

NC Fire Environment Committee Meeting

May 14-15, 2025

Stan Adams Training Center at Jordan Lake Educational State Forest

Red text denotes action items

Welcome and Introduction

- Cathy Gilkeson now the second rep in Region 1
- NCFE Region 2 has a third position on the committee vacant
- Michael Crouse now the third rep in Region 3
- Keith Kelley listed as the US Forest Service rep
- NCSU's rep position is vacant
 - Jamie can talk with Jenn Fawcett about getting a new representative
- Carmella Stirrat is leaving as TNC's fire manager at the end of the month
 - TNC is represented on this call by Deb Maurer

Review and Discussion of Minutes from Fall 2024 Meeting

- Lots of fire control and hurricane clean-up since the last meeting, so a few action items still need to be addressed
- Thomas Crate moves to accept the minutes; multiple seconds to the motion so the minutes are accepted

Seasonal Climate Update (Corey Davis, State Climate Office)

- This winter featured a La Niña pattern that made us generally warm and dry, and each of the past six months since November has been drier than normal statewide
 - Deficits of 3 to 5 inches across the Piedmont and up to 10 inches in parts of eastern NC
- For 26 consecutive weeks, at least a third of the state has been classified in drought
 - Including persistent Severe Drought (D2) along parts of the coastline
- May has been wetter, which helped with mop-up from spring fires in Onslow County
 - Soil moisture recovered nicely, and most of the state (outside parts of the Mountains with heavy Helene damage) is now greened up
- Current outlook shows elevated odds of wetter conditions in NC through July
- Hurricane season forecasts from Colorado State and NC State show near- to above-normal activity with warmer water remaining across the Atlantic this spring
- ENSO outlook shows neutral conditions are most likely through the late summer and fall

Fire Weather Portal Updates (Corey Davis, State Climate Office)

- Recent additions include FDRA-aggregated precipitation totals, color-coded forecast percentiles in statewide FDRA data tables, RAWs soil monitors, and daily average PM2.5 concentrations as an indicator of how polluted the airshed already is
 - John Cook will look into a possible soil station at Pocosin Lakes

- Features still in development include adding satellite-detected fires and smoke plumes, calculated Vapor Pressure Deficit, gridded data meteograms, and updating our source for gridded lightning strike density data
- Rollout of the new Portal has continued this year with training for burn bosses from WRC and NC State Parks; in June, Corey will present to the Georgia Prescribed Fire Council
- Still planning to phase out the old Portal soon and have that link point to the new site
- Supplemental tools will continue to work and will be updated to match the look of the new Portal and incorporate updated breakpoints

Mountain Station Gaps (Corey Davis, State Climate Office)

- Helene caused widespread tree damage in western NC, so new RAWS or ECONet stations could fill gaps where we didn't have good observations during the storm and provide better monitoring for fire-prone areas with storm debris
- Currently, 7 western counties have no RAWS or ECONets (Alleghany, Avery, Caldwell, Clay, Cleveland, Polk, and Watauga)
- For ECONet stations, the main siting considerations are filling gaps at least 30 km from existing stations, having representative land cover (typically grass or herbaceous) with surroundings that are unlikely to change, flat or gently rolling slope, and optimally within 300 meters of a road for accessibility
 - Encroachment of nearby development is becoming an issue with RAWS stations
- In addition to geographic gaps, there are also elevation gaps and climate gaps, such as precipitation ranges that aren't covered by existing stations
- In the northern Mountains, key gaps include Alleghany, Watauga, Avery, and Caldwell counties from 3,000 to 6,000 feet in elevation and annual average precipitation of 58"+
 - Ideas: Stone Mountain State Park, Thurmond Chatham Game Land, Pond Mountain Game Land, Elk Knob State Park
 - In Avery County, Big Yellow Mountain (5,443 feet) is a preserve co-managed by The Nature Conservancy
- In the central Mountains, key gaps include northern Madison, Cleveland, Polk, and Buncombe counties (outside of Asheville) from 3,000 to 4,500 feet and with 40 to 50 inches or 55 to 65 inches of precipitation per year
 - South Mountains was a target for a possible new permanent RAWS before Helene and is still a high-priority area – maybe on the south end of the park or the Silver Creek Community near the site of the Chestnut Knob fire in 2016?
 - Bob's Creek State Natural Area (Huntsville Mountain) is in McDowell County between the escarpment and South Mountain
 - Could consider Green River Game Land in Henderson/Polk counties
- In the southern Mountains, key gaps include Clay, Jackson, eastern Swain, and northern Haywood counties at 4,000 to 5,000 feet with 65 to 75 inches of precipitation per year
 - After Helene, D2 discussed moving Tow String, possible out of state or slightly eastward to fill a gap; one option is the Appalachian Highlands Science Learning Center along I-40 in northern Haywood County
- Main takeaway: WRC's game lands might be best suited for new RAWS stations, while state parks or other natural areas could work for ECONets, if funding becomes available

DAQ Updates and Notes (Tammy Manning, NC DAQ)

- An Exceptional Events demonstration for the 2023 Canadian wildfire event was submitted to EPA on February 6, 2025, after a period of public comment
 - It requested exclusion of certain days impacted by smoke from the Canadian wildfires for monitors in Mecklenburg and Davidson counties, which would bring the entire state into attainment
 - Next, EPA will send a 120-day letter prior to their final designation for PM2.5; this allows an opportunity to send additional data
- On December 10, 2024, EPA published an updated secondary standard for SO₂ NAAQS
- On March 12, 2025, EPA announced it will undertake 31 historic actions including reconsideration of the PM NAAQS; until then, the current NAAQS is enforceable
- Since January 2024, four exceedances of the daily PM standard (one due to residential wood burning, and others due to wildfires in winter/spring 2025)
- The AIR tool will be updated soon to add PurpleAir PM2.5 data
- The Design Value Predictor tool will also be updated to add PM2.5 (currently just ozone)
- AERR (Air Emissions Reporting Requirement) went to OMB and died; it would have changed the minimum fire size that needed to be reported
- The Ambient Monitoring section has certified monitoring data for 2024 and should be showing up on EPA's AQS site

Review of Smoke Summit VII Agenda (Jamie Dunbar)

- Held in Newton, GA, in February
- Reviewed Georgia's Exceptional Events demonstrations – they may treat their February prescribed burn seasons as a single event, like the Canadian wildfires
- More discussion at that meeting about messaging related to prescribed burns
 - Emphasis on working with public health officials (more to come from SERPPAS and SGSF)
- Fire activity and emissions tracking – we need better data nationally
- Related item: NC is looking at going to a 24-hour permit system, but no recent status updates about that legislation

USFS Hurricane Helene Fuels Data/Analysis (Dr. Steve Norman, Research Ecologist at SRS)

- Research has evolved from understanding the initial impacts using remote sensing into understanding what's next, such as immediate and future impacts to fuels
- At most western stations, the rainfall on September 25-26 exceeded the rain on Sep. 27, which meant they were uprooted instead of snapped
 - Helene also had a fast forward speed that added to the "punch" of the winds, and a track to the west that put the areas northeast of Asheville in the right-front quadrant
- Helene was surprising due to record landslides, record flood levels, sheer number of blown-down trees, size of blowdown gaps, heavy tree loss on lower slopes, relative

importance of uprooting, different responses by tree species and ages, and the subsequent fire behavior

- Forest impacts were rapidly mapped by USFS using satellite technology (NDVI change)
 - Leaf stripping was a problem especially at higher elevations and between Franklin and Asheville; Helene came through right as trees were beginning their transition into the fall
 - Full impacts will become better known with more confidence in the next few months once the surviving trees have greened up again
- Site moisture also helps quantify landscapes with the most damage – the drier upper slopes had more blowdown, and that’s where fires tend to burn a bit hotter
- Theory: lots of fine fuels (leaf litter) carry fires, and during the storm, suspended fuels fell as duff that will be easier to engage
- Explore maps of damaged areas at hiform.org

Fuels Awareness/Concerns Documents (Jamie Dunbar)

- [Fuels and Fire Management Considerations for Hurricane Helene Damaged Areas](#) document was created by David Quisenberry with input from across the Southeast
- Also a document by Brian Rogers at NCFS Region 3 about several western fires since Helene, including Bailey Branch
- Issues include landslides, debris piles, scouring, access especially along the Blue Ridge Parkway – need to share gate codes wherever possible

NWS Updates (Andrew Kren, NWS Raleigh)

- Last year, removed Haines Index and LAL from forecast grids
 - LAL was replaced with Probability of Thunder
 - Feedback: It’s good but it doesn’t tell the intensity of any lightning
 - Also have added potential thunder to the hourly forecast
- Potential new product: HREF (ensemble-based) lightning density forecast
 - **NWS Raleigh will explore making this available to partners in the state**
- Coordination on IFD statement and Red Flag Warning products
 - Would phone calls/briefings be preferred the day before rather than the day of?
 - Yes, the afternoon before, if possible
 - This would also work well for NWS Raleigh operators
 - Note: red flag criteria often happens right after a rain event or with freezing temperatures, so these coordination calls with CO Ops help assess the fuels status and whether a Red Flag Warning is warranted
- Coordination calls with active fires: which parameters are most important to brief on?
 - Feedback: The high-level/statewide overview is useful and local detail (from the local WFO) is even better, as long as the messaging doesn’t conflict with what the on-site guidance says
 - Maybe coordinate with them as well? Or do a screen share? Or sit in on Andy Snyder’s briefings from the GACC?
- Are there additional products you would like to see produced locally?
 - Maybe maps of Red Flag criteria – overlaps of RH and winds

- For Fire Weather Forecasts in higher-elevation areas, suggestion to include both ridgetop and valley bottom forecasts
- Issue with zone-based Fire Weather Forecasts: a prescribed burner in the Wilmington area noted a case when the county-based nighttime dispersion forecast was “Fair”, but based on the average 20-foot winds, it should have been “Poor”
 - The Fire Weather Zone Forecast is intended more for planning purposes, and it does average conditions across a county
 - Suggestion: use the Fire Weather Dashboard to see local conditions, especially for folks who aren’t able to request Spot Forecasts
 - David Greathouse could show this tool in the Certified Burner course
 - **Jamie and NWS folks: Put together a TechNote about the dashboard with an example of how local conditions can vary from the county average**

Fire Warnings Discussion/Fire Weather Testbed (All)

- David Greathouse attended the Fire Weather Testbed last June in Colorado, which covered fire warnings and fire working groups
- The Next Generation Fire System (NGFS) picks up hot spots using satellite heat detects, and there is a customizable (based on Fire Radiative Power) text-based notification tool that’s being used by county rangers in the Southern Plains to send resources to areas of new fires
- David tested with Terry Lebo across several past scenarios, including getting confirmation of fires on the ground and analyzing whether to issue a Fire Warning (like a tornado warning, but for a wildfire) – not for evacuation, but for public notice
- We would likely use it differently in NC than they do in TX/OK; thinking back to the Poplar Drive fire, which wasn’t fast-moving but had a lot of urban interface nearby, or Sunset Road after that fire crossed the roadway into Boiling Springs Lake
- David presented this to the NCFS management team and they’re reviewing it
- It doesn’t pick up every fire immediately; it took 2 to 3 hours before a hot spot from the Bee Rock Creek fire showed up
- We could create a working group to explore this more, including the coordination and public messaging
 - Coordination would be needed between ICs on the ground, local Emergency Management, and NWS to get any Fire Warnings issued in a timely manner in North Carolina for the most critical events so that these warnings don’t lose credibility

Update and Timing of FEMS Transition (Scott Linn, NFDRS Program Manager at USFS)

- FEMS material is housed at wildfire.gov, including a link to the FEMS site and WIMS-to-FEMS transition material
 - NWCG briefing paper, station list and settings for RAWs that have already been transitioned, instructions and blank default Fire Family Plus database, tech tips including for copying data from FEMS like via the WXML service
- Changes from WIMS to FEMS

- WIMS was built on the old NFDRS, centered around the once-daily 1300 observations
- FEMS shifts to a near-fully automated system that doesn't require the old manual adjustments
- FEMS was fully built around NFDRSv4, with none of the old databases from WIMS transferred over since those included so many local changes
- Among the key parameter changes:
 - Slope class defaults to 1 since a weather station is treated as representing a single point rather than a broader area, which gridded data will take into account
 - The KBDI drought fuel load transfer is set to 800 to give a level playing field and allow debugging and determining the sensitivity between regions/stations
 - Updated all average annual precipitation values using PRISM data
 - Herbaceous flag is set to perennial for all stations
 - Moisture of extinction is set by fuel model and can be adjusted based on percent
 - Period of record (2005 to 2022) gap-filled weather data for most RAWS using a standardized scientific method
 - Data is flagged as "0" (raw data), "1" (gap-filled), or "2" (erroneous)
 - In the future, any missing observations can be ingested if that data was available, but if not, there will be a gap-fill check running every few days using DRI's algorithms
 - Adjusted Growing Season Index settings to a new national standard, which will impact the live fuel moistures
- Other key differences
 - A true hourly forecast is provided directly by the Office of Atmospheric Research instead of local weather service offices, which used forecasts for 1300 with a diurnal curve fit to estimate hourly conditions
 - Automated snow flag observations and 7-day forecasts
 - All weather observations and station metadata will be done from WXx-weather, not directly in FEMS
 - Fire danger parameters are set via catalogs, and multiple stations can be assigned to a catalog
- About 1,900 satellite RAWS have already been added to FEMS, with Alternate Gateway (including mesonet) stations planned to be added this fall
 - Adding these sites through Synoptic, but will need to work with individual state networks to add in historical weather data
 - Also bringing in airport-based ASOS stations; these won't have historical fire danger information, but they will have current and forecast fire danger starting in June

- Have worked with Texas Forest Service to add a solar radiation estimation for these stations, and it's close but not exact with what nearby RAWS will measure
- The FEMS interface doesn't require a login, but a login does offer access to a more robust/longer station history
 - NFDRS data allows changing fuel models and viewing hourly data and the daily max/min for each parameter, including fuel moistures (note: KBDI, GSI, and herbaceous and woody fuel moistures are still once-daily)
 - Seasonal trend charts use the daily max, so they'll look similar to the Fire Family Plus charts but values may be different since FFP uses the 1300 estimates
- Timeline:
 - Fire danger in FEMS planned for release the week of June 9
 - WIMS will remain available for all users until September 15
 - WXML will remain available until September 30
 - WIMS will "go dark" on October 1 and FEMS will then be the system of record

Status of RAWS Stations, Contracting, FDOP (Jamie Dunbar)

- Currently 41 NCFSS-owned RAWS stations
- Maintenance contract with AEM ended in November, and now have a bill for annual maintenance with BLM that's a bit cheaper; have a 5-year MOU signed with them
 - Now \$950 per station, while it used to be \$900
 - Will pay for the remainder of this fiscal year in order to swap out parts and for customer service if issues arise
 - Plan to resume annual maintenance this fall, as has always been the case
- Number of vacancies for radio technicians/engineers, especially in D8
- Limited time since January for work on the Fire Danger Operating Plan
 - Another good reason for the delay is that FEMS is still in development

PurpleAir Sensors and Potential Uses (Jamie Dunbar)

- Ag IT approved use of PurpleAir sensors connected to non-state networks
- Cost is about \$300 and they're outdoor-ready to connect to a WiFi
- Can be set as internal or external for viewing
- Could use these to fill some gaps in air quality observations across the state, such as in D8/southern coast
- DAQ has previously written about PurpleAir sensors and other PM2.5 data discrepancies on their [Air Quality Blog](#)

Grant Funding Possibilities (Jamie Dunbar)

- NCFSS has applied for various funding including for 4 E-Samplers with a GOES-6 transmitter that could be used on project fires or tests
- Also applied for funding that could be used to purchase portable RAWS and live fuel moisture sampling equipment that could be used in Helene-affected counties

Live Fuel Moisture Sampling (Jamie Dunbar)

- Jamie has sampled gallberry and loblolly at some timber plantations this spring
- Chris Sharpton is sampling in Crossnore/Mountain Training Facility
- John Cook/USFWS will start sampling in the pocosins once more staff is brought on
- Grant funding could provide five new ovens (one per district impacted by Helene)
- This live fuel moisture data would help with calibrating the GSI model in FEMS, and with monitoring month-to-month drought stress
- We could bring in an expert to provide guidance about fuel moisture sampling to make sure we're following the best procedures

Smoke Management (Jamie Dunbar)

- Smoke Management Program Revision
 - The SMP has been certified by DAQ, which is required in order for the SMP to be cited in Exceptional Events demonstrations for prescribed burns to EPA
 - Jamie still needs to make a few small changes especially to the appendices; we should provide EPA with the update if there are any significant changes
 - Appendix changes: from 1 to 3 BlueSky runs required, and clarify what needs to be submitted to the district office
 - More info about prescribed burns and health impacts on the [DEQ website](#)
- The draft NCFPS prescribed burn plan template was shared for review a few weeks ago
 - Would replace the old burn plan in the appendix of the SMP
 - Adjusted basal area to trees per acre
 - Removed “trunk” from allowable scorch height since it was meant to apply to the canopy
 - Discussion about the tonnage by size class
 - This is required for ADM burns in BlueSky
 - But it's difficult to estimate what will actually be consumed, especially ahead of time since the amount of tonnage burns depends heavily on the conditions on the day of the burn
 - Also two separate tonnage entries on the form: one under Smoke Management and one under Acceptable Weather Parameters
 - Move the estimated tonnage by size class to below the signature line?
 - Added a section of Recommended Mapping Standards
 - Requirement is an open-ended “map of the area to be burned”
 - Items for burn boss to confirm include tweaks the wording about an air quality review using DAQ's AQI tool
 - On-site weather readings include checking the FWIP's KBDI grid
 - For fire effects evaluation, reference the Behave definition of scorch height
 - Could update Appendix 2 (Smoke Analysis Request Form)
- Discussion on interpreting 106-968(a)(9) – reasonable notice provision in NCPBA
 - NCPBA stipulates that reasonable notice is provided to homes and businesses located adjacent to a burn site
 - NC WRC is evaluating their notices; they've done mass mailers to adjacent parcels to game lands, used social media as a notification, and gone through

Pender County emergency management who uses software called Nixle to draw a box and send more targeted local notifications

- South Carolina DNR puts out signage on game lands that states “this land is managed using prescribed fire”
- What counts as reasonable notice? Various approaches include social media, mailers/door hangers, reverse 911-like contact
- TNC has used seasonal press releases mailed to all properties adjacent to priority properties for that season and contacting property owners upon request on the day of a burn; also signage and social media
- Eventually would like to add a prescribed fire viewer to fiResponse, which could be included in the notifications
- Still seeking to host VSMOKE Web on an NCDA site, but no new updates on that
- fiResponse contract issues have continued, no changes to Smoke Management Database, etc.
 - Please get final acreage from cooperators before closing out burns

Spring 2025 Fire Season Successes and Challenges (All)

- Busy since September with Helene cleanup and wildfires
- Recent rain has helped but there could still be some lightning-caused fires this summer
- The FEC has helped with coordination across North Carolina since we’re aware of resources and how to contact others who are burning within the state
- Challenges: lots of unknowns about FEMS and delays with FDOP updates

UAS - NOVA Tools and Contracting (All)

- Jamie is acting UAS program manager
- The Fire AI program from Canada has rebranded as NOVA
 - It’s fast and good at honing in on heat detects
 - Was used on Hawksbill Drive fire in D8 in March and on the Sunset Road fire

Training Needs and Opportunities (All)

- Lots of new people and vacancies in NCFs, so have lost some skill with things like RAWS maintenance and NFDRS
- S-390 is coming up
- S-290 was held in February
- Behave7 webinar is next week (May 20)
- RX-410 was held in Asheville in February – 28 students from a variety of organizations
- Request: could someone from the FEC help coordinate with Jeremy Ash (air resource specialist with USFS) on another offering or for a BlueSky webinar?
- Virtual RX-310 and RX-410 are coming up the second week of June
- S-490 has been announced for October in Tucson – pushed back after the FEMS rollout
 - Nominations are due September 1
- NC State Parks is planning to host another engine academy next January

Agency and Program Updates (All)

- NC Forest Service fire staff
 - Many vacancies including VFD coordinator and GIS data manager
 - Only 5 staff at CO Ops instead of 8
- NC Forest Service Region 1
 - 32 vacancies, mostly FFEOs and initial attack personnel
 - Michael Rhodes is current acting forester in D8
 - Heavy initial attack fires beginning on March 1
 - Busy past few weeks with Sunset Road and Crown Point #1 wildfires
 - District 7:
 - 7 vacancies, 3 of which are county rangers
 - Burning was a challenge; less than 5 good burn days before fires began
 - District 13:
 - Openings for 3 FFEO positions, a county ranger position, and machine operator position at Dare Bomb Range that have been open for more than a year
- NC Forest Service Region 2
 - Down to 21 vacancies, but 54% of the district has less than five years' experience
 - Decent burn year, mainly in D3 and D10, while also providing support on wildfires in the other regions
 - May also be able to fit in some growing season burns
- NC Forest Service Region 3
 - Challenging fire season due to vacancies, lack of experience, and Helene blowdown
 - Since January 1, preliminary data shows 17 fires of over 100 acres for about 16,000 acres total
 - 5 of those were over 1,000 acres, including Black Cove and Deep Woods fires
 - 11 of those fires were in Helene-damaged areas
 - In total, about 1,100 fires for about 20,000 acres
 - 25 to 30 vacancies now, including FM district ranger, D2 district forester, and Rutherford County ranger
 - BRIDGE:
 - One project leader position is vacant
 - About 35 inmates in the program in looking to add more
 - District 2:
 - 5 vacancies in total, including Alleghany County ACR
 - Challenging year for burning; only 3 to 4 good burn days
 - Only 3 burn bosses for all eight counties now
- NC Wildlife Resources Commission
 - Added a forester at Holly Shelter with an opening for an assistant forester there
 - 170 burns so far this season for about 14,900 acres
 - Added 11 new engines with another dozer coming to the coast, another marsh master

- Received a new IGNIS drone at the southern coast and replacing an older one this year as well
- Purchase order made for 12 smaller drones with infrared cameras
- Putting on a FFEO training in the Uwharries in June with 24 students
- NC Division of Air Quality
 - Updates coming soon to the AIR tool, including adding PurpleAir data and changing the default view to show the latest hourly maximum AQI (which pollutant is currently the highest AQI value)
- NC State Parks
 - Fire staff: all permanent positions are filled, with a legislative request for 3 additional full-time positions
 - Have a house at Weymouth Woods for a third fire crew (along with Lake Norman and Cliffs of the Neuse)
 - 150 vacancies statewide, including some at newly added properties
 - Not many wildfires on state parks so provided assistance in other areas, which was good experience on fire events
- US Fish & Wildlife Service
 - Close to 20,000 acres of prescribed burning done, but burning season was interrupted by the statewide burn ban
 - FMO interviews for Alligator River being held next week
- The Nature Conservancy
 - Assisted on 61 burns with partners for ~14,000 acres, mostly in SC and TN
 - Have used drones on about 30% of acres burned
 - Carmella is leaving as fire manager in NC at the end of May and will be recruiting for that position through June 14
 - New burn boss in the Sandhills
 - Will have a summer crew at the coast through August, plus the shared fire crew with WRC in the Sandhills through June
 - Looking to expand the agreement with NCFs, which would help with support and training
 - Arkansas TNC chapter has organized a drone TREC event on August 10-16, and it has a few nominations still open
 - Southern Blue Ridge TREC is also open in South Carolina this November
- State Climate Office
 - Began new multi-year contracts with NCFs for Fire Weather Portal maintenance and with NC DAQ for air quality tool development last fall
- NC Forest Service Management Team
 - Burn permit updates
 - Added Pender and New Hanover as high-hazard counties
 - Internal discussion about possible transition to a 24-hour burning permit
 - May lead to an online burning permit system

Planning for Next Meeting (Jamie Dunbar)

- Plan for an in-person meeting at the coast this fall