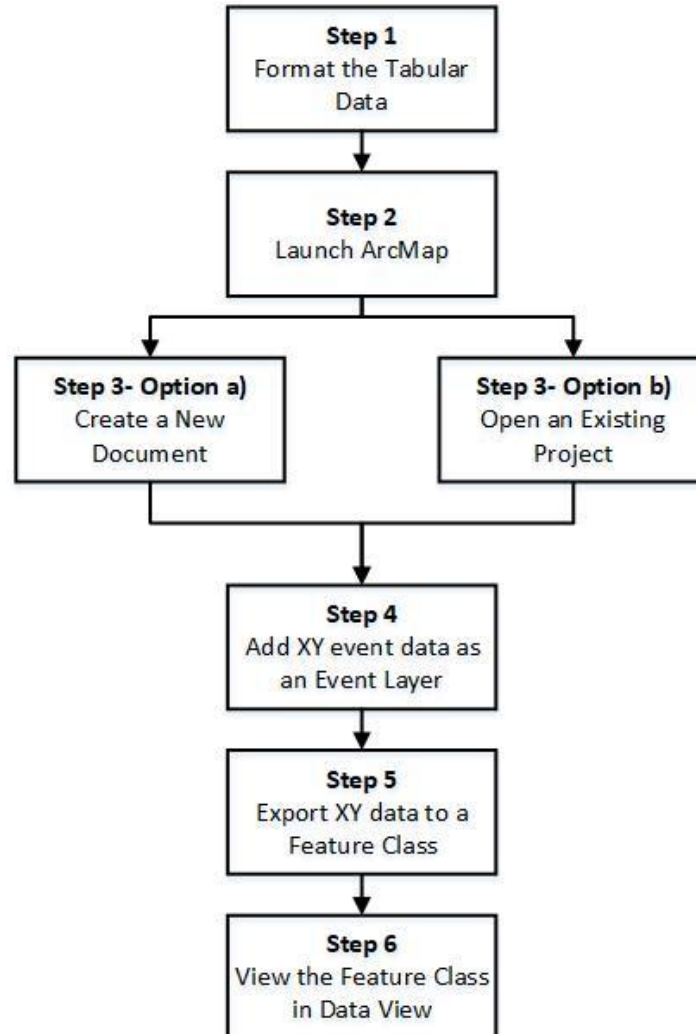


**LIBRARY**

## ADDING X, Y COORDINATE DATA IN ARCGIS ARCMAP 10.X

Coordinate values (X, Y) describe discrete point locations on the surface of the earth and can be stored in spreadsheets, databases, or text files. In order to be imported into a GIS, they must be in a numeric format like decimal degrees (DD) or UTM (meters) as opposed to an angular format like degrees, minutes, seconds (DMS). Coordinate data often contain other field data, like z-coordinates representing elevation or text describing attributes, at the discrete points. This guide provides instructions for importing coordinate values from an Excel spreadsheet, visualizing them on a map, and converting them to spatial data in ArcMap 10.X.



## Step 1 Format the Tabular Data

- Open the tabular data file in Microsoft Excel or another spreadsheet program.
- Ensure that the first row contains short, descriptive column headings without special characters or spaces. There is no limit to the number of columns or rows, but each row should have corresponding column data (blank rows will be imported as "<null>").
- Format the ID and coordinate fields (X, Y, Z) to be in numeric format. To do this, highlight the columns, right-click on top of them, and select **Format Cells**. Under the **Number Tab**, choose **Number** as the category type with the appropriate number of decimal places. Save the file as .CSV using a short, descriptive name with no spaces and close it.

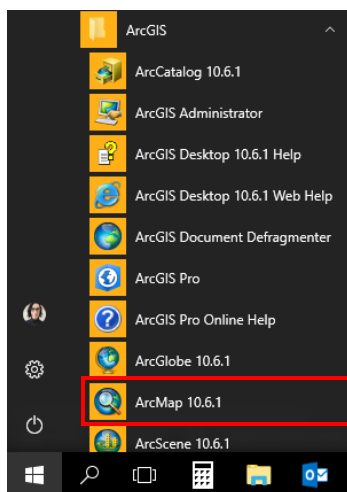
The example below shows a tabular data file with an ID field and the associated projected UTM coordinate values (eastings and northings) for each point.

ID	X	Y	Elevation	Tree_Species
0	716275.090526	4914019.263990	10.0	Oak
1	716316.878277	4914117.512580	10.5	Birch
2	716242.452071	4914145.759510	11.0	Cedar
3	716438.724073	4914017.599280	10.0	Birch
4	716198.686128	4914035.633680	9.0	Elm
5	716248.236772	4913971.123160	11.0	Cedar
6	716341.553706	4914016.741030	9.5	Cedar

**Note:** There are online calculators that can be used to convert DMS coordinates to a DD format. Alternatively, the formula for converting DMS to DD is as follows:

$$\text{Decimal Degrees} = \text{Degrees} + ((\text{Minutes} / 60) + (\text{Seconds} / 3600))$$

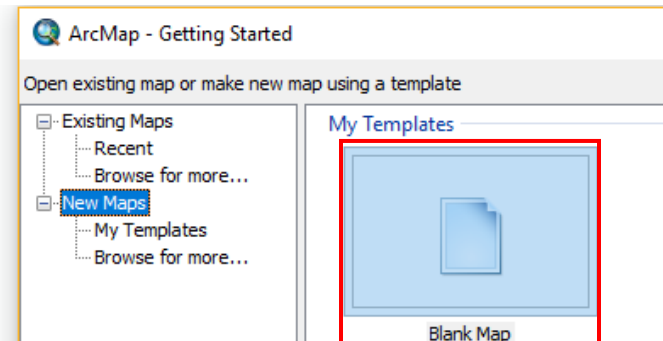
## Step 2 Launch ArcMap



### Step 3 Create/Open a Document

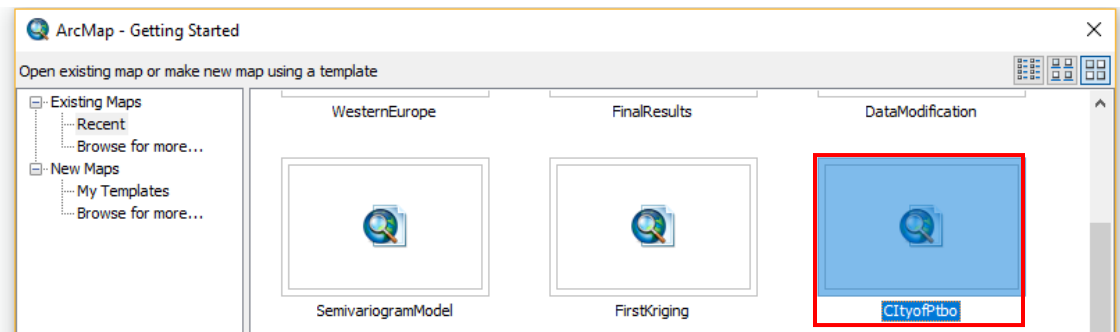
#### Option a) Create a new document

Select a **Blank Map** from **My Templates**. Click **Open**.





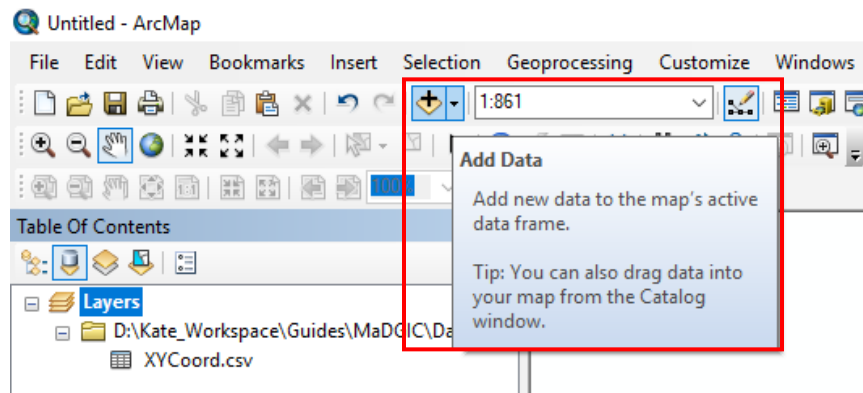
#### Option b) Open an existing document

Select the map document from the displayed options, or select **Browse for More**. Click **Open**.

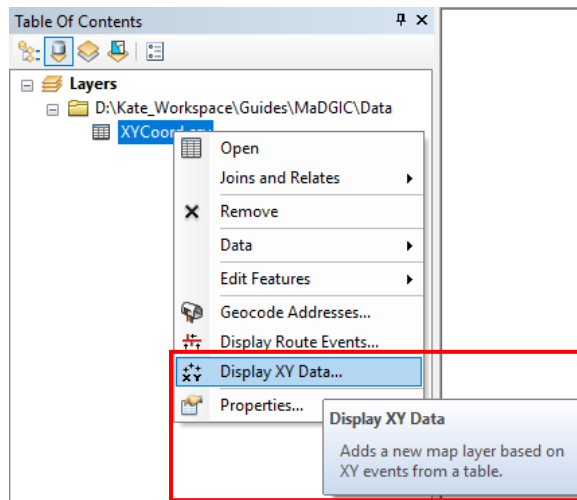


### Step 4 Add X, Y Data as an Event Layer

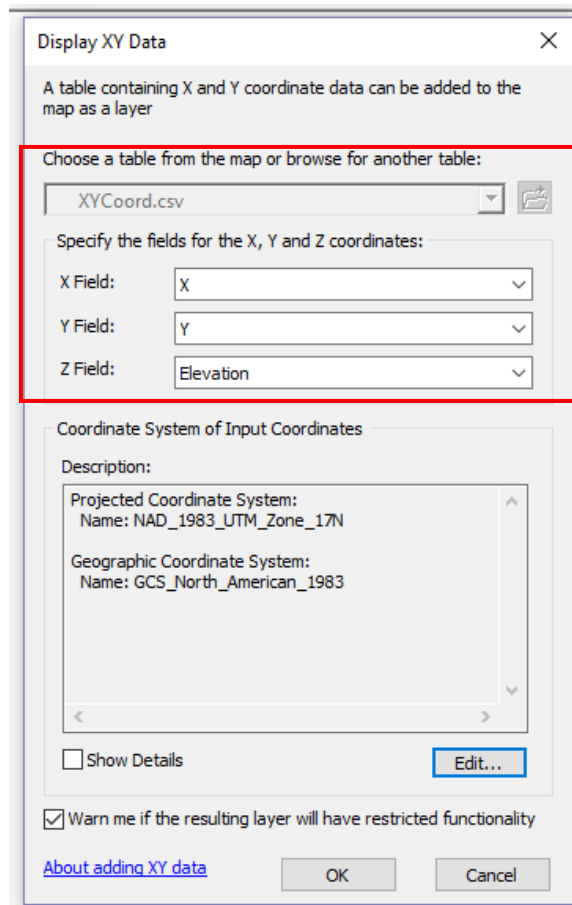
- a) Click the **Add Data** button . If you can't see the drive where your data resides, first, create a connection using the **Connect to Folder** button . Browse to the \*.csv file, select it, and click **Add**.



- b) To display your coordinate values as points, right-click the file name in the ArcMap table of contents and select **Display XY Data...**



- c) The **Display XY Data** dialogue will open. Automatically, the X- and Y-coordinates values are populated. Alternatively, specify the fields that contain the X and Y coordinates, with **X corresponding to longitude (eastings)** values and **Y corresponding to latitude (northing)** values. An optional Z-coordinate can be selected from the drop-down menu.

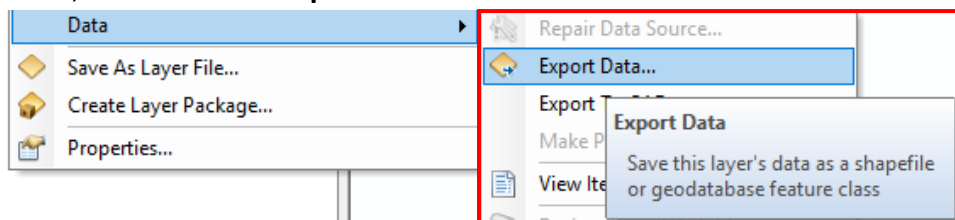


- d) Set the desired coordinate system by clicking the **Edit** button at the bottom of the dialogue screen and browsing to the coordinate system of your data
- e) Click **OK** to close the **Spatial Reference Properties** dialogue, and click **OK** again to process the request. You will receive a warning that the resulting table does not have an Object-ID field – click **OK** to close the message.
- f) The X, Y coordinate data will display in data view as a point event layer.

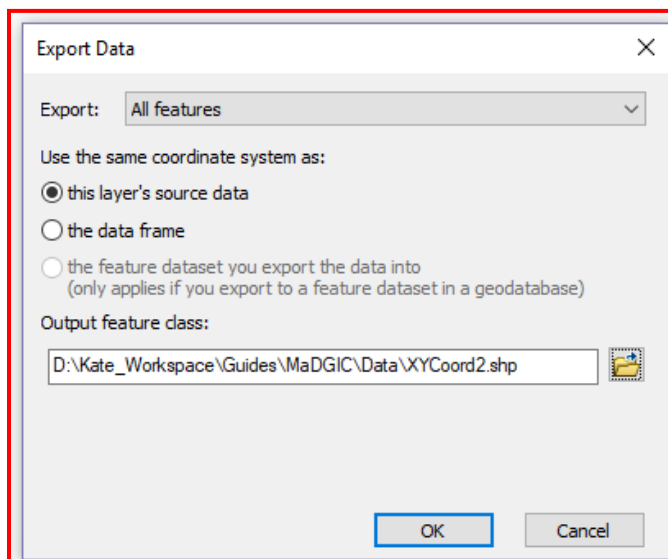


### Step 5 Export the XY Data to a Feature Class (Shapefile)

- a) To save the temporary XY layer as a feature class, right-click on it in the **Contents** pane. Then, select **Data** → **Export Data**.



- b) In the **Export Data** dialogue, select the folder button to open the **Saving Data** dialogue. Input a name (no spaces), and choose **Shapefile** as the **Save as Type**. Click **Save** and **OK**.

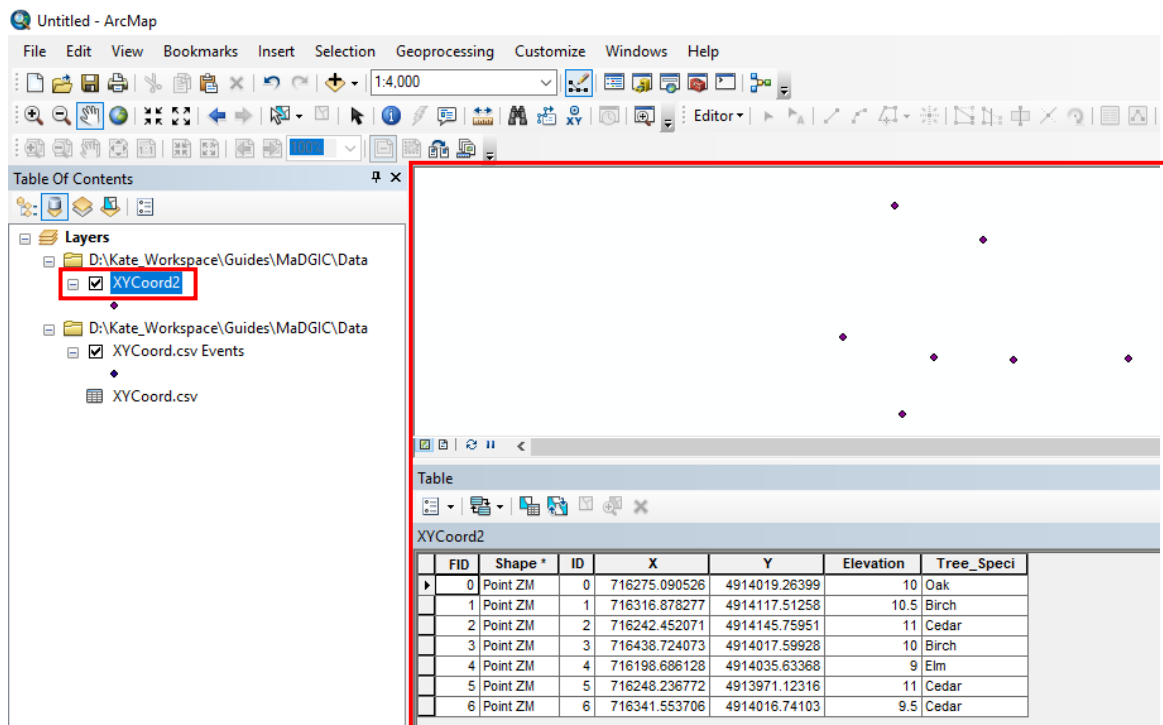


- c) Click Yes to add the exported data to the map as a layer.

## Step 6 View the Feature Class in Data View

- a) A new feature class is added to the specified directory as well as to the map document. The original file and the event layer may be removed from the map by right-clicking on the layer and selecting **Remove**. The new shapefile can be added to multiple maps, projects, or used in calculations, analyses and geoprocessing functions.

### Data View



The screenshot shows the ArcMap interface with the Data View pane open. The map displays several purple point markers. Below the map, a table view shows the data for the feature class XYCoord2. The table has the following columns: FID, Shape \*, ID, X, Y, Elevation, and Tree\_Speci.

FID	Shape *	ID	X	Y	Elevation	Tree_Speci
0	Point ZM	0	716275.090526	4914019.26399	10	Oak
1	Point ZM	1	716316.878277	4914117.51258	10.5	Birch
2	Point ZM	2	716242.452071	4914145.75951	11	Cedar
3	Point ZM	3	716438.724073	4914017.59928	10	Birch
4	Point ZM	4	716198.686128	4914035.63368	9	Elm
5	Point ZM	5	716248.236772	4913971.12316	11	Cedar
6	Point ZM	6	716341.553706	4914016.74103	9.5	Cedar

For further assistance with this guide or other topics related to geospatial and/or statistical data and software, please contact us at [madgichelp@trentu.ca](mailto:madgichelp@trentu.ca).