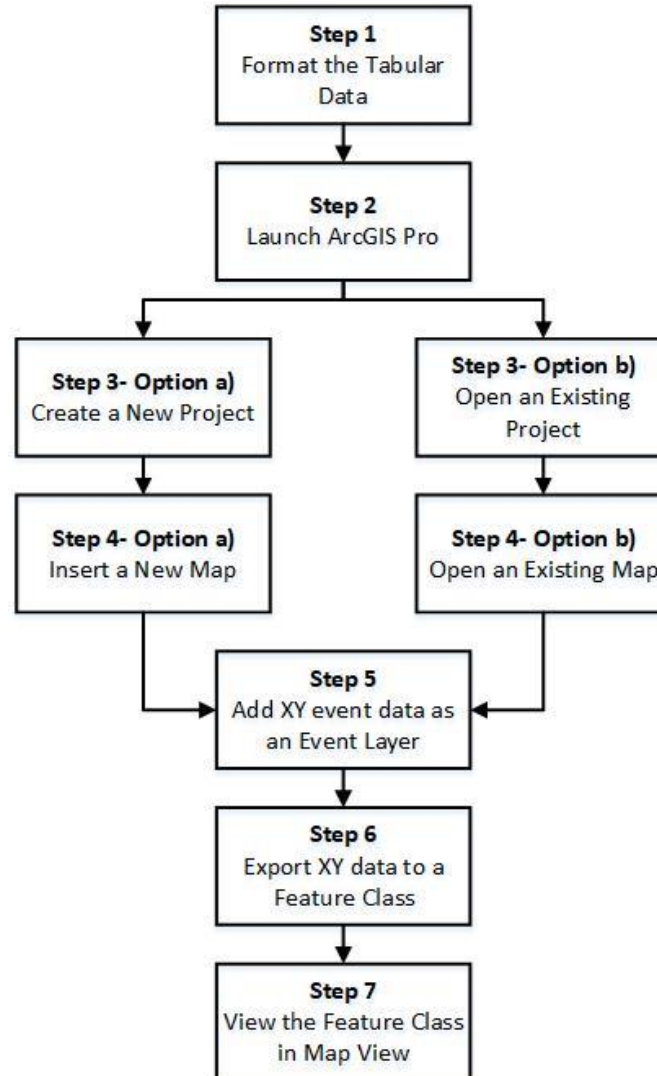


**LIBRARY**

ADDING X, Y COORDINATE DATA IN ARCGIS PRO

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 a workflow with instructions for importing coordinate values from an Excel spreadsheet and visualizing them on a map and converting them to spatial data in ArcGIS Pro.



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:

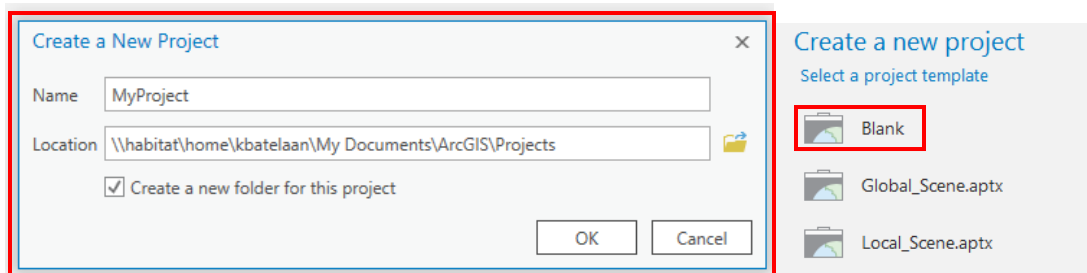
$$\text{Decimal Degrees} = \text{Degrees} + ((\text{Minutes} / 60) + (\text{Seconds} / 3600))$$

Step 2 Launch ArcGIS Pro

Step 3 Create/Open a Project

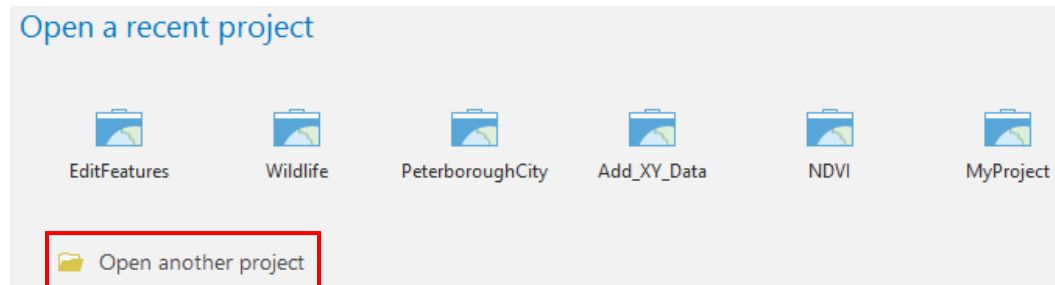
Option a) Create a new project

To create a new project, select a **Blank** template. Give the new project a name and select a folder location to store the project in. Click **OK**.

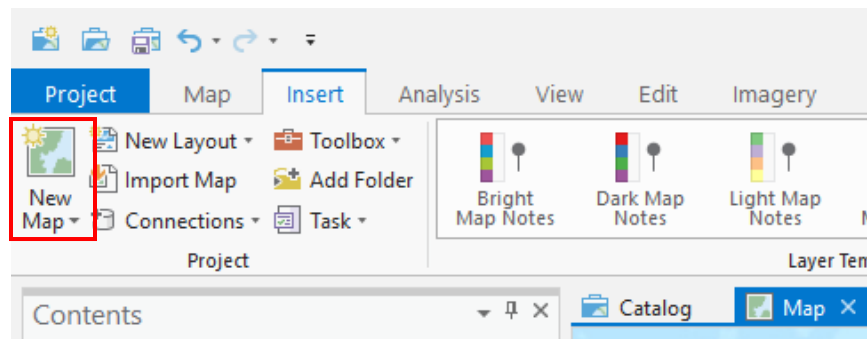


Option b) Open an existing project

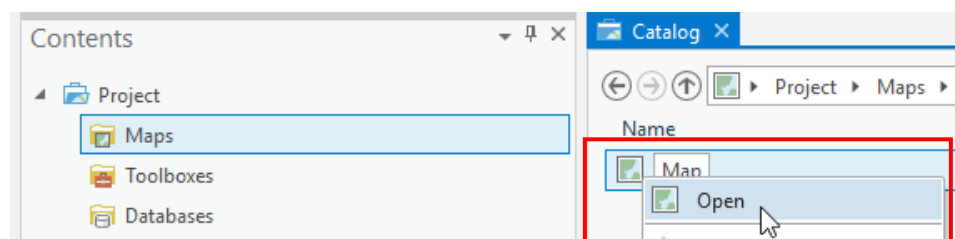
To open an existing **ArcGIS Pro project**, select it from the list of suggested projects or select the folder button to **Open another project**. Then, navigate to the folder location where the project (.aprx) is stored and select it. Click **OK** to import it.

**Step 4 Insert/ Open a Map****Option a) Insert a new map**

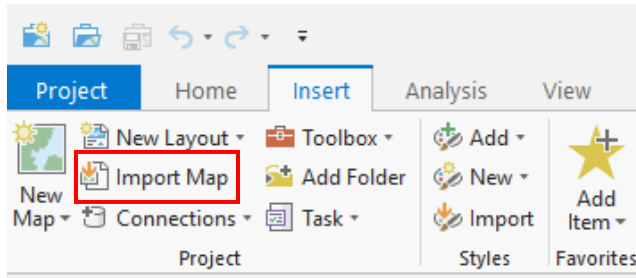
To insert a new map, select the **New Map** button from the **Insert** tab in the **Project** group.

**Option b) Open an existing map**

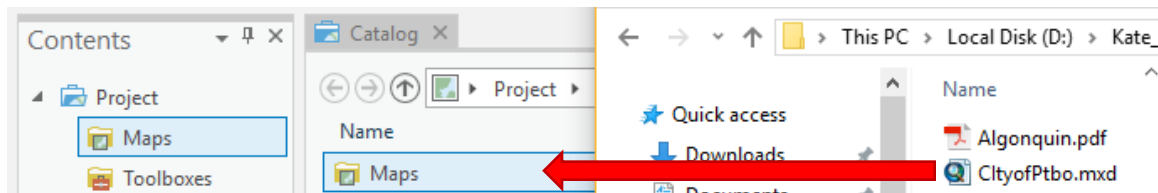
To open an existing map, select the **Maps** folder from the **Contents** pane. The **Catalog** page opens up. Right-click on the map file and select **Open**.






Note: To import an existing map from an **ArcMap document (.mxd)**, select the **Insert** tab on the ribbon at the top of the screen. From the **Project** group, select the **Import Map** button .

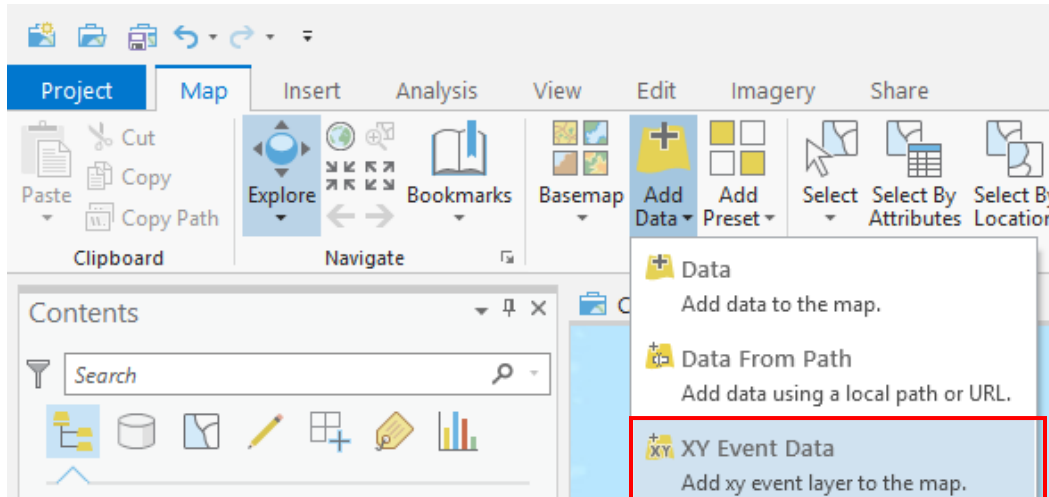


Alternatively, drag and drop an **ArcMap document (.mxd file)** into the **Catalog** or **Contents** pane from **Windows Explorer**.




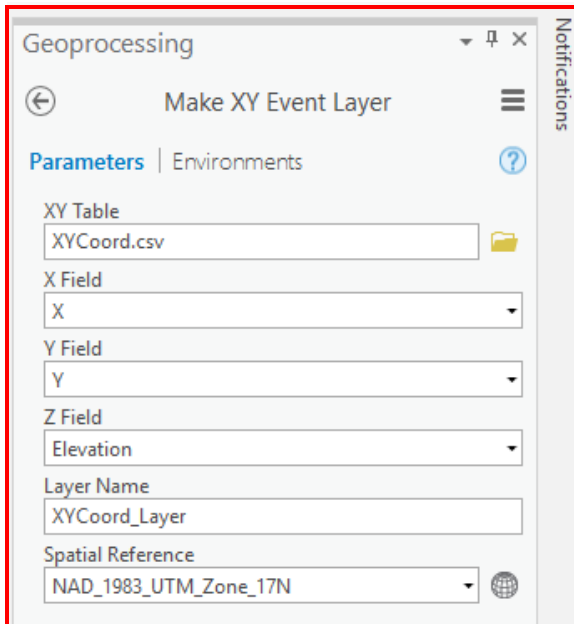
Step 5 Add X, Y Data as an Event Layer

- a) Open the **Map** tab, and in the **Layer** group, choose the **Add Data**  button drop-down menu. Select the option to add **XY Event Data** . Alternatively, if the table is already in the map project, right-click it in the **Contents** pane and click **Display XY Data** .

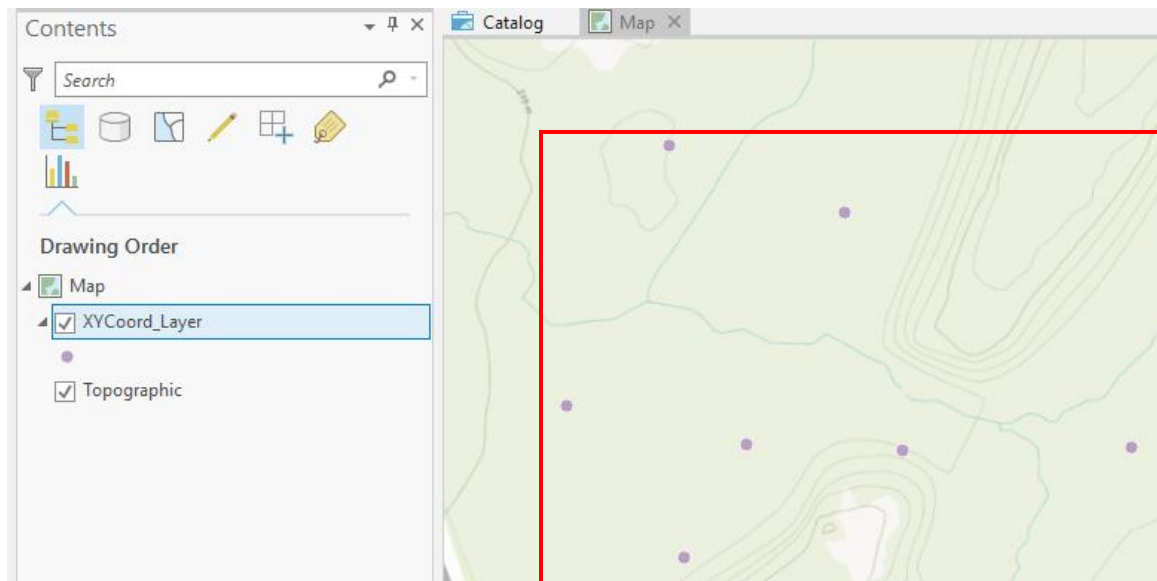


- b) The **Geoprocessing** pane is activate on the right side of the screen with the **Make XY Event Layer** tool. Open the file folder next to the text box, and browse to the .CSV file with the XY data. Select the file and click OK. Automatically, the X- and Y-coordinates values are populated. Alternatively, specify the fields that contain the X and Y coordinates, **with X corresponding to longitude (easting)** values and **Y corresponding to latitude (northing)** values. An optional Z-coordinate can be selected from the drop-down menu.


- c) The spatial reference needs to be changed to match the coordinate system of the XY data. Select the **Run**  button at the bottom of the **Geoprocessing** pane, to execute the tool. If the tool is successfully run, a green check mark will appear at the bottom of the pane.

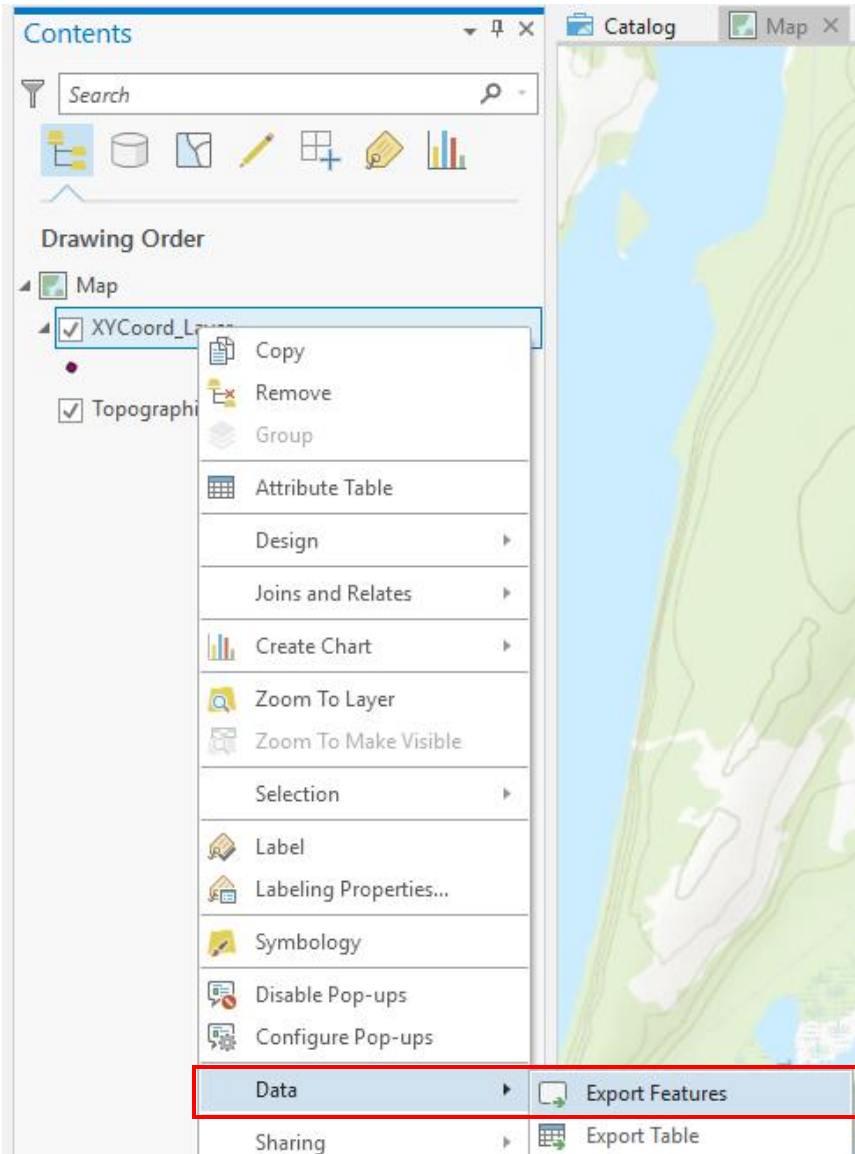



- d) The XY coordinate data will display in the **Map View** as a point event layer.

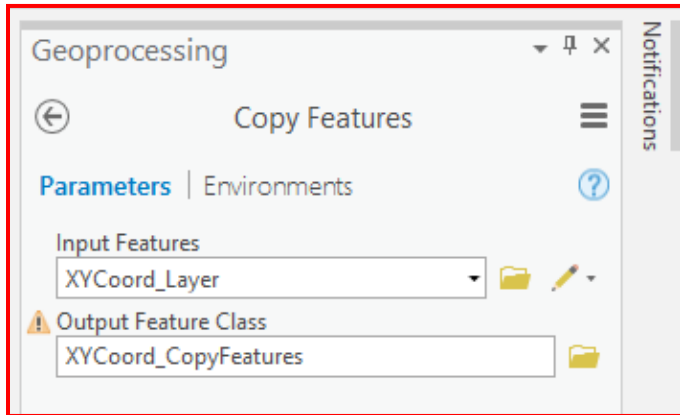


Step 6 Export the XY Data to a Feature Class (shapefile)

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

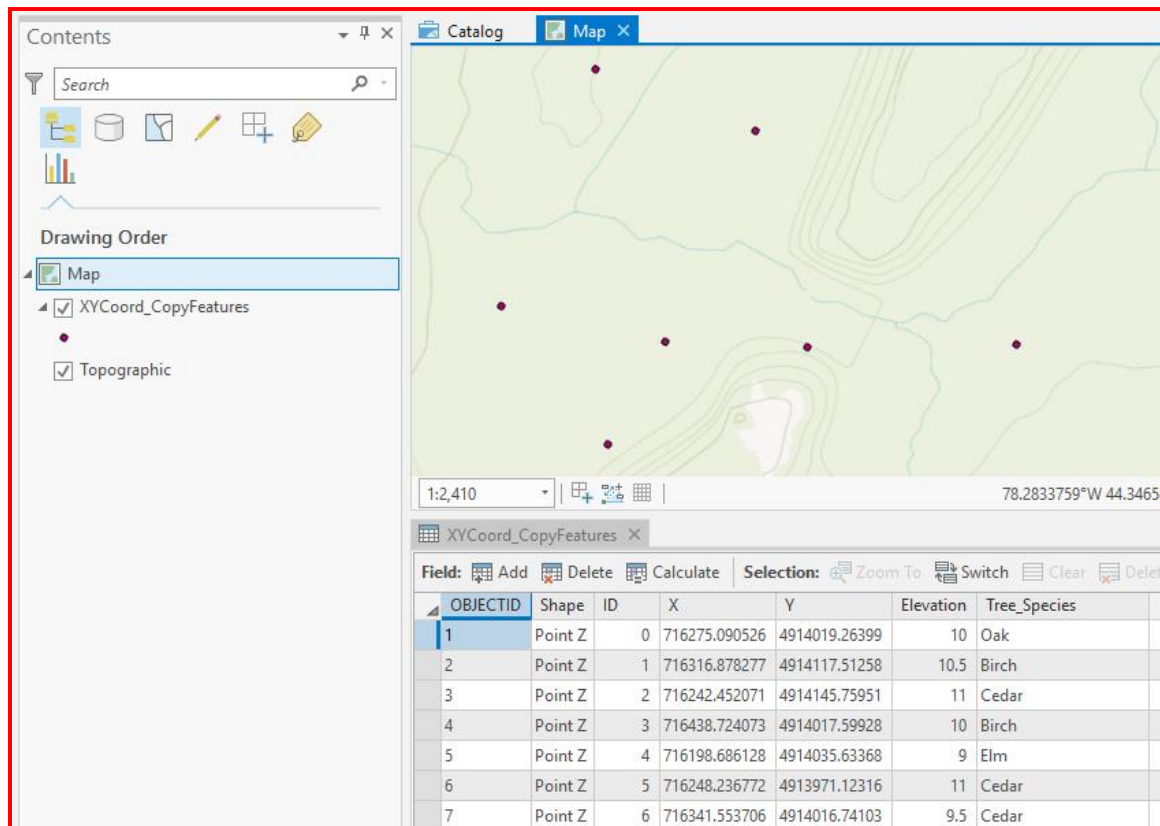


- b) In the Geoprocessing pane, the **Copy Features** tool is opened. By default, the output feature class name is populated and saved to the projects geodatabase. If needed, change the default name and save file location by selecting the folder next to the text box. Select the **Run**  button at the bottom of the **Geoprocessing** pane, to execute the tool. If the tool is successfully run, a green check mark will appear at the bottom of the pane.



Step 7 View the Feature Class in Map View

- a) The new feature class is added to the project geodatabase (or other specified location) as well as to Map View. 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 used in multiple maps and projects or used in calculations, analyses and geoprocessing functions.



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.