



# MARES

*A testbed for science-to-ecosystem-based management*

The goal of the Marine and Estuarine Goal Setting for South Florida (MARES) Project is to reach a science-based consensus about the defining characteristics and fundamental regulating processes of a South Florida coastal marine ecosystem that is both sustainable and capable of providing the diverse ecological services upon which our society depends.

## The Purpose

The coastal marine ecosystem is invaluable to the growth, development and sustainability of South Florida. The underlying purpose of MARES is to synthesize the knowledge of the ecosystem to facilitate a holistic approach to managing South Florida's coastal marine ecosystem.

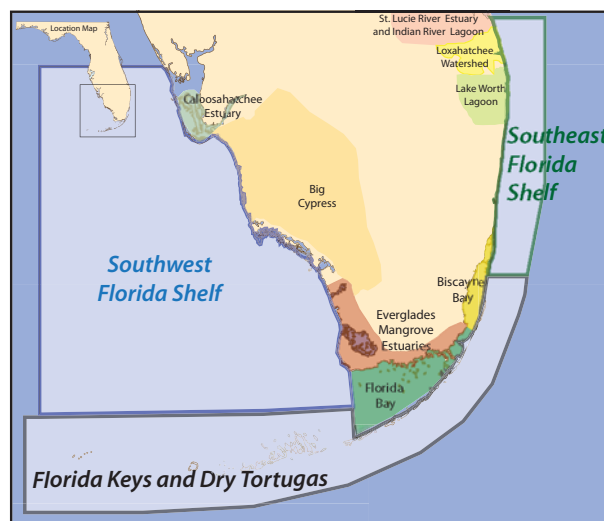
## The Process

MARES began in 2009 with targeted briefings and information exchanges with South Florida environmental management committees. These were followed by subregional Integrated Conceptual Ecosystem Model workshops, Indicator working groups to identify ecosystem components, and development of indicators to track the health of the marine environment. Indicators are presently being combined into Indices that together could be combined into a Report Card addressing the status of the Total South Florida Coastal Ecosystem. Results of MARES are being used by management agencies to address individual and jurisdictional responsibilities.

## Partnerships

MARES is a four year collaborative effort with contributions from academic, federal, state, local, public, and private organizations. 7 universities, 3 federal agencies, 2 state agencies and 2 non-governmental organizations. The project is led by the Cooperative Institute for Marine and Atmospheric Science at the University of Miami. Funding is provided by the National Oceanic and Atmospheric Administration.

MARES represents a unique collaboration among natural and human dimensions scientists, federal, state and local agency experts, and non-governmental organizations working with environmental managers, private industry stakeholders, and interested members of the public. MARES is focused upon three coastal subregions – Florida Keys and Dry Tortugas, Southeast Florida Shelf and Southwest Florida Shelf.



Existing estuarine CEMs and three subregions.

The first step in the formal MARES process is to convene the relevant experts from natural system and human dimensions science, stakeholders, and agency representatives and charge them with developing a visual representation of their shared understanding of the characteristics and processes regulating and shaping each subregional ecosystem. The second step is to build upon these diagrams to develop Integrated Conceptual Ecosystem Models (ICEMs) using an innovative model framework that incorporates information about the effects that people have on the environment and about the values that motivate their actions. The objective is to organize information about the relationship between people and the environment in a format that will help managers deal with the trade-offs they face by using *Attributes that People Care About* to focus attention upon "Who cares?" and "What do they benefit or lose from changes in their environment?" MARES models serve not only as a basis for synthesizing information but also for identifying societal and ecological indicators and knowledge gaps. The third step in the MARES process is to combine these indicators into a set of indices that can be incorporated into coastal ecosystem report cards that document trajectories towards (or away) from a sustainable and satisfactory condition.

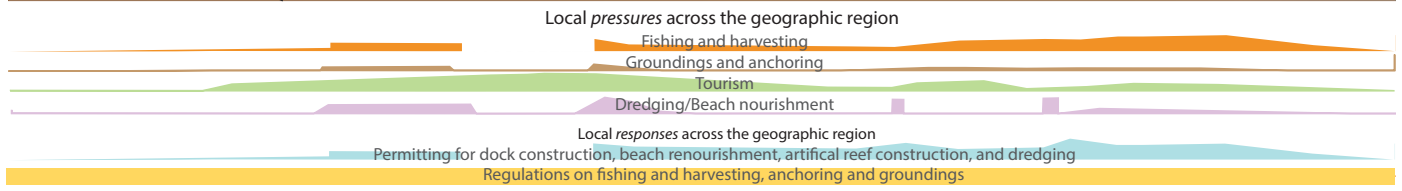
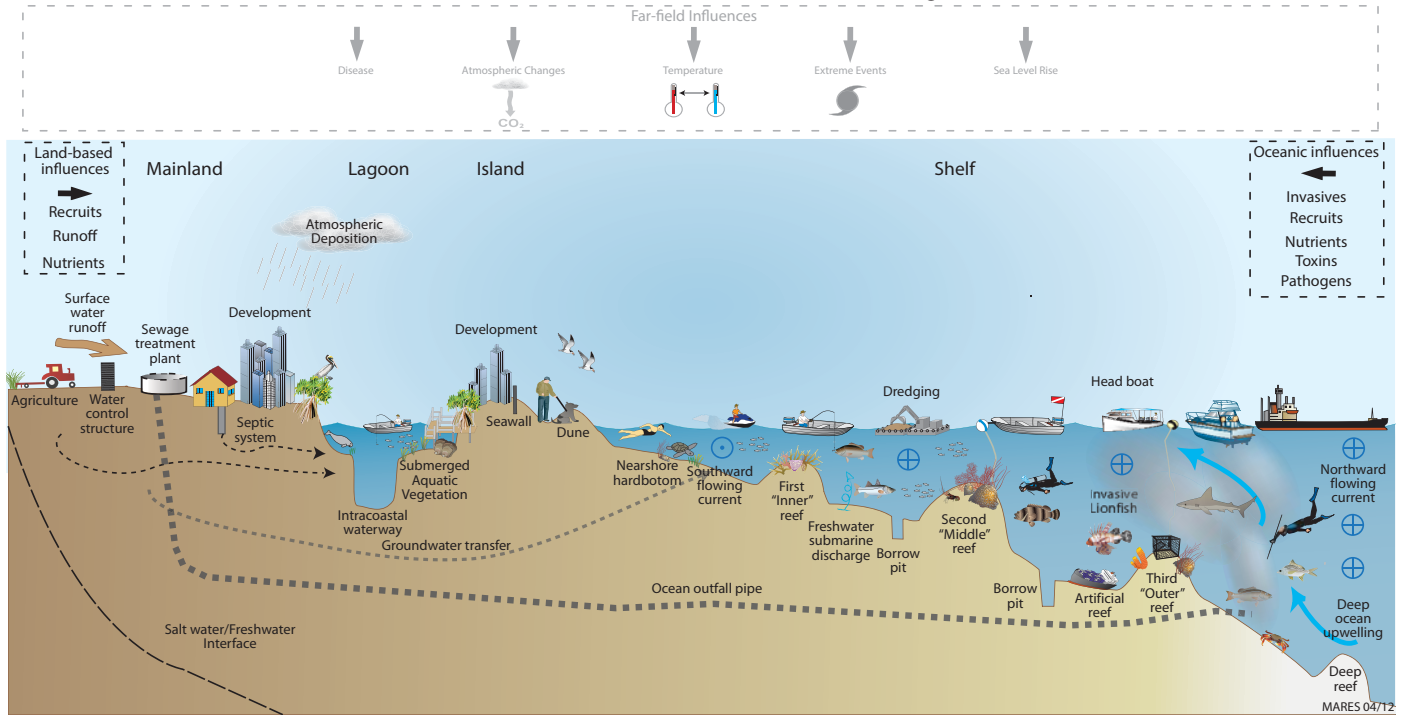


FOR MORE INFORMATION VISIT [WWW.SOFLA-MARES.ORG](http://WWW.SOFLA-MARES.ORG) OR EMAIL [PAMELA.FLETCHER@NOAA.GOV](mailto:PAMELA.FLETCHER@NOAA.GOV)

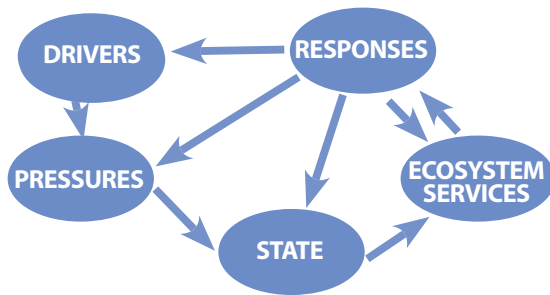
# MARES Project Components

## Conceptual Diagram of Ecosystem

Marine and Estuarine Goal Setting for South Florida  
Characterization of the Southeast Florida Coast Subregion



## Integrated Conceptual Ecosystem Models



MARES ICEMs include human dimensions of the coastal marine ecosystem in South Florida. The ICEMs describe cause and effect relationships in the ecosystem, identify services provided by the ecosystem, such as water clarity and seafood, and account for societal and individual actions including ecosystem management activities (Responses) intended to mitigate the adverse effects on the ecosystem. Ecosystem Services are the benefits that humans derive from the ecosystem. They are what link people to the State of the ecosystem, through "attributes [of the environment] that people care about."

## Quantitative Ecosystem Indicators

Quantitative Ecosystem Indicators (QEIs) are ecosystem components that can be monitored to measure change and reflect the condition and trajectory of the ecosystem including human society. Natural system indicators should integrate the system-wide response to multiple ecosystem drivers. One example of such an indicator is algal bloom status in Florida Bay. The concentration, duration, and spatial extent of chlorophyll a with respect to historical conditions can be used to assess changes in the water column affecting water clarity and habitat that eventually may impact ecosystem services such as water clarity and seafood quality. (Right: Image of Tennessee Reef with algal bloom moving from Florida Bay to the Florida Keys reef tract). Human Dimensions Indicators can be economic (measurable in dollars) or non-economic (typically measured through opinion surveys amongst key subpopulations).

