GEOL 452/552
-
GIS for Geoscientists I

Lecture 6 - chapter 2

Today

- review (does everybody have 4 voting cards?)
- (Remember to map //delphi/geol552/data to Z: to be able to copy the class exercise data)
- raster symbolization (numeric, categorical)
- get online data layers
- a bit about coordinate systems
- Lab: HW2: ch. 2 ex 2-7 + 8 (due before Tuesday)

Review

- What is georeferenced Data?

Data kept in a table | Geologic Data | Data at a location on earth

---

- what is vector data ?

data kept in a regularly spaced grid (pixels) | data with a direction | points, vertices, nodes | georeferenced points, lines, polygons

---

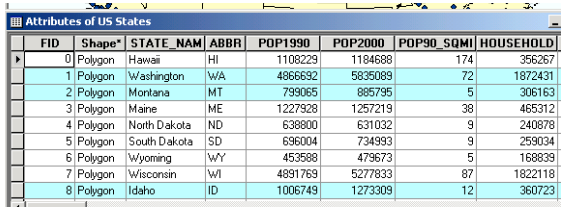
- what is a feature ?

a single piece of vector data | vector data with more than 3 points

- what is a feature class ?

features sharing the same theme (e.g., all city related data) | Collection of feature with the same geometry | Same as a layer

---



Attributes of US States

FID	Shape*	STATE_NAM	ABBR	POP1990	POP2000	POP90_SQMI	HOUSEHOLD
0	Polygon	Hawaii	HI	1108229	1184688	174	356267
1	Polygon	Washington	WA	4866692	5835089	72	1872431
2	Polygon	Montana	MT	799065	885795	5	306163
3	Polygon	Maine	ME	1227928	1257219	38	465312
4	Polygon	North Dakota	ND	638800	631032	9	240878
5	Polygon	South Dakota	SD	696004	734993	9	259034
6	Polygon	Wyoming	WY	453588	479673	5	168839
7	Polygon	Wisconsin	WI	4891769	5277833	87	1822118
8	Polygon	Idaho	ID	1006749	1273309	12	360723

a single feature's attributes | a row within an attribute table

- what are records?

both are true

- When opening a mxd file, a red ! besides a layer means:

This layer's data has not yet been symbolized (e.g. colored)

You need to call tech support to fix this

This layer's data link is broken and needs a "re-connection"

This layer is very important (!)

- What best describes a ArcGIS map document (.mxd file)?

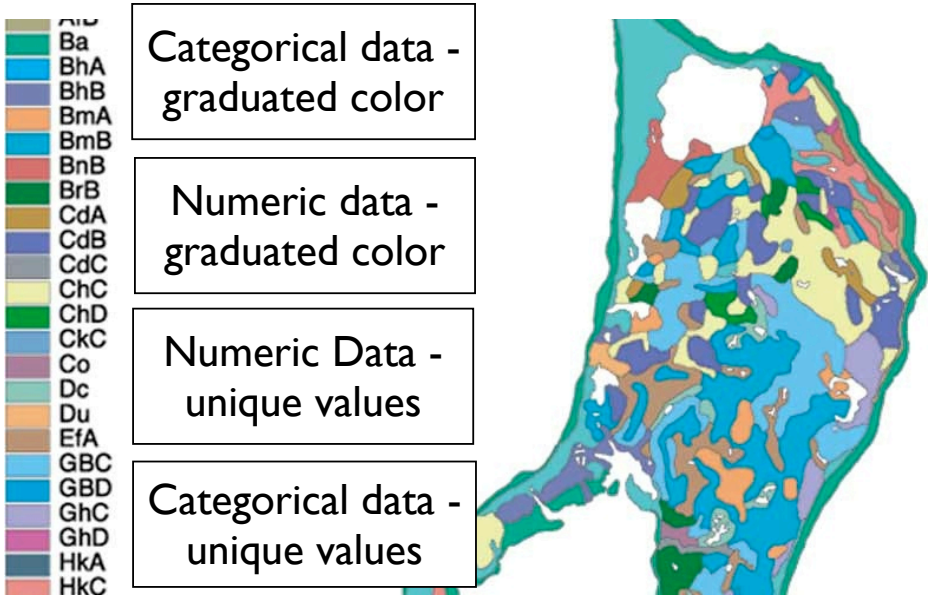
Collection of layers, the layer's data is stored directly inside the mxd file

Collection of layers, with only references to their data files

Special form of Microsoft Word (.doc) document

Digital version of a printed paper map

Which is correct ? (type of data - type of map)



Categorical data - graduated color

Numeric data - graduated color

Numeric Data - unique values

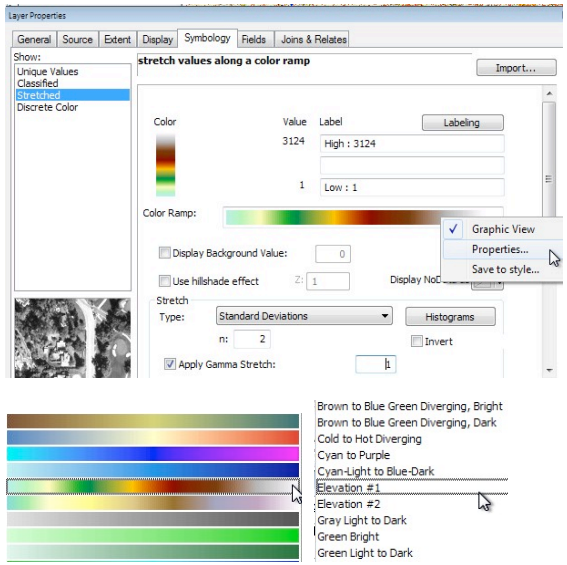
Categorical data - unique values

raster data symbolization

- Don't use unique on the original Oregon land use raster in mgisdata's oregondata or ArcMap will crash!
- copy geol552\data\follow along\ch2a_raster_class_ex into your U:\ArcGIS folder and open its mxd file
- contains a "fixed" version of the Oregon land use raster and Iowa land cover raster(Iowa_lc_2002)
- rest: in your mgisdata Oregon geoDB and online
- fix red ! - click on ! and point it at your U:\ArcGIS \mgisdata\Oregon\oregondata geoDG (or: Layer Properties - Source - Set Data Source ...)

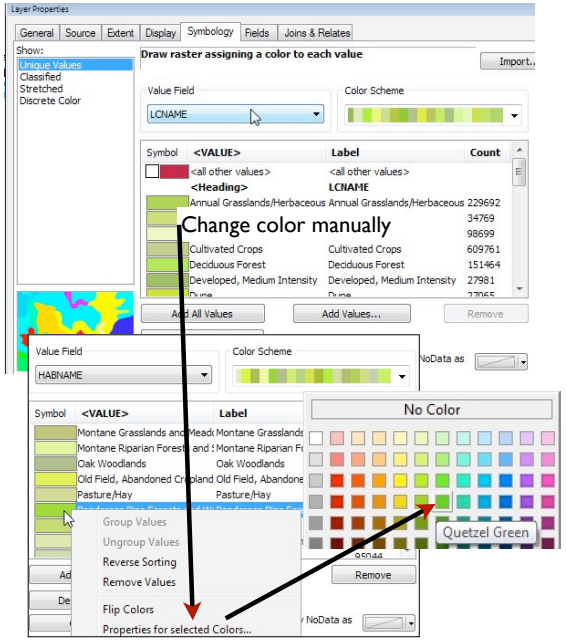
Symbology: numeric raster data

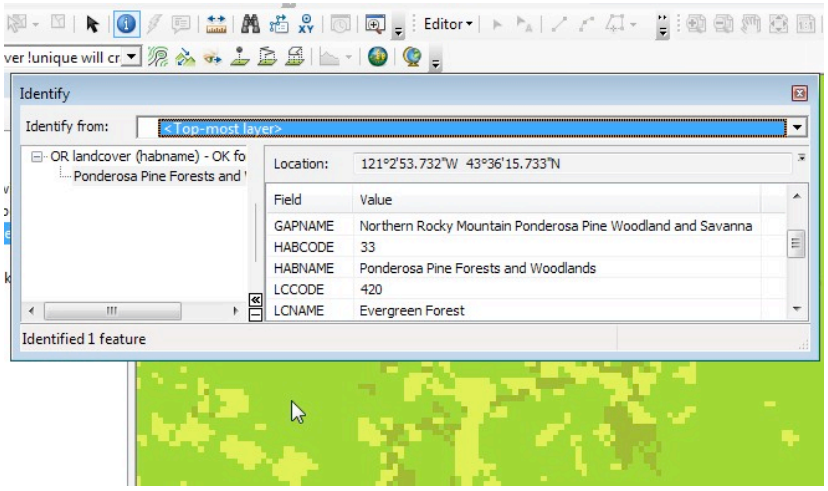
- Raster cell values: numbers (low to high)
- elevation (gtopo1km)
- symbolization: stretched
- invert - flips colors
- **Right**-click on color ramp, unselect Graphic View to show the color ramp names



Symbology: categorical raster data

- raster cell values: unordered of list concepts
- example: land use (land cover): "water", "forest", "roads", etc.
- symbolize with: unique, select a categorical type attribute: HABNAME (habitat name), LCNAME (landcover name)
- color scheme will be randomly applied to all attribute values

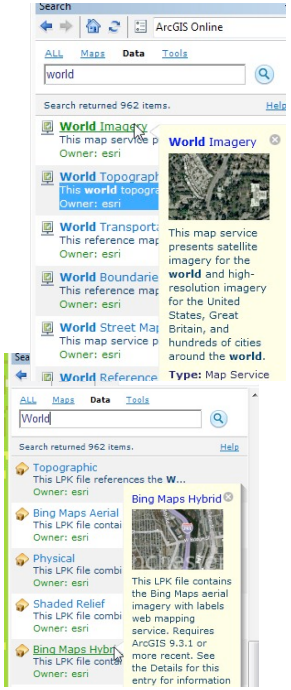


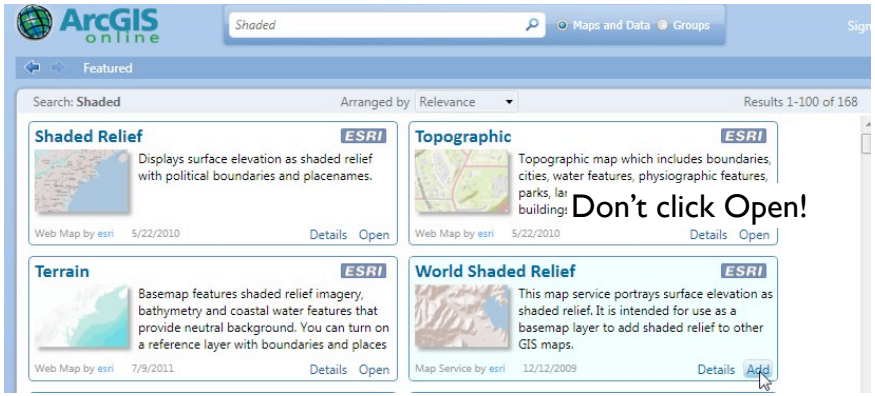


- Zoom-in until you can see pixels
- How wide is a pixel (which tool?)
- what's the value store in ("behind") this pixel? (which tool?)

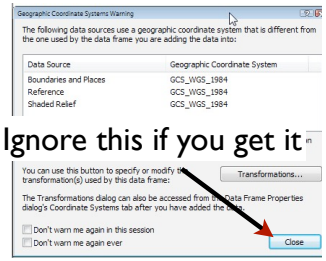
adding online data

- Method 1:
- Search window: ArcGIS Online - Data
- Type in "World", hit Enter
- Find a satellite imagery (map service or LPK)
- (same may not work - try Bing Map hybrid?)
- Click on green name - should add to TOC
- Be patient while loading (spinning globe)
- compare your crater lake layer to the online layer, which has better (higher) resolution?

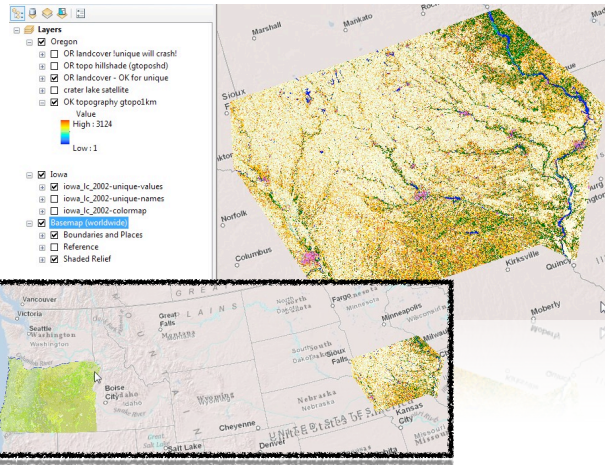




- method 2: File - ArcGIS Online > "Browser"
- search for **Shaded** (a hill shade raster that shows the terrain's relief, same as gtoposhd but world wide ...)
- find a Web Service and click add (don't use Open for now, these are for web maps, which will replace your ArcMap document)
- for later: lots of interesting data to search for (try: Iowa)



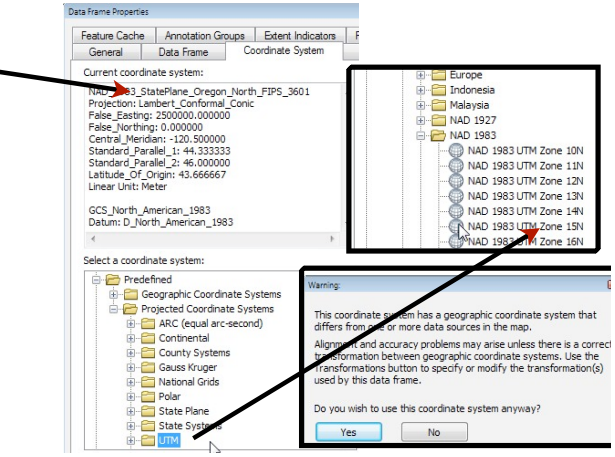
Coordinate systems



- Right-click on Iowa - Zoom to Layer
- 2002 land cover raster for Iowa, why does this look weird?
- Reason: Your **data frame** is still set to "Oregon - centric"

- Each file (layer) contains a certain type of coordinate system (more in ch. 11)
- Coord. system describes how to draw the layer's data (e.g. align it along North)
- Currently every layer is centered around Oregon
- The further away a layer is the more distorted, rotated, deformed it looks
- Let's make this map look Iowa - centric
- (Right click on Layers (the data frame) - Properties - Coordinate system

- Current Coordinate system is Oregon State Plane
- select: Predefined - Projected - UTM - NAD 1983 - UTM Zone 15
- UTM 15 is a typical coord. system for Iowa
- Warning -> Yes (warns you that the other layers may look weird after you do changed to UTM 15)
- Take that, Oregon!



Lab

- Questions?
- Lab: HW2: ch. 2 ex 2-7 + 8
- make sure to read the HW2 instructions on Blackboard first!
- If needed (how do I ...?) : consult textbook MAPPING reference part (pp. 522 -)