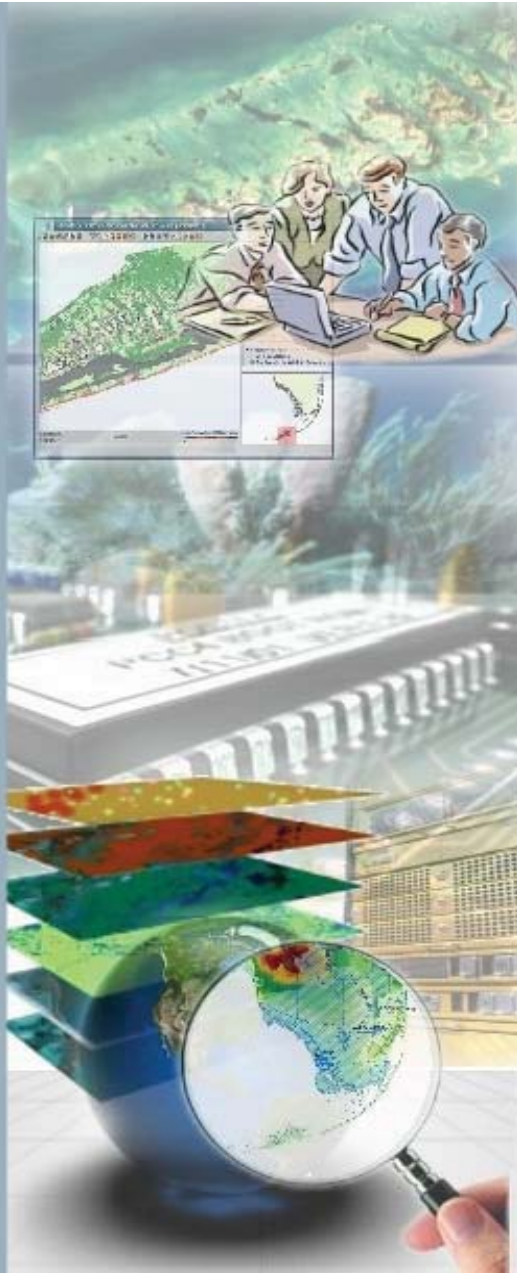


# Data Navigator: South Florida User Guide



## Data Navigator (South Florida): User Guide (Rev. 1)

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# Table of Contents

|   |    |
|---|----|
| Overview .....                                      | 1  |
| The Approach .....                                  | 6  |
| Data Layer .....                                    | 6  |
| Network Layer .....                                 | 7  |
| Processing Layer .....                              | 8  |
| User Interface Layer .....                          | 8  |
| The System .....                                    | 10 |
| System Requirements .....                           | 10 |
| User Interfaces .....                               | 11 |
| The Java Viewer Toolbar and Functions .....         | 16 |
| <i>Opening, Saving and Closing Projects</i> .....   | 17 |
| <i>Adding Layers and Layer Properties</i> .....     | 18 |
| <i>Saving Map Image and Print Function</i> .....    | 21 |
| <i>Zooming Functions</i> .....                      | 22 |
| <i>Querying the Layers and Attributes</i> .....     | 23 |
| <i>Measuring Distances</i> .....                    | 24 |
| The HTML Viewer Toolbar and Functions .....         | 25 |
| <i>Toggle (Legend/Layers) Function</i> .....        | 26 |
| <i>Toggle Overview Map Function</i> .....           | 29 |
| <i>Zooming Functions</i> .....                      | 29 |
| <i>Identifying Feature Attribute Function</i> ..... | 29 |
| <i>Query Attributes Function</i> .....              | 30 |
| <i>Find Text String Function</i> .....              | 31 |
| <i>Measure Function</i> .....                       | 31 |
| <i>Set Units Function</i> .....                     | 32 |
| <i>Select by Rectangle Function</i> .....           | 32 |
| <i>Select by Line/Polygon Function</i> .....        | 32 |
| <i>Clear Selection Function</i> .....               | 32 |
| <i>Print Map Layout Function</i> .....              | 33 |
| References .....                                    | 34 |

# Overview



Figure 1. Complex reef ecosystems such as coral reefs are very vulnerable to changes in the environment (Source: NOAA).

Coral reefs are among the most complex ecosystems on Earth, with the highest known phylogenetic diversity subject to a great range of stochastically driven disturbances (Birkeland 1997; Figure 1). However, coral reefs are declining in many parts of the world because of the cumulative and interactive impacts of disturbances, including, but not limited to, over-harvesting of coral and reef organisms, global

change, land-based pollution runoff, and physical damage from boats, divers and various fishing practices. One of the results of this onslaught is the apparent decline of ecological resilience (Done 1992) over the last two decades. Coral reefs that are perturbed by hurricanes, bleaching or other damaging events seem to be increasingly likely to experience a phase shift to macroalgal dominance rather than recovering to former states of coral dominance (Littler and Littler 1997, Hughes 1997, McManus et al. 2000). Ecological resilience on a damaged reef is controlled, in part, by the rates of recruitment of corals, macroalgae, and herbivorous organisms to the specific areas of a reef that have been disturbed. This recruitment is highly influenced by eddies and differential flow patterns of ocean waters as they flow across specific reef features. Thus, understanding resilience at the whole-reef scale requires understanding the interactions of topography and hydrodynamics as they affect recruitment, as well as the spectrum of factors affecting post-settlement survival.

Applying this understanding to decision-making requires that these relationships be considered in management planning. Nearly every management intervention impacts local economies and the quality of life of reef-dependent people. These impacts can then lead to a change in local compliance with regulations and the overall feasibility of a given

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The **National Center for Caribbean Coral Reef Research (NCORE)** is focused on the analysis and forecasting of coral reef resilience in order to improve the scientific basis of coral reef management issues. The goal is to advance coral reef science to the degree that we can determine the range of potential consequences of a given disturbance or change in

management strategy on both the ecology of the reef and the socioeconomics of the reef-dependent people. In short, we aim to move coral reef science away from post-mortem analysis toward useful scenario testing.

**NCORE's** initiative to develop the **Data Navigator: South Florida** is a step forward in an attempt to bridge gaps among science, resource management and public knowledge. The digital layers presented here have been selected and grouped together via a decision tree based on potential field scenarios. Wherever applicable, animated time series of layers are presented to provide a better understanding of the dynamics of the data and comments from experts in their respective fields have been inserted to help guide the user.