



NOAA Climate Stewards

"You can't make carbon go away. It just changes form, so you'd better figure out what to do with what's already in the atmosphere. Then you'd better figure out what you want the world to be like, because it's not going away, and it stays around for a really long time."

6th grade student



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

national ocean service

HOME EXPLORE EDUCATION NOS NOW OCEAN MEDIA OFFICES ABOUT USER SURVEY

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NOAA Climate Stewards Education Project



ABOUT US WHO AND WHERE WE ARE WHAT WE DO IMAGE GALLERY LINKS AND DOWNLOADS

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**

“
You can't make carbon go away. It just changes form, so you'd **better figure out what to do** with what is already in the atmosphere. Then you'd better figure out **what you want the world to be like** because it's not going away and it stays around for a really long time.”
— Middle School student

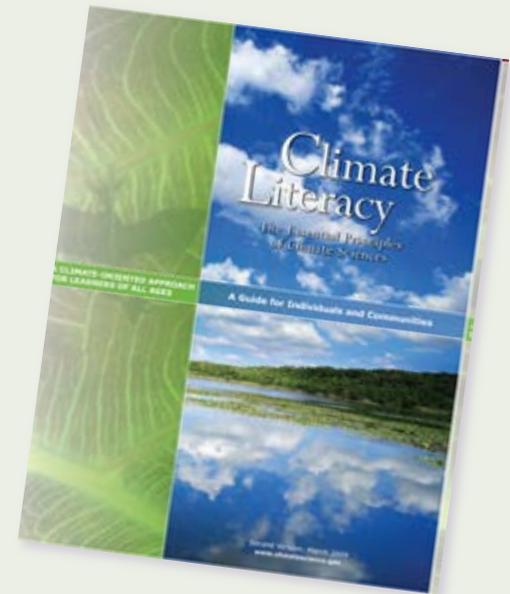
oceanservice.noaa.gov/education/climate-stewards



NOAA Climate Stewards

Build Climate Literacy for educators to:

- *understand* the concepts of climate
- *assess* the scientific credibility of information
- make *informed* and *responsible* decisions, and *initiate actions* in the community





NOAA Climate Stewards

Provides Educators:

- *Sustained* professional development
- *STEM* and geography based teaching and collaborative tools
- *Digital* content resources
- *Contextual-based* teaching applications



Leadership Team



CLIMATE PROGRAM OFFICE
Understanding climate variability and change to enhance society's ability to plan and respond



NATIONAL MARINE SANCTUARIES



Project Reach

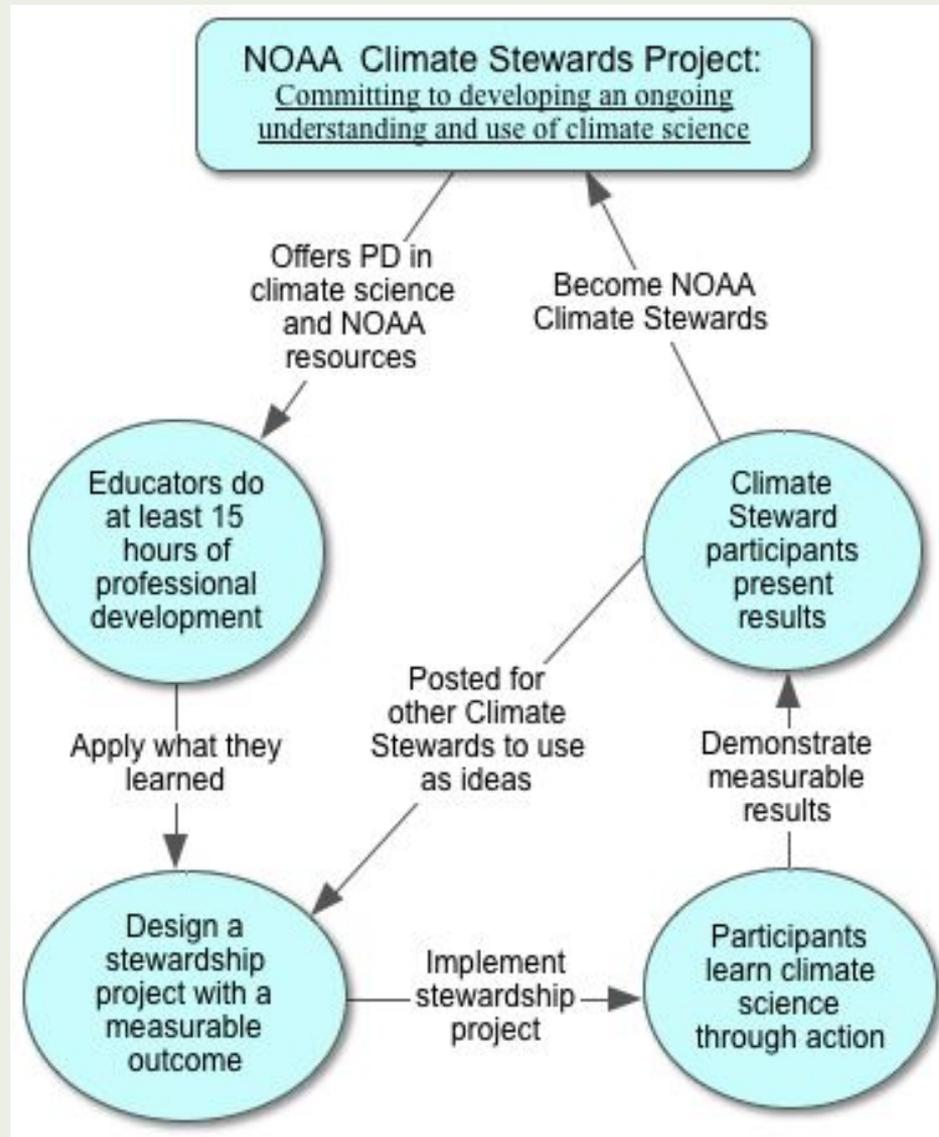
200 Educators from 46 states, DC, Puerto Rico, USVI



Formal and Informal Educators – Elementary through College



NOAA Climate Stewards Process





Expectations for Participants

- Complete at least **15 hours** of Professional Development training
- Complete of at least **9 hours** of PD training for each additional year in the Project.
- Participate in **monthly** webinars and regional events.
- Develop and Implement a **climate stewardship project** in their school, community, or organization, focused on mitigating the effects of climate change.
- Use the **CSEP Wiki** to post PD reflections, classroom activities in climate change, stewardship project plans, progress updates
- Participation in **CSEP evaluation efforts**.



Benefits for Participants

- **Mini-grant funding** to develop and implement a climate stewardship action plan.
- **Travel stipends** to attend and present at key professional development conferences.
- **Special contests** with monetary and educational resource prizes.



Organizing & Collaborating

Wiki Pages & Files Users Settings Search this workspace

VIEW EDIT

Welcome to the NOAA Climate Stewards Workspace!

last edited by Bruce Moravchik 4 days, 23 hours ago Page history



NOAA Climate Stewards Education Project

The NOAA Climate Stewards Education Project (CSEP) provides opportunities for formal and informal educators to work with NOAA in responding to environmental challenges, and inspire our youth to pursue careers in science, technology, engineering, and mathematics. CSEP brings NOAA science and education efforts together, providing educational opportunities and rewards for environmental stewardship including Climate Stewards educating themselves and others, as well as working within their communities to reduce their carbon footprints or develop plans to "go green."

Announcements

- Welcome Class of 2013! This year NOAA Climate Stewards is honored to have invited 140 new educators to join the Project. With over 200 educators representing 46 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands, we look forward to strengthening our community of learning as we start the new year.
- New Wiki Page Launched! [Click Here](#) to get to a page providing important information on National and Regional meetings, a Calendar of Events/Progress for January-September 2013, and a list of CSEP contacts.

Project Regions

NOAA CSEP has been organized into six regions to foster communication and collaboration among educators within those regions, as well as organizing and coordinating activities - beyond those occurring at the national project level. This may include sharing information about regional climate change, collaborating on mutual interests, or taking advantage of and sharing resources specific to the regions where participants are located. Each Region is coordinated by a Regional Leader(s) who is/are also Project participants. Links to Participants Personal Wiki Pages Are Located On Regional Pages

New England: MA, VT, NH, MA, RI, CT, NY, PA, OH
Regional Leader - [Jacob Tanenbaum](#) (Blauvelt, NY)

Mid-Atlantic: NJ, DE, MD, Washington DC, VA, WV
Regional Leader - [Dale Glass](#) (Washington, D.C.)

Central Region 1: KY, IN, IL, MI, MO
Regional Leader - [Claire Lannoye-Hall](#) (Royal Oak, MI)

Central Region 2: WI, MN, IA, ND, SD, NE, KS, WY, CO
Regional Leader - [Brenna Holzhauser](#) (Monona, WI)

Southern Region: FL, GA, NC, SC, TN, AL, MS, LA, AR, OK, TX, NM, PR, USVI
Regional Leaders - [Katie Kendall](#) (Ashland City, TN) and [Mellie Lewis](#) 2011 (Key Largo, FL)

Western & Pacific Region: MT, ID, WA, OR, CA, NV, UT, AZ, HI, AK, GU
Regional Leader - [Jillian Worssam](#) (Flagstaff, AZ)

Project Documents

- Meeting Notes & Presentations
 - Monthly Webinar Review Form
 - Professional Development Experience Review Form
- CSEP FAQ & Answers: How to complete, upload, and post your PD Review to your wiki page.
- Stewardship Project Roadmap and Definitions
- NOAA Talent Release Form
- Complete List of NOAA Climate Stewards Educators Action Plans
- Climate Stewards Individual Page Template
- Climate Stewards in the News

Navigator

Climate Resources

- Climate Resources - Policy and Legislation
- Climate Resources - Presentation Library
- Climate Resources - Yale Forum on Climate Change
- Copy of Climate Resources - Odds and Ends
- Welcome to the NOAA Climate Stewards Workspace

SideBar

The NOAA Climate Stewards Education Project (CSEP) provides opportunities for local, state, and regional educators to respond to environmental challenges and inspire our youth to pursue STEM careers. CSEP brings NOAA science and education efforts together to provide educational opportunities and rewards for environmental stewardship actions including Climate Stewards educating themselves and others, and working within their communities to reduce their carbon footprints or develop plans to "go green."

Goal 1. Provide educators with sustained professional development, STEM and geography-based teaching and collaborative tools, digital content resources and computing contextual-based teaching applications that align with national standards for targeted content areas.

Goal 2. Provide ALL students of NOAA Climate Stewards Project educators the opportunity to explore climate-related STEM and geography in a variety of engaging and interactive climate contexts to increase student interest, participation, knowledge about careers, and the ability to apply their knowledge STEM and geography in real-world environmental situations and day-to-day decision making.

Share this workspace

Add a new writer to the workspace.
user@email.com

User settings

Recent Activity

- NOAA Climate Stewards Education Project... edited by Bruce Moravchik
- NOAA Climate Stewards Education Project...



Professional Development: Monthly Webinars

Climate Controversy in the Classroom – Susan Buhr

Climate Change and the American Mind – Andy Leiserowitz

Tools for Investigating Estuaries – Bree Murphy

Climate Change Impacts on Human Health – Amy Work

Sea Level Change – Past, Present, Future – Stephen Gill

Ocean Acidification – Paulo Maurin



NSTA Opportunities

Symposium: NOAA Climate Data in the Classroom Saturday Workshops

- Climate Education and NGSS
- Lessons from Antarctica: Polar Ice Cores and Climate Research
- Lunch with Climate Scientists
- ClimateChangeLIVE!: Webcasts and Education Resources
- NOAA's Climate Stewards: Affecting Change in Your Community
- Discover Your Changing World With NOAA - New Hands-on Climate Activities!





Regional Workshops

2012

- Aldo Leopold Nature Center – Monona, WI
- New York Hall of Science – Queens, NY
- Norrie Point Environmental Center – Staatsburg, NY
- Flagstaff Festival of Science – Flagstaff, AZ

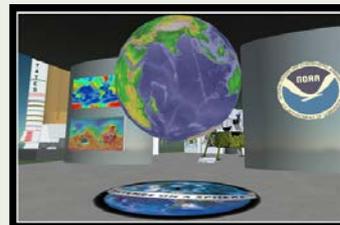
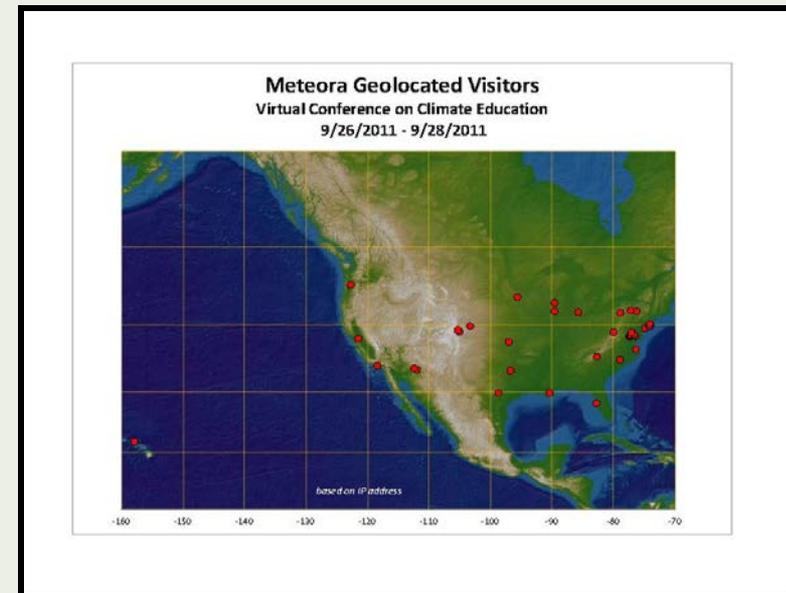
2013

- April, 2013 Traditional Environmental Knowledge
National Museum of the American Indian
Washington, DC

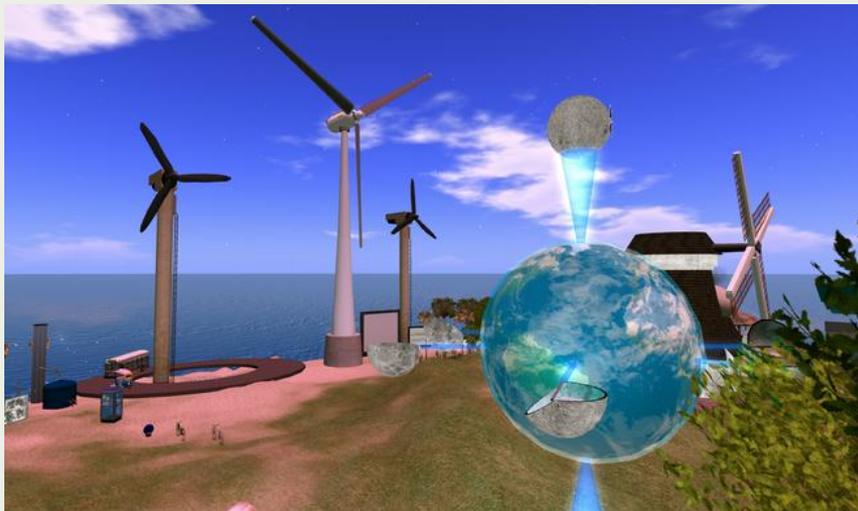
Using Virtual Platforms



- Virtual Climate Conference
3 evenings, Fall 2012
- Introductory training: construct an avatar, how to move/communicate
- Climate content, discussion groups, exploration of NOAA island



Book Discussions/Field Trips



OneClimate Island Shelter



Stewardship Project Development

Roadmap to Developing & Reporting Your Climate Stewardship Action Plan

Rubric	Incomplete	----->	----->	Complete
	1	2	3	4
Climate Science Issue	Clearly described issue	Need established through evidence	Local context for a local or global issue in climate science	Project is put in the context of others' efforts along the same lines (parallel projects)
Hypothesis	Expected effect described	Hypothesis with expected effect and circumstances stated	Hypothesis includes effect, circumstances, on whom	Hypothesis in if/then form
Data Collection, Analysis and Results	How data was used is described	Rationale for data collected and how it was used	Rationale for data collection, analysis and results	Results given in terms of how the data was collected and analyzed
Stewardship Process and Activities	Activities listed	Process described with activities	Timeline of activities described within the process used	Recommendations made for how to improve the process and activities based on lessons learned
Stewardship Actions	You educate others	You involve others in a short term stewardship project (<2 days)	You involve others in a long term stewardship project (>2 days)	You make stewardship action part of your own ongoing work, and/or the work of an institution. You document measurable results of the actions.
Use of NOAA and NOAA Partner Resources	List given	List with specific resources described	Use of each resource is described	Rationale for why & how the resources were used to support the project
Evaluation	Effects identified	Data collected on effects	Data collected from multiple resources	Results put in context of goals for the project and similar efforts by others
Conclusions	Describes what happened	States conclusions within local context	Evidence-based conclusions	Evidence-based conclusions about the effects with limitations stated
Presentations (please post to wiki)	Project summary written	Presentation after the project	Presentations created for different groups at different times	Rationale for before, during and after presentations to various audiences and stakeholders

Stewardship in Action!

- Restoration with beach grasses
- Polar Bear Challenge: Conserve energy and change habits
- Model UN Climate Change Summit
- Climate Change impacts on wetlands
- Schoolyard garden
- Effects of ocean acidification on Hawaiian ecosystems





Stewardship in Action!

Car # 1 Large or small? Large
Idle end time (when carpool started moving) 3:00 - 3:15 (idle start time) = 15 minutes idling.

Multiply the number of minutes by the g/min info above and complete the table.

Unit	CO2 (g)	VOC	CO	NOx	Cost (gas = \$ 4.047/gal \$0.06745)
Minute of Idling (1/60 gal)	148.97 g/min	0.269 g/min small car 0.401 g/min large car	3.82 g/min small car 5.65 g/min large car	0.079 g/min small car 0.095 g/min large car	
x <u>15</u> min =	<u>2234.55</u>	<u>6.015</u>	<u>84.75</u>	<u>1.425</u>	<u>\$1.01175</u>

Car # 9 Large or small? Large
Idle end time (when carpool started moving) 3:00 - 3:15 (idle start time) = 15 minutes idling.

Multiply the number of minutes by the g/min info above and complete the table.

Unit	CO2 (g)	VOC	CO	NOx	Cost (gas = \$ 4.047/gal \$0.06745)
Minute of Idling (1/60 gal)	148.97 g/min	0.269 g/min small car 0.401 g/min large car	3.82 g/min small car 5.65 g/min large car	0.079 g/min small car 0.095 g/min large car	
x <u>15</u> min =	<u>2234.55</u>	<u>6.015</u>	<u>84.75</u>	<u>1.425</u>	<u>\$1.01175</u>

Car # 14 Large or small? Large
Idle end time (when carpool started moving) 3:00 - 3:15 (idle start time) = 15 minutes idling.

Multiply the number of minutes by the g/min info above and complete the table.

Unit	CO2 (g)	VOC	CO	NOx	Cost (gas = \$ 4.047/gal \$0.06745)
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Program Evaluation

Research Questions

- *What role does increased content knowledge about climate literacy have on participants? To what extent do Climate Stewards increase their content knowledge?*
- *How does implementation of a Stewardship Project affect participants' attitude and behavior toward lessening the potential impacts of climate change?*



Instruments

- Professional Development Reflection and log
- Needs assessment for each new class of educators
- Climate Literacy Understanding Pre and Post test
- Stewardship Project Plan
- Climate Stewardship Plan Rubric to determine stewardship plan completeness and funding
- Reflection Survey – retrospective about effects of project on knowledge, confidence, interest, strategies, resources
- Stewardship project reflection survey – effect of stewardship activities on attitudes and skills



Class of 2013 Needs Assessment

- Why they applied
 - Learn new strategies to introduce students to STEM careers
 - Increase their understanding of NOAA resources
 - Learn about new technology tools such as GIS, virtual platforms, gaming
 - Learn how misconceptions influence student learning

Climate Stewards

[Exit Survey »](#)

100%

2013 NOAA Climate Stewards Education Project Needs Assessment

To better serve the participants of the NOAA Climate Stewards Education Project, we would like to know more about your interests and needs in the areas of climate and climate change science and education. Your responses will allow us to work toward offering you the types of professional development and supportive resources you are most interested in as we begin 2013.

Thank You, Bruce Moravchik, Coordinator, Peg Steffen, Director, Hilarie Davis, Evaluator

First Name

Last Name

Title

Employer/Institution

Email Address

1. What type of education do you engage in? Check all that apply.

Elementary, grades 3-5

Middle school, grades 6-8

High school, grades 9-12

University/college

Informal education

Professional development

Other, please describe



Class of 2013 Needs Assessment

- Topics they are interested in
 - Basic Climate Literacy
 - What people can do about climate change
 - Projections of climate change impacts
 - Human-induced changes to climate
 - Causes of climate change in the present

Other Topics of interest

- Citizen science
- Monitoring programs
- Energy reduction
- Green schools
- Local literacy
- Recycling



Class of 2013 Needs Assessment

- Teaching and Learning Strategies of Interest
 - Emphasizing critical thinking skills
 - Using field experiences for investigations
 - Infusing climate content into existing curriculum
 - Incorporating the use of real-time data
 - Building skills in problem-solving

"I am looking for resources/training for my high school teacher network to get them up-to-speed on the Next Generation Science Standards, in relation to climate science."



Class of 2013 Needs Assessment

- Challenges in Teaching Climate Science
 - Time
 - Resources
 - Equipment
 - Knowledge
 - Alignment with curriculum/standards
 - Community

“Time is key, especially with new common core standards. Resources to implement lessons and the equipment needed are sometimes inadequate or insufficient.”



Class of 2011 Evaluation Results

Climate Stewards reported strong effects on stewardship project participants in:

- Feeling they could make a difference (9.1/10)
- Increased knowledge of climate science (8.9)
- Readiness to apply what they had learned to their lives (8.7)
- Increased awareness of climate science careers (8.1)
- Meeting other people interested in climate science (7.5)



Class of 2011 Indicators of Success

- Increased confidence
- Changes in teaching practice
- Use of stewardship projects
- Interest in continuing to participate in the professional development.

“I am much more able to effectively integrate climate into the curriculum due to the resources and training in the program”



Contact

- Peg Steffen peg.steffen@noaa.gov
- Bruce Moravchik bruce.moravchik@noaa.gov

"It is better to teach people in advance about the environment, than to reverse the damage they do..."

6th grade student