

Climate Change

GRADES 6–8

Guiding Question

How are the Earth's climate, ecosystems, and human communities interrelated?

Connecting Concepts

- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (NGSS, LS2.C: Ecosystem Dynamics, Functioning, and Resilience)
- Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge. (NGSS, ESS3.D: Global Climate Change)
- Forests are dynamic and always changing. Forces can include climate change, disturbance, species migration, and more. (PLT FLF, 1.D.1)
- Forests sequester (collect) and store carbon from the atmosphere and are thus essential to the global carbon cycle. Forest products made from wood store carbon for that product's lifetime. Such carbon storage is an important strategy for mitigating global climate change, along with reducing fossil fuel consumption. (PLT FLF, 2.A.3)
- Urban forest management, like all forest management, considers canopy cover in addition to species diversity, age distribution and inclusion of native vegetation to promote healthy and more resilient urban forest, that increase livability of communities and help to mitigate climate change. (PLT FLF, 3.B.7)

Scope and Sequence

The collection and order of content below supports an intentional student learning progression.

Activity	Description
Exploration Energy!	Students learn about different sources of energy, conduct an audit of the electricity they use in their own homes, and create an action plan to use energy wisely.
The Global Climate	Students explore the relationship among CO ₂ , the Earth's climate, and local ecosystems and suggest ways to reduce the effects of increased CO ₂ levels in the atmosphere.
Life on the Edge	Students model the habitat components that organisms need to survive and research a rare, threatened, or endangered species.
Improve Your Place	Students plan and, if possible, carry out a service-learning project to make positive environmental changes in their community.

See plt.org/academic-standards for detailed standards correlations for each activity.

Storyline

Students explore the relationship between human activities and Earth's climate, and learn how climate change impacts ecosystems and human communities.

Storyline continued on next page.



Climate Change (cont.)

GRADES 6–8

- Introduce the unit with the activity Exploration Energy!, in which students research the impacts of different energy sources and conduct an audit of their own energy use. Ask them to evaluate how much carbon each energy source emits.
- Next, do the activity The Global Climate, in which students examine and analyze trends in CO₂ levels and learn how an increase in temperature can affect ecosystems.
- Next, use the activity Life on the Edge to further explore the ways that climate change affects organisms. Have students research a species that is at risk because of climate change, or include in their report how their species is affected by climate change.
- Conclude the unit with the activity Improve Your Place, in which students plan and carry out a project to make a positive environmental change in their community. Invite students to brainstorm ideas for a project to help reduce carbon emissions or to lessen the impacts of climate change on their community or local ecosystem.

