

**Products and Services  
Climate**

**Ecosystem, Fisheries, Water  
Quality**

**Integrated Products**

## Climate – changes in ocean conditions over time

USER NEED	PRODUCTS / SERVICES	A O O S	C A R A	C e N	G C	G L O S	M A R A	N A N	N E R A	P A C	S C C	S E C
<p><b>Long term planning for climate mitigation and adaptation strategies to respond to changes in ocean/lake conditions over time</b></p>	<p><b>Long-term records on physical, biological, chemical, and geological variables</b></p>	<p><b>ACCGGLMANNENPASCSEC</b></p>										
	<p><b>Regional climate indices, e.g. primary productivity, shelf / slope exchange, El Nino, ocean CO2, etc.</b></p>											

## Climate – Ocean Acidification

USER NEED	PRODUCTS / SERVICES	A O S	C A R A	Ce N	G C	G L O S	M A R A	N A N	N E R A	P A C	S C C	S E C
<p><b>Long term planning for mitigation and adaptation to respond to acidification and impacts on ocean life and fisheries</b></p>	<p><b>Status and trends of acidification, including mapping of sensitive habitats</b></p>											
<p><b>Effective and safe operation of facilities, e.g. shellfish aquaculture--short term planning/responses such as suspending, moving ops</b></p>	<p><b>Warnings sent to interested parties when conditions unfavorable due to acidification</b></p>											

## Climate – sea and lake level change

USER NEED	PRODUCTS / SERVICES	A O S	C A R A	Ce N	G C	G L O S	M A R A	N A N	N E R A	P A C	S C C	S E C
<p><b>Long term planning to ensure safety and protection of coastal community--e.g what should be built where</b></p>	<p><b>Forecasts on sea level rise, land subsidence, coastal inundation models</b></p>											
<p><b>Emergency planning and short term responses to imminent flooding--e.g evacuations</b></p>	<p><b>Shoreline maps, near real time conditions, public information</b></p>											

# Healthy and Productive Ecosystems and Sustainable Fisheries

USER NEED	PRODUCTS / SERVICES	A O S	C A R A	C e N	G C	G L O S	M A R A	N A N	N E R A	P A C	S C C	S E C
<p><b>Develop ecosystem-based management approaches to improve understanding, use, management and conservation of ocean, coasts and GL. Restore and protect healthy ecosystems and sustainable fisheries, and the cultures and economies that depend on them.</b></p>	<p><b>Regional ecosystem assessment and health indices that integrate biological, physical and chemical conditions</b></p>											
	<p><b>Integrated maps and displays linking habitats and wildlife distributions/migrations with physical oceanographic properties; CMSP</b></p>											
	<p><b>Seasonal and annual climatologies of key ocean conditions and biological responses</b></p>											
	<p><b>Surface current mapping / modeling for larval fish transport, virtual particle tracking</b></p>											

<b>USER NEED</b> <b>Water Quality</b>	<b>PRODUCTS / SERVICES</b>	<b>A O S</b>	<b>C A R A</b>	<b>C e N</b>	<b>G C</b>	<b>G L O S</b>	<b>M A R A</b>	<b>N A N</b>	<b>N E R A</b>	<b>P A C</b>	<b>S C C</b>	<b>S E C</b>
<b>Predict and minimize impacts from discharges of pollutants</b>	<b>Early warnings for when pollution events are present or forecasted</b>											
	<b>Plume / particle tracking</b>											
<b>Improve management based on water quality conditions and trends, identifying and mitigating sources of pollution</b>	<b>Portal for integration of regional water quality monitoring data, restoration efforts</b>											
<b>HABs--protecting public health, aquaculture facilities and preparing for wildlife rescue</b>	<b>Early information to coastal managers and businesses when conditions are conducive to HAB formation and when HABs present</b>											
<b>Hypoxia--Improve adaptation and mitigation of harmful impacts</b>	<b>Early warnings for when conditions are conducive for hypoxia</b>											

# Integrated Data Products

USER NEED	PRODUCTS / SERVICES	A O S	C A R A	Ce N	G C	G L O S	M A R A	N A N	N E R A	P A C	S C C	S E C
<b>Access to user-friendly integrated products and tools for resource managers and decision makers, scientists, industry and public</b>	<b>Regional website, data discovery tools, data portal</b>											
	<b>Visualizations overlaying physical, chemical, geological, and biological observing information, linking spatial and dynamic data</b>											
	<b>Beach conditions website including rip currents, waves, water quality etc.</b>											
	<b>Integrated decision support tools for targeted users</b>											

# Beyond the Common Elements

Other regional products



PacIOOS—portal for rainfall, stream height, discharge



SECOORA—linked biological-physical stock assessment models



NERACOOS—cumulative impacts of multiple stressors

New/innovative products



# Discussion Questions

- Identify commonalities across regions--are there other common products that should be added to national synthesis list?
- What key regional differences and new/innovative products should be considered in synthesis?
- Describe end-to-end system requirements to deliver products
- What are the next steps needed to move the synthesis forward?

