

SCCOOS FY21-26 Tier 2 unfunded projects and tasks

Governance and Management Subsystem

Outreach and Education

1. Outreach & Education with Birch Aquarium + AltaSea
 - a. Act as a facilitator between our stakeholders and researchers and regional underserved and underrepresented K12 communities in STEM through programs showcasing ocean observing related careers and informal learning between SCCOOS and (1) Ocean Discovery Institute, (2) AltaSea, (3) Birch Aquarium, (4) Heal the Bay. – PI: *Peach (UCSD/Birch), FY22-26*
 - b. Integrate undergraduate and graduate students related to our funded projects in our programmatic research and engage them in a biweekly professional development course run by the outreach personnel. – PI: *Peach (UCSD/Birch), FY22-26*
2. Outreach Evaluation and Assessment Plan
 - a. Contract an assessment and evaluation specialist from CREATE to consult on our education programs to create formative and summative assessments for our various outreach activities and programs. – PI: *Sweet (UCSD/CREATE), FY21-25*
3. Regional Association Organization & Outreach/Education
 - a. Over the next five years, we anticipate growth in the program office to adequately adapt to program expansion, particularly if projects listed as Tier 2 come to fruition. – PI: *Anderson (UCSD), FY21-26*
 - b. Codify an annual schedule of workshop-based communications with targeted stakeholder groups to strategically initiate new products and leverage partner resources. – PI: *Anderson (UCSD), FY21-26*
 - c. Collaborate with SciREN San Diego on data-based lesson plans that will allow local teachers to interface with SCCOOS researchers. – PI: *Anderson (UCSD), FY21-26*

Observations Subsystem

Marine Operations

4. HF Radar Recap
 - a. Update the HF Radar network via recapitalizing aging infrastructure and hardening the network, in partnership with CeNCOOS. – PI: *Terrill (UCSD), Ragan (USC), Washburn (UCSB), Walters (Cal Poly SLO), FY21-26*

Climate Variability and Change

5. Glider Recap
 - a. Update the CUGN via recapitalizing aging infrastructure with state-of-the-art Spray gliders. – PI: *Rudnick (UCSD), FY21-26*
6. Towards autonomous biogeochemical and ecological monitoring in the California Current System using underwater gliders (BioEco)
 - a. Integrate biogeochemical and ecological (BioEco) sensors onto Spray Gliders in the CUGN to measure pH and dissolved oxygen in partnership with CeNCOOS. – PI: *Takeshita (MBARI), FY21-26*
7. A network of low-cost near-shore monitoring stations for ocean acidification, hypoxia, and water quality

- a. Implement a network of low-cost near-shore mini-moorings for monitoring ocean acidification, hypoxia, and water quality in the SCCOOS region. – PI: *Lankhorst/Send (UCSD), FY21-26*
- 8. California Fishing Vessels of Opportunity (CFVOP)
 - a. Sustain industry and citizen-science partnerships for monitoring EOVs in the water column on California Fishing Vessels of Opportunity (CVOF) in support of commercial fisheries and in partnership with CeNCOOS. – PI: *Van Vranken (Bering Data Collective), FY21-26*
- 9. A moored SCCOOS reference and development site with a 14-year long record off Del Mar
 - a. Sustain a coastal mooring in the SCCOOS region that hosts a 14-yr time series in support of water quality management and improving ocean prediction. – PI: *Send (UCSD), FY21-26*
- 10. Effect of upwelling intensity on near-shore acidification and deoxygenation in the Southern California Bight
 - a. Maintain bi-weekly small-boat surveys of cross-shore and along-shore variability in biogeochemical parameters in support of nearshore OAH modeling. – PI: *Andersson (UCSD), FY21-26*

Ecosystems, Fisheries, and Water Quality

- 11. Indicators of Zooplankton from California's Underwater Glider Network
 - a. Combine CUGN ADCP data, CalCOFI net data, and CalCOFI acoustic data processed for krill to create zooplankton indicators in partnership with CeNCOOS. – PI: *Dorman (Farallon Institute), FY21-26*
- 12. Harmful Algal Bloom (HAB) Monitoring
 - a. Continue to provide weekly information to State and federal stakeholders on critical HAB taxa and toxins at HABMAP pier sites in the SCCOOS region, in partnership with CeNCOOS. – PI: *Anderson/Carter (UCSD), Shipe (UCLA), Caron (USC), Brzezinski (UCSB), Walter/Pasulka (Cal Poly SLO), FY21-26*
 - b. Expand capacity for dissolved toxin tracking and molecular sampling at HABMAP sites in the SCCOOS region. – PI: *Anderson/Carter (UCSD), Shipe (UCLA), Caron (USC), Brzezinski (UCSB), Walter/Pasulka (Cal Poly SLO), FY21-26*
- 13. Enhancing SCCOOS with high throughput molecular and flow cytometry observations
 - a. Develop microbial community structure and abundance data products to rapidly assess risk of HABs and other biologically mediated events at SCCOOS pier sites in support of the CA HAB Early Warning System. – PI: *Bowman (UCSD), Pasulka (Cal Poly SLO)*
- 14. Marine mammals as high trophic, early, biological sensors of algal biotoxin production in the California coastal ocean
 - a. Measure domoic acid levels in biological samples from live and fresh dead marine mammals as an objective biological indicator of HAB activity in the California coastal ocean. – PI: *Nollens (PMMC), FY21-26*
- 15. Automated Shore Stations - Recap
 - a. Update and recapitalize sensors on nearshore pier sites. – PI: *Anderson/Carter (UCSD), Nickols (CSUN), Washburn (UCSB)*
- 16. Harmful Algal Bloom (HAB) Monitoring with the IFCB Network in southern California

- a. Support O&M of the southern California sites with IFCBs through technical support (focus on Del Mar mooring) and data management and analysis support
- 17. Observing nutrient fluxes and their role in HAB development in the nearshore region of Southern California.
 - a. Deploy high-frequency instruments at multiple sites to observe nutrient fluxes and their role in HAB development in the nearshore SCCOOS region HAB development on shelf. – PI: *Lucas/Send (UCSD), Davis (UCI), FY21-26*
- 18. Develop and maintain a low-cost, citizen-science based sensor network on rocky reefs for monitoring bottom temperature and, oxygen
 - a. Develop and maintain a low-cost, citizen-science based sensor network on rocky reefs for monitoring bottom temperature and oxygen in support of water quality management and improved ocean prediction. – PI: *Johnston (UCSD), FY21-26*
- 19. Large scale and long-term kelp forest monitoring for science and policy
 - a. Conduct ecological surveys in support of the CA MPA network in the SCCOOS region. – PI: *Casselle (UCSB), FY21-26*
- 20. California Kelp Forest Marine Protected Area OAH Network with Citizen Science
 - a. Maintain a citizen-science based ocean acidification and hypoxia sensor network at two CA Marine Protected Area (MPA) sites in the SCCOOS region, in partnership with CeNCOOS. – PI: *Friewald (ReefCheck), FY21-26*
- 21. Animal Tracking Network (ATN) - White Shark Acoustic Receiver Array
 - a. Build out a buoy-based network of acoustic receiver arrays for tracking tagged Great White Sharks and nearshore tagged species in the national Animal Telemetry Network (ATN), in partnership with CeNCOOS and NANOOS. – PI: *Lowe (CSULB), FY21-26*
- 22. Ocean Sound Observation Network
 - a. Sustain the Ocean Sound Observation Network (OSON) in support of National Marine Sanctuaries and the U.S. Marine Biodiversity Observation Network (MBON), in partnership with CeNCOOS and NANOOS. – PI: *Peavey Reeves/Haver (ONMS/NMFS), Baumann-Pickering (UCSD), FY21-26*
- 23. eDNA Library Development on ichthyoplankton at SCCOOS-CalCOFI stations in partnership with SBC-MBON
 - a. Advance genomic methods for monitoring biodiversity in support of MBON and NMFS. – PI: *Thompson (SWFSC) FY21-26*

DMAC Subsystem

- 24. SCCOOS DMAC
 - a. Increase SCCOOS DMAC capacity to develop new products and partner with industry to develop web applications that extend the reach of SCCOOS data and model products. – PI: *Anderson (UCSD), FY21-26*

Modeling and Analysis Subsystem

- 25. ROMS - BEC Biogeochemical Model Development
 - a. Support development of a coupled ROMS and Biogeochemical and Lower Ecosystem (BEC) model for improved biogeochemical predictions and regional ecological forecasting in support of water quality managers, fisheries, and regional partners. – PI: *Bianchi (UCLA), FY21-26*
- 26. Numerical Ocean Model Simulations as a Research Asset for California Current System Scientists and Managers

- a. Serve ROMS-BEC predictions of coupled physics and biogeochemistry to the public via the SCCOOS data portal in support of state OAH modeling, water quality management, and fisheries. – PI: *Kessouri (SCCWRP), FY21-26*