



National Advanced Fire & Resource Institute
Managed By The U.S. Forest Service

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File Code: 5100

Date: February 6, 2009

Subject: M-580 Fire in Ecosystem Management
Field Trip Sunday April 19, 2009
REPLY DUE: March 20, 2009

To: M-580 Course Participant

As a course participant in M-580, you have an opportunity to attend a field trip on Sunday, April 19, 2009. This field trip occurs prior to the start of the course on Monday April 20th and lasts for approximately five (5) hours. Information regarding the field trip is outlined below. If you decide to attend the field trip, please notify Celeste Gordon, Course Coordinator at (520)799-8777 or cgordon@fs.fed.us. Replies are due March 20, 2009.

Field Trip Information:

Time: Sunday, April 19, 2009, leave 1200 sharp and return approximately 1700

Meeting: National Advanced Fire and Resource Institute (NAFRI)

Location: 3265 E Universal Way
Tucson, AZ 85756
Main Phone: (520)799-8787

Agenda: Tour Santa Catalina Ranger District, just north of Tucson. Drive time is approximately 45 minutes from NAFRI to the base of Mt. Lemmon Highway, with paved access the whole way.

- Review the Interagency/Collaborative Catalina/Rincon Firescape* Landscape Level (250,000A) Veg Treatment Planning Project.
- Review post burn and BAER treatments of large recent catastrophic fires (Aspen 02) with Forest Hydrologist, Salek Shafiqullah.
- Review of treated areas pre- and post-burn; enough elevation change on tour to see a number of different fuel types, fire regimes, and ecotones (2500 ft - 9000 ft).
- Recent fire use application on the landscape, invasive buffelgrass species eradication efforts through a community coalition, soil/water/hydraulic and flooding issues on landscape, and heavy public use areas.

* Firescape - large landscape level approach to vegetation management. Major themes with this project include:

- 1) Engagement with public, partners
- 2) Application of science
- 3) Management and compliance side.
- 4) BAER/Watershed treatments

Partners in these efforts include from Federal/State/Local Agencies; Saguaro National Park, Coronado National Forest, US Fish and Wildlife Service, Catalina State Park and Pima County (management of the Sonoran Desert Conservation Plan). Climate change and carbon sequestration by Don Falk – Associate Professor in the School of Natural Resources, University of Arizona (UA), Tom Swetnam, Director of the Laboratory of Tree-Ring Research & Professor of Dendrochronology, UA, and Brooke S. Gebow, The Nature Conservancy.

See attached Documents titled: "Catalina-Rincon Firescape November 2008" and "Carbon Sequestration in the Santa Catalina Mountains, Coronado National Forest, Arizona"

Travel Arrangements: The vans for the field trip will leave from NAFRI at 1200. If you need to make arrangements for pick up at a hotel or would like to meet us at the Santa Catalina RD Office or another location, please let Celeste Gordon know ahead of time.

Cancellation: If for any reason you are unable to attend the Field Trip, please contact Celeste Gordon (520)799-8777 or (520)975-6576 immediately.

We look forward to seeing you on the field trip. Please contact Celeste Gordon, Course Coordinator, at (520)799-8777 or by email cgordon@fs.fed.us with any questions or concerns about this field trip or the M-580 Course.



MERRIE M. JOHNSON
Director

Attachments

Catalina-Rincon FireScape November 2008

The **Catalina-Rincon FireScape** is a framework for (fire) management across the Santa Catalina and Rincon Mountains in Pima and Pinal counties, Arizona. It is a collaboration of the Coronado National Forest, Saguaro National Park, the University of Arizona, The Nature Conservancy and other partners to provide an umbrella for safe, ecologically sound, large-scale, multi-party fire management.

Management opportunities and urgency. Although the recent large fires in the Catalinas were tragedies for some residents on the mountain, and huge expenses for public agencies and taxpayers, they also represent an extraordinary opportunity to redirect ecosystem management in the Santa Catalina Mountains. The tens of thousands of hectares that burned in these two fire years alone dwarf the current rate of hundreds of ha per year of mechanical thinning treatments. Tens of thousands of ha of dense forested land remain in the Santa Catalinas, and these areas remain as fire-prone as the areas that burned. Consequently, there is still the potential – even the likelihood – for more fires on the scale and severity of Aspen and Bullock in the Santa Catalinas.

The prevailing strategy for preventing catastrophic fires at present is the combination of mechanical thinning and prescribed fires. While these can be effective tools for modifying fire behavior and effects, recent studies indicate that burning and thinning treatments have an effective “shelf life” of about 10-15 years in terms of reducing subsequent fire severity. As time progresses, the regrowth of vegetation recreates the fuel conditions that can carry a crown fire once again. Thus, at the same time that we are promoting a new approach for the Catalinas, we need to continue to support prescribed burning and use of wildfires in both mountain ranges and continue research to document fire behavior patterns and effects. The post-fire mosaic that exists now is a “window of opportunity” to chart a new direction, especially for the Santa Catalinas.

FireScape approach. FireScape takes fire management best practices and applies them across a large landscape. The FireScape approach embraces “adaptive management,” which means that management is constantly improved based on feedback from earlier experience and scientific data. It is the intent of FireScape to restore fire-adapted ecosystems by:

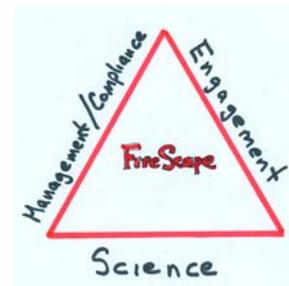
- Working at a landscape scale
- Applying science to establish management goals, measure progress, and make adjustments
- Engaging partners
- Sharing resources and increasing funding
- Streamlining compliance and other paperwork to focus more on implementation

Each FireScape project is driven by local interest and need.

This project is structured around:

- a three-year action plan for front-end fund-raising, planning, research, and outreach
- a 20-year schedule of implementation, monitoring, feedback, and improvement (adaptive management)

These phases must be part of a still longer-term vision that repeats and adjusts the process to truly accomplish the goal of restoring fire-adapted landscapes.



Carbon Sequestration in the Santa Catalina Mountains, Coronado National Forest, Arizona

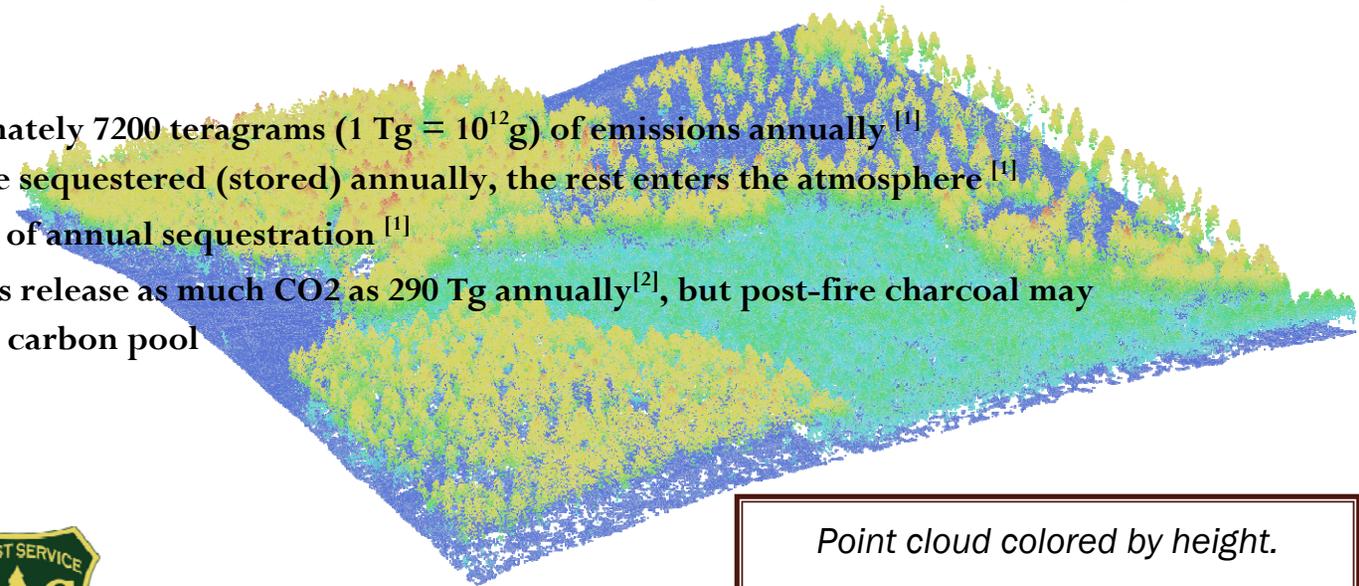
Forests are a major pool of carbon in terrestrial ecosystems; carbon that is “stored” in forests is kept out of the atmosphere where it can contribute to climate change. Thus, understanding how forests store carbon is a major role for national forests in the US, with global implications. We are using the Catalina Mountains as a laboratory to understand how much carbon is stored in trees and soils, and how wildfire affects this important carbon pool.

Carbon sequestration and emission are dependent on many factors that mediate surface and atmospheric conditions. We intend to characterize aboveground carbon pools and flux using advanced remote sensing technology (Moderate Resolution Imaging Spectroradiometer [MODIS], Light Detection and Ranging [LiDAR]), physical measurement (field based techniques, CO₂ Eddy Covariance towers), and allometric relationships.

Understanding how carbon is exchanged at the landscape scale can clarify ecosystem dynamics and mechanisms that can be used to develop better management strategies, mitigation of future fire risks, and increased productivity – all positive feedback mechanisms that can help National Forests sequester more carbon and thus offset an important contributor to climate change.

Factoids:

- The US produces approximately 7200 teragrams (1 Tg = 10¹²g) of emissions annually^[1]
- Only 1/10th of emissions are sequestered (stored) annually, the rest enters the atmosphere^[1]
- Forests accounted for bulk of annual sequestration^[1]
- Wildfires in the 50 US states release as much CO₂ as 290 Tg annually^[2], but post-fire charcoal may represent a very long-term carbon pool



*Point cloud colored by height.
Example of forest structure derived
from LiDAR scan^[3]*

Principal Investigators

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References

1. EPA Executive Summary Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, available at: <http://epa.gov/climatechange/emissions/downloads06/06ES.pdf>
2. Wiedinmyer C, Neff J, Estimates of CO₂ from fires in the United States: implications for carbon management, *Carbon Balance and Management* 2007, **2**:10 available at: <http://www.cbmjournal.com/content/2/1/10>
3. Andersen H, Reutebuch S, McGaughey R, 2006. Forest measurement and monitoring using high-resolution airborne LIDAR. Oregon State University American Society of Photogrammetry and Remote Sensing (ASPRS) Student Chapter meeting, June 2, 2006, Corvallis, OR. available at: http://forsys.cfr.washington.edu/JFSP06/presentations/RS2006/McGaughey_et_al_2006_RSAC.ppt