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Climate Change Education Highlighted on Earth Day

The National Park Service now has a service-wide public website on climate change! Produced by the Climate Change Response Program this website launched on April 22nd in conjunction with National Park Week and other Earth Day events. This site is dedicated to the climate science taking place in our parks, adapting our management practices in an era of uncertainty, and serving as an educational tool to increase science literacy. Check it out at: www.nps.gov/climatechange
Contact: Angie_Richman@nps.gov

The Park Facility Management Division's (PFMD) Sustainable Operations and Climate Change (SOCC) Branch partnered with Natural Resources Stewardship and Science (NRSS) to sponsor an Earth Day celebration at the Washington, DC Eye Street location. Eight programs from four different NPS Directorates participated in the event, which was attended by over 250 WASO staff. The many educational and interactive displays highlighted some of the most salient environmental issues confronting the Service. Attendees received environmentally responsible party favors and prizes such as compact fluorescent light bulbs, hand crank mini LED flashlights, reusable arrowhead logo bags, and "Spudware"- reusable utensils made from potato starch.
Contact: Julia_Corby@nps.gov

Also launched on Earth Day, the National Park Service's WebRanger program unveiled its first

climate science activity for kids! "Investigating Global Connections" is the first of three activities that will introduce young people to climate change and its potential impacts on their families, their neighborhoods, and their national parks through guided exploration. In this first activity, kids explore changes that are already occurring on Earth and draw conclusions about what could be driving those changes. These activities are an outgrowth of the Earth to Sky project, a National Park Service/NASA/US Fish and Wildlife Service partnership intended to provide field interpreters and, therefore, the public with NASA science related to our nation's public lands. Content for the activity was provided by NPS interpreters from around the country, NASA scientists and educators, and the USFWS image library. Media design was provided by d'Vinci Interactive. Check out this new activity at:

www.webrangers.us/activities/climate
Contact: Shannan_Marcak@nps.gov



Above: Current climate forecasts predict earlier wildflower bloom in higher elevations. This change could affect Mountain Thistles, like these in Sequoia-Kings Canyon National Parks. Photo courtesy Elliot Dale.

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NATIONAL PROGRAM UPDATES

Monthly Climate Change Webinar Series

2nd Thursday of every month
2:00 pm - 3:30 pm EDT

Next Webinar: May 13th, 2010

May's presentation will feature Dr. Peter Griffith, Director of NASA's Carbon Cycle and Ecosystems Office.

His presentation titled, "*The Carbon Cycle and Global Change: Bananas, Coal and You!*" will explore how vast amounts of carbon from the "old-slow" part of the carbon cycle are being put into the "young-fast" part of the carbon cycle. We know this is happening because we can observe human activities: burning ancient fossil fuels and burning old forests. Why does it matter? That's what this presentation will address, as CO₂ in the atmosphere "closes the window" that allows heat to escape from planet Earth. Dr. Griffith will guide us through the implications of this warming on our national parks.

Follow this link to register for this month's webinar:

<https://www1.gotomeeting.com/register/328151033>



Climate Change Response Program



Rebecca L. Beavers

The Climate Change Response Program is pleased to announce Rebecca Beavers on detail as the National Adaptation Coordinator for May and June 2010. Rebecca will continue

the adaptation efforts underway at the park level and with the DOI initiatives, especially the newly forming Landscape Conservation Cooperatives (LCCs). Since November 2000, Rebecca has served as the coastal geology coordinator for the National Park Service (NPS), where she is the NPS point of contact for sea-level change, coastal adaptation to climate change, and coastal geomorphology related issues.

SCC Projects Selected

The Climate Change Response Program saw an overwhelming response to our SCC call, which demonstrated the need for funding of climate change related projects. Out of 149 projects sub-

mitted, 17 will be funded this fiscal year. Projects were received from every region and covered a diverse array of topics. Parks and offices that will receive funding are: Yosemite NP, Yellowstone NP, Intermountain Regional Office, Biological Resource Management Division, Acadia NP, Alaska Regional Office, Wind Cave NP, Congaree NP, Shenandoah NP, Glacier NP, Pacificwest Regional Office, National Capital Regional Office, Assateague Island NS, Gulf Islands NS, Indiana Dunes NL, and Olympic NP.
Contact: Leigh_Welling@nps.gov

Steering Committee Meeting

The next NPS Climate Change Response Steering Committee meeting will be held July 13th-14th, in Fort Collins, CO. The committee will focus their discussion on moving forward from the Strategy document to the implementation plan. This plan will define short and long term actions the NPS will take to meet our mission in the face of climate change.

Contact: Melanie_Graham@nps.gov

Park Facility Management Division Update

Through ARRA money, SOCC funded specialists completed energy audits at Rocky Mountain NP, Yosemite NP, Grand Canyon NP, Cuyahoga Valley NP and Olympic NP in April and audits are scheduled at Denali NP and Mesa Verde NP in May. The influx of ARRA funds has helped NPS jump-start its energy conservation efforts by auditing the 50 largest consuming parks, and if funds remain, may reach an additional 70 parks. These audits will help park managers plan for and prioritize energy initiatives that will conserve natural and monetary resources.

The SOCC was also involved in the DOI Conference on the Environment, in both planning and presenting capacities. SOCC sponsored a training session and presentation on the Climate Leadership in Parks (CLIP) tool, in order to introduce the tool and its capabilities to NPS and DOI staff. SOCC also gave presentations about facilities adaptation to climate change and the NPS Green Parks Plan, which is currently under review.
Contact: Julia_Corby@nps.gov



Climate Friendly Parks Update

On April 13th and 14th, Crater Lake NP hosted five other parks in the Klamath Network for a Climate Friendly Parks (CFP) workshop. During the two day event, over fifty staff from Lassen Volcanic NP, Oregon Caves NM, Whiskeytown NRA, Lava Beds NM, Redwood National and State Parks and Crater lake NP learned about the impacts of climate change on their network parks and collaborated across divisions within their respective parks to formulate draft climate action plans.

CFP workshops offer a unique opportunity for NPS staff from a broad cross-section of the agency to work together towards a common goal. Park staff learn from each other during ten-minute park-specific presentations about sustainability initiatives already underway in network parks, and

brainstorm with their peers to find solutions for their own parks.

The Klamath Network workshop is the penultimate workshop of five scheduled Pacific West Region CFP workshops. Thirty-seven parks are now in the action planning process—the final milestone before CFP membership. After the upcoming Haleakala workshop, when all parks have completed their action plans, the Pacific West Region will have over fifty CFP Member parks, tripling the program's number from the beginning of FY2010. For more information, go to: <http://www.nps.gov/climatefriendlyparks>
Contact: Julia_Corby@nps.gov

NATIONAL PROGRAM UPDATES

Workshop Summaries

Adapting to Climate Change in National Forests: A Workshop for Resource Managers

A USFS workshop in Stevenson, WA held on April 19th-21st explored tools and decision support for adapting to climate change. An overview was given of a draft guidebook for climate change adaptation options based on four case studies that explore strategies at the landscape scale. Cat Hawkins Hoffman presented results from collaborative landscape adaptation efforts on the Olympic Peninsula and Leigh Welling led a session on exploring climate change futures with scenario planning. There was also an opportunity for workshop participants to give recommendations to USFS leaders as they work to organize the agency's response to climate change. Contact: Leigh_Welling@nps.gov

Climate Change at the DOI Conference on the Environment

Hosted by the National Park Service on April 26th-30th in Portland, OR, this conference provided a forum for Interior staff, stakeholders from other agencies, commercial and non-profit exhibitors to meet and exchange information on a wide variety of topics. Climate change discussions surrounded calculating and reducing federal GHG emissions (including GSA and NPS inventory tools), paleoclimate data, forecasting and downscaling models, NEPA compliance, and interagency efforts towards restoration, mitigation, and adaptation.

Geologic Resources Division and Climate Change

Soils store carbon and are one of the principle carbon "sinks" of the planet. They can thus play a role in carbon sequestration, or if mistreated, soils can release carbon back into the atmosphere. Understanding the role that soils play in climate change is a project of the Natural Resource Program Center's Geologic Resources Division (GRD).

The GRD Soils Program is developing geospatial datasets, map products, and factsheets regarding soil carbon, moisture, and temperature based upon data contained in the NPS Inventory and Monitoring Soil Resources Inventory. These products provide park specific overviews on the genesis, morphology, and distribution of soil characteristics and can help educate park staff and the public on the important role soils play in storing soil carbon and minimizing the potential impacts from global warming.

To assist in this effort, the NPS is working with the USDA Natural Resources Conservation Service's National Soil Survey Laboratory to utilize new technology for the rapid assessment of soil carbon

Julie Thomas McNamee discussed the current state of the NPS CLIP tool for calculating GHG emissions inventories in parks. For more information or conference proceedings, go to: <http://www.doiconferenceonenvironment.com> Contact: Julie_Thomas_McNamee@nps.gov

Arid Lands Monitoring Workshop

The I&M Program cooperating with the Sonoran Institute sponsored the workshop "Monitoring Ecological Response to Climate Change in Arid-lands Park Units of the Desert Landscape Conservation Cooperative," in Tucson, AZ the week of April 5th. Meeting participants included representatives from FWS, USGS, BLM, USFS, local governments, and NGOs. The goal of the workshop was to engage parks, I&M Networks, and key partners in obtaining critical input for developing multi-year strategies for long-term monitoring of ecological response to climate change relevant to park management within the Sonoran, Chihuahuan, and Mojave Desert I&M Networks. Final products of the workshop included a set of criteria for prioritizing climate response monitoring variables, and a preliminary prioritization of long-term monitoring projects for climate change response. For more information or conference proceedings, go to: <http://www.southwestlearning.org/getinvolved/outreach/workshops/climate/aridlands>

in parks using diffuse reflectance visible-near infrared (VNIR) spectrometers. The VNIR units are portable, and can collect information on soil properties quickly in the field and enable us to evaluate and track the capacity of soils to sequester carbon. Contact: Pete_Biggam@nps.gov



Upcoming Workshops & Meetings

The second of two workshops hosted by I&M this spring focusing on monitoring ecological response to climate change in High Elevation Parks will take place in Bozeman, MT on May 4-6, 2010.

http://www.greateryellowstonescience.org/CC_workshops

MTNCLIM Mountain Climate Research Conference will take place in Blue River, OR on June 7-10, 2010.

<http://www.fs.fed.us/psw/mtnclim>

The USGS and the Florida Fish and Wildlife Conservation Commission will host a free Webinar Short Course on Adaptive Management of Natural Resources on June 7-11, 2010.

<http://www.fort.usgs.gov/brd-science/AdaptiveManagement-Course.htm>

Oregon Climate Change Research Institute will host "The Pacific Northwest Climate Science Conference," in Portland, OR on June 15-16, 2010.

<http://occri.net/>

The Ecological Society of America hosts its 95th annual meeting, "Global Warming: The legacy of our past, the challenge for our future," in Pittsburgh, PA on August 1-6, 2010.

<http://www.esa.org/pittsburgh/>

Greater Yellowstone Climate Change Workshop will be held at Mammoth Hot Springs Hotel, Yellowstone NP on October 11-13, 2010.

Glenn_Plumb@nps.gov

HAPPENING IN THE PARKS

Useful Resources Related to Climate Change

Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Era of Rapid Change, by David N Cole and Laurie Yung



Check out the results of the recent DOI "green challenge" survey to see the top 10 ideas on how DOI can conserve energy. <http://www.whitehouse.gov/sites/default/files/20100217-greengov-final-report.pdf>

A great article from Orion Magazine titled, "The Big Talk; How to tell a six year old where all the birds and bees have gone," explores how to talk to children about climate change. Available at: <http://www.orionmagazine.org/index.php/articles/article/3229/>

The USGS National Climate Change and Wildlife Science Center (NCCWSC) has a new website addressing the significant effects on our nation's fish and wildlife resources due to climate change. <http://nccw.usgs.gov/>

More Information

This newsletter is a monthly forum to share the latest news relating to NPS efforts to manage our parks in a changing climate.

Leigh Welling - Coordinator Climate Change Response Program
Leigh_Welling@nps.gov

Comments, Submissions:
Angie_Richman@nps.gov

Santa Monica Mountains National Recreation Area

New Student Intern Center to be First 'Net-Zero' Facility in the National Park System: A Recovery Act Project

The Diamond X Ranch Student Dormitory at Santa Monica Mountains NRA will be completed in June 2010 and will be the first newly-constructed facility in the national park system to meet the NPS 'net zero' standard, which is required for all new government buildings beginning in 2020. To eliminate the project's carbon footprint, avoid impacts to climate change, and achieve a high level of energy efficiency, numerous sustainability features were integrated into the \$2.1M design-build project. Site location, building orientation, roof design, a 36 kW photovoltaic system, no incandescent lamps, a geo-exchange heat pump system, solar hot water heating, extensive daylighting, natural ventilation, window shading, minimal outdoor lighting, and selected landscape features all

minimize the use of energy to strategically move this building towards meeting a significant NPS 'net zero' first, 10 years ahead of schedule. Contact: Kim_Park@nps.gov



Intern Center under construction - April 2010. Photo courtesy of Kim Park.

Everglades and Dry Tortugas National Parks

Janice Holly Lynch of Everglades and Dry Tortugas National Parks facilitated two sessions on topics concerning the Environment and Climate Change at the Clinton Global Initiative University held at the University of Miami, in Coral Gables, Florida. The CGI U challenges college students and universities to address global problems with practical, innovative solutions. Various plenary and workgroup sessions were held over April 16th

18th to discuss the world's challenges with leaders in their field and develop action plans that can be taken to solve them. As a result more than 1,400 students have submitted project proposals this year and have made commitments to action. For more information, go to:

<http://www.clintonglobalinitiative.org>
Contact: Janice_Lynch@nps.gov

Everglades National Park



In 2009, the South Florida Natural Resources Center of Everglades National Park released a literature synthesis entitled *Potential Ecological Consequences of Climate Change in South Florida and the Everglades*. Prepared in partnership with the University of Florida, the

report highlights current climate change science of importance to the diverse ecosystems of south Florida, with a particular focus on the Everglades. Spurred by known changes documented by the Intergovernmental Panel on Climate Change, the report was written to highlight areas of management concern and illuminate potential adaptations to future changes. Recognizing and anticipating the potential implications of a changing climate is of crucial importance amidst ambitious efforts to restore this vast wetland of global importance. For more information, go to: <http://www.nps.gov/ever/naturescience/featuredpublication.htm>

Educational Podcast from Everglades NP

Through the Earth to Sky partnership between NASA and the NPS, interpreters at Everglades NP developed a climate change podcast addressing the work park scientists are conducting to understand how unique ecological systems, such as the mangrove swamps, help remove carbon dioxide from the atmosphere. To listen to this podcast, go to: <http://www.earthtosky.org/blog.html>



Treetop CO₂ collection tower used to understand the complex relationship between our changing climate and the park's mangrove swamps. Photo courtesy of Larry Perez.