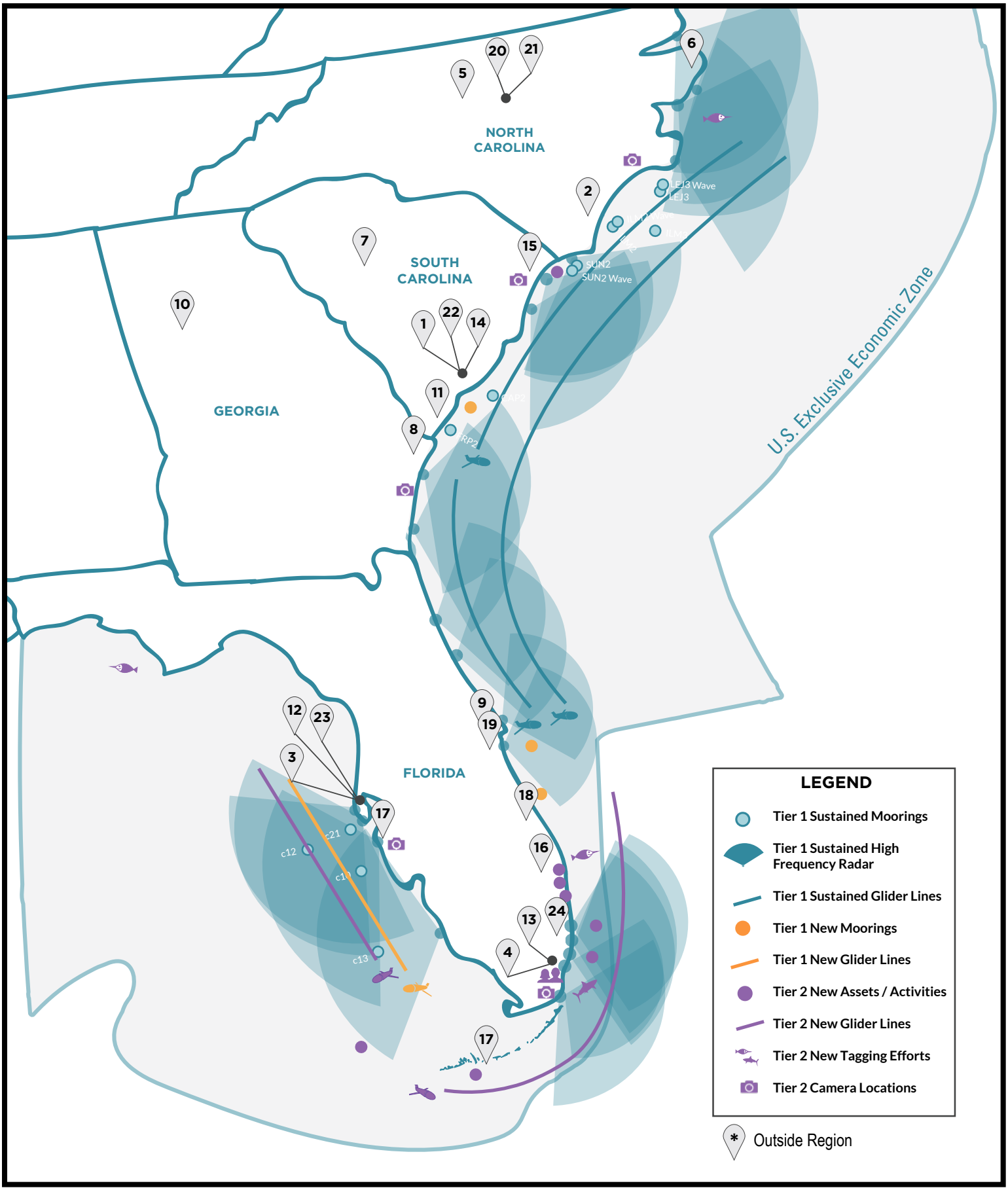
Appendix 3. Map and Tables of Tier 1 and Tier 2 Activities

Modeling and product activities not pictured



Goal 1: Continue successful operation of the SECOORA governance and management subsystem					
Obj.	**Project Title**	**RCOOS Subsystem**	**Funded Organizations**	**Tier 1 $3.5M**	**Tier 2 Greater than $3.5M**
A	SECOORA governance and operational structure	Governance	① SECOORA	Host annual members and Board meetings, update the Strategic Plan, and develop initiatives to provide coastal ocean info to underserved / underrepresented communities	
B	Regional Information Coordination Entity (RICE)	Governance	① SECOORA	Maintain RICE certification	
C	SECOORA's 2021-2026 RCOOS Strategic Operational Plan	Governance	① SECOORA	Annually update the RCOOS Strategic Operational Plan with the Science Committee	

Goal 2: Maintain and augment the SECOORA observing subsystem					
Obj.	**Project Title**	**RCOOS Subsystem**	**Funded Organizations**	**Tier 1 $3.5M**	**Tier 2 Greater than $3.5M**
A & B.1	Optimization & Enhancement of SECOORA Observing Elements in the Carolinas to Support Products and Applications	Observing	② UNCW	9 met-ocean moorings, 1 non-RT mooring, 4 non-RT acoustic receivers, 1 new co-located met and wave buoys in SC, and 3 new wave buoys off NC	
A & B.2	A Coordinated Observing and Modeling Program for the West Florida Continental Shelf	Observing	③ USF CMS	4 met-ocean moorings, 2 non RT stations, and 1 non-RT acoustic receiver on WFS	Maintain C22 Pressure Point mooring
A	Operating and Maintaining High Frequency Radars in the SECOORA Footprint	Observing	④ UM ⑤ UNC CH ⑥ ECU CSI ⑦ UofSC ⑧ UGA SkIO ⑨ FIT ③ USF CMS	Provide NRT surface currents through operation of 20 high frequency radar stations in FL, GA, SC, and NC	Funding for spares
A & B	SECOORA Regional Glider Observatory	Observing	⑧ UGA SkIO ⑤ UNC CH ⑩ GA Tech ③ USF CMS	3 glider lines off the SAB, and 1 new glider line off the WFS for HAB monitoring	1 glider mission on the WFS to support storm tracking / forecasting and 1 glider mission to track WFS to SAB connectivity
A	Estuarine Soundscape Observatory Network	Observing	⑪ USCB	Maintain acoustic array in 5 SC locations	
B.1	Florida Coastal Ocean Observing System	Observing	⑫ RDSEA ⑨ FIT	2 new buoys off the east coast of FL	Additional sensors on moorings
B.1	Establish a regional low-cost water level network	Observing	⑩ GA Tech ⑬ FIU ⑭ ASBPA ⑮ CCU ⑯ FAU	188 internet-enabled smart flooding sensors in FL, GA, SC and NC	31 internet-enabled smart flooding sensors in FL, GA, SC and NC

Goal 2: Maintain and augment the SECOORA observing subsystem continued					
Obj.	**Project Title**	**RCOOS Subsystem**	**Funded Organizations**	**Tier 1 $3.5M**	**Tier 2 Greater than $3.5M**
B.2	Long Bay Ocean Observing Buoy	Observing	(15) CCU (16) FAU		1 new met-ocean mooring offshore Myrtle Beach, SC
B.2	Southeast Florida Coastal Observation and Modeling Network	Observing	(13) FIU		2 new SOFAR buoys near Miami Beach, FL
B.2	Coral Reef Acidification Lower Keys: SeapHOx deployment to monitor long-term seafloor pH	Observing	(17) Mote (*) UD		1 new OA sub surface mooring in FL Keys
B.2	Monitoring Coastal Acidification by the Indian River Lagoon Observatory Network of Environmental Sensors in an Estuary of National Significance	Observing	(18) FAU Harbor Branch		3 ocean acidifcation stations in Indian River Lagoon and St. Lucie Estuary FL
B.2	Integrated coastal flood observation network for citizen engagement and improved data, modeling and projections	Observing	(13) FIU		Citizen science collection of WQ samples during flooding events in SE FL
B.2	Competitive opportunity to fill data gaps in coastal hazards and climate change, ecosystem health, and marine transportation	Observing	(1) SECOORA		Competitive RFP for science research or management missions using autonomous surface vehicles
B.2	Sustainable Regional Infrastructure for Coastal Observations and Operational Support Using Video Camera	Observing	(2) UNCW		Install web cameras to monitor the coast
B.3	Southeast White Marlin Inter-Annual Tagging Study	Observing	(19) ROFFS (*) GMRI (*) Univ. of Maine (24) The Billfish Foundation		84 PSATs on white marlin
B.3	Application of biotelemetry for enhanced monitoring and understanding of the effects of climate variability on ocean temperatures and fisheries	Observing	(4) UM		Deploy 40 temperature-depth profiling satellite tags on highly migratory sharks

Goal 3: Maintain and enhance the DMAC subsystem					
Obj.	**Project Title**	**RCOOS Subsystem**	**Funded Organizations**	**Tier 1 $3.5M**	**Tier 2 Greater than $3.5M**
A	Maintain and enhance the Data Management and Cyberinfrastructure (DMAC) subsystem	DMAC	(*) Axiom	Operate and expand SECOORA's DMAC subsystem	
B.1	A Data-Assimilative, Coupled Marine Environmental Assessment and Prediction System for the Southeastern U.S.	Modeling and Analysis	(20) NCSU (21) Fathom Science	Operate the Coupled North Atlantic Prediction System (CNAPS) numerical ocean modeling system 	Develop sub-regional high resolution marine predictions for end users
B.1	A Coordinated Observing and Modeling Program for the West Florida Continental Shelf	Modeling and Analysis	(3) USF CMS	Operate WFS and Tampa Bay coastal ocean models 	Add data assimilation of waves and biological variables specifically related to K. brevis red tide
B.1	Monitoring and forecasting pelagic Sargassum in the South Atlantic Bight in partnership with GCOOS and CARICOOS	Modeling and Analysis	(3) USF CMS	High-resolution, web-based system to monitor and forecast pelagic Sargassum in FL Keys and SAB 	
B.1	Modeling population linkages and habitat shifts of sharks in southeastern USA using a novel integrative approach	Modeling and Analysis	(9) FIT		Develop a series of genetic Species Distribution Models for sharks 
B.2	Enhancing the Capabilities of the SEAMAP-SA Biological Surveys Integrated into the SECOORA Data Portal	Modeling and Analysis	(22) SCDNR (*) Axiom	Enhance data management tools to increase useability of SAB fisheries survey data 	
B.2	Augmenting Ocean Observing through Artificial Intelligence: Annotation, Data Standards, and Applications	Modeling and Analysis	(23) FWC FWRI (*) Axiom	Artificial Intelligence tool to improve analysis of large datasets 	
B.2	Acoustic Surveys to Accelerate Machine Learning: Applications for Fisheries and Coral Reef Sustainability	Modeling and Analysis	(17) Mote		Use machine learning to improve analysis of fish sound data 

Goal 4: Effectively implement the engagement subsystem to support co-design of products and delivery to users.					
Obj.	**Project Title**	**RCOOS Subsystem**	**Funded Organizations**	**Tier 1 $3.5M**	**Tier 2 Greater than $3.5M**
A.1	Support Community Networks	Engagement	① SECOORA	Engagement in IA, NOAA SECART, Regional Ocean Data Sharing efforts, and development of a SE community flooding water level network and smart system testbed 	
A.1	Support Community Networks: Southeast Ocean and Coastal Acidification Network (SOCAN)	Engagement	① SECOORA		Continue to lead SOCAN through bi-monthly virtual Town Hall style webinars, recruit and engage stakeholders, and provide monthly newsletters
A.1	Support Community Networks: Southeast Disaster and Caribbean Recovery Partnership	Engagement	① SECOORA		Maintain a community of practice to share resources, catalogue existing activities, host meetings, monthly calls, maintain a website, and ensure sustainability of efforts
A.1	Support Community Networks: The FACT Network	Engagement	① SECOORA		Partner with FACT to expand its capabilities in the areas of data stewardship, data product development, website hosting, and network support
A.2	Maintain and enhance the SECOORA outreach and engagement subsystem to address priority issues in the region	Engagement	① SECOORA	Contine webinar series, website maintenance with news stories and extreme event pages, newsletters, social media posts, and hosting/participating in workshops/meetings	
A.3	Engage students in problem solving using ocean observing data	Engagement	① SECOORA	Continue SECOORA's E&O Committee, hosting NOAA Hollings Scholar, hosting two student awards, providing opportunities for formal / informal educators, and supporting students in the classroom	
B	Product development in SECOORA	Products	① SECOORA * Axiom	Co-design products with users and sustain current products	Hire an extension agent to coordinate user engagement and product development
B	Integrated Decision Support and Management Tools for Adaptive Public Health Practices: An Early Advisement and Reporting System for Recreational and Shellfish Harvesting Waters of the Southeast	Products	⑦ UofSC ⑰ Mote ⑳ NCSU	Integrate HTB, ShellCast, and BCRS / Citizen Science Information to provide advisories of public health risks in shellfish and swimming waters 	Extend the advisories to additional 12 beach areas and 15 shellfish harvesting areas
B	Optimization & Enhancement of SECOORA Observing Elements in the Carolinas to Support Products and Applications	Products	② UNCW	Develop a situational awareness tool targeting weather forecasters and ocean rescue groups 	
B	Leverage AOOS, NOAA, and Axiom work to establish a community water level portal for the SE	Products	① SECOORA * Axiom	Co-design with users a new community water level data portal 	
B	Sustainable Regional Infrastructure for Coastal Observations and Operational Support Using Video Camera	Products	② UNCW		Expand the WebCOOS operational coastal hazard and beach usage algorithms and products