

SUPPORTING CORAL REEF ECOSYSTEM MANAGEMENT DECISIONS APPROPRIATE TO CLIMATE CHANGE

Pamela Fletcher¹ James Hendee² and Karsten Shein³

¹Florida Sea Grant College Program at NOAA/AOML, Miami, Florida, USA pamelafletcher@noaa.gov

²NOAA/AOML, Miami, Florida, USA james.hendee@noaa.gov

³NOAA/NCDC, Asheville, North Carolina, USA karsten.shein@noaa.gov



National Climatic Data Center

Abstract

There is a need to provide resource managers and policy makers with relevant, appropriate climate information. The approach for this project is to build coral reef manager capacity in climate decision making with a decision support suite of tools. The research being conducted consists of:

- 1) a formal needs assessment to obtain a clear picture of the type of data desired by managers;
- 2) integrating climate data to report changes to coral reefs over varying time scales; and,
- 3) the development of an internet-based decision support system that delivers understandable science to managers.

Project goals

- Incorporate real-time in situ and satellite-derived data into scenario models for resource management.
- Anticipate future uncertainties and contingencies using scenario models and stakeholder participation

Corals are important to South Florida's ecosystem and economy



Corals provide habitat for a diverse flora and fauna



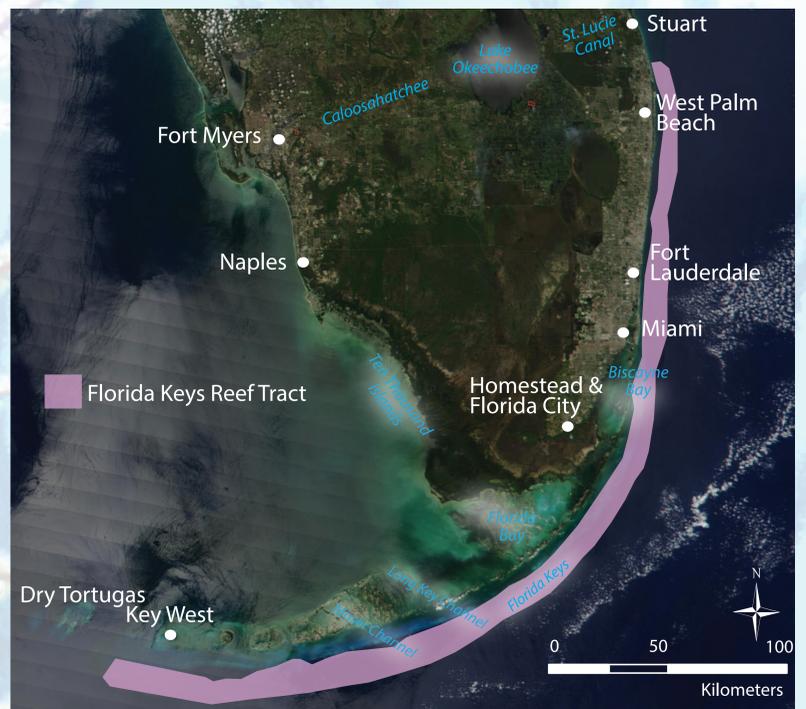
Corals are important to the local economy



Corals provide shoreline protection

The Florida Reef Tract is the only shallow-water, tropical coral reef ecosystem in the continental US

Study site: South Florida, USA

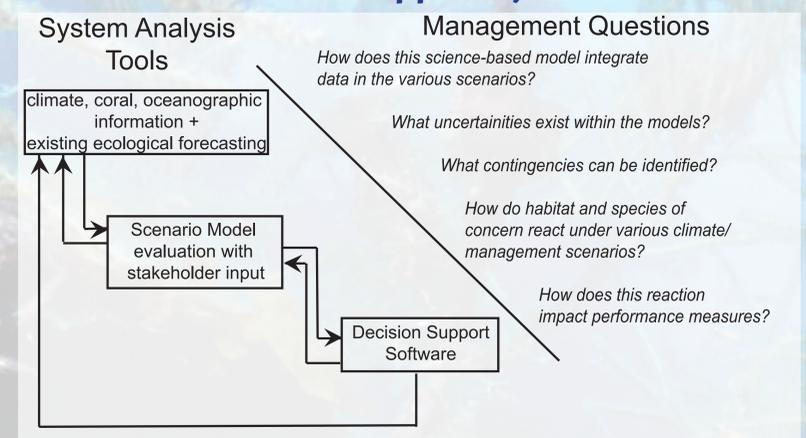


Methods

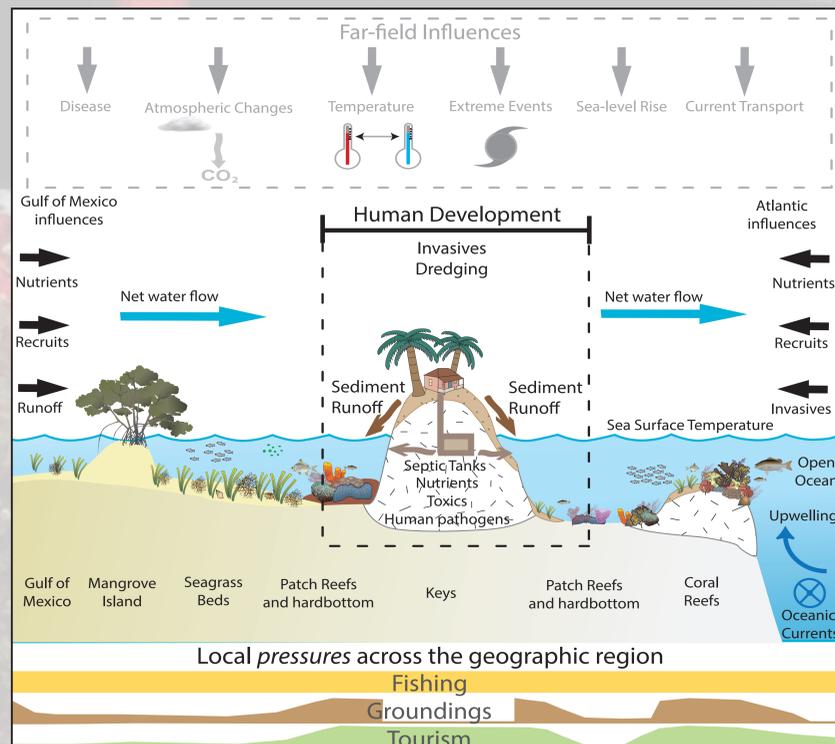
Assessing managers data needs



Analyzing data to develop a Decision Support System

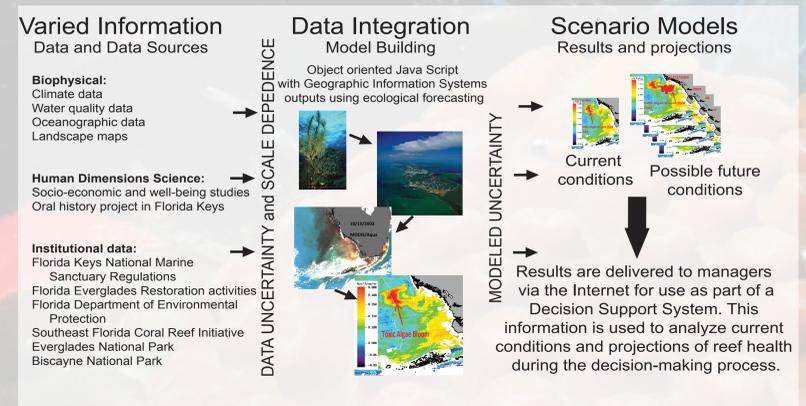


Corals are susceptible to multiple stressors



- The Florida Keys Reef Tract is impacted by local, regional and global stressors from many sources.
- Stressors can increase reef susceptibility to diseases and physical impacts.
- Corals can become less resilient due to degraded water quality associated with climate variability and human impacts.

Integrating data and designing visualizations for decision making



References and Acknowledgements

Florida Keys National Marine Sanctuary (FKNMS). 2002. Comprehensive Science Plan. [online: floridakeys.noaa.gov/research_monitoring/fknms_science_plan.pdf]

Hendee, J.C., E.R. Stabenau, L. Florit, D. Manzello, and C. Jeffris. 2006. Infrastructure and capabilities of a near real-time meteorological and oceanographic in situ instrumented array and its role in marine environmental decision support. In Remote Sensing of Aquatic Coastal Ecosystem Processes, L.L. Richardson and E.F. LeDrew (eds.). Springer Verlag, Volume 9, 135-156.

Kiker, G.A., N.A. Rivers-Moore, M.K. Kiker, and I. Linkov. 2006. QnD: A scenario-based gaming system for modeling environmental processes and management decisions. (Chapter in Morel, B. Linkov, I. (Eds) "Environmental Security and Environmental Management: The Role of Risk Assessment." Springer, Netherlands. Pp:151-185.

Marine and Estuarine Goal Setting for South Florida. 2012. www.softa-mares.org

This project has been funded in part by the National Oceanic and Atmospheric Administration's Coral Reef Conservation Program C085-ID647.

