Chapter 7

Working with Projections in ArcGIS Pro

Skills you will learn: There are two tasks you may need to perform with projections. The first is to project a map that has no projection (i.e. has only a geographic coordinate system), the other is to define the projection of a map that is supposed to be projected, but is missing the information.

Projecting a map

In this first part of the tutorial, we'll add a projection to a point map of locations of polluting facilities in Canada, derived from a downloaded set of locations available at http://open.canada.ca/data/en/dataset/40e01423-7728-429c-ac9d-2954385ccdfb. The map uses the NAD83 datum, but is not projected.

We'll add an appropriate projection to the map. To do so, we'll use the **project** tool, which you can access by clicking on the Tools icon in the geoprocessing area of the Analysis ribbon, then in the pane that opens, choosing the Toolboxes tab.
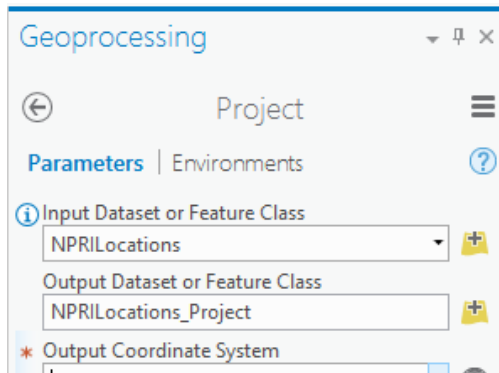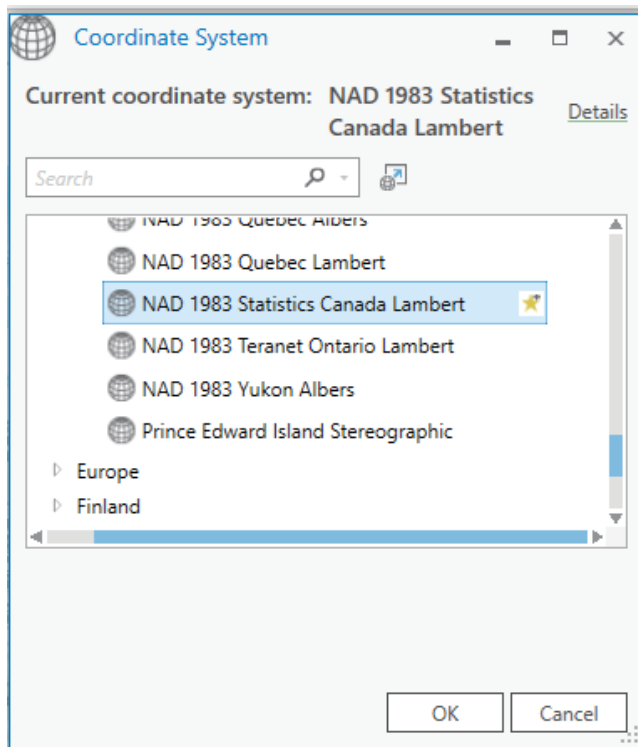
Now, navigate to Data Management Tools>Projections and Transformations>Project. The Project pane will open.

In the first two text boxes, choose the unprojected layer and a name for the new shapefile or geodatabase feature class that will be created as the output of this process.

In the Output Coordinate System text box, you select the coordinate system that will be used for the new, projected layer. You can use the dropdown list to select the coordinate system of an open layer, or of the map. You can also click on the globe symbol to see lists of available projected coordinate systems. Choose an appropriate coordinate system for your area and the underlying datum of your map. If the projection is based on a different datum, you will need to choose a datum transformation method to avoid alignment issues with your new layer.

In this case, we will project the map to the Statistics Canada Lambert Conformic projection, which is a good projection for Canada, with its wide east-west extent.

Click OK and then click Run at the bottom of the Project pane. ArcGIS Pro will project the layer and the new, projected layer will be added to the map.

Define projection

If you have a shapefile that is intended to be projected but is missing its .prj file (see Chapters 6 and 7 of *The Data Journalist* for a discussion of projections and the file structure of a shapefile), use the define projection tool.

You will need to find out what the projection for the map is intended to be, either from the layer's metadata, or if necessary, from the keepers of the data.

Once you know, clicking on the Tools icon in the geoprocessing area of the Analysis ribbon, then in the pane that opens, choosing the Toolboxes tab.

Click on the Tools icon in the geoprocessing area of the Analysis ribbon, then in the pane that opens, choose the Toolboxes tab. Now, click on Data Management Tools>Projections and Transformations>Define Projection. In the Define Projection pane, choose the input feature class or shapefile, then choose the projection to be added. Click OK and the projection will be added to the existing layer.