Engaging a Climate Ready Agency

From Dave Cleaves, Forest Service Climate Change Advisor

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Happy Halloween! You've long suspected, and we can now confirm, that the WO is filled with zombies and vampires, but our cold hearts can be warmed by an email from you. Share the details of climate change related research, management activities, and communications in the Forest Service with us (see submission details in the last section of this update), and we'll spread the news through these updates. This will help us learn from each other as we all work to bring climate change knowledge into our organizational expectations and actions.

Don't miss an issue! Sign up for our climate change listserv and we'll send emails 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

Results of the Scorecard 2011 Baseline Assessment

The National Forests and Grasslands recently completed their 2011 baseline assessment using the Climate Change Performance Scorecard. The responses provide us with a rich source of information about how climate change considerations have already been incorporated into our programs and initiatives. Over the next few months, we will be reviewing the results and producing a number of reports in order to share the stories told in the narratives. Totaling up the yes and no answers is quite a bit easier so we've got those numbers to share with you already.

Of the 113 administrative units, 18 units reported that they have already achieved the target of 7/10 yes answers. Additionally, 35 more units have nearly met the target with 5 to 6 yes answers. The majority of units (89 percent) have appointed a climate change coordinator and are able to provide them with the training, time, and resources to fulfill this responsibility. One of our other strong points involves partnerships for responding to climate change: 78 percent of units report that they have developed science management partnerships and 60 percent report that they have incorporated climate change considerations and activities into other partnerships. The majority of units (68 percent) are also making progress toward mitigation targets through sustainable operations. Many units (46 percent) report conducting management actions that reduce the vulnerability of resources to climate change, and 24 percent conduct monitoring to track climate change impacts and the effectiveness of adaptation actions. Employee education on climate change has been provided by 29 percent of units. Fewer units have assessed vulnerability of key resources to climate change (21 percent), incorporated climate change into their program guidance (16 percent), or developed carbon assessments (15 percent).

We can be proud of what we've achieved so far, but we've got a ways to go in many areas and we know it will be difficult in this budget climate. We in the Climate Change Advisor's Office are committed to helping units achieve total success on the Scorecard in the most cost efficient ways possible. We know that some of our land managers' needs can be met through guidance from national programs, regional offices, and our science partners and we'll be pulling that together over the next several months. We know that other needs will require more time and money so we're

looking at the best practices reported on Scorecards or used by other agencies in order to ensure that we spend our time and money wisely. We are extremely grateful to regional and forest climate change coordinators who are working together and with us to find the most affordable and effective ways to meet our needs while still providing field units with the flexibility to develop different approaches for different places. We encourage all of you to let us know what's working or not, what we're missing, and what new things you're learning that you want to share with others.

FROM THE FIELD

Regional Forester Climate Change Presentation in Angola

Harv Forsgren, R4 Regional Forester, presented a Land Manager's Perspective on Climate Change at the 2011 Angola Climate Change Adaptation Workshop in Angola in September. The workshop was jointly hosted by Angola, FS International Programs, and USAID to provide Angola with concrete examples, activities, and tools that will help finalize and guide implementation of their climate change adaptation plan and establish relationships between Forest Service participants and Angolan government officials that will facilitate ongoing interaction and assistance. Additional participants from African and European countries represented government, non-governmental international assistance organizations, and academia. Harv's presentation will soon be available on the WO Climate Change intranet site.

Sustainable Operations Peer Learning Series

The Sustainable Operations Western Collective's Scorecard Element 10 and Implementation Teams will provide monthly webinars to support Units in "Getting to YES" on Element 10. These 90-minute webinars will be held the 1st Wednesday of each month at 10 am PT/1 pm ET starting November 2, 2011. The target audience includes Climate Change Unit Coordinators, Forest Green Team members, Forest Energy Managers, Forest Engineers, and others with an interest in, or passion for, "greening" Agency business operations. Webinars will be closed-captioned and recorded for on-demand viewing. The schedule of webinars will soon be posted on the WO Climate Change intranet site. Connect to the webinar at https://www.mymeetings.com/nc/join/ using conference number PW8613456, and phone 888-950-5929 using passcode 3264210.

Climate Change Exhibit and Presentation at the Northern Great Lakes Visitor Center

The Northern Institute of Applied Climate Science (NIACS) and the Chequamegon-Nicolet National Forest are among the hosts for the public presentation "Wisconsin's Climate: Keeping Pace with Change" in Ashland, WI on November 2. An exhibit called "Climate Change in the Great Lakes" will also be on display. Three panels call attention to the greenhouse effect, climate change impacts in the Great Lakes region, and Forest Service Initiatives to respond to climate change. Funding for these panels was provided by NIACS. These panels are available on short-term loan for educational use and outreach events through Patricia Butler, prbutler@fs.fed.us. The presentation and traveling exhibit are designed to complement the newest exhibit at the visitor center "Changing Climate, Changing Culture," which features the potential social impacts of climate change on the Ojibwe culture as well as the regional effects on the Great Lakes States region and all people who reside in this area.

Lessons on Climate Change

Bill Jackson and Melanie Pitrolo from the National Forests of North Carolina created the first in a series of presentations (slides and audio) to help their forests fulfill Scorecard education

requirements. Lesson 1, Introduction to Earth's Climate, covers the factors that influence climate and some of the impacts of climate change.

TACCIMO, Now New and Improved

The Template for Assessing Climate Change Impacts and Management Options (TACCIMO) was recently updated. TACCIMO 2.2 supports western regions and has improved literature search and reports features. Thanks to help from the Western Wildland Threat Assessment Center, literature and geospatial content is now available and expanding for much of the west. Literature had also been reorganized to improve clarity and updates are occurring more frequently. Training videos are available and live webinars are planned (topic suggestions are welcome at etreasure@fs.fed.us).

RMRS Climate Change Research Accomplishments

RMRS has a new brochure that showcases recent RMRS accomplishments resulting from research funded in FY2010 with targeted climate change appropriations. RMRS also has a robust base program of research that addresses how changing climates impact ecosystems, wildlife, watersheds, and disturbance regimes. Research accomplishments in the brochure are organized by the Forest Service Climate Change Scorecard Dimensions: Organizational Capacity and Engagement, Adaptation, and Mitigation and Sustainable Consumption.

West-Wide Climate Change GeoBrowser

The Western Wildland Environmental Threat Assessment Center (WWETAC), a unit of the PNW Research Station, has developed a suite of mapping tools to facilitate wildland threat assessments. The West-Wide Climate Change GeoBrowser is a web browser mapping system that displays downscaled climate change data generated by the Climate Impacts Group at the University of Washington with funding from FS Regions 1 and 6, FWS, and the RMRS Boise Aquatic Sciences Lab. These data are intended for regional planning and assessments and currently cover the Columbia, Upper Missouri and Colorado River Basins and the Great Basin. California watersheds are expected to be added in FY 2012.This GeoBrowser depicts projected changes from historical (1916-2000) conditions to the mid-century (2030-2059) period for two different models (MIROC3.2 and PCM1) and an ensemble of 10 models. In addition to this GeoBrowser, WWETAC has also developed other threat assessment mapping tools and search utilities, including the Threat News Explorer which retrieves media articles pertaining to user-identified threat keywords (e.g. bark beetles, climate change, fire). More information on these and other geospatial tools is on the WWETAC website or contact Alan Ager, aager@fs.fed.us or Charlie Schrader-Patton at cschrader@fs.fed.us.

Humans, Climate, and Fire in New Mexico

Rachel Loehman and Robert Keane of RMRS are part of a University of Arizona-led interdisciplinary team of ecologists, dendrochronologists, and anthropologists who will examine interactions of humans, climate, and fire in the Jemez Mountains of Northern New Mexico. The 4-year grant, titled "Long-term Vulnerability and Resilience of Coupled Human-Nature Ecosystems to Fire Regime and Climate Changes at an Ancient Wildland Urban Interface," was awarded by the National Science Foundation. The project aims to increase understanding of long-term, landscape-scale dynamics of human societies, forests, and climate, to inform sustainable management of forests across the American West and elsewhere.

Climate Change Atlas Workshops

On September 19 and 20, NRS scientists joined with extension specialists at Cornell University to offer three web-based workshops on the use of the Climate Change Atlas. The Atlas, developed by Louis Iverson, Anantha Prasad, Steve Matthews, and Matt Peters of NRS, contains information about current and potential future habitat for 134 tree species and 147 bird species. The workshops helped more than 100 participants learn to make effective use of the Atlas for their own analysis and adaptation planning, and for educating landowners and the public. Targeted audiences included natural resource professionals and extension educators.

Climate Change in the Great Plains

RMRS and the Rocky Mountain Region hosted the Climate Change in the Great Plains webinar in August to present science findings on climate change for grassland and rangeland managers. Speakers included Deborah Finch, Linda Joyce, Megan Friggens, and Matt Reeves from RMRS, Richard Periman from Region 3, and experts from USDA Agricultural Research Service, Colorado State University, the Wildlife Conservation Society, and the National Wildlife Federation. The webinar day was followed by a manager's day for employees from National Grasslands in Regions 1, 2, and 3 during which science findings and potential products were discussed in a climate change scorecard context. Recordings and pdf files of the 12 presentations are available online.

Colombian Climate Change Vulnerability Assessment Workshop

Michael Furniss from PNW, Cheryl Mulder from Region 5, and Camille McCarthy of International Programs provided technical assistance in June for a joint USAID-Forest Service project to help Colombia's National Park System (Colombia Parques Nacionales Naturales) develop a climate change vulnerability assessment approach to be used country-wide for each of Colombia's 54 national parks and protected areas. The team met with several specialists from Parques Nacionales Naturales in Bogota and then traveled to the Otun Quimbaya National Park, where they conducted a vulnerability assessment workshop for park staff from across Colombia. The workshop format followed the 6-part model of the Watershed Vulnerability Assessment developed by the Forest Service.

Carbon Measuring and Monitoring Workshop

Rich Birdsey led a team from NRS, RMRS, and International Programs in organizing a September workshop on "Measuring and Monitoring Forest Carbon in the Americas" for participants from governmental and non-governmental organizations in Bolivia, Ecuador, Mexico, Peru, and Honduras. The workshop was hosted by the Manitou Experimental Forest, and was sponsored by FS, NIACS, USAID, and NASA. Participants received hands-on instruction on carbon measurements in the field, monitoring design, remote sensing, and carbon modeling. The course website has a full list of instructors, coordinators, and sponsors as well as videos, presentations, and other course materials.

RMRS Scientists Honored for Climate Change Publication

Linda Joyce and Deborah Finch represented the Forest Service on a team that was honored with the Department of Interior's 2011 Partners in Conservation Award for development of "Scanning the Conservation Horizon, A Guide to Climate Change Vulnerability Assessment." The peer-reviewed guide provides a consistent framework to assess vulnerability to climate change, and provides information for crafting strategies to prepare for and cope with the effects of rapid climate change on the Nation's fish, wildlife, and natural habitats. In addition to serving as working group members to

develop the objectives and framework of the guide, Linda and Deborah also contributed sections. Linda and others authored a chapter on addressing uncertainty in vulnerability assessments, and Deborah and Karen Bagne and Megan Friggens authored a case study chapter illustrating use of the System for Assessing Vulnerability of Species (SAVS). The working group included representation from 3 other federal agencies (FWS, NPS, and USGS), 2 state agencies, and 12 universities or non-government organizations.

OTHER EVENTS AND OPPORTUNITIES

American Conservation Film Festival

The ninth annual American Conservation Film Festival will be held in Shepherdstown, WV, November 3-6, 2011. Even if you can't make it out to Shepherdstown, check out the program for a list of some of the newest conservation-oriented films, many of which focus on climate change. With so many online movie viewing options available on the Internet, there's no reason to miss a depressing documentary.

Webinar for Western Water Managers

This November 8 web forum presented by the Carpe Diem West Academy is intended to explore the when, which, and why of using downscaled climate models for western water managers and decision makers. Participants will learn how to assess which downscaled models to use and where the science is headed and about stage-appropriate tools and the relationship between modeling and scenario planning. Register online.

CLIMATE CHANGE RESOURCE CENTER (CCRC)

New Resources for Silviculture and Private Forestland Stewardship

Two new sets of resources have been compiled for the CCRC with the help of Forest Service experts: one focuses on silviculture, and one on private forestland stewardship. The silviculture pages discuss some of the expected impacts on forest vegetation as a result of climate change, and how silviculture may be used to help forests adapt. It also features detailed silvicultural perspectives from the Pacific Northwest and the Great Lakes region. The webpage on private forests discusses current risks to private forestland, and the connections between these lands, climate change and carbon storage. Information is provided on how the Forest Service and other organizations are assisting landowners who wish to maintain their forests as forests. For feedback or questions on any of these resources, please contact the production team at ccrc@fs.fed.us.

RECOMMENDED READING

Role of the U.S. Forest Service: Helping Forests, Grasslands, and Wildlife Adapt to Shifts in Climate

Monica Tomosy, Frank Thompson, and Sandy Boyce

The Fall 2011 issue of *The Wildlife Professional* focuses on climate change and includes an article that highlights how the Forest Service is addressing the relationship between climate change and invasive species, wildfire, insects, water, economics, and biodiversity conservation. Additional articles highlight similar efforts by Department of Interior and the Wildlife Society and the effects of climate change on piñon-juniper woodlands.

Can forest management be used to sustain water-based ecosystem service in the face of climate change?

Ford, Chelcy ; Laseter, Stephanie ; Swank, Wayne; Vose, James

This analysis in the September issue of the journal *Ecological Applications* examines the feasibility of managing forests for water supply under forecasted climate change. Long-term data from paired watershed studies from the Coweeta Hydrological Laboratory in Western North Carolina were used to examine the interactions among climate change, forest management, and streamflow.

A System for Assessing Vulnerability of Species (SAVS) to Climate Change

Karen Bagne, Megan Friggens, and Deborah Finch

This publication (RMRS-GTR-257) describes the System for Assessing Vulnerability of Species (SAVS), which identifies the relative vulnerability or resilience of vertebrate species to climate change. Designed for managers, the SAVS is an easily applied tool that uses a questionnaire of 22 predictive criteria to create vulnerability scores. The user scores species' attributes relating to potential vulnerability or resilience associated with projections for their region. Six scores are produced: an overall score denoting level of vulnerability or resilience, four categorical scores (habitat, physiology, phenology, and biotic interactions) indicating source of vulnerability, and an uncertainty score, which reflects user confidence in the predicted response. The SAVS provides a framework for integrating new information into the climate change assessment process. Managers can use a hands-on website to score species vulnerability.

Adapting to Climate Change at Olympic National Forest and Olympic National Park

Jessica Halofsky, David Peterson, Kathy O'Halloran, and Catherine Hawkins Hoffman

Concrete ways to adapt to climate change are needed to help natural resource managers take the first steps to incorporate climate change into management and take advantage of opportunities to counteract the negative effects of climate change. This report (PNW-GTR-844) describes the Olympic Climate Change Case Study, a science-management collaboration initiated to develop climate change adaptation strategies and actions for Olympic National Forest and Olympic National Park. Science-based sensitivity assessments, review of management activities and constraints, and adaptation workshops in each of four focus areas (hydrology and roads, fish, vegetation, and wildlife) led to adaptation options and illustrated the utility of place-based vulnerability assessment and science-management workshops in adapting to climate change. The case study provides an example for other national forests, national parks, and natural resource agencies of how federal land management units can collaborate in the initial stages of climate change adaptation. Many of the ideas generated through this process can potentially be applied in other locations and in other agencies.

Carbon Sequestration and Greenhouse Gas Fluxes in Agriculture: Challenges and Opportunities

Agroforestry, trees mixed with crops and/or livestock to create integrated agricultural systems, is gaining recognition as one of several options farmers and ranchers can use for greenhouse gas mitigation and climate change adaptation in their operations. The Forest Service (Michele Schoeneberger at SRS, USDA National Agroforestry Center) was a co-author on the paper *Carbon sequestration in agricultural lands of the United States*, which was recently awarded the Editor's Choice Award for 2011 by the Journal of Soil and Water Conservation. An expanded version entitled *Carbon Sequestration and Greenhouse Gas Fluxes in Agriculture: Challenges and Opportunities* was

just released by the Council for Agricultural Technology & Science.

LINKS

US Fish & Wildlife Service Climate Change Facebook

The UsFWS Climate Change Facebook page is updated on a daily basis with the latest climate change information including research articles and news releases. Don't be afraid to click on that link. The USDA Office of the Chief Information Officer has lifted restrictions on Facebook access from all USDA employee computers. This access is intended to allow employees to view agency-related information on the Facebook pages of partner organizations and USDA -- the official source of FS information on Facebook. Employees may not create or maintain official FS Facebook pages, and should not access personal Facebook pages from their government computers.

ECOSHARE: Climate Change

The ECOSHARE climate change website is designed to help meet the information needs of the Forest Service, Bureau of Land Management, and partners in implementing a strategy to address climate change in the Pacific Northwest. You'll find links to Washington and Oregon state climate change assessment documents, information from past workshops in the region, maps and data, and more.

SUBMISSIONS

Please send your submissions on Forest Service climate change related activities to Cathy Dowd: 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.