

## Assignment One: Mapping Our World Using GIS

Geographic Information Systems (*GIS*) are the most important *technological* tool geographers use and they exist and are integrated into every aspect of YOUR life (*think: google maps or any one of these [1000 examples!](#)*). The maps created with GIS allow us to understand, make sense of, and plan the world around us. In this exercise we'll get started with a very basic GIS example in which you'll actually create some maps. (Note: If you're into this, as the semester progresses, we'll have extra credit opportunities that allow you to explore GIS much more and learn mapping skills to explore course concepts and pad your resume.) If you're in to maps and money, a GIS career might be for you, ask me about our GIS class at Grossmont.

**FOR CREDIT - Make sure you POST the following to the discussion board:**

**1) the answers, 2) the map YOU created, and 3) your map explanation**

**NATIONAL GEOGRAPHIC ESRI MapMaker** [[click here to access the site](#)]

Geographic information systems work on the basic principle of overlaying different layers of maps in order to investigate and/or illustrate the interaction of different phenomenon spatially. The NATGEO MapMaker is a basic interface that allows you to choose a base map and then add different layers. Follow the directions below to create and analyze some sample maps before you create your own (don't forget to include the answers to the questions in your discussion board post).

### EXAMPLE ONE

- 1. Choose a base map.** Click on the **BASEMAP** symbol in the navigation bar and choose one of the different options.
- 2. Choose your layers.** Click on **ADD LAYER** in the navigation bar. All the available map layers are listed here to (*note that you can sort by category and search also*). When you find a layer you want to add click the PLUS sign to add it. When you find a map you like simply click the **"ADD"** to add it to your map. (*Note that you can see the values of the layers by clicking on the LEGEND tab*). For this example **FIND and ADD the following layers:** 1) "Biomes"; 2) "Cities of the World"; and 3) Human Footprint (either one)
- 3. Adjust your layers to investigate and illustrate your point.** Click on the **"MAP LAYERS"** tab. Notice that when you view your map your layers have been added in the order you added them. **The way they are "stacked" and how the transparency is set determines what you see on the map.** Practice adjusting the TRANSPARENCY and playing with the SWIPE option for each layer to make them more/less visible. Use this map you've created to answer the questions below

## Humans and the Physical Environment Map Questions (post answers to discussion board)

- A. What are two biome types where you find a lack of human settlement (you can use the key or click on the chosen area to identify the biome)?
- B. What are two biome types where you find intense human settlement (you can use the key or click on the chosen area to identify the biome)?
- C. Does biome type (*that's vegetation type, we're using it as a stand-in for CLIMATE here*) determine where people live?
- D. Is biome/climate the only variable that determines where people live? (use evidence from your map to support your answer)

### **EXAMPLE TWO.**

Geographic information systems also offer all sorts of complicated tools which allow you to create very in depth analysis of anything you can imagine. Here we are going to use the MOST BASIC tool offered: the measuring tool.

1. **USING THE MEASURE TOOL.** To use the measure tool click the MEASURE tab. Then place one dot on the map to start and add dots to determine their distance from the start (note that you can change the units in the measure box that appears).
2. Let's compare shipping before and after the creation of the Panama Canal and Suez Canal. **Measure the following distances and record the answers.** Note: you can add as many measure segments as needed – don't send your shipping route over any land!

## Global Shipping Routes (post answers to discussion board)

A) Distance London to Los Angeles going around the southern tip of South America:

B) Distance London to Los Angeles going through the Panama Canal:

C) Distance London to Hong Kong going around the southern tip of Africa:

D) Distance London to Hong Kong going through the Suez Canal:

*(note: that you'll also have to pass through the Strait of Gibraltar, Suez Canal, Mediterranean Sea, Red Sea, Bab el Mandeb, and Strait of Malacca)*

E) The opening of those Canals changed the world forever. In addition to those Canal CHOKEPOINTS (narrow passages ships must move through) there are other problematic shipping chokepoints that can have major disruptions on world trade. Use the **MEASURE TOOL** to find the **NARROWEST width** of the following shipping chokepoints (*you can zoom in on your map to look for names or just google "shipping chokepoints to find them"*)

- i. Width of Bab el Mandeb (*1/3 of all container traffic passes through here AND this is where real-life PIRATES still take over ships!*):
- ii. Width of the Strait of Hormuz (*LOTS of oil and gas moves through here*):
- iii. Width of the Strait of Malacca (*everything going this way to/from East Asia must get through here*):

## CREATE YOUR OWN UNIQUE MAP.

Now that you're GIS experts it's time to create your own map! **Clear the current map** and then **choose at least two layers and create your own map and analysis.**

**Post a screenshot of your map along with the following to the discussion board:** Write an explanation of how you created your new unique map and what it illustrates. Include at least the following:

- A. Which base map did you chose and WHY?
- B. Which layers did you chose?
- C. What does your map illustrates (*i.e. what patterns do you see, etc. ?*)

*EXAMPLE Here's what a write-up might look like for our first example:*

*A. I chose the NGS Dark Grey base map because I liked the contrast between the ocean and land that it provided.*

*B. I chose these layers: Biomes, Major Cities and Human Footprint.*

*C. I added the layers in an order so Biome was on the bottom and Human Footprint was on the top. Then I set the transparency values of the Human Footprint so I could see the Biomes on the bottom along with major cities. I put the Human Footprint layer on top with the least transparency because I wanted to see it as the outcome. By sliding the transparency on and off I could then see how the human footprint spatially related to the other two. After noticing some patterns, I adjusted the transparency so that I could see both layers at once. **I noticed that there seems to be more of a human footprint in places where the climate was some sort of "temperate" climate and not in climates like Boreal Forests/Taiga. Thus, I concluded that climate is a factor in determining our human footprint but it is not the only factor; I did see SOME cities in climates with a low footprint.***

Be sure to focus on what you discovered as this student did!

## **REMINDER: Submit the following to the discussion board for credit:**

- 1) Your Answers to Example #1
- 2) Your answers to Example #2
- 3) A [SCREENSHOT \(click here for tips\)](#) of the map YOU created
- 4) The written explanation of your map