

Interdisciplinary K-12 Climate Change Resources

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on behalf of NAGT's Teacher Education Division

By now, your new students have walked through the school on freshly polished floors, viewed creative, eye-catching bulletin boards, and were greeted by friends and teachers alike. Some of these students may have just experienced the effects of Hurricanes Beryl and Debby. Others had to play indoors or walk their dog early in the day to avoid the extreme heat. Some students fled approaching forest fires, sought shelter from tornadoes, or experienced heavy rainstorms and flooding. While the students who walk through our halls have many different interests and experiences, they are starting the school year with two things in common: most (85%) are concerned about climate change, and they want to learn more about it (Barrón-López & Corkery, 2024; Klein, 2022). Encouragingly, parents' perceptions are changing as well. Most parents (80%) want climate change to be taught in schools (Kamenetz, 2019). Below we share a select list of high-quality resources that would work in an Earth science class as well as other courses, organized by grade/subject area.

Secondary Level

The Perimeter Institute is a renowned research institute for theoretical physics and offers a wealth of physics and astronomy resources for middle and high school teachers. They also offer [Earth science instructional resources](#). "Evidence for Climate Change" is an interdisciplinary unit that can be taught as a whole or as separate lessons. The unit includes a biology lesson where students estimate the amount of carbon trees can sequester through the process of photosynthesis, chemistry lessons on ocean acidification, greenhouse gas behavior, the physics of rising sea levels through thermal expansion, the greenhouse effect, and albedo. Classic Earth

science topics include climate modeling, Keeling curves, and climate forcing factors. Regardless of the subject(s) you teach, it is worth looking at the entire unit as there are numerous high-quality support resources that would be applicable to many classes.

Link: <https://resources.perimeterinstitute.ca/collections/earth-science>

For teachers looking to integrate more writing in their science classes, we highly recommend the book, “Teaching Climate Change to Adolescents: Reading, Writing, and Making a Difference” by (Beach, Share, & Webb, 2017). The book provides background information on climate change, lists resources, sample writing prompts, and cli-fi literature connections. The authors host a [Wiki for teachers](#) to share lesson ideas and more.

Middle School Level

CIRES (the Cooperative Institute for Research In Environmental Sciences) offers numerous environmental science and climate change resources which follow the Ambitious Science Teaching Format (Windschitl, Thompson, & Braaten, 2020). They offer a range of customizable formats including full storylines/units to shorter “data puzzles” that take only 1-2 class periods. Selected lessons include *The Future of Forests*—how forests recover from forest fires, urban heat islands, Arctic feedbacks and ecosystems. Many of these resources are aimed at middle school students, but they also offer some elementary, high school, and collegiate-level resources as well. To better support teachers, CIRES offers professional development webinars showcasing their lessons. For more information, please visit:

https://cires.colorado.edu/ceee/lesson?f%5B0%5D=resource_type%3A85.

Urgent Message from a Hot Planet: Navigating the Climate Crisis (2022) by Eriksson is an excellent book for middle school students. The book explains the underlying science behind

climate change in an accessible manner, details solutions, and highlights youth who are making a difference for the planet.

Elementary Level

[NASA's ClimateKids](#) is a good place to start. [PBS Learning Media](#) for teachers has short, instructional videos, interactive pages, and lesson plans on climate change and related topics.

General/Multi-grade resources

Each year, the National Science Teachers Association publishes a list of award-winning [tradebooks](#). Some of these books, listed by year, are related to climate change, environmental issues, and sustainability.

The Science Education Resource Center (SERC) at Carleton College houses a wealth of resources for grades K-8, high school (9-12), and higher education. While the bulk of the activities are geared towards Earth science, there are numerous lessons in biology, chemistry, physics, and environmental science. Even if a particular activity does not match your grade level, you can always scale up or down to meet the needs of your students.

Link: <https://serc.carleton.edu/index.html>

Cornell University's Paleontological Research Institute has a fantastic [Climate Change and Energy Education page](#). Here, you will find the Teacher-Friendly Guide to Climate Change—an award-winning [online book](#) that is freely available on their site. Climate change lessons for grades K-12 are also linked on their site. PRI offers webinars on climate change education topics as well as hosts experts in the Science in the Virtual Pub series.

Link: <https://climate.earthathome.org/teacher-friendly-guide/>

NASA has an amazing wealth of resources that can be found at NASA such as the [Hurricanes as Heat Engines Story Map](#) or the [Urban Heat Islands Story Map](#) for grades 5-8 and 9-12. Also check out [NOAA](#)'s website and the [Teaching Climate](#) site at climate.gov.

Be sure to use lessons from a reputable entity such as those listed above. Katie Worth details the concerted efforts of the fossil fuel industry to sow seeds of doubt amongst educators and provide mis- and dis-information in her book, "Miseducation: How climate change is taught in America" (2021).

Conclusion

Why are there efforts to thwart climate change education? Because what you are doing in the classroom *matters*. Research shows that middle school students from North Carolina who learned about climate change in school educated their parents on the topic and changed their beliefs (Lawson, et al., 2019). Thus, the impact of teaching climate change goes far beyond classroom doors.

Happy searching!

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