

Unit 2 Lesson Plan developed for Grade(s) 7

Title: Climate Change Over Recent Time

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Applies to Lesson(s) 4,5,and 6 from
<http://cimss.ssec.wisc.edu/climatechange/>

Objective: To show students that scientists have evidence that Earth's climate is changing.

Total Time Expected: One class period: about 45 to 50 minutes

Overview: In the previous lesson students were introduced to a lesson that provided them basic information about Earth's atmosphere and the greenhouse effect. They should now know why human's can survive on Earth and not other planets. They were also introduced to one consequence of human induced climate change--a video about the possible extinction of polar bears due to reduced sea ice in the Arctic. This lesson will show students that scientists know that Earth's climate is changing because of human activities.

Sequence:

1. Begin the lesson with a review of the greenhouse effect. "Why are we able to survive on Earth?" *Atmosphere*
"What is the warming process called?" *The Greenhouse Effect*
"What main gases contribute to the greenhouse effect?" *Carbon Dioxide, Water Vapor, Methane*
"Is the greenhouse effect a good or bad thing?" *Good thing--allows us to survive on Earth without freezing.*
2. Say: However, our climate is currently changing like it has never changed before. Humans are acting in ways that are making the Earth's

climate get warmer in a very

short time. Scientists know that this "global warming" could have great effects on all life on Earth. Humans and all other animals could be affected.

We are starting to see the first main affects on species due to global warming. Show students a different video from youtube to review the plight of the polar bears

on arctic ice. This video outlines the fact that polar bears need sea ice to hunt seals to ensure their survival. The narrator entails how the sea ice is freezing later, putting the population of polar bears in danger.

http://www.youtube.com/watch?v=axRX9_UyUOc

3. Say: Scientists now know that humans are changing our climate. Here are the ways that they are measuring global climate change. It has been happening very recently--over about the last 300 years in Earth's history. Since the Earth is 4 billion years old, 300 years is a short time. Have students copy into science notebooks information that scientists use to know that we are experiencing climate change.

For example How Scientists Know that Our Climate Is Changing

1. thermometers to record temperature--since 1850 the average warmest 8 years in history have occurred since 1998
2. sea levels have risen
3. the amount of time that snow covers our earth has gone down
4. glaciers and Arctic ice (Ice that covers the ocean around the North Pole) are becoming depleted

4. Say: Why would sea levels rising indicate global warming? *Water stored in Glaciers and Sea Ice melts and goes into the ocean. This makes the ocean level rise.*

This is the reason that polar bears are now the first endangered species due to global warming.

5. Say: What is a glacier? Define glacier in student notebooks.

Glacier: A large mass of ice that does not melt from year to year. Found in mountains and high altitudes. Can also cover whole continents such as

in Greenland and Antarctica. When they come in contact with oceans large pieces of ice can break off and form icebergs.

6. Glaciers are now getting smaller in all places around the world because of global warming. Photographs taken from years past compared to photographs taken from

today are great ways to see global warming in action.

7. Show slide show of before/after of glaciers from around the world. This website has a nice set of glacier pictures and is available on the web.

<http://www.worldviewofglobalwarming.org/pages/glaciers.html>

8. Show youtube video of Pucurumi, Peru. The narrator details how his life is changing due to global warming and loss of glaciers. The video of about 5 minutes long.

<http://www.youtube.com/watch?v=y0qDc4hXUSY&NR=1>

9. Using laptop computer allow student volunteers to manipulate the Jet Propulsion Laboratorie's "Climate Change Time Machine". Be sure to outline changes to Arctic

Ice, Sea Level Rising, Carbon Emissions, and Global Temperatures.

<http://climate.nasa.gov/ClimateTimeMachine/climateTimeMachine.cfm>

10. Follow up the Time machine activity with question: How could rising sea levels affect life on Earth for humans and animals?

Supplies or references required:

Science Notebooks

Laptop computer with an internet connection

Projector to project laptop screen in front of students.

National Science Standards addressed:

A.8.5 Show how models and explanations, based on systems, were changed as new evidence accumulated (the effects of constancy, evolution, change, and measurement should all be part of these explanations)

E.8.3 Using the science themes during the process of investigation, describe climate, weather, ocean currents, soil movements and changes in the forces acting on the earth

Related URLs or recommended reading:

<http://climate.nasa.gov/ClimateTimeMachine/climateTimeMachine.cfm>

<http://www.worldviewofglobalwarming.org/pages/glaciers.html>

http://www.youtube.com/watch?v=axRX9_UyUOc

<http://www.youtube.com/watch?v=y0qDc4hXUSY&NR=1>