Introduction to Coastal and Marine GIS

GeoData in partnership with ABPmer

COURSE OUTLINE

Delivering sustainable development in the marine environment requires a balance to be achieved between resource use and protection of our seas. Spatial data is increasingly important in such decision making being used for marine planning, conflict management and environmental management.

GeoData's experienced GIS trainers have teamed up with ABPmer GIS Consultants, who specialise in the coastal and marine sector, to create a course that will provide you with the background and skills necessary to utilise these powerful tools and techniques.

The course introduces GIS concepts and techniques using ArcGIS 10. In addition, it describes available Coastal and Marine GIS datasets, which also form the basis for the course exercises.

A project showcase, drawn from ABPmer's portfolio, illustrates how these datasets have been used within GIS to support coastal and marine decision making. The course also considers common problems faced when mapping the coastal and offshore zones (including projections, vertical datums, etc.) and offers a GIS Clinic, where delegates have the opportunity to discuss their own specific issues with the experts.

All of our courses are validated under the Association for Geographic Information CPD scheme.

ANTICIPATED COURSE OUTCOMES / ACHIEVEMENTS

Aims and objectives

- Provide introductory level GIS knowledge
- Focus in on commonly used coastal and marine datasets
- Show the many potential applications of GIS within the coastal and marine sectors (through our partners at ABPmer)
- Discuss some of the unique challenges / pitfalls when mapping the coastal and marine zones (e.g. coordinate systems, vertical datums, integration of model outputs)

Learning outcomes - by the end of the course, delegates will have a knowledge and understanding of:

- What a GIS is; what spatial data is; raster and vector data models
- The core tasks involved in GIS analysis e.g. data acquisition/input; data storage and management; data manipulation/analysis; and data presentation and output.
- The core functionality of ArcMap, ArcCatalog and the embedded ArcToolbox.
- Importing data from GPS outputs and scanned paper maps.
- Handling tables including selections and queries.
- Georeferencing raster images, such as hydrographic charts.
- Creating and editing spatial data.
- Greater appreciation of coastal and marine GIS data and applications.
- The steps required to produce paper maps from base data.
- Basic geoprocessing tasks e.g. buffering and clipping.
- Introduction to ModelBuilder

For further information please contact:
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Introduction to Coastal and Marine GIS

Day 1

1 - Introduction to Coastal and Marine GIS

What is GIS?
GIS Tasks
GIS Data Types
Mapping in Layers
Co-ordinate Systems
Coastal & Marine GIS Applications

2 – Introduction to ArcGIS

ArcMap
ArcCatalog
ArcToolbox
Data for ArcGIS
GeoDatabases
Map Documents

Exercise 2: Getting Started

3 - Using ArcMap

Spatial Bookmarks
Data Frames and Layers
Symbology
Labelling
Definition Queries
Map Document Repair

Exercise 3a: ArcMap Basics; 3b: Handling Spatial Data

4 – Data and Metadata Management

Data Management Lifecycle
Catalog
Metadata
INSPIRE
MEDIN
Benefits of Geodatabases

Exercise 4: Data Management

5 - Handling Tabular Data

Table Types, Creating Tables
Adding Fields and Records
Editing a Table, Selections, Sorting a Table, Generating Field Statistics and Table Summaries

Exercise 5: Using Tables

Day 2

6 – Selections and Queries

Identifying Features
Map Tips
Hyperlinks
Select Features Interactively
Selection by Criteria
Sorting Data

Exercise 6: Generating statistics for the coastline

7 – Georeferencing

What is Georeferencing?
Data Types Requiring Georeferencing
The Georeferencing Toolbar
Aligning Rasters using GCPs
Aligning Rasters using X,Y Co-ordinates

Exercise 7: Georeferencing a Bathymetry Chart

8 – Creating and Editing Layers

Creating New Data
Shapefiles
Geodatabases
Adding Attributes
Editing Shapefiles
Snapping

Exercise 8: Creating data to explore coastal erosion

ABPmer Coastal and Marine GIS Data & Project Showcase

Highlighting the importance of GIS in the context of Marine Spatial Planning. Trainees will explore and interact with important data sources used for Coastal GIS projects (including Ordnance Survey, OceanWise and remotely sensed data).

Day 3

9 – Producing Maps

What is a Map Layout?
Map Design considerations
Map Elements
Graphic Elements
Using Templates
Exporting and printing layouts

Exercise 9: Creating a Layout

10 – GeoProcessing, Analysis and ModelBuilder

GeoProcessing
Buffer, Clip, Interesct, Union, Dissovle, Merge and Spatial Join
ModelBuilder
Customisation
Extensions
ArcGIS.com

Exercise 10: Geoprocessing and Analysis

11 – Common Issues in Coastal and Marine GIS

Coordinate Systems
Vertical Datums
Concurrency of data
Global dataset alignment

Exercise 11: Map Projection Correction and Vertical Datums

ABPmer Coastal / Marine GIS Consultancy Exercises

A more wide-ranging exercise where delegates work with data to solve a typical problem such as planning a new cable route for an offshore windfarm or locating a Salmon protection area

GIS Advice

We encourage delegates to bring their own data and discuss issues with experienced coastal GIS consultants.

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