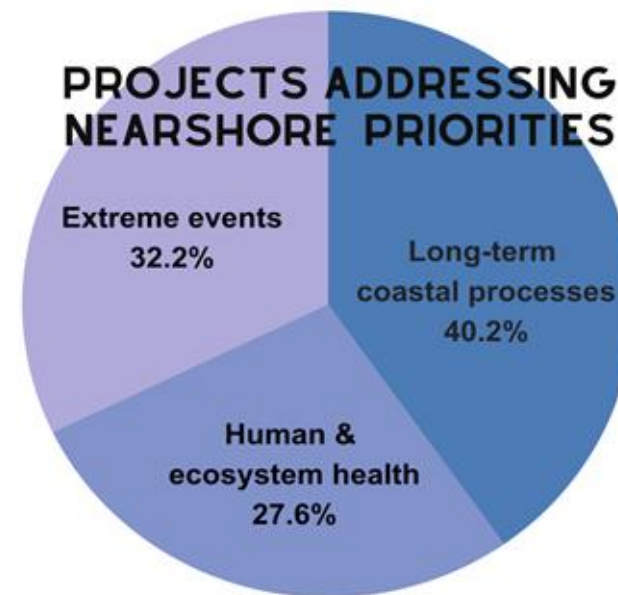
Each headline is reproduced with attribution to its source: 1—Coastside News (2022); 2—Los Angeles Times (2025); 3—Associated Press (2024); 4—University of Hawai'i (2025); 5—Scienceline (2025); 6—Michigan Public (2024); 7—WHYY (2025); 8—PBS SoCal (2025); 9—ISM World (2024); 10—Lab Manager (2024); 11—Office of Representative Hernández, U.S. House of Representatives (2025); 12—CNBC (2022); 13—AL.com (2019). Complete citations are provided in the reference list.

# What is the USCRP?

The **U.S. Coastal Research Program (USCRP)** is a multi-agency led effort to **coordinate** federal activities, **strengthen** academic programs, and **address** coastal community needs by *identifying* coastal research priorities, *enhancing* funding for coastal academic programs, *fostering* collaboration, and *promoting* science translation.

## US Coastal Research Program (2016 – 2023)

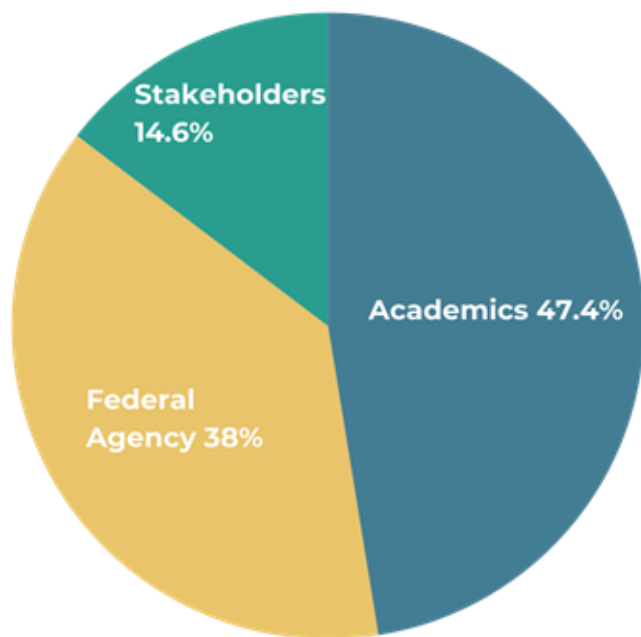
- 516 Proposals Received
- 77 Proposals Funded
- \$150M Requested
- \$23.5M Awarded



## Federal participants



## 116 participants



## Consensus Needs

- **Conduct research at all scales** to transition from foundational science to operational models to public information
- **Collaborate across disciplines** to co-develop effective solutions to coastal challenges
- **Integrate influences of humans and ecosystems** necessary to understand current and future coastal change
- **Consider Nature Based Solutions** on a continuum
- **Measure the effectiveness of adaptation strategies**



# The Future Of Coastal Processes Research Report

## COASTAL SCIENTIFIC RESEARCH THEMES

COASTAL  
FLOODING

MORPHODYNAMICS AND  
SEDIMENT TRANSPORT

ECOSYSTEM CHANGE  
AND HEALTH

**Part 1:** A Community Driven  
Vision for the Next Decade of  
Coastal Science

**Part 2:** State of the Science

**2024** Decadal Workshop  
Report

**History** of Coastal Research

# Coastal Scientific Research Themes

## COASTAL FLOODING



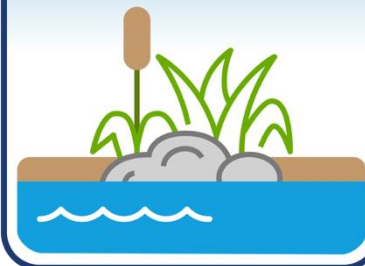
Meeting the challenge of coastal flooding requires the ability to predict the extent, frequency, and severity of inundation at the coast.

## MORPHODYNAMICS AND SEDIMENT TRANSPORT

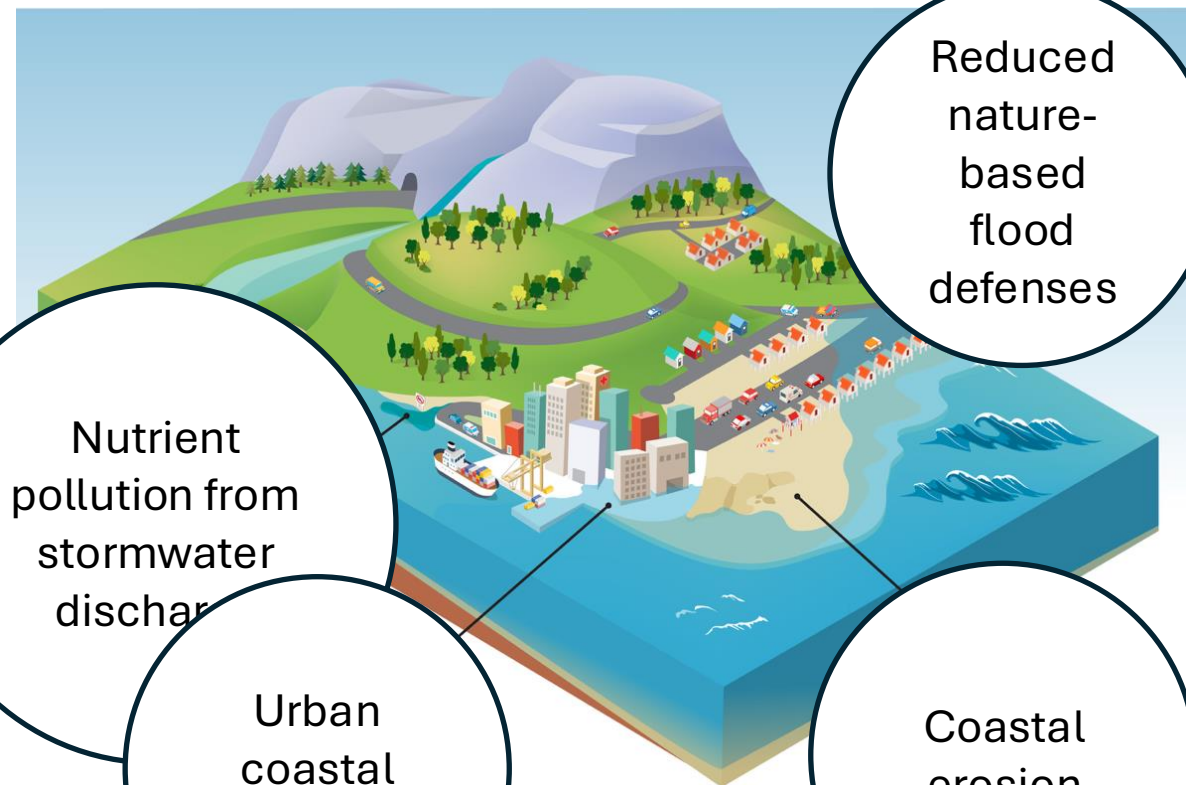


Improved understanding and prediction of sediment transport and coastal response on short, medium, and long-term temporal and spatial scales are essential for addressing societal challenges related to coastal change.

## ECOSYSTEM CHANGE AND HEALTH



Coastal ecosystems are the foundation of both human and environmental well-being, sustaining biodiversity, protecting communities from hazards, and supporting livelihoods that depend on healthy coasts.



Reduced nature-based flood defenses

Nutrient pollution from stormwater discharge

Urban coastal flooding

Coastal erosion

# Meeting User Needs



**Coastal adaptation** describes actions taken to prepare for, respond to, and reduce the harms caused by changing and evolving coastal hazards.



**Observations, modeling, and decision support** enable the translation of basic research into applied science coastal stakeholders can use to inform urgent and consequential decisions.

## Coastal Adaptation Strategies

### RESIST

- Reduce likelihood of hazardous condition
- Sea walls, levees, living shorelines, beach replenishment

*Christiansted National Historic Site, Virgin Islands. Photo: Rebecca Beavers, NPS.*



### ACCOMMODATE

- Reduce severity of consequences if hazard occurs
- Building elevation, flood vents, permeable surfaces

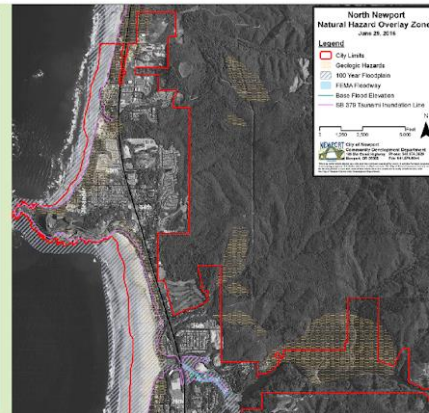
*Los Angeles home elevated to minimize flood damage from high tides. Photo: NOAA.*



### AVOID

- Reduce exposure pre-development
- Land use restrictions, hazardous zones, down-zoning, setbacks

*Coastal Hazard Overlay Zones in some Oregon towns aim to limit development on exposed shorelines. Photo: City of Newport Community Development Dept.*



### RELOCATE

- Reduce exposure post-development
- Move cultural assets away from coast, property buyouts, relocating flood-prone roads

*Relocating the Hatteras Lighthouse to avoid coastal erosion. Photo: NPS.*



(Strategies as in Doberstein et al. 2018).

# Recommendations

## RECOMMENDED KEY ACTIONS

- Meaningfully and deeply **embed social science into coastal research** and community risk assessment
- **Enhance the translation** and uptake of scientific knowledge
- Collect more **comprehensive and higher-resolution data**
- **Maintain shared**, open-source, long-term, **national data sets** and co-production platforms
- Develop coupled and holistic **modeling frameworks**
- Strengthen approaches to **promote integrated solutions**
- Apply **artificial intelligence and machine learning** approaches
- Support **funding mechanisms**

# Join the discussion

**Join** the USCRP



**Read** the *FUTURE OF COASTAL PROCESSES RESEARCH REPORT*

Coming April 2026 in ASBPA's Shore and Beach

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