**Maps**

**Map:** A visual representation of an area or a map is a model used to depict patterns of physical or human processes and patterns. Maps are idealized representations of reality.

**General map formats:**

1. Mental or cognitive maps
2. Hardcopy (paper) maps
3. Virtual (digital code) maps

**Cartography** (**Map‐making**)is the study and,often,practice,of crafting representations of the Earth upon a flat surface.

**Before you start a new map:**

You should know the: 1- The purpose of the map, 2- Who is the audience?, 3- What data do you need to the map. , 4- Which is the most important: content, accuracy, or appearance?

**Maps Elements**

**Minimal elements of a map:**

1. Title, 2. One or more views of spatial data, 3. Legend, 4. Scale bar, 5. Credits: Author and data sources, 6. Projection and Datum, 7. North Arrow

**Colors used in maps**

* backgrounds tend to be *white*
* Borders, scale bars, north arrows, and text tend to be *black*
* Large areas are best as *light colors.*
* *Lightblue* for water
* *Lightcolor* variations for nations, states, counties, etc.
* Outline with *black* lines
* *Bright colors* can be used to highlight

**Maps design issues**

* White space is good.
* Make the important content fill most of the available area
* Make sure the text is readable (remove unneeded text)

**Types of Data of maps**

1. **Discrete**, such as: Vector, Points, Polylines, Polygons
2. **Continuous**, such as: Raster, digital images, grids, topographic maps, contour maps.

**Map information**

1. **Planimetric**

* Two-dimensional information

1. **Hypsometric**

* Two dimensions plus a third dimension
* Third dimension is typically relief or topography
* Ways of depicting relief
* Shading
* Contour lines

**Map scale**

* Map scale is the ratio of the size of an object on a map to its actual size
* Map scale is expressed with a representative fraction (RF): 1:10,000
* These can be interpreted as: 1 inch = 10,000 inch or 1 cm = 10,000 cm. Any unit can be used so long as they are on both sides of the equation.

**Map Types**

1. **Reference maps:** show locations of places and geographic features.
2. **Thematic maps:** indicate the degree of an attribute, the pattern of its distribution, or its movement. It display one subject in the map, such as vegetation, or soil, water, urban area, etc.

**Contourmaps (Isopleths)**

* Isolines- Lines on a map depicting areas of same or like values.
* Contour maps use isolines, or contour lines, to depict where the same elevation exists.
* The contour interval of a contour map is the difference in elevation between successive contour lines.

**Elevation maps:**Maps that show elevation change by using color or shading.

**GIS maps**

* A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.
* GIS allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts.

**Map symbolization**

* Symbols are a code instead of text
* Three kinds: point, line, area
* Consider shape, size, orientation, pattern, color, value
* Every symbol counts as one occurrence

1. **Point symbols**

* Qualitative points
* Indicate location
* Can also describe that location
* Quantitative points
* Show a distribution
* Indicate a value (graduated symbols)

1. **Line symbols**

* One-dimensional
* Mostly taken for granted (borders, roads)
* Isolines connect same values
* Flow-line maps indicate value by width of line

1. **Area symbols**

* Each territory or region has one value
* Differences in kind
* Differences in value
* Choropleth maps
* Usually, darker indicates more
* Cartograms distort area to show value