2011 Annual Report

Wildland Fire Management Research

Development and Application (WFM RDA)

Integrating science, technology and fire management.

Wildland Fire Management RD&A

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MESSAGE FROM THE PROGRAM MANAGER

A Vision becomes a Reality

The beginning of the second decade of the 21st century comes in the midst of a transformative time for wildland fire management. Technological innovations and rapid advances in information management are accelerating. Many critical elements of effective information management affecting wildland fire management operations and efficiency such as completion of routine tasks; content of standard procedures, processes, and policy; the speed with which information acquisition, analysis, application, and archival mechanisms support management processes and decision making; and the interpersonal and interagency communication processes at local, regional, national, and international levels need to keep pace with innovations and advances.

During it's first five years of operation, the WFM RDA actively focused on the development of the Wildland Fire Decision Support System (WFDSS) as its primary objective. WFDSS was developed and delivered in preliminary working form for use by all wildland fire management agencies. Since then it has generated considerable interest internationally, and continues to show much promise for expansion and development. WFM RDA efforts in developing and delivering WFDSS were recognized during this time with staff and partners twice receiving the Forest Service Chief's Honor Award for Science and Technology. Additional indicators of WFM RDA success in this area are substantial use of WFDSS since its delivery with over 30,000 wildland fires entered into the system to date and the growth of the WFM RDA from a staff of one initially to 20 full-time employees in 2011.

During 2011, the WFM RDA provided more service and capability than ever before. Additional program areas were incorporated into the organization, including the Rocky Mountain Center, supporting fire weather data management, analysis, and national predictive services; and the National Interagency Fuels Technology Transfer program, supporting interagency fuels management training and technology transfer. Field support was provided for wildland fire decision making and situational analysis across the country. Training was provided in numerous aspects of decision support, decision analysis, risk assessment, and management applications. A new five year charter was signed by Forest Service Chief Tom Tidwell, setting the stage for continued focus and attention for the WFM RDA.

As you read about the WFM RDA in the following pages, we hope you will be excited over this innovative program, its marked influence and success in transferring research findings and improving fire managers' capabilities, and the significant potential to continue to grow and evolve its support of the interagency wildland fire research and management program. As we move into the second five year charter period, we will continue to place the highest emphasis on enduring performance, quality, and relevance in all research and field support activities. We will develop, address, and promote new tools, processes, and standardized authoritative databases to facilitate smart information access, information sharing, data analysis, and decision making - important challenges for managers in federal, state, and local wildland fire management agencies and organizations.

Tom Zimmerman

BACKGROUND OF THE WFM RDA PROGRAM

Transfer of research findings into useable applications for field implementation has long been an area of concern. Congressional studies reported in 1972 that the transfer of research findings to the field needed improvements and led to the establishment of Research, Development, and Application (RDA) programs as a formal organizational approach to improve technology transfer. Establishing a dedicated program with a timely, formal and effective communication process between research and management while integrating new knowledge and processes was determined to be a sound option to enhance the application of the best science in wildland fire management. As a result, the Wildland Fire RDA(WFM RDA) was nationally chartered in 2006. More information can be found at: http://www.wfmrda.nwcg.gov.

Figure 1. Integrated programs and partnerships of the Wildland Fire Management RDA

Integrating science, technology and fire management.

Wildland Fire Management RD&A

ORGANIZATION OF WFM RDA

The WFM RDA is organizationally situated as part of the Rocky Mountain Research Station (RMRS) based at the National Interagency Fire Center (NIFC). This location enhances opportunities for frequent, direct contact with leadership from the wildland fire management agencies and groups headquartered there. The WFM RDA is a national program having interagency implications and benefits consisting of multiple agency personnel representing diverse fire management program interests and concerns. The WFM RDA consists of integrated groups of individuals working with specific focus on defined areas of responsibility (Figure 1). These areas include, but are not limited to: WFDSS Development, Fire Management Decision Support, the Rocky Mountain Center (RMC), the National Interagency Fuels, Fire and Vegetation Technology Transfer (NIFTT) and oversight of the National Fire Decision Support Center (NFDSC).

Under the direction of the Rocky Mountain Research Station Director and Assistant Director, the RMRS hosts the WFM RDA Program Manager and Program Support Assistant as well as six other permanent positions working in Fire Science and Decision Support Development. The Fire and Aviation Management (FAM) program provides seven full-time individuals to the WFM RDA as part of the NFDSC as well as the program manager for the National Interagency Fuels Technology Transfer (NIFTT). The Department of Interior (DOI) through the Office of Wildland Fire (OWF) provides four positions

(National Park Service positions) to the WFM RDA program: Data Coordinator, GIS Specialist and two Fire Application Specialists that work in Fire Science and Decision Support and the NFDSC Figure 2).

An Advisory Group for the WFM RDA provides guidance, assists in development of and recommends the annual work plan, ensures funding within the agreed framework, and provides accountability oversight. This group is made up of individuals from FAM, Washington Office R&D, OWFC and RMRS.
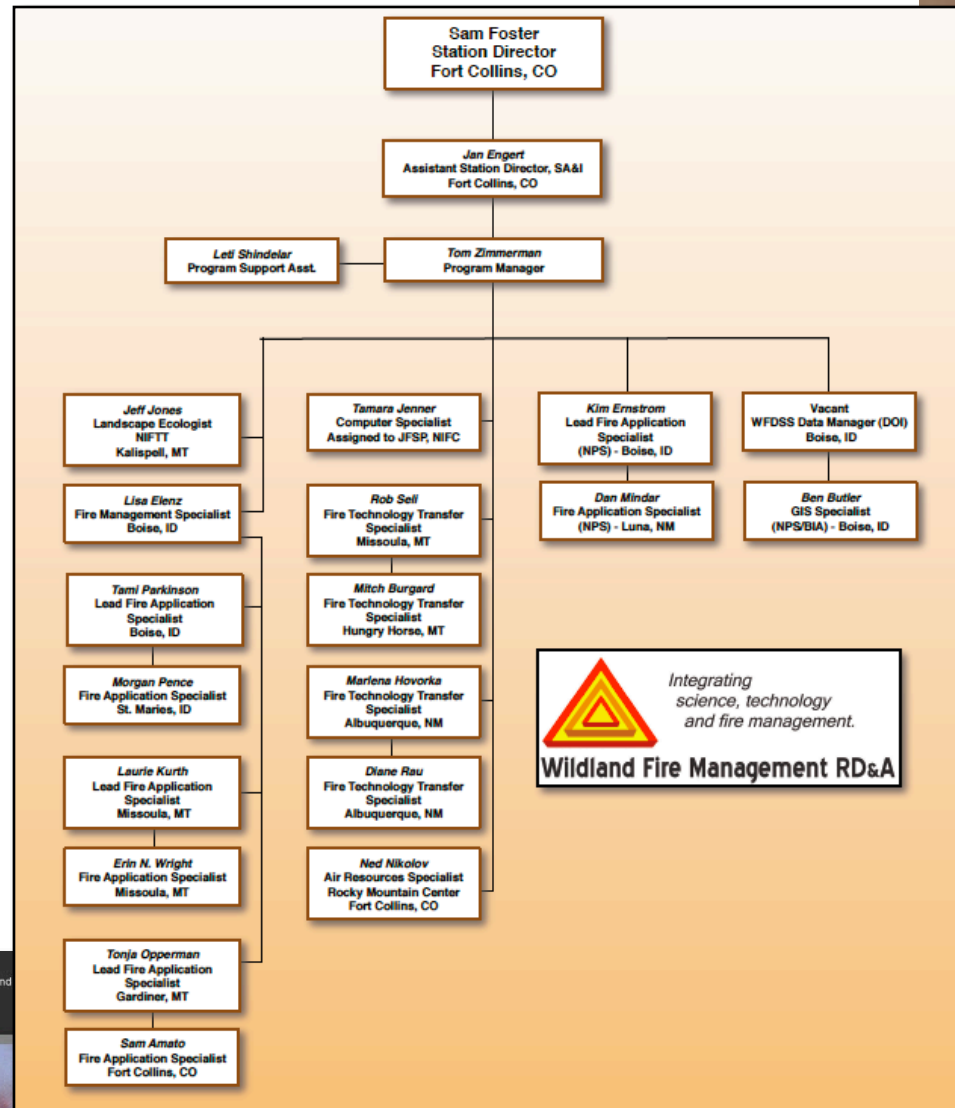
Figure 2. Wildland Fire Management RDA organization chart

Wildland Fire Management RD&A website. www. wfmrda.nwcg.gov

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Background and Organization

VISION

The Wildland Fire Management RDA is a highly effective organization providing exemplary fire science integration and wildland fire management support to management agencies and personnel through proactive and timely response in collaboration with partners.

MISSION

The Wildland Fire Management RDA Program will sponsor and guide the development and application of wildland scientific knowledge; develop decision support tools and hazardous fuels planning applications; and provide science application services to the interagency wildland fire community.

The WFM RDA Program will manage the National Fire Decision Support Center and serve as a primary point of contact for communication between scientists and participating field managers, and as an advisor to program administrators at local, regional, and national levels.

With integrity, professionalism, safety, and mutual respect as our core values, we serve as leaders, role models, and mentors within our resource management agencies.

Region/State/Area
Anticipate emerging issues and identify solutions
Intra-program coordination
Inter-program coordination

National Office(s)
Respond to national direction and needs - policy and management.

Wildland Fire Management RD&A

Collaboration, Communication, and Partnerships
Interagency, State, Tribal, University, and private organizations.

Administrative Units
Technical support,
Operational support,
Incident support

Wildland Fire Management RDA level of interactions and involvement

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WFM RDA Vision and Mission

2011

Although the 2011 fire season was not nationally significant it will be remembered by a number of milestones in wildland fire management.

- Largest fire in Arizona history (Wallow Fire)
- Largest fire in New Mexico history (Las Conchas)
- Largest fire in Minnesota since 1918 (Pagami Creek)
- Most acres burned in Texas history (3,538,852)

The Wildland Fire Management RDA coordinated analytical and decision support for many of these significant incidents. Decision Support staff were mobilized to the Southwest and Southern Geographic Area Coordination Centers to provide fire behavior analysis support and assistance with publishing decisions. Assistance was provided remotely when possible and when practical fire behavior analyses were conducted by analysts stationed all across the country. Close coordination with incident management teams, Multi-Agency Coordinating Groups, Geographic Area representatives and regional agency staffs was necessary, but proved effective in demonstrating the cost effectiveness of this approach. Significant cost savings was realized by not having to mobilize analysts to every incident.

The innovative approach of the WFM RDA has opened the door to offering a unique vision of wildland fire decision support. Improvements in technology and communications continue to revolutionize our business in ways that we can only being to imagine. Boots will always be required on the ground, but when innovation can be coupled with foundational fire management practices, the possibilities for safe, effective, sensible outcomes can be realized.

WFM RDA: A Virtual Organization

20 Employees,
4 States,
2 Departments –
communicating in a
"Virtual World"

One of the challenges to the WFM RDA is communicating effectively across time, space and agency firewalls. WFM RDA is composed of 20 individuals living in four states (see map above) working for both the Department of Agriculture and the Department of Interior. The strategy to overcome these obstacles includes face-to-face meetings when possible, but more commonly teleconferencing and online collaboration support the majority of intra-program communication. WFM RDA experiments with different communication channels including: *firenet.gov* (through Google Applications) to blog concerns or share information via a common chat system; **FRAMES**, an interagency accessible website to share and archive documents, while **conference calls, "GoTo Meetings" and Webinars** act as a "proxy" for staff meetings.

As workgroups across the government become more virtual in nature it is increasingly important to streamline communications. Although progress is being made on fully integrating technology across the interagency fire community, obstacles still remain. By testing a variety of avenues to overcome these barriers, the WFM RDA may contribute to a solution that can be shared with the rest of the interagency fire management community.

Innovation

Wildland Fire Decision Support System (WFDSS): A One-Stop Fire Management Application

The WFDSS project evolved from the need to streamline and improve wildland fire decision-making processes, as well as take advantage of improvements in technology, fire modeling, and geospatial analysis.

The Key Features of WFDSS Include:

- A spatially oriented web based system to document decisions, incorporating fire behavior modeling, value assessment and cost estimation tools.

- Textual and spatial information from land and resource management and fire management plans are preloaded into WFDSS and provide the sidebars for the decision space.

- Decision makers are able to follow a progressive decision process that can be scaled, adapted, and be responsive to changes in the wildland fire environment.

Remember back to the days when it took considerable technological effort, knowhow and time to...

- ➢ produce an accurate ERC graph,

- ➢ produce a map of a new incident with roads, trails, boundaries, and a fire perimeter - not to mention terrain, adjacent structures and T&E species information,

- ➢ get a fire weather forecast for an incident that was not in your fire weather zone,

- ➢ run a fire behavior model like Behave, Flammap or FARSITE

Wildland Fire Decision Support System
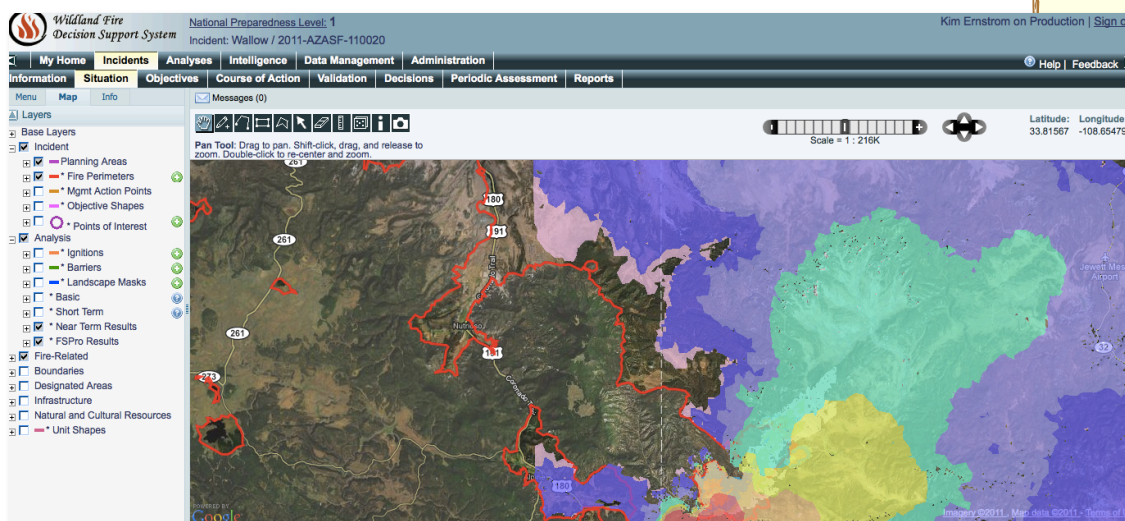
FSPro Output from the Wallow Fire, Apache-Sitgraeves National Forest

WFDSS has changed the way we assess fire potential, gain situational awareness and develop a strategic response to wildland fires. Whether a Dispatcher is locating and relaying information on new fire starts or an FMO or a Washington Office level fire manager is briefing the Chief on the current National fire situation, WFDSS provides "one-stop shopping" for many products that previously took special expertise and significant time to develop. Examples of things that can be done in WFDSS with a few simple mouse clicks are:

- ❧ Dynamic map display with pre-loaded data: roads, trails, land ownership, values such as structures, powerlines, communication towers, real-time MODIS data and critical species information

Innovation

❖ RAWS locations that can display a current ERC graph with the click of a mouse

❖ Basic fire behavior models that anyone can run to gain a snapshot of expected fire behavior

❖ Instant fire weather forecast for any map location

❖ Quick graphical Relative Risk Analysis

❖ Built in Organizational Needs Assessment

Incorporating a progressive, swift strategic decision documentation and analysis process that allows immediate response to changing situations or scale represents significant improvements in wildland fire response and management.

This scalable process, the kind and amount of information, and the speed that it can be acquired, analyzed, and utilized was not possible before WFDSS.

http://wfdss.usgs.gov/wfdss/
WFDSS_home.shtml

For a full summary of WFDSS enhancements in 2011 see Appendix A.

WFDSS Use Statistics

In FY2011, 13,648 fires were input into WFDSS, with a majority being from the five federal land management agencies. Most notable was the increase of state, county, and local government use of WFDSS; over eight hundred fires that started on state, county or local jurisdictions were input into WFDSS and 30 had published decisions. Every agency had increased fire entries in FY 2011 compared to FY 2010 except the BIA/Tribal (Figure 3). The coupling of fire

Number of WFDSS Fire Entries
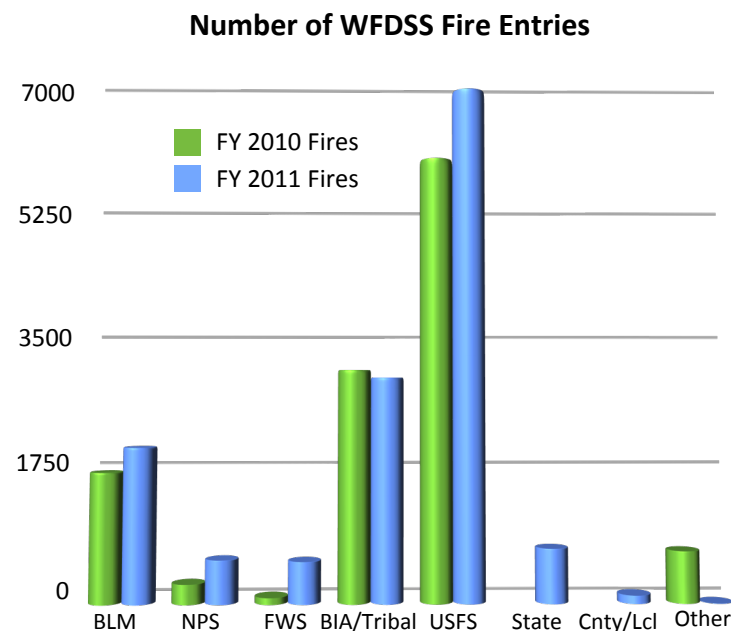
Figure 3. WFDSS Fire Entries Fiscal Year 2010 and 2011 by agency (Bureau of Land Management – BLM; National Park Service – NPS; Fish and Wildfire Service – FWS; Bureau of Indian Affairs –BIA and other tribal governments; U.S. Forest Service - USFS; States; County and Local and Other including Alaska Native Lands). In 2010 data for state, county, and local was lumped into the "other" category, whereas for 2011, these categories were split.

behavior analyses and decisions indicates a general increase in the over-all approach to assessing risk during a wildfire event. Trends in FY 2011 showed

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that users are applying fire behavior modeling to help support management decisions. The incorporation of fire behavior modeling outputs into managers documented decisions increased over 2010 for all agencies (Figure 4). The significance of local, county and state use should also not be ignored because only federal agencies are required to use WFDSS as a formal decision documenting process. FY 2011 is the first year state use is appreciably increased both with fire behavior modeling and decision support.

Number of Published Decisions with Fire Behavior Analysis

Figure 4. An increase across all agencies for Published Decisions that included fire behavior modeling outputs. Significant is the number of State, County and Local analyses.

Fire Behavior Modeling in Real-Time

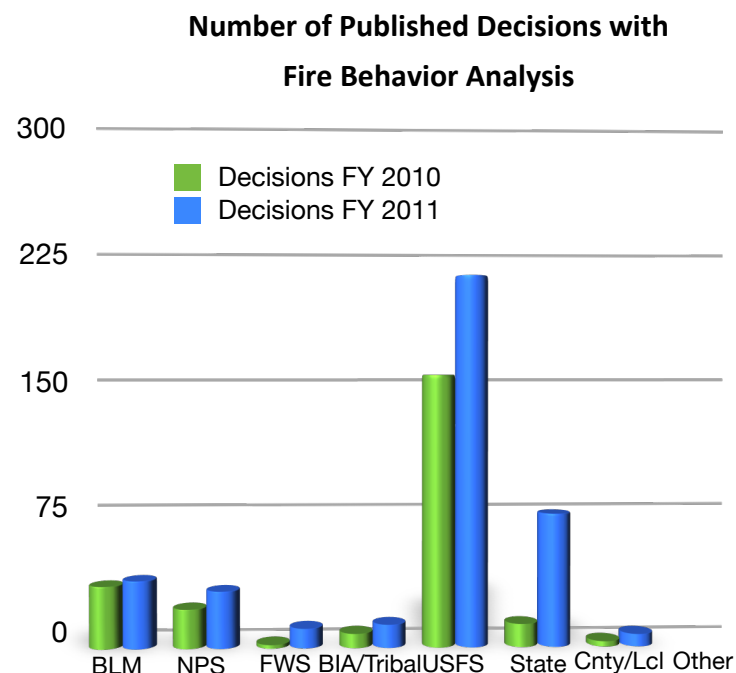FY 2011, marks an obvious increase in the application of fire behavior modeling, especially for Near-Term Fire Behavior (NTFB). FSPro, which is the long-term modeling product continued to be used in levels similar to years in the past.

Both Short-term (STFB) and Basic Fire Behavior all showed increases in use (Figure 5). Investments in WFDSS development in FY2011 have allowed these tools to become more stream-lined and consistent. In the not so distance past,

Use of Fire Behavior Modeling Tools
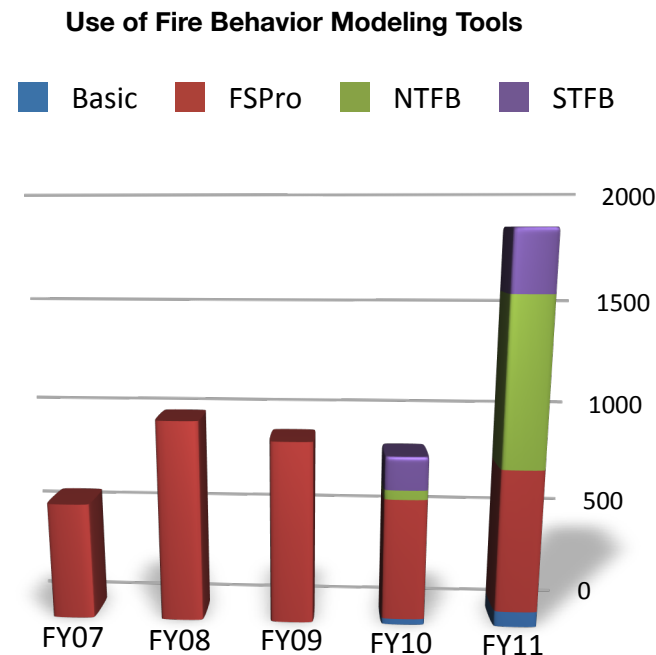
Figure 5. Use of fire behavior modeling tools from FY07 - FY11

several days were often required to calibrate a fire behavior model to produce a realistic projection. Now, these types of calibrations can be done in a few hours all within the WFDSS framework.

In addition, the fire behavior tools in WFDSS allowed multiple analysts to assess fires concurrently. Many fires were much too large and moving much too fast for one analyst and one computer processor to handle in an efficient manner. In the case of the Wallow and Las Conchas fires in Arizona and New Mexico, up to 5 or 6 analysts were able to concentrate on specific portions of the fire that were of most interest to fire managers and incident management teams. Integrated data such as MODIS (Moderate Resolution Imaging

Innovation

Spectroradiometer) provides a real-time heat signature twice a day using satellite imagery. MODIS and other remote sensing tools like infrared imagery can be helpful to assess the location and the extent of a perimeter when no other information is available (Figure 6).

Las Conchas Fire

Infrared Map 07/09/2011
Imagery Date: 07/08/2011
Time: 2243 MDT
Interpreted Total Acres: 142,250
IRIN: Brian Banks

0 0.5 1   2   3   4
Miles

- Isolated Heat Sources
Scattered Heat
Intense Heat
Heat Perimeter
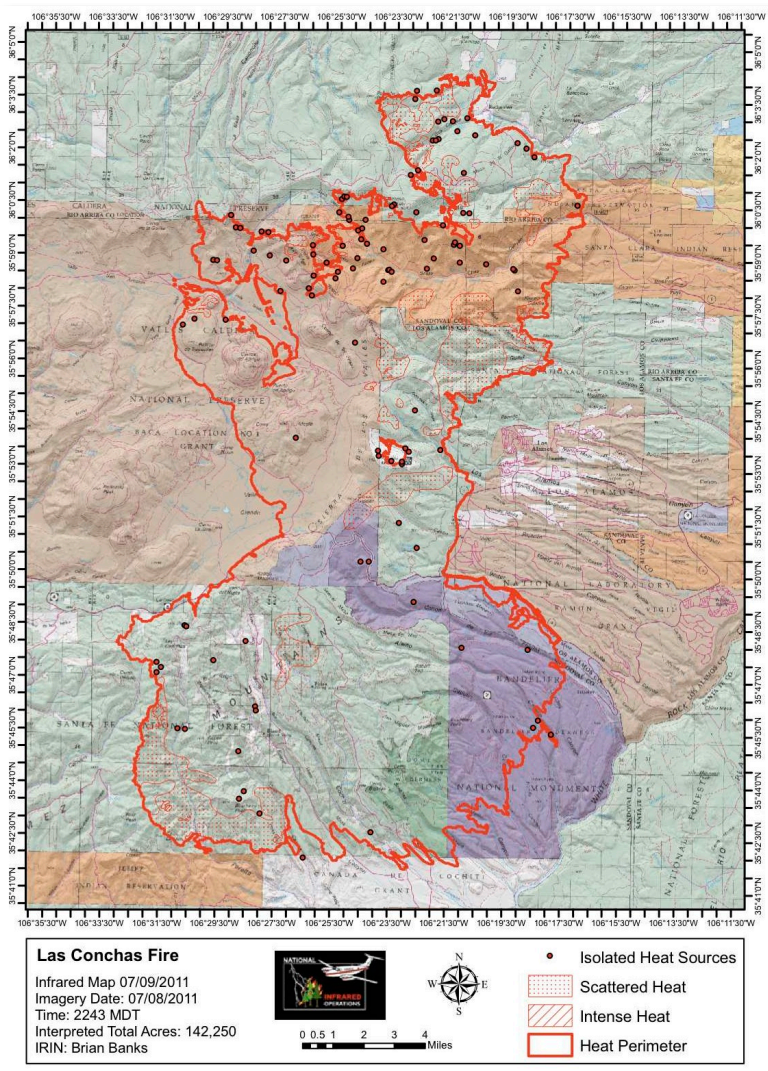
Figure 6. Las Conchas Fire Infrared Map. Remote sensing (IR and MODIS) proved useful for fire behavior modeling analysts when fire perimeters were unavailable

Expanded Support to State Partners: Fire Behavior Modeling

This year marked a new approach for utilizing fire behavior modeling to support State fire management partners in requesting Fire Management Assistant Grants (FMAG) from the Federal Emergency Management Agency (FEMA). Analysts provided support to many states in the southeast and southwest that experienced record setting fire seasons including Texas, North Carolina, Florida, Georgia, New Mexico and Arizona. Fire Behavior model outputs and values inventories from WFDSS provided support for States requests for Federal

Waco, Texas Firefighters

Assistance. Working through agreements with the US Forest Service, State fire managers requested fire modeling runs with accompanying values inventories. These outputs illustrated real-time and potential impacts from wildfires shortly after they were discovered allowing States to submit requests for assistance before a fire was contained or controlled.

Innovation

WFM RDA: A Testing Ground for New Technology

Look into any hotshot buggy, air attack briefcase or FBAN laptop case and you are guaranteed to find a variety of mobile computing devices. Having

information at our fingertips is increasingly important in all aspects of fire management. Since staff are well versed in digital fire applications and regularly utilize them in the field, the WFM RDA is an ideal testing ground for mobile technologies. In order to test new applications including WFDSS, DOI funded the acquisition of several mobile "smartphones" with the Android operating system as well as Apple MacBooks. The WFM RDA is working with the USFS Mobile Technology Integration for Fire and Aviation Management, testing the feasibility of new technologies. At the end of FY11, the WFM RDA was tasked to determine the strengths and
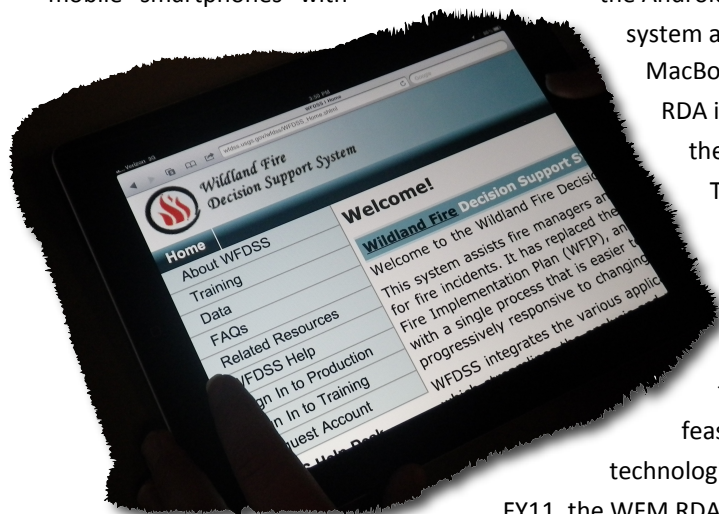
WFDSS being tested on an Apple iPad

weaknesses of the iPad as a tool to help meet user's mobile computing needs. This project is part of the CIO pilot project for the new government Enterprise Messaging Services (gEMS), providing access to email, calendar, Microsoft Outlook and various fire applications and tools. As this project launches in FY12 users will be required to comment on the applicability of these technologies to fire management via surveys, blogs, and conference calls.

Rocky Mountain Center (RMC) for Fire-Weather Intelligence

The Rocky Mountain Center was established in 2001 at the USFS Rocky Mountain Research Station as a rapid science technology transfer project in the
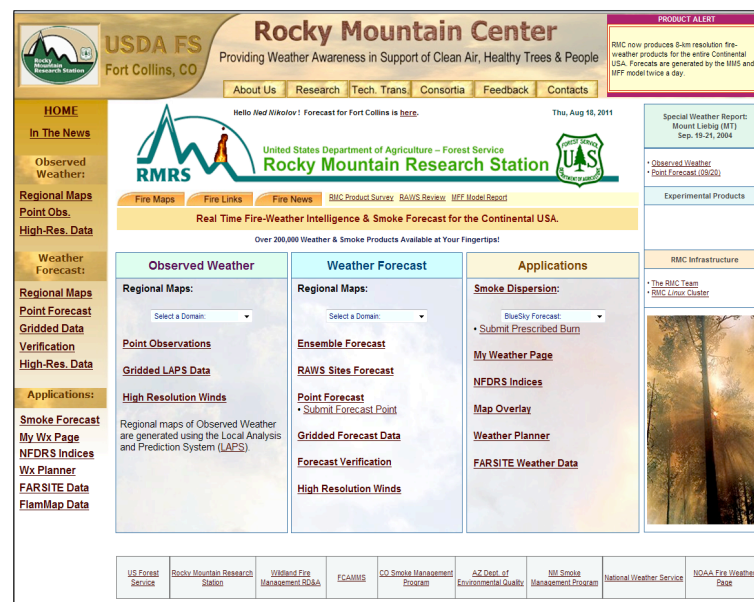
Rocky Mountain Center Homepage: http://Fireweather.info

field of fire meteorology and smoke-dispersion forecasting. The Center is part of an agency-wide initiative called Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS). From its inception, RMC has focused on

Innovation

addressing links between research in fire-meteorology and operational forecasting of fire weather and fire danger. Maintaining close cooperation between FCAMMS scientists and fire and air resource managers from USFS, BLM, NPS, and BIA has been a top priority for the RMC team over the past 6 years. In 2010, RMC joined the Wildland Fire Management RDA and some of its products are currently being integrated in WFDSS.

RMC delivers a plethora of value-added fire weather intelligence products in real time that provide support to fire and air-quality managers. The Center generates more than 200,000 maps, graphs and charts on current and future (up to 75 hours in advance) fire weather
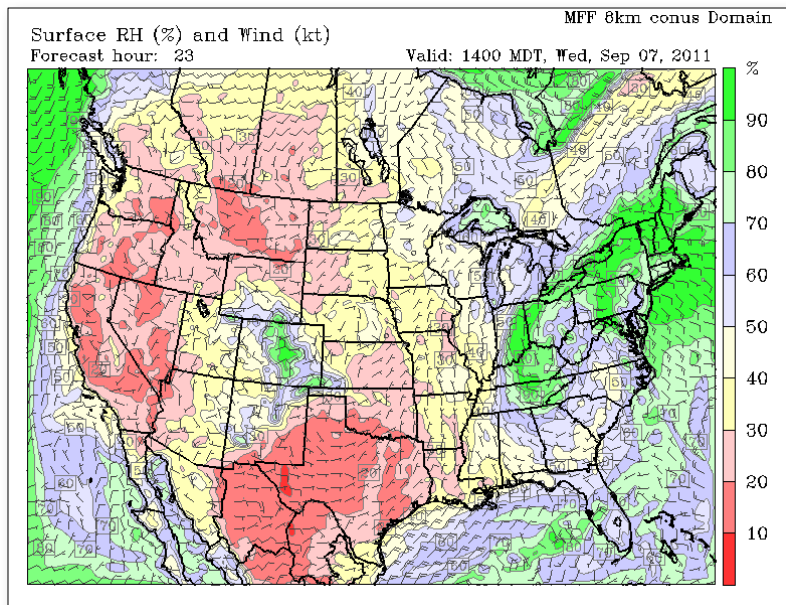
'We utilize RMC high-resolution weather modeling products almost on a daily basis to assist in the creation of decision support products for the Predictive Services program. A number of fire managers in the field make routine use of RMC products as well, particularly for smoke management related decisions and prescribed fire planning. RMC has been shown to be an invaluable resource to ourselves and those we serve in the fire management community.'

Chuck Maxwell
Lead Predictive Services Meteorologist
Southwest Coordination Center - Albuquerque, NM

HTTP://FireWeather.info

An example fire weather forecast map showing relative humidity and windspeed produced at the Rocky Mountain Center

conditions at high spatial and temporal resolution over the entire Continental USA. Fire weather forecasts are generated and updated twice a day and delivered through the Web in real time at http://FireWeather.info . Users can customize their own fire-weather page that displays information for a specific region of interest. Currently, RMC has over 1,300 registered professionals who use the products to plan prescribed burns, assess local and regional fire danger, predict smoke impact from ongoing fires, or develop short-term action plans for combating wildfires. RMC weather products have also been employed in fire related accident investigation as well as analysis of conditions that led to fire caused losses.

'Denver uses the RMC meteorological model products to ground-truth forecast air quality index (AQI) values for the region. The web interface for accessing such products is extremely intuitive and allows for easy comparison of the different model outputs. This site is a high priority on our bookmark and visit list.'

Gregg Thomas
Environmental Assessment and Policy Supervisor -
Denver Department of Environmental Health
Denver, CO

Innovation

An Ear to the Ground: a Multifaceted Approach to Facilitate Cooperation and Communication

The WFM RDA is focused on identifying, understanding and then bridging communication gaps between field managers, fire management leadership and research. The WFM RDA also acts as an advisor to administrators at the local, regional, and national levels. As a dedicated program tasked with ensuring effective and timely communication the WFM RDA strives for the integration new knowledge and processes into management. Since the WFM RDA's mission is not original research; it is uniquely poised to evaluate, gather feedback and then participate in conversations with scientists, committees and centers on programs and projects that will ultimately affect the field in their day to day activities.

WFM RDA Participation in NWCG :

- *Executive Board Member - Forest Service Research Representative*
- *Fire Planning Sub-committee*
- *Fire Reporting Sub-committee*
- *Geospatial Task Group*
- *Fire Behavior Sub-committee*
- *Fire Danger Sub-committee*
- *IMT Succession Group*

WFM RDA Partnerships and Cooperators

AirFire Group, Desert Research Institute, Lessons Learned Center, FRAMES, Joint Fire Science Program, LANDFIRE, Predictive Services, IFT-DSS, Wildland Fire Partnership

The WFM RDA provides liaisons and representatives to many committees, programs and projects across fire management.

These interactions across a broad spectrum of disciplines has lead to the recognition that many fire management efforts are often in parallel rather than complementary to one another. Identifying these situations and then

encouraging dialogue between efforts is leading to an increased awareness of inefficiencies. For a full list of Partnerships and Organizational representation see Appendix A.

Extra, Extra - Read All About it!

It is critical to the WFM RDA mission and daily operations to communicate regularly and effectively with partners, user groups, and other broad audiences. This task is large and handled from many fronts. The WFM RDA program seeks to have multiple and diverse outlets for information sharing to reach a broad range of individuals and groups and provide information and training. Information outlets include:

- Peer reviewed journal and other publications, articles, posters and flyers

- Conference attendance

- Websites (NIFTT and WFM RDA) for delivering information and training material

- Regular calls with user groups (example: Geographic Area editors)

- Webinars (training and informational)

- Presentations at meetings/workshops /trainings

Communicating through multiple means helps the WFM RDA communicate a broad range of topics and information to a variety of audiences.

Cooperation

WFDSS Geographic Area Editors: A critical Link to the Field

The role of Geographic Area Editor (GA Editor) was established during the initial development of WFDSS. It was recognized that in order to manage the large number of users in the system, oversight at the Geographic Area level would be necessary. This role would serve as a primary networking link between the WFM RDA and the field. The GA Editor role is assigned to a variety of Regional office level managers from all five federal fire management agencies. GA Editors are responsible for assigning user roles for their Geographic Area and work in an interagency setting to support their partners in WFDSS, handling questions from the field on publishing decisions fire behavior analysis, as well as assisting users during incidents and providing feedback to the WFDSS developers. The expectation is that GA Editors become the "expert WFDSS users" providing training and coordination. The challenge is in the fact that these duties are in addition to regular day-to-day job responsibilities as fire planners, fuels specialists, fire ecologists and a variety of other positions. The reality is that these these individuals have become experts in policy, guidance as well as WFDSS implementation.

The WFM RDA staff that interacts with these individuals on a regular basis recognizes the critical link that this role provides to field users, WFDSS developers and decision support personnel alike. In FY 2011, working relationships with GA Editors were refined to result in better communication to and from the field. Feedback from the field is relayed through the GA Editors and is considered when developing training and updating and enhancing WFDSS. Additionally, through the GA Editors, decision support staff and WFDSS developers are able to provide information to the field on aspects of WFDSS as new enhancements are released or system errors are encountered. During a busy fire season this communication link is vital when fire managers are asked to make expedient risk informed decisions in compressed timeframes. Without the cooperation and dedication of the Geographic Area Editors across the nation, the deployment and evolution of WFDSS would not be successful.

Cooperation

WFM RDA brings Technology Transfer full Circle: RAVAR to Values, a Success Story

Following initial testing in 2005, values at risk (facilities, building clusters, campgrounds, etc.) analyses associated with WFDSS were available by conducting a Rapid Assessment of Values at Risk (RAVAR). This assessment was a multipart process requiring the skills of several analysts (Figure 7). One analyst produced an FSPro run in WFDSS, a second analyst working outside of WFDSS in Arc Map would map the values which were acquired from a separate database. The second analyst produced a map and report which was delivered to the requesting unit as a PDF that was not necessarily connected to the

decision in WFDSS . The information contained in the final product was quite valuable, but the labor intensive process and time delays depending on data availability would often cause final product delivery to take several days from the request date.

In an effort to reduce required processing time and achieve real-time delivery of this vital information to the field, the WFM RDA staff worked alongside the fire economics staff at the Missoula Fire Lab to streamline the process into two steps fully integrated in WFDSS (Figure 8). In 2011 the values process (Values

Rapid Assessment of Values at Risk (RAVAR)

Figure 7. Multipart RAVAR process requiring the skills of several analysts

Values at Risk and Values Inventory

Figure 8. Simplified Values process integrated with WFDSS

as Risk and Values Inventory) was tested in the field as an alternative to the RAVAR process. Values analyses were made available in a user-drawn planning area as well as coupled with fire behavior outputs-short-term fire behavior, Near-term fire behavior, and FSPro (Figure 9). RAVAR analyses were and still are available to users if this new approach is not considered adequate.

By the end of the 2011 season no RAVAR requests were submitted by the field indicating that this new approach is a feasible alternative for assessing the impacts to values during an incident. The products available as a result of this cooperative approach are now found fully within WFDSS, can be immediately

Cooperation

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included in a Decision, can be updated on the fly with only one analyst and are available to anyone with WFDSS viewer privileges.

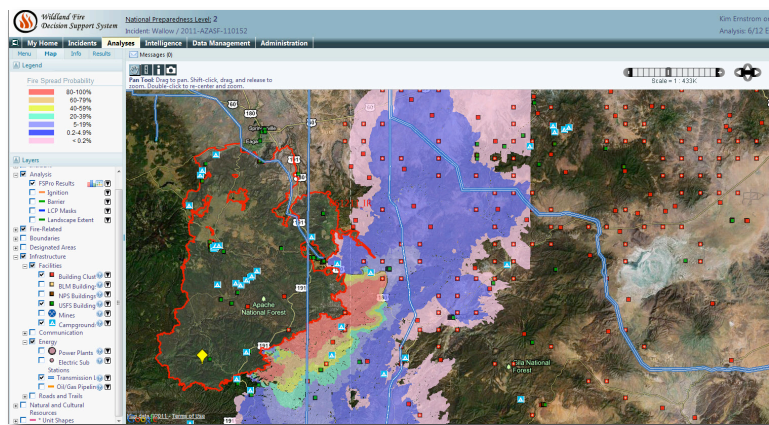Figure 9. Wallow Fire Values at Risk display in WFDSS

This transformation of the RAVAR process is a prime example of how technology transfer in a cooperative setting can directly benefit the field. Fire Economics research developed a tool that field managers needed to aid decision making on fires, the WFM RDA assisted in assessing that tool, gathering feedback from users and then worked with the developers to refine and improve the tool to better meet field managers needs. Continued assessment and improvement are planned for the 2012 fire season.

National Interagency Fuels Technology Transfer (NIFTT) really is "Nifty"

At the beginning of FY 2011 the WFM RDA welcomed the National Interagency Fuels Technology Transfer (NIFTT) to the program. NIFTT was chartered in 2005 by the National Interagency Fuels Coordination Group and LANDFIRE to assist land managers with the assessment of fire behavior, fire effects, fire regimes, and vegetation dynamics.

Since NIFTT's focus is to coordinate, develop and transfer consistent, efficient, science-based fuels and fire ecology assessment tools and training to the interagency fire community, it's placement with the WFM RDA is a natural fit.

NIFTT activities include:

✦ Developing training materials and/or post material for NWCG training courses

✦ Providing instruction pertaining to Fire Regime Condition Class (FRCC) for the Washington Institute - Technical Fire Management (TFM)

✦ Working with the University of Idaho to develop training materials (online courses, videos, webinars, posters, etc.) and to market materials, monitor the effectiveness of online courses, and serve as workshop instructors

✦ Working with the Fire Research And Management Exchange System (FRAMES) to host websites and miscellaneous training materials.

✦ Collaborating on technology transfer of LANDFIRE products with The Nature Conservancy

✦ Collaborating on the development of FuelCalc and maintenance of the First Order Fire Effects Model Mapping Tool (FOFEMMT) with RMRS Fire Modeling INstitute (FMI)

New Tools in the Toolbox

NIFTT tools released in FY2011 include the Wildland Fire Assessment Tool (WFAT), the LANDFIRE Total Fuels Change Tool (LFTFC), a new version of the Fire Regime Condition Class Software Application (FRCC$_{SA}$), and a new version of the LANDFIRE Data Access Tool (LFDAT). Development also progressed on the FRCC Mapping Tool (FRCC$_{MT}$) and FuelCalc.

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Cooperation

WFM RDA: Developing a high octane workforce

Wildland Fire Management RDA employee organization structure is designed with small teams of two individuals working together. This allows for mentoring and development from team leads by providing exposure of other employees to a variety of opportunities in projects and programs. This structure also allows lead staff opportunities to practice and improve mentoring and supervisory skills.

Morgan Pence, WFM RDA Fire Application Specialist staffs a Decision Support center in Atlanta, GA.

From the formation of the WFM RDA, separate staffs were encouraged to work together, cross train, and learn each other's role and duties as projects allowed. This has fostered a learning environment and has created a highly functioning team within the virtual organization by aiding the continuation of projects and workflow when team members are not available.

Staying On Top of their Game

To keep fire line qualifications current and to provide for continued advancement, personnel seek out training and fire assignments as available. This year members worked in trainee roles on Incident Commander Type 4 (ICT4), Firing Boss (FIRB), and Long Term Analyst (LTAN) assignments. Others kept current with, Geospatial Analysts (GSAN), Emergency Medical Technician (EMT), Long Term Analyst (LTAN), and Fire Behavior Analyst (FBAN) assignments.

As opportunities arise, WFM RDA staff participate in a variety of projects outside of their typical duties; for example participating in a Facilitated Learning Analysis (FLA). An FLA is information sharing analysis tool that helps maximize learning opportunities presented by unintended outcomes or in "near miss" events. Participation in these sorts of endeavors exposes staff to a broad range of fire management practices and supports field operations.

WFM RDA staff are encouraged to attend conferences to learn about the latest research and science, network with colleagues, and present their own findings and endeavors through posters and oral presentations.
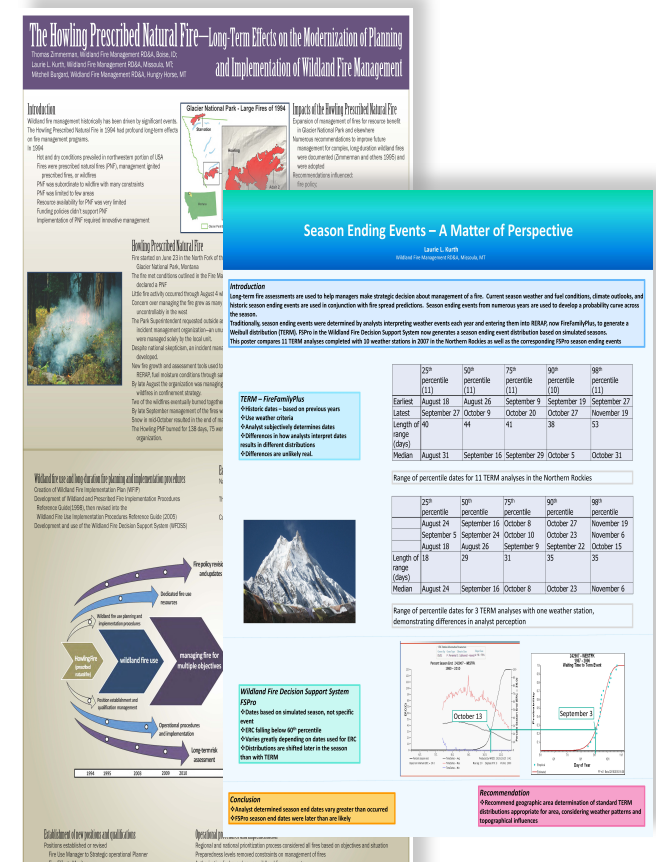
Posters from WFM RDA staff presentations at the International Association of Wildland Fire, Fire Behavior and Fuels conference, Spokane, WA Oct. 2010.

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Inspiration

Training: Practice Makes Perfect

The WFM RDA seeks out alternative delivery methods to meet training needs of the future by offering webinars, online accessible help content, and short training videos in addition to face-face presentations. Examples include pre-season WFDSS refresher training that incorporates general overviews of the system and fire behavior tools in one hour interactive webinars as well as short downloadable video clips that users can view on-the-fly when questions arise.

Course	DOI	Other	Private	State	TNC	University	USFS	Total
FCCS	13	11	1	5	0	3	14	47
FRCC Version 1.3	20	3	2	3	1	2	22	53
FBFM40	22	18	1	28	1	6	36	112
FLM	1	1	0	0	0	1	2	5
LANDFIRE	20	3	4	3	1	3	17	51
NOMOGRAPHS	8	8	1	4	0	0	9	30
ACT	12	5	1	2	0	1	14	35
FOFEMMT	11	9	1	2	0	2	17	42
FRCCMT	12	8	1	2	1	2	16	42
Total	119	66	12	49	4	20	147	417

Table 1. Online student registrations for FY 2011. The anonymous NIFTT course evaluations conveyed an overwhelmingly positive response from the students who completed the courses. Several students said that the courses were useful and would help them better communicate and understand data/information needs on the job.

Distance Learning Short Courses

NIFTT offers courses that are a part of a larger construct of learning pathways from fire behavior to fire regimes. NIFTT's website offers materials developed for NWCG course that are available online as pre-course or distance learning modules, courses include S244 Field Observer, S491 Introduction to the National Fire Danger Rating System, and S495 Geospatial Fire Analysis Interpretation Application. In FY2011 NIFTT released a new online course on Fuel Loading Models; developed a Vegetation Dynamics Learning Pathway; completed the first six of nine chapters in the Introduction to Fire Behavior Modeling learning material; and created mediasite recordings of five technical workshops. Successful migration of all but two NIFTT online courses to the eLeaP learning system has substantially reduced student-registration problems, allowing for a streamlined process that all all participants will benefit from.

NIFTT conducted a survey of students that registered for NIFTT online courses to help monitor the effectiveness of the courses. Table 1 summarizes 2011 course registration of NIFTT's nine courses by agency. Registration for NIFTT's courses can be found at www.frames.gov/niftt .

National Training Course Participation

S590 Advanced Fire Behavior Interpretation

Many WFM RDA staff participate in this course as the steering committee chair, instructors, and mentors while others will attend as students. As active members of the cadre they teach the future Fire Behavior and Long Term Analysts to prepare them for future fire assignments.   Some staff members have had the opportunity to participate in the S590 mentee program in which candidate students shadow qualified FBANs and LTANs to improve knowledge and skills before attending the two week course.

Inspiration

S495 Geospatial Fire Analysis, Interpretation, and Application

As course co-chairs, instructors, mentors, and coaches the WFM RDA provide a significant staff to this course. Assisting with this course helps them keep fresh on the latest fire analysis tools and applications, allows them to interact with

S-495 Geospatial Fire Analysis Interpretation and Application
National Advanced Fire & Resource Institute
Tucson, Arizona · April 17-22, 2011

future geospatial analysts and provides course leadership. To meet changing student needs and travel constraints, the S495 cadre used Video Tele-Conferencing (VTC) in 2011 for instructing a portion of the class that attended via VTC from Alaska. This experience was valuable as it highlighted the potential of this approach for future training, outreach and technology transfer projects that require remote collaboration.

Other National Courses that WFM RDA staff participate in include:

- ✦ **RX510 - Advanced Fire Effects**
- ✦ **S520 - Advanced Incident Management**
- ✦ **S620 - Area Command**
- ✦ **Fire Management Leadership**

Detailer Program: Hands on Learning

The WFM RDA detailer program allows up and coming analysts to join the WFM RDA for a virtual assignment. The idea was developed in 2010 but 2011 was the first year of actual implementation. The detailer program was very successful, with five detailers receiving on the job training, mentoring, and continuing education. The detailers had a wide variety of backgrounds, from post S495 students, to pre-590 students, and qualified analysts just wanting to learn what the WFM RDA does and refresh on the fire behavior tools and the decision support process to keep current on new processes and knowledge. The detailers worked for two week periods as a member of the WFM RDA team, supporting incidents with fire behavior analysis, participating in meetings and information exchanges, reviewing WFDSS, etc. Overall feedback on the program from the detailers and WFM RDA employees has been positive and it is anticipated that the program will continue and expand in 2012.

Caroline Noble of the National Park Service joined the WFM RDA for a two week detail in FY2011

Inspiration

THE FUTURE OF THE WILDLAND FIRE MANAGEMENT RDA PROGRAM

A Message from the Assistant Program Manager: To Infinity and Beyond

It's a time of change for the WFM RDA as we say goodbye to our manager, Tom Zimmerman, and transition to new leadership in 2012. It is sad to see him leave as he has been a leader to the organization and his vision has made us what we are today. With his guidance, the WFM RDA has become a program that looks to the future, provides diverse and dynamic support to management and the field on wildland fires and brings new research and science to the forefront. We wish him well in retirement.

The WFM RDA Charter has recently been revised and signed for a 5 year period and will be reviewed periodically to evaluate consistency with the program of work, continued relevancy of assigned problems, funding availability, personnel, and accomplishments. The revised charter provides a roadmap for WFM RDA operations by describing focus areas of work for future endeavors including:

- Coordinate relevant and timely fire science application
  - Work with partners and collaborators to formalize business needs and requirements to promote fire science application developments

- Develop and support a Wildland Fire Decision Support System (WFDSS)
  - Continue to provide business lead and project management, continue development, and collaborate in managing Helpdesk support

- Coordinate technology and development efforts for hazardous fuels and vegetation management and support interagency training in this area
  - Manage and support the National Interagency Fuels, Fire, and Vegetation Technology Team (NIFFT) and support other fuels and vegetation management programs as needed

- Develop applications, disseminate information, and conduct training for existing and emergent research priorities
  - Many research support areas exist: fire economics, fire spread model verification, data collection, etc.

- Participate in and manage the National Fire Decision Support Center (NFDSC)
  - Provide mentoring on analysis and decision support, improve operational use, and support additional research

As we move ahead in 2012, we look forward to the opportunities, changes, challenges and new relationships that will present themselves. Strong partnerships and effective communication with the field, research, management and collaborators will be the key to success in the coming year.

Lisa Elenz

Future Endeavors

APPENDIX A: 2011 SUMMARY OF WFM RDA ACTIVITIES

WFDSS Enhancements and Updates

For FY 2011, WFDSS released versions 3.13 through 3.15, which included enhancements and updates in all aspects of this system.

Enhancements/ Updates	Description
GIS/MAPS	• Unit Shapes can be uploaded by Data managers showing Unit-level values, tactics, objectives • KMZ's generated with embedded images; KMZ's generated from all data in the Incident Folder except Unit shapes, viewable in Google Earth. • Points & lines automatically buffered when uploaded as a polygon.
LANDFIRE	• WFDSS updated the fuels and canopy data with LANDFIRE's newest release, Refresh 2008, version 1.1.0. This landscape data set encompasses the entire continental US, Hawaii and Alaska with updated fuels and canopy fuel information for areas affected by management, disturbance (fires, beetle kill), and locations with inadequate representation of barren, water, rock, and agriculture.
DATA	• Camera tool captures images of Situation Assessment • Incident size automatically populates with most recent fire perimeter. • Responsible Unit name at Point of Origin field added • Ownership of an incident can be transferred to MULTIPLE owners and managed under Incident Privileges. • WFDSS users can use Google Search to search FAQ's and online help. • .tiff image files no longer accepted in WFDSS
SYSTEM	• New version of Weather Information Management System (WIMS) included and de-coupled from WFDSS application for better portability. • Software updates (geotools, ARCGIS server, TinyMCE) updated in WFDSS • WFDSS automatically displays the most recent version of data on the Map page.
HELP	• Updated; more question marks guide users to help for a specific subject like landfire data sources. • HELP icons shown in Pop-Up browser windows • Online help about what GIS shapes data can be uploaded and necessary permissions to upload.
DECISIONS	• "Some things to consider" box, linked to relative risk assessment • Relative Risk updated to save partial inputs • Organizational Needs Assessment added to the system • A Copy button was added for Incident Owners to copy their most recently published decision to create a new pending decision. • A PDF of the published decision is available, including all text and images from the published decision
GROUPS	• Create/Edit Groups button reworked

Appendix A

Training Course Instruction

- S495 Geospatial Fire Analysis Interpretation and Applications- Course coordinators, cadre, instructors, mentors, and coaches, Tucson, AZ
- Northern Rockies Fire Behavior Workshop, Missoula, MT
- Rx510 Advanced Fire Effect- Course cadre and instructors, Tucson, AZ
- 5 Webinar training courses on Basic/Unassisted, Short Term, and Near Term Fire Behavior tools, FSPro, and Values at Risk
- FOR 422 WFDSS Training, Sequoia Kings Canyon National Park
- Technical Fire Management (TFM)- Introduction to WFDSS, Bothell, WA
- Alaska LANDFIRE virtual webinar training on observations on use of LANDFIRE data in fire behavior analysis for Alaska
- Fire Management Leadership Northern Region- WFDSS Overview
- Southern Area fall fire season WFDSS refresher webinar refresher training (twice)
- NPS SE Region WFDSS review webinar training
- WFDSS review, NPS/FWS Refresher
- S430 (Operations Section Chief), WFDSS Near Term Fire Behavior support and curriculum.
- S482 (Advanced Fire Management Appliations), provided WFDSS FSPro support and curriculum
- WFDSS Overview training, in person and webinar, NIFC employees (twice)
- Fire Program Management Course – Presentation on WFDSS use and decision making, Boise Id, March 2011.
- Wildland Fire Assessment Tool - IAWF 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA.
- Fire Regime Condition Class - IAWF 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA.
- LANDFIRE Total Fuel Change Tool - IAWF 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA.
- NIFTT Overview and Wildland Fire Assessment Tool presentation/lab, University of Idaho, Nov, 2010
- LANDFIRE Data Access Tool and Wildland Fire Assessment Tool - January 21, 2011, Flathead NF
- Fire Regime Condition Class Short Course, BLM, February 14-15, 2011, Lewistown, MT
- Fire Regime Condition Class Short Course, BLM, February 16-17, 2011, Billings, MT
- LANDFIRE and Area Change Tool (ACT) Workshop. Hann W, Strand EK. University of Idaho Landscape Ecology course REM429, April 29, 2011 (30 students).
- Fire Regime Condition Class Short Course. Havlina D., Barrett S. Bureau of Land Management.   May 10-11, 2011, Salt Lake City UT.
- Fire Regime Condition Class Short Course. Havlina D., Barrett S.   US Forest Service/Bureau of Land Management/State of Utah DNR.   May 12-13, 2011, Salt Lake City UT.
- Fire Regime Condition Class – Technical Fire Management, Bothell, WA, October 12, 2010.
- Fire Management Leadership, Tucson, AZ
- Local Fire Management Leadership, Boise, ID

Course Material, Tools and Documentation
- Development of a revision plan for the LANDFIRE Concepts, Data, and Methods course. The revisions focus on LANDFIRE upgrades including a description of the LANDFIRE versions, National vs. Refresh, and how these versions are similar and different.
- Chapters 1-6 of the Introduction to Fire Behavior learning material is completed and is under final review.
- Developed overview lesson on LANDFIRE, FRCC, and WFAT (Wildland Fire Assessment Tool) in online course REM407 – GIS in Fire Ecology and Management at the University of Idaho (1cr).

- Development of course material for using WFAT to identify fire fighter safety zones for a workshop at the IAWF International Wildland Fire Safety Summit, Missoula, Montana.
- Development of WFAT course material for Technical Fire Management (TFM) workshop in Bothell, WA. The material includes an overview presentation, tutorial, and exercise.
- An online course on Fuel Loading Models (FLM) has been developed and online registration is available via the FRAMES web site. The course was made available for students on August 4, 2011.
- Development of the Vegetation Dynamics Leaning Pathway. The NIFTT Vegetation Dynamics Learning Pathway comprises a series of online and live courses designed to teach natural resource professionals how to use state-and-transition modeling concepts and the LANDFIRE models to predict vegetation change on real landscapes.
- The final draft of the online course 'Predicting Vegetation Change', which is part of the Vegetation Dynamics Learning Pathway, has been completed and is under external review.
- NIFTT online courses have been transferred off the Blackboard learning management system at the University of Idaho to the eLeaP online learning system. This includes all courses except 'LANDFIRE Concepts, Data, and Methods' and 'Fire Regime Condition Class v. 1.3' which will be transferred to eLeaP following their upgrade.
- Review and posting of NWCG course material for S-244 (Part I+II), S-491, and S-495 on the FRAMES web site.
- Hosting NWCG course S-491 on the eLeaP learning management system during the spring 2011 (100 students).
- Initial review of existing learning material for the Wildland Fire Decision Support System (WFDSS) has started.
- Fire Regime Condition Class (FRCC) Guidebook version 3.0 released.
- Fire Regime Condition Class Software Application (FRCCSA) version 3.0.3.0.
- The LANDFIRE Total Fuel Change Tool v.1.0 is released for ArcGIS v. 9.3 and 10. This includes a User's Guide, Tutorial, and help utility.
- Wildland Fire Assessment Tool (WFAT) Beta-version is released (www.fire.org). The final version of the WFAT User's Guide has been completed and is available at NIFTT.gov.
- Completed development of Fire Regime Condition Class Mapping Tool. The tool is undergoing BLM Testing and a User's Guide is being prepared.
- Continued development work on FuelCalc.
- LANDFIRE Data Access Tool for ArcGIS 10

Publications

- Kurth, Laurie. 2011. S495 Geospatial Fire Analysis, Interpretation, and Application. RMRS Explorer Newsletter. April 26, 2011.
- Elenz, Lisa, and Thomas Zimmerman. RMRS Programs Continue to Provide Support to Fire. RMRS Explorer Newsletter. June, 2011.
- Pence, Morgan and Thomas Zimmerman. (2011). The Wildland Fire Decision Support System: Integrating science, technology, and fire management. Fire Management Today. 71 (1), p. 22-26.
- Noonan-Wright, Erin, T.S. Opperman, M. A. Finney, G.T. Zimmerman, R.C. Seli, L.M. Elenz, D. E. Calkin, and J.R. Fiedler. 2011. Developing the U.S. wildland fire decision support system (WFDSS). J. Combustion Vol. 2011, Article ID 168473. 14 p.
- Review of FSPro Analysis, white paper, June 2011.
- Zimmerman, Thomas, L. Kurth, and M. Burgard. 2011. The Howling Prescribed Natural Fire – long-term effects on the modernization of planning and implementation of wildland fire management.   Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, Washington, USA. International Association of Wildland Fire, Birmingham, Alabama, USA.

- Zimmerman, Thomas. 2011. Fire Science Application and Integration in Support of Decision Making. Proceedings, Wildfire 2011, The 5th International Wildland Fire Conference, Living with Fire: Addressing Global Change through Integrated Fire Management. Proceedings. Sun City, South Africa.
- Zimmerman, Thomas, L. Elenz, M. Hovorka. and D. Rau. In Press. Pairing risk assessment, risk management, and decision making to improve wildland fire management. Proceedings 1ST International Conference on Safety and Crisis Management in the Construction, Tourism and SMEs Sectors. June 2011. European University, Nocosia, Cyprus.
- Zimmerman, Thomas. In Press. Wildland Fire Management Decision Making. Journal of Science and Agricultural Technology. . Vol. 2(2B). Feb. 2012.
- Stephen W Barrett, S.W., Havlina, D., Hann, WJ *et al*. (2011)   Fire Regime Condition Class: Concepts, Methods, and Applications. Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA.
- Strand EK, Schon KH, Jones J (2011) Tools, courses, and learning pathways offered by the National Interagency Fuels, Fire, and Vegetation Technology Transfer, Proceedings of 3rd Fire Behavior and Fuels Conference, October 25-29, 2010, Spokane, WA.
- Results of Questionnaire to Federal Users of NIFTT Tools and Courses. Unpublished report distributed to sponsors.
- NIFTT Courses Summary Statistics FY2010. Unpublished report distributed to sponsors.

Presentations

- WFDSS Development, 6th International Forest Fire Research Conference, Coimbria, Portugal Nov. 2010
- WFDSS Fire Behavior Tools Presentation at Southwest Interagency Fuels Workshop, Flagstaff, AZ
- WFDSS Poster Presentation at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- NFDSC Poster & Presentation at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- Evaluating effectiveness of partial fuel treatments at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- The Chakina Fire, the Spotting Problem at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- Coupling Fire Behavior Models with Other Decision Support Tools at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- Season Ending Events, A Matter of Perspective at the International Association of Wildland Fire, Fire Behavior and Fuels Conference, Spokane, WA, Oct. 2010
- Weather in Fire Behavior Modeling, National Weather Service Meeting, Oct. 2011.
- NFDSC and WFDSS at the National Predictive Services Meeting, California Nov. 2010 and Idaho Feb. 2011
- Overview of WFDSS, NIFC, Boise, ID, June 2011.
- Organizational Needs Assessment within WFDSS, virtual presentation to Payette N. F. May, 2011
- WFDSS for Data Managers, 1) Southwest BIA Fire Planning Workshop and 2) Coeur d'Alene Tribe March and April, 2011
- WFDSS Support, National Multi-agency Coordination Meeting, Boise, ID, Dec. 2010
- WFDSS, Interagency Fire Planning Committee, Webinar, spring 2011
- WFDSS and Fire Behavior Overview, Northern Rockies Fire Behavior Workshop, Missoula, MT, May 2011.
- WFDSS and WFM RDA presentation for visiting Greek Fire Managers, May 2011.
- Fire Behavior Expert Panelist, Air Tanker EIS Science Panel, July, 2011 Boise.
- Overview of Use of WFDSS Shapes and Spatial FMPs in WFDSS, Interagency Fuels Planning Committee and Data Managers, May 2011
- Fire Policy & WFDSS, Colorado State University Graduate Program, Webinar.
- Monthly GA Editor Call Coordination and presentations, Webinar.

Appendix A

- Glacier- Crown of the Continent, University of Montana presentation.
- Strand EK, Schon KH, Jones J (2010). NIFTT, Poster presentation, 3rd Fire Behavior and Fuels Conference, International Association of Wildland Fire, October 25-29, 2010, Spokane, WA.
- Jones, J. (2010). NIFTT Overview. USFS, Region 4 Fuels Meeting. October 28, 2010.
- Jones, J. (2010) NIFTT Overview & WFAT Presentation. 2010 Prescribed Fire Workshop, November 7-9, 2010, Destin, FL.
- Strand EK (2010) Guest lecture titled NIFTT Overview in FOR427, University of Idaho, Nov 10
- Strand EK, Schon KH, Jones J (2011) NIFTT, Poster presentation, Society for Range Management National Meeting, February 7-11, 2011, Billings Montana.
- Strand EK (2011). Lecture and lab titled "Fuel Loading Models" in FOR451 Fuels Inventory and Management at the University of Idaho, February 14, 2011
- Jones J (2011) NIFTT Overview presentation, Southwest Fire Science Consortium, Joint Fire Science Program, March 8-10, 2011, Flagstaff, Arizona.
- Strand EK (2011) Lecture titled "Mapping Wildland Fire Fuels and LANDFIRE Overview" in FOR451 Fuels Inventory and Management at the University of Idaho, March 11, 2011
- Ryan C and EK Strand (2011). Learning to Predict Vegetation Change: a Step-wise Progression for Acquiring State and Transition Modeling Skills; State-and-Transition Landscape Modeling Conference, Poster presentation, Portland, Oregon, June 15-17, 2011.
- Strand EK (2011). Landscape Dynamics in Aspen Woodlands on the Owyhee Plateau, Idaho; Oral presentation, State-and-Transition Landscape Modeling Conference Portland, Oregon June 15-17, 2011.
- NIFTT/FRAMES vendor booth. Strand EK, Wells L. Oct. 6-7 2010 Wildland Fire conference, Boise
- NIFTT/FRAMES vendor booth. Olson D, Tjoelker M, Strand EK, Wells L. 3rd Fire Behavior and Fuels Conference, International Association of Wildland Fire, October 25-29, 2010, Spokane, Wa
- Recording and online publication of five technical presentations at the Southwest Interagency Fuels Workshop in Flagstaff, Az, March 7-11, 2011, see www.NIFTT.gov *Presentation Library*
  - Miriam Rorig, US Forest Service , Title: Wildland Fire Air Quality Tools
  - Josh Hall, Santa Fe National Forest & Ron Sherron, US Forest Service, AZ NFs & AZ Department of Environmental Quality, Title: Smoke Management Techniques (Hall) and Creating a Successful Burn Window (Sherron)
  - Sam Amato, National Fire Decision Support Center, Title: The Wildland Fire Decision Support System (WFDSS)
  - Tim Swedberg, Joint Fire science Program, Title: The Interageny Fuels Treatment Decision Support System (IFT-DSS)
  - Jeff Jones, US Forest Service, Title: NIFTT Curricula for assessment of fire behavior, fire effects, and ecological departure

Organizational Representation

- NWCG Fire Behavior Subcommittee Chair
- NWCG Fire Planning Subcommittee Representative
- NWCG Fire Reporting/209 Subcommittee Representative
- Landscape Fire and Resource Management Planning Tool (LANDFIRE) project Liaison
- NWCG Fire Danger Subcommittee
- Predictive Services/Intelligence liaison
- Airtanker EIS Science Panel WFM RDA Organizational Rep.
- RMRS Science Application and Integration (SAI) WFM RDA Organizational Representative
- Fire Research And Management Exchange System (FRAMES) Liaison

- Air/Fire Group Liaison
- Disaster Assistance Support Program Representative
- S495 Geospatial Fire Analysis, Interpretation, and Application Steering Committee Chairmen, cadre, mentors, and coaches.
- S590 Advanced Fire Behavior Interpretation – Steering Committee Co-Chair, cadre, mentor, coaches.
- Rx510, Advanced Fire Effects Steering Committee member
- Geospatial Equipment and Technology Applications (GETA) liaison
- National Incident Management Organizations (NIMO) liaison
- National Performance Measures Task Group member(s)
- Interagency IT Roadmap Project liaison
- USFS Mobile Technologies Integration for Fire & Aviation Management – team member
- Fuels Transition Research Representative
- Northern Rockies Consortium Liaison
- NWCG Forest Service Executive Board Representative
- Cohesive Strategy Team Member
- Interagency Fuels Treatment Decision Support System (IFTDSS) Liaison
- NWCG Geospatial Task Group Representative
- FS/Interagency Geo database Data Standards Project Representative
- Wildland Fire Science Partnership member

Partnerships and Cooperative Agreements

- Fire, Fuel, and Smoke Science Program, RMRS, http://firelab.fire.org
- Human Dimensions Program, RMRS
- LANDFIRE Program, http://www.landfire.gov
- Airfire Program, PNWRS, http://www.airfire.org
- Fire Program Analysis Program (FPA), http://www.fpa.nifc.gov
- University of Idaho Wildland Fire Science Program
- FRAMES – University of Idaho, http://frames.nbii.gov
- National Center for Landscape Fire Analysis (NCLFA) - University of Montana, http://firecenter.umt.edu
- Humboldt State University Fire Science Program
- Technical Fire Management (TFM), sponsored by the Washington Institute http://www.washingtoninstitute.net
- Desert Research Institute, http://www.dri.edu
- Department of the Interior – Office of Wildland Fire Coordination (OWFC), http://www.doi.gov/pmb/owfc
- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- Fish and Wildlife Service (FWS)
- National Park Service (NPS)
- US Geological Survey (USGS)
- Joint Fire Science Program (JFSP), www.firescience.gov

Appendix A

- National Wildfire Coordinating Group (NWCG), www.nwcg.gov
- National Predictive Services Program (NIFC)
- USFS Fire & Aviation http://www.fs.fed.us/fire/
- Pacific Southwest Research Station
- Pacific Northwest Research Station
- The Nature Conservancy (TNC)

Workshops and Conference Attendance

- Geographic Editor After Action Review, Portland OR
- National Predictive Services Meeting, Pasadina, CA
- Southwest Interagency Fuels Workshop, Flagstaff, AZ
- International Association of Widlland Fire, Fire Behavior and Fuels Conference, Spokane, WA
- Northern Rockies Fire Behavior Workshop, Missoula, MT
- 6th International Forest Fire Research Conference, Coimbria, Portugal. Nov. 2010.
- Professional Technical Writing, Boise ID
- LANDFIRE Futures Meeting, November 8-9, 2010, Park City, Utah. Strand EK
- WFDSS Air Quality Tools meeting, NIFC, December 7-8, 2010, Boise Idaho. Strand EK
- Manti-La Sal National Forest. Discussed the availability of NIFTT resources, and solicited input on "what the field needed to do their job more efficiently". Jones.
- Dixie – Fish Lake National Forest. Discussed the availability of NIFTT resources, and solicited input on "what the field needed to do their job more efficiently". Jones.

Customer Support

- WFDSS Help desk responded to 2226 calls in calendar year 2011
- Updates and maintenance of three web sites: niftt.gov, frcc.gov, and landfire.gov
- Installation of Google Analytics web traffic tracking on the NIFTT and FRCC web sites.
- Customer support via three helpdesks: helpdesk@niftt.gov, helpdesk@frcc.gov, and helpdesk@landfire.gov (538 helpdesk inquiries were responded to in FY2011) (Table 2).
- NIFTT provides user support by managing two websites (niftt.gov and frcc.gov) and a HelpDesk that responds to question pertaining to NIFTT tools and curricula, FRCC, and LANDFIRE.
- During the time period June 1 – September 30, the NIFTT and FRCC web pages were visited 1409 times (352 hits/month) and 1571 times (393 hits/month), respectively.

Helpdesk Categories	# requests	% requests
LF Data Download Questions	39	7.3
LF Data Questions	30	5.6
LF Data Requests	9	1.7
LF Misc	77	14.3
LF Refresh	5	0.9
NIFTT Tools	117	21.7
NIFTT Training	35	6.5
NIFTT Courses - registration/certification	220	40.9
FRCC	6	1.1
Total	538	100

Table 2. NIFTT Help Desk requests for FY 2011

Appendix A

APPENDIX B: 2012 WFM RDA PROGRAM OF WORK

Focus Area 1: Coordinate relevant and timely fire science application

Continue communication, information sharing, information dissemination, and education by maintaining the website for the WFM RDA program for housing programmatic and NFDSC information, www.wfmrda.nwcg.gov.

- Participate in the Information Technology (IT) Roadmap Group; an interagency effort to develop a strategic plan for DOI / USFS fire technologies.
- Support analysis and review of the Fire Danger Pocket Card evaluation by the Desert Research Institute (DRI).
- Support Alaska Interagency fire behavior webinars.
- Review and provide feedback on MS research project with University of Alaska, Determining and Evaluating Variables Contributing to the Spread of Fire in Alaska.
- Continue coordination with the Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS)
- Increase use of the Rocky Mountain Center Products in WFDSS
- Increase awareness of Rocky Mountain Center's products, including the www.fireweather.info, through webinars and the Advanced Fire Practices program.
- Support an Operational System for Continental-Scale Evaluation and Verification of Fire-Weather Forecasts by the USFS Rocky Mountain Center
- Continue coordination with the Fire Research And Management Exchange System (FRAMES), including utilization of file sharing, community
- Participate as a member of the Wildland Fire Science Partnership (WFSP).
- Continue collaboration with the Pacific Northwest Research Station's Air Fire program for smoke dispersal work and seek opportunities to further integrate products with field users.
- Collaborate with the Desert Research Institute (DRI) Climate, Ecosystem, and Fire Applications (CEFA) in a formal partnership to improve data acquisition and maintenance, and decision support tool development.
- Coordinate and cooperate with the National Predictive Services and Intelligence groups.
- Provide information/data as requested regarding use of LANDFIRE data and incident decisions to research partners.
- Ensure WFM RDA stay abreast of the latest risk assessment process, evaluation, and research and provide feedback to the various efforts.
- Provide support and expertise to the development of performance measures to determine wildland fire management decision making and risk.
- Establish new and maintain current collaborative activities with universities, fire management groups, and other research projects to review and acquire additional decision support tools and evaluate 2012 operations. Collaborative efforts are underway with the Universities of Idaho and Montana; University of Nevada; Joint Fire Science Program; and Eastern Great Basin, Southwest, and National Interagency Coordination Center Predictive Services Units.
- Provide representative to the JFSP sponsored Northern Rockies Fire Science Network (NRFSN) Consortium.

Focus Area 2: Develop and support a Wildland Fire Decision Support System (WFDSS)

Development for FY2012 will focus on maintaining system reliability and making adjustments and improvements as funding allows. Evaluation and improvement of this system will occur and user feedback will be addressed as needed.

- Improvement of map viewer features and decision editor functions.
- Evaluation of potential new user roles to aid oversight capabilities.
- Risk Assessment / Management – continue to increase risk management inputs to decisions.
- WFDSS Help topics and content will continue to improve with overview topics on landing pages and descriptions of features and functions available.

- Implementation of Unique Fire Identifiers for future integration into other fire management applications – increase interoperability of systems
- Upgrade Decision Document editor to enable drag and drop and more intuitive data entry.
- Fire Behavior Analysis improvement- ensemble Near Term analysis, clustering FSPro runs for fires adjacent to each other
- Develop version of WFDSS to be compatible with multiple mobile devices, referred to as WFDSS Lite.
- Continue After Action Reviews (AAR) of WFDSS with field and Geographic Area Editors.
- Coordinate monthly GA Editors conference call to disseminate information to field and enlist user feedback.
- Data management: incorporate updates in LANDFIRE data, update National data layers as necessary
- Increase use of web services for data acquisition.
- Provide opportunities to use agency data for historic fire perimeters.
- Work with the Geospatial Enterprise Portal development to ensure connectivity of WFDSS in the future for ingesting data.
- Complete transition of values information in to WFDSS and provide a streamlined approach to preparation, management and hosting of values data.
- Continuation of Spatial FMP testing in WFDSS to ensure coordination with field and the Interagency Fire Planning Committee's work.
- Continue migration of support to the IBM Help Desk and provide training as necessary. The Helpdesk transitioned to IBM on September 7th 2011.
- Continue to work with FAM IT to maintain collaborative efforts with other software architectures and compliance with security requirements within WFDSS.
- Continued work with ICS 209 development to provide information from WFDSS to the 209 and reduce data entry for the field.
- Use of calculated state of weather so that FSPRO can be run without NDFD and to eliminate the need for storing multiple days of forecast data.
- Consolidate wind and weather tables and provide a more detailed weather summary in the Short Term Fire Behavior model.
- Implement the use of real time NDFD point forecasts in the fire models which will allow Alaska and Hawaii to utilize the Near Term model and should fix intermittent issues with gaps in forecast data.
- Continue researching, studying and testing gridded weather products for use in the WFDSS fire behavior models.
- Incorporate maps, visual cues, logic rules and validation to assist users in creating more accurate fire locations and Unit ID's.
- Provide download tool for gridded wind data in a KMZ (Google Earth) format that displays wind outputs in a directional arrow and velocity format.
- Update the WindNinja software in WFDSS and provide a gridded wind option with Near Term Fire Behavior.

Focus Area 3: Coordinate technology and development efforts for hazardous fuels and vegetation management and support interagency training in this area

- Continue cooperation with NWCG on development of training materials for S-244, S-491, and S-495
- Continue to provide FRCC instruction for the Washington Institute's Technical Fire Management Program
- Develop an online course for the Weather Information Management System (WIMS)
- Continue partnership with the University of Idaho in developing training materials (online courses, videos, webinars, posters, etc.), developing marketing materials, monitoring the effectiveness of online courses, and providing workshop instructors.
- Continue partnership with FRAMES to host websites and miscellaneous training materials.
- Collaborate on technology transfer of LANDFIRE products with The Nature Conservancy.
- Collaborate on development of FuelCalc and maintenance of FOFEM with RMRS Fire Modeling Institute (FMI).
- Continue providing NIFTT user support with websites and a helpdesk for NIFTT tools and curricula, FRCC, and LANDFIRE.
- Support the Interagency Fuels Treatment Decision - Support System (IFT-DSS) develop and application as needed.
- Continue to participate in the development of the Cohesive Strategy as requested.

- Coordinate with LANDFIRE as needed, (fuel Model Transition project, calibrations, user feedback, data refresh and updates).

Focus Area 4: Develop applications, disseminate information, conduct training for existing and emergent research priorities

- Participate in the FS CIO and Fire and Aviation Management's Mobile Technologies Integration testing phases of tablets and smart phones to improve information and applications for fire management.
- Continued development of WFDSS curriculum for NWCG and other courses and regional workshops (S495, S590, TFM, Regional FB workshops and S490), as it relates fire behavior, decision support, and risk analysis.
- Continue to expand and revise current WFDSS online training curriculum and presentations media.
- As travel allows continue presentations at conferences, workshops, and other venues appropriate for the topic.
- Continue FsPro Validation to provide feedback to researchers on model revisions.
- Provide representation and collaboration to the RMRS Science Application and Integration (SA&I) peer network.   SA& I Working group
- Support LANDFIRE Fuel Model Transition project.
- WFDSS training materials will be evaluated and improved as needed; and will include an exercise on an Introduction to WFDSS.
- Continued development of curriculum for NWCG and other courses as it relates to decision support/fire behavior analysis tools (Technical Fire Management (TFM), S495 Geospatial Fire Analysis, Interpretation, and Application.

Focus Area 5: Participate in and manage the National Fire Decision Support Center (NFDSC)

- Coordinate and expand detailer opportunities to emphasize training to field analysts
- Support interagency fire requests for fire behavior analysis and decision publication
- Manage Geographic Area Editor conference calls to aid in information dissemination and to seek field and user input
- Coordinate and collaborate with other NFDSC members: Fire Spread Research, Fire Economics Research, Human Factors and Risk Management RDA, and Fire and Aviation Management.
- Conduct evaluation of 2012 fire season activities, review procedures and develop improvements as appropriate, develop 2012 accomplishments and input for annual reports
- Maintain an FBAN/LTAN/technical specialist list for use by the NFDSC, Geographic Area Editors and Geographic areas for determining support and training opportunities
- Continue to assist with training and refreshing future and current analysts from IMTs, field units, GACCs, etc. through detail assignments, direct field support, and other means as appropriate.
- Add NFDSC employees as cadre and steering committee members to national and regional training courses pertaining to decision support analysis, risk assessment, and incident management. Develop and prepare materials for training delivery in FY2012
- Evaluate field use, output, and performance of decision support analysis tools. Provide appropriate feedback to research and the field
- Develop stronger SOPs for use of Decision Support Centers in Geographic Areas.

Appendix B

Wildland Fire Management RD&A

Integrating science, technology and fire management.

http://www.wfmrda.nwcg.gov

Contact Information