

# Engaging a Climate Ready Agency

*From Dave Cleaves, Forest Service Climate Change Advisor*



APRIL 26, 2011

We hope that everyone had a great Earth Day! These updates are intended to share the details of Forest Service activities that are linked to climate change as we all work to bring climate change knowledge into our organizational expectations and actions. Please continue to share the details of your climate change related research, management activities, and communications so that we can learn from each other as we work to connect the strong fibers of this vast organization. (See submission details in the last section of this update.)

If you want to make sure that you continue to receive these updates, please sign up for our climate change [listserv](#)—we'll send an email to announce when a new update is available on the [Climate Change Advisor's website](#). You can also direct partners to this website so they can sign up for the listserv. (It's not the kind of listserv that will flood you with tons of email.) Previous editions of the updates are also posted on the website.

## MESSAGE FROM DAVE

### Preliminary Scorecard Responses Are In

In February, the Chief asked each National Forest and Grassland to complete an assessment using the Climate Change Scorecard. The Scorecard is designed to ensure a balanced approach to integrating climate change considerations into our programs and initiatives, so that we might continue to fulfill our mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands. The preliminary assessments are in and we have been reviewing the responses. Although there was a very short time frame to complete the assessments, the National Forests and Grasslands, with help from the Regional climate change coordinators, did a great job describing their climate change efforts. We also learned a lot from them about how we can improve the process for the FY2011 and future assessments.

The Scorecard consists of ten elements in four dimensions: organizational capacity, engagement, adaptation, and mitigation. We asked the units to evaluate themselves on each element using the preliminary guidance and to provide a narrative for each element describing their accomplishments. We also asked the units to provide feedback on the guidance. We can see from the narratives that there were some differences in the ways in which the questions and the minimum requirements for a "yes" answer were interpreted. We will clarify these issues as we revise the guidance, and we expect that this will result in some units changing answers for the year-end assessment. In the meantime, we suspect that you're curious about the responses to this preliminary assessment, so here are some highlights from what was reported.

The most common overall score was three "yes" answers, and the three elements that got the most "yes" answers were about climate change coordinators, science and management partnerships, and external partnerships. Almost all units have appointed a climate change coordinator (Element 2), an exciting development that greatly expands our network of climate change leaders and increases our capacity to get the work done. Our partnerships are another strength; 55 percent of units report active participation in partnerships with the science community to improve their ability to respond to

climate change (Element 4), and 45 percent report that they have external partnerships that improve their capability in climate change-related activities (Element 5). We are also making strides forward in sustainable operations; 40 percent of units reported that they are making progress toward reducing energy, emissions, water, and other environmental footprints (Element 10).

Important next steps include providing employees with training on climate change so that each of us has a better understanding of the potential contributions of our own work to climate change response (Element 1). We will also need to better integrate climate change activities into unit-level operations (Element 3). This will necessitate assessing the vulnerability of forest and grassland resources to the impacts of climate change (Element 6) and carbon assessments to determine carbon stocks and flows on the land (Element 9). With vulnerability knowledge in hand, we can develop strategies to adapt to projected climate changes (Element 7). We will also want to be sure we are monitoring the changing conditions of species, watersheds, and forest and grassland health, as well as the effectiveness of our treatment programs (Element 8).

It is essential that we continue to find areas of alignment for the Scorecard elements with current initiatives and ways to work collaboratively on climate change response, both within our own agency and with external partners. To that end, we recently brought the Regional climate change coordinators together with staff from several program areas of the WO to discuss the Planning Rule, Watershed Condition Framework, and Cohesive Fire Strategy. The group also met with partners from the Council on Environmental Quality and the Department of the Interior, including the Bureau of Land Management, Fish and Wildlife Service, National Park Service, and US Geological Survey. We brainstormed about key actions for advancing collaborative efforts to address climate change and its impacts at appropriate geographic and organizational scales. We also discussed how Research and Development can best support Scorecard-related activities. Finally, our three working groups—Adaptation, Mitigation, and Engagement—had break-out sessions to move forward on proposed actions.

At this meeting, we also spent a full day reviewing the preliminary assessments and getting feedback from the Regional climate change coordinators regarding your thoughts, critiques, and suggestions on the Scorecard. We heard about your enthusiasm and your need for support for vulnerability assessments, adaptation strategies, and carbon assessments. We also heard your desire for a nationally developed climate change education program. In response, we are currently developing a support package to aid in the implementation and integration of the Scorecard elements so that, by 2015, each Forest and Grassland can report “yes” to at least seven of the elements, without undue burden to the units.

We are excited by your enthusiasm to become a more climate ready agency and are looking forward to continuing this dialogue and moving this work forward. Thank you for all that you do.

## HIGHLIGHTS FROM THE SCORECARD

*This month kicks off a new section of our climate change update in which we highlight some of the great work already happening throughout the agency. Each month we'll feature the accomplishments of a National Forest or Grassland on one of the Climate Change Scorecard elements.*

### **Element 1 – Employee Education**

The **Santa Fe and Carson National Forests** (R3) held a five-day Climate Change Conference in January

2011. About forty Santa Fe and fifty Carson National Forest employees attended at least one day of the conference. The first day of the conference was a general education session that covered topics including global and local climate trends, climate change adaptation, agency perspectives, and social aspects in Northern New Mexico. The following four days focused specifically on how climate change would affect management and resources related to fire and water on both forests. During the workshop there were abundant opportunities for land managers and other attendees to have informal conversations and discussions with each other, invited scientists, and various cooperating agencies in attendance. Please contact Jennifer Cramer, Climate Change Coordinator on the Santa Fe National Forest ([jennifercramer@fs.fed.us](mailto:jennifercramer@fs.fed.us)), for more information.

The **Chippewa National Forest** (R9) held a Climate Change Workshop for all employees in February 2011. Eighty-five employees from all units attended. Researchers from the Northern Research Station introduced the audience to the topics of climate change, implications for forest and aquatic ecosystems, and considerations in forest management and silviculture. Breakout groups allowed employees to discuss the implications for their work. Powerpoint presentations for this workshop can be found on the [Region 9 intranet site](#). Please contact Donald Rees, Climate Change Coordinator on the Chippewa National Forest ([djrees@fs.fed.us](mailto:djrees@fs.fed.us)), for more information.

This workshop was one of several outreach activities developed as part of the Training in Advanced Climate Change Topics (TACCT) course. Maria Janowiak ([mjanowiak02@fs.fed.us](mailto:mjanowiak02@fs.fed.us)) and Leslie Brandt ([lbrandt@fs.fed.us](mailto:lbrandt@fs.fed.us)) of the Northern Institute of Applied Climate Science can be contacted for more information about TACCT.

## FROM THE WASHINGTON OFFICE

### State of Environmental Justice in America

Dave Cleaves will present Social Vulnerability to Climate Change Impacts – Engaging Underserved Communities at the [2011 State of Environmental Justice in America conference](#) April 27-29 in Washington, DC. The conference is sponsored by USDA, EPA, Departments of Interior and Energy, Howard University Law School, and the National Small Town Alliance.

### Communicating and Teaching about Climate Change

Dr. Safiya Samman, Director of Conservation Education, and Vicki Arthur, Conservation Education Specialist, gave presentations on the process of science and the [Natural Inquirer](#) at the annual conference of the National Science Teacher Association sponsored by EPA, NOAA, and the Forest Service in March. This [climate change education symposium](#) was the third in a series for professional development of educators in an effort to bring tools, resources, and climate change science to youth. Scientists and education specialists presented information about how to address climate change science and impacts, common misconceptions about climate, the processes of science, and controversial issues in the classroom. Participants were provided with resources and classroom activities that highlight the choices we face in response to climate change and the development of climate-literate citizens. A follow-up webinar, [Climate Change Research at the USDA Forest Service: What we have learned over the last 20 years](#), on May 4 (open to all) features Safiya Samman, Carlos Rodriguez Franco, and Vicki Arthur.

### Forests, Carbon, Climate, and Fire

Forest Service Climate Change Advisor Dave Cleaves and others spoke at the Managing the Planet dialogue on forests, carbon, climate, and fire developed by George Mason University and the

Woodrow Wilson International Center for Scholars. Forest managers are facing unprecedented challenges as they plan and manage for climate change. Experience with changing fire regimes over the last decade or so have highlighted the natural, social, and financial burden associated with increased fire. Dave addressed how these challenges are being addressed at the federal level and provided insights on approaches to climate change adaptation, risk management, and the budgetary and other impacts of increasing fire activity. A video of the event including Dave's talk is available online [here](#).

## FROM THE FIELD

### National Workshop on Climate and Forests

The May 2011 workshop in Flagstaff, AZ is designed to increase understanding of adaptation and mitigation options; make planning tools accessible and useful; and foster science-management partnerships to generate the best management decisions. An afternoon field trip explores the Four Forests Restoration Initiative and sites of ponderosa pine ecosystem restoration, aspen decline, wildfire, and pinyon pine bark beetle mortality. [Registration](#) is now open for this workshop sponsored by the Forest Service, National Institute of Food and Agriculture, Arizona Cooperative Extension, Society of American Foresters, Association of Natural Resource Extension Professionals, University of Arizona, and Northern Arizona University.

### Sea Eagles as Biosentinels

RMRS Research Wildlife Biologist [Teryl Grubb](#) helped organize a recent meeting of the international Sea Eagle Climate Change Working Group (SECCWG). The event, held at Clemson University in South Carolina, included researchers from 4 continents and 7 countries discussing the role of sea eagles (a group that includes bald eagles) from around the world as biosentinels, or monitors and predictors, for climate change. The long-range goal is to identify the effects of climate change on individual populations of sea eagles and use them to better anticipate the global impacts of climate change on both natural resources and humans. Researchers from at least 25 countries are collaborating on the global biosentinel project. Read more in the Clemson University [news release](#).

### Legacy Roads and Trails Accomplishments in the Pacific Northwest Region

Restoration of healthy, resilient watersheds is just one of the many current management actions on our National Forests that address climate change. On the Mt. Hood National Forest in Oregon, the Sandy River Partnership worked collaboratively to identify, prioritize, plan, and complete restoration work in the Sandy River Basin. A strategic Watershed Action Plan guided the work that benefits an array of fish species and ensures continued high-quality water and fish habitat. In FY2009, 30 miles of roads were decommissioned/closed with Legacy Roads and Trails funding and included the removal of 230 culverts, reconstruction of stream channels at road crossings, and reconnection of side channels. Monitoring was supported by students from Portland area schools.

### RMRS scientist selected to attend the National Centres of Competence in Research (NCCR) climate summer school

RMRS Lead Spatial Analyst Jessica Haas has received a ThinkSwiss Grant to attend the climate summer school of the NCCR, a division of the Swiss National Science Foundation. The school in Switzerland invites young researchers to study climate and climate impact research issues. The topics covered will include ecological implications of climate change and weather extremes, ecosystem services and

climate change, food security, and global land and water use in a changing climate. Jessica will be blogging her experiences on the [NCCR website](#).

## OTHER EVENTS AND OPPORTUNITIES

### Safeguarding Wildlife from Climate Change Webinar

Biodiversity is threatened by climate change, and conservationists urgently require a way to prioritize strategic land conservation. This April 27 [webinar](#), sponsored by FWS and NWF, demonstrates an approach which asserts that, rather than protecting one species at a time, the key is to protect the ultimate drivers of biodiversity. Results suggest that protecting geophysical settings will conserve the stage for current and future biodiversity.

### Climate Change: Indigenous Peoples and Adaptation Symposium

Discuss the issues of climate change and the impacts, both potential and real, affecting indigenous peoples in the northern hemisphere including the United States, Canada, and Norway on April 30 in Missoula, MT. The [symposium](#) will also explore the issues of adaptation from Native American cultural perspectives.

### Communicating Climate Change

The FWS National Conservation Training Center will hold a [September 2011 workshop](#) to present accurate up-to-date science and effective communication techniques in order to train interpreters, public affairs officers, and other federal agency employees to communicate climate change to a public audience.

## CLIMATE CHANGE RESOURCE CENTER (CCRC)

### Climate Change Education Materials

When searching for educational material on climate change that can be used in a group-learning session to help spark discussion, or that can be used individually as a self-paced unit, please consider the CCRC's collection of video-based courseware (<http://www.fs.fed.us/ccrc/video/>). This video library features original presentations by scientists on a variety of timely issues including climate change adaptation, climate change impacts on forests and aquatic ecosystems, case studies from National Forests, and much more. Online resources that enable remote learning have the advantage of being inexpensive, and flexible in accommodating the busy schedules of many professionals. The CCRC's video lecture library is continually growing, so please stay tuned for future updates. Let us know if you have specific topics you'd like to see covered by sending a message to [ccrc@fs.fed.us](mailto:ccrc@fs.fed.us).

## PATENT PROGRAM

*The Forest Service [Patent Program](#) helps scientists transition their research into the marketplace. Several FS inventions have been developed to more efficiently and more accurately collect climate change data. The inventions have been patented and are available for further cooperative research and/or licensing. This is the second in a series highlighting these inventions.*

### Measuring the density and cross-section morphology of tree rings

Tree ring morphology can provide scientists invaluable information relating to the effects of

environmental conditions on tree growth and vigor. In regard to global climate change, there is considerable interest in the rate at which trees sequester carbon or function as carbon sinks. Conventional methods to analyze the anatomical properties of wood, such as infrared spectroscopy, X-ray, and others, have only limited success because of cost and their poor ability to measure properties of suppressed growth rings. These very narrow rings result when tree growth is limited by environmental factors such as drought, low sunlight, over stocking, etc. A new device, called the Ring Profiler, has recently been developed by Forest Service scientists JunYong Zhu, David Vahey, and Tim Scott to measure the cross-sectional properties of tracheids, elongated wood cells, within growth rings. This device uses an optical imaging technique that captures magnified images of a wood sample. The inventors have successfully used these methods to quantify the growth characteristics of several wood species and to resolve the irregular shape and wall thicknesses found within the very narrow growth rings of suppressed growth trees.

This patent application has been allowed and will issue shortly. The inventors are looking for an industrial cooperator to collaborate on further development of the instrument and/or licensing of the technology. Click here to view their [patent](#).

## RECOMMENDED READING

### **Carbon stocks on forestland of the United States, with emphasis on USDA Forest Service ownership**

*Heath, L. S., J. E. Smith, C. W. Woodall, D. L. Azuma, and K. L. Waddell*

This [study](#) presents methods and results of estimating current forest carbon stocks and change in the United States for public and private owners, consistent with the official 2010 U.S. greenhouse gas inventory, but with improved data sources for three states. Results are presented by NFS region with tables in the appendix showing results by individual national forests. USFS forestland in the United States is estimated to contain an average of 192 Mg C/ha (megagrams carbon per hectare) on 60.4 million ha, for a total of 11,604 Tg C (teragrams carbon) in the year 2005. Privately-owned forestland averages 150 Mg C/ha on 173.8 million ha, with forestland of other public owners averaging 169 Mg C/ha on 43.1 million ha. In terms of change, private and USFS ownerships each sequester about a net 150 Tg CO<sub>2</sub>/yr, but an additional 92 Tg CO<sub>2</sub>/yr is stored in products from private harvests compared to about 3 Tg CO<sub>2</sub>/yr from harvest on USFS land.

### **Climate change and forest diseases**

*Sturrock, R. N., S. J. Frankel, A. V. Brown, P. E. Hennon, J. T. Kliejunas, K. J. Lewis, J. J. Worrall, and A. J. Woods*

This [paper](#) reviews knowledge of relationships between climate variables and several forest diseases, as well as current evidence of how climate, host and pathogen interactions are responding or might respond to climate change. Four types of forest and disease management tactics – monitoring, forecasting, planning and mitigation – are discussed. Case studies of yellow-cedar decline and sudden aspen decline illustrate how forest diseases might be managed in the face of climate change. The uncertainties inherent to climate change effects can be diminished by conducting research, assessing risks, and linking results to forest policy, planning, and decision making.

### **Woody biomass for bioenergy and biofuels in the United States—a briefing paper.**

*White, Eric*

This report ([PNW-GTR-825](#)) summarizes some of the existing knowledge and literature on the

production of woody biomass from bioenergy. The most commonly discussed feedstocks are described along with the results of economic modeling studies related to short-rotation woody crops, harvest residues, and hazardous-fuel reduction efforts. Additionally, the existing social science literature is used to highlight some challenges to widespread production of biomass energy.

### **Effects of climate change on natural resources and communities: a compendium of briefing papers.**

*Alig, Ralph J., tech. coord.*

This 2011 publication ([PNW-GTR-837](#)) addresses effects of climate change on wildlife habitat, other ecosystem services, and land values; socioeconomic impacts of climate change on rural communities; and competitiveness of carbon offset projects on nonindustrial private forests in the U.S. Potential social impacts of climate change are discussed in terms of health effects on rural communities and sensitivity of indigenous communities. Potential economic impacts on rural communities are discussed for agriculture, forestry, recreation and tourism, fisheries, water resources, and energy.

## **LINKS**

### **Statewide Forest Resource Assessments and Strategies**

The 2008 Farm Bill requires each state to complete a Statewide Forest Resource Assessment and Strategy. The Assessments provide an analysis of forest conditions and trends in the state and delineate priority rural and urban forest landscape areas and issues. The Resource Strategies provide long-term plans for investing state, federal, and other resources to where it can most effectively stimulate or leverage desired action and engage multiple partners. The [National Association of State Foresters website](#) provides more information and a link to each state's assessment and strategy. Additionally, a summary of Northeastern Area state assessments is available on the [NAASF Forest Resource Planning Committee website](#). (Click on "State Forest Resource Assessments & Strategies and Regional Summary.")

### **Climate Change Papers and Syntheses**

To aid USDA policy makers, the Forest Service has asked researchers to help develop information to respond to and/or analyze the economic consequences of policy options and better understand the role of forests and agriculture in mitigating climate change. The papers and syntheses on [this website](#) pertain to the effects of climate change on the forest sector and the potential role of the sector in climate change mitigation.

## **SUBMISSIONS**

Please send your submissions on Forest Service climate change related activities to Cathy Dowd: [cdowd@fs.fed.us](mailto:cdowd@fs.fed.us). It's most helpful to have a short description with a web link to more information.

Contact information for the Climate Change Advisor's Office is on our [Intranet](#) site. Here you will also find materials like the National Roadmap for Responding to Climate Change, the Performance Scorecard, and Scorecard guidance.