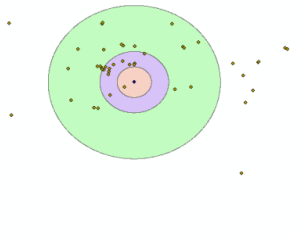
USF UNIVERSITY OF SOUTH FLORIDA ST. PETERSBURG

Intermediate GIS Workshop I & II

Course Objectives

This is an intermediate course on theories and application of GIS techniques for spatial analysis. Each student who successfully completes this course will have developed working knowledge and skills necessary to process GIS data and conduct simple spatial analysis. Students will be introduced to the concept of and will have hands-on experience with preparing data (including GPS) for GIS analysis, suitability analysis and damage assessment methodologies. This workshop assumes at least Beginner GIS knowledge. If you are not sure if you qualify, please read the Beginner GIS information to see if you are comfortable with those topics first.

Module I: Essentials of Spatial Analysis

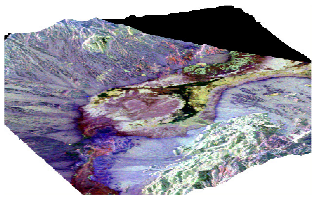


Learning Objectives

- Essentials of GPS
  - Adding xy data
  - Determining GPS Precision and Accuracy

Case Study: Integrate GPS data into GIS

- Creating Interpolated Surface
  - Creating Subsurface Limestone Formation Maps from point data using IDW
  - Using Triangular Irregular Networks (TIN)
  - Create a DEM using IDW and Spline Interpolation
  - Cross Validation of Interpolated Surfaces
  - Draping an image over a terrain surface



Case Study: Interpolating point data to visualize limestone formations

Case Study: Adding a lake to a TIN

Case Study: Create a DEM from point data

Case Study: Use elevation data from Death Valley, CA to drape image over a terrain

- Working with Remotely Sensed Data
  - Simple Image Classification Using Spatial Analyst
  - Georeferencing Imagery
  - Generalizing and Cleaning Raster Data

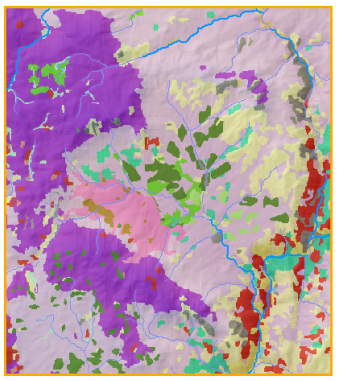
Case Study: Image Classification with vegetation on the San Andreas Fault

Case Study: Georeferencing imagery using roads

Case Study: Generalize Yellowstone Park remotely sensed data

- Report Preparation and Results Dissemination
  - Zonal Statistics
  - Cross Tabulation
  - Neighborhood Statistics

Case Study: Use zonal statistics, cross tabulation and neighborhood statistics to examine land cover types at varying elevations.



Module II: Intermediate Spatial Analysis

Learning Objectives
- Application of Geospatial Analytical Tools

Case Study: Epidemiology West Nile cases within proximity to river

Case Study: Suitable location for a business

Case Study: Using map algebra to find the best Location for pine and fir reforestation

Case Study: Use a neighborhood function to estimate edge effects on land cover data

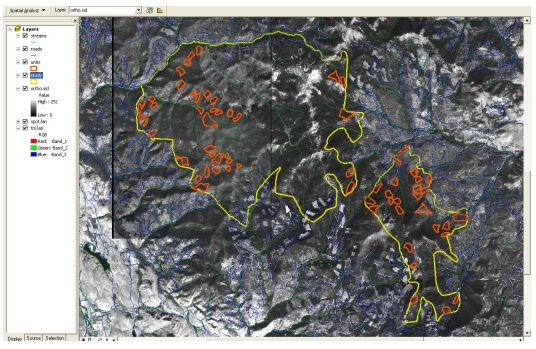
Case Study: Using cell statistics to detect change in the Columbia River Estuary

Case Study: Using map algebra to find a potential reservoir

Module III: Introduction to Topology

Learning Objectives
- Create a Topology
- Modify a Topology
- Manage Multiple Topologies
- Examining Topology Errors in ArcMap
- Use Predefined Fixes to Correct Errors
- Correct Pseudonode Errors with Predefined Fixes
- Using Topology Editing Tools to Correct Point Errors

Case Study: Analysis of topology for Gadsen County watershed



Module IV: Network Analysis

Learning Objectives
- Find the Shortest Path
- Find the Fastest Path

- Interactively restrict the path of a trace
- Restrict the Path of a trace using a weight filter

Case Study: Road networks of Santa Barbara

Module V: Advanced Habitat Suitability Model

Learning Objectives

- Build folder structure and geodatabases
- Create a Custom Toolbox
- Add Source Data to a Project Database
- Get Your Data into Shape
- Work with ModelBuilder
- Create a Submodel

Case Study: Habitat suitability for endangered lynx