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# Dragonfly Gazette

GEORGIA PROJECT WET Environmental Protection Division

## Fall 2014

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## A Rising Tide



**Over the past several years** you may have noticed a change in the Georgia weather, like increased storm intensities, damaging hurricanes, longer droughts and hotter summers. There have also been a few mega winter storms that shut down our roads and businesses. We remind ourselves that a change in the weather is not a change in the climate. But now we hear that it just may be the climate change we had feared.

The Third U.S. National Climate Assessment (NCA) unveiled in May by the Obama Administration said evidence of human-made climate change "continues to strengthen" and that "Americans are noticing changes all around them." The NCA is the most comprehensive scientific report ever generated about climate changes that are happening right now in the United States and further changes that we can expect to see throughout this century.

### **In essence it says:**

1. Climate change is here and will only worsen.
2. Get used to more flooding, wildfires and drought depending on where you live.
3. Cities and states across America already are spending lots of

money to respond.

**[See this innovative Hoboken, NJ plan for sea level rise!](#)**



**The NCA outlined key areas of social and economic impacts from climate change:**

- **Health:** "Climate change threatens human health and well-being in many ways, including through impacts from increased extreme weather events, wildfire, decreased air quality, threats to mental health, and illnesses transmitted by food, water, and disease carriers such as mosquitoes and ticks."
- **Transportation:** "The impacts from sea level rise and storm surge, extreme weather events, higher temperatures and heat waves, precipitation changes, Arctic warming, and other climatic conditions are affecting the reliability and capacity of the U.S. transportation system in many ways."
- **Energy:** "Higher summer temperatures will increase electricity use, causing higher summer peak loads, while warmer winters will decrease energy demands for heating. In the longer term, sea level rise, extreme storm surge events, and high tides will affect coastal facilities and infrastructure on which many energy systems, markets, and consumers depend."
- **Water:** "The Southwest, Great Plains, and Southeast are particularly vulnerable to changes in water supply and demand. Changes in precipitation and runoff, combined with changes in consumption and withdrawal, have reduced surface and groundwater supplies in many areas."
- **Agriculture:** "While some U.S. regions and some types of agricultural production will be relatively resilient to climate change over the next 25 years or so, others will increasingly suffer from stresses due to extreme heat, drought, disease, and heavy downpours. "
- **Ecosystems:** "Climate change impacts on biodiversity are

already being observed in alteration of the timing of critical biological events such as spring bud burst, and substantial range shifts of many species."

- **Oceans:** "Ocean waters are becoming warmer and more acidic, broadly affecting ocean circulation, chemistry, ecosystems, and marine life. More acidic waters inhibit the formation of shells, skeletons, and coral reefs. Warmer waters harm coral reefs and alter the distribution, abundance, and productivity of many marine species."



### For more on the NCA Report

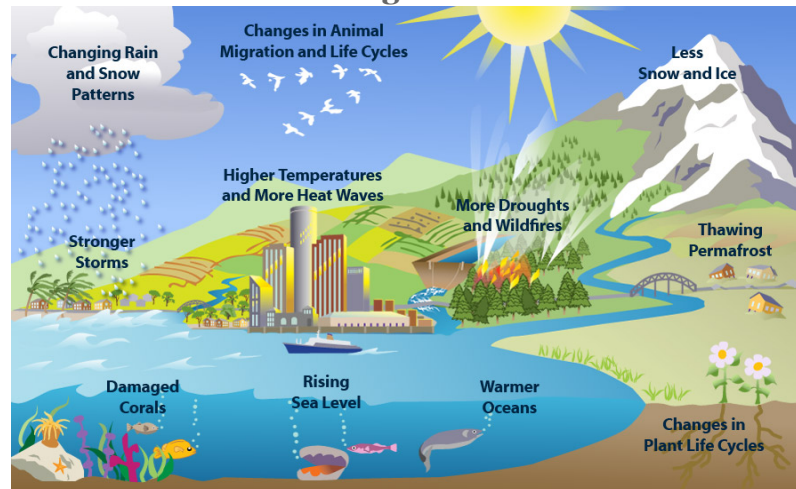
[May 2014 President's call to action](#)

[Whitehouse Climate Change Report](#)

[June 2013 President's CC Plan](#)

[Whitehouse CC Fact Sheet](#)

### How will Climate Change affect our Watersheds?



Climate Changes	Effects on Ecosystems	Effects on Water Supply
<p><b>WARMER AIR TEMPERATURES</b></p> <p>Widespread with the greatest change in mountains and northern latitudes</p>	<p>Less precipitation as snow; faster and earlier snowmelt</p> <p>Ecosystem efficiency and production affected</p> <p>Increase in water temperatures</p> <p>Sea level rise; coastal erosion and saltwater intrusion into freshwater supplies</p>	<p>Changes in the amount, type, quality, and distribution of aquatic habitat and biota</p> <p>Decrease in water availability, and recreational and cultural experiences</p> <p>Water quality affected</p> <p>Function and operation of existing water infrastructure in coastal areas will change</p>
<p><b>CHANGES IN PRECIPITATION PATTERNS</b></p> <p>Less winter precipitation at lower altitudes</p>	<p>Decreased snow; changes in stream flow timing</p> <p>Changes to water distribution contributing to increased drought, wildfires, insects, disease</p> <p>Changes in vegetation growth and composition</p>	<p>Changes in water supplies for people, agriculture, energy, and other uses</p> <p>Increased water demand, ground water withdrawals, and consumptive use of surface waters</p> <p>Fisheries and water-based tourism affected</p>
<p><b>CHANGES IN PRECIPITATION PATTERNS</b></p> <p>More precipitation at higher latitudes</p>	<p>Stream flow changes</p> <p>Changes in vegetation growth and composition</p> <p>Increased soil erosion and landslides</p>	<p>Freshwater supplies decrease</p> <p>Improvements in warm water fishery production</p>
<p><b>GREATER VARIABILITY IN PRECIPITATION FROM YEAR TO YEAR</b></p> <p>More extreme floods and droughts everywhere</p>	<p>Variability in stream, lake, and riparian habitats</p> <p>Risk of aquatic and riparian species destruction</p> <p>Soil erosion, stream and lake sedimentation, and landslides</p>	<p>Uncertainty in water supply</p> <p>Uncertainty for reservoir operations</p> <p>Risk to aquatic habitat and water supply infrastructure</p>

Hear and see what Senator Sheldon Whitehouse from Rhode Island has to say about Climate Change in our area.



Videos: <http://www.whitehouse.senate.gov/news/video-audio>

Speech:

<http://www.whitehouse.senate.gov/news/speeches/climate-change-in-south-carolina-and-georgia>

# WET in the Classroom

Explore this topic with your students

## Study Climate Change through Project WET Activities:

**\*Hot Water, pg 388** (in the original Project WET White Guide)

Not everyone is convinced of the validity of climate change. Why not organize your students in a debate? Follow this activity to learn the process. *Try assigning the opposite viewpoint to particular students for a real challenge.*

**\*Back to the Future, pg 307** – After viewing maps, videos, and reading about climate change, students analyze stream flow by monitoring data to determine safe and beneficial locations for a growing community with this information in mind.

**\*High Water History, pg 321** – After damage costs are calculated, what are the real losses associated with a natural disaster like a flood or other weather events?

**\*My Water Address, Take Action!, pg 433** - Will you be ready for the next natural disaster?

**\*Macroinvertebrate Mayhem, pg 343** - How about making the environmental stressors drought, increased water volume, increased water temperature, and saltwater infusion? Lead a discussion on how the macros would be affected by these.

## For a richer experience add:

**\*ClimateChangeLIVE** distance learning adventure! The U.S. Forest Service and 26 federal and NGO partners bring climate learning to you through a series of webcasts, webinars, and online **climate education resources:** <http://climatechangelive.org/>

**Lesson Plans:** <http://climatechangelive.org/index.php?pid=180#2>

**\*A student's guide to global climate change:**

<http://www.epa.gov/climatestudents/basics/index.html>

**\*Downloadable, interactive climate change map:**

<http://www.mapcruzin.com/gis-news/mapping-effects-climate-change.htm>

**Maps showing Human Dynamics of Climate Change:**

[http://www.metoffice.gov.uk/media/pdf/j/k/HDCC\\_map.pdf](http://www.metoffice.gov.uk/media/pdf/j/k/HDCC_map.pdf)



Find more Climate Change links on our [website](#)



**Happy News!** Georgia students won big in the *River of Words* contest this year. We had 3 National Grand Prize Winners (from a total of 8!) and 11 National Finalists! Then we had our State Contest and selected an additional 41 art and poetry winners. Nearly 200 students, teachers, and family members showed up at our awards ceremony in Decatur in May. Their work will travel around the state visiting libraries and other institutions for a year.



See the winning entries and the tour schedule here:

[GAProjectWET.org/River\\_of\\_Words](http://GAProjectWET.org/River_of_Words)

**Get your students involved this year with  
a FREE Teacher's Kit!**

Email your request to [monica.kilpatrick@gaepd.org](mailto:monica.kilpatrick@gaepd.org)

[Downloadable guide](#) is also available.

To find more Project WET  
workshops visit  
[EEinGeorgia.org](http://EEinGeorgia.org)

[TOP](#)

**Contest entry DEADLINE is December 1!**



### **Standards Database**

Have you seen our searchable database for Standards? With it, all of the correlations are easy to access for WET 2.0 activities covering CCGPS, GPS, and National subject area standards. <http://gaprojectwet.org/search.asp>

### ***RiverXchange - Sharing and Learning Across Borders - an Invitation to all 4th - 6th Grade Teachers***

RiverXchange is a FREE, year-long water resources and writing program that integrates science, social studies, and 21st-Century skills through online wiki, pen-pal partnerships with a classroom in New Mexico. All lessons are correlated to U.S. Common Core Standards! Our hands-on curriculum is easy to implement. As part of the WWMC, we provide testing kits to classes and offer support to help teachers set up field trips.

We are looking for 2014-2015 teacher partners.

Contact Carolyn Gregory at: [carolyn@riverxchange.com](mailto:carolyn@riverxchange.com) or call (505) 450-5671

### **Save the Date!**

**The 2014 Outdoor Learning Symposium will be held October 3rd and 4th at the Chattahoochee Nature Center in Roswell, GA!**

[Program and registration details.](#)



Don't miss our presentation at OLS: **McSTrEaM -- Using Project WET with STEM learning + magic, reading, and the arts!**

**Get your complete WET Magic Kit for just \$10 when you join us!**

### **Shop at Kroger and earn Money for EEA**

We are excited to announce that EEA has become a member

of the Kroger Community Rewards Program! You can now support EEA just by shopping at Kroger and using your Kroger Plus Card. We can earn up to \$8000 per quarter with your help!

[Learn how to register your card for EEA](#)

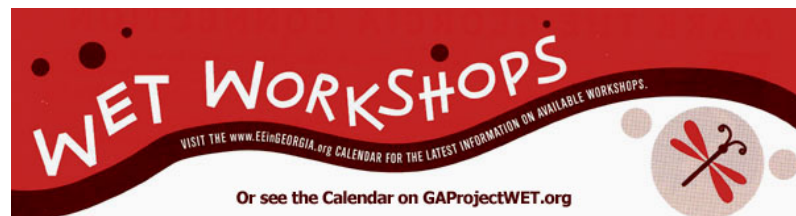
### **National Geographic Education Water Courses**

This fall, National Geographic Education brings two FREE online courses for Educators looking for content and resources on watersheds and water. Sign up for the courses to learn about environmental topics and explore strategies to implement environmental education in your classroom, as well as develop action plans for your teaching. These courses can be applied toward your professional development requirements.

**FLOW Education** - Sept. 17-Oct. 29, - for teachers of grades 4-9 to learn about watersheds and outdoor education using the Chesapeake Bay watershed as an example.

**Water: The Essential Resources** - Oct. 15-Dec. 17 - for teachers of grades 4-8 to learn about ocean and freshwater topics and teaching strategies.

Click [here](#) to find out more about these courses!



**Sign up now!**

#### **1) WET Educator Workshop**

September 6, 2014, 9 AM - 5 PM

Sandy Creek Nature Center, Athens

Contact [Kate Mowbray](#) for more information.

#### **2) Here is your chance to become a Project WET Facilitator!**

**Join us for a STEM-focused Facilitator Workshop**

October 23-24, 2014

Thursday 10 AM - 5 PM and Friday 9 AM - 5 PM

\$60, includes curriculum, materials, and lunches!

Phinizy Center for Water Sciences, Augusta

[More info and Registration](#)

#### **3) WET, WILD & PLT Educator Workshop**



Monday and Tuesday November 10 & 11, 2014  
Fortson 4-H Center, Hampton  
\$148 full registration includes meals and 2 nights lodging  
\$116 one night registration includes Monday lunch,

supper and lodging, Tues bkfst and lunch  
\$84 Days only lodging includes Mon & Tues lunch  
**Contact Alan Nasworthy at [anaswort@uga.edu](mailto:anaswort@uga.edu) to register**

Find more workshops on [EE in Georgia!](#)

**Stay active. The world needs you and water education.**

Georgia Project WET Facilitators and Educators

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