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Importing CDED (Canadian Digital Elevation Data) into ArcGIS 9.x

Related Guides:
- Obtaining Canadian Digital Elevation Data (CDED)
- Importing Canadian Digital Elevation Data (CDED) into ArcView 3.x

Requirements:
- ArcGIS 9.x with Spatial Analyst
- CDED files

Procedure:

1. Open ArcMap and create a new empty map.
2. If the ArcToolbox window is not visible, click on the small red toolbox icon .
3. In the ArcToolbox window click the small box with the + next to "Conversion Tools" and then the box next to "To Raster" in the drop-down list. Double click "DEM to Raster".

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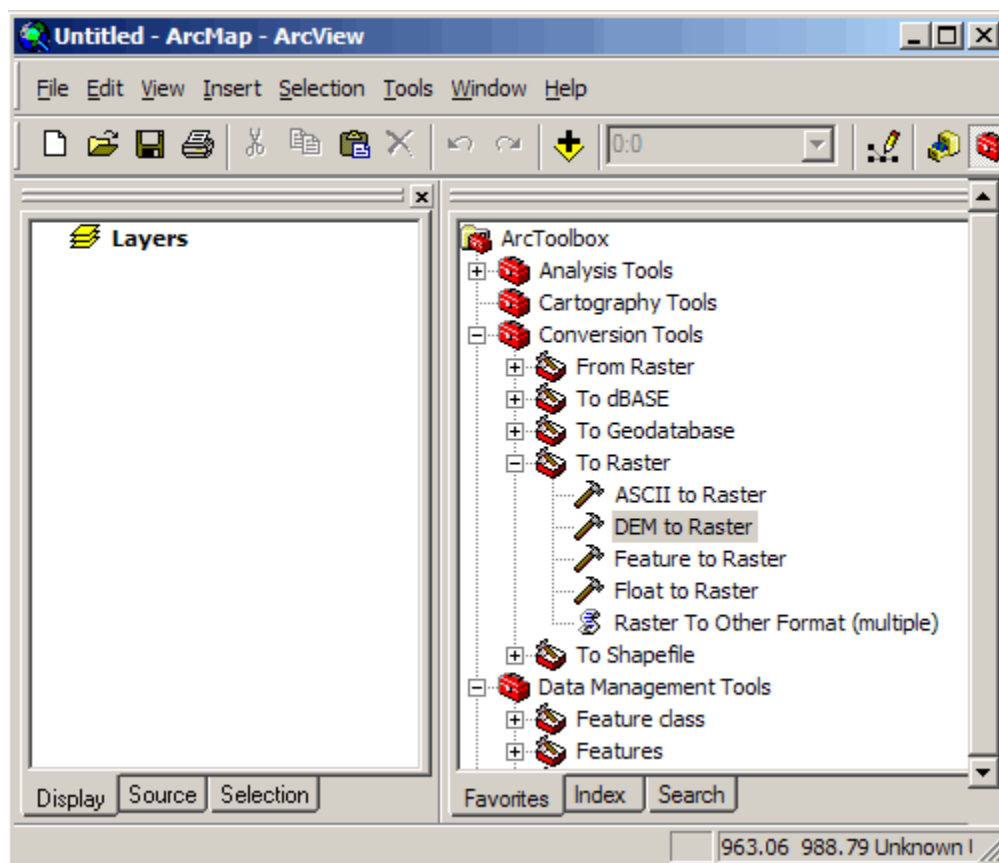
4. The "DEM to Raster" tool window will open.
5. Click the yellow folder icon at the end of the row titled "Input USGS DEM file" to browse to your DEM data. Click "Open". ArcMap will propose a name for the newly imported file. You may change the name and location where the file will be imported if you like.
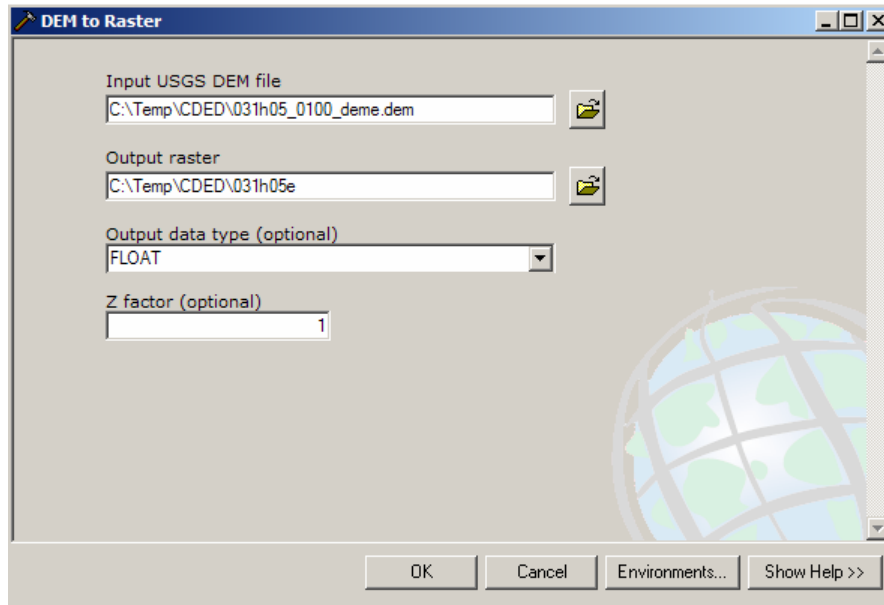

Note: In order to successfully import the CDED data it is important to verify you're your data is both stored in and being saved to a location with a pathname that contains no spaces. (Hint: My Documents contains a space)

6. Click "OK"
7. When the tool has completed its successful import click the "Close" button. Repeat steps 5-7 if you need to import more than one dataset.

At this point it is important to note that the CDED data is currently in decimal seconds whereas most other unprojected data is likely to be in decimal degrees.   To view your data in decimal degrees it is necessary to change the properties of your data frame.

8. Under the "View" menu at the upper left-hand corner of your screen select "Data Frame Properties".
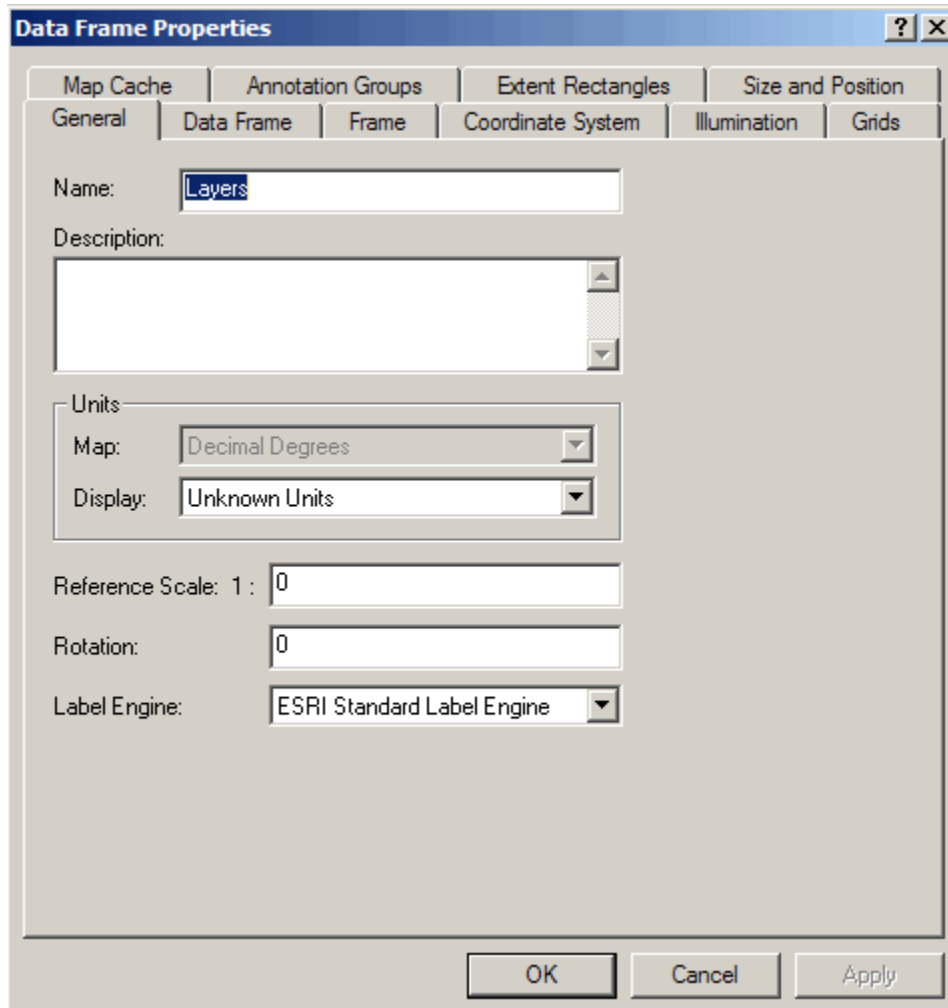

9. In the tabbed box that appears, under the "General" tab change the drop-down menu in the "Units" box from "Unknown Units" to "Decimal Degrees".

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10. Next click the "Coordinate System" tab. Below "Select a Coordinate System" GCS_North_American_1983 will be highlighted. To the right of this click the "Modify" button. Towards the bottom of the pop-up window change the selection for "Angular Unit" from "Second" to "Degree". Click "OK".
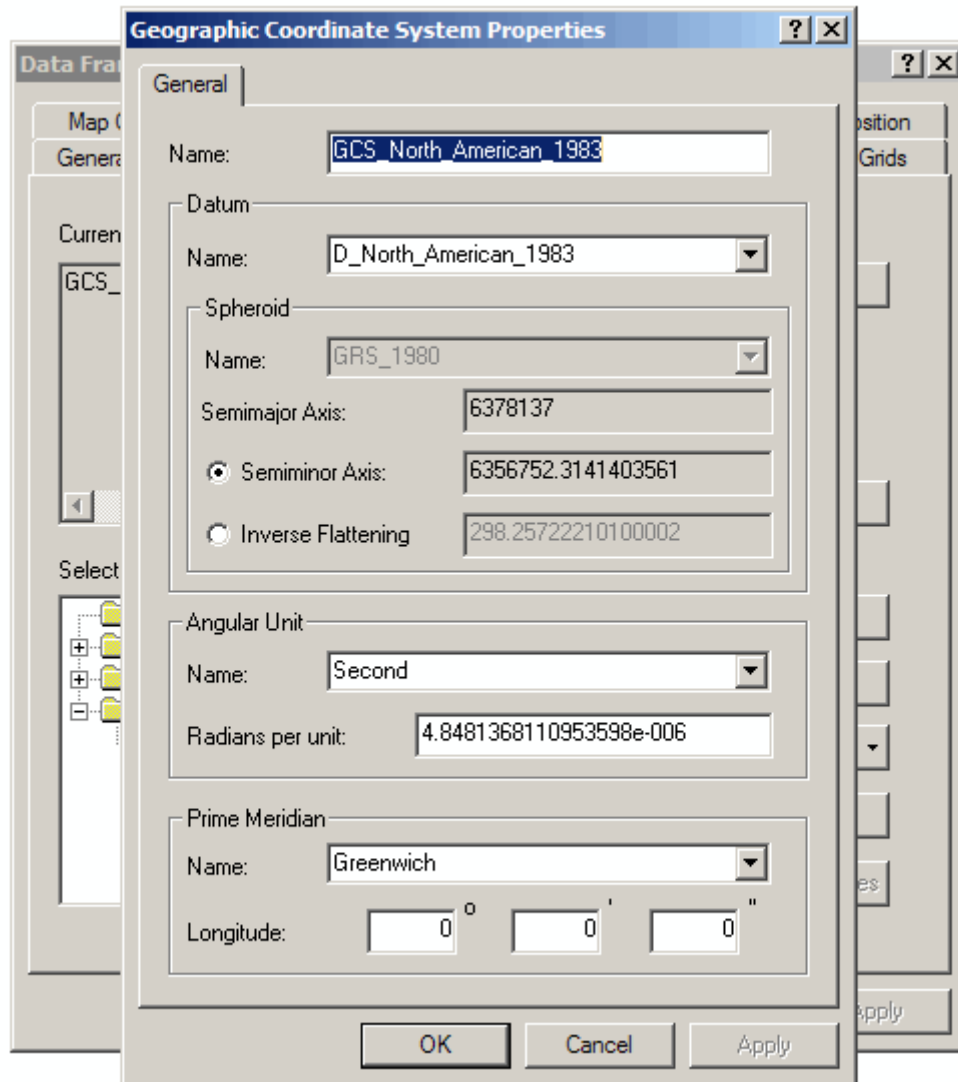
11. At this point your data will disappear. In the Table of Contents (the box on the left-hand side of your screen that lists all layers currently loaded in your Data Frame) right click your DEM layer and select "Zoom to Layer".
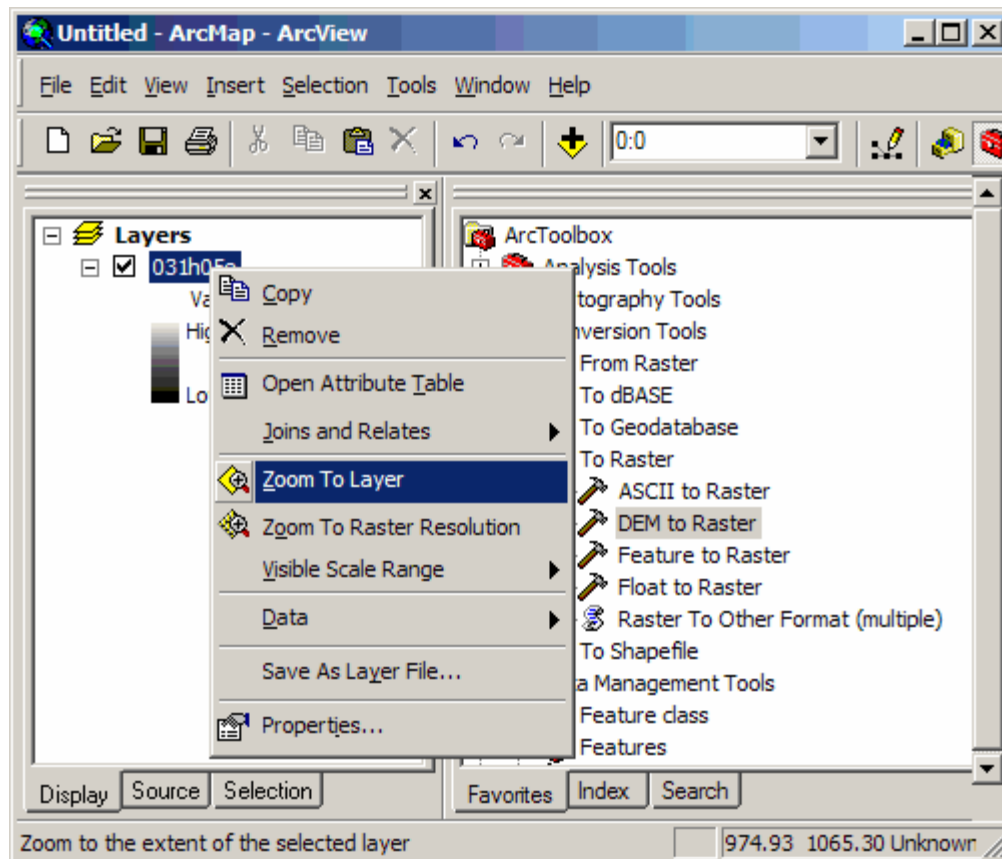

Projecting the DEM data into the same projection as data that you are already working with requires a few more steps:

12. In the upper-left hand corner of your screen click the small blank page icon □ to open a new project. There is no need to save the old project.
13. Add a dataset to the new project which is projected in the coordinate system to which you would like to change the DEM data. ArcMap will automatically change the properties of the Data Frame to match the coordinate system of this dataset. To verify this you can check the cursor location information at the lower right-hand corner of the screen. As long as the location is not listed as "Unknown Units" it is safe to assume that ArcMap's "Projection on the fly" capability has worked successfully.
14. Now add your imported DEM dataset. To do this, under the "File" menu select "Add Data". Navigate to your raster DEM data. You can add a single raster dataset by simply double-clicking the file-name. To add multiple datasets hold down the control key and click each filename, then click the "Add" button.

15. At this point a warning window will appear telling you that your layer(s) have a different coordinate system than that of the other data in your map or from the current map projection. Click "OK" (or "OK to all" if you were attempting to load multiple datasets).

Note: ArcMap will temporarily project your data to match the current map projection. Most likely this will mean that the DEM data will line up fairly well with the other data in your Data Frame but this does not mean that any spatial calculations will be accurate. In order to insure accuracy we need to reproject the DEM data. To do this we will use ArcMap's "Spatial Analyst" extension.

16. To make sure that the extension is available to use select "Extensions" from the "Tools" menu at the top of the screen and verify that the box next to "Spatial Analyst" is selected.
17. To load the "Spatial Analyst" toolbar select "Toolbars" under the "View menu and click "Spatial Analyst" if a check mark does not already appear next to it.
18. On the "Spatial Analyst" toolbar click the small black arrow that is pointing downward and select "Options".
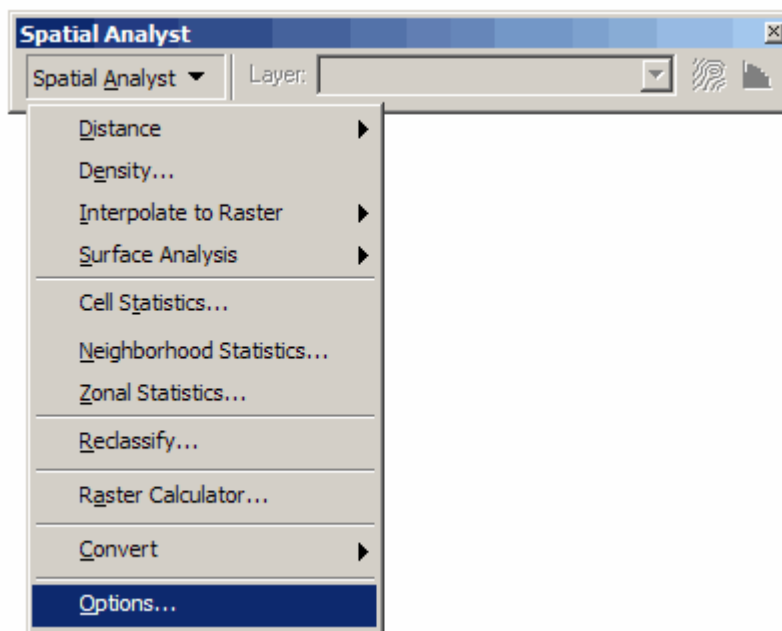

19. Under the "General" tab in the "Analysis Coordinate System" box click the circle next to the selection that reads "Analysis output will be saved in the same coordinate system as the active data frame" and click "OK".
20. Again under the arrow on the "Spatial Analyst" toolbar select "Raster Calculator".

21. In the large white box type "mosaic()". Click your cursor between the parentheses and then double-click the name of your DEM layer(s). Place a comma between the name of each of your layers and click "Evaluate".
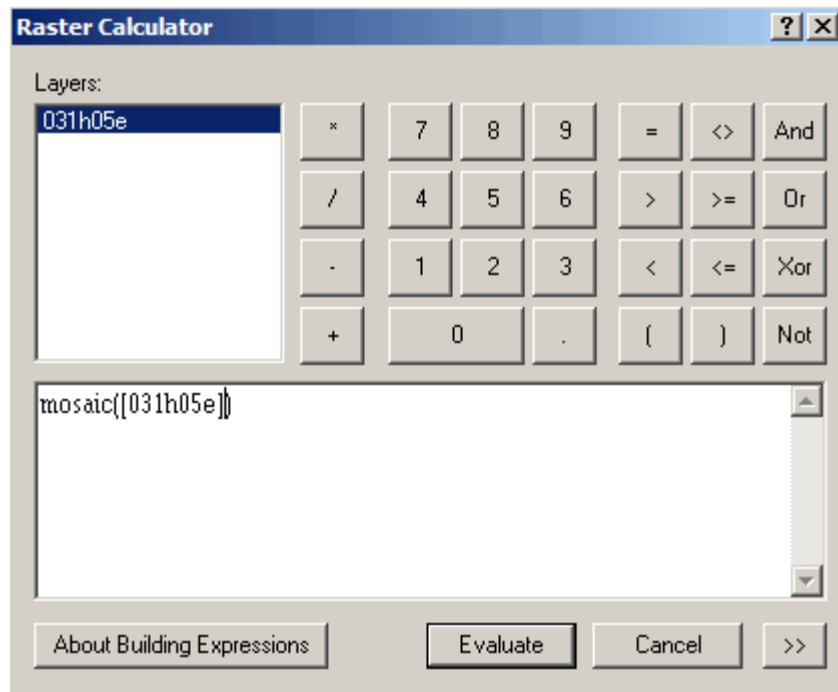
22. A layer called "Calculation" will appear in your Table of Contents. Right-click the layer and select "Make Permanent".
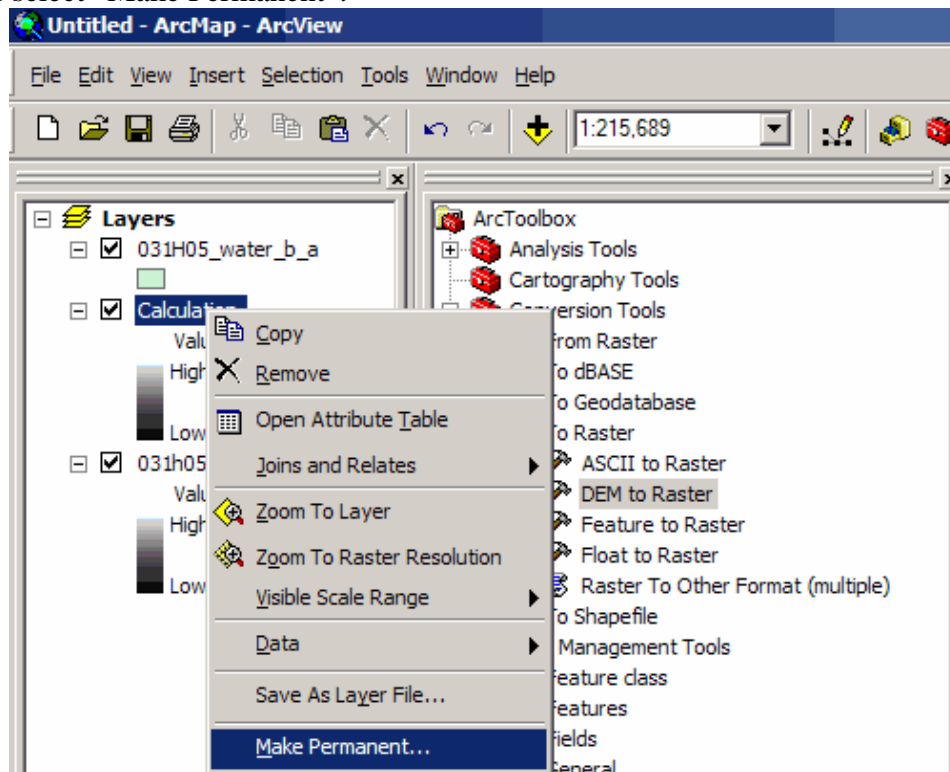
23. A window will appear allowing you to rename the file and save it in the location and file format of your choice. Click "Save".
24. You now have a seamless Digital Elevation Model for your area of interest. Double-click the layer's name in the Table of Contents to view the layer's properties. Under the "Source" tab scroll down to confirm that the data has been projected to the desired coordinate system.
25. Congratulations, you're done!

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