



# Forests and Climate Change Educator Resources

## Educator Resources to accompany *PLT® Southeastern Forests and Climate Change Secondary Module*

This educator resource serves as a listing of supplemental resources to support the *PLT Southeastern Forests and Climate Change Secondary Module*. In it you will find websites, local resources around the Chicagoland area, fiction and non-fiction books, manipulatives, curriculum guides, human resources, grants, other professional development opportunities and workshops, professional organizations, and other resources all dealing with forests, climate change, and environmental concerns. The supplemental was created by Allison Briddell who has a B.S. in Biological Sciences from Northern Illinois University, a M.A. in Secondary Education from Lewis University, and is currently obtaining a M.A. in Biology from Miami University in their Advanced Inquiry Program through the Brookfield Zoo. She teaches Earth and Space Science at Oswego East High School in Oswego, Illinois.

Project Learning Tree ([www.plt.org](http://www.plt.org)) is the national environmental education program of the American Forest Foundation. PLT is sponsored in Illinois by the Environmental Education Association of Illinois ([www.EEAI.net](http://www.EEAI.net)). *PLT Southeastern Forests and Climate Change Module* is a project of the University of Florida PINEMAP. Workshops are available throughout Illinois by visiting the EEAI website. Likewise, the Module can be downloaded for free at <http://sfrc.ufl.edu/extension/ee/climate/>.

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### Websites

#### Government Sites

Illinois Department of Natural Resources (IDNR)

This is a great resource by the IDNR. "On this web site you will be able to find information about educational materials for use in the classroom, grant opportunities, teacher workshops and more." Find it at <http://www.dnr.illinois.gov/education/Pages/default.aspx>

The Global Learning and Observations to Benefit the Environment (GLOBE) Program

The GLOBE program "is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment".

<http://www.globe.gov/>

U.S. Climate Resilience Toolkit

"The U.S. Climate Resilience Toolkit provides scientific tools, information, and expertise to help people manage their climate-related risks and opportunities, and improve their resilience to extreme events."

<https://toolkit.climate.gov/>

National Oceanic and Atmospheric Administration (NOAA)

NOAA has many different categories to explore including weather, oceans, fisheries, charting, satellites, climate, research, and coasts. Find it at <http://www.noaa.gov/index.html>

They also have a list of educational resources available at <http://www.education.noaa.gov/?full>

In addition, they also maintain climate.gov which has a section specifically on how to teach about climate. You can find it at <https://www.climate.gov/teaching>

Environmental Protection Agency (EPA)

Here you will find lots of resources about climate change and how it is specifically affecting different regions of the country. Find it at <http://www3.epa.gov/climatechange/>

United Nations Framework Convention on Climate Change

<http://unfccc.int/2860.php>

Los Angeles County Department of Public Works

"Generation Earth is an environmental education program from the Los Angeles County Department of Public Works. Our goal is to educate and empower teens in Los Angeles County to be an active part of



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the solution to environmental concerns in their community. We offer do-it-yourself environmental projects that help youth make a positive difference at school, at home, and out in the world. Our programs are built to support the needs of teachers, students, schools and community youth groups.”  
<http://www.generationearth.com/>

## NASA

Global Climate Change – Vital Signs of the Planet

This site includes facts, articles, the role of NASA, solutions, exploration, and resources.

<http://climate.nasa.gov/>

Climate Time Machine

On this site you will find a “series of visualizations [that] shows how some of Earth's key climate indicators are changing over time”. <http://climate.jpl.nasa.gov/interactives/climate-time-machine/>

Jet Propulsion Laboratory

This site includes activities, resources, workshops, and programs.

<http://www.jpl.nasa.gov/edu/teach/>

## Climate Change

Natural Resources Defense Council (NRDC)

This site includes a list of climate change health threats in Illinois with categories of air pollution, extreme heat, infectious diseases, drought, flooding, and extreme weather.

<http://www.nrdc.org/health/climate/il.asp>

Alliance for Climate Education (ACE)

“Alliance for Climate Education's mission is to educate young people on the science of climate change and empower them to take action.” More information is available at <https://acespace.org/>

Natural Inquirer

“The *Natural Inquirer* is a middle school science education journal! Scientists report their research in journals, which enable scientists to share information with one another.” Find it at

<http://www.naturalinquirer.org/>

Climate Interpreter

This site includes resources about climate education by non-formal educators. Visit the site at

<http://climateinterpreter.org/>

## Other

PBS Learning Media

This is a great place to search for informational content based on topic and grade level. Available at

<http://www.pbslearningmedia.org/>

STEM Education Resource Center: Professional Development

This site offers a list of resources on climate education.

<http://www.pbs.org/teachers/stem/professionaldevelopment/>

Population Education

“Population Education, a program of Population Connection, is the only national program with a strong emphasis on curriculum and professional development for K-12 educators that focuses on human population issues.” Find it at <http://www.populationeducation.org/> and <https://www.worldof7billion.org/>

Tree People

“TreePeople is a nonprofit organization that is growing a green and climate-resilient Los Angeles, one with enough tree canopy, healthy soil, and clean local water in even our most urban neighborhoods.”

They offer environmental education resources for teachers at <https://www.treepeople.org/action-for-schools/teachers>



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## Project BudBurst

The purpose of Project BudBurst is “to get you outside taking a moment to observe how plants in your community change with the seasons. When you share your observations with us, they become part of an ecological record.” They also have resources for education. Find it at <http://budburst.org/home>

## Local Resources

### State Climatologist Office for Illinois

This site shows climate related trends, specifically in Illinois, and offers trends in the United States, as well as globally, in order to make comparisons. It also offers more specifics about Chicago and many other locally relevant categories. <http://www.isws.illinois.edu/atmos/statecli/index.htm>

### Shedd Aquarium

The Shedd Aquarium offers a multitude of resources for educators. They have information about conservation with specific attention paid to the great lakes. They also offer resources specifically for educators, such as field trip opportunities, and professional development opportunities.

<http://www.sheddaquarium.org/Learning-Experiences/>  
<http://www.sheddaquarium.org/Conservation--Research/>

### Illinois Natural History Survey (INHS)

INHS has many resources for teachers including videos, publications, activities, and information on different collections of species. You can find more information at <http://www.inhs.illinois.edu/outreach>

### The Morton Arboretum

The Morton Arboretum has countless resources available for educators. They have online classes, professional development courses, lesson plans, and so much more. Their website is very well organized and easy to maneuver. You can learn more at <http://www.mortonarb.org/>

### Midewin National Tallgrass Prairie

Midewin is a local prairie in Wilmington, Illinois. The prairie is being restored on an old army arsenal on approximately 23,000 acres of land. The prairie is available for field trips as well as volunteer opportunities. They also have resources available on their webpage. You can find more information at <http://www.fs.usda.gov/main/midewin/home>

### Chicago Wilderness

Chicago Wilderness is a “regional alliance leading strategy to preserve, improve, and expand nature and quality of life. By connecting leaders in conservation, health, business, science, and beyond, we tackle challenging issues to ensure a resilient region.” Included on their webpage is a section with resources and information regarding climate action. You can access their information at <http://www.chicagowilderness.org/>

### Chicago Climate Action Plan

The purpose of Chicago Climate Action Plan is to “describe various scenarios for Chicago’s climate future and how these would impact life in the city.” They discuss how climate change is affecting Chicago, ways to help, and tons of resources. You can learn more at <http://www.chicagoclimateaction.org/>

### Illinois Environmental Council

“The Illinois Environmental Council Education Fund engages in education and outreach and provides a forum for environmentalists.” They have topics including clean water, energy, environmental justice, open space and wildlife, reduce, reuse, and recycle, sustainability, and toxics. You can find it at <http://ilenviro.org/#>

### The Little Village Environmental Justice Organization (LVEJO)



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“LVEJO continues to organize for a healthier community in Little Village and beyond. Building upon the successful clean power, public transit, and open space campaigns LVEJO remains committed to organizing with those most impacted by industrialization and climate change.” For more information you can go to <http://lvejo.org/>

#### Faith in Place

“Faith in Place has worked with over 1,000 houses of worship throughout Illinois to protect our common land, water, and air. With outreach staff working across the state and offices located in Chicago, Lake County, and Central Illinois, Faith in Place inspires faithful people to care for the Earth through our four program areas: Energy & Climate Change, Sustainable Food & Land Use, Water Preservation, and Advocacy.” You can find information at <http://www.faithinplace.org/>

### Books

#### Fiction

*The Wastelanders* by Tim Hemlin – The setting of this novel is America after climate change has devastated the nation. The storyline is set around controlling the water which in turn means controlling the country. Read more at <http://www.goodreads.com/book/show/22213025-the-wastelanders>

*The Lorax* by Dr. Seuss – A children’s book based around the need to preserve the planet and the trees. Would be a great fit into a middle school classroom or even a high school classroom during a unit on climate change and the effects of cutting down too many trees. Read more at [http://www.seussville.com/books/book\\_detail.php?isbn=9780394823379](http://www.seussville.com/books/book_detail.php?isbn=9780394823379)

*Memory of Water* by Emmi Itäranta – The setting takes place once climate change has caused a limited water supply across the world. The main character, a 17-year-old girl, is trying to learn to be a tea master like her father which grants her access to a secret water source. This would be ideal for high school students to read and have them relate to the struggles of the main character. Read more at <http://www.goodreads.com/book/show/18505844-memory-of-water>

*Nature’s Confession* by JL Morin – This story is about two teenagers who are in a fight to help solve the climate change crisis while falling in love with one another. Read more at <http://www.goodreads.com/book/show/23618057-nature-s-confession>

*Twig Stories* series by Jo Mitchell – Targeted for younger audiences, this is a series of books based on the climate change issues, the main character being a twig called Leaf. Read more about the series at <http://www.twigstories.com/>

#### Non-Fiction

*Six Degrees: Our Future on a Hotter Planet* by Mark Lynas – This book looks at the effects each rise in temperature will have on our planet.

*This Changes Everything: Capitalism vs. The Climate* by Naomi Klein – Just like the title suggests, this is about how reducing our effects on climate change can also help to fix our economy simultaneously.

*The Sixth Extinction: An Unnatural History* by Elizabeth Kolbert – A discussion about the current mass extinction that humans are causing and the solutions to ending this devastation.

*Climate Wars: The Fight for Survival as the World Overheats* by Gwynne Dyer – Dyer discusses how climate change will affect us in the future and will cause much conflict as the world will fight over natural resources including water.

*The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy* by Lester Brown – How does the world shift from the use of fossil fuels to using resources like wind energy? Brown discusses what is currently being done to shift away from fossil fuels.

*The Story of Climate Change* – A **FREE** interactive textbook available through iTunes targeted for middle school students. Resources are available as well and information on the textbook is at <http://www.earthday.org/story-climate-change>



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*How to Change Minds About Our Changing Climate* by Seth Darling and Douglas Sisterson – “The book provides a response to the plethora of skeptic misconceptions about climate disruption that inundate media and blogosphere. The book is intended to equip readers (high school and above) with clear and understandable science-based explanations of what we know and what we don’t know about climate.”

### Manipulatives

#### Illinois Department of Natural Resources Trunks

The Illinois Department of Natural Resources offers free trunks full of educational resources to be loaned out to educators for two week periods. There are many different types of trunks including birds, fossils, trees, invasive species, etc. Visit their website for a full list of available trunks as well as locations available to rent the trunks.

<http://www.dnr.illinois.gov/education/Pages/ItemsForLoan.aspx>

#### The Morton Arboretum Discovery Bins

The Morton Arboretum now has Discovery Bins available for rental by teachers. The bins are focused around NGSS and are sorted by grade level. Currently there are 3 types of bins available for rental based on the grade range. More information is available at

<http://www.mortonarb.org/files/Teacher%20Check%20Out%20Bins%20Flyer.pdf>

#### The Morton Arboretum Sterling Morton Library

In addition to the Discovery Bins mentioned above, the Morton Arboretum also has a library available to be accessed by teachers. There are over 28,000 nature related books available for rent. You can access the library database at [https://catalog.swanlibraries.net/client/en\\_US/mas](https://catalog.swanlibraries.net/client/en_US/mas)

For more information on both the Discovery Bins and the Sterling Morton Library, you can go to <http://www.mortonarb.org/learn-experience/educators/classroom-items-loan>

#### Illinois Natural History Survey (INHS) Traveling Science Center

“The INHS Traveling Science Center is a 320 square foot mobile classroom featuring informative, engaging exhibits on Biodiversity, focusing on Illinois.” You can find information at

<http://www.inhs.illinois.edu/outreach/tsc/>

### Curriculum Guides

#### Climate Generation

Climate Generation is a resource that has a lot of information including curriculum guides targeted at multiple age groups and different guides based on state science standards. They also offer an online curriculum based out of Minnesota. View the guides at <http://www.climategen.org/what-we-do/education/climate-change-and-energy-curricula/curriculum-guides/>

#### Exploring the Environment

Exploring the Environment is a project formally funded by NASA that has modules on different environmental categories including climate change. The site includes modules and activities for students, teacher pages, and problem based learning strategies. You can find the modules at

<http://ete.cet.edu/gcc/?/home/>

#### Climate Literacy and Energy Awareness Network (CLEAN)

CLEAN has a collection of over 600 free resources for educators reviewed by educators and scientists.

There is also a climate literacy and an energy awareness guide available for download. You can find information at <http://cleanet.org/index.html>

#### Earth System Science Education Alliance (ESSEA)

ESSEA has two modules available on their site. One of the modules is by NASA and is about global climate change. The other module is by the National Oceanic and Atmospheric Administration (NOAA) and is about ocean and climate. Both modules are available at <http://esseacourses.strategies.org/>

#### Climate Literacy: The Essential Principles of Climate Science



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Climate.gov has a curriculum guide for teaching climate change education including “Earth’s climate, impacts of climate change, and approaches to adaptation or mitigation.” This guide supports the Next Generation Science Standards (NGSS) and includes links for each topic discussed in the guide. You can find the guide at <https://www.climate.gov/teaching/essential-principles-climate-literacy/teaching-climate-literacy-and-energy-awareness>

#### G-WOW Changing Climate, Changing Culture Curriculum Guide

This a curriculum guide and information about how climate change is affecting the great lakes, more specifically, Lake Superior and surrounding areas. There are also lesson plans and project ideas for teachers to access. The guide and information is available at [http://www.g-wow.org/en-us/teachers\\_corner/default.aspx](http://www.g-wow.org/en-us/teachers_corner/default.aspx)

### Human Resources

#### Douglas Sisterson

ARM Climate Research Facility, Instrument Operations Manager, Environmental Science Division  
Argonne National Laboratory

Office: 630-252-5836, Cell: 708-341-7710, Email: [dlsisterson@anl.gov](mailto:dlsisterson@anl.gov), Website: [WWW.ARM.GOV](http://WWW.ARM.GOV)

“Doug Sisterson is a senior manager at Argonne for the U.S. Department of Energy’s (DOE) Atmospheric Radiation Measurement (ARM) Climate Research Facility. The ARM program is the largest federally sponsored climate change research program in DOE and the ARM facility provides the world’s most comprehensive 24/7 observational capabilities for obtaining atmospheric data specifically for climate change research.” Doug is available to answer questions as well as coming to classes to speak with students. He would not charge unless there would be an activity that would require large amounts of time.

#### Ross D. Powell

Board of Trustees Professor and Distinguished Research Professor  
Department of Geology and Environmental Geosciences  
Northern Illinois University in DeKalb, IL

Tel: (815) 753-7952, Email: [rpowell@niu.edu](mailto:rpowell@niu.edu), Website: <http://www.niu.edu/geology/people/powell.shtml>

Dr. Powell is a professor at NIU on climate change and sedimentology. He is available to answer questions on climate change. He is also willing to speak with classrooms directly about climate change and research that is being done. Dependent on location, he may require reimbursement for travel expenses.

#### Illinois Natural History Survey (INHS)

INHS has more than 20 scientists who are available to come speak to classes about many different topics including biodiversity and a long list of other environmental topics. They have a list of the speakers available along with their qualifications and topics at

<http://www.inhs.illinois.edu/outreach/speakers/>

### Other Resources

#### Climate Change Blog

John D. Sutter from CNN is currently blogging about issues with climate change as he travels around the world. The following website is where you can sign up to join the mailing list to be updated when a new entry has been made. There is also a link to see past entries. <http://tinyletter.com/jdsutter>

#### The Conrad Spirit of Innovation Challenge

This is a group challenge for high school students to develop solutions to problems in one of four categories, with energy and environment being one of the categories. Information is available at <http://www.conradchallenge.org/challenge-categories/>



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## Grants

### Environmental Education Association of Illinois (EEAI) Mini-Grants

EEAI awards mini-grants in the amount of \$350 to educators (both formal and informal) who will use the funds for “projects/activities that help to educate students, visitors, or community members about natural resources or the environment.” For more information, visit

<http://www.eeai.net/mini-grants.html>

### The Kresge Foundation

“The Kresge Foundation is a \$3.5 billion private, national foundation that works to expand opportunities in America’s cities through grantmaking and social investing in arts and culture, education, environment, health, human services, and community development in Detroit.” Information on the grants they provide is available at <http://kresge.org/opportunities> and information specifically about climate change is available at <http://kresge.org/programs/environment>

### National Environmental Education Foundation (NEEF)

NEEF has compiled a list of grants and awards for educators that can be found at <http://eeweek.org/toolkits/grants-awards>

### The Ocean Fund

The ocean fund grants are for “ocean science and conservation projects that relate to climate change, key marine species, technology and targeted education” Read more at

<http://www.royalcaribbean.com/ourCompany/environment/oceanFund.do>

### National Oceanic and Atmospheric Administration (NOAA) Office of Education

NOAA has a number of grants that “assist NOAA in meeting its educational goals of improving public environmental literacy and developing a diverse workforce skilled in fields relevant to our agency’s mission.” A list of grants is available at <http://www.oesd.noaa.gov/grants/>

### National Science Foundation (NSF)

NSF has a list of grant opportunities aimed at environmental research and education available at

[http://www.nsf.gov/funding/pgm\\_list.jsp?org=ERE](http://www.nsf.gov/funding/pgm_list.jsp?org=ERE)

### Disney Friends for Change Grant

“Disney Friends for Change Grants offer young change-makers an opportunity to receive a \$500 grant to help make a lasting, positive change in the world.” More information is available at

<http://citizenship.disney.com/friends-for-change>

### The Lorrie Otto Seeds for Education Grant Program

“The Lorrie Otto Seeds for Education Grant Program gives small monetary grants to schools, nature centers, and other non-profit and not-for-profit places of learning in the United States with a site available for a stewardship project.” More information available at <http://wildones.org/seedmony.htm>

### United States Environmental Protection Agency (EPA) Environmental Education Grant

This grant is designed to “support environmental education projects that promote environmental awareness and stewardship and help provide people with the skills to take responsible actions to protect the environment.” More information available at

<http://www2.epa.gov/education/environmental-education-ee-grants>

### The Captain Planet Foundation

“The Foundation supports high-quality, hands-on environmental stewardship projects that have enabled more than 1.1M youth across the U.S. and around the world make significant environmental improvements to their schools or communities.” More information available at

<http://captainplanetfoundation.org/>

### Illinois Biodiversity Field Trip Grant



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“Teachers in Illinois schools, including home-schooling teachers, may apply to the Illinois Department of Natural Resources (IDNR) through the ENTICE (Environment and Nature Training Institute for Conservation Education) program to receive funding for natural resources-related field trips.” Information is available at <http://www.dnr.illinois.gov/education/Documents/ibftgapp06.pdf>

### Professional Development and Workshops

#### Environmental Education Association of Illinois (EEAI)/Project Learning Tree

The Environmental Education Association of Illinois (EEAI) sponsors Project Learning Tree, which is the environmental education program by the American Forest Foundation. It is a secondary module about climate change impacts on forest ecosystems, the role of forests in sequestering carbon, and strategies for reducing greenhouse gas emissions and adapting to changing climatic conditions. The module includes 14 engaging activities designed for use in life science, environmental science, and agriculture classes in grades 9-12, with adaptations for use in middle school classrooms.

<http://www.eeai.net/project-learning-tree.html>  
<http://sfrc.ufl.edu/extension/ee/climate/>

#### Illinois Department of Natural Resources (IDNR)

“The Illinois Department of Natural Resources' (IDNR) Division of Education sponsors educator workshops through the ENTICE program.” The workshops vary in topic from prairies, aquatics, habitats, and more. The list of the workshops can be found at the following webpage. All workshops are \$10 unless stated in the description of the workshop.

<https://www.enticeworkshops.com/>

#### NASA Earth Systems, Technology, and Energy Education for MUREP (NASA ESTEEM)

“NASA ESTEEM is a competitive project that promotes climate and Earth system science literacy and seeks to increase the access of underrepresented minority groups to science careers and educational opportunities.” They offer online professional development courses that are available at

<http://esteem.larc.nasa.gov/ask-us/>

#### National Environmental Education Foundation (NEEF)

NEEF has many different webinars posted on environmental education available for download at

<http://eeweek.org/webinars>

### Professional Organizations

Environmental Education Association of Illinois (EEAI) – “The Environmental Education Association of Illinois (EEAI) is a group of concerned citizens who are interested in educating people of all ages to the importance of understanding and protecting the environment.” <http://www.eeai.net/>

National Science Teachers Association (NSTA) – “The largest organization in the world committed to promoting excellence and innovation in science teaching and learning for all.” <http://www.nsta.org>

Illinois Science Teachers Association (ISTA) – “The Illinois Science Teachers Association is committed to promoting excellence in science teaching and learning throughout Illinois.” <http://www.ista-il.org/>

Northern Illinois Science Educators (NISE) – “Northern Illinois Science Educators (NISE) will be a conduit for professional development, collaboration, and public private partnership to enhance K-16 science education in the northern Illinois region.” <http://www.nise.us/>

North American Association for Environmental Education (NAAEE) – NAAEE is “the only national membership organization dedicated to strengthening the field of environmental education and increasing the visibility and effectiveness of the profession.” <http://www.naaee.net/>

National Network for Ocean and Climate Change Interpretation (NNOCCI) – “NNOCCI’s goal is to establish a national network of professionals who are skilled in communicating climate science to the American public.” <http://www.nnocci.org/>



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