

Draft South Atlantic Regional Research Plan Priorities

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Note: These are still in draft form and may include some additions.

Healthy Ecosystems

- Develop climate change scenarios and predictions at scales that are relevant for regional management, planning and decision making.
- Develop detailed benthic maps and quantify coastal habitat.
- Address the impacts of climate change on coastal habitats and species.
- Better understand the role of nutrient loading from uplands on coastal /ocean water quality and algal blooms.
- Examine disturbance recovery following storms and other natural events.
- Quantify the relative importance of fishing and other factors on trends in fish stocks and health.
- Understanding the opportunities, effectiveness of methodologies and benefits of ecological restoration and engineering of threatened habitats.
- Develop an effective social marketing program for awareness of ocean and ecosystem benefits (add-in; not linked to specific ORPP).
- Use ecosystem and habitat modeling in concert to identify key signals and changes in response to stressors.

Working Waterfronts

- Assess current and future impacts of renewable and non-renewable energy extraction in coastal zone. Forecast/model impacts of new development (wind, wave, drilling, ports).
- Investigate current demographics and trends for different working waterfront industries and examine social implications of those trends (different ethnicities, immigrants, ageing populations) including traditional working waterfronts.
- Assess working waterfronts status and trends on a regional level throughout SE, including traditional working waterfronts in this analysis. combines several fragments, so break-out dots moot)
- Enhance environmental observations and forecasting of coastal and ocean conditions (e.g. currents, turbidity, surface waves, water levels, wind conditions, pH- ocean acidification, HABs, pathogens, fecal counts, emerging chemicals of concern.
- Evaluate impacts of climate change on marine operations/ infrastructure and ways to increase resilience: flooding impacts, sea level rise, and erosion.
- Cumulative impacts- need good way to assess (e.g. network analysis), secondary and cumulative impacts (e.g. on environment, on housing, on transportation, etc).
- How are human activities in working waterfronts impacting freshwater resources (e.g. salinity intrusion freshwater availability) and how vulnerable are working waterfronts to changes in freshwater resources?
- Climate impacts on relationship between human uses and impacts (e.g. freshwater inflow impacts viability of working waterfronts).
- What do people perceive re: risk of living/buying on coast, given erosion, sea level rise, possibility of HABs, etc (regional study).
- Employ an ecosystem-based management approach to evaluate impacts of human uses.
- Use best information (including geologic setting) to inform where to site marine transportation/ working waterfront infrastructure to minimize environmental impacts while maximizing utility for the industry sector (long-term planning) .

- Identify existing regional assessments of working waterfront issues (regional integrated ecosystem assessment-literature review). (add-in not linked to specific ORPP--)
- Fly LIDAR in entire region; need high precision topobathy.

Clean Coastal and Ocean Waters

- Fine scale monitoring of highly variable physical and chemical parameters, including near-shore (surface zone, tidal zone, estuary) using observing and monitoring network (bring ocean observation network in-shore) for salinity, pH, temperature, DO, nutrients, CI (does not include pollutants).
- Develop real-time detection techniques to indicate and quantify presence of pathogens and contaminants, e.g. fecal.
- Predict changes in habitat with sea level rise.
- Develop responsive management strategies based on public preferences for resource use.
- Develop fisheries models with ecosystem perspective for SE region.
- Compile information more frequently on percentage of impervious surface in watersheds.
- Finer scale predictive models for climate change and sea level rise.
- Develop a composite index of relative abundance for important species.
- Develop an indicator of carrying capacity of coastal zone for human occupation.

Disaster Resilient Communities

- Determine natural hazard related stresses on community systems (ecosystems, built environment and lifeline elements) and develop physical-societal-economic consequence based vulnerability models.
- Improved risk/ vulnerability assessment information concerning extreme and chronic events (floods, tsunami, hurricanes, sea level rise) and impacts (social, economic, structural) to provide the science foundation for evaluating adaptation strategies and investment options.
- Economic assessment of sea level rise as it relates to ecosystem services and the built environment.
- Improve understanding of coastal precipitation, temperature and circulation patterns for projections of impacts including drought, freshwater supply and quality, flooding, movement of nutrients and pollutants and coastal upwelling effects on natural systems and productivity.
- Develop cost-benefit based visually effective multiscale decision-making tools for end-users (individuals, policy makers, emergency managers, etc.) e.g. MAEVIZ for earthquakes.
- Predictive models for the removal of subsidies for beach renourishment, coastal armoring, and flood insurance.
- Understand temporal and spatial relevance for climate models (especially as they are down-scaled to most local and regional needs). Downscaling needs to be driven by the local and regional needs.
- Develop, integrate, and map and create vulnerability assessments for infrastructure systems.
- Using real-time data re; whether climate change is increasing the frequency and intensity of storm events (e.g. sea level rise and global warming)
- Integrated assessment and validation/ testing of coastal inundation models for a variety of management applications.