



# FY2007: Regional Integrated Ocean Observing System Development

NOAA initiated a competitive funding process in 2007 to continue building capacity for regional ocean observing systems towards three long-term outcomes; establishing coordinated regional observing and data management infrastructure, developing applications and products for regional stakeholders, and establishing regional and national data management and communications protocols. These projects are contributing to these outcomes.

## PACIFIC ISLANDS REGION

The Pacific Islands Region is defined as the Commonwealth and Territories of the United States in the Pacific and the Freely Associated States in the Pacific. The 2007 award to this region is \$1,700,000.

### Project Title:

Developing the Hawaii-Pacific Ocean Observing and Information System

### Recipient/ Lead Principal Investigator:

University of Hawaii/ Dr. Brian Taylor (*taylorb@hawaii.edu*)

### Cost:

Funded: \$1,700,000

Proposed (subject to available funds): Year 2 – \$2,814,811; Year 3 – \$2,698,353

### Performance:

The objective of this project is to integrate and expand ocean observing and forecasting first in the Hawaiian Islands, and later among the Pacific Islands as part of a larger Pacific Integrated Ocean Observing System (PacIOOS). Investigators will begin with four integrated “catalyst” projects focused initially on waters along the southern shore of Oahu, Hawaii's most populous island. These catalyst projects support one another to enhance community capabilities and respond to the needs of a diverse constituency of stakeholders are (1) coastal ocean-state and forecast; (2) coastal resiliency; (3) automated water quality sensing; and (4) marine ecosystem stewardship. Resultant products will contribute to nearshore and offshore safety, shipping and marine commerce, water quality assessments, marine ecosystem indicators, and marine inundation forecasts.

For the coastal ocean-state and forecast project, investigators will utilize an array of high frequency Doppler radios along with gliders, wave buoys, coastal cameras, and numerical models. This project will monitor, model, and predict channel and nearshore circulation, waves, coastal run-up, and water levels. Observations and model output will feed into a dynamic, web-based coastal ocean atlas providing interpretive products such as most efficient inter-island shipping lanes, hazardous conditions at beaches and in harbors, pollutant dispersion, and high water levels in vulnerable communities. The coastal resiliency project products will include: frequently updated maps of specific beach safety conditions; coastal inundation and erosion alerts; and vulnerability projections related to sea-level rise, chronic erosion, and high wave and water level events. The automated water quality sensing project efforts will expand and implement modifications of existing coastal water quality monitoring. The proposed system, when combined with circulation models, will provide early warning of impending water quality problems, improve prediction of affected areas, and decrease

(over)

response time for mitigation efforts. The marine ecosystem stewardship project team will focus on expanding existing cetacean monitoring arrays. Stewardship products will include fishing and marine mammal forecasts to help interpret impacts of long-term climate change on living marine resources.

**Schedule:**

## Year 1:

- Deploy one to two gliders continuously.
- Bring key data and products on-line (glider subsurface temp/salinity, sea level heights/trends, wave state, NLOM/NCOM ocean state products, autonomous underwater vehicle (AUV) survey products, surface winds).
- Deploy observation equipment (Koko Head and Barbers Point Coastal Radars, nearshore water quality stations, beach cameras, directional wave buoys, Ecological Acoustic Recorders (EAR) at Kilo Nau, 150 yellowfin tuna transmitters)
- Deploy AUV monthly surveys and event surveys.
- Upgrade water level station at Haleiwa and Waianae.
- Conduct topographic LIDAR surveys.
- Operate circulation models (RSM/MSM atmospheric model, Regional Ocean Modeling System (ROMS) model, regional wave model).
- Develop software for real time detection of cetacean sounds.
- Develop database and web system.
- Bring key data and products on-line.

## Year 2:

- Deploy additional observation equipment (Waikiki coastal radar, Barbers Point water level/seiche stations, deep EAR sensor).
- Conduct routine thermal infrared imaging overflights.
- Operate priority models (weather research and forecast (WRF) atmospheric model, HYCOM/POM, Oahu south shore model, ecosystem model).
- Continue development of database and web system.
- Bring additional key products on-line.

## Year 3:

- Bring additional products/data on-line.
- Continue development of database and web system.
- Assimilate data into WRF and ROMS models.

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