

Fire Environment Committee

Conference Call Notes

November 15th 2021

On the call:

Robyn Heffernan, Geoff Marshall, Jon Fox-Notetaker. Katy O'Hara, Nick Nausler, Rick Mowery, Jen Croft, Cheryl Bright, Pete Lahm, Tim Brown, Tim Chavez, Billy Gardunio, Wesley Hall, Larry Van Bussum, Shelby Law

Welcome and update from NWCG PMU – Heffernan

Cheryl Bright - Fire Danger Sub-Committee (FDSC) Rep at NIFC (part of BIA)

Jen Croft - FDSC Rep and Forest Service for FEMS and NFDRS coordinator.

Rick Mowery – Rep from Fire Behavior Subcommittee (FBSC) and Chair for fire behavior curriculum

Larry Van Bussum - Chair of the Fire Weather Subcommittee (FWSC).

Pete Lahm – USFS air quality program, Chair of the Smoke Committee (SmoC).

Billy G. - Fire analyst at North Ops., Represents the Predictive Services Oversight Group (PSOG)

Tim C – States Rep - Field Battalion Chief

Wesley Hall- Fire Environment Continuing Education Subcommittee (FECES) Chair. Fire applications specialist.

Tim Brown- DRI in Reno, represents the academia.

Katy Ohara - NWCG Coordinator.

Nick Nausler-Predictive Services representative. Will become the interim chair when Robyn is on detail early next year.

Geoff Marshall- States Rep, CALFIRE in Sacramento.

PMU Update & FENC budget – O'Hara

- Stay patient due to staffing shortages.
- FY23 budget guidance is available at NWCG website. Link back to FY13 showing what has been funded.
- **Jan 21st, 2022 new requests** for funding are due to PMU.
 - What sort of support is needed for any budget request?
 - What sort of priorities go into the projects or requests?
 - Continuing projects are important
 - What is the breadth of the request?
 - Is it agency specific or inter-agency?
 - What sort of funding is needed?
 - The more detail in the proposal the better.
- Representative to Wildland Fire IT (WFIT) Board.

Glossary terms

- Edge glossary will go live next week.
- The old one will continue to be displayed.

- Next generation taskbook is coming shortly as well.
- Robyn showed a screen of all the new terms introduced by other committees. Would this committee agree to these terms? Robyn has the definitions contained in another document.

Wildland: If we use this where does a WUI fit? Should this be shared with WUI or shall we give this to them?

- Tim says we should share this with NCSC.
- Katy said these terms were under the incident operations sub-committee.
- This term is used to define a type of fire which expands beyond the scope of this committee. Katy says we should use this as a question to Deb and ask doesn't this term span across many sub-committees? Where does this term fit the best? Who would make the revisions?
- It is already defined somewhere. Do we just need to link to that other location? **REVISIT. We should not be the lead or should we.**

Box Canyon: Belongs in FENC.

Canopy: Belongs in FENC

Exposure: Belongs in FENC.

Fingers of a Fire: Belongs in FENC.

Flank Fire: **Does not need to be under FENC.** Operations oriented.

Particle Size: **REVISIT.** Maybe Pete needs to look into it. Shows up quite a bit in S290.

Parts of a Fire: Belongs in FENC.

Peak Fire Season: Belongs in FENC. Scrap the last portion of the definition where it shows damages at an unacceptable level. Perhaps also change the reference from period of the fire season to the period of the fire year. Change to **period of the year and when you have the most large fires, most acres burned and the most resources utilized.**

Some areas are bi-modal and have numerous peaks. **REVISIT for more definition.**

Saddle: Belongs in FENC.

Size Class of Fire: Larry says the fire acreage is way too low. 5000 is considered a Class G (biggest mentioned in the glossary). Tim says this was used in the early days of the Incident Action reports. 30 years ago 5000 acres was big, now its an IA fire. **Perhaps this should go to the data management or fire reporting committee?** Maybe we need more letters (right now its A through G). Statistically there still may be some validity to the classifications. **Does not need to be under FENC.**

Spur Ridge: Belongs in FENC.

Stringer: Belongs in FENC.

Vectors: Belongs in FENC.

Co-Stewards for these terms:

Flanks of a fire: Belongs in a share with FENC. **Trade with Flank Fire definition.**

Flare-Up: Belongs in a share with FENC.

Large Fire: Belongs in a share with FENC. 100 ac for timber and 300 ac for grass according to Nick. Used in fire danger analysis.

What about additional terms

Significant fire: Nick says there is a definition for that as well. Robyn says FENC already owns this term.
If we accept these terms are we in charge of updating them as well?

Larry mentioned for weather terms (RH for instance), most are contained in the AMS glossary so should FENC deal with them? Katy says they will be hyperlinked to the AMS terms but they have to remain in the glossary. The new EDGE database will have a much easier way to link to other glossaries. Is there a better authority for the terms above? Does NWCG need to be doing this and do we just need to link to it.

Other Issues from Katy:

- Annual meeting: will be held virtually. In Mid-February.
 - Data management program
 - Systems improvements
 - Topic specific. Couple hours max.
- Robyn wanted to know who is invited.
 - USFS says 50 people or less for in person.
 - Will use something other than MS Teams.
 - Might consider new people for some of the chair positions.

Revisit some of the items mentioned:

- Rick had a funding request for some RAWS maintenance projects.
- If the request is data or IT specific, we can revisit offline.
- Larry would like to be part of the conversation.
- Robyn: The RAWS data archive should not have to be submitted every year. There should be an easier way.

Fire Environment Mapping System (FEMS) - Shleby Law

- Shelby is one of the business leads for the FEMS: Fire Environment Mapping System.
- Intent is to replace WIMS.
- Integrate NFDRSv4 data into this project.
- This is not a new concept. Been ongoing for several years.
- Going to upgrade long term storage of this project as well.
- Create a platform to integrate Fire Family Plus, KCFAST, WFSAFE and Wind Ninaj under ATO.
- FEMS has numerous group members: Fire Weather, Predictive Services, Fire Behavior, Fire Danger, Fuels, Planners, Dispatch, RAWS, and USFS.
- Funding for the current hosting environment is BLM but all other contracts are USFS.
- Data sources:
 - RAWS data with DRI quality control and gap filling.
 - Gridded historical weather data. DRI is also reviewing and gap filling.
 - Working with U of Utah to host the data.
- FEMS 1.0 is hopeful for Fall 2022.
 - Climatology API with hourly NFDRS and weather obs for all RAWS stations.

- The interface will display all the data via a mapped interface (maps/charts/tables)
- You can login via login.gov or user authentication to get full access. You will be able to group stations and set thresholds to display data.
- There will be an unauthenticated site as well with much less data.
- Also adding National Fuel Moisture Database.
- What happens beyond version 1.0? (winter 2022?)
 - Weather station settings will come from WIMS-RAWS
 - Current weather observations will come from WFMI weather.
 - Hourly forecasts from NDFD.
 - There might be a request for weather data in the 10-14 day window which will require a source other than NDFD.
- After FEMS 1.0
 - Transition from WIMS to FEMS.
 - Add Canadian model
 - Add gridded weather and gridded NFDRS outputs.
 - Create an analysis module.
 - Create a 7-day significant fire potential.

Questions:

- Tim C: Next fire season will we move to NFDRSv4? Yes, most likely. Jen confirms. January 2022 will be the date for the full transition.
- Historically what determines what models get included into FEMS? The intent is for the design group to make those decisions.
- Know who your design committee contact for FEMS is.
- FEMS needs somebody from the fire behavior world since Tami had to step down. Brett Wachter might be a possibility, however the team is fire weather heavy at this point. Might want somebody outside of the fire weather world.

Training updates – Benoit

Training Updates:

- Training Liaison role. We have 1.5 training specialists. So very short staffing.
- Getting ready to hire a new training lead and 2 associates.
- They have to oversee 150 training courses.
- Webmaster position will soon have somebody detailed to do the work.
- 40-50% of the positions are vacant.

Course Updates:

- S190 online will be released in December.
- S110 is being revised and will be done at the end of January.
- D110 will be certified at the beginning of 2022 (January).
- S130 will be contracted out hopefully.
- Spanish versions of S190 and S130 will be available in the Spring.
- Fire behavior posters will also be translated into Spanish. Used for Latin America.

- 290, 390, and 490 need to be certified. But when?

NWCG Wildland Fire Qualifications System Guide:

- Want to get to a performance based system.
- This will all be kept online.
- Desire is to get the 125 Incident positions grouped into Group A and Group B
- Broken into physical fitness requirements.
Group A will be for operations:

± Group A - Tentative Position Analysis Timeline:

Fall 2021 (4)	Spring 2022 (4)	Fall 2022 (10)	Spring 2023 (9)	Fall 2023 (14)	Spring 2024 (9)	Fall 2024 (4)
FAL2	FIRB	STCR	SOF3	STAM	HECM	INTM
FAL1	HEQB	STEQ	PIO3	CREP	HMGB	INVF
FFT1	ENGB	STEN	ICT3	SOF 1/2	HEBM	SOPL
FFT2	FELB	TFLD	PSC3	PIO1/2	DECK	SITL
		DIVS	LSC3	ICT 1/2	UASD	
		OSC3	FSC3	LSC 1/2	UASL	
		OSC1/2	ICT4	FSC 1/2	UASM	
		OPBD	ICT5	ICT 1/2	LTAN	
		SOFR	STPS		FBAN	

Total of 54 positions

- Develop an Incident Position Performance Package (IPPP) for each Incident Position
 - Write out what the responsibility for that position.
 - Takes about 1 week for recommendations from a group of folks and then 4 months to write out the IPPP.
- Group B will not be updated for a number of years. Have to finish Group A first.

±

Air Operations	12 positions
Area Command	4 positions
Finance	11 positions
Planning	12 positions
Logistics	15 positions
Command	3 positions
Dispatch	6 positions
Prevention	2 positions
RX	1 position
	66 total

Question: What's the main delay for hiring the folks needed to fill the positions? **It is HR.** DOI moves faster than USFS. The position vacancies can be prioritized. DOI HR is getting slammed with resignations and retirements.

Working assumptions:

- This will be going on for many years.
- Hope to contract much of this work out.
- Rely heavily on SME's to get this work done.
- Lower level positions should have quite a bit of training assigned.
- For higher positions the amount of training may actually decrease due to redundancy.
- Could there be self-study and then an abbreviated in-person session?

Potential Position Flow:

Looking at Fixed Wing Parking Tender (as an example):

- Coordinate with supervisor and aircrew regarding aircraft ramp movement and assigned area leads to a section which shows more resources: Operations guide, Briefing Guide, Assignment supervisor.
- Need to update the taskbook and tasks come straight from the IPD.
- Allows the trainers and trainees to reference in a quicker manner and ensure greater consistency.

Question: Tim C: For the courses used to fill a position it makes sense, however for Fire Behavior (290, 390, 490, 590) how does this fit the process? They thought about modularizing this. But for now leadership, there will not be position specific standards. The same will likely be done for fire behavior.

Potential PTB Direction:

- Infrequent O's in the Taskbook need to be on the job rather than via offline training.
- Requiring training before a taskbook is initiated: If you can get your taskbook signed off before you take training, then what is the point of training?
- All NWCG training should be required. Otherwise why create the training?
- This will roll out as each position is defined. It will be done through attrition.

Question: Cheryl: Are we going to move away from prescribed fire vs wildfire to fulfill tasks? There is talk about it. It needs to be done on the job regardless. From a tribal perspective there are all kinds of incidents and all kinds of experience. But if it isn't from a wildfire, shouldn't it still count for training? NWCG would like to see that but from now there has been no acceptance.

Question: Pete: What about continuing education? Jim Schultz is a huge proponent of this. Right now it is on the radar but the team needs to stay focused before moving onto continuing education. Can there be a refresher course every year? The only expectation right now is to take an RT130 every year. But as we see new things introduced we will need to see continuing education. For instance when we see FEMS 1.0 introduced, shouldn't there be training?

Question: Pete: Very dependent on the trainers. There are good ones and bad ones. What can we use to prepare the trainers? Is there something which helps us improve our performance? If you are trained by a sub-par trainer this will have implications down the road. Taskbook training: Develop videos on what it takes to be a good trainer. How do you give constructive feedback? Half are brought up in operations but never learn how to communicate? Instructors for courses: It is a crazy system. NWCG creates the training but they don't provide the training to the field. There are instructors that can't effectively teach online. Now there are cadres which perform the training. It is tougher to dial down the 100's and 200's. For the higher level courses the cadre model might continue. There might be more training academies in the future.

Question: Pete: Can we see who is proficient at training through QRCS? Pete is tracking his trainers to see who has significant experience with training. Is there a way to do this for other positions. Not sure it can be tracked through QRCS according to Annie.

Question: Wesley Hall: Says continuing education is a great idea. If NWCG can formalize this, it will get support. But since you are adding a requirement to an existing position it has to go through a request for change. If and when it is approved, it would have to get changed in QLCS. What would this addition for training look like?

Question: Robyn: There are certain positions where technology and science will continue to evolve and we need to as well. Teachers are required to take on some continuing education requirements. Some of the fire positions also have that requirement.

Question: Tim: There is a new S390 and S490 ready to go so what's the status? It's been wrapped up but in Annie's mind it needs a bit of a working group to approve the changes. Rick agrees. They got comments from the students and need to encompass those into the revision. 90-95% ready to go. New PowerPoints were also created. It is also 508 compliant. Annie would like to put a bow on it and upload it to the training portal. The course is not certified yet and if that's the case, should it be used?

Question: Rick: What's the status of the online RT-130? It is being reviewed and the online version will be contracted out.

Question: Cheryl: What's the status of the fire danger curriculum? A request of change was submitted.

NFDRS 2016 update - Croft

- In 2017 the curriculum was developed and the rollout had begun.
- In 2020 COVID threw a wrench in the plans and workshops were delayed.
- In January 2022 all agency units are told to transition to NFDRSv4 and NFDRS 78/88 will be decommissioned.
- A checklist has been created for the agencies to help with the transition.
- There is a national transition chart, right now 67% of the agencies are ready for the transition. If you include in progress units we are looking at 90% completion.
- Regions need to identify their National Fire Danger Rating Area.

- There are still quite a few agencies who feel this transition isn't important.
- Some agencies complained about the transition from Fuel Model G to Fuel Model Y.
- WIMS: we need more training. Make it self-guided.
- How do we transition from WIMS to FEMS?
- There is a Decision Support Module to enable a WIMS user to designate a decision threshold.
- There are units that have come up with their own workarounds.

Where does this committee sit on the WIMS Decision Support Module plan?

- Pluses:
 - FEMS not operational for another 2 years.
 - Consistent outputs to the fire danger rating committee
- Minuses:
 - We don't want to archive WIMS any longer.
 - The timelines are not consistent with each other.

Question: Nick: Can WIMS handle all the output and input needed for fire danger? Yes it does. If you talk to your units they need to put this data into a CSV format

Question: Robyn: Do we have folks in the field who are capable of making these adaptations? Predictive Services has a lot of work being done by Nannete and Chuck to solve this issue. The 7-day would not be operational without this work. Fuel model G to Fuel Model Y conversion outputs.

Question: Tim: What's the major rub about this conversion (Fuel Model G to Fuel Model Y)? The lack of adding a live fuel moisture component plus a resistance to change.

Question: Cheryl: For the BIA the big objection has to do with a lack of strong ties to all units (3rd tier dispatch centers). A WIMS support module might be able to alleviate this problem. Looking at a pilot project but don't want to head in their own direction. Jenn says this module should help with some provided training.

If FEMS isn't operational for another 2-3 years can we allow WIMS to wither on the vine? Probably not and thus we can't completely ignore WIMS. We have not had a tool in WIMS to give us a linkage. We have not changed the mechanism to come up with the subordinate plans since 1988.

Robyn would like the committee to voice a preference. Do we need to move ahead with a WIMS Decision Module?

Nick wants to know if we invest in this do we have to take resources away from FEMS? According to Jenn the answer is TBD since people are still being brought on board for the task.

ICAMMS SC-ACIS Fire Weather Team Services Working Group

We are getting more money due to some recent fire legislation.

- ICAMMS is an overarching team beyond NOAA and NWCG and now includes USGS, DHS, DoD.
- The ICAMMS committee subgroup will draft a federal plan for meteorological services.

- We need to map out the groups. There are at least 8 groups working to advance meteorological services.
- Efforts by USGS to map out gaps and needs to fill sparse observational areas.
- For this FY: Getting the federal plan started. And to fill the observational needs.
- Need to work on consistent mixing heights.
- This is the replacement for OFCM. Heath is on the sub-committee

Heath is the working group chair. Under the air quality folks (Laura Wilson). His authority is a coordination one. How will this be executed across agencies. Not just line offices.

Nick was asked to be part of one of the groups dealing with high impact weather.

How do we get our arms around this as the FENC group?

Overview of new interagency wildfire teams/committees/organizations

- Interagency Council for Advancing Meteorological Services (ICAMS) – New Fire Weather team chaired by Heath Hockenberry, NWS.
- Fire Observations, Research and Services Team (FOReST): Internal to NOAA but across line agencies
- Cohesive Strategy Team – longstanding
- White House Wildfire Resilience Interagency Working Group
- Federal Fire Working Group: Been around for a long time. Coordinating body.
- NISC/WFLC Task Team: NOAA will be a member on this group.
- SDR GeoHealth Wildfire Data Integration Sub-Working Group: Science of destruction reduction.

Has anybody else heard of any additional teams? Rick has heard of symposiums but not teams. USGS has a wildfire strategy group.

The WH fire resilience group has a lot to do with prescribed fire. These are all one-off of one another.

Tim wanted to know if there are documents for these teams defining their tasks: Not right now, but it is possible to have a membership list. Robyn is just a member or liaison to these groups but is not a member. We also don't know who these are chartered under.

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- Brief discussion between Nick and Robyn over the transition from WIMS to FEMS. If this project takes too long to come to fruition, there needs to be a plan in place to bridge the gap. Cheryl also would support the tool to bridge the gap.
- Does this need to be run through the fire danger sub-committee?
- BIA needs to re-engage to show their needs and wants.

Strategy for coordination with all relevant interagency teams/committees/organizations

FENC Charter: The Fire Environment Committee (FENC) provides national leadership in measuring and predicting the wildland fire environment. The FENC develops, disseminates, and promotes national standards for fire behavior prediction, fire danger rating, and fire weather forecasting.

- We need to catalogue all these groups so we know where our representation sits.
- Tim C wants to add the **Commission on Catastrophic risk and recovery**. (CA only)
 - This was based on the Camp Fire
- **Venato (?) Declaration** was introduced by ex-governor Brown.
 - Its has a directive written into it somewhere.
- Rick spoke of a **Fire Litigation group (CA only)**
 - Spurred by a bunch of lawyers looking into fire mitigation.
 - Also looking into getting money from utility companies.
 - Annual event, well attended.
 - Plugged into academia.
- Robyn wonders if these groups could be catalogued under FireNet
 - You can establish a team through FireNet
 - Would the group like to establish this? Or are emails better?
 - In NOAA we have Google. Not helpful across other agencies.
 - FireNet Pros and cons relate to access outside of the USFS.
 - Too many drawbacks of FireNet since there are a lot of folks in FENC without access.
- Tim B: People are going to be doing things that they think are in the best interest of the group, but without coordination is this the right thing to do? There will be a lot of silos popping up.
 - Would we report back to NWCG?
 - What is the action on our part?
 - NWCG charter is fairly broad.
 - Participates in the development of operational standards and procedures.
- Nick wonders one these things come through should they be vetted through NWCG?
 - Moving these ideas forward into operations is lacking.

- Robyn: Should we be focused on standards and the coordination of products and services?
 - We fill a niche.
 - Some of the groups won't know what to do with fire.
 - We need to make the connections when we can.
- Cheryl: One way to tackle things is there is a bigger or broader group that can help. The cohesive strategy team. Or perhaps a different umbrella organization.
 - This would be just as effective with less work.
- Tim says for NOAA in FY22 is a lot to wrap up. If this happens across other agencies, how will a cohesive strategy team tackle this?
- The NOAA research money will be put into new technologies including fire suppression.
- Paul Steblein: The markup of the infrastructure bill is giving new authority to new partners and agencies. This is a big challenging issue. There is a niche here that needs to be defined.
- Tim C: Say this group has a responsibility to make sure the ideas don't go off the rails. We need to rein those in. The money into CalFire is outrageous. Need to keep this going into things that are important. Same thing will happen to the federal government.
- Nick wonders if we have the capability. We monitor as best we can. If we hear something, we need to discuss it at our monthly meetings. Make sure to engage before it's too late.
- Paul isn't sure if this committee has the decision space to literally guide it. NASA might say we respect what you think, but we are going to do what we want anyway. NWCG could facilitate discussions over these things.
- Pete: Potential for redundancy, going down a rail too far before considering operational impact. We need to ensure the products are usable. Our opinions should matter. There are lots of products sitting on the shelf that aren't being used since we didn't check if they are applicable.
- Robyn says we could get a liaison from the Cohesive Strategy team or we could send someone to them as well.
- Paul says NOAA could work to eliminate the duplication of services.
- Pete says we should not have NWCG do this. We should figure this out as a group.

We should discuss issues at our monthly meetings.

We should have active cataloging of these groups.

We should have representation on the Cohesive Strategy Team.

USGS Wildfire Strategy-Paul Steblein

- USGS is in charge of stream gages, post fire risks, fire ecology, fire history, geospatial imagery, volcanoes.
 - Over 200 scientists were involved with these tasks.
- Looks into the necessary roles of fire in the evolution of flora and fauna.
- National Cohesive Wildland Fire Management Strategy FLAME Act 2009.
 - Wants to advance USGS science capabilities.
 - Be adaptive: new science and technology.
- Fire Science needs in the next 2-10 years.
 - Climate (#1 research need)
 - Fuels (2nd)

- Human dimensions/social science. (3rd)
- Risks, hazards, vulnerability-Planning for uncertainty.

Wildfire Strategy Plan (2021-2026):

- Priority 1: Produce state-of-the art actionable fire science
- Priority 2: Engage stakeholders in scientific production
- Priority 3 effectively communicate USGS fire science
- Priority 4 : Organizational structure and advance support for fire science.

Questions: Cheryl: How much coordination with BIA?

3 groups interviewed with tribal interests - input into Strategic Plan

How to define science needs and resources to meet those needs

Got disaster funds to support post-fire response - working closely with the tribes

Nausler: Data and use of LIDAR?

Several examples from the Southeast

In general - establish a fire program within USGS

Nick: Are you DOI's research arm:

Yes is the non-trite answer. We have 200 scientists.

This is a big paradigm shift.

Is quick fire being used in the SE US:

- Yes. Tall Timbers has been working closely with us.
- Also working on DOD lands.
- Quick fire is a good way to predict prescribed burning.
- Will be using it in the SW and sagebrush steppe.

Tim B: How is the strategic plan tied to climate changes?

- USGS is working to look into this.
- Fire is a driver
- Climate and fire literature: how do we integrate this into a modeling center

Tim B: We are part of the SW cast. Lots of talk about the flush of money. Might there be something more specific we need to look at outside of your strategic plan

- There has to be a way.
- We have a team meeting on Friday.

Larry: On the IT side of things, what is the possibility of hosting some operational tools? Things like Wind Ninja.

- This is one of the concerns we have. The good models cannot be orphaned.
- This would be a good one to help.
- We need a better integration for fire weather.
- Is there an NWS integration for this weather modeling?
- The key is what does it mean to design that capability and support.
- As people retire these things get left behind.

Robyn: What is the intent of USGS to play in the research realm or become an operational entity?

- Most of our capability is in research.
- We need an interagency approach.
- No one agency can do it all.

Robyn: We would love you or your deputy to be part of the FENC committee. Please send the contact information.

Kevin Hiers will be the new USGS rep to FENC.

Paul is on the board for Joint Science Fire Program (JSFP). He would encourage that the FENC will keep this group up to date as well.

Predictive Services update – Nauslar

- GACC level information is integrated into the national systems.
- We are more longer scale, longer term.
 - Resource tracking
 - Fire activity
 - Planning
- Offer daily and annual briefings.
- **Annual meeting is on 12/7-12/9 1000-1600 MST**
- **Predictive services Oversight Group -Dec 2019 (PSOG)**
 - Created to address numerous issues
 - Lack of oversight to implement changes
 - Trying to jumpstart this for better engagement.
 - Current Challenges:
 - NFDRS (including the transition)
 - 7-Day Product
 - Vision and oversight
 - Staffing
- NFDRS challenges:
 - Not enough NFDRS support
 - This impacts the downstream other GACCs (not all PS personnel are NFDRS experts)
 - FEMS will help but delayed implementation does not help the situation.
 - It is non-standard. Big variations between the GACCs. Lacks any scientific foundations.
 - Colors don't mean the same thing across GACC boundaries.
 - We need a refreshed product!
 - Transition from Fuel model G to Fuel model Y. Slated for winter/Spring 2022.
 - The legacy fire potential model might not work!
 - Need to make this percentiles based
 - Nannette created a page to compare G vs Y. She is leaving for the RFC in SLC.
 - Vision and oversight challenges:
 - Lack of national cohesion due to lack of understanding.
 - Not properly staffed.
 - Varies from GACC to GACC.
 - Significant turnover
 - 10 people have left within the last 3 years.
 - Replacements haven't taken into account the recommendations from PS staff.
 - GS13 positions downgraded to GS12. GS14s down to GS13s.

- Are we supposed to handle our own research?
 - Reliant on PSOG.
 - Need to engage and work with FS, WFIT, NWCG, NWS, FEMS,
 - How does this work?
 - We serve on numerous committees.
 - PSOG under FMB
 - Gaps and overlaps need to be addressed.
 - Challenges and summaries:
 - Lots of funding is coming.
 - This is a good opportunity to shore up our service.
 - We are here for decision support, but we need support as well.
- Final Thoughts:
 - We have challenges, but PSOG could help.
 - Working on solutions and contingency plans.
 - We aren't alone. Wildland fire system is under considerable strain.

Current Openings in PS:

- There are 2 positions open in Southern Area
- 2 in SouthOps
- 1 in NorthOps
- 1 in Northern Rockies
 - Lucky if any are filled within 6 months after they become vacant.

Questions:

Pete: Lots of money rolling into the agencies regarding prescribed fire. If you want money, you should add that into your responsibilities. There is an opportunity for you.

- Nick says a lot of the mets are involved with this.
- NWS are instrumental in this though.
- Perhaps go to 7-days per week, but there isn't the staffing for that.

Cheryl: Is this a broader issue? As a planner in BIA there are silos. What gets done for suppression, what gets done for fuels? All the science is the same. Risk assessments should be the same. It isn't happening on the ground. That is a problem. Fire danger has run into it as well.

- Because of the stresses on the system, there are lots of issues to address.
- It's difficult to manage since we are an inter-agency.

Paul: Uses the PS products all the time. Used in a lot of high level briefings. The media uses it as well. There should be a strike team looking into what are the barriers? You should issue a one-pager stating what is needed to support prescribed burning. The executives and FMB need to be working together to further your cause. May will be too late for that.

Pete: Say this needs to happen, (changing spots to stripes) but the odds of it happening are quite small. FMB is up to their eyeballs with work. We only got through this last season due to creativity. IMETS extending to 3-weeks.

Robyn is open to options to help manage the issues. Might want to have another sub-committee to address the products and services level.

Wildfire Analyst & Tactical Response applications overview - Joaquin Ramirez

Technosylva: Wildfire modeling

65 people producing wildfire support to the community.

Also they are making incident management tools.

Steeped in Wildfire Science: WildfireSAFE

In 2020-2021: 30 peer reviewed articles and studies.

Created wildfiresafe.fs.usda.gov

Also created Wildfire Analyst Pocket Edition

Wildfire Safety Evaluator.

Also created an enhanced WindNinja Mobile and Desktop interface

The WFA-E platform has been used daily during 2020-2021 after successful proof of concept in 2019.

The tactical Analyst provides individual incident operations monitoring and dispatching. Provided an advantage over Wildcad. This is being used widely in the SE US.

There are various courses created to help utilize and implement the software.

Lidar is used to map the fuels model across the entire state of California.

Comments:: Using WFA for an FBAN is very helpful.

Question Robyn: Updating the fire perimeter or fire front, how is this taken into account?

- Integration of GOES 16 and GOES 17 is very coarse. But using FireGuard is much quicker and higher resolution.

WFA data can be output to Google Earth.

Robyn will get the slides from Joaquin.

Plans for Fire Weather Testbed – Dan Nietfeld

This is a proposed fire weather testbed...it doesn't exist yet.

- Dan was a SOO for 15 years.
- Last 6 years have been at OAR in Boulder.

90% of the ideas didn't make it to fruition.

Early user engagement was the key.

There is money set aside for the testbed.

- Due to Infrastructure bill.

What is there the need for?

Increased Fire/smoke observations.

Why the testbed?

We want to bring together the wildfire community.

Standard objectives

Test new products, technologies, and applications.

Reach beyond NOAA to build partnerships.

The testbed will act as a filter between forecasters and decision makers.

Who are some of these partners? USFS, FEMA, DOI, BLM, NWCG, and lots more.

Start by asking what our partners need. We need to ask them, not us telling them what they need.

Then ask the forecaster community how they can communicate with these partners

Then ask the operational forecasters what they need to do the job.

Lot of research needs to be done over the next several years.

Required infrastructure:

Virtual hardware platform and on-site center

High performance computing for model improvement.

The data server would reside at Boulder and could feed anybody via the internet.

In the past these testbeds were done in Boulder utilizing large groups of forecasters. Obviously this hasn't been utilized since COVID.

The goal is to evaluate new technologies for our partners.

These testbeds are analogous to a teaching hospital. Everyone is working together and learning from one another. The success depends on how much participation we see.

Tim B: This isn't as simple as asking partners what they need. We have to have established partnerships with them. This isn't where meteorologists are strong. Social scientists can fill that gap.

Nick: How do we engage in all these new endeavors? The fire weather testbed is a good way to enter this test. Dan says don't be surprised if we see millions and millions of dollars invested into fire weather, but this is where the testbeds will prove useful.

There are connections between OAR and FEMS which would provide greater utility for wildland fire.

Fire Environment Committee

Conference Call Notes

November 17th 2021

On the call:

Geoff Marshall, Jon Fox-Notetaker, Nick Nausler, Rick Mowery, Cheryl Bright,
Tim Brown, Tim Chavez, Billy Gardunio, Robyn Heffernan, Larry Van Bussum, Pete Lahm, Jen Croft,
Wesley Hall, Jason Knievel, Mike Pavolonis, Jim Wallman, Ravan Ahmadov, Henry Bastain, Steve
Larabee

Coupled fire-atmosphere modeling – Knievel

Weather impacts fuel moisture, where fires could start and how fast they can spread.

Fire also impacts the weather, lowers RH, raises temperatures, wind speeds, etc.

- What model is best?
- How fast do they need results?
- What kind of results?
- Do you need an equation for the model?
- What observations get into the model?

Going from our coarse scale to a fine/hi-res scale takes its toll on computer resources

The Colorado Fire Prediction System is a Hi-res simulation of fire behavior and weather.

2 Modes:

- 6 hour rapid mode
- 18 hour mode

The model can be manually configured for location, size, fuel conditions.

The model can run in the cloud.

It initiates from the HRRR and downscales it to 13km x 13 km then 30m grid cells.

The fire is carried by the wind, but it doesn't model the smoke.

It is run on Amazon web services.

The model output is:

- Weather
- Aviation
- Fire

Sources of error:

- Weather:
 - Getting better real-time data from a UAS (drone) can help the fire modeling significantly.
- Time/location of ignition (major challenge)
 - This can have a major impact on the size and spread of the fire.
- Fuel type and moisture content (40 fuel types from Scott/Burgan important)
 - Moisture can be taken from WFAS RAWs moisture, but this can be too coarse
 - However a better way is using machine learning from AQUA/MODIS (1km resolution)
 - NCAR is now building a 1km hourly moisture estimate using satellite data.
- Fire suppression

Challenges:

- Probabilistic output using ensembles

- Seamless integrations with operations
- Coupled model for many locations/states
- Better products/interfaces
- More focus on smoke
- Simulating pyro-cu.
- Add FastEddy simulations.

Questions: Geoff: Has the time frame for spot fire modeling become any better? With cloud computing we are getting better. Its always a matter of money if you want fast simulation. Cloud computing is much more efficient rather than upgrading your own computer.

Larry: Have you looked at NASA Grace RH forecasting?

Rick: Are any of the forecasts available to the public? Right now no. We are in a mode to figure out best way to make this operational. The access to the interface is through a web interface who has access to the password protected site. This runs into the issue of having too many simulated fire. The state wonders who will host this. NCAR cannot do this. They can develop but wash their hands when a sponsor takes over.

Smoke modeling updates – Ahmadov

3 model domains:

- HRRR Smoke (this is what we will focus on today)
- RAP Smoke
- Alaska Smoke

A smoke tracer was added to the RAP/HRRR .

The tracer is initiated using GOES satellite fire radiative power (FRP).

HRRR Smoke (3km) can capture mesoscale flow in complex terrain.

Estimating the FRP is ingested from 4 satellites (VIRS and MODIS).

- This does not use Goes 16 or Goes 17.

Looking at the FRP there is a huge variability from day to day: much may be due to clouds (satellite cannot detect the fire).

Important to forecast fire plume rise.

The model does not include anthropogenic pollution.

Verification of temperatures for the HRRR is better with smoke vs. no smoke. At least from a bias standpoint.

The model still can suffer some very high bias values if it doesn't model smoke correctly.

- In the future the lab is working on a RAP-Chem model.
 - Same domain, but involves all sources of smoke/pollution (anthropogenic)

- <https://rapidrefresh.noaa.gov/RAPchem>
- Also there is the Global GEFS-Aerosol model that shows smoke over the entire globe.
- <https://rapidrefresh.noaa.gov/RRFS>
 - This model incorporates GOES 16/17 data.

Landfire and fuel models update - Bastian

- Landfire modeling: focusing on annual updates.
- 775 sources led to over 1,000,000 plots.
- Landfire uses remote sensing plus submitted polygon data.
- Will begin to offer streaming data (including ArcGIS)
 - WFDAS will be able to access this data within the next year.

What's next?

- Improvements on percentile composites
- Testing utilizing cloud computing for downloading, storage, and processing
- Condense timelines
- Streamline legend and reduce duplication of services.
- Target modeling in problem areas to decrease image interpretation.

Learn more about this at www.landfire.gov

Or email helpdesk@landfire.gov

NESDIS fire detections – Pavolonis

Identifying gaps and emerging needs

The current administration has recognized the importance of smoke and fire services

NOAA contributes information to every part of the fire lifecycle.

We will focus on fire detection and forecasting

Detection: GOES-R and JPSS (polar orbiter)

- GOES pixels are 5km, but sensitive enough to see heat from fires.
- Can detect fires the size of a basketball court

JPSS has a resolution of 350 m.

The next generation will improve resolution 4x greater than GOES-R

There is an algorithm that detects fire as sub-pixel features. Sometimes this can give some good lead time to local authorities.

- 1 out of 10 to 1 out of 20 cases show this improvement.

The same algorithm can be applied to the polar orbiter (375 & 750 m resolution)

- It was able to detect a bonfire that was 4'x4'

There is a dashboard that can show recently satellite detected hot spots

And it can be color-coded based on the local fire weather conditions (issued by NWS)

You can also look at imagery from a larger satellite image.

This can be filtered by state/CWA/County. It has been running for over a year now.

- Tested in cloud environments.

FRP is impacted by cloud cover and thick smoke. However there is a way to correct this using GOES satellite imagery.

Transform to account for key capability gaps.

Advances in sensor technology, algorithms and user engagement.

These will be demonstrated in the NESDIS proving ground and fire weather testbed.

Questions: Tim C: San Diego WFO sends emails for new hotspots, and this is helpful for local fire concerns.

Nick: Are you looking for volunteers to test out the dashboard? Yes - this does not have to be internal to NOAA.

Desert Research Institute update and wildfire legislation overview - Tim Brown

Representing CEFA projects:

- Including: Revamping NWS Red Flag Warnings
- CA/NV smoke forecasting
- Developing a WRF 2km model for CA/NV
- QC of RAWS data

Going to look at all RAWS across the county via an algorithm to QC the data as well as fill in data gaps

- This is still being tested in V1.0
- By the time we get to V2.0 the data will go into FEMS
- Went through 400 stations manually.
 - Precipitation is one of the worst fields.
 - RH can be fairly bad as well.
 - Solar rad is one of the easiest ones to fill. Prior to 2015 all data was bad due to bad calibration.
 - Temperature is bad. There cannot be a 0°F temperature.
 - Wind speed is either missing or is it calm. Also spurious wind spikes.

URMA grid: Contracted out to NCEP to create 2.5km x 2.5km dataset of 1980-present

- Delivered 30tb worth of data
- Domain: CONUS/AK/PR
- Got 1985-2015 including clouds, winds, HI, Vsby, Specific Humidity, Heights, Cigs, Temps, Td

- This will be used to create a fire weather climatology.

Red Flag project: Purpose of the project is to issue RFW based on percentiles on RH/ERC/Winds across the country.

- There is social science behind this project.
- SPC has been interested in this.
- Not at a quantitative level yet.

Question: Tim B...You mentioned a fuel/flammability index. Can you touch on that? The idea behind this is to use leaf water potential to time of ignition. Some prototype work showed is there is a tipping point when you transition to a large fire. Tested out on needles. Would like to test on sage. What can help us predict this? EDDI is part of the input, KBDI is part of the input. Even if soil moisture is normal to above normal you can still have a big fire day due to large evaporative demand.

WRFx: Integrated fire, weather and smoke forecasting for prescribed burn.

- Can run the model well in advance for a prescribed fire or even the day in advance.
- All accessible through an App.

Question: Jenn Croft...How does the model perform once it got going on the fire we were at together? It modeled the entire event quite well.

Wildland Congressional Bills for 2022:

H.R 4664: Forest Improvements through research and emergency stewardship for healthy ecosystem development and sustainability act (Moore-UT)

S 2436: Forest Improvements through research and emergency stewardship for healthy ecosystems development and sustainability act (Risch-ID)

Both are there to amend the healthy forests restoration act of 2003 to establish emergency firehatched management area, and for other purposes.

H.R. 1073 Wildfire Wireless Resiliency Act (Rodgers- WA)

HR 2585 Forestry Improvements to restore the environments act of 2021

S.2650: Wildfire Resilient Communities act: 30.15 billion dollars (if treasury has money)

HR 4573 Stop Causing Alarming Tree,

S2404. Western Wildfire Suppression act

This includes Wildfire detection equipment and research into Unmanned aviation programs.

S2421: Smoke planning and research Act: \$50 Million

This tells the EPA to establish 4 centers of excellence for wildfire smoke at institutes of higher education (DRI?)

S2806 Wildfire Emergency Act 2021

More wildfire detection equipment.

Western prescribed centers.

S2159 Wildland Fire Mitigation and management commission act of 2021. 1 million dollars (Romney)
Need lots of representatives. Including NIFC, state departments, county governments, utilities, tribal governments. Academics are not mentioned.

HR 4302 Active Forest Management Wildfire Prevention and community protection act. 126m

Collaborative prescribed fire program

Incentive for large cross boundary fire.

HR 5010 was voted down.

Now it was added to HR 5781 by voice vote.

Tim told Senator Rosen about the good and the bad of the bill.

HR 5781 National Wildland Fire Hazard Reduction Program Act (Markup)

NOAA 1.11 B NIST 182m NSF 281m NASA 525m EPA 62m

This has a very good chance of moving through

There were 25 amendments to this, but not all made it through.

Membership (another committee)

Director of NSF

NOAA administrator

FEMA administrator

US Fire Administration

Secretary of Interior

Secretary of defense

And many others!

Fire weather testbed showed up in many references to this bill.

Questions: Nick... *The implementation of these things is the true bottleneck. Things such as NOAA IT or staffing. Is this addressed or will folks have to do more jobs than 1?* No, its up to those directing these funds. This is a place where we should try to have influence. Don't build things that can't be maintained.

Robyn: The bill appears to be formulated in support of private interests and academia. Tim says Lofgren is in California and Craig Clements gave testimony. This bill follows the hearing. Tim has never seen a congressperson so interested in the research. She is on the commerce committee and thus there is no mention of the USFS.

Nick: *Any specific mention of FEMS or something like that in any of these bills?* No, there is nothing that specific or granular at this point.

Tim: Can FENC make recommendations to NWCG and then to the directors to say these are the priority issues? Yes prior to the money to get out ahead of the rush of money. We can start the groundwork. The money is spent by the agencies appropriately.

We talked a lot about modeling today and what should move forward and what should be transferred into operations. That will be a big piece of all of this.

S591 Discussion – FDSC/S591 Steering Committee

This is a last minute discussion. No presentation.

- 591 cadre has curriculum and cadre issue.
- **Issue at hand: 2022 S591 proposed to be postponed to 2023.**
- Tried to convene 5 different meeting and informal polling.
- There might not even be cadre support available for a 2022 course, if desired
- S591 is a 2-week course.

S591 is not required for any position description, but might be in their employee development plan. The focus is to help students develop a fire weather operating plan. Typically 2 weeks in length.

Questions: Robyn...Historical intent of this course was to create a fire weather plan. But have folks had even more exposure to this over the past few years without taking the course? Yep you are probably on the right track. The content is now being delivered in other ways. However, folks need FDOPs. More urgency and demand than ever before.

Robyn: If you decide to move on, is the cadre unwilling or unable to do it next year and is this because of the transition to NFDRSv4? I can't speak on behalf of the fire danger sub-committee, however to Steve there are 2 things that led to the decision. Steering committee has the decision space to say whether or not the course is offered. The committee came to the decision, that the steering committee got down to brass tacks, they were wondering if this is the best use of their resources. One member was opposed. The class was already bumped once and it was determined that a class in 2022 wasn't viable. Partially COVID and partially the class content needs to be reevaluated and altered. Some should be done online before heading to the residence course. Can this be done before 2022? Probably not. Also need to add S391, S291, and S191 content and it needs to shift. Lessons should be packaged so they can move.

What is the timeline of the courses? At least a couple years before we see a new S391. What can be shifted from S491 to 391? What can be shifted from 591 to 491?

Jenn: The fire danger series of courses is going to ISPC who looks at these courses. FENC has recommended moving forward with the plan.

Cheryl: new to the sub-committee, however given what Jenn presented regarding the transition and the capacity of the S591 cadre and coaches. All pretty much the same people. We would defer the 591 curriculum and allow the group to focus on what really needs to be taught. For instance WIMS help for implementation. Don't want to discuss creating FDOPs. We have gone past what the S591 material has recently consisted of.

Steve: Second piece of the internal decision, does the steering committee support the plan to carry on in 2022? There is a limited group of heavy lifters and those folks are getting a lot of pressure to work on the outstanding business of transitioning to NFDRSv4.1.

Students have been selected. They should be doing the pre-work. The online learning was to be offered in December. But if the session is kicked into 2023 the students have been notified the class could be cancelled. We aren't working on modules or updated lesson plans. We could probably pull this off, but its not the best use of time. The GACC have identified issues that need to be addressed in the interim. We could use the gap year to offer a symposium and allow slow folks to catch up. Delaying the 2022 class could actually result in more work. To officially cancel will rely on NWCG decision. Students will be notified of go or no-go by Thanksgiving 2021.

So is there any opposition to forwarding the final decision to Katy O'hara to make the final decision on the fate of this course? There were no objections from the group to send this to the executive board to ask for a final decision.

FENC will sponsor the topic and move it to the Board, via the PMU for a final decision.

Firefly - Triplett

Shawn Triplett has been the lead on working with Firefly/FireGuard and getting it funded. This project is complementary to the project shown by Mike regarding satellite detections for fires.

Want this to be the one-stop shop for fire SA.
This started in CA last year., but went live across the US last year.

Firefly is all the streams of data
Fireguard is a national program using multiple sources of data to monitor fires.
This can be used as a standalone program.
It is not a tactical tool. It cannot say the fire jumped over a river for instance.

There is a national fire dashboard. Keeps a running total of the work done by fire guard.
Including fires detected and polygons created.

How do you request this?

- Build a standing request. Fill out a survey form and what you're interested in.

- You will get a text message if something (fire-related) is detected in the polygon.
- It will contain information including NDFD weather.
- You can also specify a time length (SITL for instance requesting a 4-day period updated every 15 minutes)

This information is in EGP.

This will continue to be run and funded through September 2022.

This data can be fed to DRTI aircraft if something is detected. This intel can be used to have the DRTI then adjust its view to validate or invalidate what the program is detecting.

Questions: Robyn...where will this go in the future? Good question. We have had 5 or 6 meetings regarding this. Would like to keep this in house and not be so dependent on external sources. Need some appropriations. Its good through 2022 now but might get extended to 2026. This funding could tie into some of the legislation Tim referred to earlier today. Canada might launch a satellite soon strictly to detect and monitor fires. It will be similar to VIRS. It won't be on a sun synchronous orbit. We have a big gap during the peak burning period using our satellites. The Canadian one won't have this issue.

There might be a dedicated aircraft over the SW US at 60k feet to monitor/detect fires as well.

Tim C: This program has been a dream come true for firefighters. Even if its not perfect its better than nothing. How hard was it to get the extensions this summer? Not that hard this year. There is a big disconnect between us in the field vs those in the DC beltway. There were a couple senators who are supporting this program who are behind this tool. The old way of fighting fires isn't working. We need to evolve.

Robyn: Any effort to merge location data from prescribed burns to remove from the overall view on Fireguard? Yes we have that information and that is one of our big objectives. Also look at land coverage data to determine if the burns might be an agricultural fire.

We would also like to increase the coverage of nighttime satellite data to help with "midnight" fires along the California Coast.

Research gaps and R2O - All

Good information sharing took place today, but we are a coordinating body and might want to take some action on these efforts.

What do we do with these fire modeling efforts? There are a lot spinning up. None are being used nationally. Technasilva is used in CA, there is one model being run for CO (Kneivel). But there is a gap for national coupled modeling.

What should we get behind and move forward with.

Not ready to state quite yet which model we should recommend? How do you feel about that?
Nick...We should look at broader scale modeling before committing. We should also reach out to the land agencies and see what they need. Lots of good stuff out there and we need to vet it. We aren't aware of what's coming down the pike.

We need to encourage and develop the plan to present to the folks with the purse strings. To be blunt there is no plan. Most folks aren't even aware of it. We need to create our own path. We have access to the field to provide some recommendations to facilitate a path going forward.

Jenn says we see so many shiny objects that attract our attention. Some of these products might be useful for other agencies. What are the NIFC needs and then you come up with FEMS, NFDRS. The idea we need to evaluate all the tools on private markets, state markets and federal agencies. We want to try to alleviate duplication. Joaquin's presentation showed WFAS which won't even be around in a couple years. Saw lots of great stuff to throw in FEMS. We need to see stronger outcomes for everyone involved.

Robyn...FEMS isn't a done deal. The success we have had moving this forward had to do with our committee supporting its purpose. We see gaps that needed to be filled and recommended what was needed to fill them.

Nick would like to see all this intel/modeling cataloged. This would be a great first step. There is a lot more coming. **Robyn suggested the cataloging could be an NWCG request to pull all these sources together.**

Geoff says cataloging is going to be a huge process and a moving target. More realistic would be keeping track of what is out there now. We would want to determine a readiness level before tracking it. Rick doesn't agree with this. Things can't turn operational without help. These models need the support of our group.

Fire Environment Committee

Conference Call Notes

November 18th 2021

On the call:

[Geoff Marshall](#), [Jon Fox-Notetaker](#), [Nick Nausler](#), [Rick Mowery](#), [Cheryl Bright](#), [Katy O'Hara](#),
[Tim Brown](#), [Tim Chavez](#), [Billy Gardunio](#), [Robyn Heffernan](#), [Larry Van Bussum](#), [Pete Lahm](#), [Jen Croft](#),
[Wesley Hall](#)

Leadership rotation plan - All

We want to keep the workload manageable and keep new energy flowing.
We want adequate representation for all the agencies we represent.

Can't keep kicking the can down the road.

This is for all the sub-committees under FENC.

We will decide on something today and if not it will be in the very near future.

The charter has a 2-year rotation. Robyn has been the chair for 10 years, as was Tami. John Wallace was chair for nearly 10 years as well. Wes has been the chair of his subcommittee.

Wes agrees the 2-year time limit is ideal, however he's willing to continue in his position. Once you get into the chair there is reluctance that you might get "stuck" there.

Nobody wants to volunteer for what could be a semi-permanent assignment.

Larry: Issues within the fire weather sub-committee. **Our roster is out of date in terms of who's on it and what they represent.** There is no FBAN on that team which doesn't make sense. Without expanding a roster from 10 to 20, we need to figure out what's best for the committee.

- People look at this and see there is a ton of work there.
- Folks don't know how to lead a committee.
- Plus lots of new blood.
- Is this a PMU thing. Committee leadership 101 perhaps?
- Not sure vice-chair or secretary are necessary.
 - No reason for the vice to do some of the work
 - No reason for the chair to take the notes.
 - Maybe we need a budget focal point.
 - Need to figure out what the big time sinks are.

Katy: Our staff is trying to put some focused effort toward some of your issues Larry. We recognize this from a PMU side.

- We are beginning to film how to get involved in the committees
- Also making a document "I'm a chair of a committee, now what am I supposed to do."
- We get the admin support side and it's becoming a struggle.
- Also want to make sure people get credit for serving on a committee.
 - Write it into their performance reviews.

Intertribal Timber Council and IAFC are looking to add members to committees where they don't currently have representation as well.

Step 1 review our rosters:

- Set a date to get this done.
- There are units that need to be filled.
- Try to bring in some new blood.
- Look at the positions themselves, are they necessary?
 - Larry: We need an FBAN, but do we need ground support?

Step 2: Suggestion

- Rotate the leadership positions every 6 months.
- Example: Jan 1, Fire danger rotates out FENC to Fire Weather.
- We could continually the backup of experienced leadership
- Do you want to rotate by agency? By Position?

Geoff: This is a double edged issue. If we are constantly rotating leads, people are just starting to grasp the roll and then rotating out. It keeps things fresh, but inefficient and we lose some of the legacy knowledge and risk reinventing the wheel. Perhaps rotate the vice-chairs and then they gain experience and we foster the next generation.

Katy: Several of the larger committees see the vice-chair rotate to becoming the chair. There is 2 years being the vice before 2 years becoming the chair. This gives you the experience. Larry supports this idea.

Larry: there may be a NWS representative on the fire weather committee, but another NWS person could be the chair as well. The chair can also count as the agency representative.

Rick: Is our NWCG roster our upper or lower limit? Katy: That's the baseline to start with, you can add additional people. Sometimes folks from the same agency represent different geographic areas. There are also advisor positions that don't have a voting roll on the committee.

Cheryl: Is there any talk of changing the rosters to define what role they might have? We had a BIA member on fire danger but now they are in Alaska, so they are the Alaska rep. Now we have 3 BIA members on this committee. Katy: good point.

Need some actions going forward:

- **Start with vice-chairs going to chairs after 2 years. These committees have one.**
 - Fire Weather
 - Continuing education
 - Fire behavior
 - Fire danger has co vice-chairs
 - **FENC does not**

The next FENC call is in 2 weeks on December 1st. And then we will go over this plan of having the vice-chairs raised to chairs after 2 years.

FENC Member Report outs

Fire Danger Subcommittee – Bright/Croft

NEWS:

Jenn Emphasis is the transition to NFDRS old school to NFDRSv4. Calling it this instead of NFDRS 2016 Dramatic loss in Subject matter experts in WIMS.

Cheryl and Shelby are translation the curriculum to improve the awareness of what's going on with the transition.

Support for NFDRS transition, building a better and bigger cadre.

Current cadre is Chuck Maxwell and Matt Jolly

2018 to 2021 weather to be backfilled for fire weather operations.

Cheryl: Need a western states rep.

Going to incorporate field reps

Need a comms plan to notify about the transition.

Justification for the creation of an S191, S291, S391 has gone to the ISPC.

Fire Behavior Subcommittee – Mowery

Fire behavior training

Publications and updates

Emerging science

Training

- S190-New materials in review.
 - Online
 - Also a spanish version
- S290 Moving toward a review.
- S390 Beta offering last spring
 - This is virtual training, but instructor led.
 - Some can be done alone.
 - Nick had a virtual S-390 last spring. I helped build the wx portion and attended. Went pretty smoothly.
 - Went smoother than some in-person classes.
- S490 green light for re-working.
 - Adding supplements to previous version.
 - NWCG will take in materials if other agencies will do the work
- S495 Uncertainty for around Spring 2022.
 - Own steering committee and cadre.
 - Late offering in 2020
 - Revolves around the WFDAS application, which will be retired in Oct 2022.
- S-590 In person session coming up.

Publications and Updates:

- Fire Environment poster released last year
 - Developed companion materials this spring through Northern Arizona University and WFSTAR
 - Used in the S390 training
- Missoula Fire Lab videos-Russ Parsons-StandFire
- Guide to fire behavior assessment (Updates Appendix B of fireline handbook
- IRPG updates (Brent Wachter)

Qualifications work:

- Incident position description for FBAN and LTAN
- Outreach to potential analysts.
 - There was a decided shortage of FBANS/LTANS this year.

- Led to virtual assignments. Not ideal!
- Regional decision support centers for IMET support. Rick supported 4 complexes simultaneously in Montana.
- Analysis of IQCS/IROC data
 - Who has sufficient quals and what positions are they filling on a fire?
 - Are there analysts going out as something other than an analyst?
- Currency issues
 - What will maintain your qualifications as an analyst?

Other work:

- Agreement administration for other sub-committees
- Mann Gulch Staff ride materials
- NASA SPoRT
 - Looking at fuels assessment work
 - Also some fire weather relations to fire behavior

Challenges:

- Retirements
- Day job duties
 - Big problem this year!
- Coordination/Conflict
- IT Issues
 - How to push fire line applications. Not easy to do.

Fire Weather Subcommittee – Van Bussum

Item 1: Lightning unit. Lightning is becoming tougher to herd.

- Nanette was the chair of the lightning committee
- Nick will take over for Nanette.
- Contract was through Visala and the new contract is through Earth Networks
 - Can the data be lumped together? No
 - There are differences between the two.
 - We will see flips every couple of years due to new contracts.
 - We might see 2 contracts:
 - One for live data
 - One for archived data (Visala)
 - Ben at DRI is looking into biases from the networks.
 - **Preference would be to have one provider supply both live and archived data.**
 - Neither Nick or Nanette have contract experience.

Item 2: Fire weather observations:

- Electronic handheld weather meters (Kestrels)
- Want to replace Belt Weather kits with the kestrels.
- Body of work shows Kestrels are much more accurate.
 - Pushback: What if batteries die?

- Will the RAWs cache and calibrate these items?
 - Perhaps, but they won't be cached.
 - Fire Weather subcommittee call will look at this shortly. (getting kestrals)
- **PROBLEM:** in the S290 there is a big section about taking belt weather kit observations

Item 3: Task team headed by Jason Loomis with an FBAN, IMETS, OPS Chief

- Looking at IAP inputs.
- Why does the Fire Behavior forecast regurgitate the weather forecast?
- What should stay and what should go?
- Now we also have the fire weather matrix.
- Jason's type 2 team would test some of these things out.
- Must be vetted through various committees.

Item 4: Darren Clabo is updating the fire weather handbook (425-1 publication)

- NWCG guide to a fire weather forecast.
- Updating the fire weather handbook (last updates in the '80s)
 - Get something out in 2024 or 2025.

Item 5 Haines and LAL hotwash

- Response to the committee is doing something with these antiquated indices
- But what do we replace it with?
- Another call on Dec 7th, 2021 to revisit the issues.
 - It will be recorded and put on Fire on the 5s.
- LAL was meant to be used in NFDRS, but not being used
 - It has been replaced by a prob wetting rain and weather, sky
- Haines Index: What is it telling you?
 - Will teach other indexes in the future (Hot, Dry, Windy)
 - Would like an addendum to the S190, S290, S390 courses.
 - Can't be removed from S290 yet, but that's the hope.
 - Don't need to replace 1 index with another.
 - Maybe replace it with something else? HDW?
 - Educate people to look at something else
 - Can we move on?

Questions: Tim B..What happened with the initial questions about how mixing heights are done? Larry will follow up with this.

Rick...Material for taking obs in the field has been moved to S190 and uses Kestrels as well as belt weather kits. Also move forward with Haines and Stability Indices

Fire Environment Continuing Education Subcommittee – Hall

- Small group. 5 or 6 folks
- Fall AAR for the season webinar

- 130 attended.
- Will post to a website shortly.
- Prepare a spring webinar
 - Focusing on continuing education
- Virtual workshop to dive deep into the new tools
 - Risk management assistance product
 - IR and satellite data sets
- AGL products for developing long term assessment tools for LTANS
- Need for continuing education?
 - Especially for LTANS, FBAN, SOPLs
 - Can't keep up on all the changes
 - The webinars help, but more details are needed.

Questions: Cheryl: What are the focuses on continuing education for your sub-committee and what portions should we tackle for fire danger? Have not had a broad enough discussion about this. We have focused on fire behavior piece. Would not be opposed to helping out with fire danger, especially ERC and new models. Need to have a larger discussion on this. True focus is fire behavior piece. Cheryl wonders if there is duplication of the materials. Perhaps revisit this after the new year and use or lose is done.

Smoke Committee – Pete Lahm

Down on representation.

- Vice chair is done.
- Technical chair sub-committee is looking for pulling off the team.
- Need outreach for filling vacated positions.

12-15 people on the team.

Busy with finishing up video on personal exposure to smoke

- Got input from safely and medical folks
- Then the contract expired.

Smoke management field guide for prescribed burn

Smoke safety guide for travelers

Lots of changes due to air quality regulations

Working to get a fire weather app developed at U of Montana to predict superfog.

- Lots of weather apps out there but this would benefit the USFS
- Get funding for it.

PM2.5 standards will be adjusted downward from 10 vs 12

Good air will become moderate air quality. Lot less green on the air quality maps.

Big ask for funds after the President's budget. This will make smoke management a higher priority item with more prescribed fires quite likely.

- There won't be any shortage of work moving forward.

State updates – Marshall / Chavez

Lots of Technosylva implementation work to do

- Folks can't find the time to learn the subject matter classes

Bring it all together (all the programs for SA)

- AlertWildfire
- fiResponse T/A
 - Utilized on Dixie Fire
 - Making cheat sheets for these programs
- FireGuard reports
 - Improved significantly over past year.
- Technosylva Enhancements
 - FMAG with another cheatsheet
- Ingestion of aircraft full motion video/imagery
- Ingestion of UAS full motion video
- 108 ALERT wildfire cameras
 - Enhancing them with IR imagery
 - Can draw firelines with some of the cameras
- Cinemassive...a giant computer screen where you can get great Situational Awareness.
 - One in Sacramento and one going in NorthOps
- CALFIRE SB-209 WFTIIC...Wildfire Forecast and Threat Intelligence Integration Center
 - Are hiring 6 meteorologists
 - Self contained
 - Working with the GACCs and embedded in them.
- xView2 projects:
 - Can see what structures have been destroyed by fire.
- Daily 1600 Sync Calls
 - Match up what product each team needs with the correct equipment.
- RAWs installation
- Troubles since they use a Canadian company which had issues with COVID

Question: Larry...Problems with inciweb not showing California fires. Is there talk of expanding what California is doing to other states? Example...Estes Park fire not on Inciweb. We would love to see that. We have worked together so we aren't siloed by our own. We don't have control about Inciweb. Not to mention we can't post TechnaSylva information on Inciweb.

Nick: Timeline for the 6 met hires. Hire as fast as well as can to help with the GACCs. It wasn't bid out as fast as wanted due to a spelling error.

Pete: collaborated effort with EPA showing a smoke and fire map. Right now we feed into inciweb. Is there a way to feed your data into that map? Would be great to have this information. We want a one-click stop. Geoff will talk with Pete later. Smoke issues are asked about often.