Global Climate Change

As a result of both natural and human activity, Earth's atmosphere is subject to cooling as well as warming.

The net global atmospheric temperatures vary depending on location. This leads to a lot of uncertainty in climatologists' predictions for the future. For the most part, however, there is general consensus that **global warming**, due to increased concentrations of **greenhouse gases**, leads to **climate change** and is indeed a serious environmental concern.

Scientists have been able to confirm that the concentration of these gases has substantially increased ever since the beginning of the Industrial Revolution in the 1750s. Over the past few decades, environmentalists have viewed unprecedented global warming as a serious environmental problem.

Increasing average air and ocean temperatures, widespread melting of snow and ice, and a rising average sea level are evident worldwide. According to Environment Canada, we are already seeing rising temperatures, shifting rainfall patterns, and increases in certain types of hazardous weather, such as heat waves.

The Intergovernmental Panel on Climate Change tells us that climate change in the polar regions is expected to be among the largest and most rapid of any region on the Earth. It alone will cause major physical, ecological, sociological and economic impacts, especially in the Arctic. In the North, rising temperatures are thawing permafrost and shrinking the ocean's ice cover.

Guiding Questions

In your presentation, you should address **as many of the following questions as possible**.

1. Identify the various **greenhouse gases** and explain where they come from. Differentiate between natural sources and human sources.
2. Which greenhouse gases pose more of a problem than others? Explain.
3. Are the issues of climate change and global warming linked in any way to deforestation, acid rain or ozone depletion? Explain.
4. Who is mostly responsible for increased global temperatures?
5. How is the natural world (not including humans) affected by global warming? Consider aquatic ecosystems, forests, individual plants and animals, etc.
6. How are humans affected by global warming, both directly and indirectly?
7. Why is the Arctic region more sensitive to global warming than other areas of the world?
8. Give specific examples of how the Arctic ecosystem would change as a result of global warming (include both wildlife and human examples).
9. What can an individual do to help counteract the problem of increased global warming?
10. What is being done to address the problem on national and international levels?
11. What does the future hold for the success and/or failure of our attempts to fix the problem?

Click these links to access a few great resources to get you started on your Case Study. Do not limit yourself to these resources, but be sure to cite every source you use on the final screen of your presentation:

* [**Climate Change**](http://www.ec.gc.ca/cc/Default.asp?lang=En&n=9853BFC5-1) (Environment Canada)
* [**Climate Change Science and Research**](http://www.ec.gc.ca/sc-cs/Default.asp?lang=En&n=56010B41-1)
* [**Information on Climate Change**](http://www.climatechange.gc.ca/default.asp?lang=En&n=F2DB1FBE-1)
* [**Climate Likely to Be on Hotter Side of Projections**](http://www.nasa.gov/topics/earth/features/earth20121108.html) (NASA)
* [**Arctic Sea Ice**](http://earthobservatory.nasa.gov/Features/WorldOfChange/sea_ice.php) (NASA)
* [**Biomass Burning and Global Climate Change**](http://cimss.ssec.wisc.edu/satmet/modules/9_global_monitor/gm-6.html#tag)
* [**If Polar Ice Vanished**](http://www.pbs.org/wgbh/nova/earth/mapping-sea-level-rise.html)