## Displaying Latitude and Longitude Data in ArcGIS



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If you have a table of data that has longitude and latitude, or other xy coordinates, you can view these data as points on a map in ArcMap 10.2.2. Examples might be school locations, data from a GPS receiver, or a table of spot height elevations.

For detailed instructions about adding tabular xy data to ArcMap 10.2.2, see the ArcGIS Desktop Help for <u>Adding XY Coordinate Data as a Layer</u>

There are two basic ways of displaying XY data from a table:

- In ArcMap, click on File Add Data Add XY Data
- OR, in ArcMap, add your table to the table of contents (e.g., an Excel worksheet as shown below), and then *right-click* on that data layer and choose **Display XY Data**

I prefer the latter method even though it is more steps because I can examine the table to make sure it is being read and displayed properly in ArcMap before attempting to map the data.

Use the dataset located on the **Tufts S: drive at S:\classes\UEP\_ENV\GISData\eGRID\ eGRID2006V2\_1\_year04\_plant.xls** or the data that is zipped up on our website and follow the steps in the graphics below. They show how to add points for all electricity plants in the US based on an Excel file from the EPA called eGRID.

First, add the sheet within the Excel table that you will bring into a map. Make sure you
navigate all the way down to the sheet level. In this case, add EGRDPLNT04\_modified\$
 Q Untitled - ArcMap



 Check that the table came in properly, and note the field names where the coordinate numbers are stored. It is important to remember that Lat = Y Coordinate and Long = X Coordinate.



• Right-click on the table in ArcMap again (after closing out current table) and choose **Display XY Data** 

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• Follow the steps in the graphic- do NOT leave out the part about editing the coordinate system and changing it to GCS WGS1984!

Display XY Data		Π
A table contain map as a layer	ing X and Y coordinate data can be added to the	
Choose a table EGRDPLN Specify the fi X Field: Y Field: Z Field: Coordinate S	e from the map or browse for another table: IT04_modified\$  IT04_modified\$ IC0N IC0N IC0N IC0N IC0N IC0N IC0N IC0N	5. Make sure the X and Y field are correctly set to the LON and LAT columns in your table.
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•	4	6. My XY data is latitude and longitude, so
Show De	tails Edit	it's in a Geographic Coordinate System. I
Warn me if	the resulting layer will have restricted functionality	have to tell ArcMap this in order for it to display correctly. Click on <b>Edit</b> to do this.
About adding X	OK Cancel	

Choose the GCS – World – WGS 1984 coordinate system:



## Tufts University GIS Center

patial Reference Properties		x
XY Coordinate System		
Type here to search TTRF 2000 TTRF 2005 TTRF 2008 NSWC 9Z-2 WGS 1966 WGS 1972 WGS 1972 TBE WGS 1984 Projected Coordinate Sys Coordinate Sys		
Current coordinate system: GCS_WGS_1984 WKID: 4326 Authority: EPSG		
Angular Unit: Degree (0.01745329) Prime Meridian: Greenwich (0.0) Datum: D_WGS_1984 Spheroid: WGS_1984 Semimajor Axis: 6378137.0 Semiminor Axis: 6356752.31424 Inverse Flattening: 298.2572235	25199433) 5179 563	
	OK	el

- Click **OK** and **OK** again to finish.
- You'll get a warning read it and we'll explain below. Respond **OK** for now.

Here are the results – This displays points for the electricity generating plants in the database:



## Tips to keep in mind when adding XY data:

- If your data is in longitude and latitude:
  - The columns for the X and Y coordinates must be in decimal degrees (not degrees, minutes and seconds) – to get decimal degrees, you keep the degrees as they are, divide the minutes by 60 and the seconds by 3600 and add all these together.
  - The longitude coordinates for places in the Western Hemisphere should be negative – often in tabular data you acquire, you will find that the longitude coordinates in the Western Hemisphere are given as positive. Before you attempt to use this in GIS, open it in Excel and add a field for negative longitude (e.g., long\_neg) and fill it with the negative version of the positive longitude
- When you use the **Display XY Data** function in ArcMap, you will see that the coordinate system is either listed as "undefined" or is listed as the coordinate system of the data frame, which may not be the case you should press the **Edit** button to define the coordinate system, and then **Select**. For data that is in longitude and latitude, you would typically choose **Geographic Coordinate System**. If your tabular xy data is in another coordinate system (like State Plane or UTM) choose that coordinate system.
- When the data initially comes up as points in a map, ArcGIS refers to it as an "events" layer this is a temporary, virtual view of your tabular data. To make it into a permanent shape file which you can edit and use in analysis, export the "events" layer to a shape file by right-clicking on the points events layer, and choosing Data-Export Data when the export dialog box comes up, you can choose to export the data into the data frame's coordinate system so that it matches your other data. That's what the warning was about.