Manitoba 🦬

Physical Features of North America in ArcGIS 9.x

Social Studies Learning Outcome:
S2-KL-012 Locate major physical features on a map of North America.

Grade Level: Grade 10

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Introduction:
The purpose of this activity is to give students experience using ArcGIS at a beginning level as well as creating a map of North America's physical features. It is suggested that the teacher download the needed files to the same drive that contains the ArcCanada data sets.

Required Files
Downloadable Physical Features files:
  - Physical Features.dbf
  - Physical Features.shp
  - Physical Features.shx

ArcCanada 3.1 Disk 3
  - Continental/na/shp/cont_bnd.shp - *Continental boundaries of North America*

Instructions to download necessary files: The Physical Features shapefiles can be found at http://www.edu.gov.mb.ca/k12/cur/gis/index.html. The link to download the data is found directly below the assignment title. Double click on the **ArcView files** link and save the files to the same drive on your network that contains the ArcCanada 3.1 data sets.
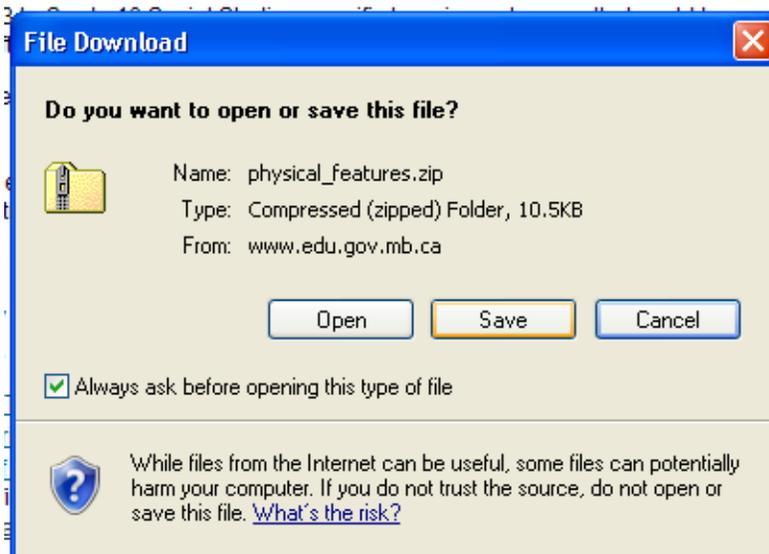
Note: When creating projects in ArcGIS, it is best to create a new folder for each project to save to. You can give the folder a name that corresponds with the nature of your project. Whenever you add or create theme layers in your project, select the corresponding folder to save your changes. Also, note that the directory paths shown in the screen shots will differ from the paths in your system. Ask your instructor if you need help creating a folder or selecting an appropriate file directory.

1. Launch ArcMap and when prompted, select **A new empty map**.
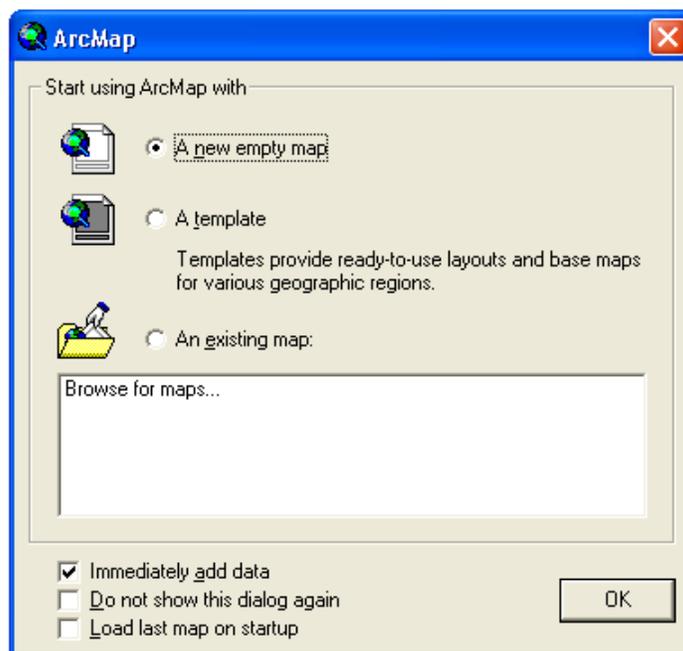
2. Use the **Connect To Folder** button to navigate to where the physical features
   data is stored. If you do not know where to locate the data, ask your instructor.

3. Use the **Add Data** button ⬇ to add the physical features shapefiles to your Data
   View.
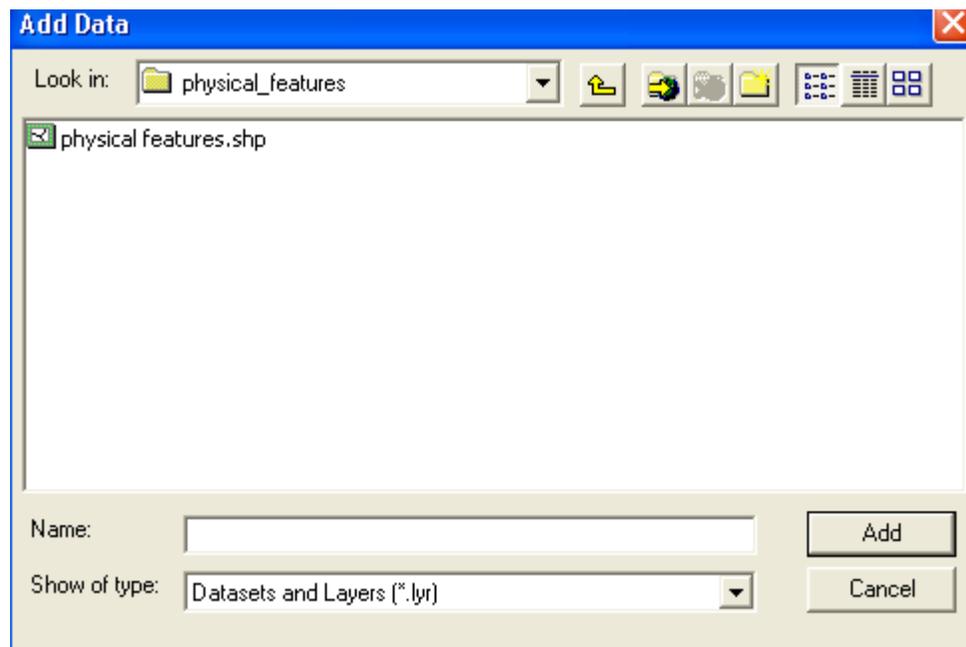
4. This is a good time to save your project. Go **File → Save As**, navigate to
    the folder you created for your project, create a title for your project, and select
    Save.   Save your project frequently as you go along.

5. Now use the **Add Data** button and the **Connect To Folder** button 🔜 and
    navigate to the **Continental Data** and then go **na → shp** and add
    cont_bnd.shp.
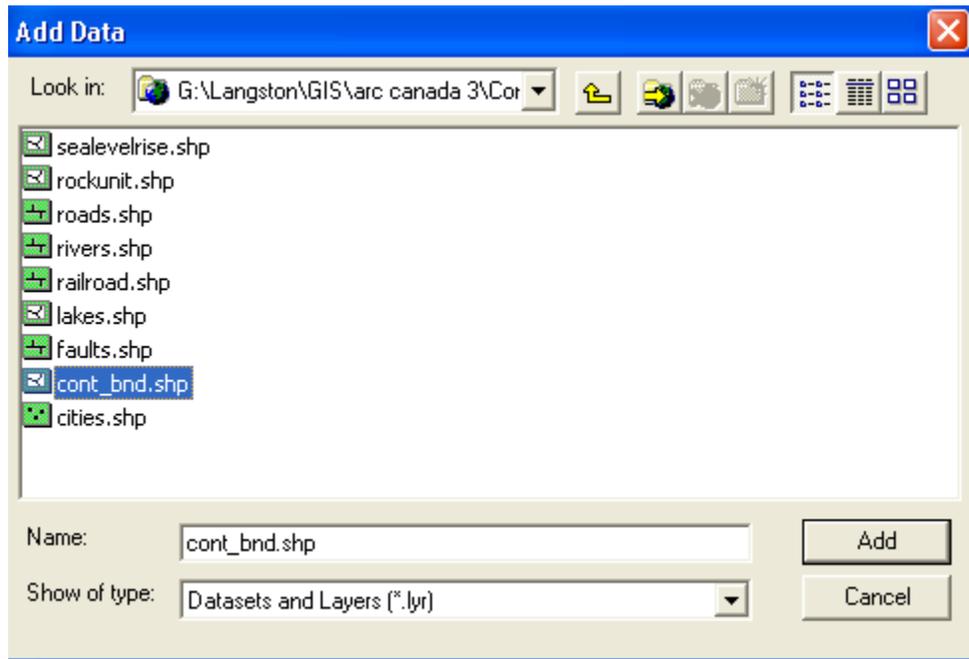
6. Click once on the **physical features** label in the Table Of Contents to make it the active layer (it will be highlighted). Click on this layer and drag it to the top of the Table Of Contents to make the physical features visible on your map.
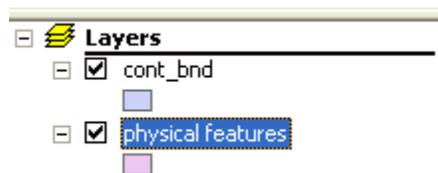
7. You may wish to examine the data associated with the physical features layer. To do this single click on the **physical feature** label in the Table Of Contents to make it active. Now right click on the label and left click on **Open Attribute Table**.
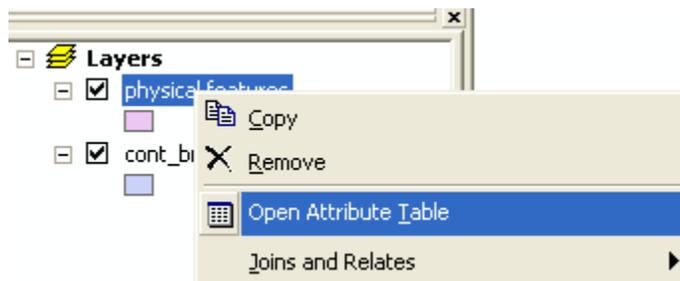
8. Examine the Attribute table. You can see that there are 10 polygons representing the seven physical features of North America. This is because several features consist of more than one location (e.g. Lowlands). The region names is the only data that was created with this file, however, you could create additional fields and add further data (e.g. size of region, main rock types, etc.)
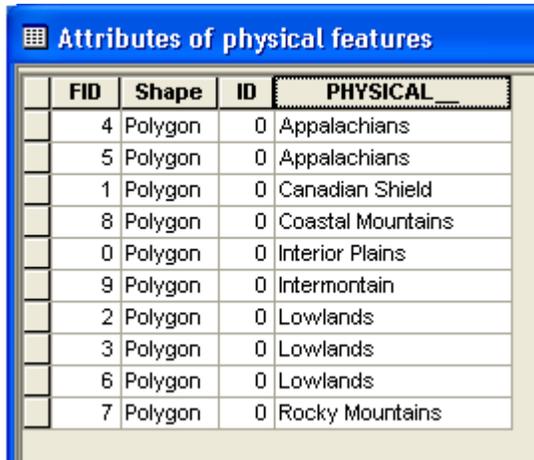
FID	Shape	ID	PHYSICAL
4	Polygon	0	Appalachians
5	Polygon	0	Appalachians
1	Polygon	0	Canadian Shield
8	Polygon	0	Coastal Mountains
0	Polygon	0	Interior Plains
9	Polygon	0	Intermontain
2	Polygon	0	Lowlands
3	Polygon	0	Lowlands
6	Polygon	0	Lowlands
7	Polygon	0	Rocky Mountains

Attributes of physical features

9. You can give each physical feature a separate color to distinguish each region more clearly and to improve the visual appeal of your map. Double click on **physical features** in the Table Of Contents, then go **Symbology → Category → Unique Value**. Make **Value Field** = **Physical** and click on the **Add All Values** button, **Apply** and **OK.**
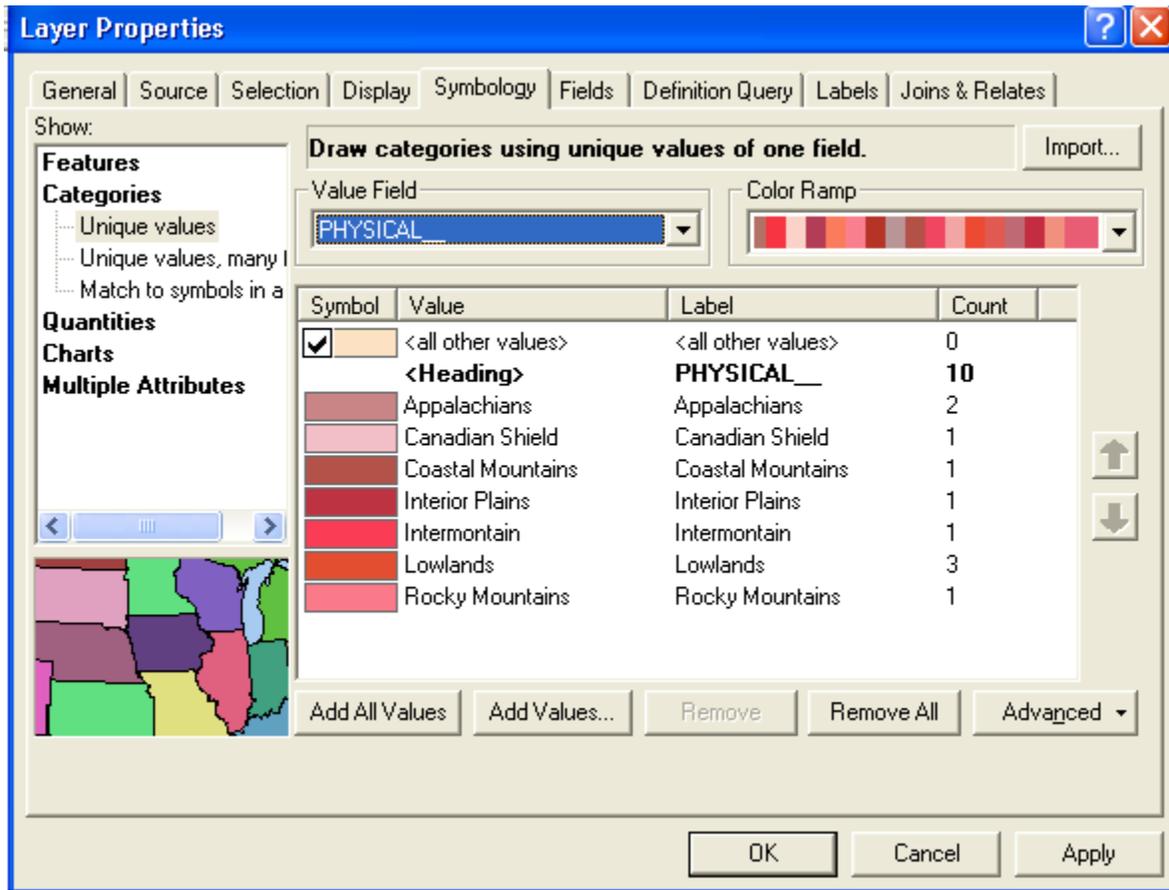
10. You will now label the physical features of North America. Click on the **New Text** button in the bottom toolbar. From the drop-down menu you can select the desired text.

11. Once you have the text tool selected, click on the location on the map where you want your text to go and when prompted, type in the appropriate label.
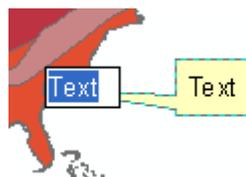
12. Continue until all physical features are labeled. If you make an error, use the **Select Elements** button [icon] and click on the error to highlight it and use the **Delete** button on the keyboard to delete the error. If you would like to change font size or colour, use the **Select Elements** button to select the desired text, then use the **New Text** button to make the necessary changes.
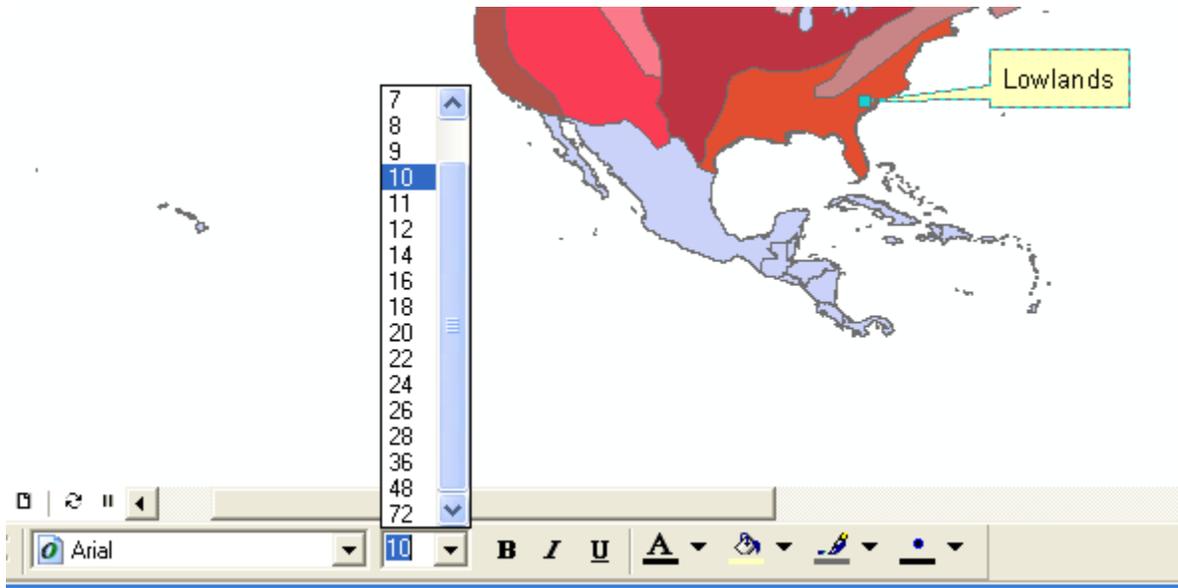
13. You will now create a **Layout** so you can add the necessary map components such as the title, legend, scale and north arrow. Go **View → Layout**. If you wish you can change the Layout format from the default Portrait view to the Landscape view by clicking on the **Change Layout** tool [icon]. For this lesson we will keep the Portrait view.
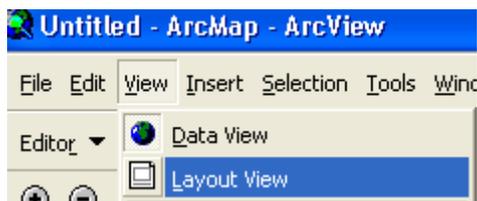
14. Where prompted, double click and add the title *Physical Features of North America.* At the bottom double click where prompted and add your name and date.

15. Click on the **Legend** and **North Arrow** and drag it to an appropriate location.

16. Double click on the **Scale**, click on **Scale and Units** and change the divisional units to **Kilometers**.

17. Your map is now ready to show your teacher or to print.

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