IRA RFA Topic Area 2 Potential Project of Interest

1.a: Establishment of a National Network of Regional Water Level Observations to Support Coastal Resilience

Goal

Establish a Coastal Water Level Observations Community of Practice group that will develop and implement common practices to maximize the collective value of various water level observation efforts, particularly with stakeholder engagement from underserved communities, at local, regional, and national levels for coastal resilience and coastal flooding risk prediction applications. The applicants will establish an overall data management system for these water level observations, as well as one or more data analysis tools to quality control water level data and create tidal products that facilitate national-scale data interoperability. The applicants will then fund priority water level observation efforts, and develop a robust training program for basic system operations and the use of the water level data analysis tools. These efforts should establish new partnerships and ensure water level data derived from various independent observation networks will be readily available via web services and will be available for use and display in local, state, regional, and/or federal real-time water level alert and coastal flooding risk prediction applications that expand service delivery to economically distressed communities on the frontline of coastal and climate impacts.

Project Description

Accurate water level observations are foundational to improving the Nation's coastal resilience and providing coastal flooding risk prediction services at both weather and climate timescales. The overall value of the collective body of water level observations used for these applications will be increased through partnerships establishing common data collection and data analysis approaches. The benefits of such common approaches are many, including promoting innovation through standardization; more readily understanding and sharing the efforts of an individual water level observation practitioner with a much broader group of users particularly to overburdened and underserved communities; and making more water level observations available for crucial coastal model improvements and validation, including NOAA's Vertical Datum Transformation (VDatum) application.

Proposals should aim to develop common practices through the creation, coordination, and facilitation of regular meetings of a Coastal Water Level Observations Community of Practice to define and communicate common practices for coastal water level observations. This will ensure that independent efforts culminate in national-scale data interoperability for coastal resilience and coastal flood risk prediction applications. For example, determining a local tidal datum for a series of water level observations will allow better data interoperability for real-time water level alert and coastal modeling applications, over just having those water level

observations tied to a geodetic datum (i.e., NAVD88). The scope of the Community of Practice would include: (1) common standards for metadata and data collection, including a common approach to establish appropriate vertical control/reference of the water level measurements; (2) common practices to deploy and vertically reference a range of low cost water level sensors, including identifying situations where co-located meteorological sensors and real-time web cameras would be most beneficial; (3) a common approach to collaboratively identify and share water level observation gaps and tidal datum gaps in a region; and 4) mechanisms for communicating or training in any established standard, practice, or approach. One approach would be to leverage, as appropriate, ongoing related work by Alaska Water Level Watch on identifying and filling regional water level observation gaps, and by the Southeast Coastal Ocean Observing Regional Association (SECOORA) Southeast Water Level Network.

Proposals should focus on building a national-scale data management system that will make consistently-derived water level observations - and derived tidal products - available via web services for use and display in regional or national-scale coastal resilience and coastal flood risk prediction applications (e.g., NOAA Coastal Inundation Dashboard), including tsunami warning systems that are essential to provide emergency guidance to coastal communities impacted by coastal flooding. The common data management system will have the capability to ingest and store all metadata, the original water level data series, and derived tide products, and make these metadata, data, and products available via public web services particularly to communities impacted by climate impacts. This work should be aware of and leverage, as appropriate, ongoing related work by the Alaska Ocean Observing System (AOOS) in developing and hosting a regional data management system for vertically-referenced water level observations.

Proposals should develop one or more water level data analysis tools to enable metadata documentation, water level data quality control, calculation of tidal harmonics and predictions, and production of tidal datums and inundation statistics using NOAA-approved methods and algorithms. This work should be aware of and leverage, as appropriate, ongoing related work on the NOAA Tidal Datum Analysis Calculator. Development of the data analysis tools will be guided by robust user engagement (including underserved communities) throughout the planning and beta product stages. Once the data analysis tools are developed, in-person and web-based training materials on these new capabilities should be made available after refinement through several test trainings with real-world users.

Proposals should provide funding for the collection of additional coastal water level observations in priority locations identified through collaborative regional water level observation gap analyses. The identified water level systems will leverage common practices recommended by the Coastal Water Level Observations Community of Practice, and resulting water level observations and derived tidal products should be ingested, stored and managed in the common data management system. The applicants will establish a mechanism to provide technical consultations on water level gauge installations, per practices recommended by the Community of Practice.

For More Information or to Ask Questions

Please contact Gerald Hovis at gerald.hovis@noaa.gov with questions on this project theme or to be connected to subject matter experts in NOAA for technical assistance with this project. Please send general questions about the RFA to ioos.regions@noaa.gov.