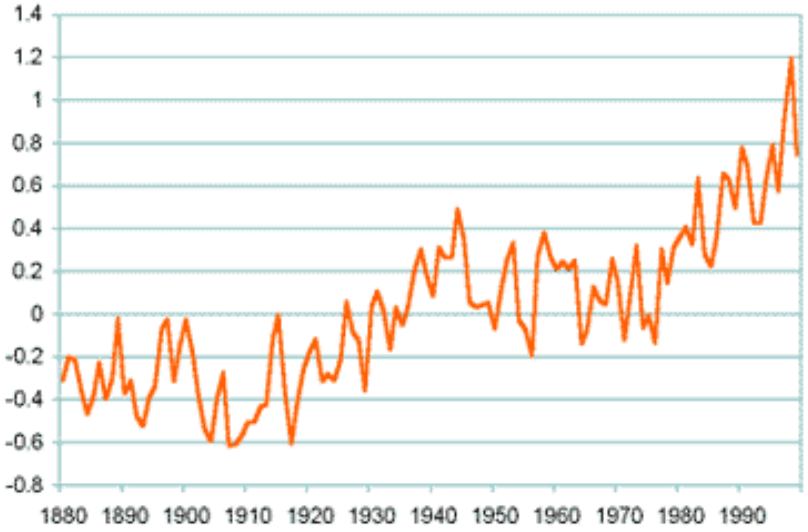
Cataclysmic Climate Change

An Educator's Guide to Lesson Plans about Our Warming Planet



Suggested Activities

Related Exhibitions at the Field Museum

Climate Change Stories

The Greenhouse Effect
Global Warming

Global Warming In a Jar
It's Getting Warm in Here
It's Freezing Down Here

Climate Change Movies

An Inconvenient Truth

Related Exhibitions

Nature Unleashed: Inside Natural Disasters

From earthquakes and volcanoes to hurricanes and tornadoes, nature's forces have shaped our dynamic planet. Throughout history, these catastrophic phenomena have affected people around the world. Now, uncover the causes of these natural disasters and find out how people cope and adapt in the aftermath.


© NOAA

Melting Ice – A Hot Topic: Envisioning Change

Many scientists agree that most global warming of the last 50 years is due to human activity. The burning of fossil fuels has thickened the heat-trapping blanket of greenhouse gases around the planet, warming the Earth's surface. As a result, glaciers that provide fresh water for millions of people are disappearing. Ocean temperatures are rising, and on land, both plant and animal species feel the effects of global climate change. Here, 26 artists from around to the world respond to the threats posed by melting ice and rising temperatures.


© Robert Bateman

Climate Change Stories

Lesson Title: Climate Change: *The Greenhouse Effect*

Illinois Learning Standards:

Language Arts:

Goal 1 – Reading: 1.B.1a, 1.B.2a, 1.B.3a, 1.B.4a, 1.B.5a, 1.C.1a, 1.C.2a, 1.C.3a, 1.C.4a, 1.C.1d, 1.C.2d, 1.C.3d, 1.C.4d

Goal 2 – Literature: 2.B.1a, 2.B.2a

Goal 3 – Writing: 3.A.1, 3.A.2, 3.C.1a

Goal 4 – Listening and Speaking: 4.A.1a, 4.A.2a, 4.A.3a, 4.A.4a, 4.A.1b, 4.A.2b, 4.A.3b, 4.A.4b

Science:

Goal 12 – Concepts and Principles: 12.E.1a, 12.E.2a, 12.E.3a, 12.E.1b, 12.E.2b, 12.E.3b, 12.F.1a, 12.F.2a

Social Studies:

Goal 17 – Geography: 17.B.1a, 17.B.2a, 17.C.1a, 17.C.2c

Objectives:

Students will be able to:

- Build on existing vocabulary.
- Connect an increase in greenhouse gases to global warming.
- Make choices that can impact the reduction in greenhouse gases.

Materials:

- Book: *The Greenhouse Effect*
- Student Activity Sheet
- Pencil

Instructional Procedures:

1) Begin by introducing global warming and climate change. Show the slide show on the effects of global warming.
2) Read *The Greenhouse Effect* to students.
3) Ask students to answer the questions about the book on the student activity sheet.

Climate Change Stories: The Greenhouse Effect

Student Activity Sheet

Name _____

Activity Questions:

1. What is a greenhouse? _____

2. How does a greenhouse work? _____

_____

3. What is the *natural* greenhouse effect? _____

_____

4. What do glass and gas have in common? _____

5. Name two gases that are part of Earth's natural greenhouse: 1) _____ 2) _____

6. What is Earth's main greenhouse gas? _____

7. What are the average temperatures for the following planets? Venus: _____ Neptune: _____

8. What types of human activities cause an increase in greenhouse gases? _____

_____

9. Where do CFCs come from? _____

10. How could farming be affected by global warming? _____

_____

11. Global warming could cause sea levels to rise. What would be the result of rising sea levels? _____

_____

12. List three ways people could cut down on greenhouse gases: 1) _____

2) _____ 3) _____

Climate Change Stories

Lesson Title: Climate Change Stories: *Global Warming*

Illinois Learning Standards:

Language Arts:

Goal 1 – Reading: 1.A.1b, 1.A.3b, 1.B.1a, 1.B.2a, 1.B.3a, 1.B.4a, 1.B.5a, 1.C.1a, 1.C.2a, 1.C.3a, 1.C.4a, 1.C.1d, 1.C.2d, 1.C.3d, 1.C.4d

Goal 2 – Literature: 2.B.1a, 2.B.2a

Goal 3 – Writing: 3.A.1, 3.A.2, 3.A.3, 3.A.4, 3.B.1a, 3.B.2a, 3.B.3a

Goal 4 – Listening and Speaking: 4.A.1a, 4.A.2a, 4.A.3a, 4.A.4a, 4.A.1b, 4.A.2b, 4.A.3b, 4.A.4b, 4.A.1c, 4.A.1d,4.B.1b, 4.B.2b

Science:

Goal 12 – Concepts and Principles: 12.C.1a, 12.E.1a, 12.E.2a, 12.E.3a, 12.E.1b, 12.E.eb

Social Studies:

Goal 17 – Geography: 17.A.1a, 17.A.2a, 17.B.1a, 17.B.1b, 17.C.1a, 17.C.3a, 17.C.2c

Objectives:

Students will be able to:

- Build on existing vocabulary.
- Explain the science behind global warming.
- List possible effects of global warming to life.

Materials:

- Book: *Global Warming*
- Student Activity Sheet
- Pencil

Instructional Procedures:

1) Begin by introducing global warming and climate change. Explain how scientists are concerned about the implications of global warming on the planet.
2) Read *Global Warming* to students.
3) Ask students to answer the questions about the book on the student activity sheet.

Climate Change Stories: Global Warming

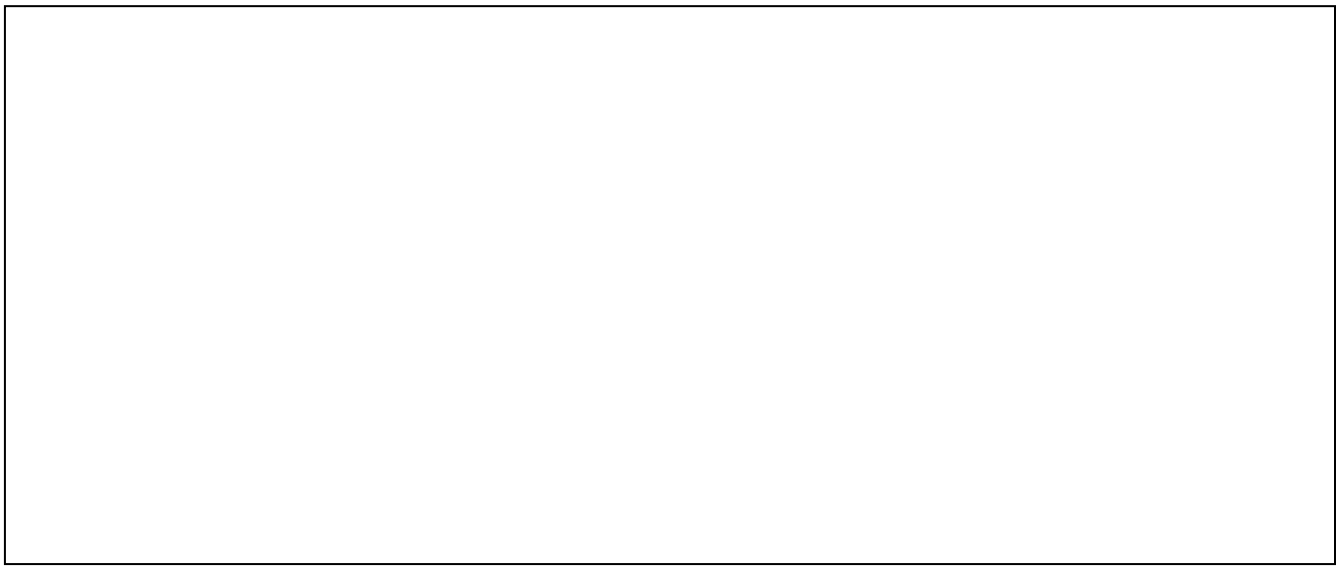
Student Activity Sheet

Name _____

Our Planet Earth

1. Earth is often called the Blue Planet because about 70% of its surface is made up of: _____

2. In the space below, sketch the water cycle.



3. Scientists have divided the atmosphere into four sections. From the surface of the Earth, up, list them below:

   1) _____ 2) _____

   3) _____ 4) _____

4. Plants are an important carbon dioxide "sink." What does this mean? _____

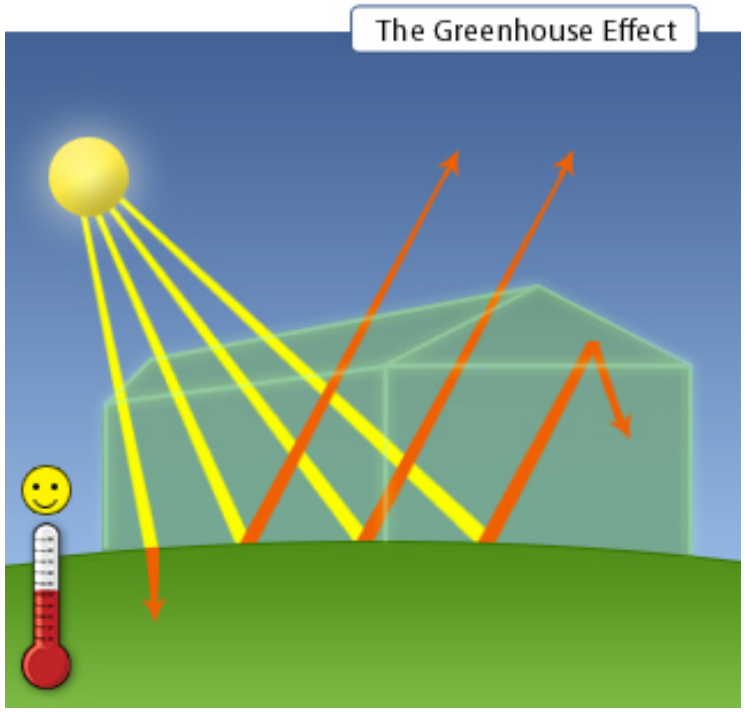
_____

5. What are fossil fuels? _____ _____

_____

6. Give an example of a fossil fuel: _____

7. In the figure below, label the yellow and orange arrows:



Yellow Arrows: _____ Orange Arrows: _____

8. What does the green house represent? _____

Our Changing Climate

9. What is a climate model? _____

_____

10. How have warmer sea temperatures effected the population of Adelie penguins in Antarctica? _____

_____

11. How is global warming related to El Niño? _____

_____

12. List at least two ways you can make a difference when it comes to helping with the threat of global warming:

1) _____

2) _____

Global Warming In a Jar

Lesson Title: Global Warming In a Jar

Illinois Learning Standards:

Language Arts:

Goal 3 – Writing: 3.A.1, 3.A.2, 3.A.3, 3.A.4, 3.B.1a, 3.B.2a, 3.B.3a, 3.B.1b, 3.B.2b, 3.C.1a, 3.C.2a, 3.C.3a

Goal 4 – Listening and Speaking: 4.A.1b, 4.A.2b, 4.A.1c, 4.A.2c

Goal 5 - Research: 5.A.1a, 5.A.2a, 5.C.1a

Mathematics:

Goal 6 – Number Sense: 6.B.1, 6.B.2, 6.D.1, 6.D.2

Goal 7 – Estimation and Measurement: 7.A.1b, 7.A.1d, 7.B.1b, 7.B.2b

Goal 10 – Data Analysis and Probability: 10.A.1a, 10.A.2a, 10.A.1b, 10.A.2c, 10.A.3c, 10.B.1a, 10.B.2a, 10.B.1b, 10.B.1c, 10.B.2d

Science:

Goal 11 – Inquiry and Design: 11.A.1a, 11.A.2a, 11.A.3a, 11.A.2b, 11.A.3b, 11.A.4b, 11.A.1c, 11.A.2d

Goal 12 – Concepts and Principles: 12.C.1a, 12.C.2a, 12.E.1a, 12.E.1b

Goal 13 – Science, Technology, and Society: 13.A.1c, 13.A.2c, 13.B.1a, 13.B.1b, 13.B.2f

Objectives:

Students will be able to:

- Understand the greenhouse effect as a physical phenomenon.
- Utilize the scientific method.
- Relate a simple model to a planetary condition.

Materials:

Students work in small groups.

- 2 Thermometers
- Clock or Stop Watch
- Glass Jar
- Lamp or access to a sunny area
- Student Activity Sheet
- Pencil

Background:

The air over the exposed thermometer is constantly changing and as it gets warm it is replaced by cooler air. Because the air in the jar cannot circulate to the rest of the room, this air stays in the sunlight and gets warmer and warmer. A similar trapping of heat happens in the Earth's atmosphere. Sunlight passes through the atmosphere and warms the Earth's surface. The heat radiating from the surface is trapped by greenhouse gasses. Without an atmosphere, the Earth's temperature would average about 0F. This warming due to heat-trapping gasses is called the "Greenhouse Effect." Both the atmosphere and the jar allow light to enter, but then trap that energy when it is converted to heat. They work differently, however, because the jar keeps in the heated air, while the greenhouse gasses absorb radiative heat.

Instructional Procedures:

1) Have each group place their thermometers a few inches apart under the sunlamp or in direct sunlight.

2) Have the students wait three minutes so the thermometers will give accurate readings.

3) Have the students record the temperature readings (in Fahrenheit) for both thermometers as well as the start time.

4) Instruct each group to place their jar over one of their thermometers, taking care that the jar does not cast a shadow over the uncovered one. If the thermometers are too large to remain horizontal inside the jars, stand them against an inner side.

5) Every minute, for eight minutes, the students should record the temperature readings of both thermometers on the student activity sheet.

Global Warming In a Jar

Student Activity Sheet

Name _____

Data Table

Start Time: _____

	Initial Temperature	1st Reading	2nd Reading	3rd Reading	4th Reading	5th Reading	6th Reading	7th Reading	8th Reading
Thermometer #1 (With Jar)									
Thermometer #2 (No Jar)									

Activity Questions:

1. What were the final temperatures for both thermometers? #1: _____ #2: _____

2. Convert the temperatures above to Centigrade: #1: _____ #2: _____

3. What accounts for the distinction in temperatures? _____

4. How does this experiment mimic global warming? _____

_____

5. Global warming is a natural event. Explain why life on Earth would not be possible without the effects of global warming.

_____

_____

_____

_____

It's Getting Warm in Here

Lesson Title: It's Getting Warm in Here

Illinois Learning Standards:

Language Arts:

Goal 3 – Writing: 3.A.1, 3.A.2, 3.A.3, 3.A.4, 3.B.1a, 3.B.2a, 3.B.3a, 3.B.1b, 3.B.2b, 3.C.1a, 3.C.2a, 3.C.3a

Goal 4 – Listening and Speaking: 4.A.1b, 4.A.2b, 4.A.1c, 4.A.2c

Goal 5 - Research: 5.A.1a, 5.A.2a, 5.C.1a

Mathematics:

Goal 6 – Number Sense: 6.B.1, 6.B.2, 6.D.1, 6.D.2

Goal 7 – Estimation and Measurement: 7.A.1b, 7.A.1d, 7.B.1b, 7.B.2b

Goal 10 – Data Analysis and Probability: 10.A.1a, 10.A.2a, 10.A.1b, 10.A.2c, 10.A.3c, 10.B.1a, 10.B.2a, 10.B.1b, 10.B.1c, 10.B.2d

Science:

Goal 11 – Inquiry and Design: 11.A.1a, 11.A.2a, 11.A.3a, 11.A.2b, 11.A.3b, 11.A.4b, 11.A.1c, 11.A.2d

Goal 12 – Concepts and Principles: 12.C.1a, 12.C.2a, 12.E.1a, 12.E.1b

Goal 13 – Science, Technology, and Society: 13.A.1c, 13.A.2c, 13.B.1a, 13.B.1b, 13.B.2f

Objectives:

Students will be able to:

- Determine if different amounts of carbon dioxide in the air affect the amount of heat retained in the air.
- Mimic the conditions of the greenhouse effect inside of a coffee can.
- Utilize the scientific method.

Materials:

- 5 Coffee Cans with Lids
- 5 Sun Lamps
- 16 Thermometers
- 700ml of Vinegar
- 20g of Baking Soda
- Student Activity Sheet
- Pencil
- Tape

Background:

Today the amount of carbon dumped globally into the atmosphere corresponds, on average, to one ton per person on the planet, each year. In the United States, carbon-based energy is especially important. The average American per capita emission is 5 tons of carbon annually. Carbon dioxide is a greenhouse gas – it traps heat radiation that is attempting to escape from Earth. The basic argument (that is, that greenhouse gases keep the Earth comfortably warm) has never been challenged, and it follows that an increase in carbon dioxide in the atmosphere undoubtedly produces a rise in temperature at ground level.

Instructional Procedures:

1) Have the students number each coffee can 1 through 5.
2) Instruct the students to tape 3 thermometers to the inside of each coffee can, positioning them so that one is taped near the bottom (B) of the can, the second at the center (M), and the third near the top (T).
3) Assist the students in creating carbon dioxide by mixing 140ml of vinegar with the following amounts of baking soda.

Can 1 – 140ml of Vinegar, NO Baking Soda
Can 2 – 140ml of Vinegar, 2g of Baking Soda
Can 3 – 140ml of Vinegar, 4g of Baking Soda
Can 4 – 140ml of Vinegar, 6g of Baking Soda
Can 5 – 140ml of Vinegar, 8g of Baking Soda

4) Once the carbon dioxide is created, have the students pour the appropriate amount into its respective can and seal it.
5) Have the students position a sun lamp above each can.
6) Using the last thermometer, instruct the students to record room temperature (Fahrenheit). Continue to record room temperature in the same intervals indicated in steps 7 and 9. Enter this data on the student activity sheet.
7) Every 10 minutes, have students record the temperature of each thermometer until the temperatures stop rising and enter the data on the student activity sheet.
8) Instruct the students to turn the sun lamps off.
9) Every 10 minutes, have students record the temperature of each thermometer until the temperatures return to room temperature and enter the data on the student activity sheet.

It's Getting Warm in Here

Student Activity Sheet

Name _____

Data Tables

Lights ON	10 min	20 min	30 min	40 min	50 min	60 min
Coffee Can 1	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 2	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 3	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 4	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 5	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:

Lights OUT	10 min	20 min	30 min	40 min	50 min	60 min
Coffee Can 1	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 2	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 3	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 4	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:
Coffee Can 5	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:	T: M: B:

T = Top Thermometer M = Middle Thermometer B = Bottom Thermometer

Room Temperature	On: Off:	On: Off:	On: Off:	On: Off:	On: Off:	On: Off:

On = Lights On Off: Lights Off

Activity Questions:

1. Which can had the greatest temperature increase? 1 2 3 4 5

2. Which can returned to room temperature most slowly? 1 2 3 4 5

3. Which can had the lowest temperature increase? 1 2 3 4 5

4. Which can returned to room temperature most quickly? 1 2 3 4 5

5. What accounts for the distinction in temperatures? _____

_____

_____

_____

6. How does this experiment mimic global warming? _____

_____

7. What was the purpose of can 1 in the experiment? _____

8. Why do you think you were asked to place three thermometers inside of each can? Why not just one per can? _____

_____

_____

9. Why was it important to record room temperature at the same time you were recording can temperatures? _____

_____

_____

It's Freezing Down Here

Lesson Title: It's Freezing Down Here

Illinois Learning Standards:

Language Arts:

Goal 3 – Writing: 3.A.1, 3.A.2, 3.A.3, 3.A.4, 3.B.1a, 3.B.2a, 3.B.3a, 3.C.1a, 3.C.2a, 3.C.3a

Goal 5 - Research: 5.B.1a, 5.C.1a, 5.C.1b

Mathematics:

Goal 6 – Number Sense: 6.C.1a, 6.C.2a, 6.C.1b, 6.C.2b

Goal 7 – Estimation and Measurement: 7.A.1d

Goal 10 – Data Analysis and Probability: 10.A.1b, 10.A.2c

Science:

Goal 12 – Concepts and Principles: 12.E.1a, 12.E.2a, 12.E.1b, 12.E.2b, 12.E.3b, 12.F.1a, 12.F.2a, 12.F.1b

Social Studies:

Goal 17 – Geography: 17.B.1a

Fine Arts:

Goal 26 – Creating and Performing: 26.B.1d, 26.B.2d

Objectives:

Students will be able to:

- Access websites that monitor Antarctic climate.
- Connect the planetary position of Antarctica to its extreme climate and seasons.
- Witness changes in climate at Antarctica.

Materials:

- Internet Access
- Student Activity Sheet
- Pencil

Background:

Antarctica's location as the southernmost continent presents a unique situation in terms of weather and climate. The Antarctic polar climate boundary encompasses about 12 percent of the surface of the globe, an area twice as large as that of the Arctic. It includes all of the Antarctic continent except the extreme northern tip of the Antarctic Peninsula. In the interior regions, extremely low temperatures, several months of complete darkness, fierce winds and blowing snow combine to make life virtually impossible. On the Antarctic Peninsula, temperatures are milder, yet snowstorms and gale force winds can persist for days or weeks on end. Most of Antarctica is covered with vast areas of snow and ice which reflect about 75% of the incoming solar radiation. Winter temperatures are also influenced by latitude, elevation and by the shortage of sunlight during the Antarctic winter. In fact, the coldest temperatures are usually during late August before the return of the sun.

Instructional Procedures:

1) Have students access: **www.antarcticaconnection.com**.
2) Instruct students to use the website to respond to questions 3 through 10 on the student activity sheet.
3) Have students access: **www. ecophotoexplorers.com/AntarcticaStations.asp.**
4) Instruct students to use the website to respond to questions 11 through 19 on the student activity sheet.

It's Freezing Down Here

Student Activity Sheet

Name _____

Activity Questions:

1. Go to **www.antarcticconnection.com**.
2. Click on the tab: *Weather Center*.
3. What is the coldest temperature ever recorded on Antarctica? _____
4. Where was this temperature recorded? _____
5. What is the warmest temperature ever recorded on Antarctica? _____
6. Where was this temperature recorded? _____
7. In Fahrenheit, what is the annual mean temperature in the winter? _____ In Celsius? _____
8. Why is Antarctica so cold? Give at least 5 reasons: _____

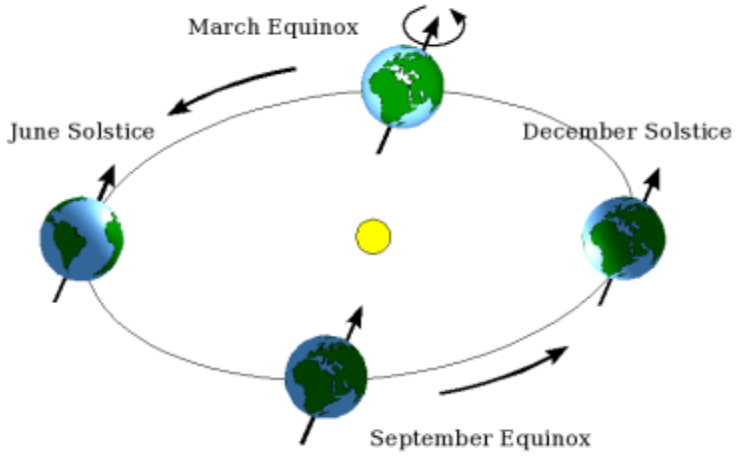
_____

_____

_____

_____

9. What is the average precipitation? _____inches per year
10. Study the figure below. Explain why Antarctica experiences 6 months of complete darkness and 6 months of light.



Explanation: _____

11. Go to **www. ecophotoexplorers.com/AntarcticaStations.asp.**

12. Study the list of wintering stations in Antarctica.

13. Give the coordinates of Novolazarevskaya: _____

14. Which nation calls Novolazarevskaya home? _____

15. Vostok is also claimed by this same nation. Give the coordinates of Vostok: _____

16. Vostok and Novolazarevskaya often experience great differences in temperature. What do you think accounts for this?

_____

_____

_____

17. Below is an outline of the flag of the nation that resides at Novolazarevskaya and Vostok. Color the flag using the appropriate colors.

18. Locate the US station Amundsen-Scott on the list. Click on: *Virtual Tour of the Pole*.

19. Why is it so important to wear sunglasses while in Antarctica? _____

_____

Climate Change Movies

Lesson Title: Climate Change Movies: *An Inconvenient Truth*

Illinois Learning Standards:

Language Arts:

Goal 3 – Writing: 3.A.1, 3.A.2, 3.A.3, 3.A.4, 3.B.1a, 3.B.2a, 3.B.3a, 3.C.1a, 3.C.2a, 3.C.3a

Goal 4 – Listening and Speaking: 4.A.1a, 4.A.2a, 4.A.3a, 4.A.4a, 4.A.1b, 4.A.2b, 4.A.3b, 4.A.4b, 4.A.1c, 4.A.1d, 4.B.1b

Science:

Goal 12 – Concepts and Principles: 12.E.1a

Goal 13 – Science, Technology and Society: 13.A.3b, 13.A.1c, 13.A.2c, 13.A.4c, 13.B.1a, 13.B.2a, 13.B.3a, 13.B.2b, 13.B.3b, 13.B.1c, 13.B.2c, 13.B.3c, 13.B.1d

Social Studies:

Goal 17 – Geography: 17.C.1a, 17.C.2a, 17.C.3a, 17.C.1b

Goal 18 – Social Systems: 18.A.2, 18.B.2a, 18.B.3a, 18.B.1b, 18.C.1

Objectives:

Students will be able to:

- Form a connection between human activities and global climate change.
- Recognize that their actions can influence climate change.
- Gain a responsibility for the health of the planet.

Materials:

- *An Inconvenient Truth* DVD
- Internet Access
- Student Activity Sheet
- Pencil

Background:

An Inconvenient Truth offers a passionate and inspirational look at one man's fervent crusade to halt global warming's deadly progress in its tracks by exposing the myths and misconceptions that surround it. That man is former Vice President Al Gore, who, in the wake of defeat in the 2000 election, re-set the course of his life to focus on a last-ditch, all-out effort to help save the planet from irrevocable change. In this eye-opening and poignant portrait of Gore and his "traveling global warming show," Gore also proves himself to be one of the most misunderstood characters in modern American public life. Here he is seen as never before in the media - funny, engaging, open and downright on fire about getting the surprisingly stirring truth about what he calls our "planetary emergency" out to ordinary citizens before it's too late.

Instructional Procedures:

1) Watch the film *An Inconvenient Truth*.
2) Have students seek out media sources for the latest information regarding automobile emissions and global warming. Gather data on the amount of GHGs emitted by various countries, states, and automobiles. For example, information on cars should include data on green cars, hybrids, SUVs, economy models, and new prototypes.
3) Ask students to rank the amount of GHG emissions that various countries, states, and automobiles produce. Also ask them what resources they could use to find the amount of carbon dioxide produced by each.
4) Have students calculate the amount of carbon dioxide they generate each year by taking one of these online quizzes:

www.climatecrisis.net/takeaction/carboncalculator/
http://yosemite.epa.gov/OAR/globalwarming.nsf/content/ResourceCenterToolsGHGCalculator.html

5) Ask students to discuss the number of miles the average citizen travels in various countries and states. Discuss urban sprawl, carpooling, public transit, carpool lanes, and other variables that influence the number of miles traveled and how that affects GHG emissions.
6) Ask students how they got to school and how far they traveled.
7) Ask students whether they are aware of any global patterns that seem to be linked to temperature increases.
8) Allow students to pair up and share their beliefs on the hazards of global warming and the urgent need for remedial action.
9) Ask students to brainstorm ways that GHG emissions might be reduced.
10) Have the students use the student activity sheet to keep track of their thoughts and responses.

Climate Change Movies: *An Inconvenient Truth*

Student Activity Sheet

Name _____

Activity Questions:

1. Provide data on the amount of GHGs emitted by various countries, states, and automobiles: _____

_____

_____

_____

2. Rank the amount of GHG emissions that various countries, states, and automobiles produce: _____

_____

3. What resources did you use to find the amount of carbon dioxide produced by each?_____

_____

4. How much carbon dioxide do you generate each year? _____

5. What is the number of miles the average citizen travels in various countries and states? _____

_____

6. How did you get to school and how far did you travel? _____

7. Are you aware of any global patterns that seem to be linked to temperature increases? _____

_____

8. How could GHG emissions be reduced? _____

_____

9. List two things you could do *today* to help: 1) _____ 2) _____

Suggested Books for Children

Cherry, Lynne and Braasch, Gary. 2008. *How We Know What We Know About Our Changing Climate*. Dawn Publications, Nevada City, CA.

Forester, Piers. 2008. *Climate Change*. DK Publishing, New York, NY.

Green, Kenneth. 2002. *Global Warming: Understanding the Debate*. Enslow Publishers, Inc., Berkeley Heights, NJ.

Johnson, Rebecca, L. 1993. *The Greenhouse Effect: Life On a Warmer Planet*. Lerner Publications Company, Minneapolis, MN.

Koral, April. 1989. *Our Global Greenhouse*. Franklin Watts Publishing, New York, NY.
Woodward, John. 2007. *e.guides Weather*. DK Publishing, New York, NY.

Stille, Darlene, R. 1990. *The Greenhouse Effect*. Children's Press, Inc., Chicago, IL.

Silverstein, Alvin, Silverstein, Virginia and Silverstein Nunn, Laura. 2003. *Global Warming*. Twenty-First Century Books, Brookfield, CT.

Suggested Books for Educators

Archer, David. 2007. *Global Warming: Understanding the Forecast*. Blackwell Publishing Ltd., Malden, MA.

Cline, William R. 2007. *Global Warming and Agriculture: Impact Estimate by Country*. Center for Global Development and Peter E. Peterson Institute for International Economics, Washington D.C.

David, Laurie and Gordon, Cambria. 2007. *Down to Earth Guide to Global Warming*. Orchard Books Scholastic Inc., New York, NY.

Houghton, John. 2004. *Global Warming: The Complete Briefing*. Cambridge University Press, Cambridge, United Kingdom.

Langholz, Jeffrey and Turner, Kelly. 2003. *You Can Prevent Global Warming and Save Money Too*. Andrews McMeel Publishing, Kansas City, MO.

Tennesen, Michael. 2004. *Complete Idiot's Guide to Global Warming*. Alpha Books, Indianapolis, IN.

Suggested Websites

An Inconvenient Truth Official Site
Official *An Inconvenient Truth* global warming documentary movie site: Learn about Al Gore, global warming truth, causes, effects and facts, climate change.
www.climatecrisis.net

The Photographic Documentation of Climate Change
Global warming photography - photographs of global climate change in the Arctic, ... This website will help you learn the connection between human-made Carbon Dioxide and rapid climate changes and negative effects around the world.
www.worldviewofglobalwarming.org

Environmental Defense Fund
Environmental Defense Fund providing clear explanations of climate change science, technology, policy, and news.
www.fightglobalwarming.com

Global Warming Solutions
Learn how you can take action with solutions, ideas, and policies.
www.globalwarmingsolutions.org