

Engaging a Climate Ready Agency

From Dave Cleaves, Forest Service Climate Change Advisor



MARCH 2, 2011

Spring is still a few weeks away, but the wait is already over for another Forest Service climate change update. Thanks for continuing to share the details of Forest Service activities that are linked to climate change. (See submission details in the last section of this update.) Please also keep the Climate Change Advisor's Office in the loop on climate change related research and communications so that we can learn from each other as we work to connect the strong fibers of this vast organization. Contact information 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.

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

This month we have a guest essayist filling in for Dave. Rob Harper is the Assistant Director for Integrated Vegetation Management on the Forest Management staff in NFS. He and his team oversee the national silviculture program; Forest and Grassland Restoration (CFLR); parts of the biomass and inventory and monitoring programs; and a broad suite of contemporary policy issues. Before coming to the WO, he was the Forest Supervisor on the Chippewa National Forest. In his 20 years with the Forest Service, Rob has also worked as district ranger, hydrologist, smokejumper, and firefighter.

Increasing Our Shared Understanding

Rob Harper

Recent communications by the Chief and Dave Cleaves have emphasized that climate change is an issue that increasingly influences our approach to managing and restoring the nation's forests and grasslands. Already, we have FIA data that quantifies above-ground carbon stocks, and we are receiving questions from the public about our approach to managing carbon, assessing vulnerable resources, and developing strategies to respond to change. Having been a Forest Supervisor until late last year, I appreciate that these are vexing questions and questions that most Forests and Grasslands are not well equipped to answer alone. Shortly after my arrival in the Washington Office, I was asked to lead development of agency guidance for implementing the climate change scorecard, which will improve our ability to address those issues. I quickly realized that I did not understand the purpose and intent of the scorecard, the concepts that it embodied, nor how it related to recent developments like the planning rule, watershed condition framework, and cohesive fire strategy. I am pretty sure that I was not the only one to have such a reaction.

One of our first steps in developing the scorecard guidance was to reach out to both technical experts and field leaders. We tasked teams of subject matter experts to assemble technical background information and make preliminary recommendations. Concurrently, we reached out to a group of Forest Supervisors and Directors to help us frame the structure and intent of the guidance. We

wanted a product that was brief, affordable, practical, and easy to understand. The team spent a week in Washington with me, Dave Cleaves, and staff of the Climate Change office working through the material provided by the subject matter experts.

Along the way, we encountered two challenges that influenced development of the guidance. The first was communication. With the Climate Change Roadmap and Scorecard came a whole set of words that are not typically a part of the vocabulary of most of our field folks: vulnerability assessments, mitigation strategies, and carbon stocks and flows to name a few. We quickly learned that, as an agency, we did not share a common understanding of these new words and concepts. The second challenge was one of alignment and integration. It was unclear how investments in requirements like the watershed condition framework, planning rule, and cohesive fire strategy could complement the climate change scorecard and our efforts to increase organizational capacity to integrate climate change into our traditional land management programs and responsibilities. Each of these initiatives is performed at a different scale, with different requirements and on different timelines. As a result, few examples of conceptual or practical alignment and integration exist. These challenges are widely recognized by the Climate Change Advisor and other staff areas in the Washington office.

One of the first actions we took to address the challenge of communicating the intent of the scorecard was to define new terms and concepts in the guidance. The goal is to improve our collective understanding of climate change science and how it applies to the work we do, and provide for a consistent interpretation of the scorecard's requirements. The team of Forest Supervisors and Directors provided invaluable insights to this effort. With regard to alignment, the team did their best to keep in mind other initiatives, for example, working with the most current copy of the new planning rule. But more work is needed. Efforts are underway across multiple staff areas in the Washington Office to increase our shared understanding of the requirements in the planning rule, watershed condition framework, cohesive fire strategy, and climate change scorecard. We are already finding areas of alignment and opportunities for integration. For example, assessments performed as part of the new planning rule or the watershed condition framework could, if designed appropriately, contribute toward scorecard requirements. The NFS Directors have made this challenge the focus of several meetings, as has the national cross-deputy Sustainable Landscape Management Board of Directors. Recently, Assistant Directors from across multiple staff areas in the WO have begun regular conversations with the intent of developing practical expressions of integration.

I am encouraged by these developments, and by the possible benefits of increasing our ability to integrate climate change into our traditional programs. The scorecard may prove to be a powerful tool to accelerate our progress toward integration and alignment of our many initiatives. As we increase our shared understanding of these new initiatives, we are reminded that they are unified around the intent to advance collaboration, partnerships, and landscape restoration of the Nation's forests and grasslands.

FROM THE WASHINGTON OFFICE

Forests at Risk

Harris Sherman, USDA Under Secretary for [Natural Resources and Environment](#) (which oversees the Forest Service and NRCS), spoke about mitigating the risks to America's forests at the symposium, [Forests at Risk: Climate Change and the Future of the American West](#), in February in Aspen, CO. Sherman highlighted the many benefits the public receives from forests including drinking water, wildlife habitat, carbon storage, recreational opportunities, food, and fiber; how stressors on our

forests, like drought, insects, and disease, have been exacerbated by climate change and how this has already impacted ecosystems; and what we are doing in response to these risks. First, the President's newly released [America's Great Outdoors](#) report calls for: 1) making federal lands more resilient to climate change by using the best available science and building adaptation into our land management plans; 2) using an all-lands approach in land management; and 3) engaging Americans, especially youth, in partnerships to connect them to their public lands. Second, the [2011 Proposed Planning Rule](#) integrates climate change considerations into the planning process, building off the [Roadmap](#) and [Scorecard](#), which will increase our capacity and accountability for responding to climate change. Third, the President's 2012 budget proposal prioritizes restoration, which will provide jobs to rural communities, and the budget provides full funding for the Land and Water Conservation Fund. Sherman ended with examples of successful efforts by the Forest Service to achieve our mission through collaboration such as the Four Forest Restoration Initiative and Bark Beetle Cooperative. [Video of Sherman's speech](#) is online.

This conference, sponsored by For the Forest, a nonprofit organization that works through education programs to preserve the health and biodiversity of forests, also included R2 Regional Forester Rick Cables in a panel discussion and a presentation by R2 plant pathologist Jim Worrall on sudden aspen decline. RMRS scientist Linda Joyce spoke about enhancing the adaptive capacity of our national forests. Other talks covered climate and insects, tree mortality rates, wildfire, climate and people, the role of forests in carbon sequestration, and forest die-off risks. Former Vice President Al Gore spoke about climate change, impacts, and adaptation. The conference was attended by more than 400 people. Follow the links on the [agenda](#) to view videos of nearly all of the speakers.

FROM THE FIELD

National Workshop on Climate and Forests

This 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 pinon 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.

Climate Change in Aquatic Ecosystems

RMRS, USGS, the Great Northern Landscape Conservation Cooperative, and Trout Unlimited sponsored [Understanding and Adapting to Climate Change in Aquatic Ecosystems at Landscape and River Basin Scales](#), a decision support workshop for integrating science and management, in Boise, ID. The workshop had three objectives: 1) share information regarding the effects of climate change on aquatic ecosystems; 2) present tools to assist managers in addressing climate change; and 3) discuss management implications of climate change, the utility of existing tools, and future information and analysis needs. For more information, contact Dan Isaak at disaak@fs.fed.us.

Climate Change & Land Use Threats to Tropical Wetlands

Tropical wetlands are important for carbon storage and biological diversity and also provide livelihoods for millions of people. Land conversion, deforestation, and drainage have created a shift in

their function from globally significant carbon sinks to sources of emissions. In order to understand their role in the global carbon cycle and their value in financing strategies aimed at adaptation and mitigation, Forest Service scientists and partners are quantifying carbon pools of intact wetlands as well as losses and emissions of freshwater peat forest and mangroves across the world as part of a growing international collaborative effort. In an International Programs seminar in January, NRS senior research ecologist [J. Boone Kauffman](#) discussed building research networks, promoting greater appreciation amongst policy makers of the role of these ecosystems, and capacity building for measuring and monitoring carbon emissions and stocks.

Copper River Delta Science Symposium

The [Copper River Delta Science Symposium](#) will be held March 22-24, 2011, in Cordova, Alaska. Co-sponsored by the Cordova Ranger District on the Chugach NF, PNW, and other partners, the conference will provide a forum for researchers and managers to better integrate current knowledge and plan future research efforts to help manage and conserve Alaska's Copper River Delta in the face of climate change and other environmental transformations.

Climate Change Education Workshop at the North Cascades National Park Complex

The North Cascadia Adaptation Partnership (NCAP) held their first [climate change education workshop](#) at the North Cascades National Park Service Complex in February with presentations on climate change effects on glaciers, hydrology, vegetation, and wildlife. NCAP is a collaboration of Mount Baker-Snoqualmie and Okanogan and Wenatchee National Forests and North Cascades and Mount Rainier National Parks working to accomplish three goals: (1) increase awareness of climate change, (2) assess the vulnerability of natural and cultural resources, and (3) implement science-based climate change adaptation options into current land management. This workshop kicked off a series of four workshops to be held over the next two months at national parks and forests in Washington. The workshop exemplified a science-management partnership and included scientists from PNW, Climate Impacts Group at the University of Washington, and Western Washington University, as well as resource specialists from the North Cascades National Park.

Classrooms for Climate: Chugach National Forest

[Classrooms for Climate: A Symposium on the Changing Chugach, Northern Ecosystems, and the Implications for Science and Society](#) to be held this May in Anchorage is organized by the University of Alaska Anchorage and Chugach National Forest in partnership with Alaska Coastal Rainforest Center, Alaska Geographic, Northern Forum, Alaska Youth for Environmental Action and Institute of the North. Alaska is ground zero for climate change, and the Chugach and neighboring landscapes, with world famous glaciers and watersheds, are a classroom for researchers, educators, and students seeking to understand potential physical, biological, cultural, and socio-economic impacts. The conference will examine the current state of knowledge of regional climate, natural and managed ecosystems, socioeconomic conditions, and traditional cultural values of Alaska's coastal forests and surrounding areas and. Guest speakers include MacArthur Genius Fellow, Majora Carter; Charles Wohlforth, author of *The Whale and the Supercomputer* and the *Fate of Nature*; Research Glaciologist Shad O'Neel on "Disappearing Ice and Rising Sea"; and 20 other sessions on topics ranging from outdoor recreation and the dynamics of wildlife in a changing climate, to archaeological perspectives on environmental adaptation and human health impacts.

Youth Involvement: The Northern Forum is a nonprofit, international organization composed of sub-national or regional governments from eight northern countries. 2011 is the 10th anniversary of the

organization's Youth Eco-Forum, an annual event aimed at promoting environmental education among teenagers around the circumpolar north. For the first time, the Youth Eco-Forum will come to Alaska, and 80-100 youth from all over the north will join the conference to explore research and questions concerning climate change and forested landscapes. Alaska Geographic, the nonprofit coordinating partner of the Chugach Children's Forest, is working closely with the Northern Forum to develop this important session for youth at the symposium.

CLIMATE CHANGE RESOURCE CENTER (CCRC)

Wildland Fire and Climate Change Resources

The CCRC is assembling cross-station teams of scientists to provide up-to-date information to help land managers address climate change in grasslands and forests. A [new synthesis](#) discussing the current scientific knowledge on the connection between wildfire and climate change is now available along with an accompanying suite of resources on fire, carbon, and climate. The new fire synthesis underscores the fact that while the Forest Service has always managed for fire disturbance, climate change may lead to new fire patterns that increase the challenge of incorporating fire in management planning. The synthesis highlights options for management and suggests tools for further analysis. To submit feedback on this resource or other components of the CCRC, please visit the website or contact the production team at 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. We'll be highlighting these over the next few updates.

Measuring Precipitation

Increases in global temperature are likely to lead to increases in evaporation and consequently increases in precipitation. Additionally, while more overall precipitation may be experienced, changes in precipitation will vary from region to region. Thus, accurate measurements of precipitation are crucial to understanding the effects of climate change. Because much of the precipitation falls on forested areas in the U.S., it is all the more important to improve measurements at Forest Service Stations. Forest Service scientist [Charles Luce](#) (RMRS) has helped address this issue with two inventions: a magnetostrictive precipitation gauge and a method for sensing evaporation of a liquid.

While numerous precipitation gauges already exist, they typically use spring compression technology, which does not always provide accurate precipitation measurements due to fluctuations in functioning when exposed to wide variations in ambient temperatures that occur in many areas throughout a given year. Such gauges are also expensive to manufacture and require periodic calibration. Dr. Luce's magnetostrictive precipitation gauge however is robust to temperature fluctuations and produces accurate measurements of both snow and rain. It is also inexpensive to manufacture and does not require periodic recalibration. A method of sensing evaporation of liquid from a pan to estimate potential evaporation was also devised. Click on the hyperlinks to view the [magnetostrictive precipitation gauge](#) and [method of sensing evaporation of liquid](#) patents.

RECOMMENDED READING

Managing Changing Landscapes in the Southwestern United States

The Southwest Climate Change initiative

This 2011 [regional assessment](#) by The Nature Conservancy, in collaboration with the Forest Service, CLIMAS, Wildlife Conservation Society, and University of Washington, examines the impacts of temperature change from 1951-2006 on natural resources in Colorado, New Mexico, Utah, and Arizona. Summarizing the findings of peer-reviewed literature, the report explores three areas: 1) patterns of temperature change across habitats and watershed; 2) ecological and hydrological changes consistent with warming; and 3) conservation and management approaches for adaptation.

Wisconsin's Changing Climate: Impacts and adaptation

The Wisconsin Initiative on Climate Change Impacts

This 2011 [report](#) is intended as a resource for business executives, government, natural resource managers, public health officials and other decision makers as they take strategic steps to preserve jobs, invest resources wisely, build resiliency and protect our built and natural environment in the face of a changing climate.

Economic Modeling of Effects of Climate Change on the Forest Sector and Mitigation Options: A compendium of briefing papers

Ralph J. Alig, tech. coord.

This October 2010 report ([PNW-GTR-833](#)), intended for policy analysts and decisionmakers, is a compilation of six briefing papers based on literature reviews and syntheses. The main topics addressed are economic effects on the forest sector at the national and global scales, costs of forest carbon sequestration as part of mitigation strategies, and mitigation aspects for nonindustrial private and public forest ownerships in the U.S. forest sector.

LINKS

International Year of the Forests (IYOF)

The IYOF was established by the United Nations to draw attention to the many ways trees and forests impact the quality of life worldwide. The US campaign focuses on the connection between health and our forests. The [website](#) provides a press kit, event toolkit, and other useful information for folks interested in hosting IYOF events, which can be posted on the website's events calendar.

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.

The purpose of these updates is to help us keep our eyes on the prize of healthy and functioning ecological, social, and economic systems as the climate around them changes. We are working to bring climate change knowledge into our organizational expectations and actions.