Name:

Generating Arguments about Climate Change
And Global Warming

Introduction:
When asked about Global Warming and Climate Change, most people are able to give an opinion such as, “I believe...”. This activity is going to help you get away from saying “I believe...” and instead say, “Based on the data...”. To accomplish this change of thinking you will be using an instructional strategy known as “generate an argument” (Sampson and Grooms 2010).

Learning Target:
You will be working in small groups to analyze a variety of data from various sources to help you answer three main questions: Is the Earth presently cooling, warming or staying the same? What are some potential causes of climate change and global warming? What impact is climate change and global warming having on the wildlife, agriculture, temperature and humans in Wisconsin? You will then formulate an argument based on your analysis of the data to demonstrate what you have learned to answer these questions.

Part 1: Analyzing Patterns in World Climate Data

1. Look at Figures 1-10. Write a brief summary statement, in your notebook, of what is being shown in each figure. What is the main concept or point being conveyed by the figure? Be sure to use the example format for your answers.

Example:

Figure 1: Figure 1 shows the major loss of ice on the Columbia Glacier between 1980 and 2005 and the loss of ice on the Arapaho Glacier between 1898 and 2003.

2. Use your information from Figures 1 through 10 to answer the following questions in your notebook:

1) Based on the data you have analyzed using Figures 1-6, is the Earth presently cooling, warming or staying the same? Explain the evidence you used to develop your answer.

2) Based on the data you have analyzed using Figures 7-10, is Wisconsin presently cooling, warming or staying the same? Explain the evidence you used to develop your answer.

Part 2: Potential Causes of Climate Change and Global Warming

1. Look at Figures 11-18. Write a brief summary statement, in your notebook, of what is being shown in each figure. What is the main concept or point being conveyed by the figure? Be sure to use the example format for your answers.

Example:

Figure 11: Figure 11 shows the Atmospheric Carbon Dioxide concentrations at Mauna Loa, Hawaii have been steadily rising from 1960 (~315 ppmv) to the present (380 ppmv).
2. Use your information from Figures 11 through 18 to answer the following questions in your notebook:

3) What are the Earth’s past patterns of climate change? Answer the questions for Figure 17. I would recommend looking at Figures 12, 15 and 16 as well. Explain the evidence you used to develop your answer.

4) Based on the data you have analyzed using Figures 11-18, what are the potential causes for climate change and global warming? Explain the evidence you used to develop your answer.

5) Based on information learned in the Energy unit and your answer to question number one, what are some possible ways to reduce or slow the causes of climate change and global warming?

Part 3: Possible Impacts of Global Warming and Climate Change on Wisconsin

1. Use your information from Figures 19 - 25 to answer the following questions in your notebook:

6) Interpret Figure 19, where has much of the increase in precipitation occurred? Where has much of the decrease in precipitation occurred? Explain your answer and give evidence to support your answer.

7) Look at Figure 20, list two indicators or examples that the climate is changing in Wisconsin.

8) Analyze Figure 21, is climate change and global warming bad for all species in Wisconsin? Explain your answer and give evidence to support your answer.

9) Using Figure 22, list two aspects of climate change and how it may positively affect agricultural production in Wisconsin.

10) Using Figure 23, list two aspects of climate change and how it may negatively affect agricultural production in Wisconsin.

11) Using Figure 24, list two indirect impacts climate change and global warming may have on Wisconsin. Be sure to include both the situational change and impact on Wisconsin agriculture in your answer.

12) Based on the information in Figure 25, how has global warming and climate change affected the people of Wisconsin from 1982-2008? Explain your answer and give evidence to support your answer.

13) Overall, what impact has climate change and global warming had on the wildlife, agriculture, temperature and humans in Wisconsin?
Part 4: Making Your Argument For or Against Global Warming and Climate Change

1. Review the information in Figures 1-25 and your answers to the three main questions of this activity:

Part 1: Question 1: Is the Earth presently cooling, warming or staying the same?

Part 2: Question 4: What are some potential causes of climate change and global warming?

Part 3: Question 13: What impact is climate change and global warming having on the wildlife, agriculture, temperature and humans in Wisconsin?

2. With your team, develop an argument either supporting the need for awareness and prevention of global warming and climate change or reasons why we do not need to be overly concerned with the changes due to climate change and global warming. If your team does not agree on the issue, you may need to disband and develop a new team who agrees with each other.

- Be sure to explain your reasoning and cite evidence based on Figures 1-25 and your answers to the questions in this activity. Your reasons need to be backed by scientific data and not belief statements.
- In your arguments, include evidence of how the climate and temperature of the Earth has changed over the years and possible reasons for this as well as possible solutions to prevent further changes if necessary.
- Write your arguments, either for or against the issues presented here, on a piece of white construction paper to use to present to the class.