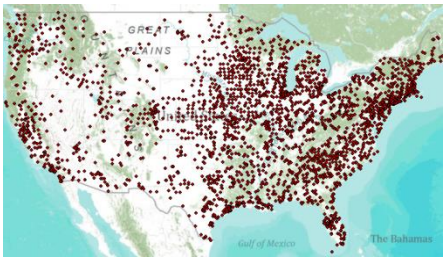
Displaying Latitude and Longitude Data in ArcGIS



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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 Adding XY Coordinate Data as a Layer

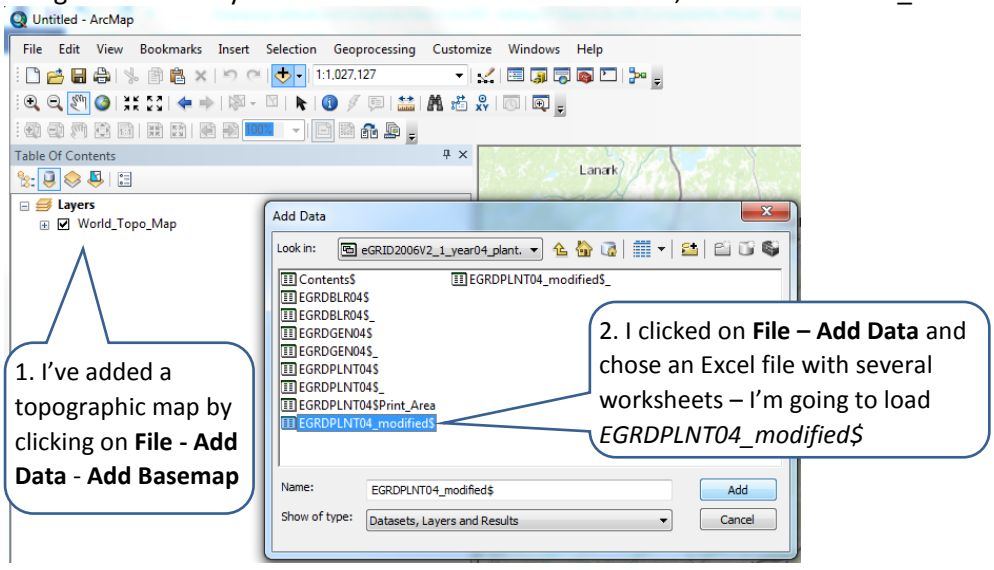
There are two basic ways of displaying XY data from a table:

- 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**

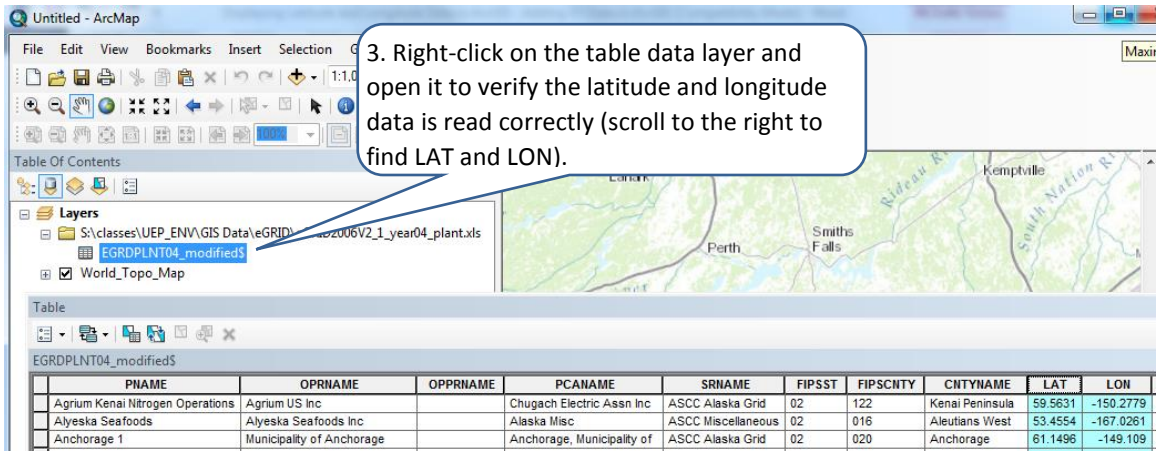
I prefer the latter method even though it is more steps because I can examine the table to make sure it is being read and displayed properly in ArcMap before attempting to map the data.

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.

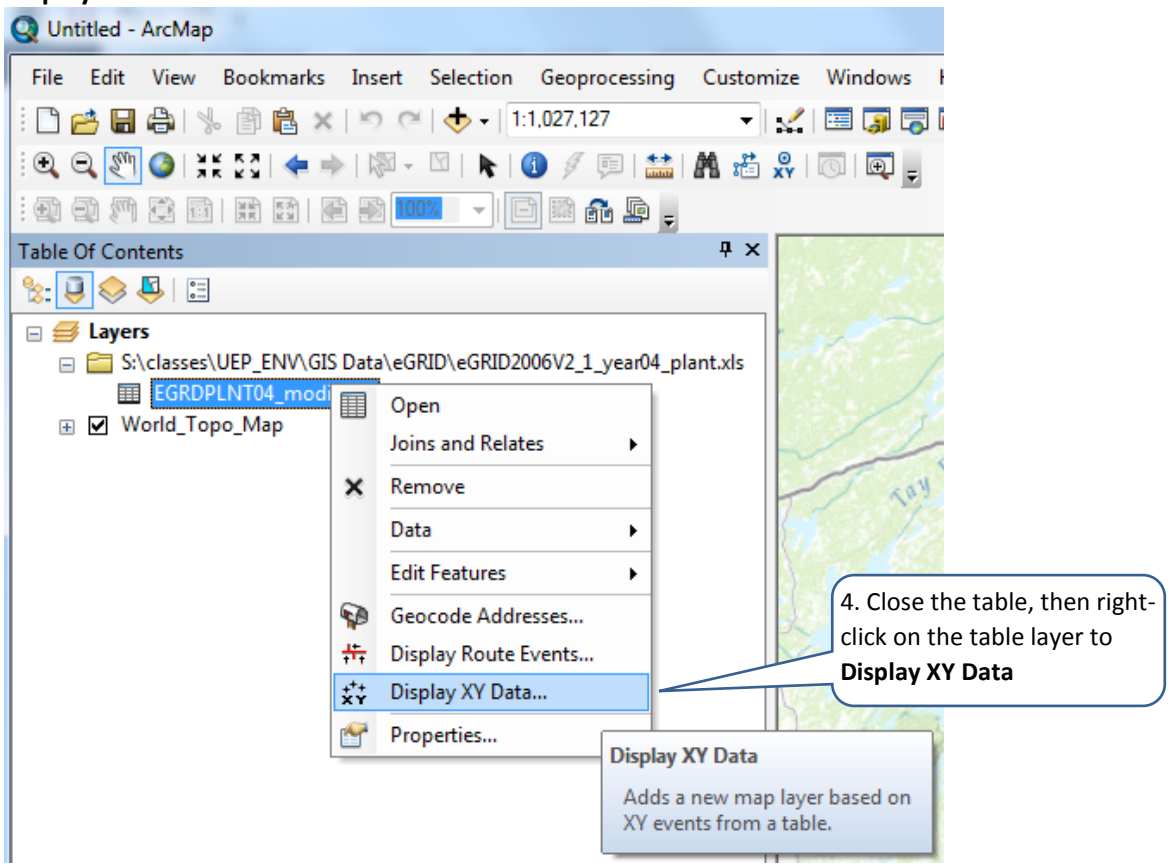
- First, add the sheet within the Excel table that you will bring into a map. Make sure you navigate all the way down to the sheet level. In this case, add EGRDPLNT04_modified$



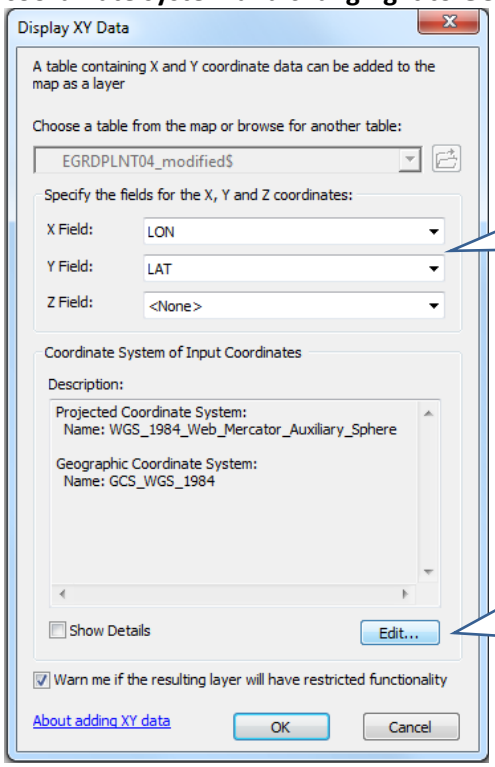
- Check that the table came in properly, and note the field names where the coordinate numbers are stored. It is important to remember that Lat = Y Coordinate and Long = X Coordinate.



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



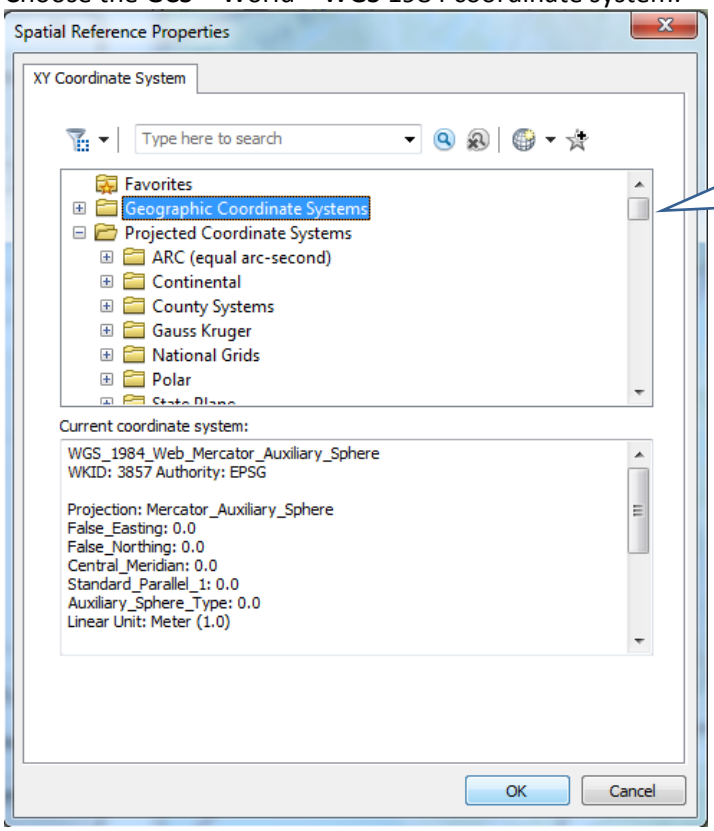
- Follow the steps in the graphic– **do NOT leave out the part about editing the coordinate system and changing it to GCS WGS1984!**



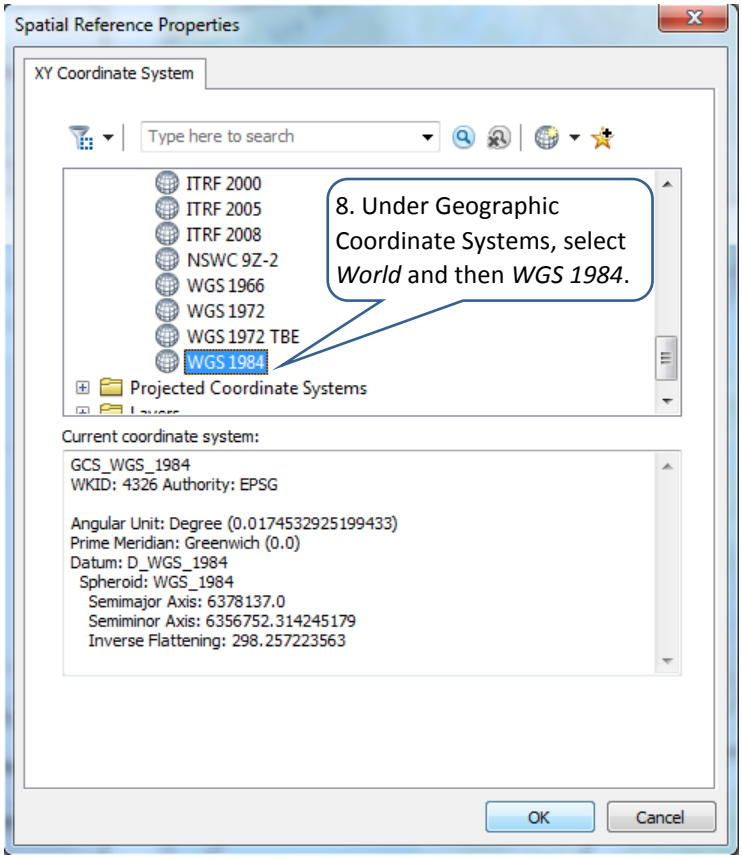
5. Make sure the X and Y field are correctly set to the LON and LAT columns in your table.

6. My XY data is latitude and longitude, so it's in a Geographic Coordinate System. I have to tell ArcMap this in order for it to display correctly. Click on **Edit** to do this.

- Choose the GCS – World – WGS 1984 coordinate system:

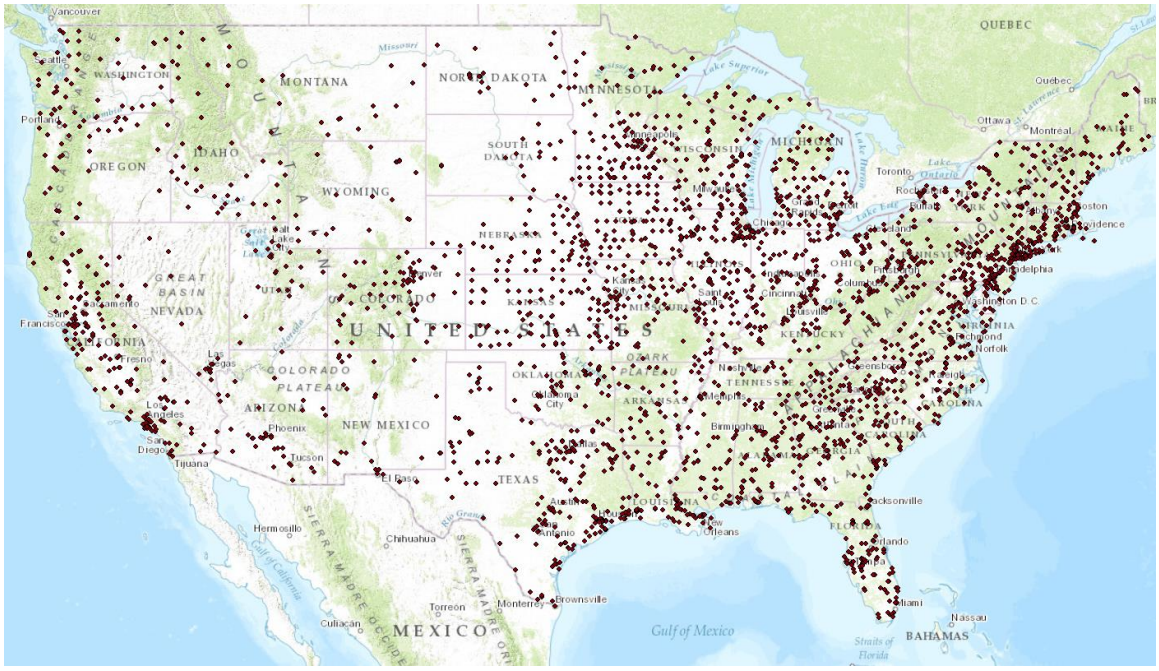


7. Since the data is in latitude and longitude, I need to scroll up to *Geographic Coordinate Systems.*



- 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.