

Progress Report

Project Title: Implementation of the Infrastructure Investments and Jobs Act: Improving and Enhancing the Southern California Coastal Ocean Observing System

Award number: NA23NOS0120084

Project Period: 12/01/2022 - 11/30/2024

Period of Activity: 012/01/2022 – 05/31/2023

Principal Investigator: Clarissa Anderson, UCSD - SCCOOS Executive Director

I. PROJECT MILESTONES:

Milestone Table. Developed and modified from the SCCOOS milestone table available in C. Anderson “Implementation of the Infrastructure Investments and Jobs Act: Improving and Enhancing the Southern California Coastal Ocean Observing System” NOAA IOOS proposal. Quarters are defined as 1 (Dec-Feb), 2 (Mar-May), 3 (Jun-Aug), and 4 (Sep-Nov). Shaded blue squares indicate the expected milestone completion date. The status of each milestone/deliverable is reported as complete, on-track, or delayed. If the milestone is delayed, a justification for the delay is provided along with a new tentative completion date in Red and a description of activities employed or to be employed to mitigate the delay under section II. Progress and Accomplishments.

	Year 1				Year 2				Status	
	1	2	3	4	1	2	3	4		
California’s Surface Current Mapping Network										
SIO - Upgrade transmit/receive antennas at San Clemente Island										On-track
SIO - Upgrade transmit/receive antenna at Dana Point and Upper Trestles										On-track
USC - Upgrade transmit/receive antenna and add Auto APM kit at Dan Blocker Beach										09/2023
USC - Upgrade transmit/receive antenna at Newport Beach										Delayed
UCSB - Upgrade transmit/receive antenna at Summerland Sanitary District and Refugio State Beach										On-track
UCSB - Upgrade transmit/receive antenna at Point Mugu and Coal Oil Point										On-track
UCSB - Upgrade transmit/receive antenna at Mandalay Generating Station										On-track
Cal Poly SLO - Upgrade receive chassis at Pt Sal										On-track
Cal Poly SLO - Upgrade transmit/receive antenna at Pt Sal										Delayed
California Underwater Glider Network										

SIO - Purchase Spray 2 Glider equipment and supplies	■	■			■				Delayed
SIO - Build and Deploy Spray 2 Gliders				■				■	On-track
Automated Shore Stations									
SIO - Purchase pier clamps and fluorometers	■	■			■				On-track
SIO - Install fluorometer on Scripps Pier	■	■							On-track
SIO - Install Pier Clamp on Scripps Pier					■				On-track
SIO - Install Pier Clamp and fluorometer on Newport Beach Pier	■	■							On-track/ Delayed
CSUN - Install fluorometer on Santa Monica Pier		■	■						Delayed
CSUN - Install Pier Clamp on Santa Monica Pier					■				On-track
UCSB - Redesign and purchase air blaster supplies, and install on Scripps Pier, Newport Beach Pier, Santa Monica Pier, and Stearns Wharf	■	■							Delayed
UCSB - Install fluorometer and pier clamp on Stearns Wharf								■	On-track
HAB Early Warning System									
SIO - Purchase hardening supplies; fabricate new housings	■	■	■		■	■			Delayed
SIO - Replenish spare parts kits and communication components	■	■	■		■	■			Delayed
Acoustic Monitoring of White Sharks									
SIO - Purchase two real-time acoustic receiver buoys and DO and Chl-a sensors	■	■			■				Delayed
CSULB - Build and deploy buoys at Torrey Pines and Redondo Beach		■	■						Delayed
CSULB - Build and deploy buoys at Little Corona and Will Rogers Beach						■			On-track

II. PROGRESS AND ACCOMPLISHMENTS

SCCOOS received the project funds on January 4, 2023, but due to the language in the Special Award Certification that required Implementation of Domestic Sourcing Requirements for Infrastructure and the Required Use of American Iron, Steel, Manufactured Products, and Construction Materials (BABA) we were not approved to spend on the award until April 10th when UCSD received sufficient assurance from NOAA that the BABA legal requirements did not apply to our project. Since we were unable to spend on the project until mid-April most of the milestones in Year 1, quarters 1 & 2, are delayed.

I. California Surface Current Mapping Network

PIs: Terrill (SIO), Ragan (USC), Washburn/Emery (UCSB), Walter (CP SLO)

Accomplishments / successes:

SIO

- The systems within the California domain are composed of CODAR Seasonde systems, which are based on compact antenna design and rely on direction-finding algorithms for determining the bearing angle of the ocean currents. In April 2023, Scripps Institution of Oceanography successfully placed an upgrade equipment order to CODAR Ocean Sensors for new dome antennas for two sites within the SCCOOS network - SDUT (Upper Trestles) and SDBP (Dana Point). We plan to have the hardware delivered prior to the end of Year 1.

Problems/delays:

USC

- Funds were received in May 2023 and an order was placed for a new dome antenna along with an Auto APM kit for SCDB (Dan Blocker Beach). Receipt of the new equipment is anticipated in 2023 fourth quarter.

UCSB

- Orders will soon be placed to upgrade MGS1 and Summerland Sanitary District (SSD1) to combined transmit/receive antennas.

Cal Poly SLO

- Cal Poly SLO did not receive the subaward agreement from SCCOOS/SIO until May 2023. The signed agreement was sent back to the sponsor (SCCOOS/SIO) in early June 2023. Once the funds are available, we will begin making equipment purchases and installing components shortly after they are received. Depending on equipment lead times, we are aiming to install the receive chassis at FBK1 by the end of 2023 or early 2024. Year 2 purchases should not be impacted.

II. California Underwater Glider Network

PI: Rudnick (SIO)

Accomplishments/successes: We are in the process of buying components to build one Spray2 in the coming year. Arrangements have been made to acquire pH and nitrate sensors from MBARI.

Problems/delays: No significant delays beyond the late arrival of funds.

III. SCCOOS Automated shore stations (SASS)

PIs: Anderson/Carter (SIO), Silbiger (CSUN), Washburn (UCSB)

Accomplishments/successes:

- Newport Beach Pier: Funding was received mid-April 2023 and plans were made immediately to perform work on securing Newport Beach Pier conduit that had been compromised during the winter 2022/2023 storms. This task consisted of cleaning the pier piling of all hard growth and inspecting the underwater conduit and band-it systems for structural integrity and function. Luckily the conduit, used for power and data transmission, was intact and solid though the lower portion had broken free and all cables were chaffed to varying degrees. The IFCB cable was chaffed throughout and was replaced with OPC and HABON support, see below. The pH and CTD power and data cable were only slightly chaffed but were also replaced to ensure long-term operations.

These cable replacement costs were not included in the proposed SASS infrastructure budget but were required to finish this portion of the infrastructure project.

- On May 17th and 18th, 10 new stainless bands were replaced or installed where prior ones were lost due to extended periods without long term maintenance funding. This new banding system will secure the conduit at the Newport Beach station for 5-7 years with average swell and storm surge. See [photos](#) and [videos](#) of band-it replaced on the Newport Beach Pier piling.
- On 18-April an order was placed with SIO machine shop for two new pier clamps based on quotes requested in 2022. On 30-May two pier clamps were ready for pickup that had been fabricated by SIO Machine shop and galvanized days prior.
- On 31-May the SASS system was cleaned and recovered before removing the old cage and [pier clamp](#). On 1-June the new pier clamp was installed with a few modified parts including a more expensive yet durable Dyneema cable instead of the long link galvanized chain that was unavailable at hardware or marine stores, and more expensive stainless steel turnbuckles had to be used instead of the originally planned galvanized steel due to issues with overall quality and cross threading. The old SASS cage was reused and reinstalled which houses and protects the SASS sensor package from large-scale disruptions. See the final install photos here of [clamp](#) and [turnbuckle](#), and [video](#).
- An air blaster system was installed at the Newport Beach Pier Station since other infrastructure work occurred at this site. A new air hose was purchased under the SIO budget since the need was determined on-site when the conduit and other cable work was being conducted. It was installed, tested, and operational starting on 30-May.
- Santa Monica Pier: PI Kerry Nickols left CSUN to accept a new position at Ocean Visions on February 13th, 2023. We brought Nyssa Silbiger, CSUN Associate Professor, on board as the SCCOOS Santa Monica Pier Shore Station principal investigator.

Problems/delays:

Scripps Pier/Newport Beach Pier/Santa Monica Pier/Stearns Wharf:

- Due to the delay in funds, no new parts were ordered for additional air blaster systems. David Salazar is visiting the sites and taking inventory of what is in place and what needs to be ordered to install and standardize all the air blaster systems for each SASS site. Orders will be generated soon and additional air blasters will be installed as they become available.
- Due to the delay in funds only one new potential fluorometer was tested at Scripps Pier in early 2023, and tests indicate that a non-plumbed, open design is not feasible at these highly biofouled, coastal locations, and pumped or wiped configuration is the only option. Another test is planned for July 2023 at Scripps Pier using a Turner Design fluorometer with end cap housing for in-line pumped configuration.
- See additional costs incurred for pier clamp replacement parts as described above for turnbuckles and chain/Dyneema.

IV. California Harmful Algal Bloom Early Warning System

PI: Anderson/Carter (SIO)

Accomplishments/successes: The underwater power and data cable for the IFCB at Newport Beach was purchased and replaced. This cable was damaged by the winter storms of 2022/2023, and was purchased using OPC and HABON funding since the BII funding was delayed at the

time of purchase. BIL salary and travel support was used for the install of the cable on May 15-17, 2023.

Problems/delays: We were unable to place equipment purchases until May 2023.

V. Southern California Acoustic Telemetry Tracking Network

***PIs:** Anderson (SIO), Lowe (CSULB)*

Accomplishments/successes: NA

Problems/delays: Unsuccessfully been able to place the purchase order for the acoustic buoys due to an inaccurate billing address in the UCSD Payment Works system for Innovasea. SIO budget office is working with Innovasea to update the system so we can resubmit the purchase order of equipment totaling \$49,578.78. We hope to have the Purchase Order for the acoustic buoys submitted by the end of June 2023.