



*Integrating
science, technology
and fire management.*

Wildland Fire Management RD&A



FY2014

Wildland Fire Management

Research Development and Application Program

Accomplishment Report

FY2014 Accomplishment Report
Wildland Fire Management
Research Development and Application Program

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The Wildland Fire Management Research, Development, and Application (WFM RD&A) program was created to promote application of wildland fire scientific knowledge; develop decision support tools; and provide science application services to the interagency wildland fire community. The WFM RD&A serves as a primary point of contact for communication between scientists and participating field fire managers, as a liaison among research, wildland fire planning and operations, interagency wildland fire IT groups; and as a source of advice to fire program administrators at local, regional, and national levels. The WFM RD&A was initially chartered by the Department of Interior and the USDA Forest Service in 2006 and re-chartered in 2011 for a five-year period. The charter is recommended by the Directors of the Rocky Mountain Research Station, Forest Management Sciences, and Fire and Aviation Management and signed by the Deputy Chief of Research and Development, the Deputy Chief of State and Private Forestry as well as the Chief of the US Forest Service. The charter defines the areas the WFM RD&A participants will work and focus their attention. The focus areas are:

- Coordinating relevant and timely fire science applications.
- Developing and supporting a Wildland Fire Decision Support System (WFDSS).
- Coordinating technology and development efforts for hazardous fuels and vegetation management, and supporting interagency training in this area.
- Developing applications, disseminating information and conducting training for existing and emergent research priorities.
- Participating in and managing the National Fire Decision Support Center (NFDSC).

Vision

The WFM RD&A 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 and in collaboration with partners.

Mission

The WFM RD&A Program will sponsor and guide the development and application of wildland fire scientific knowledge; develop decision support tools; and provide science application services to the interagency wildland fire community. With integrity, professionalism, safety, and mutual respect as our core values, we serve as leaders, role models, and mentors within our resource management agency.



In 2014 the Wildland Fire Management Research Development & Applications program continued to support real-time decision making on wildland fires through web-based applications, remote assistance and in-person analysis and advice. As in years past, we engaged researchers and managers in the field to facilitate effective delivery of emerging science to those who can use it to help solve problems.

This year we achieved full staffing by filling three key vacancies. Addition of new staff and skills allowed us to critically review the effectiveness of previous efforts and consider taking on new challenges. With full staffing we have increased our ability to provide support to fuels planning and implementation, spatial fire management planning, risk analysis, improved objectives for wildfire management, and use of fire effects to inform decision-making.

We conducted widespread and intensive interactions with regional and local-level decision-makers and other users to update awareness of issues and solicit suggested remedies associated with WFDSS and other decision support efforts. We will continue to act on the information gained to enhance our applications and efforts in support of local-level wildland fire decision-makers.

Midway through 2014, the WFM RD&A accepted the challenge of development and management of the Interagency Fuels Decision Support System (IFTDSS). This application holds promise to greatly improve the ability of local-level practitioners to plan and implement fuel treatments that are based on the best available science and are effective in mitigating undesired wildfire effects.

The WFM RD&A continues to strive to transform fire management through integration of science and technology. I encourage you to review the following report to learn more about what we have achieved and where we intend to focus in the future.

The WFM RD&A welcomed three new employees in 2014

Reginald (Reggie) Goolsby was most recently a forester and fire ecologist at the Francis Marion and Sumter National Forests of South Carolina. In 2014, he detailed with the Redmond Hotshots, and comes with a unique set of skills and a clear passion for transferring technology and research to the field. Reggie was a journalist for a New York Times Company newspaper for several years before receiving his master's degree in Forestry (Fire Ecology concentration) from Clemson University. Goolsby is also a programmer and a database manager, independently developing desktop software, web-based modeling applications and mobile device applications to assist with fire effects monitoring and wildland fire and fuels planning. Reggie lives in Union, SC.

Caroline Noble has served as the National Park Service Southern Region's Regional Fire Ecologist for the past fourteen years. She has previously worked as a Hotshot, Fuels Specialist, Prescribed Fire Specialist, and Assistant Fire Management Officer for both the NPS and the Forest Service. She has a B.S. in Natural Resources from Cornell University and a master's degree in Silviculture from the University of Idaho. Caroline will serve as the lead for our Fuels Program as well as provide support to technology transfer initiatives. Caroline resides in Tallahassee, FL.

Mark Hale worked as a Fire Planner and as the Eastern Region Geographic Area Editor for WFDSS for the last six years on the Superior National Forest in Minnesota. Mark has been in fire since 1991 and previously worked as a Hotshot, Assistant Station Manager, Fuels Technician, Fuels Specialist, Forest Aviation Officer, and acted as Forest AFMO, Forest FMO and Regional Fire Operations. He has an A.S. in Recreation and Wildlife from Hocking Technical College, a B.S. in Fisheries Resources from the University of Idaho, and he completed Technical Fire Management in 2006. Mark will serve in one of our National Fire Decision Support Lead Analyst positions, providing support to decision-makers on wildfires as well as conducting technology transfer duties. Mark resides in Grand Rapids, MN.

Awards and Recognition

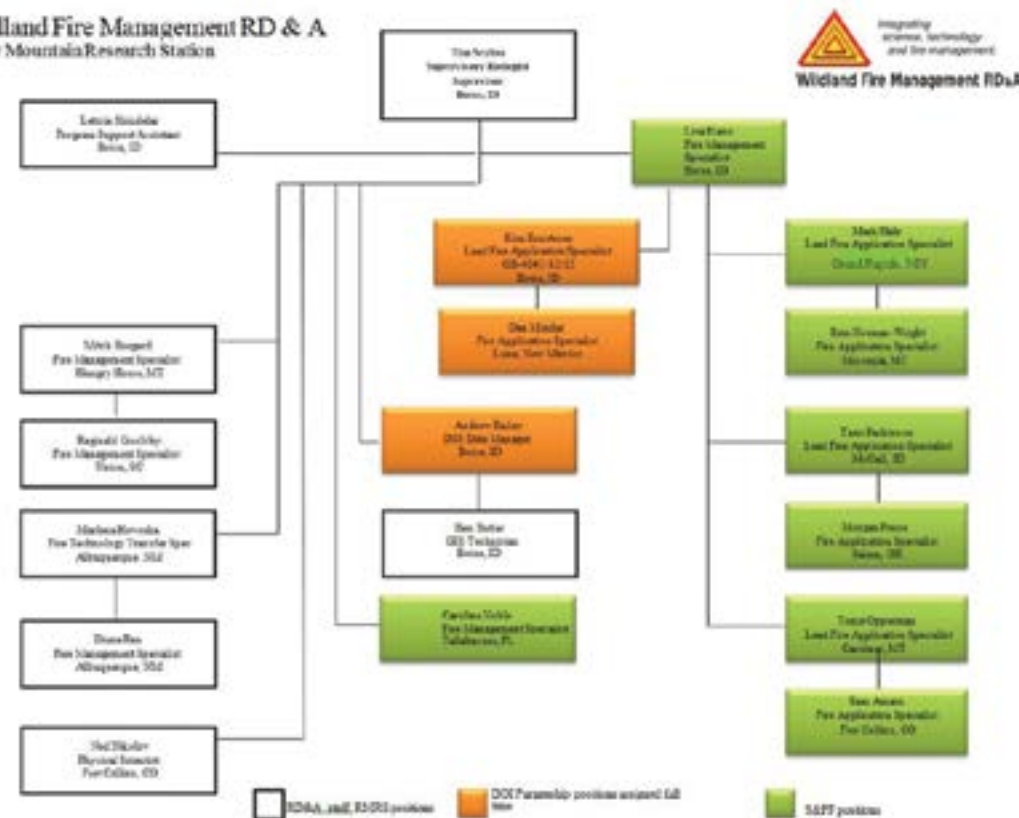
WFM RD&A Employee Receives Award

Lead Fire Analyst Tami Parkinson received an award of recognition on behalf of the WFM RD&A for efforts in producing a USFS Line Officer Desk Reference for Fire Program Management from the National Line Officer Team (NLOT). The award reads "In recognition and sincere appreciation for your leadership, distinguished service, and outstanding contribution in support of the National Line Officer Team." The reference guide is available from the WFM RD&A website and is updated annually to account for changes in guidance and policy.



Photo by Karen Wattenmaker

Wildland Fire Management RD & A Rocky Mountain Research Station



*The Wildland Fire Management RD&A is comprised of 19 individuals located across the U.S. Learn more about all of the WFM RD&A staff at http://www.wfmrda.nwcg.gov/staff_bio.php.

The WFM RD&A organizes projects among three broad goals as distilled from focus areas of our charter. This section highlights FY14 accomplishments that support these three goals:

- Wildland Fire Decision Support Systems are Risk-Based, Relevant, Timely, and Integrated Covering Planning (Fuels) and Incident Response.
- Technology Transfer Provides Various Methods for Land Management Units to Understand Fire Risk Systems and Use them as a Basis for Project Planning and Incident Management.
- Connect with Field Practitioners to Understand Management Needs; Researchers to Ensure that Latest Science is Incorporated and is Relevant to Field Needs; and Washington Offices to Ensure National Interagency Coordination in Addition to Local, State, and Non-Government Entities.

Goal 1: Decision Support Systems are Risk-Based, Relevant, Timely, and Integrated

Wildland Fire Decision Support Systems include fuels planning and incident response.

1.1 Objective: Integrate research and technology into decision support systems

The goal is to provide for better decision making with decision support systems that utilize the best available research and technology.

Development of the Incident Risk Console (RisC)

The Incident Risk Console (RisC) is a 'dashboard' style application that provides a quick glimpse of risk related elements for large and emerging wildland fires. Requested by the USFS Washington Office (WO-FAM) and released to initial users in 2014, this tool is accessed through the Enterprise Geospatial Portal (EGP), <https://egp.nwcg.gov>. Multiple Washington Office and regional briefings covered navigation, a walkthrough of each risk element, and review of the EGP. Fire season 2014 allowed the WFM RD&A to evaluate the risk elements and use of the dashboard. Adjustments and modifications



*The RisC dashboard allows an overview of fire risk elements at both broad and site-specific scales.

were made as needed and will continue as feedback is received. RisC consolidates data from WFDSS, ICS-209, and ROSS, allowing users to compare risk elements between several fires and review detailed information about individual fires. The RisC application is a collaborative project with WO-FAM, Forest Service Research (Economics and Fire Spread), and FAM-IT.

Spatial Fire Planning in Wildland Fire Decision Support Systems (WFDSS)

Spatial fire planning enhancements are continuing within the WFDSS platform. A YouTube video, "Introduction to WFDSS Spatial Fire Planning", is available at: https://www.youtube.com/watch?v=HlzbB9dl_hc. An informational PowerPoint called, Spatial Fire Planning in WFDSS: An Introduction was produced, and a help guide is available at https://wfdss.usgs.gov/wfdss/pdfs/SFP_in_WFDSS.pdf. All of these serve to inform practitioners on the spatial fire planning process. In 2014, eleven National Forests and several Fish and Wildlife units were early adopters and have switched over to WFDSS Spatial Fire Planning. National fire direction came out in September that all Forest Service Units must use Spatial Planning by the 2016 fire season. In an effort to facilitate this process the WFM RD&A will collaborate with Regional Fire Planners to assist them with local planning efforts.

The WFM RD&A recently received the following feedback praising the new feature:

"In my opinion the move to the Spatial Fire Planning [is] a much better way to display and implement the forest plan direction vs. using FMUs. [It] was a relatively simple exercise. Perhaps the more significant benefit of converting to spatial fire planning is that policies have changed substantially in the last few years both nationally and locally. Stand-alone policies specific to retardant avoidance, sage grouse, aquatic invasives, mitigating impacts to T&E species, and others have or will become major constraints relevant to most fires. The advantage of Spatial Fire Planning is that you can include everything, and efficiently filter through what is relevant once a planning area for [the] incident is defined."

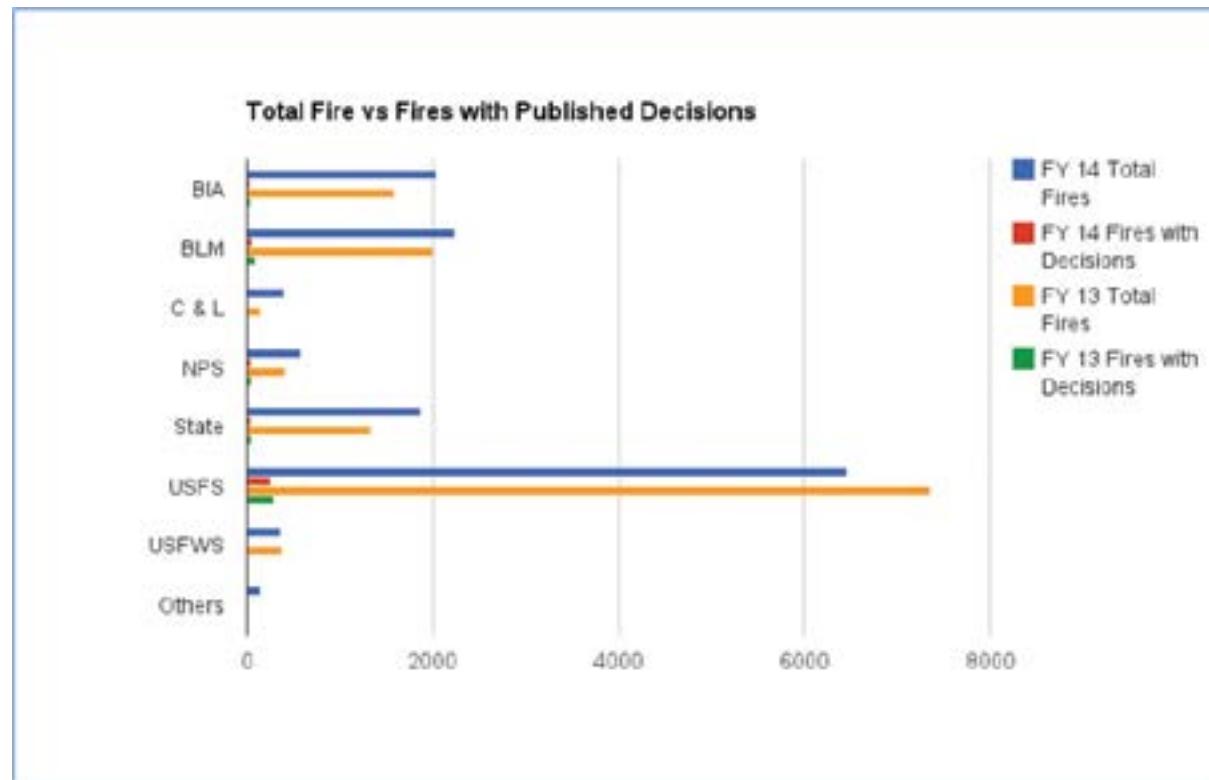
Historical Mesoscale Reanalysis Project

The WFM RD&A has combined funding with the Rocky Mountain Research Station Fire Economics program to fund a cooperative project with the National Oceanic Atmospheric Administration, the National Weather Service, and the National Centers for Environmental Prediction staffs to produce a 30 year record of mesoscale gridded weather by 2017. This record can be utilized in the future by the Wildland Fire Assessment System, for calculating life fuel moistures, for developing National Fire Danger Rating System information, and for the WFDSS fire behavior models. Although these known systems have been identified for use of the data, the product is expected to be useful in research and for other programs.

1.2 Objective: Assist the field to increase and improve inputs for timely risk-based decisions

Real-Time Decision Support

We continued to staff a decision support hotline this year and have analysts on standby for fire behavior requests. Although national fire averages were lower than typical, we provided assistance on Type 1 through Type 5 incidents. The majority of our support was in the Northwest (29%) and the Northern Rockies (25%). Decision support questions most often involve Near Term Fire Behavior and FSPro requests, followed by Decision Documentation. For more statistics on the help we provided in FY14, see the National Fire Decision Support Center Annual Report on the WFM RD&A's website.



***Total FY14 fires compared to FY14 fires with published decisions compared to FY13. The USFS had the most fires of any agency at about 6500 fires in FY14 compared to about 7400 in FY13. Very few fires are analyzed through the published decision process in WFDSS no matter the agency. The USFWS & County/Local Government each had four published decisions in FY14, the BIA had 23, State governments had 33, the NPS had 37, the BLM had 72, and the USFS had 268.**

Risk & Complexity Analysis

The new Risk and Complexity Analysis was approved by NWCG in December 2013 and incorporated into WFDSS in the spring of 2014. The WFM RD&A provided additional documentation and edits to the current paper version based on utilization and feedback from field users. This information will be updated in the appropriate guides and has been added to the help content in WFDSS.



***Line officers and stakeholders are briefed on strategic options as part of a deliberative risk assessment process.**

Line Officer Refresher

The WFM RD&A hosted two webinar refreshers specifically targeting the interagency Line Officer community and their use of WFDSS. Topics for the 189 attendees included an overview of current risk management processes, basic WFDSS navigation, decision focus areas in WFDSS for the Line Officers, and how to support decision making using fire behavior models.

WFDSS in the News

The Idaho Statesman wrote a front-page article about the science and modeling behind the Wildland Fire Decision Support System and its use as a tool to inform risk-based decisions on the Johnson Bar Fire this summer. Read more at: http://www.idahostatesman.com/2014/10/05/3411043_employing-science-to-work-with.html?sp=/99/1687/&rh=1

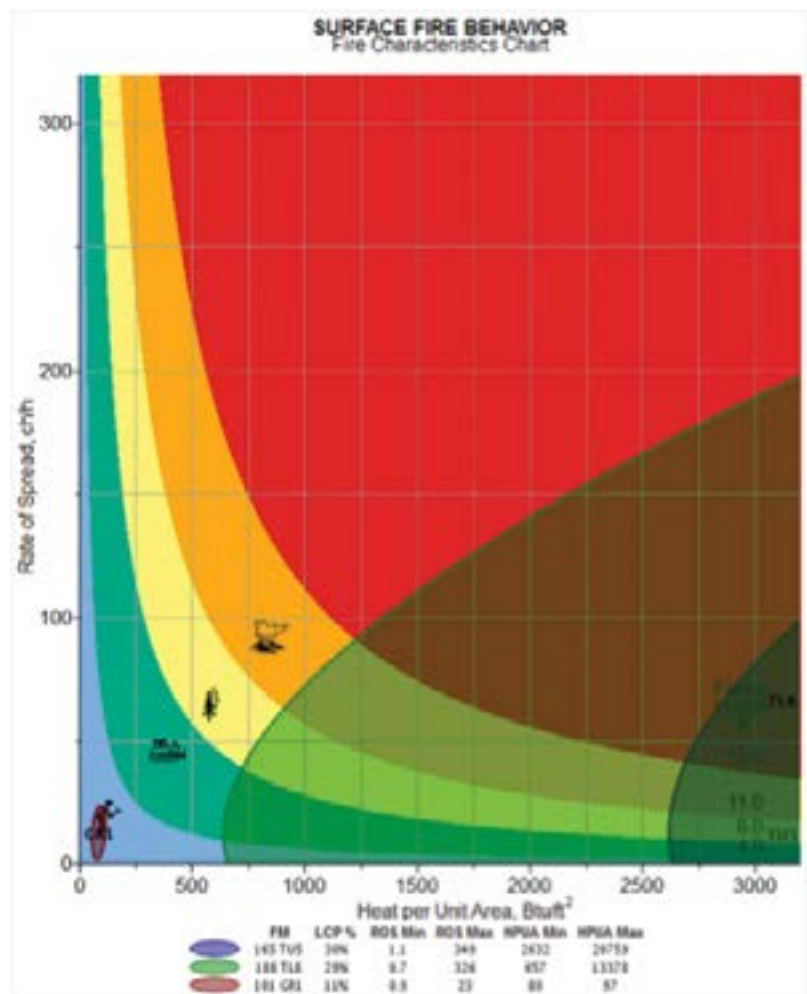
1.3 Objective: Evaluate, test, identify and suggest WFDSS enhancements that support the field

WFDSS Website and Training Materials Receive Regular Updates

As the WFDSS application grows and matures, we ensure that new information is available to users in the form of Online Help, WFDSS 101 lessons, and other learning materials. With each new release, training materials are updated and republished to the Website and outdated materials removed. 2014 brought the 508 compliance challenge to documentation. The documentation team converted training materials into 508 compliant documents in addition to regularly scheduled updates, increasing workload, but providing an excellent opportunity to utilize detailers and mentees to assist in the effort.

Hauling Charts added to WFDSS

In collaboration with the Missoula Fire Science Lab, a new Hauling Chart feature was added as an output to Basic and Short Term Fire Behavior analysis simulations for modeled fires. The output displays modeled flame length in dominant landscape fuel models with the same breakpoints as the Fire Characteristics Charts developed by Rothermel (1983). The output also provides minimum and maximum rates of spread and heat per unit area for each of the dominant fuel models. The charts are available in a linear and a logarithmic scale. This new feature provides for quick interpretation of potential fire behavior and associated control tactics.



***The Hauling Chart in WFDSS gives users a graphical representation of potential fire behavior by drawing ellipses for each fuel model on the chart.**

1.4 Objective: Develop applications for fuels treatment planning

WFM RD&A leads development of the Interagency Fuels Treatment Decision Support System (IFTDSS). The Interagency Fuels Treatment Decision Support System (IFTDSS) is a web-based software and data integration framework that organizes previously existing and newly developed fire and fuels software applications to make fuels treatment planning and analysis more efficient and effective. IFTDSS provides access to a variety of data and models, all in one place, through one user interface. This interface provides planners with the structure to pass data (inputs and outputs) easily between models, and to reuse and share their products, providing a consistent analysis framework for all users.



***Fire managers require geospatial planning tools that are easily accessible in order to plan successful fuels projects (photo provided by Kristy Swartz).**

Extensive guidance from a broad range of fuels treatment specialists over the last five years has resulted in the identification of four critically important workflow processes:

1. Hazard Analysis
2. Risk Assessment
3. Fuels Treatment Assessment
4. Prescribed Burn Planning

The Wildland Fire Information and Technology (WFIT) Executive Board formally approved IFTDSS on May 30, 2014, for further development and eventual operational deployment. IFTDSS version 2.0 Beta is currently available for testing and evaluation and will be managed in beta test mode for the next two years, with full operational deployment planned for 2017. A number of improvements are planned before IFTDSS can be considered fully operational, but with continued enhancements, IFTDSS could become the official archive for federal fuels treatment planning, and be available for non-federal users. Additional information about the evolution of IFTDSS is found at: <https://www.frames.gov/partner-sites/iftdss/iftdss-home/>

Planning for effective fuels treatments

This project is an ongoing effort to find an analysis process usable to field personnel to evaluate fuels treatment methods prior to implementation to determine if the treatment will effectively meet the intended objectives. Currently there are many different assessment methods and tools available, which are used to varying degrees of efficacy and little agency guidance on evaluating treatment methods for effectiveness. Consequently some treatments are ineffective when tested by actual wildfire.

The WFM RD&A staff has completed a literature review to gather pertinent information on the subject and helped conduct a workshop at the Large Fire Conference in Missoula titled "Defining Fuels Treatment Success". The workshop results could be used to supplement the process in IFTDSS for evaluating fuel treatment effectiveness. A paper is also being developed with recommendations outlining a potential methodology for a fuel treatment assessments with IFTDSS. A potential template for Fuels Specialists to follow when conducting NEPA analyses is also being investigated.

1.5 Objective: Incorporate fire effects into decision-making

Exploring New Products for Decision-Makers

The WFM RD&A is exploring ways to incorporate fire effects into real-time decision making. A recently completed Joint Fire Science Project called FIRESEV used Monitoring Trends in Burn Severity (MTBS) data and pre-fire landscapes to test predictions of nine severity classes based on the NDVI (Normalized Difference Vegetation Index). The product looks to be a promising tool, but is so far only available for the contiguous western 48 states. Maps created to date can be found here: <https://www.frames.gov/partner-sites/firesev/firesev-home/>. Further work is being completed for the eastern states with WFM RD&A support with the goal of providing a real-time tool for fire decision-makers.



***WFDSS provides decision-makers with weather and fire behavior analysis information, accessible via any desktop computer or mobile device.**

Goal 2: Technology Transfer Project Planning and Incident Management

Technology transfer provides various methods for land management units to understand fire risk systems and use them as a basis for project planning and incident management.

2.1 Objective: Train the wildland fire community in utilization of the products we create/sponsor

Fire Behavior Workshops

The WFM RD&A provides instruction, technical transfer, or support for workshops on fire behavior modeling. At the Northern Rockies Fire Behavior Workshop, the WFM RD&A provided a two-hour session for 35 fire behavior specialists to introduce WFDSS processes for using spatial fire behavior modeling and data to support risk-informed decision making on wildland fires.

RMRS Collaborates with Local Governments to Manage Fires

The WFM RD&A collaborates with local governments and fire organizations to collect the best information for WFDSS. Local jurisdictions can immediately see the value their data adds to improve decision-making and assess wildland fire risk to property and homes in the resulting predicted fire footprint. WFM RD&A Data Manager Andrew Bailey and GIS Specialist Benjamin Butler published an article highlighting this valuable collaboration. Some of the most important information put into WFDSS comes from the local government datasets listing building locations, ownership, and values as "cadastral" data. This partnership between WFM RD&A and local governments engages federal partners from within the wildland fire research and operations communities, non-fire federal agencies with aligned goals, and state and local government entities to build datasets that improve decision-making and contribute to public and firefighter safety. Read about this collaborative approach to management at:

<http://www.emergencymgmt.com/disaster/Data-Sharing-Tools-Fighting-Fire.html>.



***Detailed incident maps are not possible without integration of local cadastral data.**

Advanced Fire Behavior Learning Group

The WFM RD&A is involved in providing lessons learned and sharing information about advanced fire behavior practices. The group focuses on sharing information on challenges faced by fire behavior specialists and methods used to overcome those challenges. The group organized a workshop at the Large Fire Conference in Missoula, MT titled "Advanced Fire Behavior Analysis, Through Lessons Learned" for over 40 participants. The workshop encompassed a range of issues regarding spatial fire behavior modeling and included a session about using the Energy Release Component to inform FSPRO outputs, modeling in beetle kill, case studies in beetle kill, and challenges for fire behavior modeling in Alaska.



***A team of fire behavior and long-term analysts develop projections for the King Fire in California.**

Detailer and Mentee Programs

The WFM RD&A's Mentee program provides field practitioners an opportunity to improve their analysis skills and work virtually with the WFM RD&A on on-going projects. The WFM RD&A provided training opportunities to five mentees this fire season: Allan Hepworth (FS), Kurtis Nelson (USGS), Jennifer Adams (NPS), Kristy Swartz (BLM), and Chris Stetson (FS). Each mentee worked in two-week increments from June 30th through September 6th, and were coached as needed by staff while supporting incidents. Mentees supported 11 different incidents in six geographic areas with fire behavior analysis. Two mentees supported prescribed fire planning efforts in preparation for fall burning. While not supporting incidents, mentees tested a new host site for WFDSS, reviewed new NWCG WFDSS related modules, prepared appendix materials for the Rocky Mountain Center website (www.fireweather.info), created "508 compliant" training materials for disabled users, and expanded their knowledge and skills with WFDSS decisions and analysis. Over the last four years we have hosted twenty-one mentees from five agencies.

"The mentee program was a great experience for me and allowed me to gain much more familiarization and comfort with using WFDSS." ~ 2014 Mentee

The WFM RD&A also supports a detailer program that simultaneously allows for critical work to be accomplished while providing training and experience to field personnel on a variety of unique and diverse projects. We utilized five detailers from eight weeks to 120 days each:

- Liz Stuhar (NPS) and Annie Benoit (FS) implemented a prototype Fire Planning and Fuels Management Resource Portal (website) as part of a joint effort assigned through the NWCG Interagency Fire Planning Committee and the Fuels Committee. This Resource Portal assembles information for Fuels Specialists and Fire Planners related to planning challenges as well as "toolboxes" and career development information to aid in keeping up with changing technology and management practices.
- Jhen Rawling (FS) updated the suite of WFDSS 101 training lessons. These lessons are available online from the WFDSS website, and are a primary source of learning for WFDSS users.
- Phil Graeve (FS) assisted with Growing Season Index (GSI) investigation for adjustments to WFDSS, identifying fires of interest for further research, fire behavior model output analysis and investigations into model improvements, and evaluation of the Interagency Fuels Decision Support System.
- JoAnn Fites-Kaufman (FS) is working with other members of the WFM RD&A group to: evaluate past and existing incident objectives; find good examples; develop good examples; and, create training material to improve development of incident objectives that are specific, useful, and tied to local unit plans.



The Resource Portal website assembles relevant information for fuels planners.

Check out more information about all of our detailers and mentees on our blog: <http://www.wfmrda.nwcg.gov/news.php>

Coordinate with NWCG Training

There is a need to incorporate WFDSS training into NWCG course curricula and replace outdated references to incident planning. The WFM RD&A developed 22 training modules as supplemental training aids for various NWCG training courses from S-130 to S-590. Each module is tailored to the course and to the target positions the course is designed to train. The modules provide training on the need for WFDSS, what WFDSS can do, its basic structure, uses and how the student may interact on an incident with the WFDSS process. As NWCG course work is updated the WFDSS modules may be incorporated into the new course curriculum.

2.2 Objective: Increase awareness and effectiveness of the Rocky Mountain Center

In an effort to further incorporate the Rocky Mountain Center (RMC) into the WFM RD&A and streamline efforts of the RMC with other meteorological and climate research groups, an RMC Steering Committee was formed. This committee is composed of several subject-matter experts in the WFM RD&A and NOAA Meteorologist Robyn Heffernan and meets monthly. The purpose of the group is to recommend resource allocation for projects, collaborating with external entities to develop ideas for future products, and determine how to best meet user needs. Learn more about the RMC at http://fireweather.sc.egov.usda.gov/info/about_us.htm.

2.3 Objective: Provide assistance to other countries as invitees, participants, and contributors

The WFM RD&A collaborated with international partners in FY13 and FY15, but has nothing to report for this year. Next year we will have a story about work done in Indonesia for FY15.

2.4 Objective: Support training for fuels treatment planning

Integrating the 40 fuel models into NWCG Courses

The Scott & Burgan 40 fuel models are widely used in wildland fire behavior predictions, fire planning and fuels treatment planning, but much of the NWCG curricula are focused on the 13 fuel models. Students are often at a disadvantage when they reach advanced fire behavior courses such as S-495, or attempt to apply their fire behavior predictions skills in real life field situations. A revised unit for S-390 was developed to provide the students with more information on the 40 fuel models and provides some comparisons and contrasts to the different fuel models as well as introducing some modern tools to aid the students in their fuel model selection. Future efforts hope to target S-490 and help with all the fire behavior training curricula revision to help students learn to select the best fuel model for a given situation.

Fuels Workforce Development Task Team

Staff from the WFM RD&A participated on the Fuels Workforce Development Task Team to address the persistent lack of standardized expectations and accompanying skills and training for individuals in Fuels Management positions. This work has been a multi-year effort with three recommendations being brought forward to the NWCG Executive Board and the Fire Management Board.

- 1) Develop a consolidated "Center of Practice for Fuels and Fire Planning".
- 2) Investigate a potential Professional Certification Program for Fuels Specialists.
- 3) Invest in training development to address persistently recognized gaps.

The task team, comprised of representatives from all federal fire agencies and subject-matter experts, was assembled in the fall of 2013 with a tasking to review and update two reports completed in 2005 and 2008 ("Prescribed Fire and Fuels Specialist Development Project Report" and the "NWCG Fuels Management Workforce Development and Action Plan"). Through a series of workshops, virtual meetings and informational webinars, the team gathered information on fuels workforce trends and development. Action items from the previous reports that had not been acted on or were never

fully developed were consolidated into groups of items that the task team felt were still valid and needed attention. Other knowledge gaps for fuels specialists were discussed and the above three recommendations were presented to the NWCG Executive Board and Fire Management Board with full concurrence.

The result is progress in the effort to build capacity in the federal fuels specialist workforce. It is anticipated that further progress will be made on the above recommendations once dedicated positions are hired at NAFRI to build capacity for a "Center of Practice for Fuels and Fire Planning" along with other collaborative efforts.



2.5 Objective: Improve data delivery mechanisms for broader audiences

WFM RD&A Promotes and Assists in the Development of Interagency Data Standards

2014 was a busy and productive year for the interagency wildland fire data community. For the first time since 2008, new National Wildfire Coordinating Group (NWCG) geospatial data standards were adopted for Wildland Fire Locations (points), Wildland Fire Perimeters (polygon) and Fuels Treatment (polygon). These standards become the building blocks upon which data are exchanged among systems, and serve as a starting point for analysis of data that span wildland fire agencies nationwide, from the local to national levels. The WFM RD&A Data Management staff used the new Fuel Treatment standard to compile interagency fuels treatment data from the five federal wildland fire agencies into a single layer. Their experience in implementing the standard was used to improve and refine later standard revisions. This resulting interagency fuels treatment layer can be used in WFDSS by fire behavior analysts to adjust fuelbed characteristics, fire behavior, and spread properties, as well as for situational awareness. WFM RD&A Data Manager Andrew Bailey played an important role in the creation of these standards through his role as NWCG Geospatial Subcommittee Chair.

Integrated Reporting of Wildland Fire Information (IRWIN) Collaboration

The WFM RD&A has been engaged in a significant partnership with the interagency fire data community through the Integrated Reporting of Wildland Fire Information (IRWIN) project, and as a result, transformative data delivery capabilities for WFDSS have been achieved. Representing the culmination of a busy winter of development and preparation, the IRWIN data service began facilitating the exchange of real-time fire information from computer-aided dispatch (CAD) systems, financial systems, operational fire reporting systems, and decision support systems. WFDSS began receiving fire information from authoritative systems in May, and as a result, more than two-thirds of the fires entered into WFDSS were delivered from sources such as WildCAD and FireCODE, eliminating the need to enter 7,800 fires over the period from May 2014 to October 2014. This reduced the workload on dispatchers and other users who in the past had to manually enter fire information into WFDSS; and improved data consistency and quality. The work of the WFM RD&A in developing and supporting data standards, and implementing robust data quality procedures in WFDSS has been recognized by partners in the IRWIN project as contributing significantly to project success. Work continues in 2015 to refine data element definitions and standards, implement quality control procedures, and add additional wildland fire computing systems which can both deliver and utilize wildland fire data.

Fire Behavior Community

With recent changes to the Wildland Fire Lessons Learned Site and the fire communities, located at <http://www.wildfirelessons.net/home>, a need was identified to stand up a new fire behavior community. The WFM RD&A assisted in starting this new site for fire behavior analysts and meteorologists to collaborate and share information. This will not be a long-term pursuit of the WFM RD&A but many staffs will contribute their knowledge and share their experience on this site well into the future.



***WFM RD&A's Kim Ernstrom briefs Operations on the long-term plan during the Bald Sisters Fire in Oregon.**

Goal 3: Understand Field, Management, and Research Needs.

The WFM RD&A strives to connect with field practitioners to understand management needs, with researchers to ensure that latest science is incorporated and is relevant to field needs, and, in addition to local, state, and non-government entities, with the Washington offices to ensure interagency coordination.

3.1 Objective: Communications with collaborators improve WFM RD&A functions

WFM RD&A Collaboration with LANDFIRE

The WFM RD&A has been in a productive partnership with the LANDFIRE program since 2006 and depends on LANDFIRE data for many projects and applications. Find more information at <http://www.landfire.gov/>. LANDFIRE has engaged the WFM RD&A in many technology transfer projects, including:

- LANDFIRE provides seamless fuel model data for the WFDSS program which enables fire behavior modeling on a landscape scale.
- All of the fire behavior models in WFDSS (Near Term, Short Term and FSPro) depend on LANDFIRE data to operate.
- LANDFIRE is experimenting with adjusted fuel model data sets that reflect regional differences in drought effects on fire behavior, allowing analysts to perform more advanced fire behavior modeling on wildfire incidents.
- The WFM RD&A developed an online course introducing LANDFIRE data and processing methods to new users.
- LANDFIRE data sets are available in the beta version of IFTDSS and will play an important role in further development of the IFTDSS application for fuels management planning.
- The WFM RD&A has produced tools (FRCC Mapping tool--FRCCmt, Wildland Fire Assessment Tool - WFAT and LANDFIRE total fuel change tool - LFTFCT) to help users manipulate and adjust LANDFIRE data sets to reflect local fuels and vegetation conditions.
- The WFM RD&A has provided help desk support for LANDFIRE through a cost reimbursable agreement with the University of Idaho. This agreement provides additional staff to manage the help desk and provide user support to the many LANDFIRE data users from across disciplines.

The LANDFIRE program celebrated its ten-year anniversary this past year and the WFM RD&A recognizes the importance of this program. Seamless, landscape-level fuels and vegetation data is critical to the success of fire management programs across the country. Without this data, many of the fire management decision support efforts of the WFM RD&A would not be possible or would be so cumbersome that the WFM RD&A would not be able to effectively assist fire managers in decision-making. The continuation and potential expansion of the LANDFIRE program will continue to enhance and allow WFM RD&A efforts to move forward in the next decade.



***LANDFIRE translates complex fuels patterns into a wall-to-wall pixellated format for use in predictive fire behavior modeling.**

Fuels Treatment Effectiveness Workshops

The WFM RD&A is working with the Rocky Mountain Research Station in developing processes for determining fuels treatment effectiveness. In coordination with the Rocky Mountain Research Station Fire Sciences Lab and the Northern Rockies Fire Science Network, the WFM RD&A developed and taught a workshop to 35 practitioners and developed a theoretical project-level process for evaluating fuel treatment effectiveness before the implementation of the treatment. Four groups of 5-6 people with a range of management and research experience were provided scenarios and had to develop a process of how they would measure the effectiveness of their chosen treatment using visual aids to facilitate their thought process. Folks interested in facilitating a similar process will find the materials and workshop specifics at <http://nrfirescience.org/event/defining-fuel-treatment-success-workflows-metrics-and-evaluation>.

Wildland Fire Information & Technology

As the interagency Wildland Fire Information & Technology (WFIT) efforts proceed at the national scale, the WFM RD&A has been involved, and supports efforts as needed. Team members have been involved since 2011 in development of needs and assisting with writing standard operating procedures as part of the Emerging Technologies Group. This support is continuing to move new technology use forward in the interagency fire community.

In addition, the Fire and Aviation Management Mobile Technologies focus has been integration and testing of tablets and smart phones to improve information and applications for fire management in several applications from mapping, air attack, and planning.



***Long-Term Fire Analyst Mary Taber gives a briefing to Lisa Elenz using her iPad.**

WFM RD&A Participates in Staff Rides

Mann Gulch

In 1949, 13 firefighters lost their lives on the Mann Gulch fire when they were caught on the steep slopes of the gulch and the fire spotted across the drainage below them. The tragedy was a catalyst that set in motion many changes in fire management and research. Members of the WFM RD&A participated in a facilitated Staff Ride of the Mann Gulch fire along with the NWCG Fire Behavior Subcommittee and members of the Missoula Fire Science Laboratory on May 18th, 2014. Insight gained from walking in the steps of the men that died at Mann Gulch proved an experience that provides powerful lessons in crew dynamics, the fire environment, and fire behavior.

Big Hole National Battlefield

Tami Parkinson from the WFM RD&A assisted the Office of Learning with hosting the first Big Hole Battlefield Staff Ride in September of 2014. The staff ride presented the opportunity to explore emergent leadership by recognizing the Nez Perce Indians and US Army responses to external pressures. The integration and field phase of the staff ride required an awareness of history, allowing participants to examine the way people react to stress, conditions and events beyond their control. This was a non-traditional staff ride, looking to deliver a message of inclusivity, diversity, adaptation and reflection; highlighting the importance of sense making and, opening the dialogue for discussion regarding trauma psychology and resilience. A total of 20 participants participated in the staff ride, including representatives from all levels of the FS organization, DOI representatives and Nez Perce tribal members.



Big Hole National Battlefield is a National Park Service site located in southwest Montana. Historic events at this location are often used to illustrate decision-making concepts to today's leaders.

WFM RD&A Staff Attend Learn How to Deliver Online Learning

Working cooperatively with the National Advanced Fire & Resource Institute (NAFRI) and the American Society of Training and Development, members of the WFM RD&A staff completed a four-week online course to learn about improved methods of online training delivery. The Facilitated Synchronous Learning course provided exposure to different online learning platforms and an opportunity to utilize the full array of learning options available with online training tools. The course offered valuable insight from the vantage point of a student, offering tips and tricks to keep students engaged and motivated, which improves learning and comprehension. Coursework included reading assignments, online sessions, blog/discussion board posts, and interaction among students. A final project allowed course participants to actively put skills gained into practice, and followed with lively discussion and performance review. Skills gained from the course were shared with the WFM RD&A as a whole and have been incorporated into some of the WFM RD&A's regular scheduled online meetings and trainings. The WFM RD&A is continuously looking for ways to improve how they transfer technology to the field. Participation in these types of courses provides opportunities to refresh and improve skillsets of mentors and teachers, while improving user experiences.

WFM RD&A Supports Prescribed Fires

Erin Noonan-Wright worked with Chuck McHugh from the Missoula Fire Sciences Lab and Brad Gillespie from Big Fork RD on the Flathead NF, MT, to support a prescribed burn. This was a complex burn and was part of a collaborative landscape restoration project (Southwestern Crown of the Continent). The objective was to provide a buffer in the Mission Mountain Wilderness Area to increase options for managing fires in wilderness while protecting highly valued assets near Condon, MT. The group used WFDSS to assemble a burn assessment.



***The WRM RD&A supported the Mission Uplands prescribed burn in central Montana as part of a collaborative landscape restoration project.**

WFM RD&A Supports Safety Zone Research

Firefighters continued to be killed by fire entrapments. Dr. Bret Butler of the Missoula Fire Sciences Lab recently proposed modifications to safety zone calculations for fire personnel with help from the WFM RD&A and the Joint Fire Sciences Program. Original research from the 1980s was based on flat terrain with no wind, but recent funding allowed consideration of the effects of slope and wind. The main purpose of the research is to determine how far a firefighter needs to be from a fire to prevent burn injury. Due to the difficulty in gathering real-world data needed for these calculations, computer-based "virtual" experiments were conducted. The WFM RD&A is working with Dr. Butler to provide field-based feedback, potential study sites, and assistance in development of a mobile smartphone app. More about his research is found at <http://www.firelab.org/project/firefighter-safety-zones>.

Pocket Card Research Highlights Fire Danger Revision Needs

Fire Danger PocketCards are used by firefighters to interpret key fire danger index values from the National Fire Danger Rating System (NFDRS), with the goal of improving firefighter situational awareness and safety. With funding from the WFM RD&A, Tim Brown, Tamara Wall, and Nicholas Nauslar from the Desert Research Institute (DRI) assessed utilization of Pocket Cards from its 1997 introduction to present day, using quantitative and qualitative analysis. They authored a report detailing 21 recommendations in Pocket Cardformatting, development of Pocket Card data, and training. Work is being completed by the NFDRS Subcommittee to implement many of these recommendations in the near future. The project illustrates successful coordination between the WFM RD&A and the NWCG Fire Danger and Fire Behavior Subcommittees and DRI's Program for Climate, Ecosystem and Fire Applications (CEFA), and provides the backbone for upcoming revisions to the NFDRS.

Geographic Area Editor Information Coordination

The WFM RD&A maintains regular communication with WFDSS Geographic Area Editors (GAEs), who represent the interagency fire community. GAEs provide a vital communication link by disseminating information from the WFM RD&A to the field, and giving quality feedback from the field to the WFM RD&A. Monthly conference calls with the GAEs allow the WFM RD&A to solicit feedback on specific items that will affect WFDSS users, share new proposals, and discuss current issues. Additionally, an annual After Action Review is held with the GAE community to review the previous year's successes and areas for improvement. Priority tasks are identified and tracked throughout the monthly calls.

Large Wildland Fires Conference

The WFM RD&A Staff participated in the 2014 Association of Fire Ecology and the International Association of Wildland Fires Large Wildland Fires: Social, Political and Ecological Effects conference, May 19th-23rd in Missoula Montana. Staff gave oral and poster presentations, organized and moderated special sessions, hosted workshops, and staffed the WFM RD&A booth. Here are the details:

Lisa Elenz and Marlena Hovorka (Presenters) - Integrating Fuel Treatments in Land Management Planning and Wildfire Incident Response

Erin Noonan-Wright, Tami Parkinson and Dan Mindar (Hosts) - Workshop: Advanced Fire Behavior Analysis, Through Lessons Learned

Erin Noonan-Wright (Host) - Workshop: Defining Fuel Treatments Success: Workflows, Metrics, and Evaluation
Tami Parkinson (Moderator)- Special Session; The Evolution of Fire Behavior Analysis and Management of Large, Long duration Incidents as Experienced on the Mustang Complex

Ben Butler -(Presenter) An investigation of LandScan Suitability for Strategic Decision Making in the Wildland Fire Decision Support System

Tim Sexton -(Presenter) Evolution of Decision Making

Mitch Burgard - (Presenter) Strategic Operational Planner (SOPL)

Morgan Pence and Kim Ernstrom - (Moderators) Special Session: Wildfire Risk Assessment and Decision Support

Lisa Elenz (Presenter) Strategic Decision Making for Wildfires using a Risk Management Process

Erin Noonan-Wright and Tonja Opperman (Presenters) Applying the Wildland Fire Decision Support System to Support Risk-Informed Wildland Fire Decision Making: the Gold Plan Fire, Bitterroot National Forest, Montana

Sam Amato (Poster) Fire Perimeter Delineation and Reconstruction from Geo Referenced Photographs Using Google Earth Pro

Supporting the Forest Service's National Fire Desk

WFM RD&A Fire Management Specialist Diane Rau completed an assignment with the National Fire Desk (NFD) in the National Headquarters of the US Forest Service in Washington, D.C. The NFD collects and classifies wildland fire and hazard intelligence and disseminates timely, accurate and concise incident information to Forest Service and USDA Leadership. Diane was one of a handful of detailers that the NFD relied on in 2013 to assist with these tasks. The NFD relies heavily on detailed Forest Service employees from April to October, when seasonal severity is at its peak, but employs detailers at other times of the year as needed. Working at the NFD is an excellent opportunity for Agency employees to understand the fire reporting process and incident information delivery to the various audiences. A background in fire and good communication and organizational skills are essential.

Yarnell Investigation Report Released

A day before the Lapse in Funding and the furlough began last October, the Yarnell Fire Investigation Report became public. The Report's primary goal, to facilitate learning from this tragedy in order to reduce the likelihood of future accidents, retained some of the most effective techniques of past investigations while integrating current theory and practices. This blending of techniques offers the highest-quality learning product possible, in a timely manner, to the



***Nineteen firefighters tragically lost their lives on June 30, 2013 in the Arizona wildfire. WFM RD&A staffs assisted with the final Report.**

wildland fire community. The Report does not identify causes in the traditional sense of pointing out errors, mistakes, and violations, but approaches the accident from the perspective that risk is inherent in firefighting. Using this approach minimizes the common human trait of hindsight bias, often associated with traditional accident reviews and investigations.

The Team, which included Program Manager Jim Saveland with the RMRS Human Factors & Risk Management RD&A, Fire Spatial Analyst Chuck McHugh, Missoula, and Ben Butler, Sam Amato, and Lisa Elenz with the RMRS Wildland Fire Management RD&A, developed its conclusions through deliberation. The process considered information from a number of sources, including accounts from personnel on the fire, records and logs, physical evidence, knowledge of the firefighting culture, Team observations, and subject matter expert sessions. Team conclusions include:

- The Granite Mountain IHC was a fully qualified, staffed, and trained hotshot crew.
- The Yarnell Hill area had not experienced wildfire in over 45 years.
- Although Yavapai County had a Community Wildfire Protection Plan, many structures were not defensible.
- Radio communications were challenging throughout the incident.
- The fire's complexity increased in a very short time, challenging all firefighting resources to keep pace with the rapidly expanding incident.

The report summarizes the event, draws conclusions, and makes recommendations. Read the report at <https://docs.google.com/file/d/0B36DlycSgbzWSUjNkl1Z2ROT0k/edit?usp=sharing&pli=1>

Research Station Collaboration

The WFM RD&A program was established to ensure effective and timely communication between research and management and the integration of new knowledge and processes into management to enhance the application of the best science in wildland fire management. The WFM RD&A seeks out research projects relating to wildland fire or hazard fuels treatments that have national applications. The WFM RD&A is always seeking to expand its communication and collaboration with other research stations, academia, and the private sector, in ways that can benefit the interagency fire community. We recognize the personnel at these research stations have many unique skills and areas of expertise that can benefit the interagency fire community. We are continually seeking research projects that can be developed into field-useable applications relating to wildland fire and fuels.



Photo by Karen Wattenmaker

Future of the RD&A from Deputy Program Manager, Lisa Elenz

FY2015 will provide opportunities for the WFM RD&A to continue work in identified focus areas and establish new areas for growth. One significant growth area is providing development support to the Interagency Fuels Treatment Decision Support System (IFTDSS) to successfully roll it out in 2017. WFDSS will roll out a new and improved decision editor and include updates for disabled users. Continued development of the Incident Risk Console (RisC) will include evaluating the effectiveness of summarizing risk-based incident information. The Rocky Mountain Center webpage and products are being evaluated and improved to ensure relevant and timely support to wildland fire incidents. Findings from a review of incident objectives will inform new training material, webinars, and courses to provide useful field guidance. A partnership with NOAA and the National Centers for Prediction (NCEP) aims to build a historic gridded weather data set for use in fire behavior analysis and research. Additionally, continued work in the interagency data management arena and IRWIN development will provide opportunities for shared data across applications. Underlying the above listed tasks is the continued support to the risk-centered approach to wildland fire management and supporting the interagency fire and Line Officer community in risk-based decision making.

With three vacant positions recently filled, new opportunities to expand in the above mentioned and other areas will be realized. We will continue to focus on partnerships and effective communication with research, the field, and collaborators to provide support to the interagency fire community.



FY 2014 Presentation, Oral & Poster

- Integrating Fuel Treatments in Land Management Planning and Wildfire Incident Response. Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- The Evolution of Fire Behavior Analysis and Management of Large, Long duration Incidents as Experienced on the Mustang Complex. Moderated session at the Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- An investigation of LandScan Suitability for Strategic Decision Making in the Wildland Fire Decision Support System. Oral and Poster presentation at the Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Evolution of Decision Making. Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Strategic Operational Planner (SOPL). Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Wildfire Risk Assessment and Decision Support. Moderated session at the Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Strategic Decision Making for Wildfires using a Risk Management Process. Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Applying the Wildland Fire Decision Support System to Support Risk-Informed Wildland Fire Decision Making: the Gold Plan Fire, Bitterroot National Forest, Montana. Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- Fire Perimeter Delineation and Reconstruction from Geo Referenced Photographs Using Google Earth Pro. Poster presentation at the Large Wildland Fire Conference, Missoula, MT, May 19-23, 2014.
- WFDSS and Risk Management. National Fire Management Leadership. March 25, 2014.
- WFDSS and Decision Making. Presentation to Undersecretary Harden. June 25, 2014.
- The Wildland Fire Decision Support System. Presentation to members of Australian Fire Management. Sept. 15, 2014.
- Incident Risk Console (RisC) regional presentations. Spring/Summer 2014.
- WFDSS Refresher for Line Officers, online presentations. June 2014
- An Introduction to Spatial Fire Planning. Regional Fuels Planning Meeting, Boise, ID, March 18-20, 2014.
- WFDSS and Line Officers. Presentation at Regional Line Officer Meeting, Ogden, UT, April 2014.

FY 2014 Publications

- Bailey, A., Meyer, N., and Butler, B. 2014. Data Sharing Leads to Powerful Tools for Fighting Fire. Emergency Management, Dec. 3, 2013.
- Noonan-Wright, E., Vaillant, N. and A. Reiner. 2014. "The Effectiveness and Limitations of Fuel Modeling using FFE-FVS". Forest Science 60 (2): 231-240.
- Vaillant, N., Reiner, A. and E. Noonan-Wright. 2013. "Prescribed fire effects on field-derived and simulated forest carbon stocks over time". Forest Ecology and Management (310):711-719.

- NWCG Fire Behavior Field Reference Guide, RDA as Co-Sponsor, <http://www.fbfrg.org/>

FY 2014 Cooperative Agreements/Partnerships

- Air Fire Program, Pacific Northwest Research Station, Homepage: <http://www.airfire.org>
- LANDFIRE Program, Homepage: www.landfire.gov
- Cooperative agreement and development of Board of Directors for oversight of DOI Fire Application Specialists and their participation in the WRM RD&A and the NFDSC
- Desert Research Institute (DRI), Homepage: <http://www.dri.edu>
- National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS), Homepages: www.noaa.gov and www.weather.gov
- Fire, Fuel, and Smoke Science Program, RMRS, Homepage: <http://firelab.fire.org> Human Dimensions Program, RMRS, Homepage: <http://www.fs.fed.us/rm/human-dimensions/>
- University of Idaho Wildland Fire Science Program, Homepage: www.uidaho.edu/cnr/frfs/fire
- Fire Research And Management Exchange System (FRAMES)- University of Idaho, Homepage: www.frames.gov
- National Center for Landscape Fire Analysis (NCLFA)- University of Montana, Homepage: <http://firecenter.umt.edu>
- Department of Interior- Office of Wildland Fire Coordination (OWFC), Homepage: www.doi.gov/pmb/owf
- Bureau of Indian Affairs (BIA), Homepage: www.bia.gov
- Bureau of Land Management (BLM), Homepage: www.blm.gov
- Fish and Wildlife Service (FWS), Homepage: www.fws.gov
- National Park Service (NPS), Homepage: www.nps.gov
- US Geological Survey (USGS), Homepage: www.usgs.gov
- Joint Fire Science Program (JFSP), Homepage: www.firescience.gov
- Northern Rockies Fire Science Network, Homepage: <http://nrfirescience.org>
- National Wildfire Coordinating Group (NWCG), Homepage: www.nwcg.gov
- National Predictive Service Program (NIFC), Homepage: www.predictiveservices.nifc.gov
- USFS Fire & Aviation, Homepage: <http://www.fs.fed.us/fire>
- Pacific Southwest Research Station, Homepage: www.fs.fed.us/psw
- Pacific Northwest Research Station, Homepage: www.fs.fed.us/pnw
- The Nature Conservancy (TNC), Homepage: www.nature.org
- International Association of Wildland Fire (IAWF), Homepage: www.iawfonline.org

FY 2014 Organizational Representation

- NWCG Forest Service Executive Board Representative
- NWCG Fire Behavior Subcommittee Chair
- NWCG Fire Planning Subcommittee Representative
- NWCG Fire Reporting/209 Subcommittee Representative
- NWCG Fire Danger Subcommittee Member
- NWCG Geospatial Subcommittee
- LANDFIRE Liaison
- Predictive Services/Intelligence Liaison
- RMRS Science Application and Integration (SAI) WFM RD&A Representative
- Fire Research And Management Exchange System (FRAMES) Liaison
- Air/Fire Group Liaison
- S495 Geospatial Fire Analysis, Interpretation, and Application Steering Committee Chairmen, Cadre, Mentors, Coaches
- S590 Advanced Fire Behavior Interpretation- Steering Committee Chairmen, Cadre, Mentor, Coach
- Rx510 Advanced Fire Effects Instructor
- National Incident Management Organizations (NIMO) Liaison
- National Performance Measures Task Group Members
- Interagency IT Roadmap Project Liaison
- Wildland Mobile Technologies Working Group
- Fuels Transition Research Representative
- Northern Rockies Consortium Liaison
- Wildland Fire Science Partnership Liaison
- Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS) Representative
- Desert Research Institute (DRI) Liaison
- BLM Data Standards Committee Member
- Interagency Fuels Planning Committee Representative
- Enterprise Geo-spatial Portal (Fire Common Operating Picture) Fire Reporting Representative
- Incident Risk Console (RisC) WFM RD&A Representative

- Emerging Technologies Group Chair and Representative
- NWCG Fire Environment Committee Representative
- National Line Officer Team Liaison

FY 2014 Workshop/Conference Attendance

- Large Wildland Fire Conference, Missoula, MT
- Synchronous Learning, by Association for Talent Development, Online
- Author It Summit 2014, September 17-18, San Jose, CA.

FY 2014 Training/Course Instruction

- Advanced Fire Behavior Analysis through Lessons Learned. Workshop at the Large Wildland Fires Conference, Missoula, MT, May 19-23, 2014.
- Defining Fuel Treatments Success: Workflows, Metrics, and Evaluation. Co-host of workshop at the Large Wildland Fires Conference, Missoula, MT, May 19-23, 2014.
- Oregon state BLM Westside WFDSS Training. Medford, Roseburg, Salem, OR, May 29, 30, June 3, 2014.
- Payette NF Leadership Team and Fire Management WFDSS training. McCall, ID, April 9, 2014
- S590, Advanced Fire Behavior Interpretation, Tucson, AZ, March 10-21, 2014
- S495, Geospatial Fire Analysis, Interpretation, and Application, taught winter/spring, online & Tucson, AZ, 2014/2015.
- Rx510, Advanced Fire Effects, Tucson, AZ, Jan. 13-17, 2014.
- S520, Advanced Incident Management, Tucson, AZ, Feb. 23-March 1, 2014
- S620, Area Command, Tucson, AZ, Feb. 23-March 1, 2014.
- National Fire Management Leadership, Tucson, AZ, March 24-28, 2014.
- S482, Advanced Fire Management Applications, Boise, Idaho, Oct. 21-23, 2014.
- S390, Introduction to Wildland Fire Behavior Calculations, Boise, ID, Nov. 18-22, 2014.
- Northern Rockies Fire Behavior Workshop, Missoula, MT, April 29-May 1, 2014.
- Facilitated recording and posting of S490 pre course workshop to online format for current and future student viewing.
- Facilitated recording and posting of Large Fire Conference (Missoula, MT, May 2014) presentations to online format for current and future practitioner viewing.

Projects are listed here based on how they fit into our three main focus areas and associated goals for FY15.

Wildland fire decision support systems are risk-based, relevant, timely and integrated covering planning (fuels) and incident response.

Integrate research and technology into decision support systems for better decision making.

- Support interagency Spatial Fire Planning efforts.
- Work with partners to support and improve the Incident Risk Console (RisC).
- Partner with the RMRS Fire Economics group to develop a “prototype” forest example for risk assessments, supporting fire decision-making, and spatial fire planning.
- Test Amazon Web Services (AWS) for potential use in the future.
- Develop and test the TwitterFire application.
- Assist the field to increase and improve inputs for timely risk-based decisions.
- Provide training and implementation support for spatial fire planning.
- Develop documents and information that link risk analysis to spatial fire planning.
- Expand expertise in tools and processes for risk analysis (FSIM, ArcFuels, LFTFC).
- Investigate how to assist managers with developing objectives in Land and Resource Management Plans and spatial fire plans to ensure relevant WFDSS guidance.
- Provide daily phone support for ongoing fire incidents, and on-site support as needed.
- Develop Advanced Fire Behavior Lessons Learned workshops at conferences and meetings.
- Edit the Line Officer’s Desk Reference and disseminate through the US Forest Service National Line Officer Team (NLOT).
- Evaluate, test, identify and suggest WFDSS enhancements that support the field.
- Support development and award of a new WFDSS contract.
- Develop applications for fuels treatment planning.
- Continue support for the Fuels Management and Fire Planning Portal.
- Support development and award of an IFTDSS contract.
- Incorporate fire effects into decision making.
- Continue work with the FireSev project to evaluate use in WFDSS.

Technology transfer provides various methods for land management units to understand fire risk systems and use them as a basis for project planning and incident management.

Train the wildland fire community in utilization of the products we create/sponsor.

- Provide webinars, papers and help content to assist managers in writing better objectives in fire decisions.
- Develop a WFDSS Guidebook for the user community.
- Provide good WFDSS Decision examples to the field for use in spring training and reference during the fire season.
- Develop curriculum for WFDSS refreshers to be utilized for general refreshers and Line Officer certification.
- Coordinate WFDSS releases with help content updates, testing and training material dissemination.
- Automate WFDSS GIS mapping features to assist GISS position on incidents.
- Provide training and support to RisC and risk products in WFDSS.
- Support national/regional level courses.
- Provide training opportunities for the field through the WFM RD&A detailee/mentee program.
- Support IFTDSS technology transfer/help documentation.
- Partner with the Aldo Leopold Wilderness Research Institute, USFS Region 1, and the Northern Rockies Fire Science Network to “tell the story” about decision-making on fires managed for resource benefits through a series of video modules.
- Increase awareness and effectiveness of the Rocky Mountain Center.
- Provide oversight to RMC through the newly chartered Steering Committee.
- Develop RMC training and outreach.
- Develop a weather verification model for RMC products.
- Develop a dynamic weather map to host on the RMC website.
- Provide assistance to other countries as invitees, participants and contributors.
- Support fire training in Indonesia.
- Improve data delivery mechanisms for broader audiences.
- Automate and manage WFDSS data processing and acquisition.
- Coordinate with others regarding data standards.
- Continue collaboration with IrWin, the Geospatial Subcommittee, and the Data Management Committee.

Appendix B: FY15 Planned Activities Based on Focus Areas

The Wildland Fire Management RD&A connects with field practitioners to understand management needs; with researchers to ensure that latest science is incorporated and is relevant to field needs; and with Washington offices to ensure national interagency coordination, in addition to local, state and non-government entities.

Communications with collaborators improve WFM RD&A functions.

- Coordinate monthly calls with interagency Geographic Area Editors regarding WFDSS functionality.
- Participate on various National Wildfire Coordinating Group (NWCG) committees.
- Develop a marketing plan for the WFM RD&A.
- Determine the potential role of the WFM RD&A in supporting the Cohesive Strategy.
- Provide developmental opportunities for our staff through details.



*Integrating
science, technology
and fire management.*

Wildland Fire Management RD&A