

# BTM

# Benthic Terrain Modeler Tool for ArcGIS®

## Bringing the Deepwater Benthic Environment into Focus

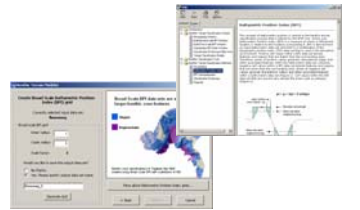
### Background

The Benthic Terrain Modeler (BTM) is an ArcGIS-based tool that can be used by coastal and marine resource managers to examine the deepwater benthic environment using input bathymetric data sets. High resolution bathymetric data, most often obtained through acoustic means such as multibeam sonar mapping instruments, creates an extremely accurate digital representation of seafloor topography. Using the spatial analysis functions of a GIS, certain derived products can be extracted from bathymetric data, such as slope, bathymetric position, and rugosity. The BTM contains a set of tools that allow users to create these products, and then define the relationships between them to form terrain classifications.

### Functionality

#### Benthic Terrain Classification Wizard

The Benthic Terrain Classification Wizard is provided to guide users through the terrain classification process, educating them along the way through diagrams and an interactive help window.



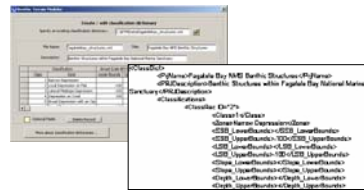
#### BTM Tools

More advanced BTM users can choose to skip the wizard and use the tools provided through the BTM toolbar within ArcMap.



#### Classification Dictionaries

These XML-based files give users the ability to create and distribute their own benthic terrain classifications by defining the relationships between input bathymetry, slope, and broad and fine scale bathymetric position index (BPI) data sets.



### System Requirements

#### Required

- ArcGIS 8.x or Arc 9.0 with SP 2
- Spatial Analyst Extension

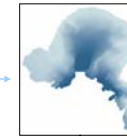
#### Recommended Hardware

- >2Ghz Processor
- > 1 GB of Hard Drive Space

### Methodology

#### Input Data

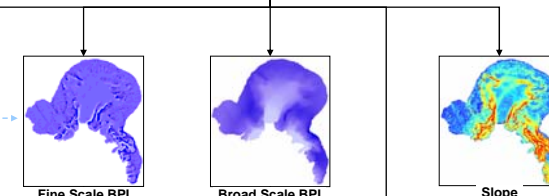
The BTM Tool utilizes multibeam bathymetric data in ESRI's Grid raster data format



DATA

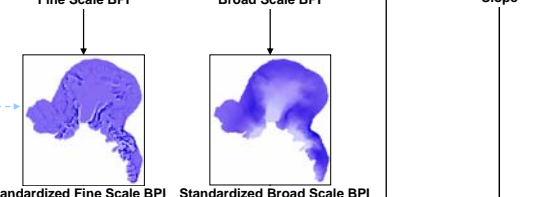
#### Bathymetric Position Index (BPI)

BPI is a measure of where a referenced location is relative to the locations surrounding it.



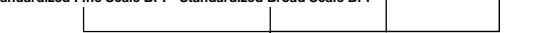
#### BPI Standardization

Standardization allows for easier parameter entry during the classification dictionary editor creation process.



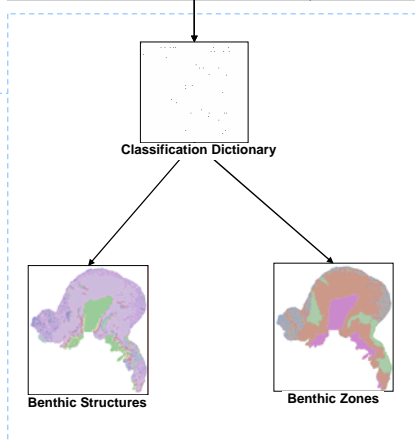
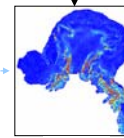
#### Output Data

The outputs of the BTM tool are benthic zone (broad scale) classifications and benthic structure (fine scale) classifications. Each data set is classified through the creation of an associated dictionary file. The dictionary allows the analyst to assign intuitive names (i.e. fore-reef, reef crest) to seascape features.



#### Rugosity

Rugosity is a measure of terrain complexity or the "bumpiness" of the terrain. In the benthic environment, rugosity has the potential to highlight hotspot areas of biological activity. However, it is recognized that this potential needs further investigation to determine its utility



INFORMATION

The Benthic Terrain Modeler was developed as part of a partnership between:



The Benthic Terrain Modeler is in the final stages of development. Look for tool release in Spring 2005

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