**Objectives:** 1) learn vocabulary related to climate change 2) make personal connections to nature &/or the issues of climate change; 3) become aware of conflicting opinions in media and science; 4) learn ways to be environmentally responsible; 5) **Alternate** – prepare for field trip

**Science-Related Careers:** Weather & meteorological researchers work at air-pollution control, agriculture, forestry, air & sea transportation, defense, and the study of trends in the Earth’s climate, such as global warming, droughts, & ozone depletion.

**Materials:**
- **For teacher:** film(s) & equipment to view &/or Internet access for class
- **For students:** Handouts: 1 each of “Handout to View: An Inconvenient Truth”
- **Safety:** n/a

**Assessment/Performance Indicators:**
- **Informal assessment:** participated in vocabulary preview discussion by contributing or listening; watched film attentively
- **Formal assessment:** completed handout accurately & thoughtfully; participated in discussions as directed

**Suggested Grades:** 20 points
- (informal) on task during preview & film activities – 5 pts
- (formal) handout & discussions – 15 points

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Suggested Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3)</td>
<td>Optional CLASS VOTE – ask students if they want to see this film in one long class, or in small parts over several classes</td>
</tr>
<tr>
<td>5-10</td>
<td>DISCUSSION – Preview vocabulary in Part A of the “Handout to View: An Inconvenient Truth” by having students use these terms in a sentence, recall when they have heard these words before and/or how much they know or can guess about this terminology</td>
</tr>
<tr>
<td>15-25</td>
<td>FILM – encourage students to look over Part B of the handout, then play the film up to the start of the cartoon; stop and allow 5 minutes for students to complete question 1; you may want them to share their responses with a partner or the class, and then discuss why our feelings about these images matter (ie people are more likely to care if we experience strong emotions for or against something)</td>
</tr>
<tr>
<td>5-10</td>
<td>CONTINUE – show the cartoon and have students complete question 2; discussion in pairs or whole class is optional at this time; tell students the rest of the questions in Part B can be answered while the film is playing</td>
</tr>
<tr>
<td>60</td>
<td>DISCUSSION – after the film ends have pairs do Part C verbally or, if students are reluctant speakers, in writing so that they can read aloud what they wrote; then go on to Part D, the whole class discussion (see answer key below)</td>
</tr>
<tr>
<td>10-15</td>
<td>CAREER TALK – tell students about the many science careers related to climate change now and in the future (see box above)</td>
</tr>
<tr>
<td>(3-26)</td>
<td>Alternate - show Science on a Sphere (short movie clips) available at <a href="http://sos.noaa.gov/audio/WithMusic/">http://sos.noaa.gov/audio/WithMusic/</a></td>
</tr>
<tr>
<td>Total = 98-123 min</td>
<td>Alternate – FIELD TRIP (see suggestions in Unit Overview)</td>
</tr>
<tr>
<td>Exceeds Expectations:</td>
<td>Meets Expectations:</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Student is 90% on task or more; viewing, writing, discussing and listening participation shows insight, caring &amp; learning.</td>
<td>Student is 70% on task or more; viewing, writing, discussing and listening participation shows some insight, caring &amp;/or learning.</td>
</tr>
</tbody>
</table>

**Hawaiian Values:**

<table>
<thead>
<tr>
<th>Ahonui (patience)</th>
<th>Akahai (modesty)</th>
<th>Aloha (loving)</th>
<th>Alakaʻi (leadership)</th>
<th>Hoʻihi (respect)</th>
<th>Kuleana (responsibility)</th>
</tr>
</thead>
<tbody>
<tr>
<td>√ Lauilima (helpful)</td>
<td>Lōkahi (harmony)</td>
<td>√ Mālama (caring)</td>
<td>√ Naʻauao (wisdom)</td>
<td>ʻOluʻolu (positivity)</td>
<td>√ Pono (right behaving)</td>
</tr>
</tbody>
</table>

**Learning Styles:**

- Left Brain
- Right Brain
- Auditory
- Visual
- Kinesthetic/Tactile
- Spatial

**Technology, Math &/or Literacy Skills:** terminology related to climate change; Optional: science on a sphere

**Keywords:** activism; advocacy; Al Gore; alternate energy; *An Inconvenient Truth*; carbon dioxide; carbon footprint; climatology; climate; climate change; CO₂; collective consciousness; coral; Earth Rise; endangered species; ethics; global warming; greenhouse gas; glacier; ice core drill; issues; legislature; mass media; meteorology; moral imperative; movie circle; ocean current; ocean conveyor; peer-reviewed journal; politics; politician; popular press; science on a sphere; temperature; weather

**Enrichment/Extension:** see “*An Inconvenient Truth* Extension Options: Prediction & Research Activities” handout and debate options; see also item g) in the lesson plan, Alternate activity with Science on a Sphere website which students can explore on their own and may present to the class

**Standards/HCPS:**

SC.BS.3.4 (ORGANISMS AND THE ENVIRONMENT): Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment

**General Learner Outcomes:** GLO #2 - Understand it is essential for human beings to work together; Optional: GLO #5 - Communicate effectively

**NHEC Cultural Pathways:** 14.1 Learners are keen observers of the natural environment.

**National Career Development Guidelines:** ED2.A7 – Demonstrate participation in informal learning experiences

**Hawai’i College Links:**
Teacher’s Notes for Unit 6: Viewing An Inconvenient Truth Film

Resources:

✍ Buy the film at http://www.climatecrisis.net/ for $17 new, $8 used.
The homepage also has links to short readings on “The Science” (what global warming is),
how to “Take Action” (tips for home, travel, & global change) and news & blogs related to
the film with a toolkit to download a poster, cards, etc.

✍ Download the free curriculum at:
This fantastic resource of nearly 60 pages includes:
Tier One -- The Green Mile to School - For this one-day lesson, students are challenged to
examine their personal activities and estimate their own impact, while finding ways to reduce
damage to our environment.

Tier Two -- Think Globally, Act Locally - The stage for this week-long program is set by
viewing a series of DVD chapters that detail the science of global warming and culminate
with a focus on the Kyoto Treaty and on the U.S. cities that are taking matters into their own
hands.

Tier Three -- Small Steps Mean Smaller Footprints - This semester-long program is highly
project-based. After discussing climate change and renewable energies, students will
interact with large sets of scientific data and draw conclusions from those interactions.
Focusing on their conclusions, students will take action to present their findings to local
government representatives, community members, or the PTA.

✍ Buy the book at http://www.penguin.com/youngreaders (just type title into the
‘search’ box). Costs $16 for paperback and $23 for hardcover, or under $10 if purchased
used on other online sites. The book has all the best photos and diagrams in the film and
very short, clear paragraphs of the same content, presently almost in exactly the same
sequence of chapters as in the film.

Class Viewing Options:

✍ The curriculum above includes 2 handouts for “Movie Circles” (discussion sheet and
self-assessment form) for group work in assigned roles after viewing (about page 46 of 57).

✍ We recommend viewing the film with frequent stops, or in parts over more than a
single class as the style and mood of the film may not keep students engaged for a full hour
and a half. The handout below offers students short tasks for specific film segments.

✍ The film also comes with 32 minutes of “special features” in which Al Gore gives
2006 updates on: hurricanes (5 min); ocean temperatures, coral, etc. (8 min.); glacial
earthquakes in Greenland (19 min.); wildfires (2 min.); soil moisture evaporation (3 min.);
permafrost gas releases (1 min); and positive changes in public opinion, some politicians,
many faith leaders & businesses (4 min.) See prediction & research extension activities
below to teach with this resource in a single lesson or in parts over several lessons.
Handout to View: An Inconvenient Truth KEY

B. Before & During Viewing: Stop the Film to Consider these Questions  
15 Points Total Possible

1. Which of these images affects you the most (circle one answer):
   - the river  
   - "Earth Rise"  
   - the paper mill  
   - traffic

What do you think of and/or feel when you see this image?

2 Points

Give 1 point if topic circled; give 1 point if response is related to topic and student has written a thought or feeling about the image topic circled.

2. Watch the cartoon then write notes to compare points of view below.

3 Points total - 1 point each box

<table>
<thead>
<tr>
<th>The Speaker’s point of view is…</th>
<th>The little girl’s point of view is…</th>
<th>My point of view is …</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

3. Complete these Short Answer & True or False Questions as you watch:

6 Points total - 1 point each

a) How does the Earth breathe in and out each year? In summer leaves breathe in CO₂, in winter dead leaves release it, so levels are seasonal.

b) The Himalayas supply 40% of the world’s population with water.

c) True or False—More CO₂ in the atmosphere causes higher temperatures.

d) True or False—Colder oceans cause stronger, more frequent storms.

e) The “ocean conveyor” of cold, salty water could cause world temperatures to rise, making the start of a new ice age possible in our lifetime.

f) What species are dying because of temperature and CO₂ changes? Coral and birds, (Also frogs, lemur, geese, whales, penguins, seals, polar bears)

C. After Viewing: Discuss with a Partner

Is climate change really happening? What do these numbers suggest?
Why do most people do nothing about the problem of climate change?

1 Point for participating with a partner – students should realize science journals do not usually give biased reports, unlike mass media which is controlled by corporate interests.
D. After Viewing: “Crisis = Opportunity” Group Brainstorm

3 Points for participating by contributing to the class discussion or by listening to others speak

What could people do about climate change?

- Move to homes near where they work to reduce their commute, or take the bus or carpool.
- Avoid investing in stocks or businesses which do not use environmentally sound practices – support as many local businesses as possible
- Buy solar panels for homes or businesses
- Install green roofs in homes or businesses
- Support alternate energy research (wind, wave, geothermal, etc.)
- Drive hybrid cars, or cars that get better gas mileage and keep the tires inflated correctly and get regular oil changes. Don’t drive cars that produce excessive emissions.

What can we do individually or with our families?

- Teach your parents, siblings, grandparents, aunts, uncles and family friends what you’ve learned and why your future will be so hard if they don’t try to help
- Use fluorescent bulbs in home lighting instead of incandescent bulbs
- Join in local activities to learn more and support climate change solutions

What can we do as a class?

- Learn about the legislative process and how local politicians, environmental activists and others address climate change issues
- Form a student climate change action group at school and create a plan to reduce the school’s “carbon footprint”
- Choose a local climate change issue you want to address and take action by writing letters to the newspaper &/or political leaders, organizing demonstrations, &/or circulating petitions

What can each of us do after graduating from high school?

- Enter science-related careers or run for political positions
- Lead or join community groups active in solving climate change issues
- Support legislative bills and vote for politicians that support solutions to climate change issues
- Advocate and model attitudes and behaviors to others which show your support of solutions to climate change issues (live pono!)
Teacher’s Notes for: Science On a Sphere™

Go to: http://sos.noaa.gov/audio/WithMusic/

- Intro.mp3 - Plays with the an Earth image - 1:42 minutes
- Topography.mp3 - Plays with the NGDC topography/night light - 3:35 minutes
- HurricaneLoop.mp3 - Plays with the 2004 hurricane loop - 2:36 minutes
- SeaSurface.mp3 - Plays with the NCDC SST data - 2:41 minutes
- ClimateChange.mp3 - Plays with GFDL 4 x CO2 simulation - 2:24 minutes
- Mars.mp3 - Plays with Mars topography - 1:38 minutes
- X-Ray.mp3 - Plays with NOAA SXI loop - 1:41 minutes
- PlateTectonics.mp3 - Plays with the paleogeographic visualization - 3:16 minutes
- BlueMarble.mp3 - Plays with the Blue Marble - 00:27 minutes
- Close - Plays with the Earth At Night image - 00:43 minutes