

Canada's Climate

Introduction

Due to Canada's enormous landmass, Canadians all across the country experience a whole range of weather patterns and conditions. A region's climate reflects the weather patterns in that area over time.

Objective

In this exercise you will examine climate data from different places across Canada. Using ArcView, you will generate climate graphs for these areas and compare the different types of climate across the country.

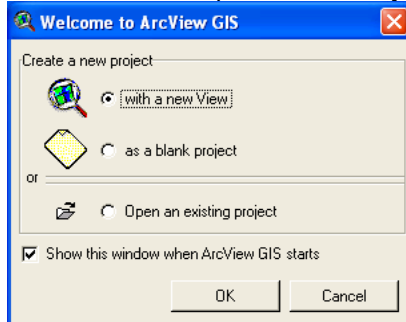
Before you begin...

Starting ArcView

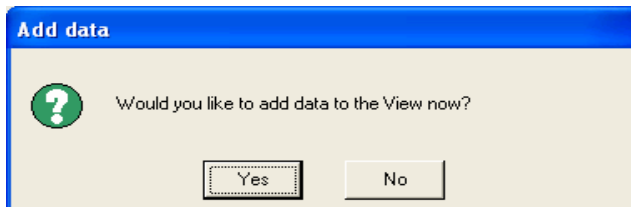
1. Click on the class icon **CGC_1P1**.
2. Click on **ArcView GIS 3.2** folder.
3. Click on **ArcView GIS 3.2** icon.
4. As you work, be sure to **SAVE OFTEN**.

Let's get started...Adding Maps to the View

1. ArcView 3.2 will open. It will ask you to Create a New Project with a New View. Click on **OK**.



2. The following box will appear. Click on **Yes**.



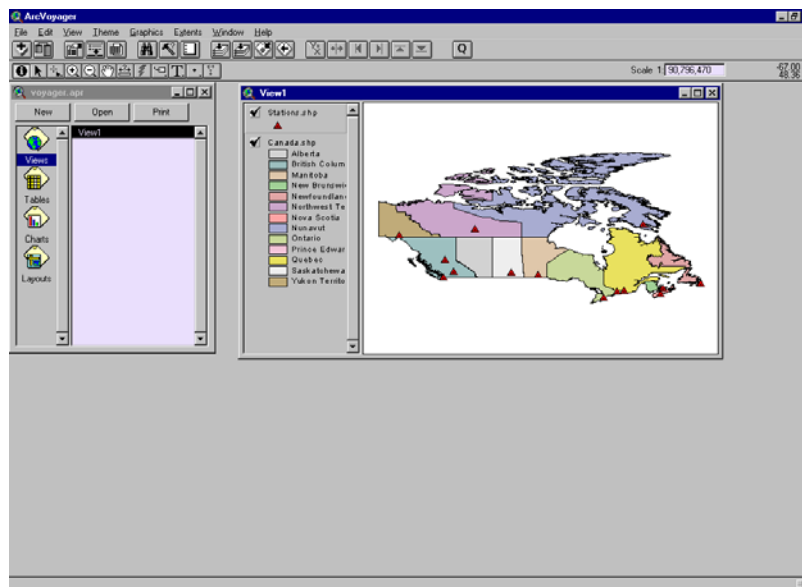
3. You need to add some maps to your view. Follow the teacher's instructions and select the following files:





canada.shp
stations.shp

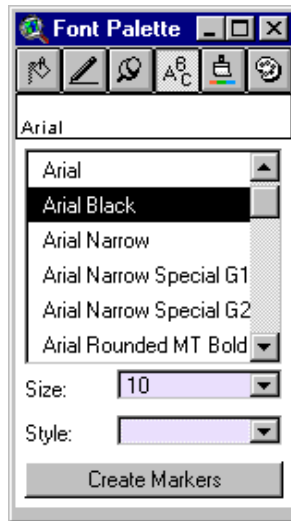
Click on **OK**.

Setting Up Themes

4. You will see these themes appear in the **Table of Contents** (the gray area next to the view). Turn on the visibility for both the themes by placing a check mark in the gray box next to the theme's name.
5. You will have to change the order that the themes are drawn in. ArcVoyager draws themes from bottom to top so some themes may be "hidden" by others. To do this, click and hold your mouse on the theme name, drag the theme up or down in the Table of Contents. Do this until the themes appear in the following order: (1) stations.shp (2) canada.shp.
6. Maximize the outer Window of ArcView but do not maximize your view.





7. Make the "stations.shp" theme active by clicking once on the theme name (it will appear raised). Click on the **Open Theme Table button** . Notice that you have temperature and precipitation data for each of these places for each month. Close the Theme Table.
8. You now need to change the map projection. From the **View menu**, choose **Properties**. Click on the **Projection button**. Click on **Custom**. Change the **Projection to Lambert Conformal Conic**. Click on **OK**. Change the **Distance Units to Kilometers**. Click on **OK**.
9. Finally, you need to label the stations on your map. Make sure "**stations.shp**" is the active theme (click once on the theme name). Click on the **Label tool** . Click on each of the stations and you will see the name of the stations appear. When you are done, click on your **Pointer tool** . From the **Edit menu**, choose **Select All Graphics**. From the **Window menu**, choose **Show Symbol Window**. Click on the  button to bring up the **Text Palette**. Change the **Font to Arial Black**. Change the **Size to 10** (you should be able to read the names of the stations).

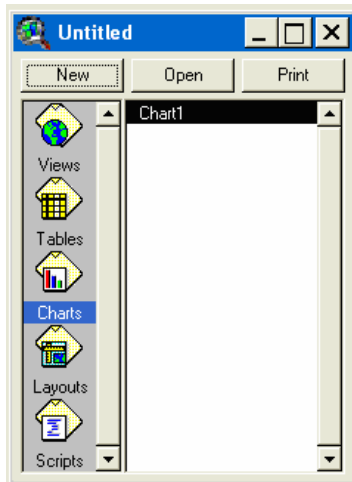


Close the **Text Palette**. With your **Pointer tool** , click anywhere outside the map to remove the handles from the text.

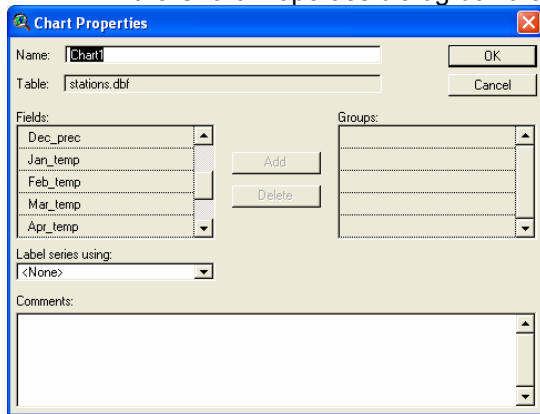
Making Charts- Temperature and Precipitation

10. You are now going to make charts to represent the data in the table. Make the “**stations.shp**” theme the active theme by clicking once on the theme name. Click on the **Open Theme Table** button  to bring up the attribute table for this theme.


11. From the **Table of Contents**, click on the **Charts icon**  and click on **New**.





12. In the Chart Properties dialog box that appears, change the **Name:** to **Temperature**.

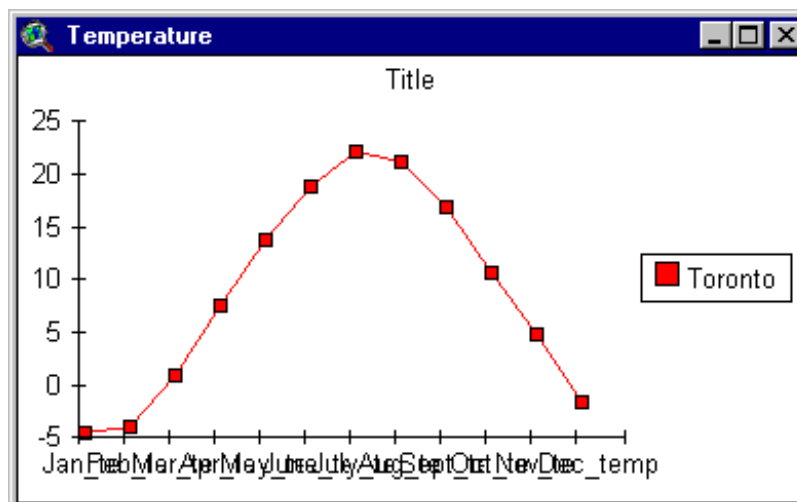





13. In the **Fields** column, scroll down and hold down the **SHIFT** key to select all the monthly temperatures (these have “_temp” after the month name) and click on **Add**. Change the **Label Series Using:** to **Name_eng**. Click on **OK**. ***Don't panic if your chart does not appear!! It will say “Too Much Data, Please Select Fewer Rows. This simply means that the charting in ArcView can only handle a certain amount of data at one time.**

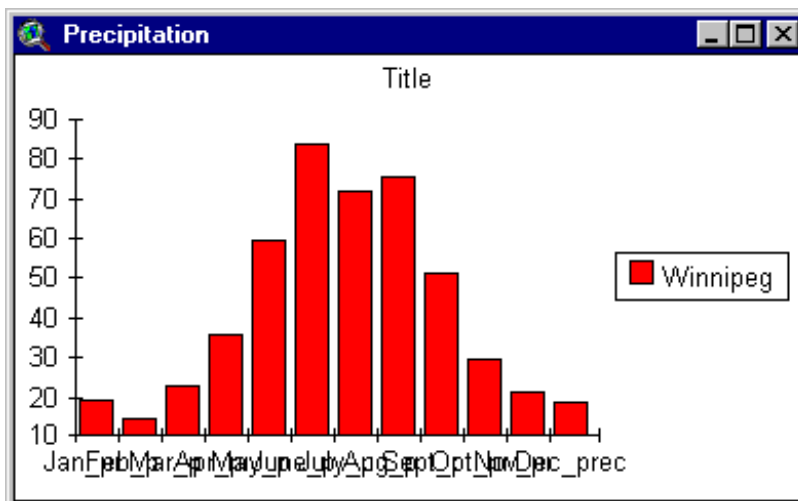
14. Click on the **Line Chart Gallery button** . In the dialog box that appears, choose the first selection and click on **OK**. **You still do not have to panic!!**


15. From the **Window** menu, choose **View 1**. Click on the **Select Feature tool** . Click on one of the stations. You should now see a temperature graph appear for that station.

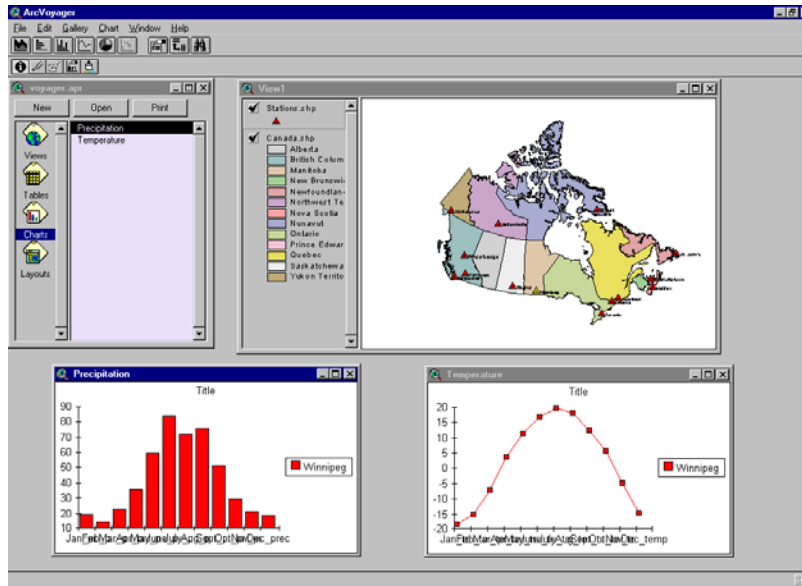
16. From the **Window** menu, choose **Temperature**. Click on the **Chart Element Properties tool**  (on the second row). Now click on “**Title**” and change the **Chart Title** to **Temperature**.




17. From the **Table of Contents**, click on the **Charts icon**  and then click on **New**.
18. In the **Chart Properties dialog box** that appears, change the **Name:** to **Precipitation**.
19. Hold down the **SHIFT** key and select all the monthly temperatures (these have “_prec” after the month name) and click on **Add**. Change the **Label Series Using:** to “**Name_eng**”. Click on **OK**.
 Don't panic if your chart does not appear!
20. Click on the **Column Chart Gallery button** . In the dialog box that appears, choose the first selection and click on **OK**. **You still do not have to panic!***
21. From the **Window menu**, choose **View 1**. Click on the **Select Feature tool** . Click on one of the stations. You should now see a precipitation graph appear for that station.



22. From the **Window menu**, choose **Precipitation**. Click on the **Chart Element Properties tool**  (on the second row). Now click on “**Title**” and change the **Chart Title** to **Precipitation**.
23. Rearrange your windows so that you can see your view as well as both your charts. To move your windows around, click and hold on the blue bar at the top of the window and drag it to one side. Your screen should look like this:



24. From the **Window** menu, choose **View 1**. Click on the **Select Feature tool** . Try clicking on different stations. As you click on different stations, you will see the graphs change!
25. Try looking at several stations at the same time. To do this, hold down your SHIFT key while you are selecting the stations.



Compare the climate characteristics of the following stations and give reasons why they are different from one another:

Iqaluit and Toronto


Vancouver and Kamloops













Regina and St. John's

Creating a Layout/Map

26. You are going to create a layout that highlights one of the stations. In your View, use your **Select Feature tool**  and select one station. When you have chosen the station, click on your **Pointer tool** . From the **Window** menu, choose “_____ .apr” (the name you have been saving your project as).



27. Click on the **Layouts icon**  and click on **New**. From the **Layout menu**, choose **Page Setup**. Change the **Orientation** to **Landscape** (horizontal). Click on **OK**.

28. Click on the **View Frame tool** . Click, hold and drag your cursor to draw a box where your map will appear (don't make it take up the whole page because you will have to add other components). In the **View Frame Properties dialog box** that appears, select **View 1**. Click on **OK**. You will see your map appear here.
29. Now you need to add a legend. Click and hold on the **View Frame icon** . From the drop down list, select the **Legend Frame tool** . Again, use your cursor to draw a box where you want your legend to appear. In the **Legend Properties dialog box**, select **ViewFrame1: View1**. Click on **OK**.
30. You now need to add a scale bar. Click and hold on **Legend Frame tool**  and select the **Scale Frame tool** . Draw a box where you would like your scale bar to appear. In the **Scale Bar Properties dialog box**, select **ViewFrame1: View1**. Click on **OK**.
31. Next we are going to add a North Arrow. Click and hold on the **Scale Frame tool** . Select the **North Arrow Frame tool** . Draw a box where you would like the North Arrow to appear. In the **North Arrow Manager dialog box**, select a North Arrow. Click on **OK**.
32. Now let's add the charts that relate to our particular city. Click and hold on the **North Arrow tool** . Select the **Chart Frame tool** . Draw a box where you would like one of your charts to appear. From the **Chart Properties dialog box**, select **Precipitation**. Click on **OK**.
33. Click on the **Chart Frame tool**  again. Drag another box where you would like your temperature chart to appear. From the **Chart Frame Properties dialog box**, select **Temperature** and click on **OK**.
34. Finally, you need to add a title to your map. Click on the **Text tool** . Click once where you want your title to appear. In the **Text Properties dialog box**, type in a title for your map. Click on **OK**.
35. You can rearrange and resize any of the components of your map. Click on the **Pointer tool** . Click on one of the components and handles will appear around it. Use these handles to rearrange your map.
36. Once you are done, you can print your map.

