the Tech. Spec.

A Twice Yearly Newsletter of the Wildland Fire Management RD&A

In this Issue:

The Wildland Fire Management RD&A is Ready for a Brand New Year!

Howdy Everyone! Well, we made it to 2021. We are grateful and excited about this New Year. The WFMRD&A staff has a lot on their plates. Teams are working on the Next Generation of WFDSS, and the Interagency Fuel Treatment Decision Support System (IFTDSS) has a lot of great new features with more to come. We are all getting ready for another busy wildfire season while keeping the original WFDSS system working smoothly. Several of our staff are keeping Line Officers up to speed on the latest technology developments and then of course there is COVID….. Read on to learn more about what we've accomplished and where we are headed.

Program Managers Corner

Tim Sexton

COVID-19 has had a huge impact on all WFMRD&A staff with pre-school and school-age children as well as those with elderly parents needing care. We carried on by conducting "Impact and Mitigation Sessions" in which each staff member described how COVID had affected their lives, what they were doing to get by and unsolved problems. These sessions gave everyone a much better appreciation for the difficulties that were being endured and how we all might make things easier for our co-workers. In addition, sharing how we all cope provided ideas for all of us. Work schedules, conference calls and meetings were changed to accommodate new personal responsibilities and, in some cases, taskings were moved from one staff to another. Our staff was better prepared than many others because most of us have already been working remotely and are skilled in use of teleconferencing, videoconferencing, and remote collaboration.

Two original members of the WFMRD&A left us in 2020. Tonja Opperman took a new assignment with the Enterprise Team Program and Leti Shindelar retired. We also gained two new employees, Susan McClendon and Wes Hall, and were able to get several excellent detailers (Kip, Dean, Dan and Wes) who helped us through staff shortage times *(see pages 5 and 7).*

I encourage you read this newsletter to gain an appreciation for progress we have made on our major projects (WFDSS Next Gen, IFTDSS, Modeling Services Framework) and contributions that have been made to a wide range of Wildland Fire Management functions and program areas.

Area Command Develops COVID-19 Wildland Fire Response Plans

In March 2021, as the COVID-19 pandemic started manifesting it's potential all three Area Command Teams were assigned by NMAC to develop COVID-19 Wildland Fire Response Plans for each of the ten geographic areas. Tim Sexton, Area Commander for Area Command Team 2 was tasked with the Southern, Eastern, Great Basin and Northern Rockies Geographic Areas. The Eastern Region Type 2 IMT was assigned under Sexton's Area Command Team to develop the Eastern Geographic Area Plan.

Sexton's ACT brought in additional staff for this assignment to ensure the team was well connected with the best available science. The team collaborated with MPHAT and the USFS Enterprise Risk Management Group to ensure alignment with their agency work on COVID-19 safeguards. All four Geographic Area Plans were completed and delivered to the Geographic Area Boards and processes were developed for amending and updating the plans as new information is discovered.

Prevention and Management of COVID-19 During Wildland Fire Operations
Keep yourself and your peers safe by practicing these measures whenever possible

WFMRD&A Decision Support Round Up 2020

Wildfires blanket the west in 2020
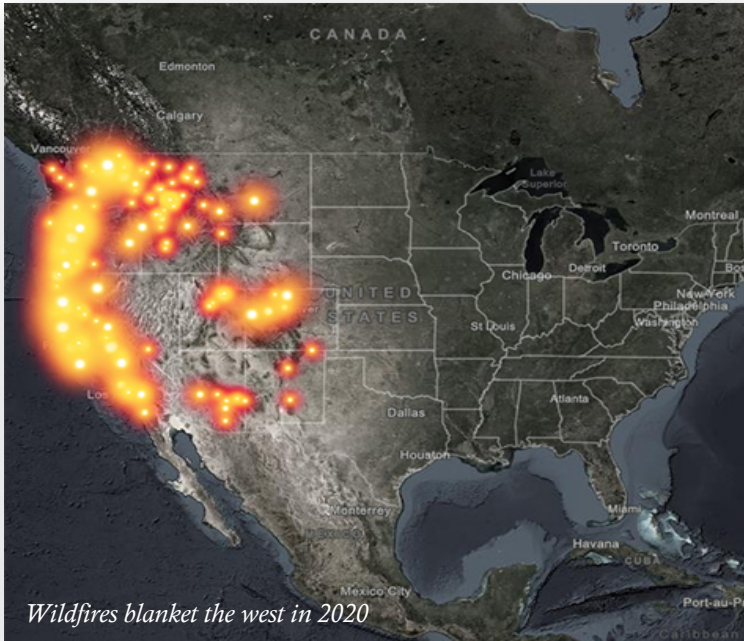
Like the rest of the country, the Wildland Fire Management RDA staff thought fire season was behaving itself through most of July… then August rolled around and things were off to RDA kicked it into high gear quickly providing support to some of the earlier fires in Region 2. Mark Hale (SOPL) headed to Colorado, the first out of the gate to test a traveling assignment under COVID, to support the Region with the Grizzly Peak, Williams Fork and Cameron Peak Fires taking the headlines. Kim Ernstrom took on a remote LTAN assignment for the Williams Fork Fire and assisted Wes Hall with the regional MAC group so Wes could take a few well-deserved days off. WFMRDA detailer Kip Van de Water provided remote support to Region 2 as an LTAN(t) throughout.

Just as things began to stabilize in Region 2 California stole the show with Oregon following shortly behind. Tim Sexton's Area Command Team was mobilized to support Region 5 with Caroline Noble (LTAN), Mitch Burgard (SOPL), Bre Schueller (LTANt) assisting with fire behavior analyses on the larger fires. *(see Area Command Story on Page 5).*

As things moved into Planning Level 5, California's South Ops was put to the test with many long duration fires from the Sierra to the coast. Randy Striplin, acting coordinator, requested help from the WFMRDA in early September to set up a remote Decision Support Center to coordinate multiple LTANs, FBANs, SOPLs, THSPs, and IMETs across the many fires burning across the GACC. Mark Hale and Kim Ernstrom tagged teamed the effort and brought on remote analysts John Reick, Caroline Noble, Casey Teske, Patty Johnson, Carol Ewell, Jennifer Anderson, Robert Ziel and Mitch Burgard to support the myriad of fire behavior analyses and WFDSS decisions spread across 7-9 Type 1 and Type 2 fires. The South Ops Decision Support group lent a hand for most of September and October as a few of the fires in the southern Sierra stretched well into late October.

Other RDA staff members with sought after skills also contributed to the crazy 2020 fire season. Andrew Bailey and Susan McClendon helped out in the GISS and data specialist department, Nicole Valliant took a turn assisting the FBAT team for the Red Salmon Complex and Reggie Goolsby was fortunate to take an assignment as an ENGB(t) on the Slater Fire.


COLORADO'S LARGEST WILDFIRES	ACREAGE BURNED	YEAR
CAMERON PEAK	206,977	2020
PINE GULCH	139,007	2020
HAYMAN	137,760	2002
E. TROUBLESOME	125,602	2020
W. FORK COMPLEX	110,405	2013

A Record Breaking Year in California –
99 Days of Area Command and Decision Support

The WFM RD&A contributed its expertise to California's 2020 historic wildfire events in multiple ways. It's staff provided leadership for Area Command Teams (ACT) that played a significant role in the oversight and management of these events; supported ACTs, Decision Support Centers, incidents and units with a variety of analytical support as LTANs/SOPLs/THSP; and supported Risk Management Assistance (RMA) efforts by developing custom products for units to inform decision-making.

Tim Sexton, WFMRD&A Program Manager, supported North and South Ops as Area Commander for a record 99 days. His ACT worked with Region 5 to evaluate Preparedness, Strategic, and Operational Plans and presented findings to both Geographic Area Coordination Centers (GACC) and the Washington Office. His ACT reached out to analysts from the Rocky Mountain

Number of IHCs Available
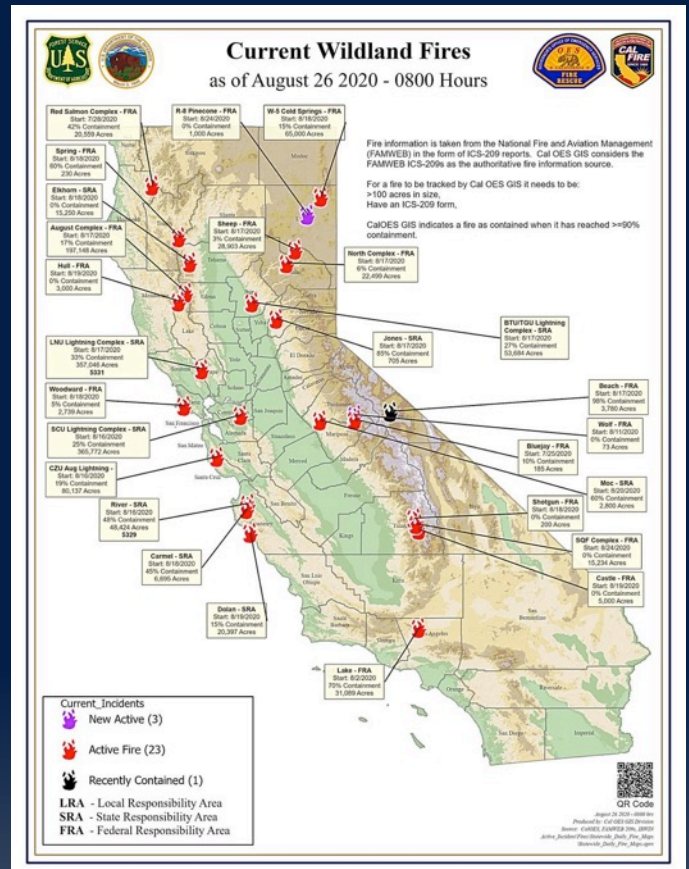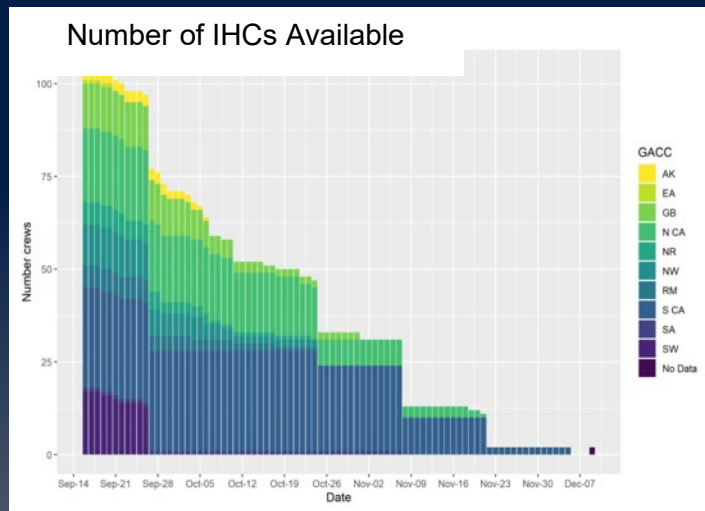
Research Station (Dave Calkin, Karen Short, Matt Jolly) to develop new analytical products to support strategic planning at the GACC level and from WFMRDA (Erin Noonan-Wright and Diane Rau) to develop and deliver modeled products in support of incidents to include the August Complex. Other collaborators included DRI (Tim Brown) and Erin Belval (Research Assistant, Colorado State University); the Fire Modeling Institute (Greg Dillon), the Lincoln National Forest (Wes Hall), and the San Juan National Forest (Brad Pietruska).

The fundamental problem faced by California GACCs was how to assign resources to several mega-fires during a time of historic demand for incident management teams and all other suppression resources. Analysts tackled this problem both for the short term when incidents were in need of IMT transitions and additional, but limited resources; and into the fall given the potential for high fire activity scenarios through the end of calendar year 2020. *The Area Command Website* contains decision support-related products to ensure the most up to date analytics are available to support fires managed by the Area Command Teams.

Comings and Goings

Leti Shindelar Retires after 10 years with the WFMRD&A

In December of 2020 the RDA said goodbye to a coworker, a friend and about the best program support one could ask for. Over 9 years Leti supported the RDA staff with budget, hiring, admin, travel, agreements and the list goes on an on. Support is defined as, "bear all or part of the weight of: holdup", or "give assistance to, especially financially: enable to function or act". Leti embodied that, enabling us all to function in our daily tasks, bearing a lot of the weight of admin and other less than fun task. Her sense of humor was contagious and made budget and admin challenges less daunting. Leti, you will be missed and enjoy your retirement!

Susan McClendon Joins the Fun as New Data Management Specialist

Filling in behind Dan Mindar who retired in 2019, we want to welcome Susan McClendon. Susan, a GIS specialist with the Bureau of Land Management's (BLM) High Desert District in Pinedale, WY, was selected as a data management specialist for the National Park Service's Branch of Wildland Fire. Some of Susan's specific focus areas have been working on data acquisition, coordination, and analysis needs of the interagency wildland fire community and meeting data and system development needs for the Wildland Fire Decision Support System (WFDSS) and Interagency Fuel Treatment Decision Support System (IFTDSS). Susan works from Grand Teton National Park in Moose, WY where her partner also works. In their downtime, they enjoy fishing, camping, live music and skiing.

Wes Hall Comes on Board Full Time!

Wes Hall rounded out our staff vacancies starting in January 2021 filling in behind Tonja Opperman who left the RDA in May of 2020. Wes hails from the Lincoln National Forest where he was the Forest Fuels Planner. He is the chair for the FCESC (Fire Environment Continuing Education Subcommittee) and is a cadre or steering team member on multiple NWCG Fire Environment Courses. Wes has done several details with the RDA over the last 5 years and currently assisting with development of the Next Gen WFDSS application as a Product Owner. Wes works from Ruidoso NM where he lives with his wife and two daughters.

Fire Season Operations 2020

The WFDSS Team worked very hard to keep the WFDSS program operational and running smooth throughout the very busy 2020 fire season. Three code releases occurred since spring of 2020; May, July, and November. In May and July we fixed over 50 high and medium priority bugs. Our November release focused on implementing required security enhancements. Release notes are available on the WFDSS Homepage.

National Summary Report for Wildfire Incidents from 01/01/2020 to 12/31/2020

Geographic Area	Not Contained	Contained	Controlled	Out	Total Incidents	With Decisions	Total Decisions
Alaska	4	0	0	348	352	33	37
Northwest	441	27	56	2770	3294	70	144
Northern California	2745	12	10	780	3547	40	111
Southern California	5819	13	21	771	6624	45	143
Northern Rockies	1044	719	26	2326	4115	48	85
Great Basin	35	3	31	3029	3098	89	148
Eastern Great Basin	0	0	0	0	0	0	0
Western Great Basin	0	0	0	0	0	0	0
Southwest	80	19	30	3494	3623	73	121
Rocky Mountain	256	871	79	2452	3658	54	115
Eastern	154	16	12	2248	2430	1	1
Southern	360	27	31	2044	2462	12	13
National Totals	10938	1707	296	20265	33206	465	918

The 'With Decisions' column contains the number of incidents with at least one published decision.
The 'Total Decisions' column contains the total number of published decisions.

The WFMRDA staff continue to provide 7-day support coverage for WFDSS; answering questions, providing decision and analytical support, and communicating known issues and solutions. In fiscal year 2020 the team has managed over:

- 388 WFDSS Feedback Messages,
- 70 IIA Help Desk Tier 2 tickets
- Over 270 direct phone calls, emails, and chat messages.

WFDSS Security Enhancements

The November release (6.4.7) addressed required improvements to the security of WFDSS. The most noticeable changes to front-end users were:

- Users are now required to select a NEW security question and answer from a predetermined list of questions. The questions and answers are used by the IIA Help Desk during the password reset process.
- CAPTCHA technology was added to the 'Forgot Username' and 'Forgot Password'

  process. CAPTCHA stands for **C**ompletely **A**utomated **P**ublic **T**uring test to tell **C**omputers and **H**umans **A**part, and it requires users to select specific images, type letters, or type phases to weed out non-human users that pose security risks.
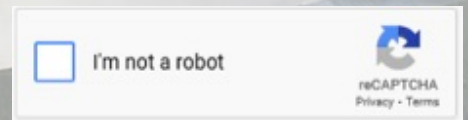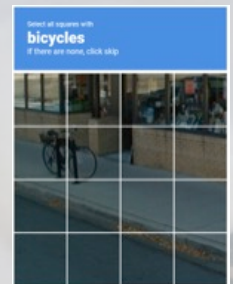
Contract Transition

For the last five years the WFDSS Operations and Maintenance (O&M) contract was managed by Criterion. This contract came to a close October 31st 2020. An Agreement was developed and Enterprise Application Services (EAS) took over O&M beginning in October. Fortunately, several former Criterion developers transferred to EAS and are continuing to work on WFDSS ensuring continuity and a transfer of institutional knowledge. We have enjoyed a very smooth transition thanks to all the hard work of the outgoing and incoming teams.

2021 Operations and Maintenance Plan for WFDSS

- Regular data refresh and FMU/SO Updates
- Maintaining current software and licenses
- Ensuring WFDSS will be compatible with IRWIN Version 7
- Addressing applications bugs
- Adding LANDFIRE 2016 for CONUS, AK, and Hawaii
- Development of Annual Refresher documentation

Detailers Keep the Program Humming Along in 2020

Dan Mindar

Wes Hall

Kip Van de Water

Sean Henning

Dan, Kip, Sean and Wes – we just can't thank you enough for stepping in to help during what turned out to be a VERY busy fire season.

Retired WFMRD&A team member **Dan Mindar** returned as an AD this fire season to provide WFDSS Decision and Analysis On-Call support. He worked 5 weeks total during the months of July, August, and September. With a busy fire season and competing priorities, RD&A team members were very thankful Dan was able to provide this critical fire support to the field. On-Call work includes answering and responding to phone calls, IIA Help Desk tickets, and WFDSS Feedback issues. Typical issues include questions about the decision process, assistance with analysis inputs, and user account issues. Our On-Call team strives to respond to WFDSS issues within 30 minutes during business hours and within 2 hours on nights and weekends. Thank You Dan!

Kip Van de Water joined the WFDSS Operations and Maintenance team in July for a 4-month detail. He immediately jumped in and worked on testing for an upcoming release. Kip helped the O&M team by responding to user issues, and providing On-Call decision and analysis support. He also worked to test code fixes for defects and security enhancements. Kip supported the FS Region 2 Decision Support Center in August for 3 weeks with analytical support as an LTAN(t). Thank you Kip!

Wes Hall once again detailed with the RDA starting in early October 2020, completing his detail January of 2021. Wes assisted with application development of Next Gen WFDSS as a Product Owner and worked with the team coordinating data flow. He served as the technical lead for the Fire Environment Mapping System (FEMS) and as a WFDSS SME for the Fire Modeling Services Framework (FMSF).

PupperButters

A fun easy treat for your pup, so yummy you'll probably have a few! So easy, even an Analyst can make them.

Four Simple Ingredients
2 Cups Flour
½ Cup Creamy Peanut Butter
2 Eggs
¼ Cup Water

1. *Preheat oven to 350 F*
2. *Mix together flour, peanut butter & eggs in a large bowl until lightly combined*
3. *Add in water (1Tbsp) at a time until you can roll out the dough*
4. *Roll dough and cut favorite shapes*
5. *Place on cookie sheet and bake for about 15 minutes until bottoms are brown*

Detailers Keep the Program Humming Along in 2020
(continued from page 7)

Wes supported wildfires working with Region 2 of the Forest Service to set up and lead a Decision Support Center supporting Grizzly Creek, Cameron Peak and Williams Fork Fires. He also provided analytic support to Area Command Teams in California by developing and delivering new decision support products for the August Complex. Wes was a great asset to the RD&A during his detail.

Sean Henning joined the RDA in early August 2020 for 120 days, supporting the IFTDSS team with application development. Sean played a large role in helping with design and testing of the FlamMap Minimum Travel Time Model by reviewing design specifications and conducting user acceptance testing. He also participated in development of help content and got exposure to services-oriented architectural design for software. We were able to also utilize Sean's GIS knowledge to support both the WFDSS Help Desk and to provide GIS support to RD&A staff working active incidents. We enjoyed having Sean and hope to tap into his skills in the future as a field practitioner of our software applications.

Tami Parkinson from the Wildland Fire Management RD&A helped organize and facilitate *"The Cohesive Strategy in 2020: Dynamic Adaptation in a Novel World"* online event. It was presented by the International Association of Wildland Fire (IAWF) in Partnership with the Wildland Fire Leadership Council (WFLC) and its Western, Southeastern and Northeastern Regional Strategy Committees and held in response to the recent pandemic. There is a strong consensus among participants to continue communicating and sharing lessons and information to keep the Cohesive Strategy on the forefront of management discussions, decisions and implementation activities. USFS Chief Vicki Christiansen, OWF Director Jeff Rupert, and Washington State Forester George Geisler kicked off the webinar by providing leadership perspectives and responses to a question and answer forum. Additional presenters shared information around pilot projects, resource sharing, smoke management, all-risk combined with wildfire response, and an agency administrator's perspective of adapting to the dynamic world providing leadership during unprecedented times. Approximately 400 participants engaged in the webinar, which was recorded and hosted on the IAWF Event website along with the program and several resource links. Tami continues to participate primarily with the Western Region Cohesive Wildland Fire Management Strategy and is one of four chairs providing leadership for the National Wildland Fire Management Strategy Workshop for 2021. More information can be found on the IAWF website.

FACILITATED OPENING PANEL
Jeff Rupert, Director, Office of Wildland Fire, DOI; Vicki Christiansen, Chief, US Forest Service;
George Geissler, State Forester, Washington State DNR

National Line Officer Team (NLOT)

https://wfmrda.nwcg.gov/agency-administrator-toolbox/national-line-officer-team

In spring 2020 the National Line Officer Team was tasked with standing up the Community of Action Pilot program. Its intention is to capitalize on learning opportunities and information sharing about risk informed decision-making to benefit the greater line officer community. Risk in this case is all-inclusive, going beyond fire management and working towards developing a community of practice (COP). The Team worked with Samantha Orient, previously detailed to the Doctrine, Learning, & Risk Management Fire and Aviation Management program, to pull together a video that clearly articulates details about the Pilot program for sharing with line officers throughout the USFS. Please listen to the five minute video to better understand the NLOT Community of Action Pilot program and its mission. Tami Parkinson from the WFMRD&A staff participated with these monthly conversations and meetings.

Fire Behavior Sub-Committee Postpones S495 in 2021, Develops New Training Videos and Helps Recognize the 80th Anniversary of Mann Gulch

The Fire Behavior Subcommittee is chartered to provide oversight of the 90 series fire behavior courses, including S-495 and S-590. The S-495 course specifically has been postponed for 2021 due to the pandemic and other circumstances beyond our control. The decision to postpone was taken very seriously due to the implications for up and coming analysts. Pandemic impacts to cadre and the rollout of the Next Generation WFDSS contributed to the decision. On a positive note course postponement will provide more time for integration of the course with the updated WFDSS application, for updating course delivery within the Wildland Fire Learning Portal and the necessary rewrite of course materials.

The Committee initiated a project for the Mann Gulch Staff ride several years ago to document the anecdotal historical reference Dave Turner provided for the event. They have worked with the videographers at MTDC and Samantha Orient to make this documentation package for integration into future staff rides or to be used as a virtual component to the Mann Gulch Staff ride. This year is the 80th anniversary for this event and this product is expected to be complete for various anniversary events.

Mann Gulch Archives

The Committee is also working with Northern Arizona University (NAU) – World of Wildland Fire to develop additional videos to compliment NWCG training and curriculum developments. The next video is tied to the Fire Environment Poster about situation awareness and monitoring the next big change. Rick Mowery continues to lead and coordinate Subject Matter Experts for course revision and delivery. opportunities with the NWCG training team for S-290ta and S-390.

When a Bunch of Firefighters Learn How to be "Agile"

"Agile" is a term used in software development to represent a process where the "Product Owner" is heavily engaged. The Product Owner is a subject matter expert who is constantly available to the software development team and helps steer the development process. As the Interagency Fuel Treatment Decision Support System (IFTDSS) and now Next Generation of WFDSS are developed, multiple WFMRD&A staff serve in the Product Owner role. While one pictures hours spent pontificating on the perfect shade of teal or the location an interface button (and this does sometimes happen), the bulk of the Product Owner role lies in the less glamorous realm of developing and documenting requirements, scheduling to accommodate external dependencies, and testing developer code. Who knew a bunch of firefighters could be so "Agile"!

The Agile process uses iterative cycles (Sprints) that are generally 2-4 weeks long. The work within a typical "Sprint Cycle" looks like this:

- Requirements: Defined/Refined based on user/stakeholder feedback
- Development: Design and develop software based on requirements
- Testing: Quality Assurance testing to ensure requirements are met
- Delivery: Deliver tested code into the application
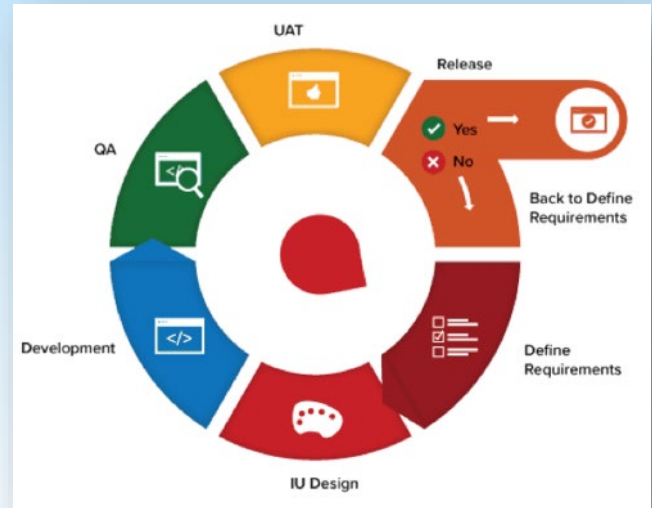
You should care about agile development for two reasons:

1) The definition of requirements and design is based on user feedback obtained through advisory group calls, user support tickets, training sessions, user support forums. While word of mouth works, the best way to have your voice heard is through these avenues so they can be documented and tallied.
2) Much of the WFMRD&A staff is engaged in this Agile process with either IFTDSS or WFDSS Next Gen. This limits the amount of time the staff has available for more traditional WFMRD&A work like training and on-site fire support.

The original WFDSS application was built with a more "predictive" approach, called the Waterfall Method. Requirements were generally finalized before development began and there was limited interaction and iteration with the government Product Owners along the way. Agile, on the other hand, allows applications to better meet user needs but comes at a cost of heavy involvement by WFMRD&A staff. So the next time you see a WFMRD&A staff member with bags under their eyes and thicker glasses than you recall, ask them how the Sprint is going.

WFMRD&A and Power Authorities

Over the past few fire seasons, understanding and mitigating wildfire hazard and wildfire risk has been on the forefront of the minds of power companies in the western US. In July the Bonneville Power Administration (BPA) reached out to the WFMRD&A to learn more about Decision Support Systems that could aid in understanding risk to power lines for planning purposes for potential mitigation work and real time impacts due to wildfire. The RD&A offered a high level presentation of our applications, Wildfires Near Me, the Wildland Decision Support System (WFDSS), and the Interagency Fuel Treatment Decision Support System (IFTDSS), and how each may or may not meet their needs. Additional sessions with the IFTDSS team were held in August and October, to share more about fire behavior modeling and risk mitigation that included Portland General Electric (PGE) and Pacific Corp in addition to BPA.

Quantitative Wildfire Risk Assessment Available Now in IFTDSS!

A Quantitative Wildfire Risk Assessment (QWRA) can now be developed in the Interagency Fuel Treatment Decision Support System (IFTDSS) to evaluate the likelihood and intensity of fire in a particular area and determine it's effects on the things we care about. Both the losses and benefits associated with fire are part of the assessment. Conducting this type of Risk Assessment makes land management decisions more effective by characterizing the predicted benefits and threats from fire on several, often overlapping, values across a Unit's landscape. Fuel treatment and pre-suppression response planning can benefit from a well thought out Risk Assessment, and puts the best available science to work for you. In IFTDSS, risk calculations are completed in a matter of minutes and can be re-run with different scenarios quickly. This allows for learning by doing and relatively easy updates as the planning cycle plays out.

Developing the Quantitative Wildfire Risk Assessment in IFTDSS was a phased release process starting with the inclusion of the Landscape Burn Probability model in July 2019 and completing in September of 2020 with the
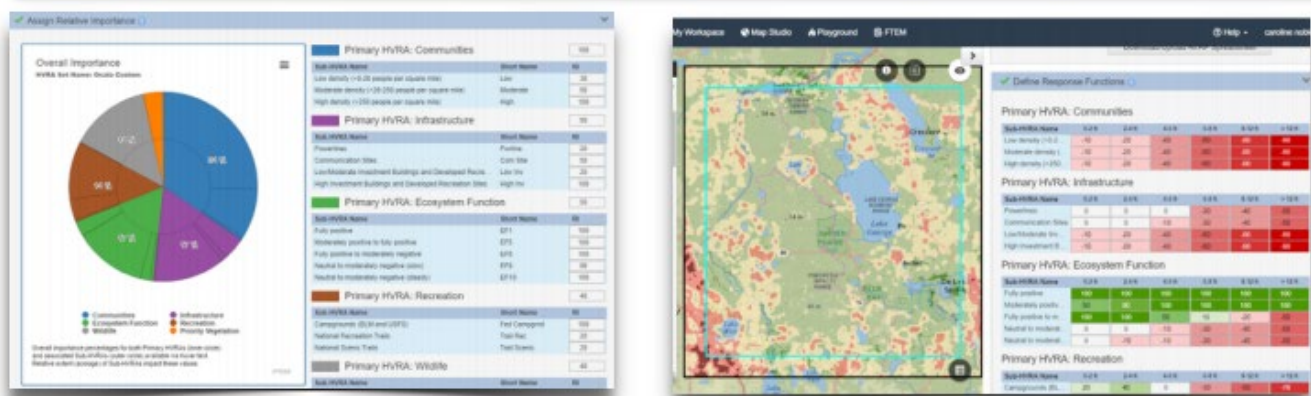
*IFTDSS is unique as it is the only place you can work with HVRAs, Response Functions, and Relative Importance with a map interface on the same screen*
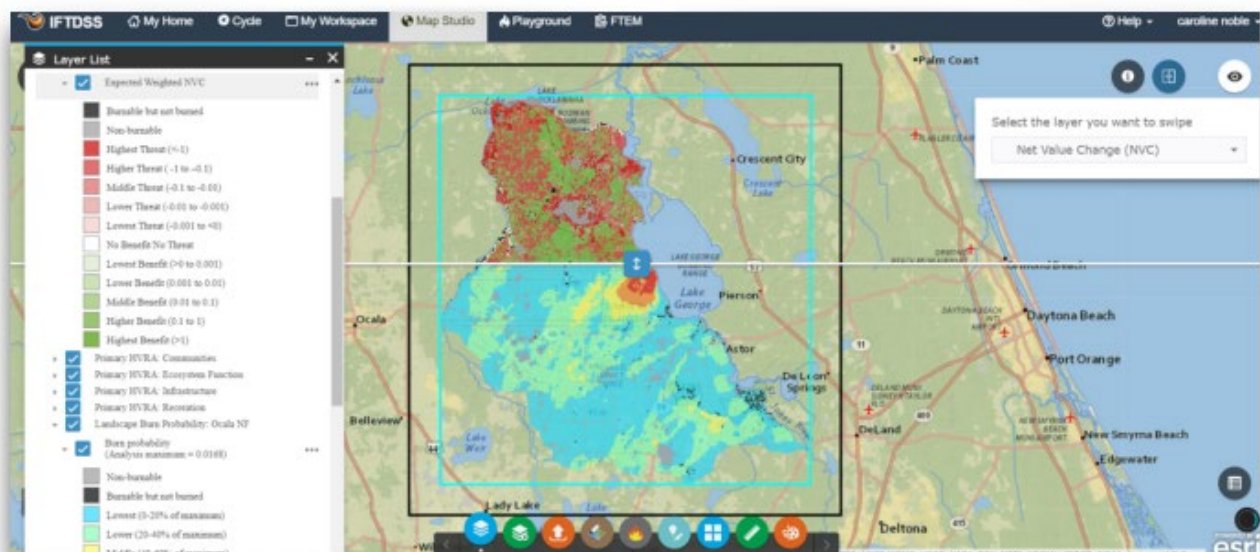

View your Risk Assessment outputs in the Map Studio to inform your decisions. Associated model runs and key data layers are available to add to your map. The Identify and Swipe Widgets allow you to understand how the model outputs and HVRAs impact risk.

QWRA workflow. Following the new model, Map Values, and then Exposure Analysis were released. Each release acted as a building block or pre-requisites for the next. This phase allowed the user to learn the steps and processes as we continued development and start creating the outputs they would need to eventually complete a Risk Assessment. A user must complete a Landscape Burn Probability run to predict the likelihood and intensity of fire for the "worst case" wind and weather scenario. Next, a user creates a Highly Valued Resource or Asset (HVRA) Set using the Map Value module. The next phase allowed users to combine these two to complete an Exposure Analysis. This analysis summarizes predicted hazard to HVRAs. In the final phase, the Risk Assessment, users assign Response Functions (fire effects) and Relative Importance to their HVRAs in order to determine the risk to their landscape.

Risk Assessment outputs can be viewed in Map Studio or downloaded for further analysis in a GIS. In addition, users can create an optional report. The report summarizes conditional and expected risk for the analysis area (landscape or user picked area of interest) and for each HVRA.
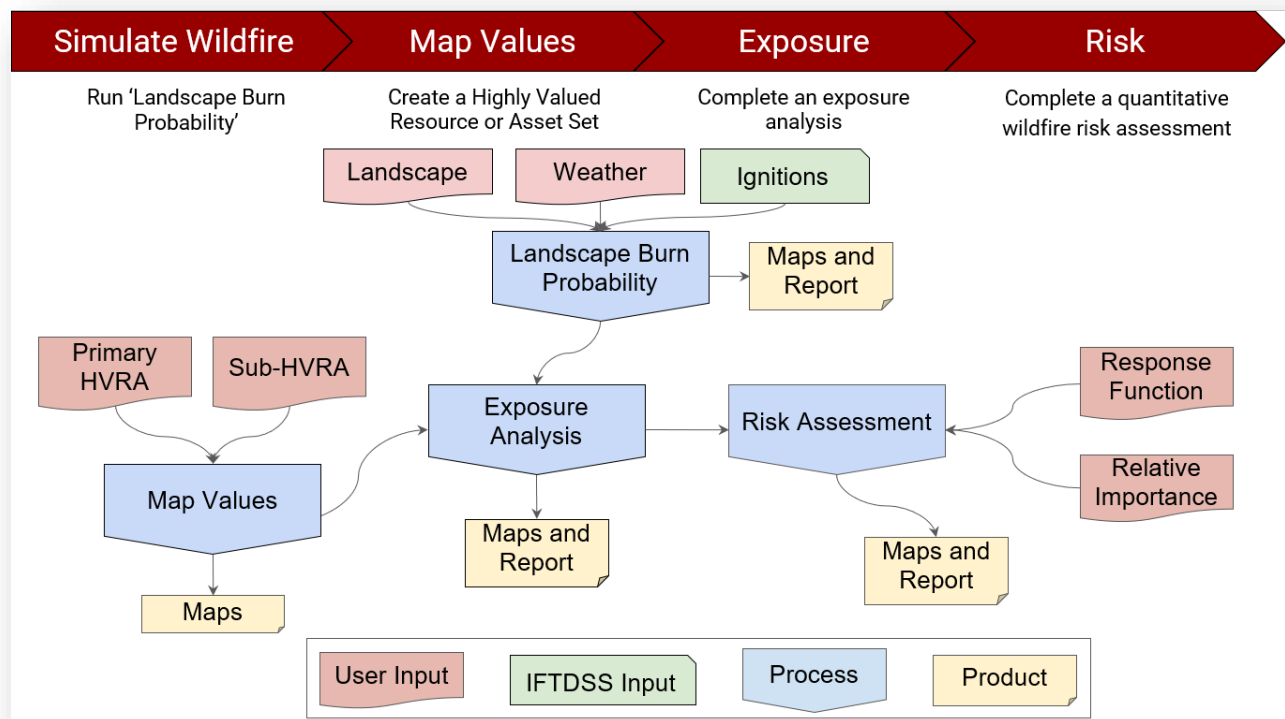
The IFTDSS QWRA process follows the steps outlined in GTR-315, *"A Wildfire Risk Assessment Framework for Land and Resource Management"*
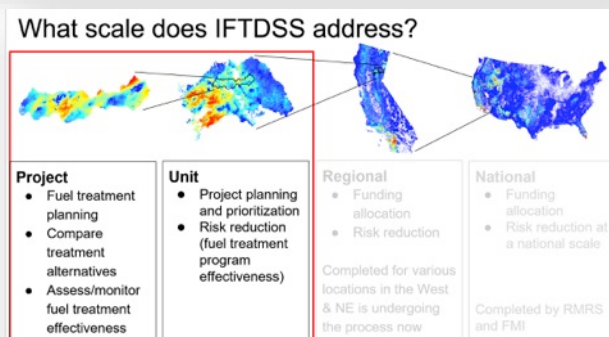
IFTDSS is designed for use at the Project and Unit level with a maximum Landscape size of 3.5 million

For More Information contact the IFTDSS Team at: iftdss.help@firenet.gov

https://iftdss.firenet.gov

Building a Better ~~Mousetrap~~ NFDRS-Map

Andrew Bailey, Data Manager for the WFMRDA worked with the Advanced National Fire Danger Rating System (ANFDRS, now S-591) Steering Committee to modernize the approach to geospatial data analysis used in the Advanced NFDRS course. Previous iterations of the course relied upon desktop GIS software. In the past, large amounts of reference data were prepared ahead of time by a team of GIS specialists, checked for quality and completeness, and loaded to the computers used by students in the course. Part of the course had to be dedicated to teaching students the basics of GIS software and how to view and analyze the data. As students worked through the lessons, trained GIS specialists then had to be available to sit with students to assist with complexities that arise in data management and analysis. Andrew was asked to join the Advanced NFDRS steering committee and evaluate opportunities for advances in GIS technology to yield improvements in these areas.

Working with subject matter experts on the ANFDRS steering committee, Andrew led an effort to move most of the geospatial data and analysis work to the National Interagency Fire Center (NIFC) ArcGIS Online (AGOL) platform. AGOL is a collaborative GIS platform that brings together data, maps, and analysis tools online. Andrew migrated the data that had been painstakingly assembled over previous iterations of the class into the AGOL cloud environment. He then developed a series of maps within a web mapping application to meet spatial analysis requirements for developing Fire Danger Operating Plans and other fire danger application guides. Data developed during use of the application are stored for use in future analyses, archived, and brought into agency systems of record. Andrew also developed a web-based tool that extracts and tags fire occurrence data within Fire Danger Rating Areas and prepares it for statistical analysis in Fire Family Plus, further reducing the amount of GIS work needed to develop a Fire Danger Operating Plan or related documents.

This new process debuted for the initial NFDRS 2016 rollout workshops, and was used as the primary tool to develop and analyze Fire Danger Rating Areas and Fire Danger Operating Plans during the 2019 iteration of the Advanced NFDRS course. As a result, fewer GIS specialists were needed to prepare for and support the class than in previous years. The NFDRS web application continues to be used in regional and local NFDRS 2016 workshops, supporting agency policy requirements to implement the NFDRS 2016 in fire planning and preparedness documents. Future work with the Steering Committee and stakeholders will improve this toolset, leading to a reduced workload for the field and improved implementation of the National Fire Danger Rating system.
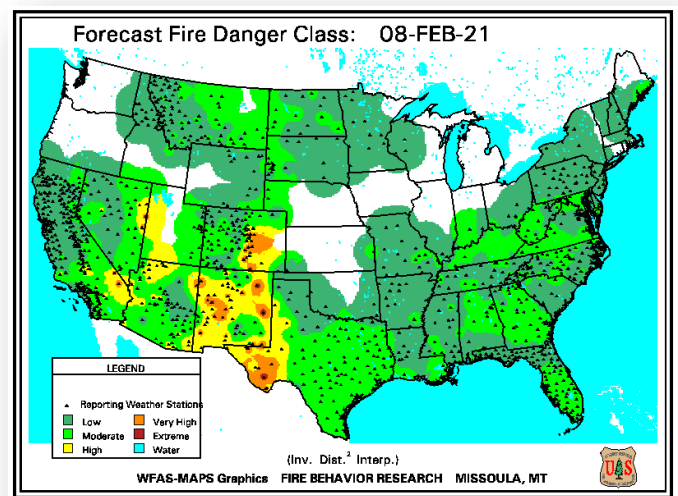
The Next Generation of WFDSS
Fondly referred to as "Next Gen"

For many of our regular WFDSS users, the need to stand-up a new version of WFDSS that embodies current technological advances is apparent. WFDSS is 10 years old so there is no better time than the present! Almost every member of the WFMRDA staff is either directly or indirectly involved with developing the Next Generation of WFDSS or 'WFDSS Next Gen'. In addition, our staff relies heavily on project management and contracting support provided by FAM-IM and DOI. We have entered an agreement with EAS, an USDA-CIO enterprise team, to develop the application.

One of the tenets of embracing new technology is to leverage "services" to provide data and other functionality to the WFDSS Next Gen application. A "service-oriented architecture" (SOA) allows different applications to be plugged into WFDSS and provide a "service" to support the application. When that service needs to be fixed or updated, just that one part can be fixed without taking down the whole application. Another big benefit is that the authoritative data and applications are located in one place which eliminates the need to maintain multiple copies of everything. An SOA can also leverage a suite of existing applications and data sources *(think of data stored in Arc GIS Online (AGOL), for example)* that benefits WFDSS Next Gen and many other web-based applications used by the fire community.

The WFDSS Next Gen project is being developed with services such as the Fire Modeling Service Framework (FMSF), which will host Short-term, Near-term, FSPro, and Basic fire behavior modeling systems. It will also interact with a weather service providing gridded and RAWS weather data, a LANDFIRE data service will provide gridded fuels and topography, as well as a whole host of data services

Decision making workflows are being revised to use maps and spatial data, rather than just writing a lot of text. With an emphasis on maps and data, users will now determine wildfire strategies spatially, leveraging spatial fire planning which will also be provided in a geospatial service. Agile product development is the method the WFMRDA is using to deliver the Next Gen WFDSS this approach employs a flexible and iterative application development philosophy *(See story on page 11)*. Engagement with users to test specific workflows of the application will begin in 2021.

For More Information Visit:
https://famit.nwcg.gov/applications/wfdss

Fire Environment Continuing Education Subcommittee

Fall Webinar 2020

The FECSC hosted a webinar centered on lessons learned over the 2020 fire season. The webinar focused on elements related to the fire environment and is intended to provide a continuing education platform for analysts (LTANs, FBAN, SOPLs, IMETs). However in recent years, there has been a greater attendance of fire managers and line officers to these types of events. Attendance was down compared to past year's events (76 attendees versus the normal 150), but this was likely due to the pandemic and continued busy fall fire season.

The webinar was presented via Go To Webinar and covered 4 topic areas:

- *NWCG Satellite Data Task Team Report* – Todd Lindley
- *Assessing the Current Fire Situation: Tools to Assist the Analyst* – Robert Ziel and Casey Teske
- *Using the WildfireSAFE app to Assess and Communicate Severe Fire Weather Conditions: Case studies from the 2020 Fire Season* – Matt Jolly
- *Fire Environment Mapping System (FEMS)* - Shelby Law

The FCESC typically hosts two webinars a year and recordings of each are posted on the FCESC website. The Spring Webinar focuses on tools or tips to help the analyst refresh or prepare for the upcoming fire season. The Fall Webinar focuses on lessons learned for the past fire season. The FCESC has hosted workshops for analysts in past years and may look into that option again in the 2021 fire season. To view the fall webinar visit the FCESC website. https://www.nwcg.gov/committees/fire-environment-continuing-education-subcommittee

WFMRDA "Off the Clock"

Kayaking for a Cause

Kim Ernstrom, Fire Application Specialist for the WFMRDA took up kayaking when she moved to Boise to work for the WMFRDA 10 years ago. She met a whole community of friends and spent most of her free time on the river. In 2015 one of her kayaking buddies started a Chapter of *Team River Runner.* A group dedicated to teaching Veterans how to kayak and enjoy other paddle sports. Kim first worked with Team River Runner teaching Vets how to paddle kayaks at the pool in the winter and then joined the group for summertime trips in the Boise Area. *"Working with these folks has been extremely rewarding. It is amazing how determined they are. We have Vets that have endured severe injuries, both mental and physical that have stuck with the program from the beginning and have learned to paddle Class III rivers."* They are now taking their new- found skills to teach others in a kayak and just recently on paddleboards and rafts. Kim thoroughly enjoys the days with Team River Runner on the River and can't wait for the snow to melt to get back in her boat with these amazing folks.

> To provide all Veterans, First Responders and their Families an opportunity to find health, healing, community purpose and new challenges through adventure and adaptive paddle sports!
>
> — Team River Runner

Editors Note:

The Tech. Spec. is published a couple time a year as time permits. Staff contribute stories based on current events and projects. As readers, if you have questions, thoughts or comments related to any of the content or are curious and would like to know more about the things the WFMRD&A is working on please contact:
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Integrating science, technology and fire management.

Wildland Fire Management RD&A