NFDRSFEMS Updates and Tips-20251119_140304-Meeting Recording

November 19, 2025, 8:03PM

55m 27s

Scott Linn started transcription

Scott Linn 0:04

OK.
So what we have going on the world of feminism, so transition is whims is no longer around.
I'm hoping everybody has made the formal transition over to femmes and we are continuing with our development a little bit slower than we had hoped, but we are still working through that.
We do have a release coming up here, 3.5 that's coming up in the middle of.
December, what that release will do is it's going to be bringing in.
A.
Cleaned up data set from 2023-2024 and part of 2025 so that'll that'll gap fill any of the missing data that we have, but we'll also do a QC of the data. It won't change any of the quality control.
Data again, but it's going to.
Flag any of the the information that you have that.
Maybe.
Erroneous data so.
It will also be bringing in certain mesonets we will bring in additional sources and you'll be able to filter.
That by.
They'll be able to filter the views, so I'm gonna show what that looks like going forward here.
So as you get into the map view on the filter, you'll be able to click on the filters. The first one that we have is.
You'll see a seasonal trend.
So if you do not, you only want to see stations that have historical trend charts or historical data.
You just click on that and these will be the stations that have any seasonal trend

charts. If you just want to see stations that don't have historical information, you can also just click on that and that'll bring in those stations.
Into view as well.
The other piece that we have on here is networks.
So you start sorting by network by Ross, Asos and Niezo net depending on.
What you are interested in viewing? So those are the primary functions that we have.
Additionally, we do continue to work on some of the reports.
So you'll be start seeing additional reports that are be coming in here and updating that information.
I believe we'll probably be getting a new push of these reports.
Probably within the next week or so.
And then the other piece of this release is going to be.
In the.
For the Fems admin group, which is currently only Travis, myself and Cheryl, you'll be able will be able to edit the.
Fire behavior or sorry not fire behavior.
The fire danger parameters.
So any of the drought fuel catalogs will be able to add new catalogs.
Adjust these few model catalogs and assign stations to these catalogs.
The caveat to this is we do are working on a a process to make sure that that happens.
In a organized fashion.
Because once you go through and change a catalog, there's going to be numerous impacts that could happen downstream.
First off is you need to make sure that any other agency that may be utilizing that station is aware of any changes in the catalogs. You'd need to make sure that you have that communication that's documented.
And that everybody knows that it's occurring at the they agree upon any of the changes that are occurring within those catalogs.
So this is going to be, I should say fends is not making any wholesale changes.
To any of the catalogs during this process or doing this one, it's just the ability to make these edits in the future.
So so again, as we start moving forward, we will have that ability to make some of the edits to the catalog.
But again, there's gonna have to be a lot of communications in order to make sure

we have that taken care of so that we're not, you know, potentially screwing up other analysis work that is done by other agencies.
So those are the main three or four main pieces of the work that has been completed or that's gonna be completed on the three, five release as we move forward into next year.
So the longer term steps that we're going towards.
For Fems is mostly going to be on the work for the beginning of the year is going to be in the data integrity.
Trying to work towards getting a more.
Balanced.
QC and gap filling of the weather stations as well as the recalculation process when we do get a gap fill in QC data set, so the long term goal that we are shooting for is a.
Near real term. So maybe once a day, once every four or five days we are able to update our update the weather information that is from the weather stations and if there's any erroneous data and or if there's any data that was missed, any gaps in the Serv.
That that data would then be populated with.
Populated with data from the grid.
Weather information sources.
So we're working towards getting that fully automated.
I know there's been a lot of questions about that as of recently about how to go in and adjust.
Or or fill in missing information.
And we are that those are really the long term process that we're going for.
Is is to try and take care of that.
Sorry, I had a spider dangling in front of my face.
So those are. So that's like the next 6:00 to 9:00-ish months.
We also are working on a couple of pieces or a couple of small.
Enhancements. One of the fuel moisture database we are working to enhance those charts that are associated with the field sample data and showing in more of the traditional information that we'd be used to seeing with a daily or a maximum minimum. The average line in the current line.
So we're working to try and get that completed.
Hopefully by next field season as well.

And so, and then eventually we are working or we're still working currently with Noah to.
Integrate gridded in some way.
Into fems. It's going to be a little bit more of a process just because of the sheer data size and the data needs for that. And then some of the mapping capabilities.
But we are working towards getting that information.
Or I know it's been working.
Very diligently on getting that built up and hopefully we'll be able to get that display at least integrated into fems here.
Within the next year, year and a half so.
Those are the long term priorities that we have going forward and what we're working on in the short term.
So I want to see if there's any questions on where that is currently sitting.
I guess one of the other pieces is forecast information.
We're we're continually analyzing that to see about the cadence of when we bring forecasts in how often we bring forecasts in as well as snowflake information and and snow depth that we are currently utilizing to seeing if we want to adjust those thresholds.
To to not be quite as sensitive as it currently is with Snowflake.
So a couple of the bigger other bigger pieces that we are looking at and and analyzing and trying to.
To find out when would be some good times to one. If we're going to make changes, make those changes, and then how to integrate those into the system so.
So now open up any questions on.
Where we are moving with fems for the time being.

WS **Wilburn, Steven@CALFIRE** 8:36
Hey, Scott.
Steve Woer from Cal Fire.

SL **Scott Linn** 8:37
Scottsdale.
Hey, Steve.

Wilburn, Steven@CALFIRE 8:40
Hey, when do you expect to see the precipitation amounts come into the data leaks?

Scott Linn 8:46
Say that.
Guess I'm not following that one. Precip coming in from the data links.

Wilburn, Steven@CALFIRE 8:53
Yeah. So we have the data links that we push into our Cal Fire spreadsheets.
Some of our unit are looking at that data in real time and the data links do not bring in the precipitation amounts, but that you would normally see on the fems front page.
We heard that that was something that would see in the future, but we were.
I was just wondering when we would see that moving forward.

Scott Linn 9:23
So when you open up a station and when you download, so you're not seeing any precip amounts at all in when you're downloading in the data links.

Wilburn, Steven@CALFIRE 9:35
Correct. When you use the live data link you know so we can put it into Excel to look at the data.

Scott Linn 9:42
OK.

Wilburn, Steven@CALFIRE 9:43
We get 0 amounts regardless of what's actually occurring.
But you can go back and look at the fems front page. The map you're on right now, and you can see that obviously the stations are reporting. And then I'll go back into WX weather and you can see the station is reporting the precipitation amount, but we're not.

Scott Linn 9:54
Mm-hmm.

Wilburn, Steven@CALFIRE 10:04
Getting the precipitation amount in the datalink.

Scott Linn 10:09
OK.
So if I were to then use so when I go to the download page and you do.
Weather and you do your observation and forecast and you do hourly.
This is where you're saying you're not getting and then you do the copy data link.

Wilburn, Steven@CALFIRE 10:25
Correct.

Scott Linn 10:28
You're not seeing precit.

Wilburn, Steven@CALFIRE 10:29
Yeah.
Correct. And if you wanted to look, you could pull up, say reader Ranch, cause I've had over the last few days I've had precipitation all over that site for for days, so I should be able to get precipitation.

Scott Linn 10:47
Mm-hmm.

Wilburn, Steven@CALFIRE 10:47
You can get it on your map here, but on that data link you just put in, you don't get, it's just zeros.

Scott Linn 10:50
Mm-hmm.
That's very interesting.

Steve, you, I will make note of that one. And if there is a bug.
For that, which it sounds like there may be, is it only occurring with hourly, or is it daily?
Or have you not tested the difference between 2:00?

Wilburn, Steven@CALFIRE 11:14
Umm.
I have a one hour.
I have a fire danger daily that had the precipitation amount on there.

Scott Linn 11:20
Mm-hmm.

Wilburn, Steven@CALFIRE 11:22
I didn't pay much attention to it, but I can on I can confidently say that myself and another unit aren't getting the hourly precipitation and I expected maybe an hourly precipitation amount.
Not a total, but we're not get we're just getting zeros.

Scott Linn 11:36
Mm-hmm.
That's really interesting.
What about in? Have you done just a straight download without the data link?
I mean it shouldn't matter.
But.

Wilburn, Steven@CALFIRE 11:51
Anytime you pull in the well, I haven't been.
I haven't looked at it to the live data because you can download the data and put it into firefamily plus and see the precipitation amounts.
But you can't download, you can't get it to live.
So it's just zeros. At least I I hope that I I can get that precipitation mount.
I've looked at the data with precipitation, so I I honestly I can't confirm right now, but I can.
I've seen precipitation.

Scott Linn 12:19
Yeah, I understand.

Wilburn, Steven@CALFIRE 12:20
Move my dad's head.

Scott Linn 12:22
Right, right.
OK.
What station?
I just want to give it a.
I'm just curious what station were you saying that you had?

Wilburn, Steven@CALFIRE 12:30
But we'll do reader ranch.
That's common spelling on reader common spelling on ranch.

Scott Linn 12:35
Yeah.
Oops, I hit the wrong button there.
Let's see here.
I had to stare at my ugly mug, dug it and juggling around here.
OK, I will definitely take a look at that Steve, and find out what is happening. If there's something broken between the UI and the download.
And I'll get back to you on that one, so.

Wilburn, Steven@CALFIRE 13:04
Thank you.
Thank you.

Scott Linn 13:05
Yeah. Good.
Good question.
I haven't heard that one before.

That kind of seems to be a key piece, so.
We'll see what we can do.
Other questions?
All right. So we're going to move into a couple of other topics. So a couple of there have been numerous questions, I guess honestly around forecasting information and forecast weather. But before we get into that one, there was also, I've heard several different discussions going around about.
Fems and Firefly plus not lining up.
And so usually it's in the hourly data where where the readings are off.
And not not tracking well.
I know that there is one one specifically kbdi that we're having an issue with and we we found the issue in the code with that and we'll be working on getting that fixed probably in the early part of next year and that's what the absolute values, the, the.
The trends are are lining up.
Well, it's just that the absolute values are off a little bit and it's due to.
The timing associated with that.
It continues. The code continues to lock into 1300 and so we're kind of getting 1/2 day precip, which is throwing things off on our on the kpdi side.
I think it is only a KB D side of things and since kbdi does not factor into any of the other outputs it it has not been affecting any of the ER, CS or anything like that.
But I'm going to bring on Matt Molassic.
Matt, are you still available?

Matthew Malesic 15:15
Yeah, I am, Scott.

Scott Linn 15:17
All right, so I'm gonna. I'm gonna turn over.
So. So Matt reached out to me about a week and a half ago and he definitely had some questions about misalignment between the two systems and him and I had some some really good long conversations on Friday afternoons.
And and so we've I thought it would just overall be a really good example of of one how he.
Picks view of the data and found some.
I guess the solutions to where he was at and what he'd been finding out.

Overall, so him and I are just kind of kind of work through this discussion piece again for you and answer questions as we go through.
I'm just kind of curious to see if other people have seen it.
So Matt, I'm going to pass it over to you for just a a few minutes here. And like I said, if you need anything.
You can just keep chatting as we go so.

Matthew Malesic 16:06
Yeah. Thanks, Scott.
I do have a couple places where I'd like you for better explanation, but turn off my camera just for bandwidth, but just wanted to quickly run through some of the discussion pieces that Scott and I were having regarding as we have live fire danger or we're looking at.
Fire danger for the current year.
We have folks that are looking at Firefly, plus graphs or cataloging information.
And there in the form of Sigs. And then when you're taking that information from them and you're averaging it, although Fems isn't giving us a stats graph that visually shows that the numbers were off.
Multiple indices, multiple outputs that we were seeing that so talking with Scott, the big the big driver of this is what he already mentioned earlier is about the recalculation. That is not happening in Fems currently.
So just wanted to give a visual for folks.
Kinda just what I went through.
More from my understanding, but also I think it may help if anybody's having some issues with them just being off so quickly.
I just grabbed the FW21 file for multiple raw stations and started sifting through weather data.
As to be expected, the FW21 file.
If you look at the daily or hourly.
Listings in Fems is going to match the hourly listings in Firefly plus and what you're seeing here is even if there is missing data in fems.
That is also coming over into Firefox as we would expect though in the data set that I looked at I had 18 hours of missing data in both FEMS and Firefly plus, so they mirror each other.
They're the exact same data.

Also went through a correlation test just to see, you know, are these values that are coming over. Is there any wonkiness that's happening when we're transferring that information from them to the fire plan plus? And they all came out good.
With that, if we transition over to looking at hourly fire danger, which both systems give us outputs for what we can see here is we brought over those 18 missing hours of data in the Firefly plus.
But when we look at fire danger, we're also seeing that there's ten extra that are missing in fems.
And what you're seeing here is not the same.
Time frame is the last, but you're seeing the records in in Fems that are not calculating fire fire danger hourly.
Whereas in Firefly plus we are getting outputs for those hours.
So talking with Scott, I think the root cause of what you know I was not necessarily understanding was that when there is a missing hour of data.
Or when there's missing weather data in fems, it is obviously not calculating fire danger.
But the relationship that Fems has with WXX will eventually backfill that information if available, and when that is available that is being catalogued in FEMS as FW21, and when you export it in the Firefly plus you can then calculate the out and Scott, this is kind.
Of that relationship of what?

SL **Scott Linn** 19:56
Mm-hmm.

MM **Matthew Malesic** 19:58
You know you for whatever reason you miss you're missing some data.
The process in fems that is cataloging or back filling that information. If you wanted to take the realm.

SL **Scott Linn** 20:12
Yeah, exactly. So, so this is.
I guess we've we've in the development process gone through this, you know, crawl, walk and run phase. And when we first started doing the development for, for WX weather and how we we did the relationship, we first needed to establish these direct

connections so that we would get.
The information.
But we realized a lot of times there's delays.
Is in the uplink between the station and the satellites, and then getting in the WX weather and then when we pull the station, you know we we delay that pull like 10 minutes just so. Hopefully that linkage happens between the station and WX weather, but sometimes it doesn.
Do that well. What WX weather does is it actually goes back and it and it tries and it regathers any of the missing inputs that have been there from, like the past couple of hours or, you know, whatever it may be.
So eventually what happens is we because we are importing into every, you know every 15 minutes when we bring in the weather data, the weather inputs may be missing.
So if you go back to your previous slide and you look at the actual those missing inputs.
We have.
We have the original or we, you know, our FW 21 is missing that that time frame.
What we do then is we go back after 24 hours and we we test the system for 3/3 cycles and we go back and gather the FW21 or we gather the weather inputs for any of these gapped. All this gapped weather and we then.
Fill in the FW21 with this with with.
The data that now is in WX weather.
And we populate that what is not occurring on our end is a full recalculation of that.
So we don't have a way then to trigger a recalculation of fire danger.
So when we originally once it calculated it, those hours are missing, which is what you're seeing on the right hand side.
That that data is now missing. Then when you bring that FW21 file though, which has now the full weather data into Firefly, plus it calculates.
So it appears that the system is off, but we're just not.
We haven't had the opportunity to or we don't have the system yet set up so that it's doing a recalculation.
That process is being built and like I said, we should have that fully.
Available I in our December, we should be able to have it so that we can go back and trigger a recalculation when these systems are occurring.
So we should be, you know, taking care of this process behind the scenes.

For everyone, it's just that right now we aren't.
We don't have that. So this is where some of the differences are coming in. When you start looking at the values.
So I know that's a long explanation of of that, but the weather data is there.
That's why it's in the in the CSV or in the FW21.
But fire danger is not calculated in Firefox.
Or I'm sorry in FEMS for those missing times so.

Matthew Malesic 23:38
And Scott?
Kind of what we talked about that wouldn't have been triggered in whims either.
Until somebody went in and done a recalc.

Scott Linn 23:46
Good.

Matthew Malesic 23:47
So I think you know the point being, we're moving towards a recalculation that's either on an hour, a day or more so than a manual punch of that.
But we are now in FEM seeing all this information, and it's it's at our fingertips where in whims it wasn't triggered until you had.
To go back and recalc because you realized you're missing data.
Is that correct too?

Scott Linn 24:17
Yes, correct.
And we and at that and with whims, you had to go back.
It was not an automatic process.
We had to have Lou go in there or or Neil go in and grab the data from.
From the Raz station itself and pull it in manually, and then he would usually trigger the recalculation. So it took people in order to actually notice that they were missing data to go grab it.
Otherwise you just you were missing the data and you it was not being automatically.
Back filled. So yes, that is correct.

It was not being.
It was not an automatic recalculation in wins either, so.

Matthew Malesic 24:54
Awesome, I have just a couple more slides. So just a continuation of the same data set, primarily looking at this, but just that relationship of how?
You know the lack of that information and why? Why I bring this up is because when we're in an area, what I've noticed is when we're in an area where we're missing data that was pretty close to current time, we're gonna see those.
Differing if we're using Firefly plus at the same time, we have folks that are using Firefly plus on a daily or by daily.
Time frame and they're seeing large discrepancies. So just as we look at, you know, these five hours, we started off coming at 13.1 and 12.5. That discrepancy isn't that big of a deal.
But what we do see is when we're missing the data in fems, it's caring that last value over.
Once it starts to pick back up and calculate where it is.
Progressively gone down in fire family plus and where we see this I have a better visual kind of zoomed into. This is when you're missing that gap filled or that.
Fire danger in fems.
You're gonna have a lag in whether that lag's happening at night or during the day, depending on when you're looking at it.
We're going to see that, and it's gonna take time depending on which end, to see your output you're looking look looking at.
To essentially calibrate out or look into the future where they kind of calibrate to the same.
Also, looking at the hourly, I just wanted to note that although there's discrepancies there from a statistical standpoint running.
A correlation test on the full analysis set that I looked at. We're still.
Like .98 at the lowest, which statistically speaking is very very good.
So the correlation between the fems data as it relates to fire danger outputs in fems seems to be consistent.
And that's pretty much every Ross station that I've looked at.
Has been pretty consistent on that.
I did want to mention this.

We normally don't go down to the hour, but I think what we're seeing.
When we're missing data is that bacon?
And it's all stuff that you guys probably already know, but it it really stood out. So around the beginning of June is when fems.
Was set up and fire danger was starting to calculate. You would expect, as we see here, that fire danger.
Was matching up and to the point you end up having two calculators going at the same time, but as you.
Step through and look at these.
We had, you know, a break in data or a difference in data coming out of the gate here and over time we get to a point where those values start to become more similar and then we have another missing data and we see some separation so on and.
So forth as you go through there and I'm guessing to the degree that technology has is we're always gonna have these, what I call blips or differences.
But.
It also tracks and trends very well and has a good correlation between the two.
Lastly, just to give you an idea, you know depending on the indices.
It can have a more separation. Looking at stuff like IC, you're gonna have much smaller absolute numbers and you're gonna see less of a discrepancy compared to BI or kbdi as it's there.
The only other thing Scott, I just wanted to kind of throw in the room because you gave me a quick platform is I.
You know, looking at all of the stations and I use kbdi, just as a visual understanding that there's some nuances with it, but.
Looking at individual stations and hourly data really showed to me, you know, that correlation between the not only the overall correlation of the Ross stations as we do in FTops, but that day-to-day frequency you can certainly see as you start to SIG stuff that the laws of a.
I understand that that.
We're gonna be closer in nature, but really getting that idea of which ones are.
Are the ones that are causing you issues. Is going to, you know, kinda give you that idea in a wholesale of why things aren't correlating well together and specifically if you're in that area or in that close time frame where you're seeing these differences or this missing data.

That is being backfilled and found.
That's gonna be your most.
Differing numbers as you move through specifically with this fdra we had some snowflag issues. At the same time. So it's kind of exasperated but.
Just some things to think about. I think the hourly stuff that Scott had me go through really brought to light a lot of the the correlation between what happens in Firefly plus and what happens in fems and where.
We're going and how we can be to me happier that fems is looking at that more automatic and bringing that deviation closer together.
So that's all I had, Scott.
I appreciate your time and.

Scott Linn 30:59
No. Hey, man, can you go back 11 slide group there to the ERC trends, yeah, where you were missing?
Keep one more, I guess.

Matthew Malesic 31:06
Oh yeah.

Scott Linn 31:07
Yeah. So this one.
So this I think is really key.
So when you're looking at ERC, this is, you know, really what we've talked about.
For many times and saying OK, this is where.
Missing data from Roz is a big issue and the only way to fix these discrepancies.
In this system, without actually going back and doing recalculations, is time.
So one hour fuels you could go on back and you could have seen like that, you know, even if you go back one, I think it was one more slide. You had those discrepancies.
It it corrected fairly quickly after about three or four hours.
Yeah, three or four hours.
The system kind of equalized again fairly quick between those two systems and now we're back into where those numbers are matching fairly closely in.
And so so the the shorter the time.
Leg of our system. The quicker those individual indices will get back to equalization

between them.
But since we're looking at ERC with this, this is where we keep saying if you miss, you know, a day you're having an impact. If you miss three days, it's going to take you about a month to get back to where you were would be expecting for that.
Time and that's really this is I think drawing into that key that.
Yes, the trends are going to be there, but you're going to miss.
It's like if you're really concerned about those absolute values, you're going to miss that if you start missing, you know 2-3, four days out and after seven days, you know, I mean it's it's it's who knows where you would have been.
So the the watching of those Ross stations is extremely important to make sure that the tipping bucket's still working, that your snowflakes are lining up the way that you would expect them to be and that your sensors aren't off into being able to catch that information as.
Soon as you can.
To get those those systems repaired, if you need to, or correcting whatever.
On on the input side so that you don't have these types of long term things because we can't do anything to really repair what we didn't.
We don't have at least as of right now.
Again, we're working towards that, so hopefully we'll be able to at least have some some data flowing in for you. But remember that model data is different than observed data and we and we're going to be mixing those to.
As we start going forward and there's some caution, there's some benefits. Benefits will be you won't be having quite as much of this, but there are also going to be some cautions going forward with that by mixing the two sets of the two types of datasets.
So. So I guess you open up to I guess questions, Matt.
Thank you so much for putting this this presentation together.
It's, you know, to me it was a great visualization of a lot of the pieces that we talked about, but I want to see if anybody has, you know, questions for myself or Matt on what he did for the analysis.
And I guess if anything comes to light for people.
Yeah, Rachel.

C **Compton, Raechel - FS, CO** 34:06
Hey, Matt and Scott, just a question for you.

How did you kind of first notice that there was an issue?
Do you have like a workbook that you're using for your daily fire?
Danger. Is there something that you recommend?
Kind of tracking as fire planners to make sure we catch those.

Matthew Malesic 34:23
Yeah, Rachel, good, good question actually.
One it I've been working with some fmos and they're it's coming from their daily output.
So it was a four specific question that came in and I kind of dove in and looked at it. I think moving forward-looking at that.
I think just kind of the comparison you know depends on how far removed.
If you are from the field, but if you know if you're trying to look at a regional level, I think it would be relatively tough because you're gonna have to look at so many Ross stations.
But for me, the forest was able to reach out and just say, hey, we're having this slight issue and it was around Kbdi and the variation went from like 3030 points difference, which isn't too crazy.
In Kbdi, but up to like 150.
So we had like a large enough discrepancy in essentially we were missing data in real time.
So we were in one of those areas where you're gonna see the largest discrepancy before it starts calibrating and coming back closer, so.
Yeah, I don't have a workbook or anything like that, Rachel, but.
Hoping to in the future.

Compton, Raechel - FS, CO 35:48
Thanks Matt.

Wilburn, Steven@CALFIRE 35:52
Hey, Rachel.
This is Steve Woburn from Cal Fire.
In our I have 5 counties that we look at and the best way that I have done.
To identify anomalies is on the seasonal trend on the the Bell curve that you can get out of firefamy plus is you could throw up.

You're like, hey, this doesn't feel right. First of all, is it consistent with the with the season that that being the number one?
And then after that, then the weather die.
Hey was this.
Did this event actually occur?
And was there a data gap?
So on a quick service.
Just pulling up your fire family plus graph for that particular model and then seeing where it lands.
Hey, is it on the bell curve? OK. If it's out. Why?
And one issue that San Diego had, and it it was a result of dispatch levels.
Long story short, it was that reaction time of the higher.
The X and the Y and like, hey, it's raining outside. Why am I in a high dispatch?
I'm like, well, because it just started raining outside. Give it some time.
But to answer your question, I speak from my own personal experience. Whether Matthew has a good suggestion on this is I went back and I would just plot the days and then I would go into the inputs for the the weather inputs and see if there was any.
Anomaly in there.
Hey, did I have a solar rad input?
Issue did I have?
Whatever insert whatever you're looking for, but that I've been successful on that enough that we've crapped down an anomalous event on one of our sites in regards to ambient air moisture that we're still looking into.
So I wanted to share that 'cause I think that's a valid it's something I just figured out. I don't have a good answer how I got there. And then just looking at the Bell curve.

C **Compton, Raechel - FS, CO** 37:48
Thanks Steve.

SL **Scott Linn** 37:49
Thanks Steve.
OK.
So and and I'm gonna keep the conversation moving because I think there was also some good points that Matt brought up that I think Michael can also help out

answer because.
He had met had brought up about hey, this was really good to look at, you know, individually as stations and and when you start looking at it as a SIG, it's really kind of hard to pick apart exactly what's going on and where, where the issues are.
And we had a similar situation happening with that down in in Colorado and so.
Michael was hoping you can jump on here and and kind of work through some of the questions and and what we were working through together on that forecast information.

Michael Caggiano 38:43
Yeah, yeah, sure. Absolutely can do.
Let me pull this up real fast.
OK.
Yeah. So, see, I just have a quick presentation.
Really appreciated what Matt did cuz we're also kind of looking at the data to see what's lining up and what's not. And so I'm working with a few different dispatch areas in western Colorado, Durango, Montrose and Grand Junction. And we had this issue kind of pop up where?
One of the fire staff was like, hey, how come?
How come the calculator says we should be in restrictions and how come the?
The the observed values in the afternoon.
Soon are really.
There's a discrepancy between what was forecast in the morning, so you know just kind of looking at this one example, you know not too far off, but the forecast burning index was supposed to be 90 and we're only getting, you know 26 for the observations and so.
Just went through an exercise in order to compare.
The forecast to to the observations.
I have.
3 dispatch areas.
I'm working with 9 fdris and about 26 or so individual raw stations.
So we just kind of set out to ask the question, how well is the fem's forecast matching the observations in order to understand if we have an over prediction problem or an under prediction problem, we focus the initial analysis on ERC and Burning Index, although you could.

Obviously look at any variable you wanted and then I just picked a, you know time frame.
That kind of roughly matched our fire season.
So I'll just kind of work through some of that. Just built a spreadsheet.
Not really. In order to pull in the fems.
Information into into Excel a bunch of queries for the observations and a bunch of queries for the the forecast, and we just overlaid the observations on top of the forecast and what we're seeing here, the blue lines.
Or in the in the in in the four pack graph or seen on the blue lines or the forecast.
The orange are the observations and these are the four weather stations in the lower elevation fdra and so you can just really do a quick visual in order to see how well these are lining up and on the top right, we overlaid all four forecasts on top of.
One another.
And then on the bottom right, we have.
Looked at the forecast errors.
So the forecast minus the observations and we can get a really quick handle on it for over predicting or under predicting in that fdra.
The axes weren't super clear on the presentation, so I just overlaid those on top as we go through a bunch of these.
Even though the lines kind of look the same, they're on different scales, so.
In general, you know this fdra had really good alignment for the ERC, moving to the burning index for that same fdra.
We saw a little less alignment. You'll notice on the forecast error. Then you're pretty consistently.
Under predicting burning index and if you look at each of the rallies stations individually, you know some are contributing to that a little more than others.
Here's another one where you can ask a question.
Which one of these is not like the other you know? So there's something going on with weather station.
Three where we're we're constantly under predicting and you can see that both in that.
Yeah, you can see that on the weather station 3 graph and in that in that bottom forecast error graph and.
Went through the burning index and again we're seeing.
It tracks not as good as ERC.

Most of the time we're seeing some of those anomalous events where either spikes that really high.
Or low. But if you look at the access there.
We're really only over predicting or under predicting by by 10, which is pretty acceptable.
And you can just count and I work through all nine of my fdras and all 26 or so of my Ross stations.
Easy enough. We're seeing someone under prediction again.
I just want to have an understanding.
Standing of what that owner prediction is, if if it's consistent, the trends all match.
But it's good for us to know.
Kind of. Where? Where, where we're at. And again kind of rinse and repeat here.
So I just quickly summarized all that data.
So I could present to each of the dispatch areas and the different fire staff and folks interested in this.
We had really good alignment with ERC, you know, except.
One or two raw stations.
There was more variability in the burning index.
Like Scott and I discussed, or Lex, Scott told me rather a lot of this is having to do with the transition between.
The gridded wind forecast and the point wind forecast and the heights of kind of where we where we're predicting the 20 foot winds versus 30 foot and how that, how that in math works.
That's kind of why we're seeing.
And that and then I'll just kinda run through. This is my second to last slide, but I just built a really quick spreadsheet. You can see in the on the top, the top kind of window there. I have an overview worksheet.
This pulls in eight different fems queries.
Two for each raw stations, one forecast 1 observed. One of the queries and connections window on the right there reference the named cell.
Which makes it really easy and then the results.
I've 2 results tabs or worksheets, one for ERC. It summarizes all those images you just saw and one for BI that did the same.
And so I was able just to take this spreadsheet, hit copy and paste 9 times, switch out the raw's ID's.

And after I got it all squared away, it was a fairly quick process.
To work through all nine of my fdras and get a handle on this.
In summary, just a quick little analysis like this helps me understand what was going on.
The other thing that was going on when that FMO or fire staff said, hey, something's wrong here is the fire restrictions are front loaded. So looking at the forecast more than the past days and so.
Over an over prediction.
In the broadcast was more influential because it was more that one metric was more future looking.
This is also really helpful for El Tans and Fbanz.
He can do an analysis like this in order to in order to understand, you know, which of those nearby Ross stations are tending to over or under, predict ERC and you can just hear.
You can adjust your modeling accordingly.
And then I I had this set up.
I'm I'm not a programmer.
I'm not a coder, but I'm fumbling my way through fems and the URLs are super helpful and so it was really easy just to once I had it set up, just switch out of the station ID's and I could generate the results fairly quickly and.
Couple little things that I kind of I I was kind of stumbling on as I went through this.
This or I was able to get the.
I had trouble downloading the forecast data from Fems.
I was hoping to do this on a on a daily Max, but it's it was hard for me.
I don't know if anyone else has had this trouble either, but I was unable to download historical forecast data and so.
The work around there was I just tried.
Tried the hourly instead of the daily.
That worked.
Had some of the missing record records issues that Matt had brought up, but you know for for this purpose it was fairly, I mean it didn't really matter.
And then just use the Max if statement to convert the.
The hourly to the Max for the day.
And to reformat of the date. But that's you know, getting into the nuts and bolts if anyone wants send me an e-mail send me a note.

I'm happy to walk you through this and share the workbook with you if you're if you're, if you're interested.

Scott Linn 48:38
Thank you, Michael very much for that.
So questions on the work that was done are examples of of how, how this can be applied, you know going forward.

Allison, Kristen - FS, CA 48:56
Hey, Scott, that seems super useful.
Is that something that might be integrated into?
Report or dashboard that you guys could put kind of in your backlog?

Scott Linn 49:07
Yes, that is definitely one that we are trying to actually we're working with with.
Superman Maxwell, currently on that in U of A to try and do get that information built up. So part of that.
There's there's one thing that we have that's that's a issue we are currently not saving.
All historical.
Forecast files so the latest one overwrites the the the newest one.
Yes, we have the the latest data saved itself, but the forecast the raw forecast.
File is not saved and so we are working on getting that saved up into an S3 bucket, so we'd have each individual.
File that comes in from SPC completely saved so that you'd be able to look at what at any one point in time, what that 7 day forecast looks like.
So we're getting getting some more information with that stored.
Like I said, we do have the historical information of these stored since we've been getting the files from it, but it's only the most recent that day's forecast.
This is really what saved and then the next day it overwrites that.
You know, within day 2, day one now overwrites that.
But we are working on getting that built up and into some some reports.
So yeah, that is one of the pieces we have coming forward.

Allison, Kristen - FS, CA 50:33
Fantastic.

Scott Linn 50:36
Yeah. I think one of the other big pieces of that, Michael, was that you know originally when it came down to as well was it there was one or two stations that were really kind of throwing the forecast off. And when you SIG the stations together, it was.
Really hard to understand what was occurring and why, but when you took the stations apart piece by piece, you were able to really understand which ones and that you summarize that very well. Then for the fmos of.
What station's doing, what and which ones do?
Better for which scenarios?
Like when some of them are great for ER, CS and some of these stations are really good for B eyes, but they not all the stations should fit in the CIGS as a whole.
So I thought that was also one of the key pieces that you know, to come out of that is remember it's really difficult to really understand the full grasp of what's happening when we start signing stations together and if you ever talk with me about the stuff one.
Of the first questions I'll say is what are you doing with the data.
Because I'm always going to ask you if you're singing it together and we can't start to really know what that full onion looks like, we're gonna have a really hard time deciphering.
Really. What's going on?
So I guess anybody, whoever, if you guys ever called me up about this stuff, that's usually one of the first things I'll do is say, OK.
What's the individual stations look like? 'cause, we gotta, we gotta really peel it apart.
So, and that's really what Michael did a great job with on this entire process.
Other thoughts or discussions?

Scott Turner 52:06
Hey, Scott, Scott.

Scott Linn 52:08
Yeah. How you doing, man?

Scott Turner 52:10
I'm doing good yourself.

Scott Linn 52:11
Doing well.

Scott Turner 52:14
How far back can we access the historical forecast?

Scott Linn 52:19
You should have them back to when we went live.
What was that 2023 like June of 2023?
I believe it's. It should be back to there.
But again, we don't have daily Max, it's hourly data.

Scott Turner 52:35
Yeah, it's, yeah.
But the forecast is potentially available.

Scott Linn 52:38
Yes, Yep. It should be in there.
If it's not, let me know, but I thought we should have everything saved from when we first started ingesting and went live with Bems 1.0 back back in the day.

Scott Turner 52:52
Cool. Yeah, that's exciting.

Scott Linn 52:52
So Yep.
You at least have a couple years of data. I think at this point, so.

Scott Turner 52:59
No, that's definitely good enough for comparison. I appreciate that.

Scott Linn 53:03
And remember, it's just that will just be weather forecast.
You will not have fire danger because fire danger was not being forecasted until.
I want to say last fall was that last November. Then we kind of went live with it.
So we might have it available, but really June was when we started really having everything for fire danger being shown so.
So if you want fire danger itself, you're going to only have up until.
So it really didn't start getting forecasted until like June at this point because we were still working on the calculator prior to that. We did start having it December of last year, but I wouldn't utilize it because we found a couple of errors in the calculator that are.
In the initial that we had that were impacting it, which is why we had to hold off kind of until that June time frame so.

Scott Turner 53:55
OK.

Scott Linn 53:57
But the forecast itself, if we just want the weather data that should be there, it should be farther back.

Scott Turner 54:02
Yeah, no, that sounds great.

Scott Linn 54:05
Yeah.
I know we only got a couple minutes left.
Any other questions or discussions and just kind of open up to anything else going on?
OK.
Well, I want to thank both Michael and Matt very much for for doing those demos

for everyone.
I know I learned a lot through the process.
Working with you guys and I really appreciate you, you know, taking the time to to work with me all through that and then taking the time to build up those presentations and and sharing with everyone. I know there's a lot of great information that's going around and I.
Really hope that you know everybody can start taking advantage of all the other work that people are working through so.
That's all I have for for this month.
I do plan to have the call in December, so if you are around.
We will see you in December if if I don't see you.
Have a great Thanksgiving for sure, and enjoy your holiday season and reach out if you get any other questions. Thanks everyone.

AR **Anderson, Jennifer R** 55:23
Thanks.

Scott Linn stopped transcription