

# Why Teach about Climate Change?

Today, it is easy to notice the politicization of science in public discourse. This is common in conversations related to climate change, and transcends politics to affect the general public's understanding of the topic. One way to overcome this politicization is to shift the way people learn about it, starting with our students here in New York City. Addressing climate change in the classroom can ensure that the next generation is equipped with the skills required to tackle this crisis head on. Teaching about climate change can also instill a sense of stewardship and expose students to various emerging fields of study and industries as they begin to plan for their futures.

Teaching about climate change can engage students in arguably the most important decisions of our time by discussing the most up-to-date scientific research and current local city initiatives. With a potentially scary or intimidating topic like this, the Department of Environmental Protection's module presents information in a way that remains hopeful and productive while avoiding the "doom and gloom" narrative that sometimes dominates these conversations, with a focus on accuracy and science. Through an exploration of climate topics, supported by place-based lessons, we can encourage a deeper connection to New York City, and empower students to make responsible decisions, both big and small. Whether it's the decision to recycle a plastic bottle instead of throwing it in the trash, to start a green team at school, or to choose a career in the environmental field, teachers have the power to greatly influence students and the future of this planet. We hope that these resources help you prepare your students to face the intensified effects of climate change.

This module connects to New York State Learning Standards, including the Next Generation Science Standards and the Amplify curriculum. Please see this module's **Standards Connection Document** for information on how each lesson connects. These are lessons that can be taught in and out of the classroom. Each lesson includes a description, list of objectives, vocabulary, materials, background information, methods, discussion questions, and extensions. Each lesson builds on the one before, so we recommend going through the module in order; however, the lessons can also be used as stand-alone pieces if you prefer to pick and choose lessons relevant to your class based on topics. You might choose to start this module by presenting the **Climate Change Introduction Slides**, which are designed to provide your students with an introduction to climate change in NYC. You'll also find three **Green Jobs in the Field** articles, which highlight the work of local professionals across different sectors, including Mark Chambers, the Director of the Mayor's Office of Sustainability, Eleanor Blakeslee-Drain, the co-Founder of Berry Brook Farm, and Jennifer McDonnell, NYC DEP's Resource Recovery Program Manager. Finally, be sure to explore the **Climate Resources** document for an extensive overview of the many amazing classroom resources, articles, studies, local exhibits, videos, podcasts, children's books, and opportunities for student action. For a full list of works cited in this module, see the next page.

# **Works Cited**

#### **Creating the Systems Thinking Web:**

<sup>1</sup> Zabel, I. H. H., Duggan-Haas, D., & Ross, R. M. (2017, May). Retrieved from <a href="https://teachclimatescience.files.wordpress.co">https://teachclimatescience.files.wordpress.co</a> m/2017/06/tfg-climatechange-ch1.pdf

<sup>2</sup> Tate, W. (Ed.). (2009). Leadership and Systems. In *The Search for Leadership: An Organisational Perspective*. Retrieved from The Search for Leadership: An Organisational Perspective

### **Distinguishing between Weather and Climate:**

<sup>1</sup> Climate Literacy: The Essential Principles of Climate Science. (2009). *Climate Literacy: The Essential Principles of Climate Science*. Retrieved from

https://downloads.globalchange.gov/Literacy/climate literacy lowres english.pdf

<sup>2</sup> Climate Variability. (n.d.). Retrieved from https://iri.columbia.edu/ourexpertise/climate/climate-variability/

### **Recording Weather and Climate:**

<sup>1</sup> Weather. (n.d.). Retrieved from https://www.noaa.gov/weather

# Modeling the Earth's Atmosphere:

<sup>1</sup> Climate Kids: What is the Greenhouse Effect. (n.d.). Retrieved from <a href="https://climatekids.nasa.gov/greenhouse-effect/">https://climatekids.nasa.gov/greenhouse-effect/</a>

 Reducing Urban Heat Islands: Compendium of Strategies Urban Heat Island Basics.
 (n.d.). Reducing Urban Heat Islands: Compendium of Strategies Urban Heat Island Basics. Retrieved from

https://www.epa.gov/sites/production/files/20 14-06/documents/basicscompendium.pdf

# **Calculating our Ecological Footprint:**

<sup>1</sup>Tilman, D., Clark, M. Global diets link environmental sustainability and human health. *Nature* **515**, 518–522 (2014). https://doi.org/10.1038/nature13959

# **Accepting the Anthropocene:**

<sup>1</sup> Martini, B. (n.d.). The Anthropocene: Humankind as a Turning Point for Earth. Retrieved from https://astrobiology.nasa.gov/news/theanthropocene-humankind-as-a-turning-pointfor-earth/

<sup>2</sup> Fairbridge, R. W., & Agenbroad, L. D. (n.d.). Holocene Epoch Geochronology. In *Holocene Epoch Geochronology* 

#### **Analyzing the Urban Heat Island Effect:**

<sup>1</sup> Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities Safe in Extreme Heat. (n.d.). Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities Safe in Extreme Heat. Retrieved from <a href="https://www1.nyc.gov/assets/orr/pdf/Cool Neighborhoods">https://www1.nyc.gov/assets/orr/pdf/Cool Neighborhoods</a> NYC Report.pdf

<sup>2</sup> Reducing Urban Heat Islands: Compendium of Strategies Urban Heat Island Basics. (n.d.). *Reducing Urban Heat Islands: Compendium of Strategies Urban Heat Island Basics*. Retrieved from

<a href="https://www.epa.gov/sites/production/files/20">https://www.epa.gov/sites/production/files/20</a>
14-06/documents/basicscompendium.pdf

<sup>3</sup> Learn About Heat Islands. (n.d.). Retrieved from <a href="https://www.epa.gov/heat-islands/learn-about-heat-islands">https://www.epa.gov/heat-islands/learn-about-heat-islands</a>

<sup>4</sup> Reducing Urban Heat Islands: Compendium of Strategies Trees and Vegetation. (n.d.). Reducing Urban Heat Islands: Compendium of Strategies Trees and Vegetation. Retrieved from www.epa.gov/sites/production/files/2017-05/documents/reducing\_urban\_heat \_islands\_ch\_2.pdf

<sup>5</sup> Heat Island Effect. (n.d.). Retrieved from https://www.epa.gov/heat-islands

# **Placing Climate Change in New York City:**

- <sup>1</sup> New York City Panel on Climate Change 2015 Report Executive Summary. (2015). *Annals of the New York Academy of Sciences*, *1336*(9). doi: 10.1111/nyas.12591
- <sup>2</sup> Scenario Process for AR5. (n.d.). Retrieved from https://sedac.ciesin.columbia.edu/ddc/ar5\_scenario\_process/RCPs.html
- <sup>3</sup> Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities Safe in Extreme Heat. (n.d.). *Cool Neighborhoods NYC: A Comprehensive Approach to Keep Communities*

Safe in Extreme Heat. Retrieved from <a href="https://www1.nyc.gov/assets/orr/pdf/Cool\_Neighborhoods">https://www1.nyc.gov/assets/orr/pdf/Cool\_Neighborhoods</a> NYC Report.pdf

# Approaching the School Climate Solutions Challenge:

- <sup>1</sup> Truth to Power: School Climate Solution
  Challenge Official Information and Guidelines.
  (n.d.). Retrieved from
  <a href="https://www.inconvenientsequeleducation.org/climate-solutions-challenge-guidelines/">https://www.inconvenientsequeleducation.org/climate-solutions-challenge-guidelines/</a>
- New York City Council Participatory Budgeting. (n.d.). Retrieved from http://ideas.pbnyc.org/page/about

## **Exploring Resiliency with the NPCC:**

- <sup>1</sup> New York Panel on Climate Change. (n.d.). Retrieved from <a href="http://ccsr.columbia.edu/our-partnerships/new-york-panel-on-climate-change/">http://ccsr.columbia.edu/our-partnerships/new-york-panel-on-climate-change/</a>
- <sup>2</sup> One New York: The Plan for a Strong and Just City. (n.d.). *One New York: The Plan for a Strong and Just City*.

### **Building Resiliency in New York City:**

<sup>1</sup> One New York: The Plan for a Strong and Just City. (n.d.). *One New York: The Plan for a Strong and Just City*.