



**Teacher Professional Development Workshop:
“Climate Change and the Long Island Sound Estuary”**

TEACHER RESOURCES

• **Workshop Presenters**

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- **Grant Opportunities**

- **NOAA Climate Stewards Education Project**

<http://oceanservice.noaa.gov/education/climate-stewards/>

The NOAA Climate Stewards Education Project (CSEP) is part of NOAA's portfolio of activities designed to strengthen ocean, climate, and atmospheric science education. CSEP increases understanding of essential climate concepts, providing educators with ready access to reliable scientific information through an array of professional development (PD) opportunities. Through direct interaction with scientists and education specialists, participants receive instruction in the use of data resources, digital tools, and other innovative technologies. Educators benefit from an active online learning community that offers collaborative space, web seminars, conference symposia, workshops, and virtual conferences. Armed with this knowledge, NOAA Climate Stewards design and implement environmentally friendly action plans to reduce the “carbon footprint” in their own communities. After completing the CSEP requirements, educators are eligible for mini-grant funding (\$500 to \$2,500) to develop and implement a climate stewardship action plan and travel stipends to attend and present at key professional development conferences.

- **Project Learning Tree® Grants**

<https://www.plt.org/apply-for-greenworks-environmental-education-grant>

Do you have an idea for a school/community native plant garden, a forest improvement project, a streamside restoration plan, a recycling program, or energy conservation project for your students? Need funds to implement it? Then, Apply for a Project Learning Tree (PLT) GreenWorks! Grant. Grants are available in three award levels: 1) GreenWorks! grants up to a maximum of \$1,000, 2) GreenWorks! grants up to \$1,000 for schools involved in the USFS ClimateChangeLIVE Program, and 3) GreenWorks! grants up to \$2,000 for registered PLT GreenSchools.

- **Target Field Trip Grants**

<https://corporate.target.com/corporate-responsibility/grants/field-trip-grants>

As part of the program, Target stores award Field Trip Grants to K-12 schools nationwide. Each grant is valued up to \$700. Grant applications are accepted between noon CST Aug. 1 and noon CST Sept. 30.



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- **Book Lists**

- **EPA Wetlands Reading List**

- <http://water.epa.gov/lawsregs/guidance/wetlands/readlist.cfm>

- An extensive list of books on estuaries, wetlands, and common species found in wetlands, sorted by reading level (i.e., primary, elementary, intermediate, and secondary).

- **Teachers.net Annotated Bibliography of Children’s Literature with Environmental Themes**

- <http://teachers.net/archive/envirobks.html>

- A list of children’s literature with environmental themes.



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- **Long Island Sound Study Resources**
 - **Long Island Sound Study’s “Ask Dr. K” Blog**
<http://longislandsoundstudy.net/category/media-center/ask-dr-k/>, email your questions to askdrk@lishealth.net
 - **Sentinel Monitoring for Climate Change in the Long Island Sound Ecosystem**
<http://longislandsoundstudy.net/research-monitoring/sentinel-monitoring/>
The Sentinel Monitoring for Climate Change in Long Island Sound Program is a multidisciplinary scientific approach to provide early warning of climate change impacts to Long Island Sound ecosystems, species and processes to facilitate appropriate and timely management decisions and adaptation responses. These warnings will be based on assessments of climate related changes to a set of indicators/sentinels recommended by technical advisory work groups.
 - **Environmental Indicators in Long Island Sound**
<http://longislandsoundstudy.net/research-monitoring/long-island-sound-environmental-indicators/>
Long Island Sound Study’s environmental indicators report tracks measures that indicate the status of the health of Long Island Sound and the efforts to restore and protect the Sound and its watershed.



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- **Climate Science Websites**

- **USGS Science in Your Watershed**

- <http://water.usgs.gov/wsc/>

- The purpose of this site is to help you find scientific information organized on a watershed basis. This information, coupled with observations and measurements made by the watershed groups, provides a powerful foundation for characterizing, assessing, analyzing, and maintaining the status and health of a watershed.

- **EPA Surf Your Watershed Web site**

- <http://cfpub.epa.gov/surf/locate/index.cfm>

- This site provides assessments of watershed health and water quality information that can be tied directly to climate condition. When you actually close in on the watershed associated with your zip code you will find additional information including historical water use data, citizen-based groups at work in the watershed, and environmental websites specific to your watershed.

- **Coastal Inundation Toolkit**

- <http://csc.noaa.gov/digitalcoast/applyit>

- This Toolkit from NOAA’s Coastal Sciences Center contains tools and information communities need to address coastal inundation issues. Check out the Visualize section with Picture It, Graph It, and Build It.

- **Sea Level Rise and Coastal Flooding Impacts Viewer**

- <http://www.csc.noaa.gov/digitalcoast/tools/slrviewer/>

- NOAA’s Coastal Services Center’s Sea Level Rise and Coastal Flooding Impacts Viewer features coastal flooding scenarios coupled with photos of well-known locations that illustrate potential inundation; uncertainty maps; flood frequency information; and social and economic vulnerability information.

- **Skeptical Science**

- <http://www.skepticalscience.com/>

- This website gets skeptical about global warming skepticism. Do their arguments have any scientific basis? What does the peer-reviewed scientific literature say?



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- **Cornell Climate Change Climate Science Resources**
<http://climatechange.cornell.edu/tools-resources/climate-change-101/>
This website includes fact sheets, reports and studies, research projects, making a difference and getting involved resources, online courses, videos, and other resources.
- **EPA Climate Change Northeast**
<http://www.epa.gov/climatechange/impacts-adaptation/northeast.html>
This website describes the climate impacts and adaptation examples of climate change in the northeast region.
- **EPA Climate Ready Estuaries**
<http://water.epa.gov/type/oceb/cre/index.cfm>
The Climate Ready Estuaries program works with the National Estuary Programs and the coastal management community to assess climate change vulnerabilities, develop and implement adaptation strategies, and engage and educate stakeholders. This website provides examples to help coastal managers and provides technical guidance and assistance about climate change adaptation.
- **US Global Change Research Program Northeast Region**
<http://www.globalchange.gov/explore/northeast>
This website provides key messages about the Northeast from the National Climate Assessment report.



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- **Climate Change Activities and Lesson Plans**
 - **Estuaries 101 Curriculum**
<http://estuaries.noaa.gov/Teachers/Home.aspx>
Designed to be used by teachers in grades 6-12, the Estuaries 101 Curriculum deepens students understanding about estuaries and how estuaries affect their daily lives. Estuaries offer an exciting context for learning about math, geography, chemistry, marine science, among other fields.
 - **Water Cycle Learning Object**
<http://www.montereyinstitute.org/noaa/lesson07.html>
Animations, diagrams, tutorials and lessons that guide the learner to an understanding of the water cycle and its impacts.
 - **Climate Literacy & Energy Awareness Network (CLEAN)**
http://www.cleanet.org/clean/educational_resources/index.html?search_text=ocean&Search=search
This web site has about 613 (as of September 2014) well done educational labs/activities and other resources for all grade levels 6-College. The digital resources for teaching about climate science, climate change and energy awareness – resources are reviewed by educators and scientists, and annotated and aligned with standards and benchmarks. The web site gives you the option to refine your search topic, educational standards, and/or grade level. Resources are very in-depth and are appropriate for today's hot climate and energy topics.
 - **Cornell Climate Change Youth Education Resources**
<http://climatechange.cornell.edu/tools-resources/youth-education/>
This website includes Cornell citizen science and learning resources, peer-reviewed curriculum collections, get involved activities and other websites for student exploration.
 - **NOAA Climate.gov Teaching Climate Educational Resources**
<http://www.climate.gov/teaching>
This website contains reviewed resources for teaching about climate and energy.
 - **NOAA Activity Book: Discover Your Changing World with NOAA**
<http://oceanservice.noaa.gov/education/discoverclimate/>
At this website, you can download ten activities to introduce you to the essential principles of climate science.



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- **NOAA Ocean Service Education Climate Resources**
<http://oceanservice.noaa.gov/education/pd/climate/>
This website provides fact sheets, lesson plans, case studies, links, and information on teaching climate in partnership with the National Science Teachers Association (NSTA).
- **EPA Global Climate Change Lesson Plans for Educators**
<http://www.epa.gov/climatechange/kids/resources/lesson-plans.html>
EPA has compiled a suite of hands-on, interactive lesson plans to complement and make use of the material on this website. The plans, aimed primarily at middle school students, work systematically and individually to reinforce students’ knowledge of climate change, as well as enhance skills across multiple disciplines. The lessons are correlated to national science standards.
- **NASA Global Climate Change Resources**
http://climate.nasa.gov/climate_resource_center
This website contains interactive graphics, videos, and quizzes to help you teach climate science concepts.
- **NASA Climate Kids**
<http://climatekids.nasa.gov/>
This student-friendly interactive website provides information in an easy-to-understand manner. Topics include weather and climate, air, ocean, fresh water, carbon’s travels, energy, plants and animals, and technology.
- **Waquoit Bay Research Reserve (Cape Cod, MA)’s “Bringing Wetlands to Market” Curriculum**
<http://wbnerwetlandscarbon.net/teachers/>
This site contains a high school STEM curriculum related to the “Bringing Wetlands to Market” project. The “Bringing Wetlands to Market” research studies located in Falmouth and Mashpee on Cape Cod, Massachusetts, examine the relationship between salt marshes, climate change, nitrogen pollution, and the economic value of salt marshes as carbon sinks. This curriculum module, which is linked to the Next Generation Science Standards, introduces many different aspects of this exciting project and provides teaching ideas and activities for sharing it with teachers and students.