National Perspectives on Ecosystem-based Fishery Management & an Introduction to the Draft Climate Science Strategy

South Atlantic Fishery Management Council Briefing

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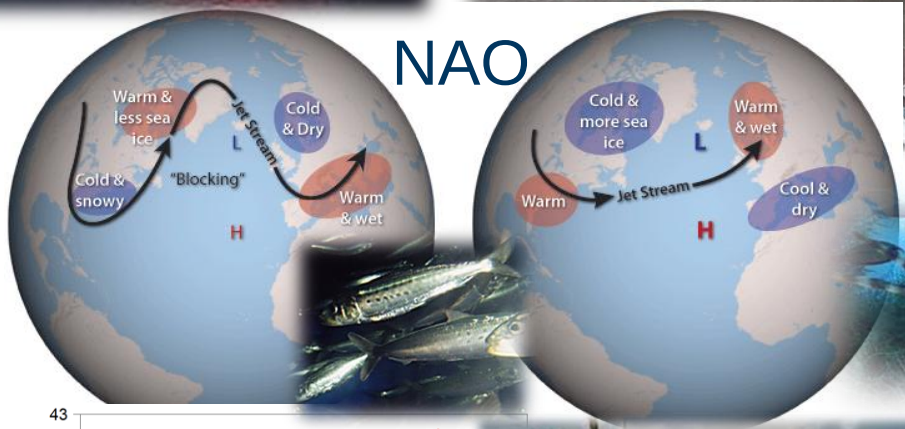
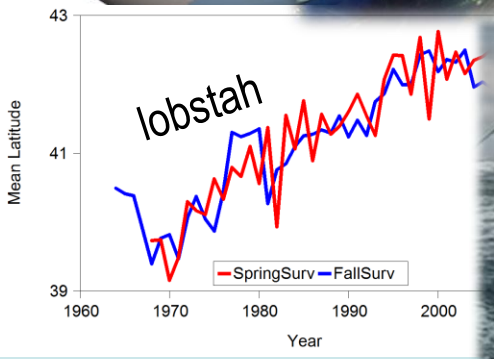
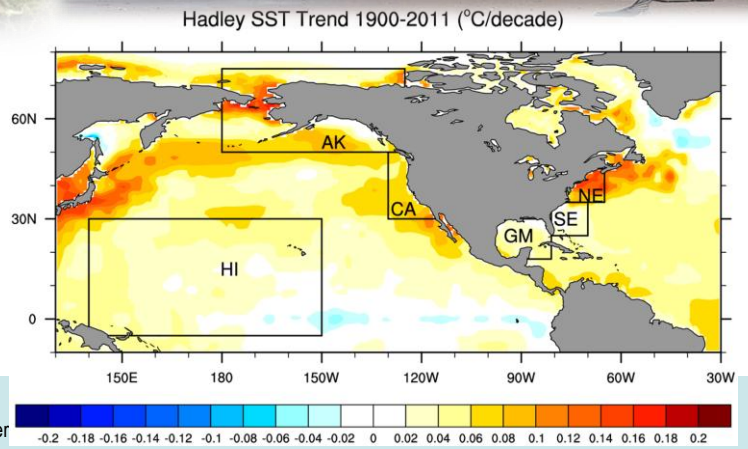
Take Aways

- We need to do, and are committed to doing, Ecosystem-based Fisheries Management
- Science-based Options exist to do EBFM, and can be inserted into LMR management, now
- The risks of not doing EBFM are not fading
- Key parts of this are our efforts to address Climate Impacts

Marine Ecosystems Face Many Pressures





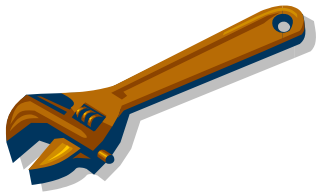


Some Benefits of EBFM

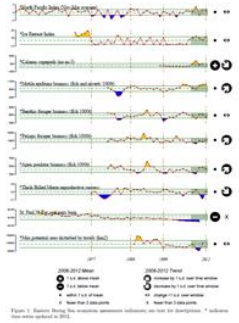
- More information to bear on management decisions, which should improve our ability to sustainably manage fisheries.
- We will have increased predictability of management actions.
- More stability of ecosystem levels measures,
    - translates into better regulatory stability and business plans
- Facilitates trade-offs, balancing social and ecological needs

What NMFS is doing wrt EBFM

- Stocking the EBFM toolbox to provide a menu of options
- Developing an EBFM Road Map for operational application



EBFM Options

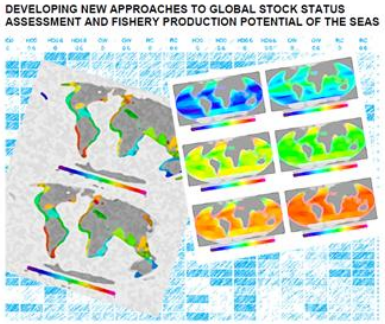


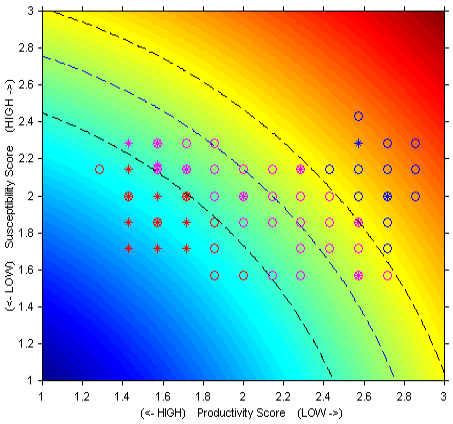
Technical

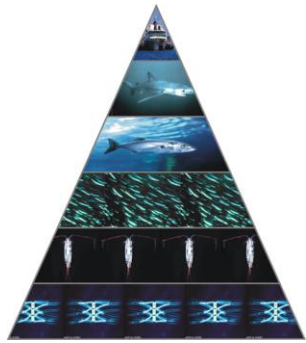
- Vulnerability & Risk Assessment
- Indicators & Status Reports
- Ecosystem Productivity
- Scenario Testing & Modeling

Governance

- Process- ecosystem and climate savvy
- FEPs
- Performance Metrics





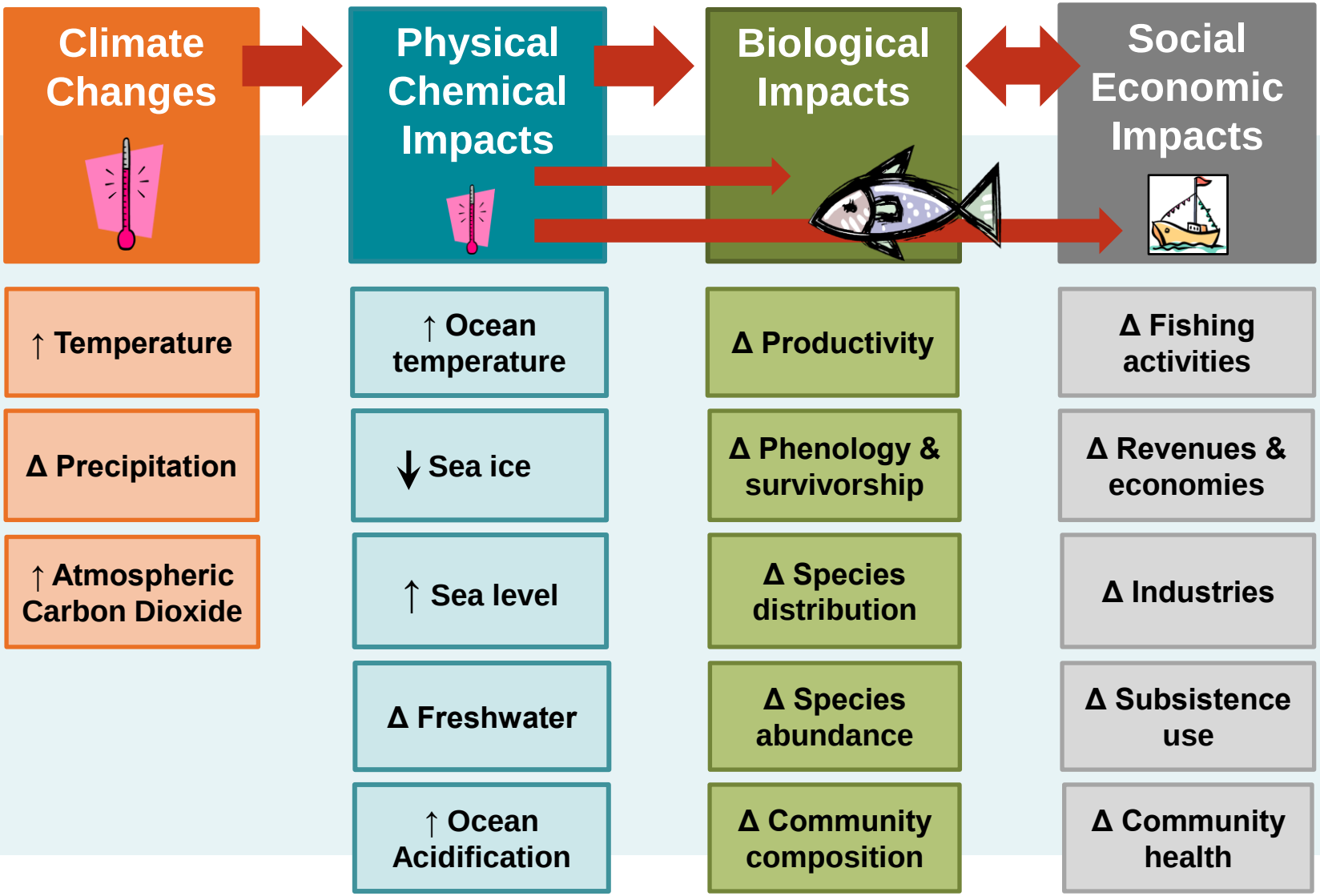


WHY	Growing demands and requirements for climate-related information.
GOAL	Increase the production, delivery, and use of climate-related information to support agency and stakeholder decisions.
ASK	Provide input on the draft Strategy and future Regional Action Plans.

Our Changing Oceans

- Climate change and ocean acidification are profoundly altering ocean ecosystems.
- Negative impacts expected for fisheries globally.
- Some positive impacts expected for high latitude fisheries.
- Other stressors exacerbate impacts.
- Significant challenges for fisheries management in changing conditions.

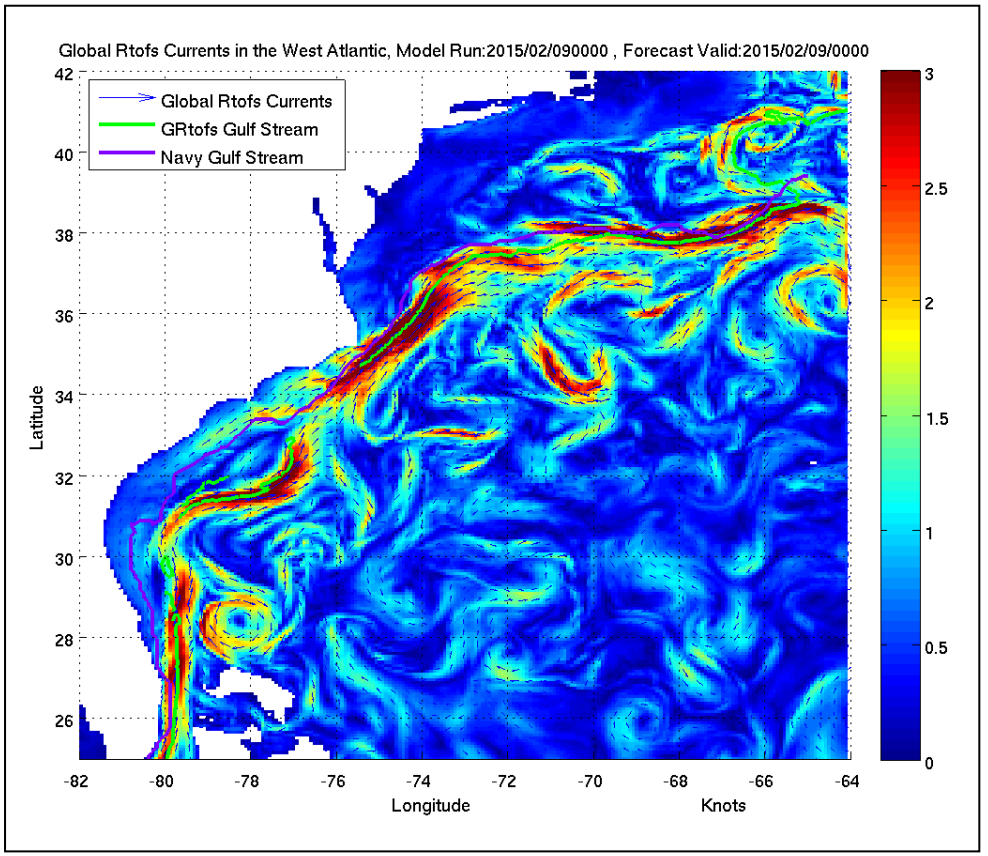
Possible Impacts of a Changing Climate



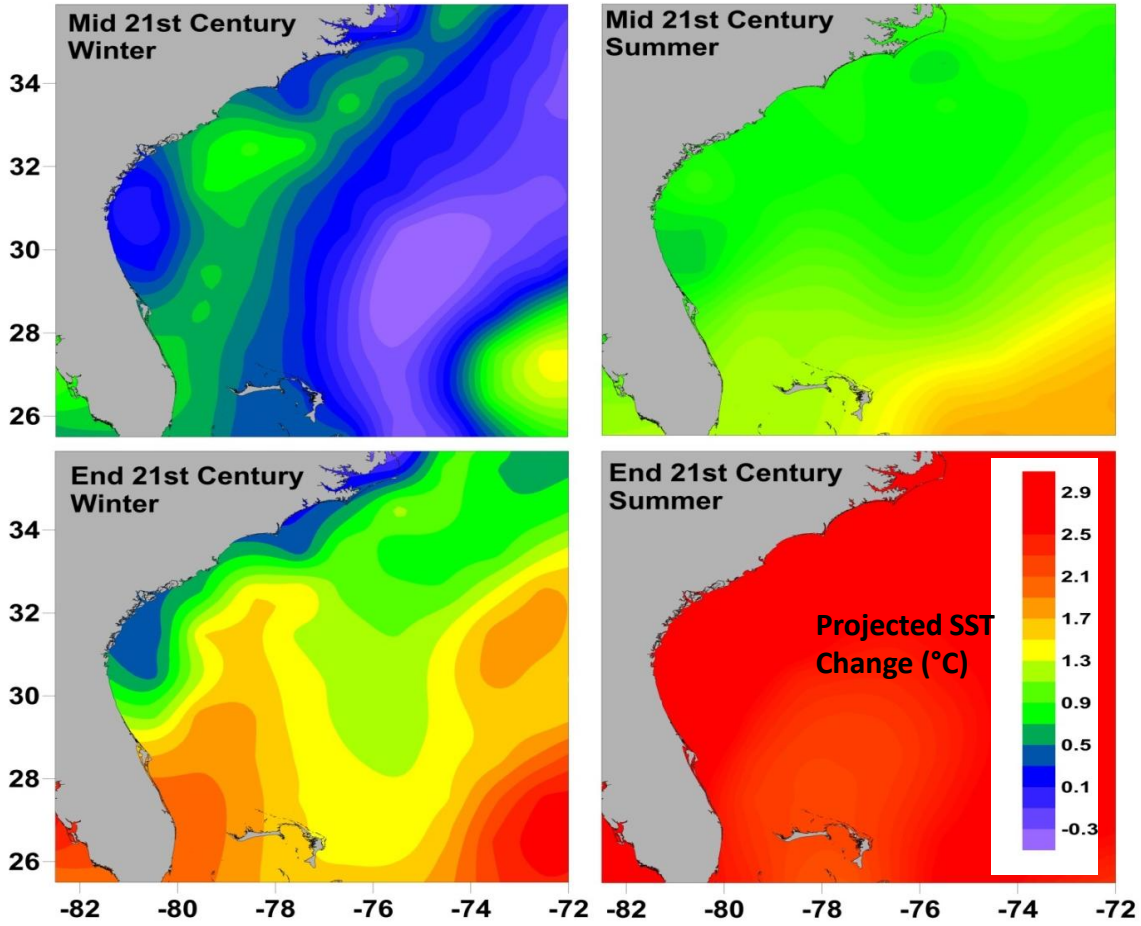
Climate change and the South Atlantic

Potential impacts and issues

- Rise in sea surface temperature
- Rise in sea level
- Altered frequency of extreme weather events (e.g., hurricanes & flooding)
- Changes in Gulf Stream
- Hypoxic Conditions
- Ocean Acidification
- Coral Bleaching



Projected Changes: Ocean Warming



Predicted surface temperature change under one IPCC climate trajectory scenario (RPC 8.5).
Credit: Yanyun Liu (NOAA AOML) and Sang-Ki Lee (UM-CIMAS).

Possible effects on marine resources

Shifts in distribution and abundance

- Projected northward expansion of species (e.g., grey snapper, black sea bass, blueline tilefish).
- Implications for management.
- Continued decline of corals and reef systems?

Invasive Species

- Projected expansion of invasive lionfish and native tropical species into nearshore waters of the North Carolina shelf.
- Implications for food web and fisheries as lionfish prey on reef fish larvae.

Oceanography and recruitment

- Potential climate effects on Gulf Stream strength and location may affect recruitment success of shelf-edge spawning species.

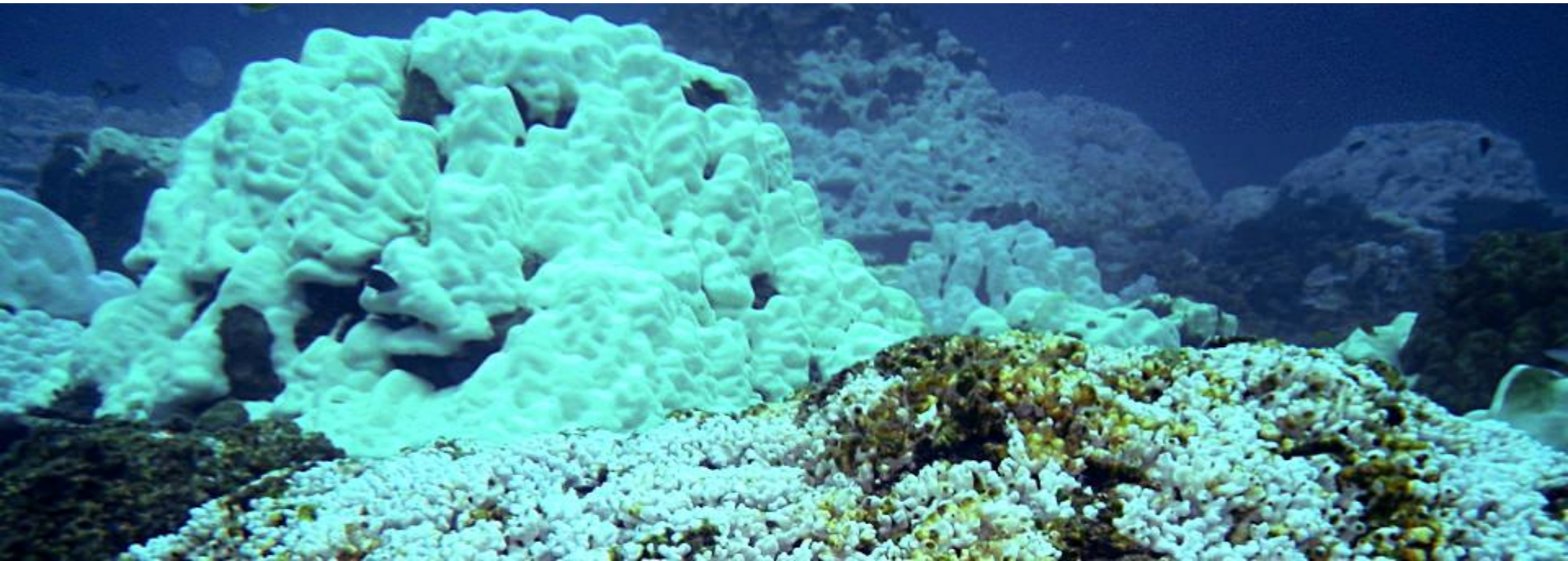
Possible effects on marine resources

Ocean Acidification

- Implications for shrimp and oyster fisheries and coral reefs?

Coral Bleaching

- Increased bleaching frequency or intensity?



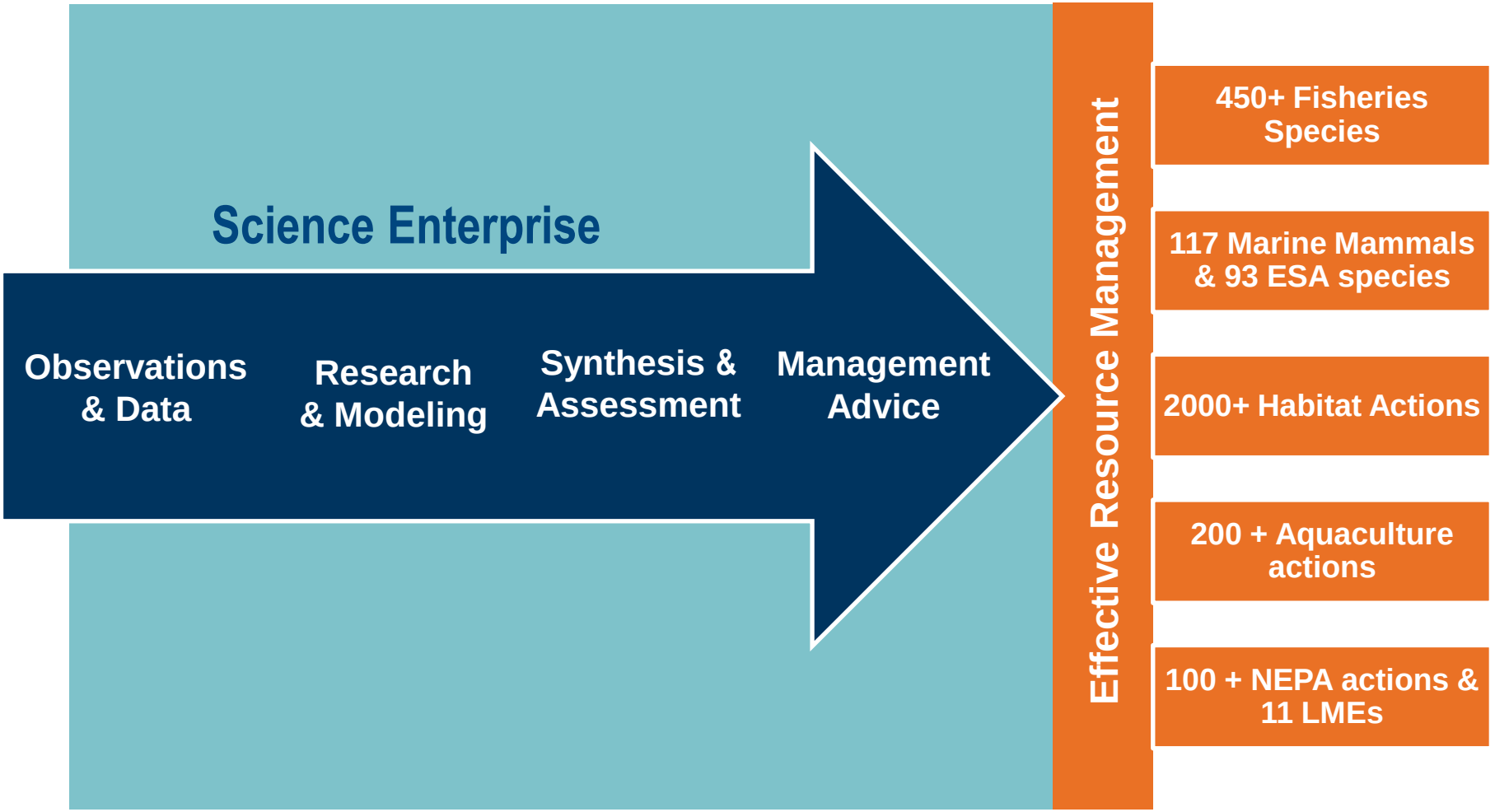
Implications for South Atlantic Fishing Communities?

- Climate change will lead to changes in LMRs
- This will result in change to fleets and coastal communities relying on these resources

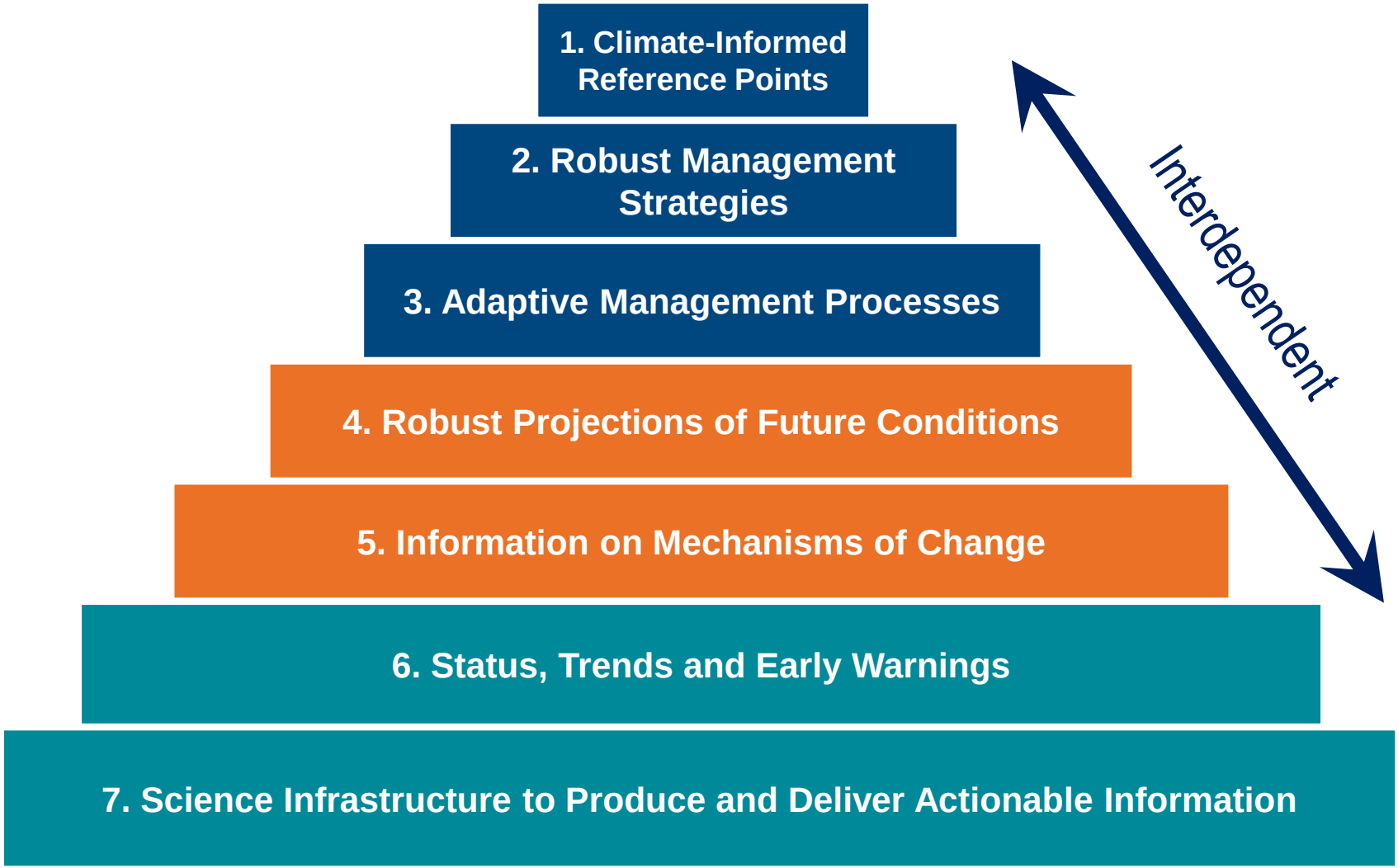
Draft Climate Science Strategy

GOAL	Increase the production, delivery and use of climate-related information to support NOAA Fisheries and stakeholder decisions.
CONTENT	Identifies 7 key objectives to meet NOAA Fisheries information requirements for resource management in a changing climate.
INTENDED USE	Help guide development of NOAA Fisheries science enterprise at national to regional levels (e.g., regional action plans).

Strategy designed to meet climate-related information requirements across mission areas



Draft Climate Science Objectives



Recommendations—Immediate Actions

1	progress	Conduct Living Marine Resource climate vulnerability analyses in each region.
2	progress	Maintain and develop Ecosystem Status Reports to track change and provide early-warnings.
3		Increase capacity to conduct climate-informed Management Strategy Evaluations

Recommendations—Short-term Actions (6-24 months)

1	Complete region-level action plans.
2	Strengthen climate-related science capacity nation-wide.
3	Increase resources for process-oriented research.
4	Establish climate-ready terms of reference for ESA, MSFCMA, MMPA stock assessments and Biological Opinions, etc.

Expected Results:

- ***Better tracking*** of ecosystem changes that provide early warnings of climate-related changes.
- ***Increased understanding*** of the mechanisms of change and the vulnerability of fish stocks, communities.
- ***Near and long term forecasts*** of ocean & resource conditions.
- ***Climate sensitive*** stock assessments and biological reference points.
- ***Robust management scenarios.***

Request for Input

1. Climate Science Strategy

- Input requested thru March 31.

2. Regional Action Plans

- Developed in 2015.
- Future call for input on regional needs & priorities.

www.st.nmfs.noaa.gov/ecosystems/climate

NOAA FISHERIES

DRAFT CLIMATE SCIENCE STRATEGY

NATIONAL MARINE FISHERIES SERVICE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Draft for Public Review
January 2015

WHY

Growing demands and requirements for climate-related information.

GOAL

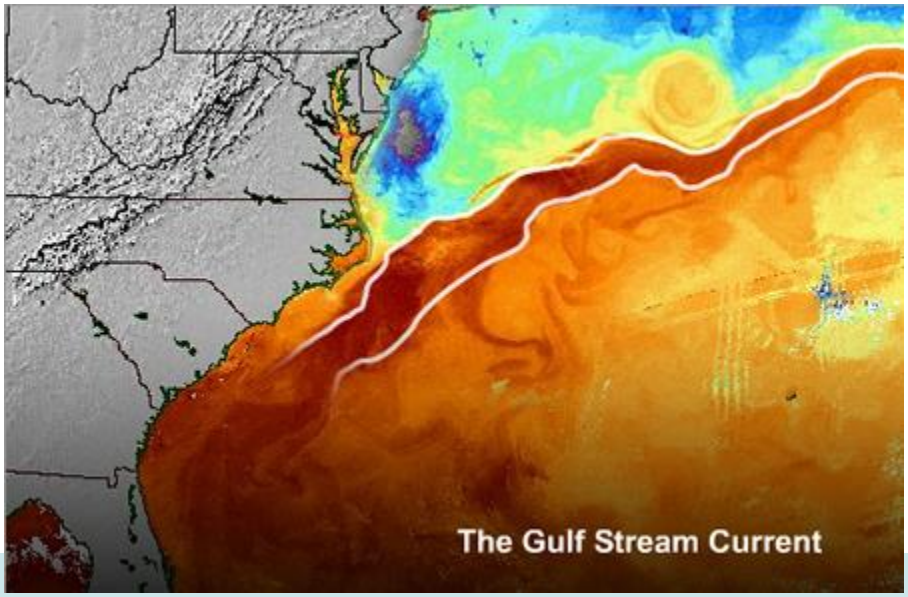
Increase the production, delivery, and use of climate-related information to support agency and stakeholder decisions.

REQUEST

Provide input on the draft Strategy and future Regional Action Plans.

Moving Forward

- We know the ocean is changing
- These changes are impacting marine ecosystems & us
- Help us advance EBFM



Questions?

For more information:

www.st.nmfs.noaa.gov/ecosystems/climate

www.st.nmfs.noaa.gov/ecosystems/EBFM