



## In Search of GLOBE Data – Student Worksheet



### Project #1:

#### Part 1: Creating graphs using GLOBE data

- Step 1: From the GLOBE Home Page, [www.globe.gov](http://www.globe.gov), place your mouse cursor over For Students; move the cursor down to highlight Maps and Graphs; move the cursor over to highlight Graphs; click on Graphs.
- Step 2: Choose Benin from the Country list under SCHOOL LOCATION: Country Search and click on Go.
- Step 3: Place a checkmark by Lycee Behanzin, in Porto-Novo, by clicking in the square next to the school name and click on Go in the green box next to “Make a Graph” above the table of schools.
- Step 4: The default graph will be for Maximum Air Temperature.

What do you notice about this graph? \_\_\_\_\_

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- Step 5: Scroll down until the Other Options box is visible. Click on Select Option and move the cursor so that Add or change schools is highlighted and click on Go.
- Step 6: Choose Argentina from the Country list under SCHOOL LOCATION: Country Search and click on Go.
- Step 7: Place a checkmark by the two schools: Escuela Provincial No. 38 Julio Argentina Roca and Escuela de Enseñanza Media 7 "Nicolas Copernico", Buenos Aires by clicking in the squares next to the school names.
- Step 8: Click on Go in the green box next to “Make a Graph” above the table of schools.

The graph that appears should contain 3 schools' data (the graph from Lycee Behanzin and the two that were just added).

What do you notice about this graph? (Note: Latitudes and Longitudes of the schools can be found below the graph in the list of Selected Schools under the Other Options box.)

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- Step 9: Scroll down so that the Other Options box is visible at the top of the screen and the information about the three selected schools is near the center of the screen. Notice that there are small squares under each school's information with a checkmark in the squares. Click in the squares for the two schools, Escuela Provincial No. 38 and Escuela de Enseñanza Media 7 "Nicolas Copernico", to remove the checkmarks in the boxes and click on Redraw above the list of schools. The graph will return containing only the Lycee Behanzin school.

You are now ready to proceed to Project #1, Part 2.



## In Search of GLOBE Data – Student Worksheet



### Project #1:

#### Part 2: Creating graphs using GLOBE data

The graph of Maximum Air Temperature for the Lycee Behanzin school, in Benin, should be on your screen. (Note: If you are beginning anew, and not continuing directly from Project #1, Part 1, follow steps 1 through 6 of Project #1, Part 1, before proceeding.)

Step 1: Scroll down until the Other Options box is visible. Click on Select Option and move the cursor so that Add or change schools is highlighted then click on Go.

Step 2: Choose United States of America from the Country list under SCHOOL LOCATION Country Search and click on State/Province Search.

Step 3: Choose USPA – Pennsylvania and click on Go.

Step 4: Place a checkmark by Waynesboro Senior High School, Waynesboro, PA, by clicking in the square next to the school name and click on Go in the green box next to “Make a Graph” above the table of schools.

What do you notice about this graph? \_\_\_\_\_

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Step 5: Scroll down until the Other Options box is visible. Click on Select Option and move the cursor so that Add or change schools is highlighted and click on Go.

Step 6: Highlight Australia from the Country list under School Location Country Search.

Step 7: Scroll down until you see the NUMBER OF DATA REPORTS section. Type 3000 in the first box under Find schools that have submitted at least:

Step 8: Click on the Total box and select All Atmospheric Data and click on Go.

Step 9: Place a checkmark by Serpentine Primary School, in Serpentine, by clicking in the square next to the school name and click on Go in the green box next to “Make a Graph” above the table of schools.

Step 10: Scroll down until you see Graph Data and Display Selection. Change the Dates to Year: 1998; Month: 01; Day: 01 through Year: 2001; Month: 01; Day: 01. Click on Redraw.

What do you notice about this graph? \_\_\_\_\_

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You are now ready to proceed to Project #1, Part 3.



## In Search of GLOBE Data – Student Worksheet



### Project #1:

#### Part 3: Creating graphs using GLOBE data

The graph of Maximum Air Temperature for Lycee Behanzin in Porto Novo, Benin, Waynesboro Senior High School, in Waynesboro, PA USA, and Serpentine Primary School, in Serpentine, Australia, should be on your screen. (Note: If you are beginning anew, and not continuing directly from Project #1, Part 2, follow steps 1 through 6 of Project #1, Part 1, and steps 1 through 9 of Project #1, Part 2, before proceeding.)

Step 1: Scroll down below the graph. You will see a box entitled: Graph Data and Display Selection. Under the Datasets (Choose a dataset) option, click on Maximum Temperature (the current displayed dataset); this action will open the scroll menu of datasets. Click on Mean Temperature.

Step 2: Under the Plot Type option, click on Combined Graph (the current graph display). Click on Stacked Graph.

Step 3: Scroll down below the graph to the Graph Data and Display Selection. Below the “Dates” selections you will see Or Select a pre-defined time period: Click on SELECT DATES (the current display) and click on 2001. Click on Redraw.

What is Mean Temperature? How is this temperature determined? \_\_\_\_\_

What do you notice about the three graphs? Why are these three graphs of Mean Temperature different? (Note: Latitudes and Longitudes of the schools can be found below the graph in the list of Selected Schools under the Other Options box.) \_\_\_\_\_

Do the data in the three graphs seem reasonable? Why or why not? \_\_\_\_\_

Step 4: Scroll down below the graphs until you see Graph Data and Display Selection. Change the Dates to Month: 03; Day: 01 through Month: 03; Day: 31. Click on Redraw. (Year: 2001 should remain the same.)

Step 5: Scroll down below Graph Data and Display Selection and below the Redraw button. You will see a box entitled Other Options. Click on Select Option, click on Show Table and then click on Go.

The table of data is located below the graph and graphing tools. Scroll through the data. You'll notice that Serpentine Primary School reported 0° C on March 17 and 18. Does that seem reasonable? If not, what might have happened? \_\_\_\_\_

You are now ready to proceed to Project #2.



## In Search of GLOBE Data – Student Worksheet



### Project #2:

#### Creating maps using GLOBE data

If continuing from Project #1, Part 3, the Mean Air Temperature graph for *Lycee Behanzin*, *Waynesboro Senior High School*, and *Serpentine Primary School* should be on the computer screen. Scroll to the top of the page until the Navigation Tabs (Home, Projects, etc) are visible. Place the mouse cursor over *For Students*; move the cursor down to highlight *Maps and Graphs*; move the cursor over to highlight *Maps*; click on *Maps*.

If you are beginning this activity and not continuing from Project #1, Part 3, enter the GLOBE Home Page <[www.globe.gov](http://www.globe.gov)>; place the mouse cursor over *For Students*; move the cursor down to highlight *Maps and Graphs*; move the cursor over to highlight *Maps*; click on *Maps*.

Note: an image of the Globe will be on the right. Notice that the dataset is for Maximum Temperature and the date is set for today. The zoom level (identified by the small magnifying glass) is set at 1x. These are the default settings.

Step 1: Click on Europe (or as close as possible) on the Globe on the right. You will notice that the new view of the Globe has changed. Look at the top left of the map box (left of the list of zoom levels). You will notice that the part of the Globe on the right that is currently not visible is now shadowed on the Globe to the left.

Step 2: Scroll down below the map. You will see a box entitled: *Map Data and Display Selection*. Change the *Date* to *Year: 2004; Month: 02; Day: 15*. Click the radio button for *medium* under *Map size*. Click on *Redraw map*.

Step 3: Click on Europe (it should be easier to identify Europe this time). Notice that the image of the Globe has changed yet again. It is now a square. Notice that the magnification level is now 4x.

Step 4: Click on the *8x* zoom level. Notice that the map zooms in more.

Step 5: Scroll down below the map to the box entitled: *Map Data and Display Selection*. Click the radio button for *Both* under *Map type*. Click on *Redraw map*.

Looking at the map your queries produced, do the data look reasonable? \_\_\_\_ Why or why not? \_\_\_\_\_

How might the Contours help answer this question? \_\_\_\_\_

Step 6: Scroll down below the map and the box entitled: *Map Data and Display Selection*. You will see a box entitled *Other Options*. Click on *Select Option* and move the cursor so that *Create Scatter Plot* is highlighted. Click on *Go*.

This will generate an X, Y plot (or Horizontal, Vertical plot) of the data visible on the map. The X, or Horizontal, axis depicts Latitude and the Y, or Vertical, axis depicts Maximum Temperature. Do the data graphed in this manner help determine whether one or more data represent possible errors? Explain: \_\_\_\_\_

You are now ready to search for data from other GLOBE schools in other countries and in other investigation areas.

## In Search of GLOBE Data – Advanced Search

Searching for GLOBE data can be monotonous and frustrating without the proper tools. The “In Search of GLOBE Data” series can be used as an introduction to searching and using GLOBE data. Project #1, parts 1 through 3, and Project #2 of “In Search of GLOBE Data – Student Worksheets,” offered step-by-step instructions on searching for schools by selecting Country, by entering a specific school name, and by entering values for data entered for the investigation under study. However, other methods of searching for GLOBE data exist. Try the following:

If continuing from Project #2, the scatter plot of GLOBE Data should be on the computer screen. Scroll to the top of the page until the Navigation Tabs (Home, Projects, etc) are visible. Place the mouse cursor over *For Students*, move the cursor down to highlight *Finding Data*, move the cursor over to highlight *Advanced School Search*, click on *Advanced School Search*.

If you are beginning anew, and not continuing directly from Project #2, enter the GLOBE Home Page <www.globe.gov>; place the mouse cursor over *For Students*, move the cursor down to highlight *Finding Data*, move the cursor over to highlight *Advanced School Search*, click on *Advanced School Search*.

Below the “SCHOOL LOCATION: Country Search” box, are five (5) gray buttons entitled, “State/Province Search” (this was introduced in Project #1, Part 2), “Lat/Lon Point Search,” “Lat/Lon Regional Search,” “Display Map of Selected Region,” and “Choose selected location(s) for Data Access.” These will be examined (except for “State/Province Search”) in the order listed above:

### Latitude/Longitude Point Search

Click on *Lat/Lon Point Search*. Notice that you still have the option to search by “School, City or Teacher Name.” Under “SCHOOL LOCATION: Point Search”, you will see “Find schools within” followed by a pull-down box. This lists the following possibilities: 1 km, 5 km, 10 km, 20 km, 50 km, 100 km, 500 km, and 1000 km. Following the pull down box you will notice: “Lat” (Latitude) and “Lon” (Longitude). Note: Positive values entered in the “Lat” box will search for schools north of the Equator, negative values will search for schools south of the Equator; positive values entered in the “Lon” box will search for schools east of the Prime Meridian, negative values will search for schools west of the Prime Meridian.

Try this example to familiarize yourself with the system: Enter 1000 km in the “*Find schools within*” box, 30 in the “*Lat*” box and 130 in the “*Lon*” box and click on *Go*. This will bring up schools in China (CN), Japan (JP) and South Korea (KR). There are actually more than 100 schools within this range, so the Web site database will display only the first 50 schools. If you wish to see all of the schools within this area, click on “Follow this link to view all table entries.”

Click the “Back” button on your browser to return to the *Advanced Search* page. Change the “*Lat*” to –30 (keep the “*Lon*” at 130) and click on *Go*. This will bring up schools in Australia (AU). A quick look at a World map will confirm that these regions are on opposite

sides of the Equator. Similarly, entering 30 in the “*Lat*” box and –130 in the “*Lon*” box will bring up California (US) while –30 in the “*Lat*” box and –130 in the “*Lon*” box will return you to the search page with the note: “Warnings and error messages: No schools were found using your search parameters. Please modify your values and try again.” A quick look at a World map will confirm that the latter location is in the South Pacific, Southeast of French Polynesia – just open ocean.

This type of search is useful when you want to start from a known point (for example, your school) and locate all schools within a certain distance (1 km, 5 km, 10 km, 20 km, 50 km, 100 km, 500 km, or 1000 km) from it.

### Latitude/Longitude Regional Search

Scroll to the top of the page until the Navigation Tabs (Home, Projects, etc) are visible. Place the mouse cursor over *For Students*; move the cursor down to highlight Finding Data; move the cursor over to highlight Advanced School Search; click on Advanced School Search.

Click on *Lat/Lon Regional Search*. This search tool looks similar to the Lat/Lon Point Search tool. However, rather than having the function of distance (1 km to 1000 km) there are four (4) boxes, “Northern Lat,” “Western Lon,” “Eastern Lon,” and “Southern Lat.” This will search within a geographic box defined by the user. Let’s look at an interesting example: enter 10 in “Northern Lat,” -10 in “Western Lon,” 10 in “Eastern Lon” and –10 in “Southern Lat” and click on *Go*. This will bring up schools in Western Africa (for example: Benin (BJ), Cameroon (CM), Ghana (GH), and Nigeria (NG)). What you have just done is asked the database to look for GLOBE schools within a box 10° north of the Equator, 10° south of the Equator, 10° east of the prime meridian and 10° west of the prime meridian.

This search tool can be very useful for searching for schools in a specific region. However, if the area you’re searching is somewhat densely populated with GLOBE schools, your search may bring up hundreds of schools (for example, the search above brought up over 100 schools). You can narrow the search criteria by adding a tool you are already familiar with: Number of Data Reports (see “In Search of GLOBE Data – Student Worksheet, Project #1, Part 2: Creating graphs using GLOBE data” Step 7). Try the example search above (10 in “Northern Lat,” -10 in “Western Lon,” 10 in “Eastern Lon” and –10 in “Southern Lat”) but this time, under “Number of Data Reports,” enter 5000 in the “Find schools that have submitted at least  data reports for  ” and click on *Go*. The number of schools the computer will find will decrease to a more manageable number.

Choose an area on Earth that you would like to search for GLOBE schools. Refine the search by entering how many data schools should have (either “Total” data or select an investigation) to make your list. If you receive a message “No schools were found using your search parameters. Please modify your values and try again,” you should either change the geographic area of your search using a World map to make sure that you’re not selecting an area over the open ocean or over a country that has not yet joined GLOBE, or reduce the number of data in your search.

## Display Map of Selected Region

Scroll to the top of the page until the Navigation Tabs (Home, Projects, etc) are visible. Place the mouse cursor over *For Students*; move the cursor down to highlight *Finding Data*; move the cursor over to highlight *Advanced School Search*; click on *Advanced School Search*. The “Display Map of Selected Region” tool will create a map of a selected geographic area (country or countries) based on the selections made in the “SCHOOL LOCATION: Country Search” box.

Try the following example: scroll down in the “SCHOOL LOCATION: Country Search” box until you see Hungary (HU). Click on Hungary and then click on “*Display Map of Selected Region*.” Change *Map Size* to *Medium* and click on *Redraw map*. A map will be generated showing Hungary and all Hungarian schools – as well as schools in neighboring countries that are within the area displayed on the map. Notice that the schools within the Hungarian border are triangular in shape while all others (outside of Hungary) are small squares. This will help you identify where Hungarian schools are located. Notice also that the default display is “How Many Data Are There?” If you wish to view actual student data, click on the pull down menu currently entitled “How Many Data Are There” and highlight “Measurements” under “STUDENT DATA” and click on *Redraw map*. Notice that the default date for the map is today.

## Choose selected location(s) for Data Access

Scroll to the top of the page until the Navigation Tabs (Home, Projects, etc) are visible. Place the mouse cursor over *For Students*; move the cursor down to highlight *Finding Data*; move the cursor over to highlight *Advanced School Search*; click on *Advanced School Search*. The “Choose selected location(s) for Data Access” tool is useful for pulling the raw data out of the database of a selected geographic area (country or countries) based on the selections made in the “SCHOOL LOCATION: Country Search” box. These data can then be placed in a spreadsheet or GIS program. Try the following example: scroll down in the “SCHOOL LOCATION: Country Search” box until you see Saudi Arabia (SA). Highlight Saudi Arabia and click on “Choose selected location(s) for Data Access.” You can click on one round button (investigations: Atmosphere, Surface Water, etc.) choosing all protocols within that investigation or you can click on one or more square buttons within an investigation. Experiment by clicking the different round buttons and square buttons to become familiar with the selection process.

Click on “Air Temperature” under the “Atmosphere” investigation. Next scroll down below the table of investigations and protocols. You will see “Start date (YYYYMMDD)”; “End date (YYYYMMDD)”; and “Output format.” Defaults are: Start Date = the first date of measurement; End Date = the last date of measurement; Output format = “View results in browser.” Other options for Output format are: “Download tab-delimited results to disk,” “Download comma-delimited results to disk,” and “Download shapefile (zipped).” When you have selected the format you want, click on “Get the data now!” Follow the instructions of your spreadsheet or GIS program for displaying these data.

This is not meant to be an exhaustive collection of search tools available on the GLOBE Web site, but rather just enough to whet your appetite. GLOBE data await – enjoy!