



NATIONAL ARTS CENTRE
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Teacher Information Sheet: Climate Change

How do scientists track climate change?

Scientists use weather statistics, descriptions of weather from travellers' and explorers' journals, and growth rings on trees. They also test layers of ice in icebergs and sea ice and measure the height of the sea level around the world.

What climate changes have you heard about ?

The Ice Ages were an example of a time when the earth was going through a climate change.

What was the effect of the Ice Ages?

During the Ice Ages glaciers increased and moved south from the North Pole to cover most of the Northern Hemisphere. As the glaciers retreated, lakes and landforms such as eskers and drumlins were formed, much of the topsoil was deposited at the southern reaches of the glaciers.

What is different this time about climate change?

Scientists believe this time the earth seems to be warming up faster than the time they believe it took previously, and that greenhouse gases are contributing to this.

What will happen to these places when the permafrost and icebergs begin melting? What animal species will these changes affect? What human activities will have to change?

Canada's north, and other communities near the Arctic Circle are bracing themselves for big changes in the next 100 years. It is believed the effects of global warming will be felt most in these areas. For example:

Environmental changes:

- Melting sea ice
- Melting permafrost
- Earlier spring and longer season of warm temperatures
- Increase in the amount of snow as the temperature warms up
- A hard crust of ice on top of the snow because of warmer temperatures
- More violent storms

Impact on animals:

- Animals like polar bears and seals who hunt from sea ice
- Animals like caribou that scratch through snow to eat lichens
- Animal migration patterns disrupted by landscape changes

- Fish habitat and spawning grounds altered or wiped out by rising sea levels and alterations in river beds

The impact on humans:

- Houses and roads collapsing because of melting permafrost
- Hunters and trappers have a more difficult time moving around on unstable ice
- Higher impact on First Nations communities because there are more of them in the north
- Life disrupted by violent storms with attendant damage

For more information check these websites:

- www.climatechange.gc.ca, especially the student and teacher resources, and to sign up for the One Tonne challenge;
- www.climatechangenorth.ca, especially the student backgrounders;
- <http://www.pembina.org>, especially the links to their "One Less Tonne" project and the instant calculator;
- www.bchydro.com, for lesson plans on energy and energy conservation;
- www.greenschools.ca/seeds, to sign up for the One Tonne Challenge.

What do you think will happen to Venice?

The Adriatic Sea around Venice will start rising and flooding the city. The land Venice is built on is sinking as well, making the problem worse. Scientists are predicting that Venice could disappear in 100 years. The Italian Government approved a project in 2001 to build a dam at the three channels linking Venice's lagoon with the Adriatic Sea. This seems to be helping during storms and high tides, but there are concerns regarding the city's sewage which is emptied into the canals and gets flushed out with regular tides twice a day.