

Bringing Climate Justice Home

Objectives

In this unit, students will

- Identify major causes of climate change
- Understand some of the palpable effects of climate change
- Articulate the connection between climate change and climate justice in their communities
- Develop ways to effectively talk about climate change and climate justice

Lesson Resources

What is Climate Change? <ul style="list-style-type: none"> • Al-Jazeera News Brief 	3 Strategies for Effectively Talking About Climate Change <ul style="list-style-type: none"> • TED Talk
Sea Level Rise Viewer <ul style="list-style-type: none"> • Data Visualization / Simulator 	Climate Justice can't happen without Racial Justice <ul style="list-style-type: none"> • TED Talk
Causes & Effects of Climate Change <ul style="list-style-type: none"> • National Geographic Video 	The Climate Explorer <ul style="list-style-type: none"> • Datasets / Visualizations

Lesson Descriptions

DAY 1

Essential Question(s): What are some of the major causes of climate change? What are some of the documented effects?

Main Activity: Students will watch the “What Is Climate Change?” video. Based on the video and their own experiences, the class will brainstorm causes and effects on climate change, with students invited to share examples from what they have heard or seen.

[I do/ We do] The teacher will show students the NOAA Sea Level Rise Viewer and some of the options for toggling controls, selecting specific cities, etc. – including how to interpret results. Students will offer different options to try and hypothesize about results.

[You do] In pairs, students will use the NOAA Sea Level Rise Viewer to explore local effects in a place chosen from the simulator, based on rising sea levels. Consider: what amount of sea level rise is considered “extreme” for that place? (Note, students are encouraged to pick multiple places – one which they know well and one that is far away or very different). Finally, students should formulate 2-3 questions from the data simulator results.

CRCS Connection: Core Components 3 and 4

Potential Instructional Strategies to Use: Think-Pair-Share, Close Reading, Concept Map, Graphic Organizer, Exit Ticket, See-Think-Wonder, Blender, Simulation, Case Studies, Gradual Release, Peer Review

Debrief: How is climate change measured? What thresholds are considered problematic or extreme?

DAY 2

Essential Question(s): How is climate change linked to extreme weather or other issues that put humans at risk?

Main Activity: Students will review major causes and effects of climate change (NatGeo video).

[I do] The teacher will show students the temperature projections for New York City (The Climate Explorer → New York → Climate Graphs) and work with students on how to interpret the graph (see also the Glossary for The Climate Explorer).

[We do] In pairs and with teacher support, students will view the projected temperatures for

Honolulu and interpret the graph – how are temperatures trending? What can the “historic range” of temperatures (the gray area on the graph) tell us about the possible predictions? Why are there multiple projections (higher and lower emissions)?

[You do] In pairs, students will view data (a graph) for a third city of their choice and answer the same questions as above. Additionally, students will analyze the downloaded data (projections.csv) to find:

- The highest and lowest temperatures (past or future)
- The number of projected days above 80°F
- Extension: students can also examine precipitation data for the city of their choice.

CRCS Connection: Core Components 3 and 4

Potential Instructional Strategies to Use: Think-Pair-Share, Graphic Organizer, Exit Ticket, See-Think-Wonder, Blender, Case Studies, Worked Examples, Modeling, Gradual Release, Peer Review

Debrief: List three causes of global climate change and corresponding effects (including extreme weather events).

DAY 3

Essential Question(s): How can we visualize climate data to understand what’s happening?

Main Activity: Using the visualization tools built into the spreadsheet software, students will create visualizations of the data from yesterday’s lesson (i.e., for the city of their choice and for one temperature variable, create a chart or graph). On this chart, highlight the extremes. Add notes to the chart answering the following questions:

- How does the highest projected temperature compare to historic averages?
- How different are the “low emissions” and “high emissions” projections? (Explain why less than 1°F would still matter)
- Remember, these are *annual* averages. What effects would warmer average temperatures have *year round*?

CRCS Connection: Core Component 3

Potential Instructional Strategies to Use: Think-Pair-Share, Graphic Organizer, Self-Explanation, Exit Ticket, See-Think-Wonder, Blender, Simulation, Case Studies

Debrief: How would you take what you saw or learned in class today and make it a newspaper headline?

DAY 4 (Option 1)

Essential Question(s): How are issues of climate change being discussed and debated? Why isn't everyone on board to take action?

Main Activity: Students will research to find a recent news article discussing some aspect of climate change. Students will then distill the article into a 30-second summary, using words or pictures. How clearly could complex issues be communicated? What worked well? Then, watch the TED Talk, "3 Strategies for Effectively Talking About Climate Change." Students will then revise their visuals or 30-second speeches to more effectively communicate an issue.

Supplementary Activity: Instead of the news articles, students can also distill the information from their infographics made on Day 3 into 30-second speeches.

CRCS Connection: Core Components 3 and 4

Potential Instructional Strategies to Use: Think-Pair-Share, K-W-L, Close Reading, Concept Map, Graphic Organizer, Exit Ticket, See-Think-Wonder, Blender, Simulation

Debrief: What works to help people learn about climate change? Who in your life could learn from your (revised) speech?

DAY 4 (Option 2)

Essential Question(s): How does climate change disproportionately affect communities of color?

Main Activity: Students will have to watch the video "Climate Justice can't happen without Racial Justice." In pairs, students will share an observation or experience they've had around climate justice in their own life or community. Some students may volunteer to share their stories with the whole class for discussion. Again in pairs, students will research ways in which a particular community was impacted by climate change. Students can then make a poster about the community as a case study of climate justice.

CRCS Connection: Core Components 1, 3, and 4

Potential Instructional Strategies to Use: Think-Pair-Share, Close Reading, Guided Notes, Exit Ticket, Jigsaw, Socratic Seminar, Fishbowl, Peer Review

Debrief: What is one area where climate justice is complicated by racial injustice?

DAY 5

Essential Question(s): What can we do to better communicate climate issues in our communities?

Main Activity: Using a combination of infographics (made on Day 2), revised 30-second speeches (Day 3), and case study posters (Day 4), the students will convene a “climate summit” to their classroom community in order to present their research.

Supplementary Activity: Bring in a local climate activist to talk about how climate change, environmental racism, and related issues are affecting the local community.

CRCS Connection: Core Components 4, 5, and 6

Potential Instructional Strategies to Use: Think-Pair-Share, Exit Ticket, Case Studies, Barometer, Peer Review, Self-Explanation, Gallery Walk

Debrief: What can you do to help others understand climate change and climate justice?

Extension Activities

- + Students can find data from another city (as in Day 2 and 3) to create additional visualizations, or can look at data from the same city for a different variable (such as precipitation)
- + Students can research another possible effect of climate change in their communities (i.e., wildfires, air quality, etc.)
- + Students can research local climate change + climate justice organizations
- + Students can research and present a case study on extreme weather events in another country (such as droughts in Sudan or Ethiopia, worsening storms in Haiti, etc) and their relationship to climate change and climate justice.

Differentiated Activities

- + Students can create a timeline of major events for the industrial revolution and extractivism
- + Students can read the benchmarks of the Paris Accords or Kyoto Protocol and share them with the class in a presentation
- + Students can research another aspect of environmental racism that has/is happening near their town/city/state

Vocabulary

- **Mean Higher High Water (MHHW):** the average height of the highest tide recorded at a tide station each day during the recording period

- **Anthropogenic:** (chiefly of environmental pollution and pollutants) originating in human activity
- **Greenhouse Effect:** the trapping of the sun's warmth in a planet's lower atmosphere, due to the greater transparency of the atmosphere to visible radiation from the sun than to infrared radiation emitted from the planet's surface.
- **Emissions:** produced by burning fuel for power or heat, through chemical reactions, and from leaks from industrial processes or equipment
- **CO₂:** Carbon dioxide (chemical formula CO₂) is a chemical compound occurring as an acidic colorless gas with a density about 53% higher than that of dry air.
- **Methane:** gas that is found in small quantities in the atmosphere. Methane is the simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms. Methane is a powerful greenhouse gas. ([link](#))
- **Clean/Renewable energy:** energy that is collected from renewable resources that are naturally replenished on a human timescale. It includes sources such as sunlight, wind, rain, tides, waves, and geothermal heat.
- **Paris Accords:** The Paris Agreement, often referred to as the Paris Accords or the Paris Climate Accords, is an international treaty on climate change, adopted in 2015. It covers climate change mitigation, adaptation, and finance
- **Kyoto Protocol:** The Kyoto Protocol was an international treaty which extended the 1992 United Nations Framework Convention on Climate Change that commits state parties to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and that human-made CO₂ emissions are driving it.
- **Colonialism:** the policy or practice of acquiring full or partial political control over another country, occupying it with settlers, and exploiting it economically.
- **Extractivism:** the process of extracting natural resources from the Earth to sell on the world market
- **Environmental racism:** a concept in the environmental justice movement, which developed in the United States and abroad throughout the 1970s and 1980s. The term is used to describe environmental injustice that occurs within a racialized context both in practice and policy

Standards

- NGSS-5-ESS2-2 Earth's Systems
- CCSS.Math.Content.5.OA.A.2
- CCSS.ELA-Literacy.RI.5.3
- CCSS.ELA-Literacy.RI.5.7
- K12 CS Framework 5th Grade: Algorithms and Programming
- K12 CS Framework 5th Grade: Data and Analysis