Map Output in ArcView 8.x (ArcMap)

Note: To complete this exercise, you will need to download the dataset designed to be used in this tutorial. If you have **ArcCanada 3.x** you can locate the files on **Disc 3** in the **World**, **Shp** folder. Otherwise download the files by clicking either the **WinZip** or **Setup.exe** links located just below this tutorial on the Tutorials 8.x/9.x page. The **Setup.exe** will extract the files to a folder called **Create_Layout** on your **c: drive**.

Overview

This tutorial will walk you through how to create a map using ArcView 8.x

A. Generate a layout from the "Data View"
B. Insert the proper cartographic elements such as titles, scales and north arrow
C. Use the "Legend Wizard" to customize your legend
D. Export your map as a Jpeg for use in PowerPoint presentations or on web pages

Part A – Cartographic Conventions

The term *Cartographic Conventions* refers to elements that should be included in a map for it to be *cartographically correct*. These elements include:

- **Map Data -** In **ArcView (ArcMap)**, this is the data that comes from the **Data Frame**
- **Legend -** The area of the map that lists and explains the colors, symbols, line patterns, shadings, and annotation used on the map. The legend often includes the scale, origin, orientation, and other map information.
- **Scale -** The reduction needed to display a representation of the Earth's surface on a map. A statement of a measure on the map and the equivalent measure on the Earth's surface, often expressed as a representative fraction of distance, such as 1:24,000 (one unit of distance on the map represents 24,000 of the same units of distance on the Earth). Map scale can also be expressed as a statement of equivalence using different units; for example, 1 inch = 1 mile or 1 inch = 2,000 feet. Scale may also be shown graphically, using a scale bar.
- **North Arrow -** A map element that indicates the north direction, relative to the map itself.
- **Neatline -** A border drawn around the extent of the map.
- **Title -** An informative title for the map.

When working in **ArcView (ArcMap)**, there are number of other map elements that can be included in a **Layout**:

- **Tables -** Tabular data, usually in the form of a layer's attribute table.
- **Charts -** A graph or chart, generated from your tabular data.
- **Pictures -** Photographs and other image files.
- **Graphics and Other Text -** Text, lines, points and polygons.

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Part B – Preparing Your Map

In **ArcView (ArcMap)**, it is easy to generate professional quality maps with a click of the mouse. This can be done using the software's ability to automatically generate a **Layout** from a **Data Frame**. The appearance of the resulting **Layout** is dependent on various parameters set within the **Data Frame**.

Start **ArcMap** if it is not already running, and follow these steps:

1. **Create a New Map**

In the ArcMap dialog that appears when you open ArcMap, choose **A new empty map** and check the box at the bottom of the window that says **Immediately add data**. Click **OK**.

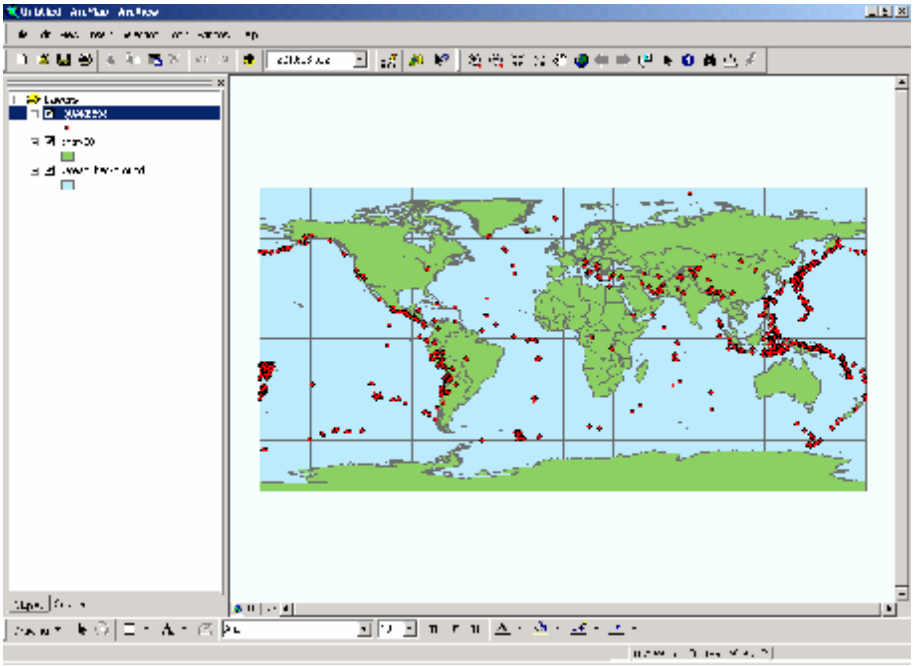
In the **Add Data** dialog box, add the following layers:

QUAKES98.shp – earthquakes that occurred around the world in 1998.
cntry00.shp – the country boundaries from the year 2000.
Ocean_background.shp - the ocean background.

Select all of the files at once by holding down the **Ctrl** key while clicking on each layer file. Click **Add**.
You may have to drag **cntry00** above **Ocean_background**. The layers in your table of contents should be in the same order as listed above.

2. **Change the Appearance of the Layers**

In this step, you will change the **Data Frame** so that a cartographically pleasing **Layout** can be generated from it. The three files should now be present in the **Table of Contents** as **Layers**.



You should give each layer a more meaningful name so that anyone looking at your layout will understand what is being mapped.

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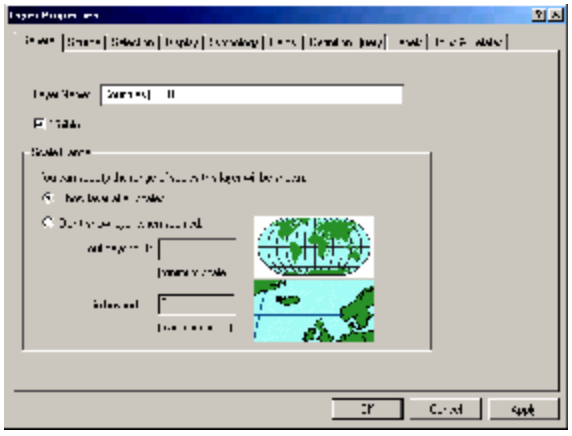
To change the name of a layer, double click on the layer to bring up the **Layer Properties**. Select the **General** tab.

Type in the new **Layer Name** in the field at the top of the dialog box. For example, you might want to rename **cntry00** to **Countries (2000)**. When you have finished typing in a new layer name, click **OK** to close the **Layer Properties** dialog box for that layer. Repeat this process until you are happy with the names colours, and symbols used for each layer.

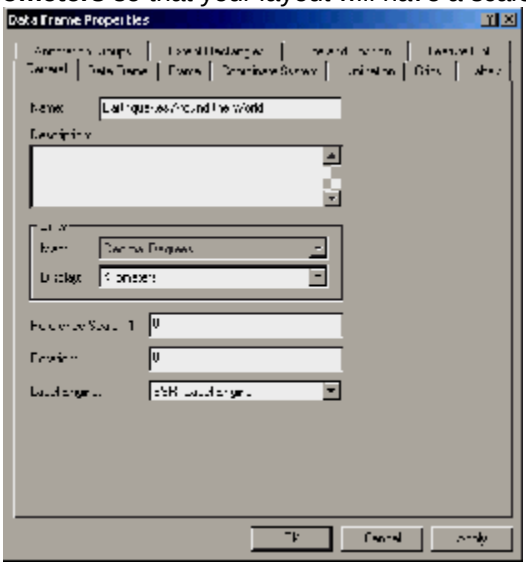


If you wish, you can also change the symbols for each of the layers to create a more attractive map. For example, you might want to make the landmasses of the countries (cntry00) green, and the water features blue (Ocean_background). This is done in the **Layer Properties** under the **Symbology** tab.

3. **Change the Appearance of the Data Frame**

When you first create a **Data Frame**, it is named *Layers*, or *New Data Frame*, or *New Data Frame 2*, depending on how many Data Frames are present within the project. You need to give the **Data Frame** a name that more accurately reflects its contents. From the **View** menu, choose **Data Frame Properties**. Select the **General** tab. Change the **Name** field (at the top of this dialogue box) to **Earthquakes Around the World**.

The data used in this exercise is stored in decimal degrees. In the **Data Frame Properties** dialog box, change the **Display** to **Kilometers** so that your layout will have a scale measured in these units.



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Click **OK** to close the **Data Frame Properties** dialog box.

Part C – Creating the Layout

1. **Making Adjustments**

To generate a **Layout** from a **Data Frame**, click the **Layout View** button at the bottom left of your map window . The map that was located in your **Data Frame** will now appear on your layout with a frame around it.

Right click outside the frame on the layout. Select **Page Setup**. Under **Page Orientation**, click on **Landscape**, then click **OK**. This may cause your map to fall outside your layout border. You are going to fix that next.

Right click on the **Data Frame** and select **Properties**. Click on the **Frame** tab. Under **Border**, scroll and select **None**. Click **OK**. This removes the neatline that is too big for the **Data Frame**.

Resize and move your **Data Frame** to the position you want it to be in using the **Pointer** tool.

2. **Adding Cartographic Elements**

The **Insert** menu contains all the elements you need to create a map that meets all the cartographic requirements listed in Part A.

Start with the title. From the **Insert** menu, select **Title**. A box will appear on your layout telling you to **Enter Map Title**. You can double click on it to bring up the **Properties** dialog. Here you can give your map a proper title like **Earthquakes Around the World in 1998**, and change the font, size, and colour of your title. This can be done by clicking on the **Change Symbol** button. Click **OK**.

Next, add a **North Arrow** from the **Insert** menu. You can customize the type, size, and colour of your north arrow in the **North Arrow Selector**.

Now, add the **Scale Bar** in the same manner. Again, you can customize the scale bar in the **Scale Bar Selector**.

Finally, add a **Neatline.** Select the **Neatline** from the **Insert** menu and use the **Neatline Dialog Box** to customize it to your liking. Hint: To prevent the Neatline from falling outside the layout frame click “place inside margins” under placement.

3. **The Legend Wizard**

The Legend Wizard is a tool that helps you customize your legend for your layout. You can accept the defaults that the Legend Wizard provides for you or you can customize your legend the way you decide.

From the **Insert** menu select **Legend**. This will open the **Legend Wizard**.

In the first window of the **Legend Wizard**, you will notice that all the layers are listed under both **Map Layers** and **Legend Items**. If you would like to remove an item from the **Legend Items**, click once on the item and then click on the arrow pointing towards the Map Layers. For example, it might not be necessary to label the ocean background in the legend, as map readers will likely recognize that the blue area depicted on your map is water. You can add and remove items from each window this way. Click on **Next** when you are finished.

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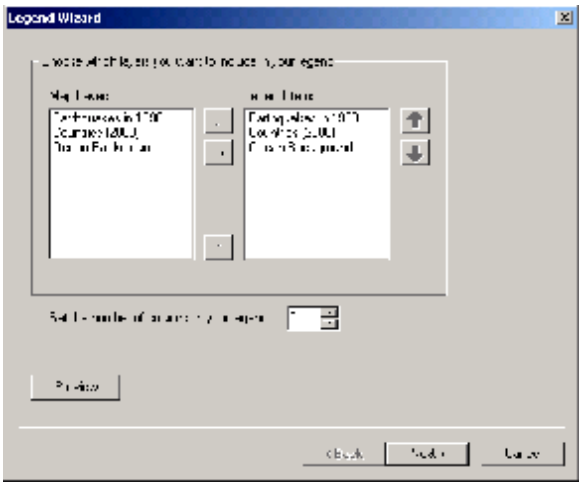
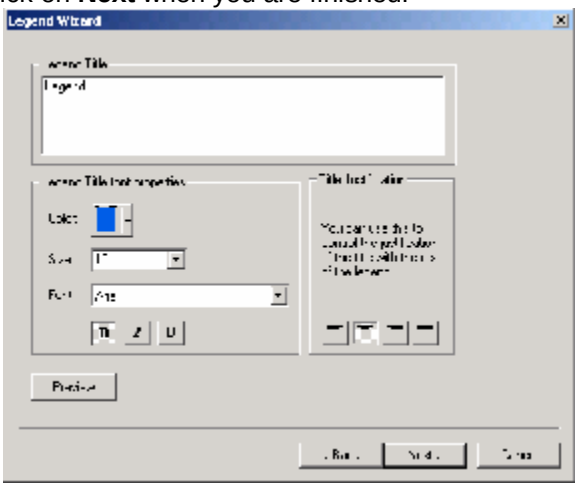


Note: You can preview the customizations you have made at any point during the **Legend Wizard** steps. Simply click on the preview button and you will see what your legend is going to look like. This is a useful technique as it allows you to see any problems and make the necessary alterations before you've actually created the **Legend**.

Now you can customize the title for your legend to your liking. You can change the **Color**, **Size**, **Font,** and **Justification** of your title. Click on **Next** when you are finished.



In the third window, you can change the **Legend Frame** properties including the type of **Border**, **Background Color,** and **Drop Shadow** you may want or not want for your legend. Click **Next** when you are finished.

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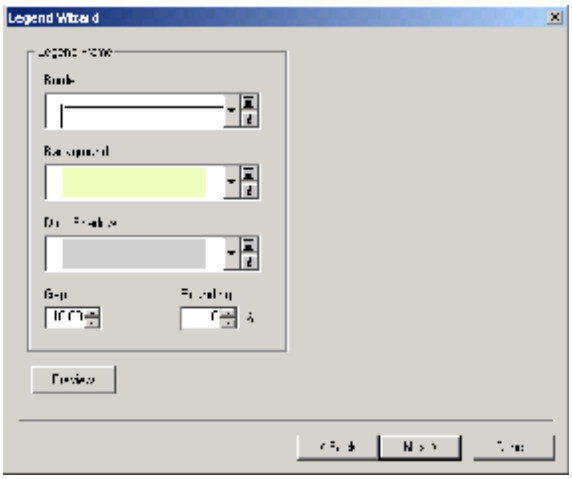
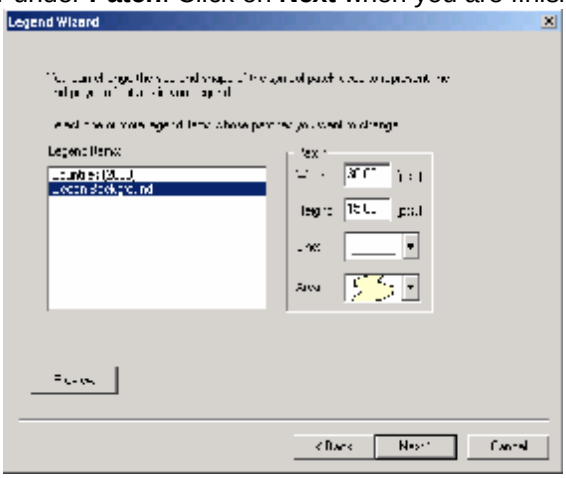
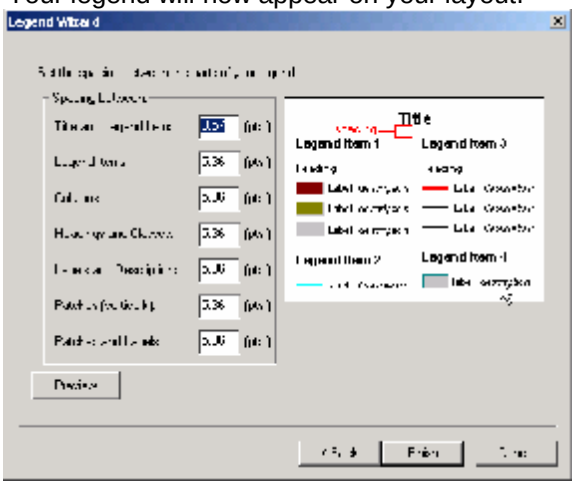


You can change the size and shape of the symbol patch used to represent line and polygon features in your legend. Select the layer to be altered from the **Legend items** (just click once on it), and then select the way you want it to appear under **Patch**. Click on **Next** when you are finished.



Finally, select the amount of spacing that you would prefer between each item in your legend. When you are finished, click on **Finish**. Your legend will now appear on your layout.



If you need to make further changes to your legend, double click on it to bring up the **Legend Properties** and make the necessary changes.

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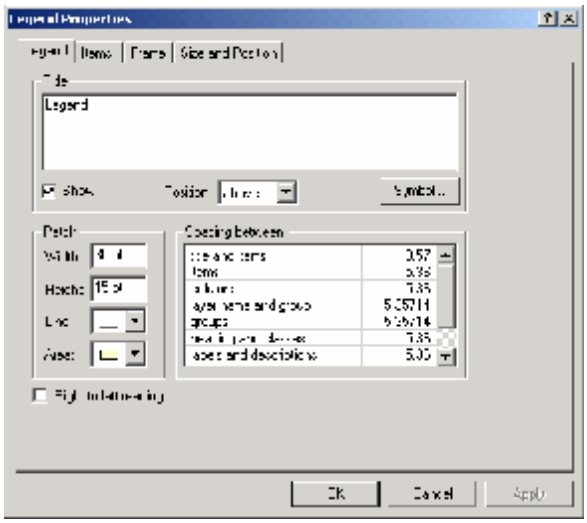


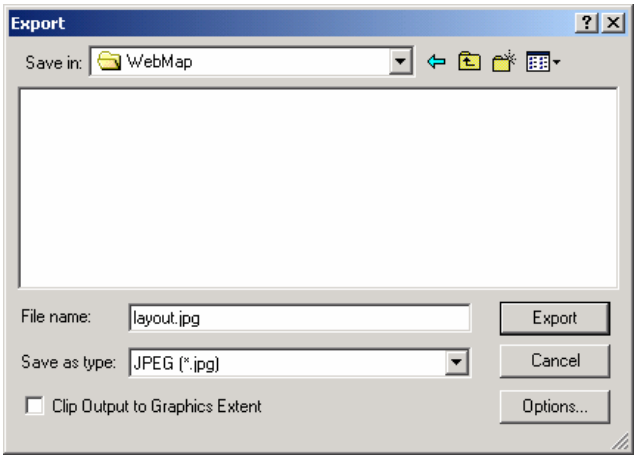
Part D: Using Your Layout

Once you are happy with your layout, you are ready to export the layout to a **JPEG image** (JPEG is an image format that can easily be used when you are creating web pages or reports).

In your Layout, from the **File** menu choose **Export Map**.

In the **Export** dialog box, navigate to the directory where you are going to save the image.

Give your file an appropriate name, set the **Save as type:** dropdown box to **JPEG** and click **Export.**



That's it! You have just created a **JPEG image** file of your **ArcView layout.** If you want to see the image, open your image processing software and navigate to the location where you saved the file above and open it up. You can then return to your web page editor and insert the new image into your HTML page, or go to your word processor or presentation package and insert your map into your report or presentation.

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