

**Statement of Work
2017 NOAA/Sea Grant Regional Integration
Hawai'i Sea Grant**

Attachment 1: Framework for 2017 NOAA/Sea Grant Regional Integration Work Plan

Region: **Pacific Islands Region**

Project Title: **Hawai'i and Pacific Islands King Tides Project: A Citizen Science Program**

Personnel:

Sea Grant:

Lead Program Director: Darren Lerner

Project Lead (if different from Program Director):

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Secondary Contact:

Regional Collaboration Team:

Regional Team Lead/Co-lead: Raymond Tanabe, NWS, NOAA

Regional Coordinator: Seema Balwani, NOAA

Secondary Contact:

Project Description:

What Regional Collaboration and Sea Grant priorities will this support?

This is a collaborative project that connects University scientists with coastal decision makers and stakeholders, and the greater community in Hawai'i and the Pacific region. This project also leverages several NOAA products and services and engages citizen scientists at a regional level (Hawaiian Islands, American Samoa, Republic of the Marshall Islands and Guam). Using a citizen science framework, our proposed work also aims to increase the climate intelligence of the general public on complex topics such as King Tides and coastal flooding, and how these extreme water level events can be exacerbated by future climate change and sea-level rise (SLR). Citizen scientist-generated data will provide a large scale data set of field observations that will be used to validate and ground truth scientific models that provide projections for coastal flooding, SLR inundation risk, and high wave over wash. This project meets the priorities of the Pacific Islands Regional Team and Sea Grant.

What do you plan to achieve/goals for this project?

Our project has four main objectives:

- 1) Educate and train citizen scientists on coastal processes and coastal hazards including tides, sea-level rise, coastal inundation, coastal erosion, and high wave over wash;
- 2) Observe and document water levels during King Tides through a large-scale and long term citizen science photo survey and data collection campaign;

- 3) Discuss and facilitate dialogue during community “Coast Walks” about how to prevent, withstand, adapt to, and recover from threats and vulnerabilities of coastal hazards associated with a community’s location;
- 4) Apply citizen scientist-generated data towards research questions, coastal management policy implementation, climate adaptation planning.

What are your expected product(s) and results(s)?

Our project has five expected outcomes:

- 1) Increased environmental literacy of the general public especially relating to the topics of coastal hazards including tides, sea-level rise, coastal inundation, coastal erosion, and high wave over wash;
- 2) Increased awareness of the threats and vulnerabilities from coastal hazards associated with a community’s location;
- 3) Strengthened coastal community resilience through increased dialogue and enhanced ability to make informed decisions;
- 4) Better understanding about how people and places are connected to each other across time and space;
- 5) Improved understanding of local impacts from coastal hazards through use of citizen scientist-generated data and photos. This citizen science dataset can inform decision making and ongoing planning efforts in the state of Hawai‘i including, Hawai‘i’s Climate Adaptation Initiative (Act 83; House Bill 1714) and Hawai‘i’s Sea Level Rise Vulnerability and Adaptation Report.

Project Rationale:

How does this strengthen the Sea Grant-Regional Collaboration relationship?

How does this benefit stakeholders in the region?

Introduction to the problem: Hawai‘i and Pacific Islands, such as Guam, are highly vulnerable to the impacts of coastal hazards and climate change due to a combination of high hazard exposure, geographic isolation, and dependence on imported goods. In these Pacific Island communities most coastal development, infrastructure, and populations are concentrated on low-lying coastal plains and are therefore highly vulnerable to flooding, coastal erosion, sea-level rise, and disaster events including tropical cyclones and tsunamis. Activities that help to increase coastal community climate resilience (defined as the capacity to prepare for, adapt to, and recover from the impacts of coastal hazards and climate variability and change), can help communities “bounce forward” after coastal hazard events. Coastal communities can also increase their resilience and climate intelligence by engaging in activities that enhance their understanding of risks (e.g., risks from coastal hazards) and using this information when making decisions. Although island communities are vulnerable to the impacts of coastal hazards, increasing coastal community resilience can help to prevent a short-term hazard event from escalating into a long-term disaster. We are specifically interested in King Tides and coastal flooding, and how these extreme water level events can be exacerbated by future climate change and sea-level rise.

Rationale: King Tides, or the highest high tides of the year, are a unique coastal hazard. The timing of these extreme water level events can be anticipated through the use of tidal predictions yet their impacts (e.g., coastal flooding and inundation in low lying areas) can have significant

consequences for coastal inhabitants, infrastructure, land uses, and habitat. The aim of this project is to make information on climate change and coastal hazard topics, especially as they relate to King Tides and flooding, more accessible, relevant, and relatable through direct stakeholder engagement. Our proposed citizen science program will engage the general public in the documentation of King Tide impacts through photography and will produce a database and web map viewer of place-based images and data records that can be used to illustrate vulnerability and risk along coastlines at local, island-wide, statewide, and archipelagic scales, as well as inform and support ongoing coastal research and education efforts.

Project Approach:

What NOAA and Sea Grant programs and assets will be involved?

This project utilizes and incorporates NOAA data, data access tools and expertise from a wide range of program offices and NOAA line offices.

Sea Grant programs and assets

- Hawai'i Sea Grant
- Guam Sea Grant
- Sea Grant Climate Network

NOAA data and data access tools

- CO-OPS tides and currents datasets
- Sea Level Rise Viewer
- PacIOOS web platform
- National Sea Grant Resilience Toolkit

NOAA infrastructure and place based initiatives

- National Marine Sanctuary Visitor Centers
- Hawaiian Islands Sentinel Site Cooperative
- Coral Reef Conservation Program priority sites
- Habitat Blueprint Focus Area, West Hawai'i

How will the NOAA Regional Collaboration Team(s) be involved?

The NOAA Regional Collaboration Team is connected to a wide network of regional contacts across the Pacific. The Regional Collaboration team will be involved in helping project leaders at Hawaii Sea Grant identify project partners and recruit and train citizen scientists in Guam, and the Hawaiian Islands. Additionally the NOAA Regional Collaboration Team will be involved in identifying priority sites for photo surveys and opportunities to leverage project outcomes to benefit regional NOAA programs and place based initiatives.

Will other partners be involved?

Other collaborators of the project include

- Pacific Islands Ocean Observing System (PacIOOS)
- University of Hawai'i at Mānoa Joint Institute for Marine and Atmospheric Research (JIMAR)
- Hawai'i Department of Land and Natural Resources Office of Conservation and Coastal Lands (DLNR-OCCL)

- University of Hawai‘i at Mānoa, Coastal Geology Group (CGG)
- Hawai‘i Shore and Beach Preservation Association (HSBPA)
- NOAA Hawaiian Islands Sentinel Site Cooperative (HISSC)

Key Milestones:

- Complete four Citizen Science Training Workshops within one year on Moloka‘i, Maui, Kaua‘i and Hawai‘i Island
- Complete two “train the trainers workshops” in Guam and O‘ahu. These workshops will aim to train points of contact to conduct their own citizen scientist trainings to grow and expand the program and further recruit citizen scientists for the project.