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OSSIM Outputs: Shape files

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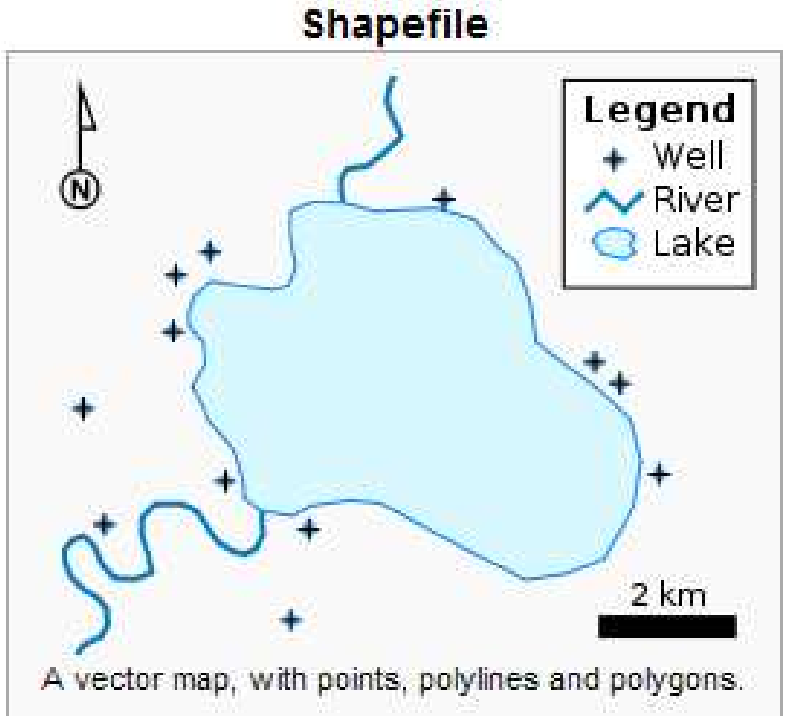
Overview of Talk

- Overview shape files
- Online documentation
- Coding an example



Shape Files Overview

What: Geospatial vector data format

Shapefiles were introduced with ArcViewGIS v2 in the 1990's

- Created by ESRI www.esri.com

Shapefiles specifically describe geometries

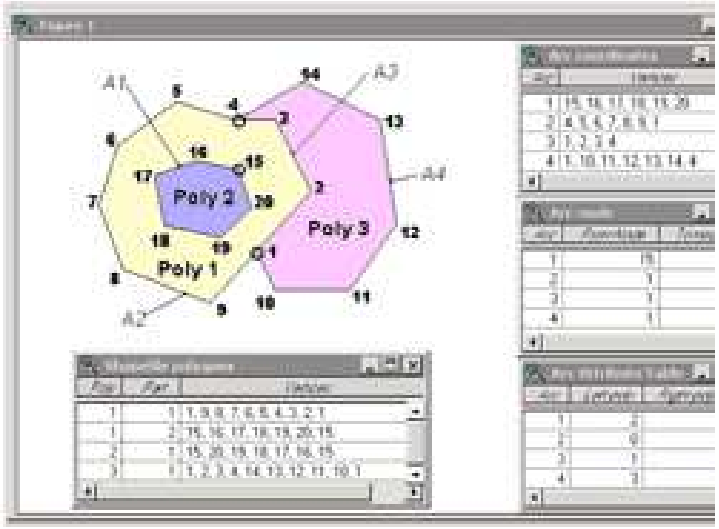
- Points
- Polylines
- Polygons
- Item attributes (name, location, etc)

A "shapefile" is actually a collection of several files

Shape Files Overview

A shapefile can be thought of as a ring

- Closed, non-self-intersecting loop



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Shape Files Overview

A “shapefile” is actually a collection of several files

There are at least 3 files that are *mandatory* to store the core data of the shapefile

- myShapeFile**.shp**
  - Shape format, the feature geometry
- myShapeFile**.shx**
  - Positional index of the feature geometry
- myShapeFile**.dbf**
  - Columnar attributes for each shape

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Shape Files Overview

In addition to the 3 *mandatory* files, there are several option files

.prj — projection format; the coordinate system and projection information, a plain text file describing the projection using well-known text format
.sbn and **.sbx** — a spatial index of the features
.fbn and **.fbx** — a spatial index of the features for shapefiles that are read-only
.ain and **.aih** — an attribute index of the active fields in a table or a theme's attribute table
.ixs — a geocoding index for read-write shapefiles
.mxs — a geocoding index for read-write shapefiles (ODB format)
.atx — an attribute index for the .dbf file in the form of *shapefile.columnname*.atx (ArcGIS 8 and later)
.**shp.xml** — geospatial metadata in XML format, such as ISO 19115 or other schemas
.cpg — used to specify the code page (only for .dbf) for identifying the character encoding to be used

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Shape Files Overview

Why should we use shapefiles?

The shapefile stores geometry and attribute information for the spacial features of a data set – shapefiles do NOT store topological data

- Faster drawing speeds and edit ability
- Typically require less disc space and read/write faster

The geometry for the feature is stored as a shape

- Shapefiles support point, line, and area features

Shapefiles are used by a number of GIS software programs

- Do not require importing or exporting
- Specification is readily available

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Shape Files Overview

Shapefile limitations

Do not store topological information

Spatial representation

- Edges are defined using points → spacing implicitly determines the scale for which the data is useful

Data Storage

- Shapefiles must be <= 2GB ≈ 70 million point features

Written in a binary format

- Need software to make changes

Shape Files Overview

Resources

Technical Description
http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf

Topology and Shapefiles article
http://www.esri.com/news/arcuser/0401/topo.html

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Questions?