

Gulf of Mexico Integrated Ecosystem Assessment



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Welcome to NOAA's Integrated Ecosystem Assessment Program

NOAA's IEA program supports Ecosystem-Based Management (EBM), a new era of ocean stewardship, by providing a next generation tool and helping transfer scientific knowledge to management. The program is currently being implemented in 5 regions across the United States.



The California Current Large Marine Ecosystem (CCLME) is a dynamic, diverse environment in the eastern North Pacific Ocean. [Read More....](#)

A New Era of Ocean Stewardship

Humans have long enjoyed a broad spectrum of benefits from the sea. A worldwide movement has emerged that places Ecosystem-Based Management (EBM) at the center of our approach to safeguard marine ecosystems. NOAA's Integrated Ecosystem Assessment Program ushers in this new era of ocean stewardship by providing analytical tools to implement EBMs. [Read More...](#)

IEAs: A Next Generation Tool

IEAs are intended to provide a structure to assess ecosystem status relative to objectives, account for the holistic impact of management decisions, and guide management evaluations. [Read More...](#)



Transferring Scientific Knowledge to Management

-Ecosystem Function and Response to change
-Ecosystem Status, Trends and Pressures
-Management and Future Ecosystem Conditions
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www.noaa.gov/iea

WHAT IS AN IEA?

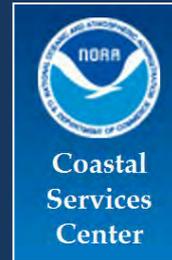
The Analytical Toolbox to Support EBM

A structure to assess ecosystem status relative to objectives and evaluate the holistic impact of potential management actions, thus informing management decisions

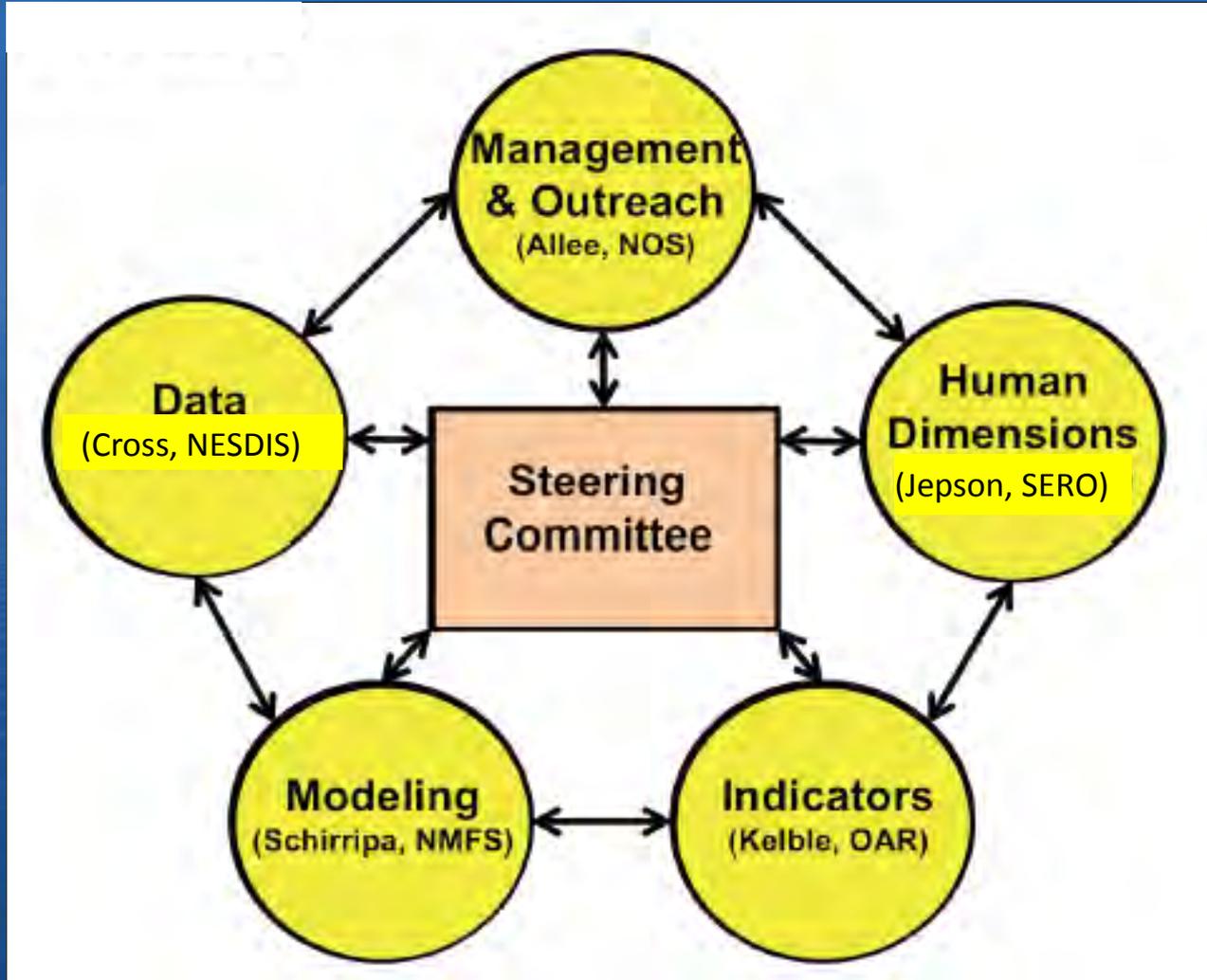
Ecosystem Services Approach
Holistic Ecosystem Modeling



LARGE AMBITIOUS GOALS REQUIRE COLLABORATION



GOM IEA Organizational Chart



GOM IEA PROGRESS TO DATE

HOW HAS THE GULF OF MEXICO
IEA PROGRESSED SO FAR?

GoM EBM-DPSEER Model

Ecosystem Services – Science & Education, Cultural Identity, Existence, Aesthetics, Beach Recreation, Non-consumptive recreation, Consumptive Recreation, Air Supply, Food Security, Raw Materials, Medicinal, Ornamental, Climate Stability, Pollution Regulation, Hazard mitigation, Human Health & Well-Being, Biodiversity & Habitat

State – Abyssal Plain, Aquatic birds, Artificial Reefs, Beaches & Dunes, Deep/Cold Reef, Wetlands, Estuarine Water Column, Fish & Shellfish, Macroalgae, Mangroves, Nearshore, Offshore, Offshore Shoals & Banks, Oyster, Seagrass, Shallow Reef, Sand & Mud

Pressure – Freshwater/Salinity, Temperature, tropical cyclones, Sea-Level Rise, Ocean Acidification, Subsidence, Boating Damage, Noise, Fishing, Invasives, Nutrients, Pollutants/Contaminants, Debris, Wetlands, Dredging, Logging, Coastal Development, Disease

Drivers – Climate, Human Population, Hydrologic Modification, Economy, Oil & Gas, Tourism, Shelter, Marine Transportation, Agriculture, Food,

Responses –

1. Individuals – behavioral changes
2. Local – permitting, clean-up, lights off @ beaches, wastewater systems
3. State – pollution regulation, oil well permits, fishing
4. Federal – pollution, fishing, habitat protection, ESA
5. NGOs – social marketing, public outreach

GOM ECOSYSTEM STATUS REPORT



NOAA Technical Memorandum NMFS-SEFSC-653

ECOSYSTEM STATUS REPORT FOR THE GULF OF MEXICO

Mandy Karnauskas, Michael J. Schirripa, Christopher R. Kelble, Geoffrey S. Cook
and J. Kevin Craig



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

December 2013

http://www.noaa.gov/iea/Assets/iea/gulf/GoM_EcoStatusReport_NMFS-SEFSC-653.pdf

Human Dimensions Indicators



Monitoring Well-being and Changing Environmental Conditions in Coastal Communities: Development of an Assessment Method



Maria K. Dillard
Theresa L. Goedeke
Susan Lovelace
Angela Orthmeyer



September 2013

NOAA TECHNICAL MEMORANDUM NOS NCCOS 174



NOAA National Centers for Coastal Ocean Science

Development of Social Indicators of Fishing Community Vulnerability and Resilience in the U.S. Southeast and Northeast Regions

Michael Jepson and Lisa L. Colburn

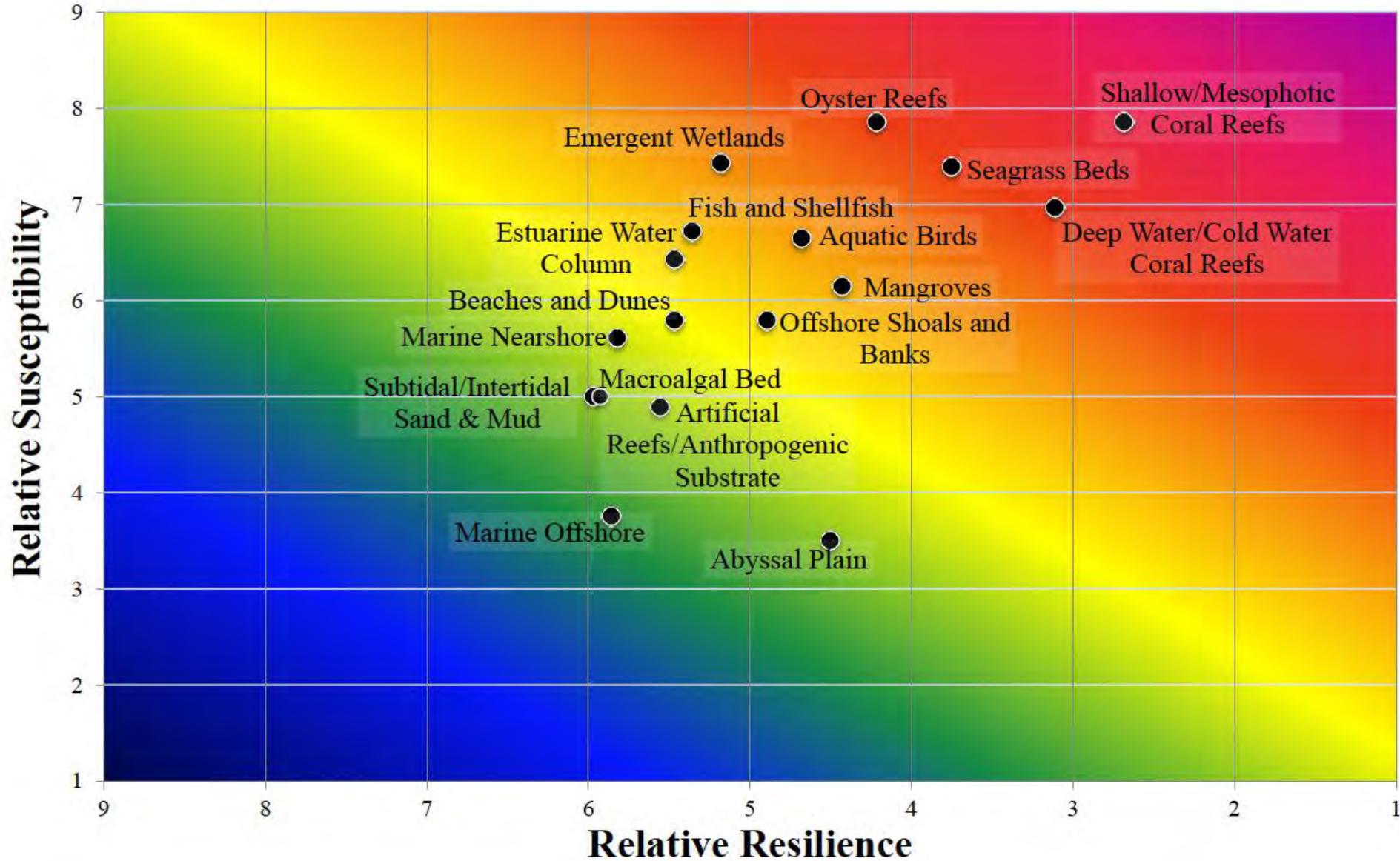


U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-129
April 2013

<http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index>

ANALYZE RISK

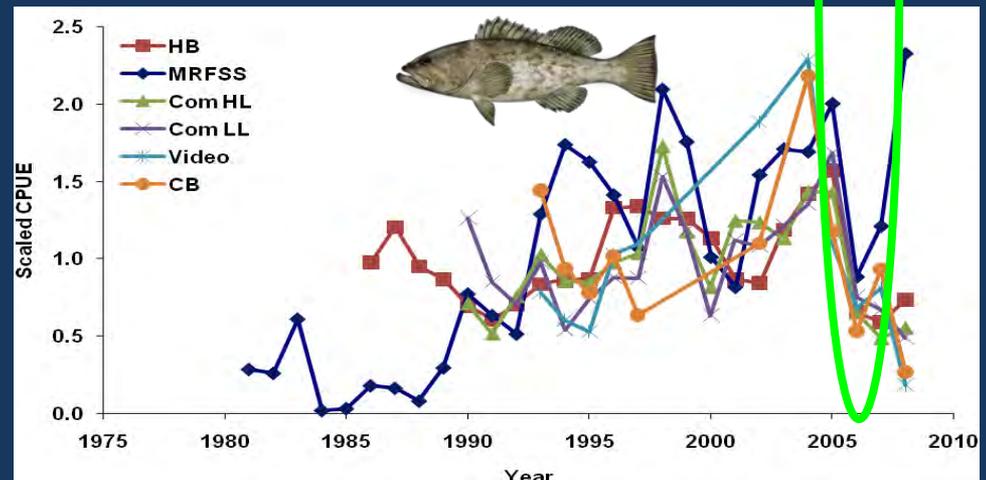
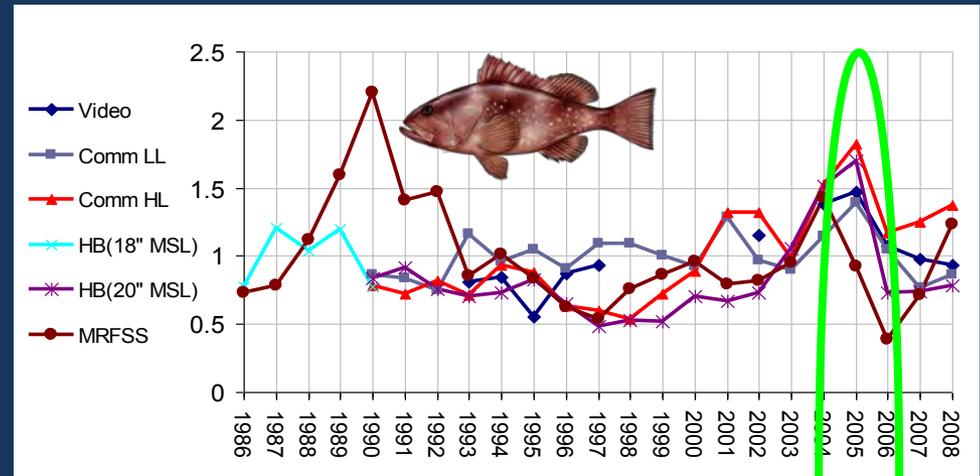
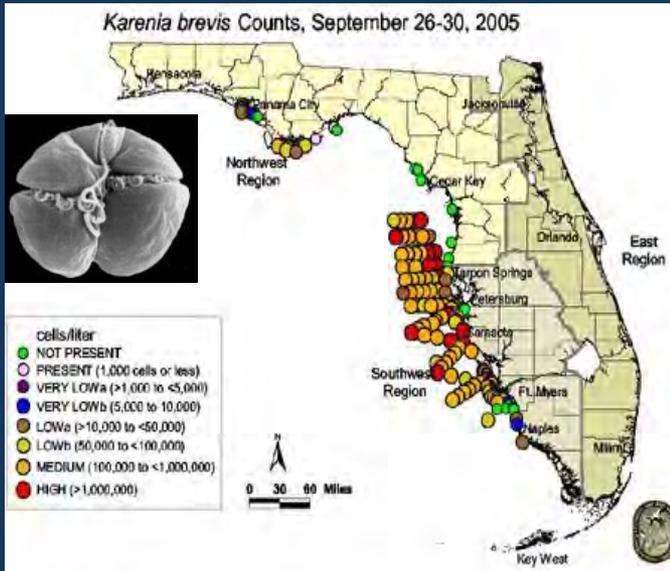


Using Ecosystem Models to inform Mgmt



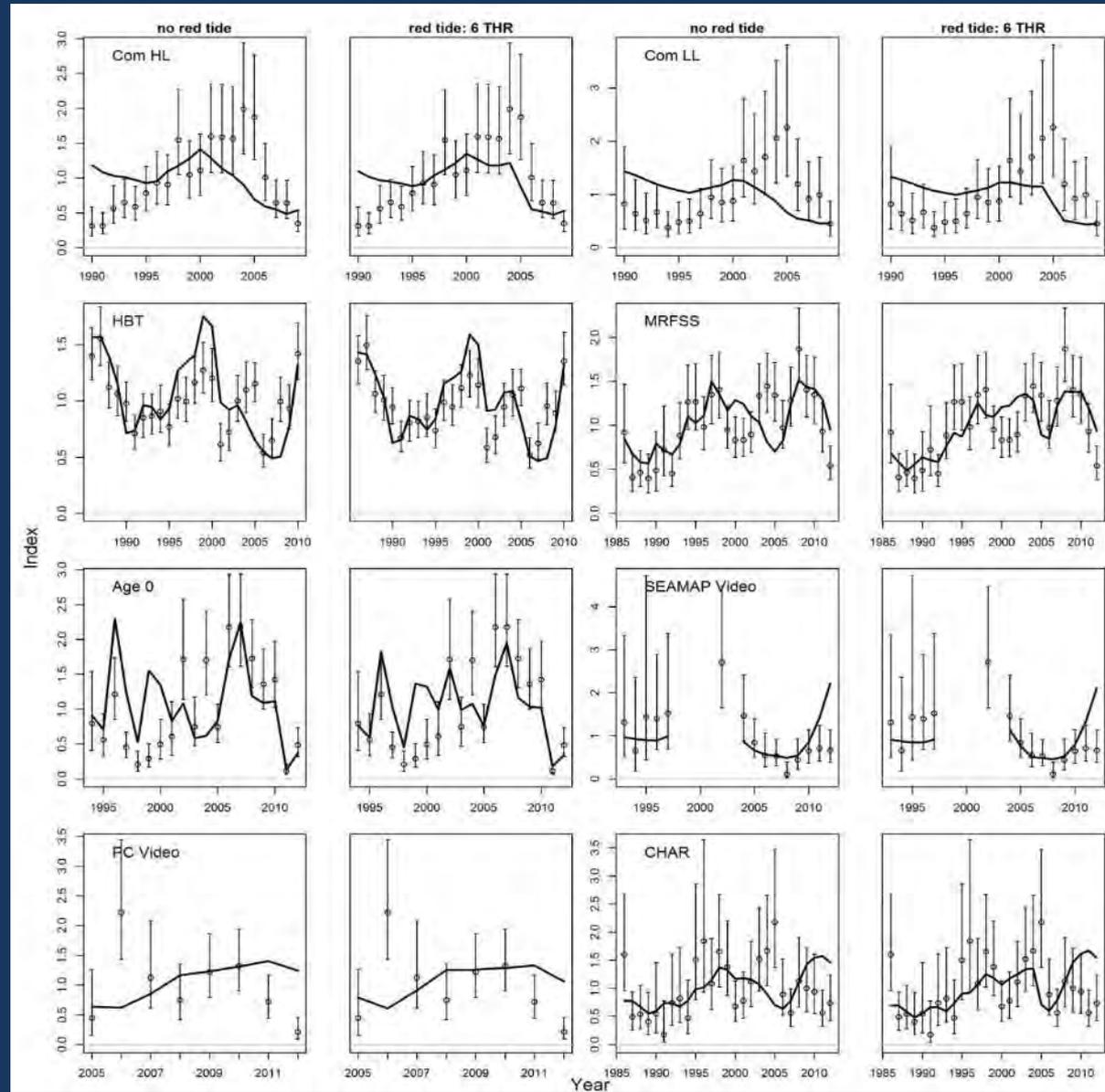
1. Helps resolve historic patterns in the data

Example: Red tide and grouper



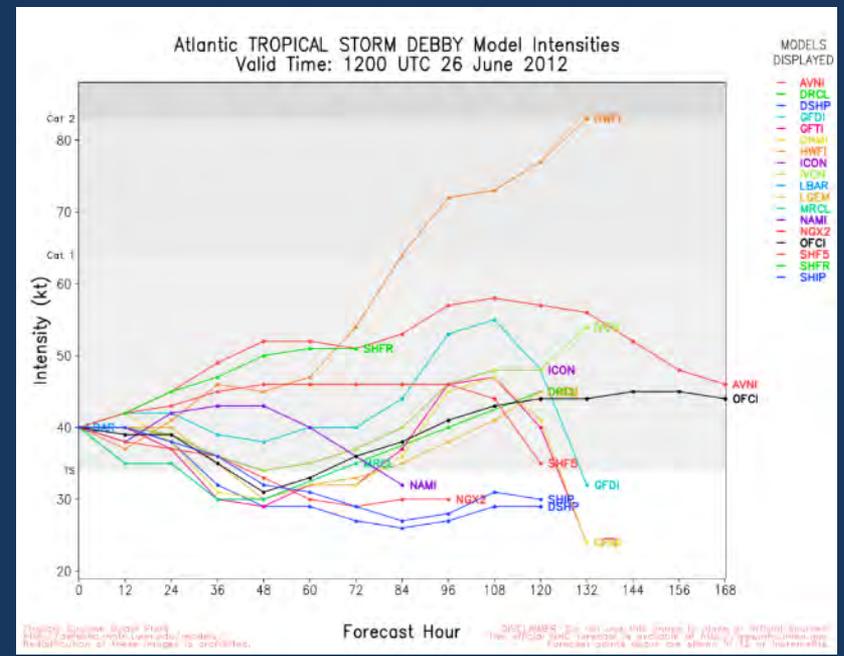
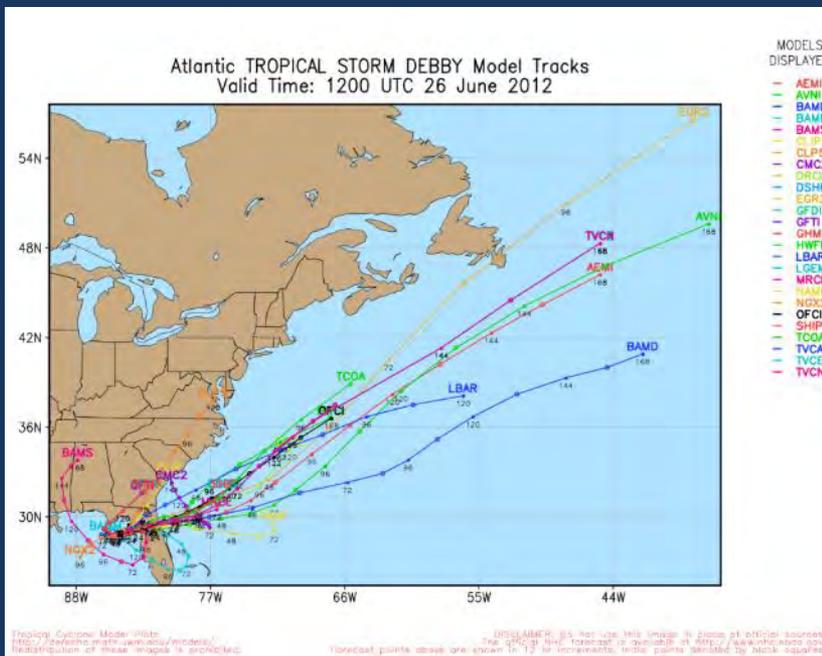
IMPROVED MODEL FIT

- Explained 36% of variation in natural mortality deviations
- Better fits to indices of abundance



DEALING WITH MODEL UNCERTAINTY

We are using a multi-model approach to deal with uncertainty similar to geophysical modeling efforts (Hurricanes, Climate Change, etc)



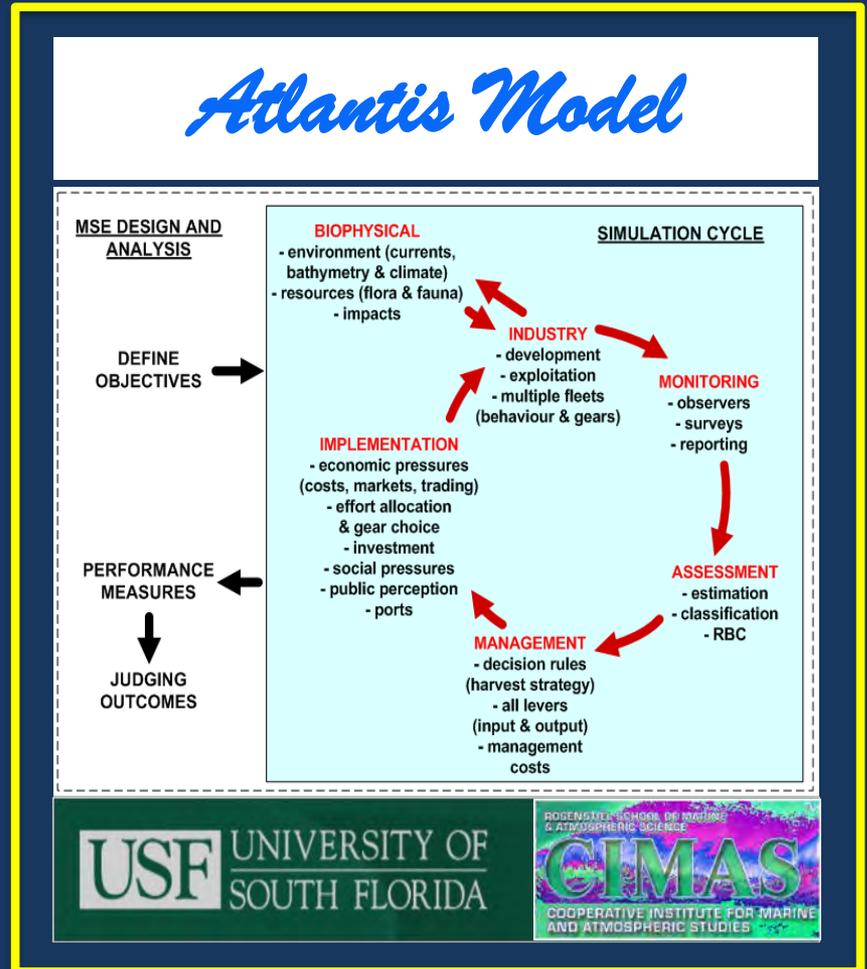
MULTIPLE ECOSYSTEM MODELS



EcoPath with EcoSim (Ewe)



OSMOSE



Northern Gulf Institute's *TroSim*
Ecosystem model for estuaries

WHAT ARE WE DOING NOW?

- Linking ecosystem state to services to Human Well-Being
- Working with NGI partners to make these linkages happen in Northern Gulf estuaries focused on oyster reefs
 - Allows us to take an ecosystem service approach to inform management of Gulf estuaries
- Working to help management entities define Ecosystem Goals and how they can implement an Ecosystem Service Approach to Mgmt
- Multi-species and cross-sectoral management strategy evaluations

THANK YOU

"A healthy ecology is the basis for a healthy economy"

-Claudine Schneider

Our natural resources are a bank account. We should live off the interest while leaving the principal intact for future generations.

- Input into IEA project database
- What products can we use to improve assessments?