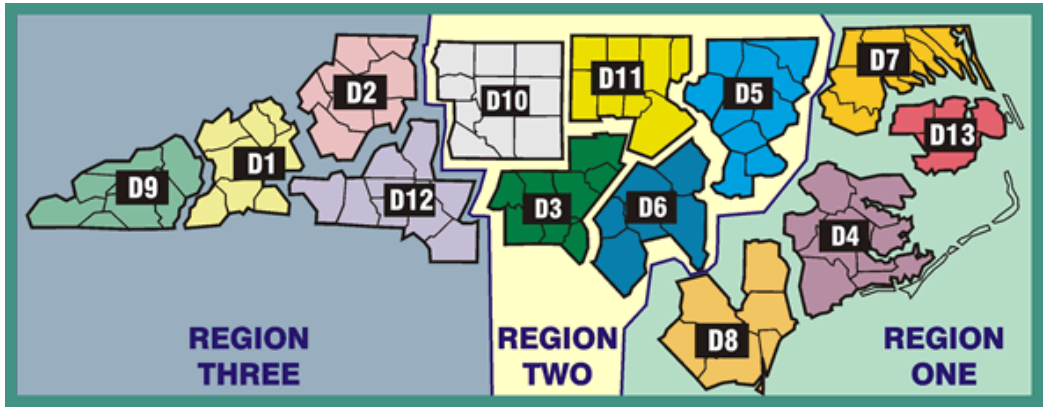
Statewide Seasonal Fire Danger Assessment

– February 2024 Update –



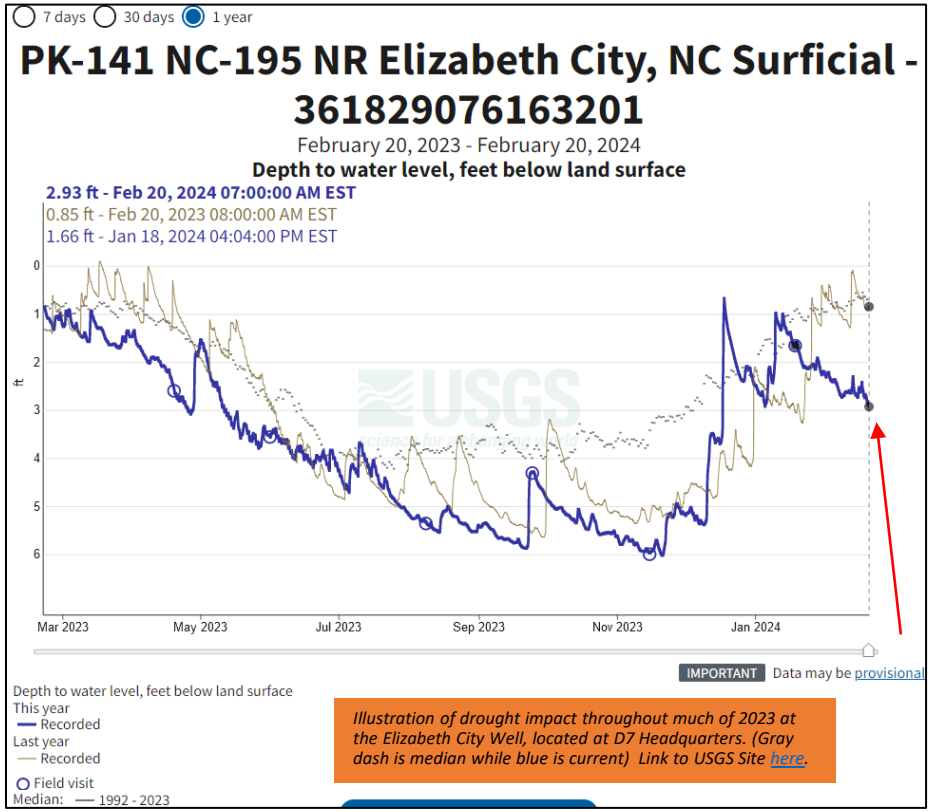


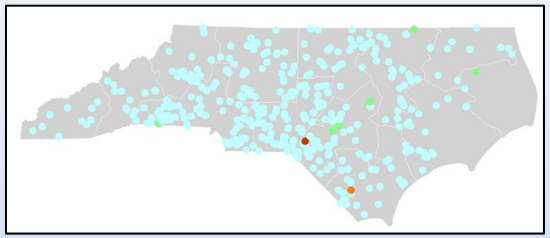
Illustration of drought impact throughout much of 2023 at the Elizabeth City Well, located at D7 Headquarters. (Gray dash is median while blue is current) Link to USGS Site here.

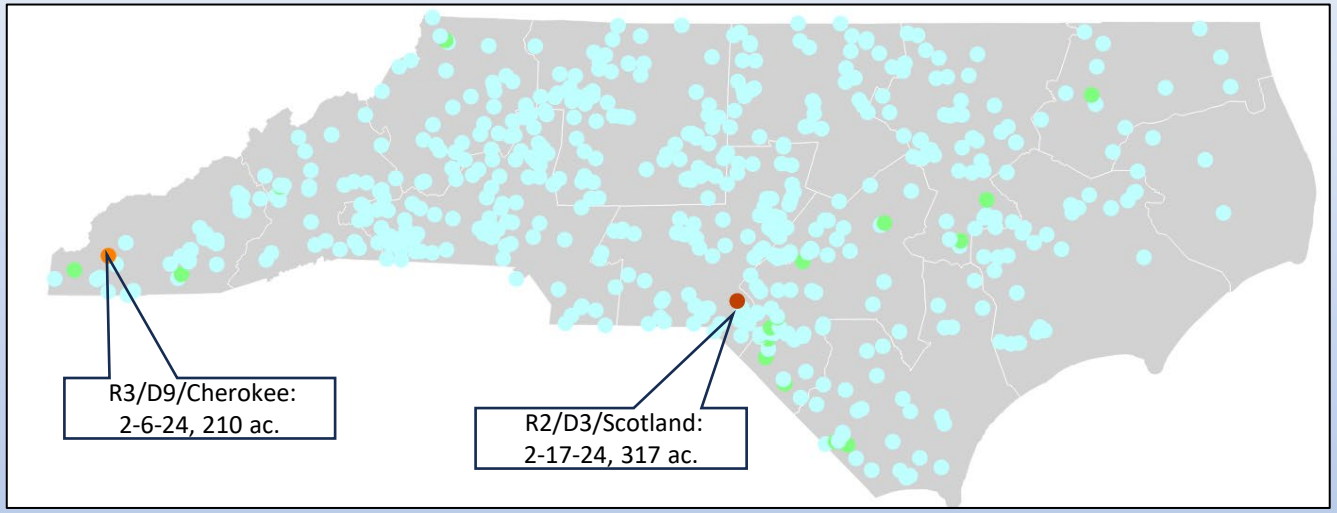
Created by: Jamie Dunbar
Fire Environment Staff Forester
NC Forest Service

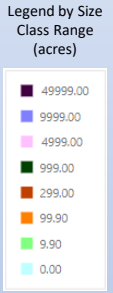
Month to Date Incident Activity

fiResponse Incident Location Map (for general context, preliminary data)
Date Range: 2/1 – 2/19, 2024
Report: Business Intelligence Module, Response Trends Map

1/1 – 1/31

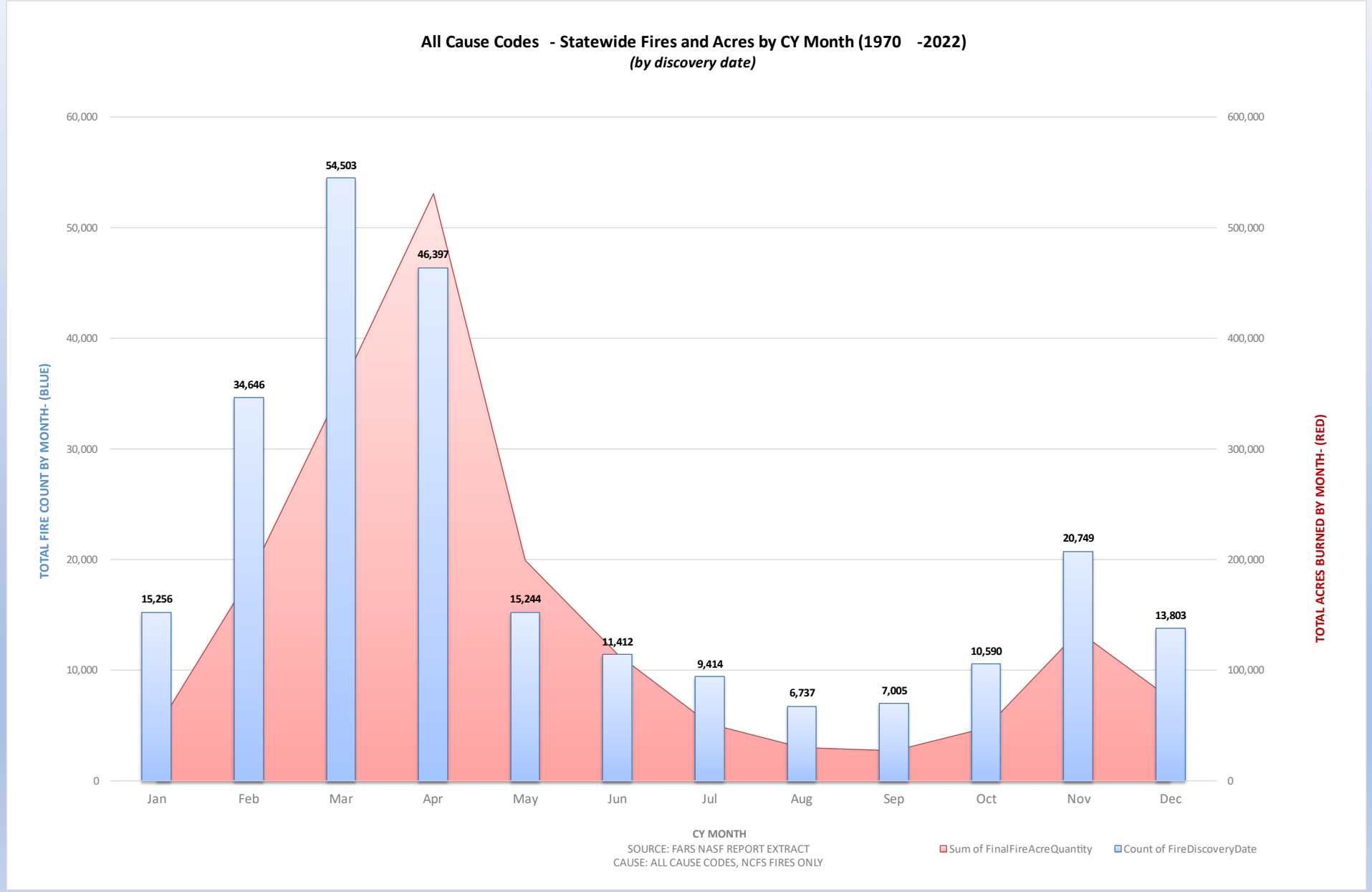






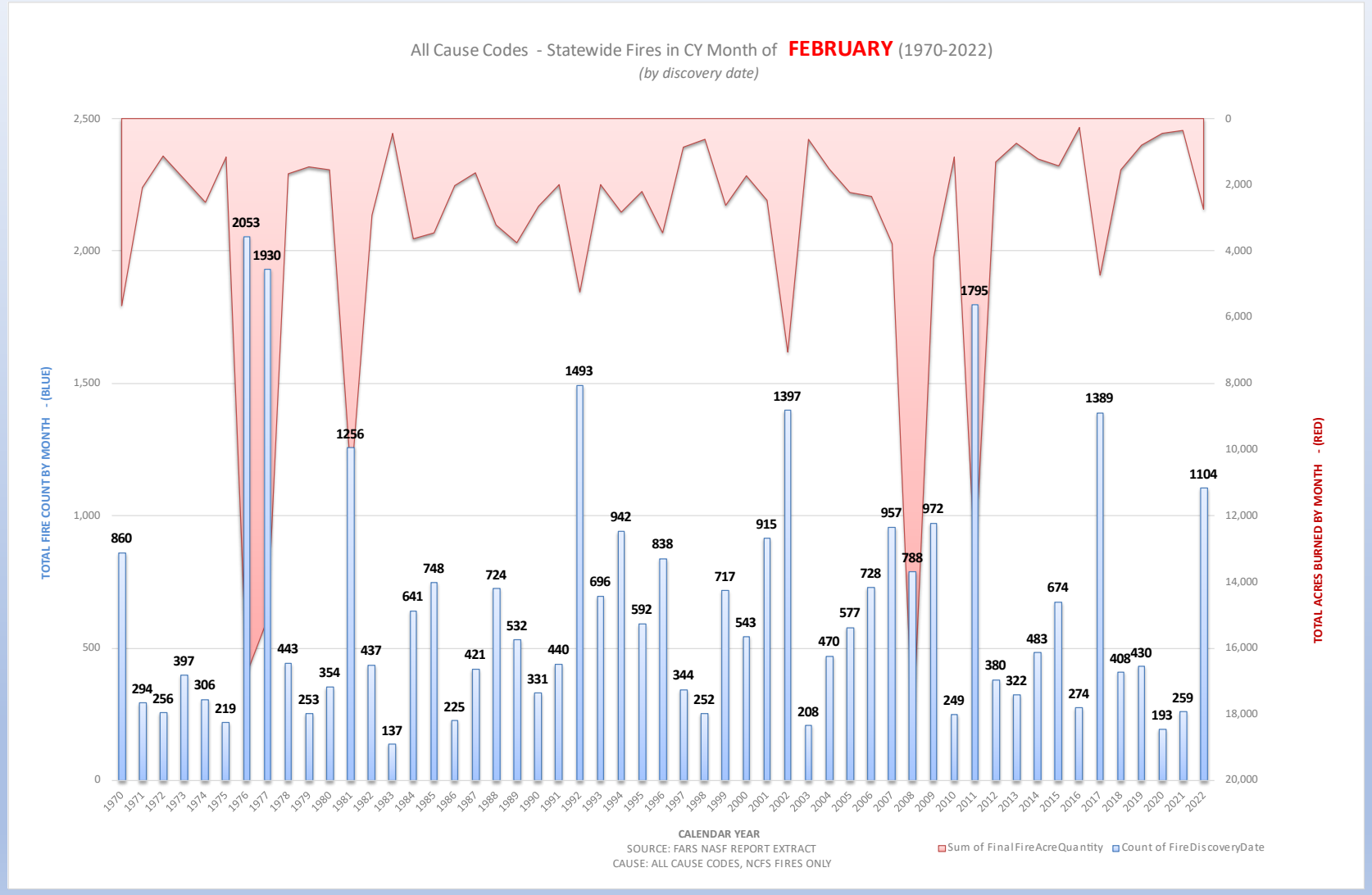
NCFS – By Region				
Monthly Fire Activity (Does Not Include Federal Ownerships)				
Data Source:	Signal 14 Regional Activity Summary Report (Signal 14 is a daily snapshot in time)			
Date Range:	2/1 – 2/18, 2024			
Area	Wildfire Count	Wildfire Acres	RX Count (State & Private)	RX Acres (State & Private)
R1	72	188.4	64	5,163
R2	229	679	72	3,570
R3	168	275	12	583

Distribution of All Fires & Acres by Month from 1970 - 2022



Cause: All Cause Codes, Statewide, NCFS Reported Fires Only

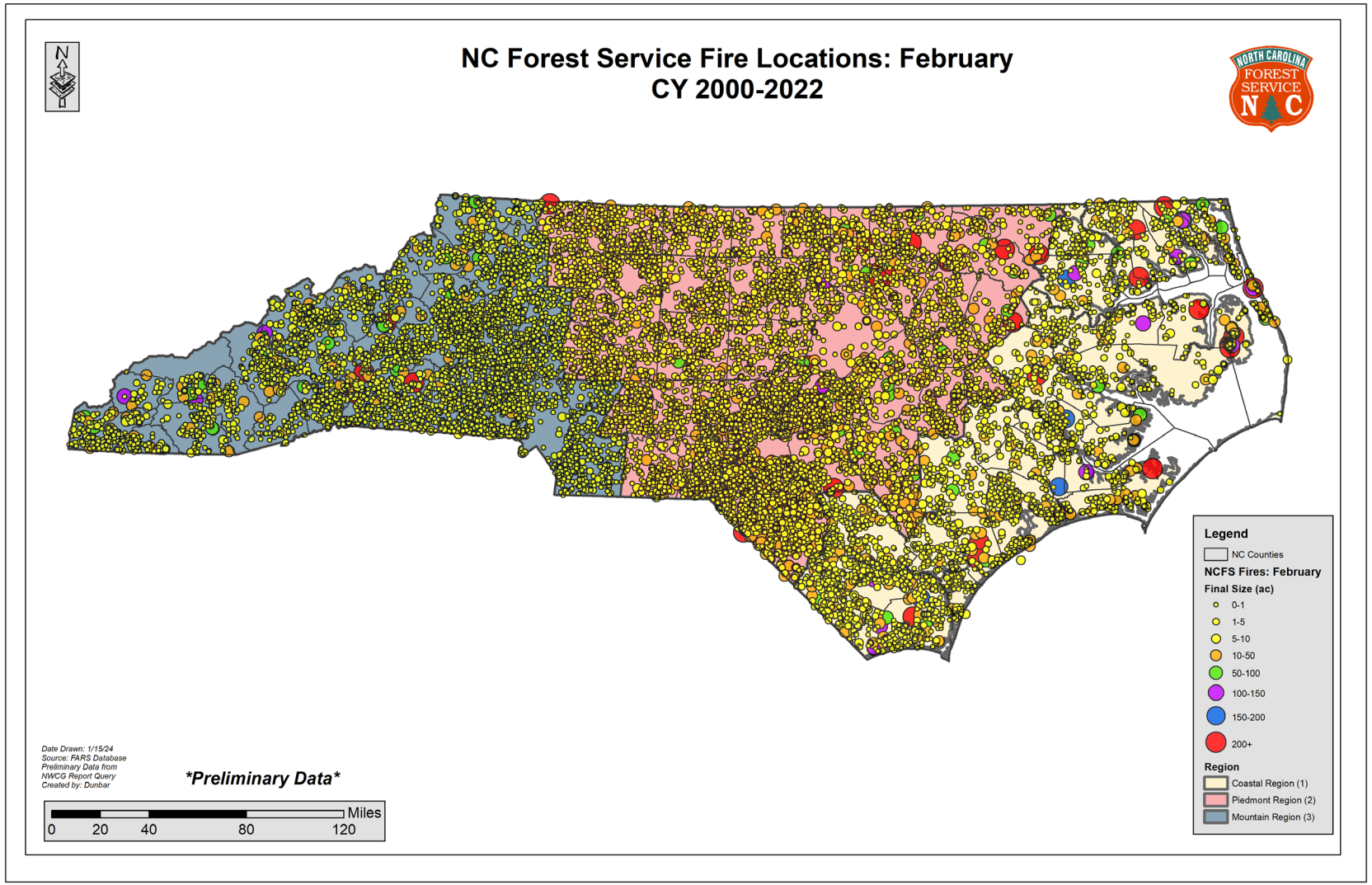
Distribution of All Fires for month of February from 1970 - 2022



Cause: All Cause Codes, Statewide, NCFS Reported Fires Only

10-Yr. Rolling Average for February: ~ 553 Fires for 1,427 Acres

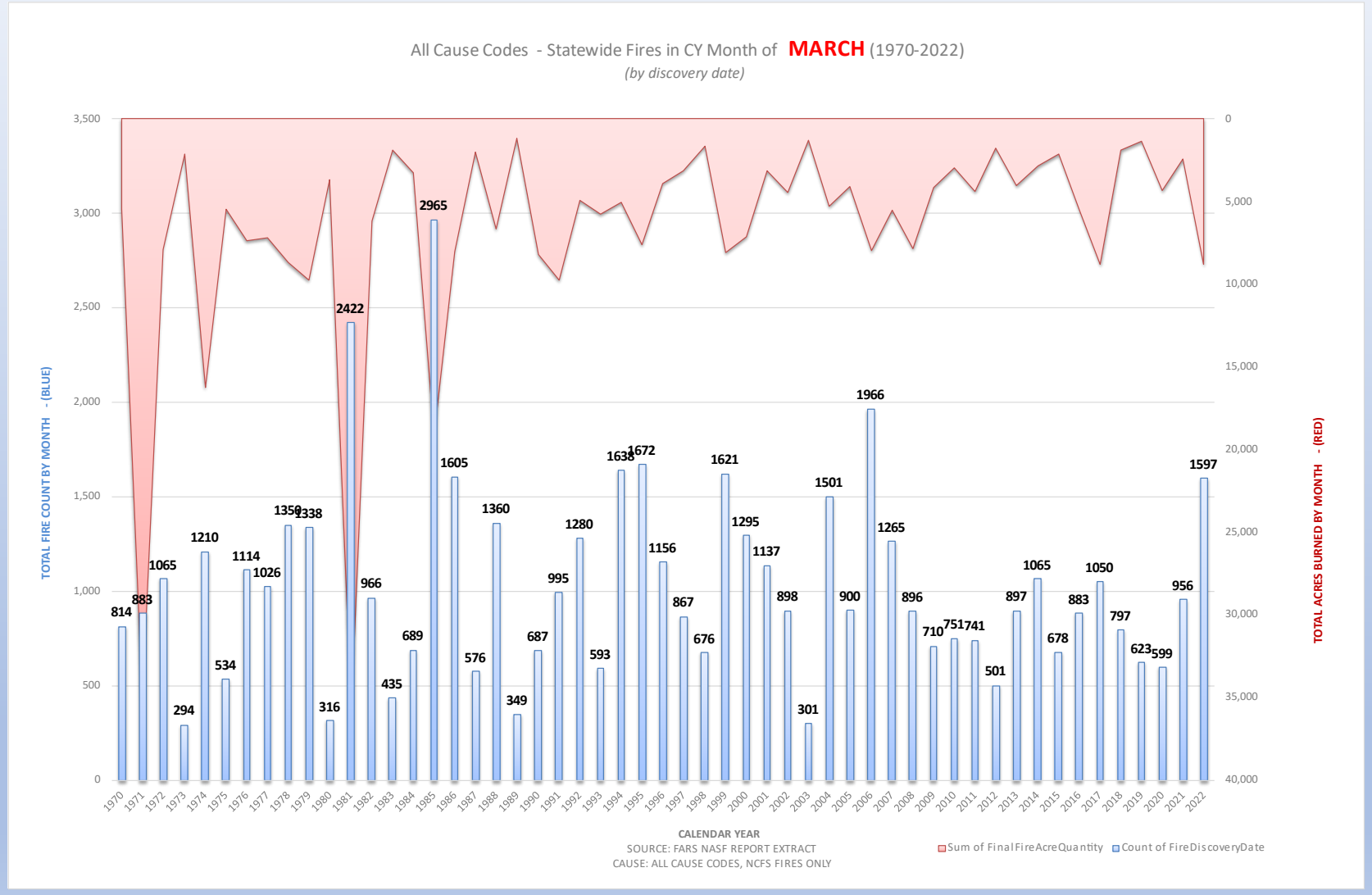
Fire Locations of All Fires for month of February from 2000 - 2022



Cause: All Cause Codes, Statewide, NCFS Reported Fires Only

10-Yr. Rolling Average for February~ 553 Fires for 1,427 Acres

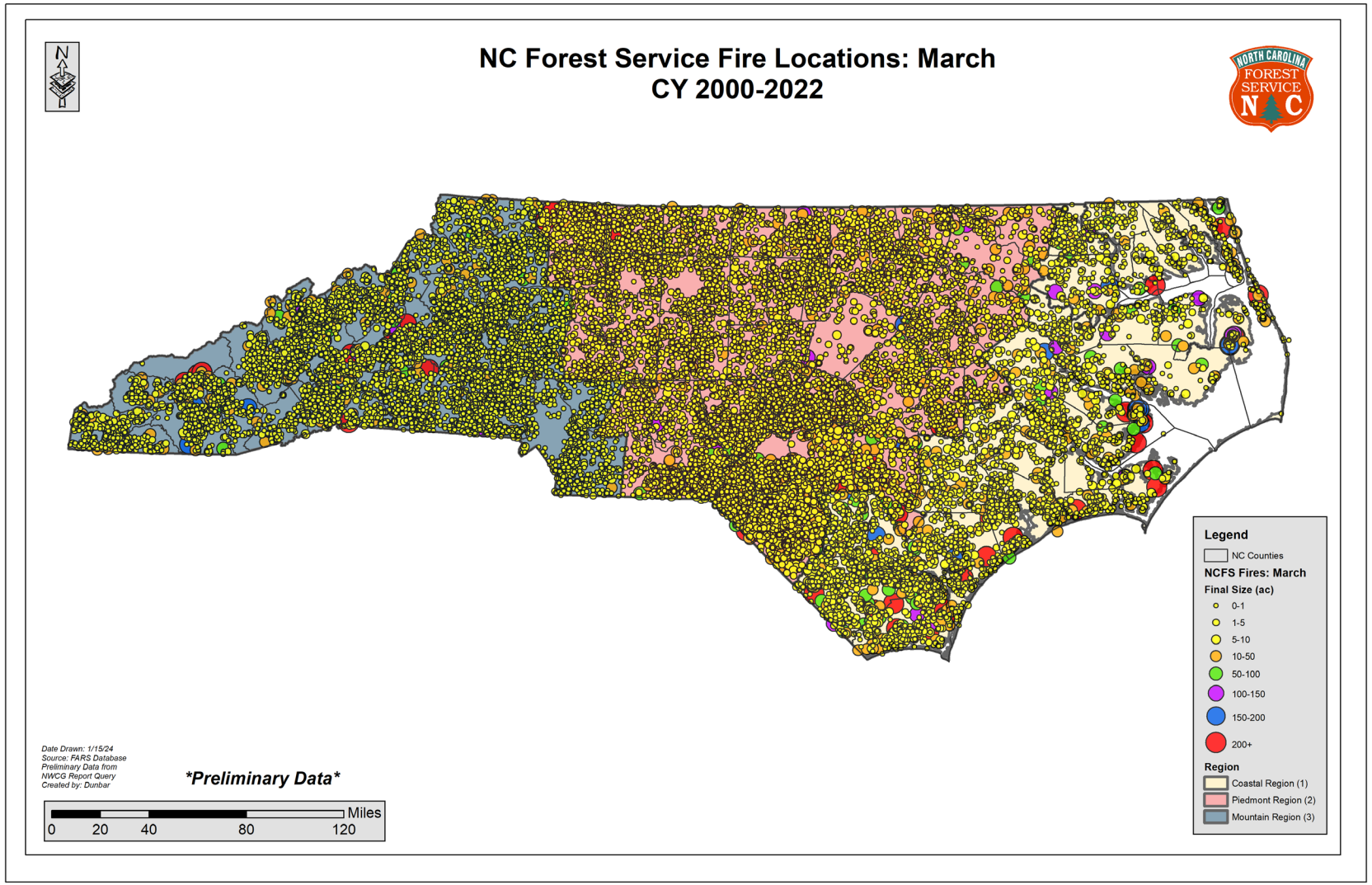
Distribution of All Fires for month of March from 1970 - 2022



Cause: All Cause Codes, Statewide, NCFS Reported Fires Only

10-Yr. Rolling Average for March: ~ 915 Fires for 4,214 Acres

Fire Locations of All Fires for month of March from 2000 - 2022

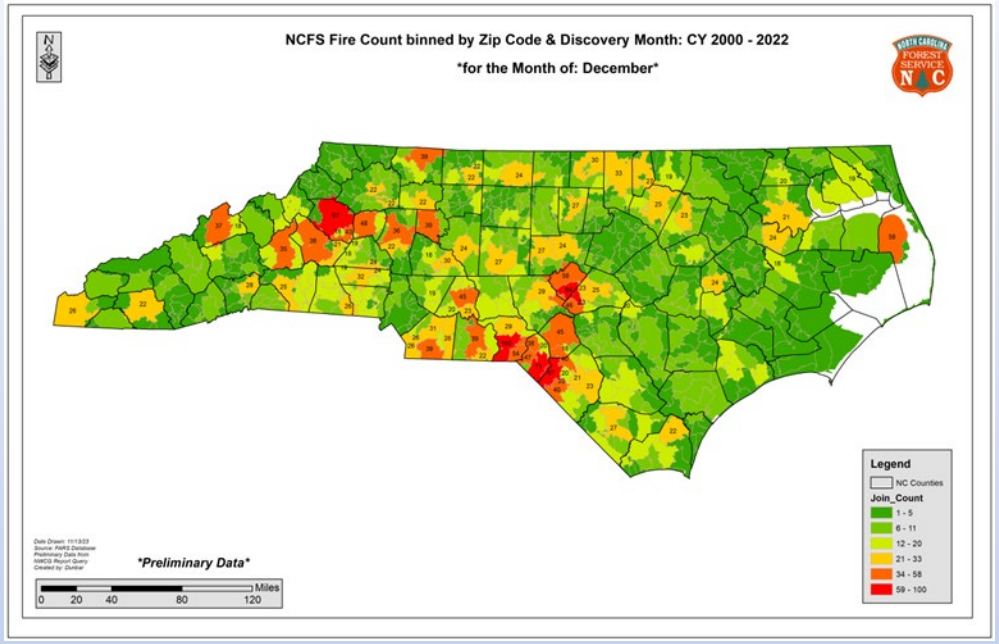


Cause: All Cause Codes, Statewide, NCFS Reported Fires Only

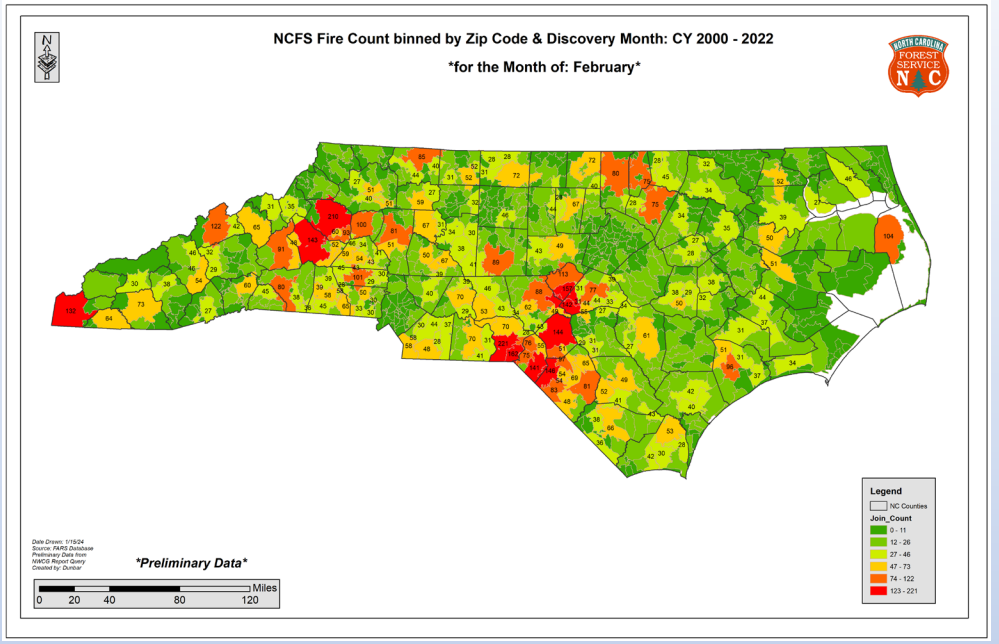
10-Yr. Rolling Average for March: ~ 915 Fires for 4,214 Acres

NCFS Fire Count Binned by Zip Code & Discovery Month CY 2000-2022

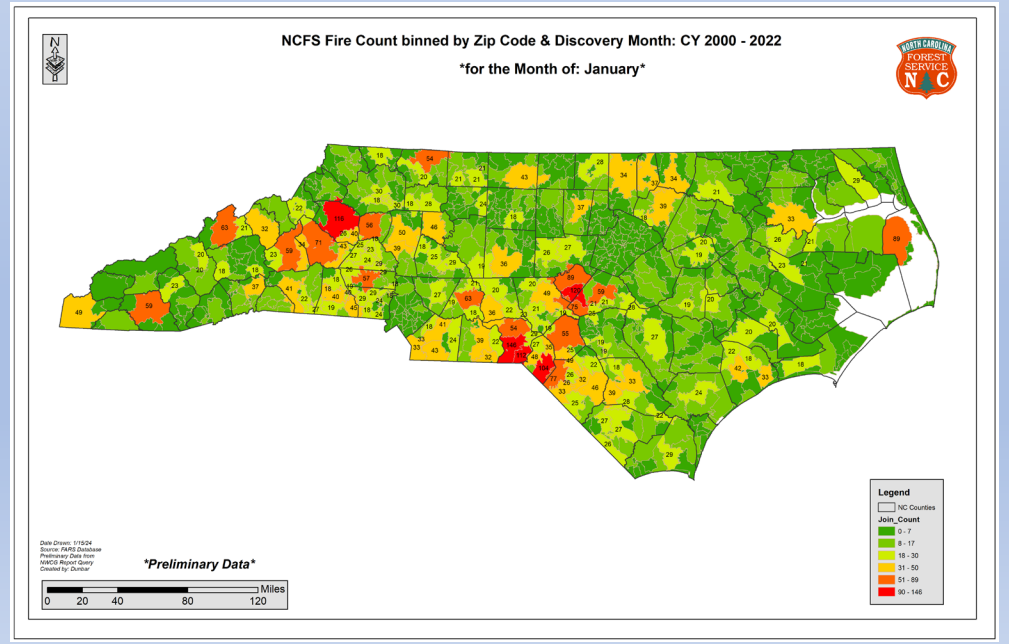
December



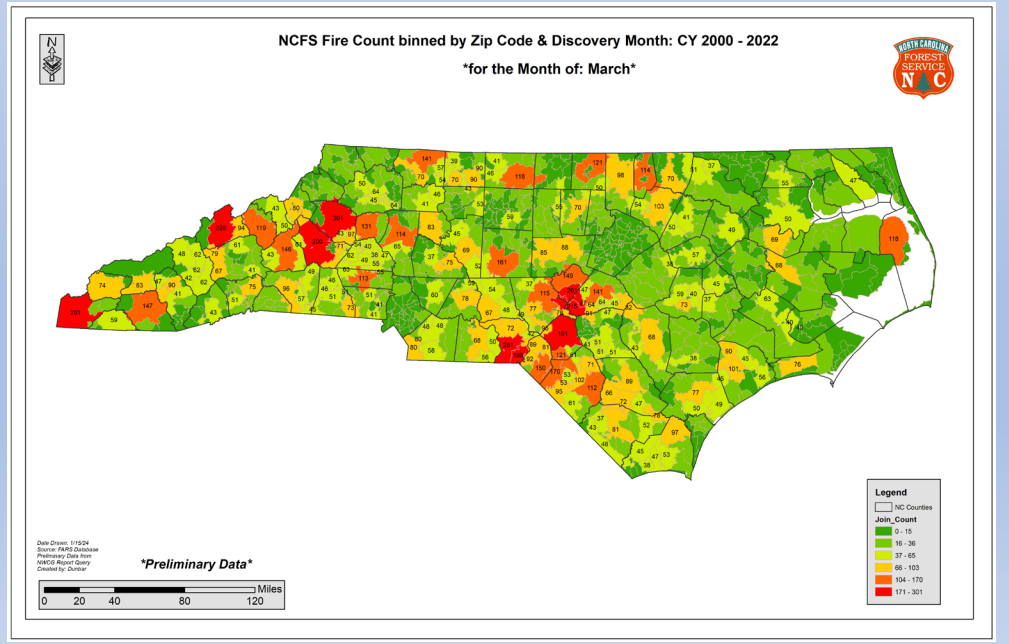
February



January



March



Fire Environment Slides

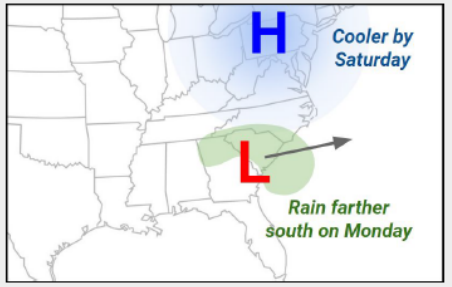
Summary at End

State Climate Office: Short-Range Monthly Outlook for NC

Released 2/1/24 & Location: https://climate.ncsu.edu/fire/outlooks/

Short-Range Outlook for North Carolina

Week 1: February 1 to 7, 2024



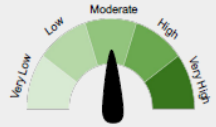
Warm Friday, Then Cooler

Temperatures will reach the 60s on Friday before cooler air moves in from the north on Saturday, dropping our highs back in the 50s. A system moving through on Monday should bring widespread cloud cover, with highs remaining in the low to mid 50s.

Rain Possible on Monday

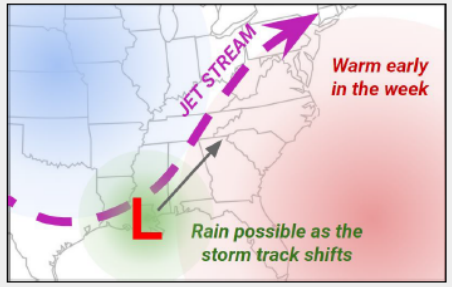
A low pressure system will move in from the west on Monday. Most forecasts keep the bulk of the rain to our south, with a quarter to half-inch of rain along the South Carolina border. If it tracks farther north, then more of North Carolina could see rain on Monday.

Forecast Confidence



Models have been trending toward a more southerly track for Monday's system, but confidence is still low about the overall event.

Week 2: February 8 to 14, 2024



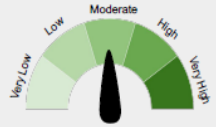
Warmer Weather Arrives

Jet stream ridging is expected to develop over the eastern US, which should push our temperatures above normal, likely back into the 60s, by next weekend. As that ridge shifts eastward, we could begin to see a cooldown by the end of the week.

Rain Later This Week?

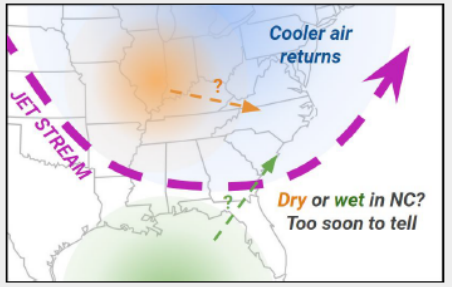
Under the ridge, we should stay mostly dry through next weekend. As the pattern shifts, that could put us back in the storm track with better precipitation chances around Valentine's Day. Current forecasts suggest that rain is more likely than anything frozen.

Forecast Confidence



As with any pattern change, there is still uncertainty about the exact timing of this event and its local impacts.

Weeks 3-4: February 15 to 28, 2024



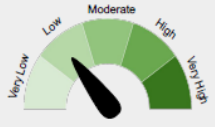
A Wintry Chill Returns

The mid-month pattern change, with troughing over the eastern US, should bring colder conditions for Week 3. While that pattern could relax in Week 4 and see near-normal temperatures return, some recent forecasts keep us cool through the end of February.

An Uncertain Outlook

A cold air mass in place could act as a roadblock for any precipitation-producing weather systems, as we saw in mid-January, while weaker high pressure could increase our precipitation chances. For now, it's too early to know how this pattern will evolve.

Forecast Confidence



Confidence is highest about the mid-month cooldown and lowest about our late-month precipitation chances.

This infographic is based on forecast and outlook guidance from the National Weather Service.
For more information, visit **www.weather.gov**.

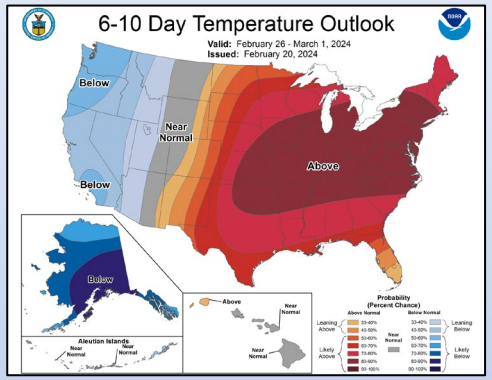
Author: Corey Davis (NCSCO)
cndavis@ncsu.edu

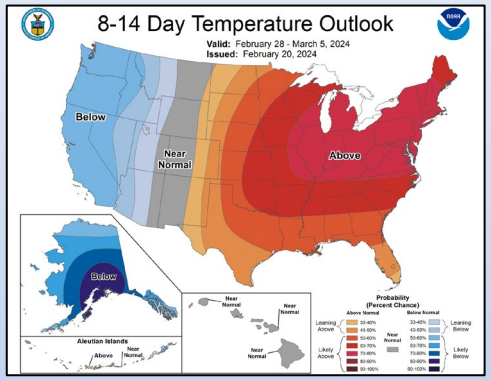
NORTH CAROLINA CLIMATEOFFICE

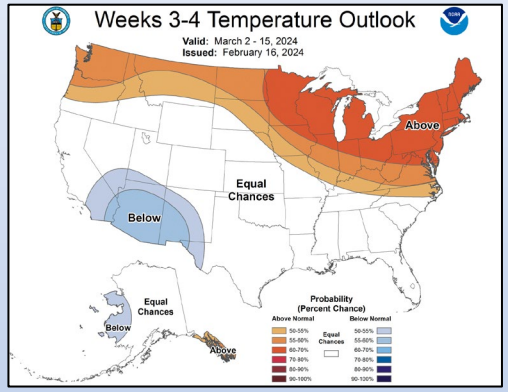
Supported by:

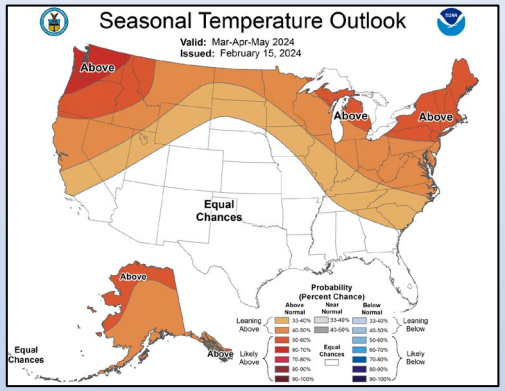
CPC Temp & Precip Outlook

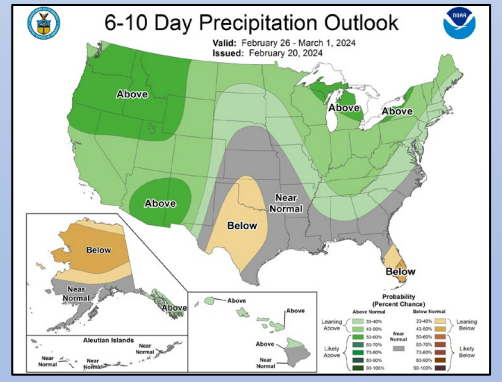
6-10 Day, 8-14 Day, Weeks 3-4, Seasonal

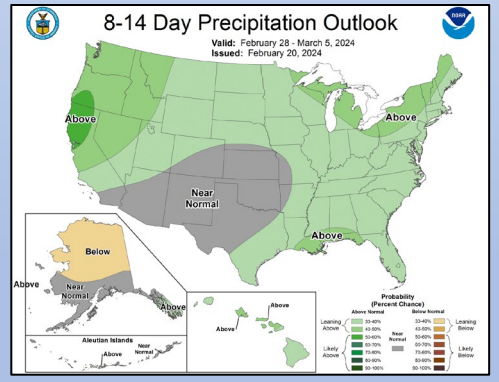


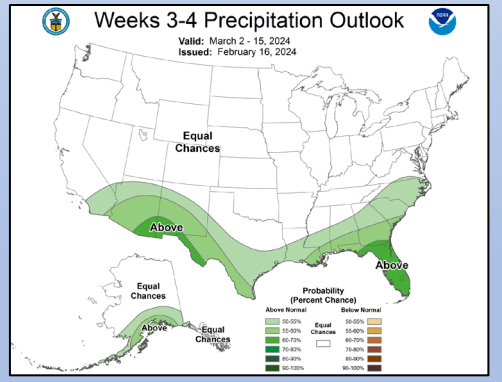


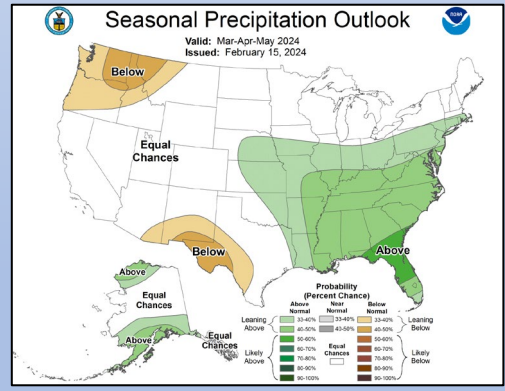








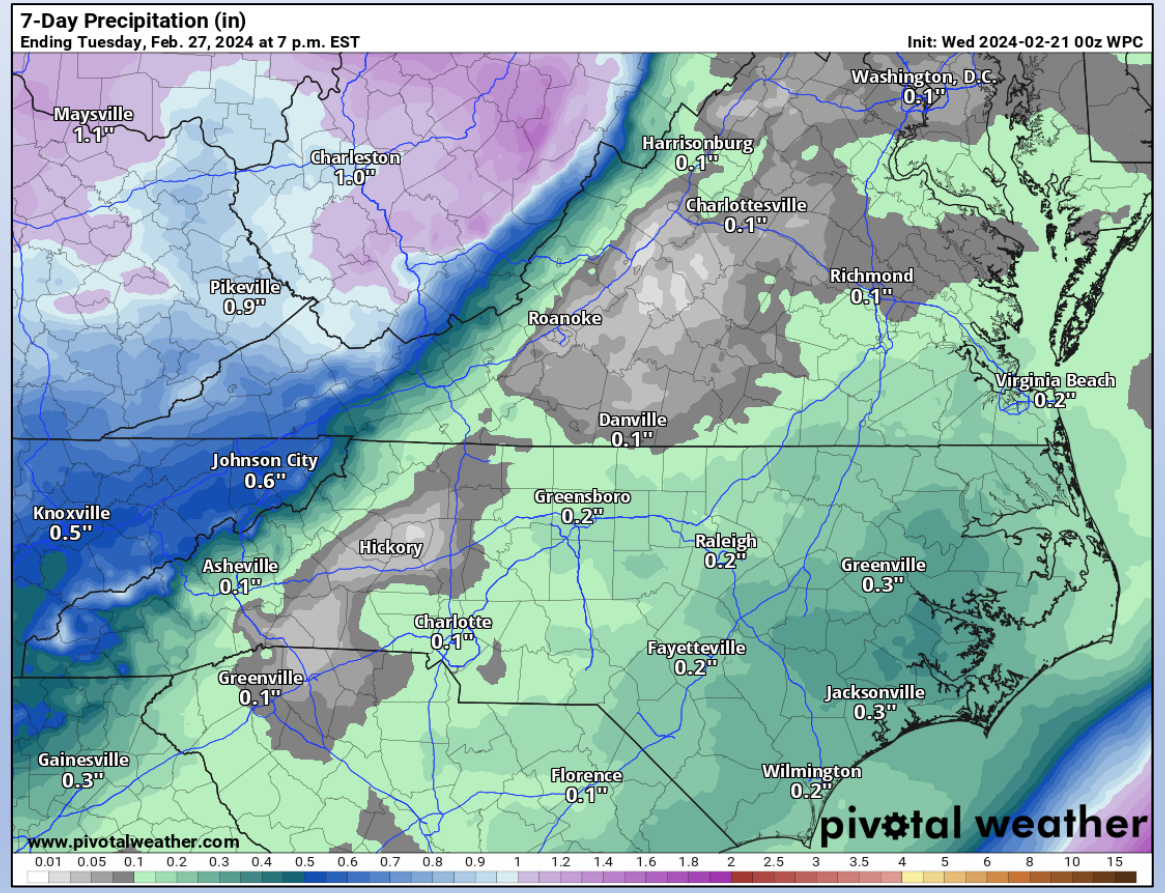




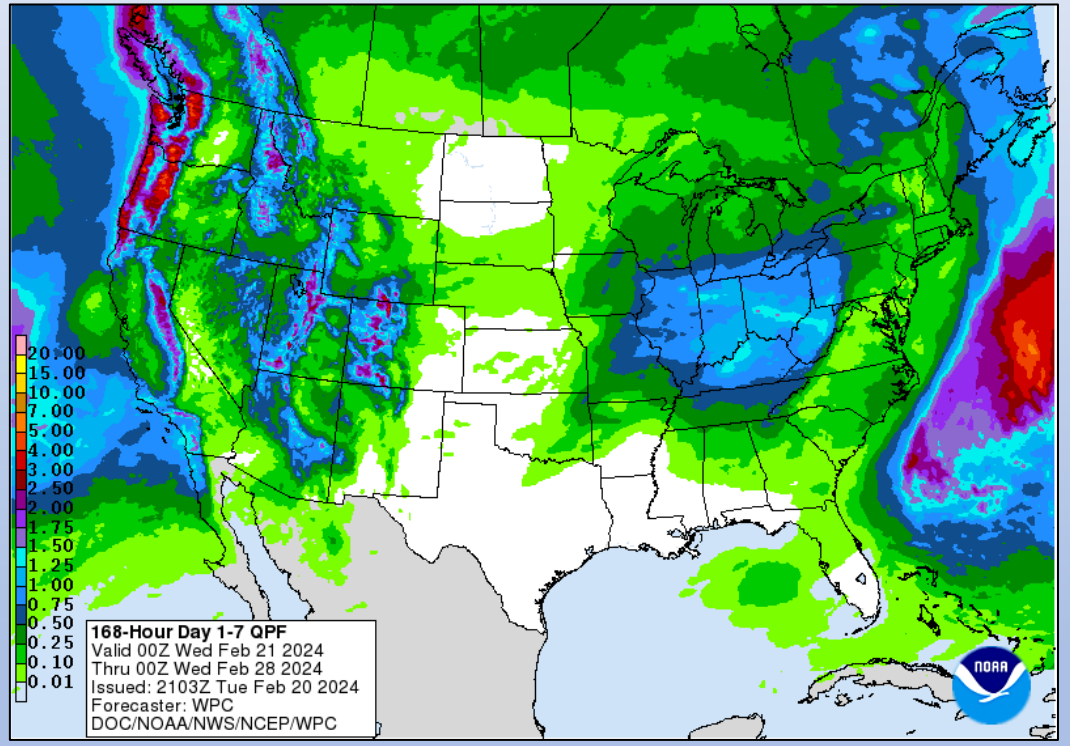
Source: https://www.cpc.ncep.noaa.gov/

Quantitative Precipitation Forecast, Day 1-7

7-Day QPF Total - Zoomed



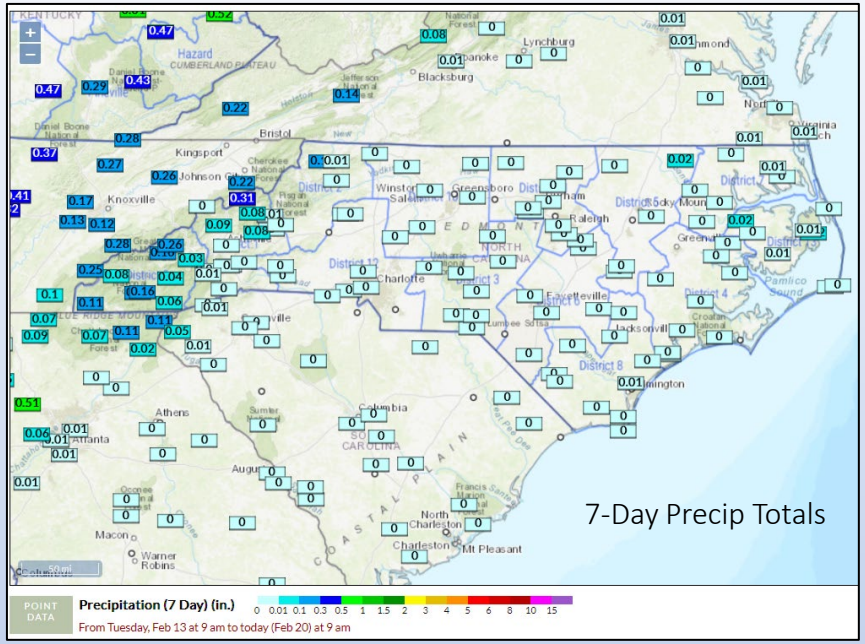
7-Day QPF Total

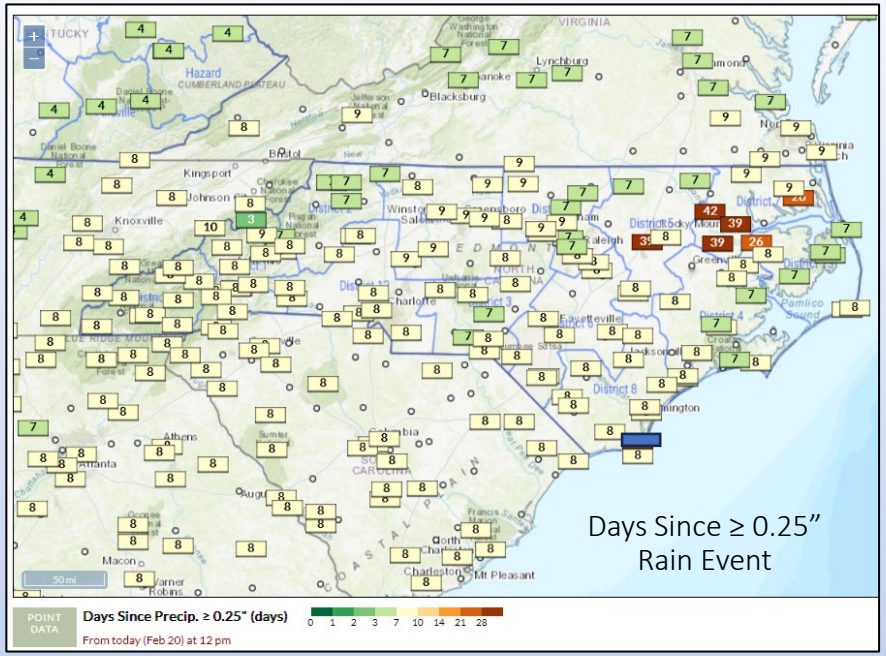


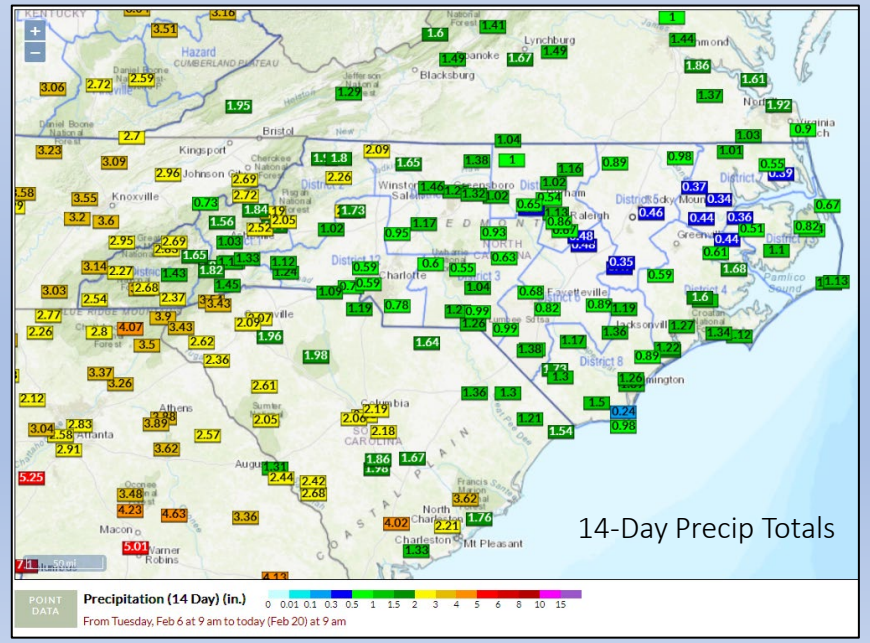
Location: https://www.wpc.ncep.noaa.gov/#

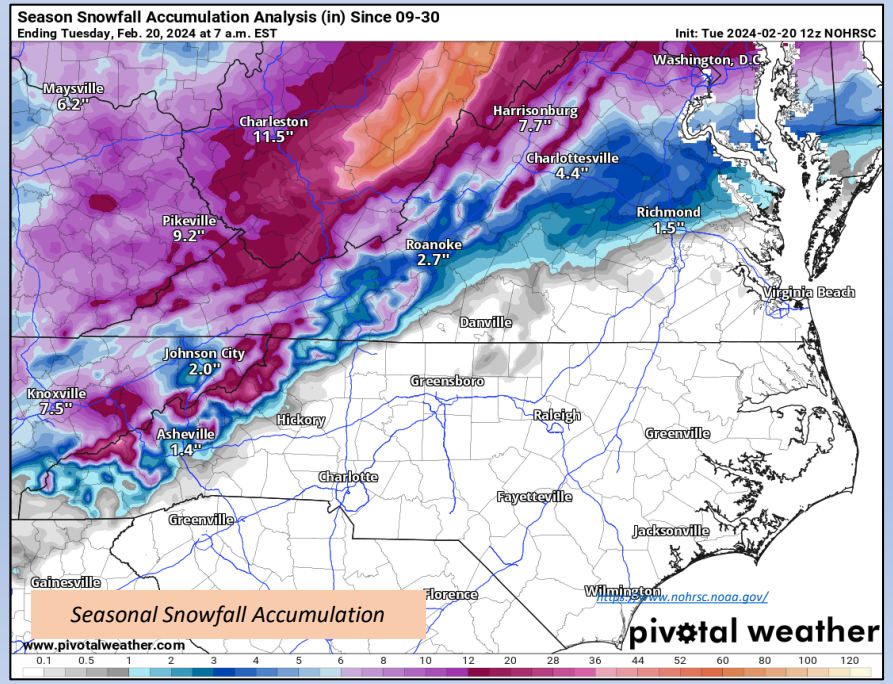
**Significant forecast uncertainty exists later in forecast periods concerning possible precip amounts (related to track changes in potential storm systems, etc.)

Observed Precipitation



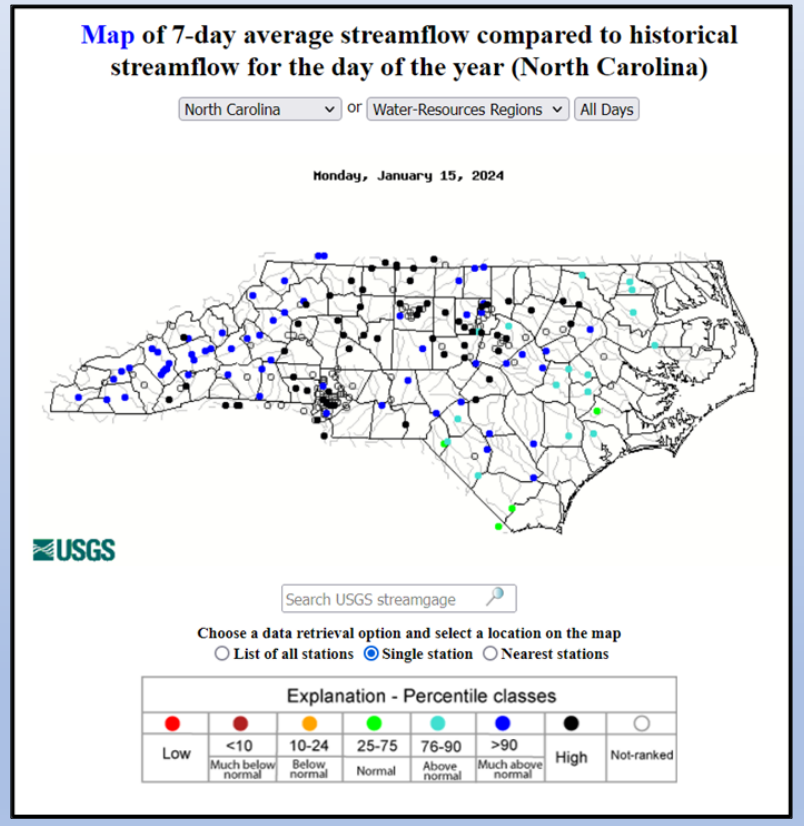




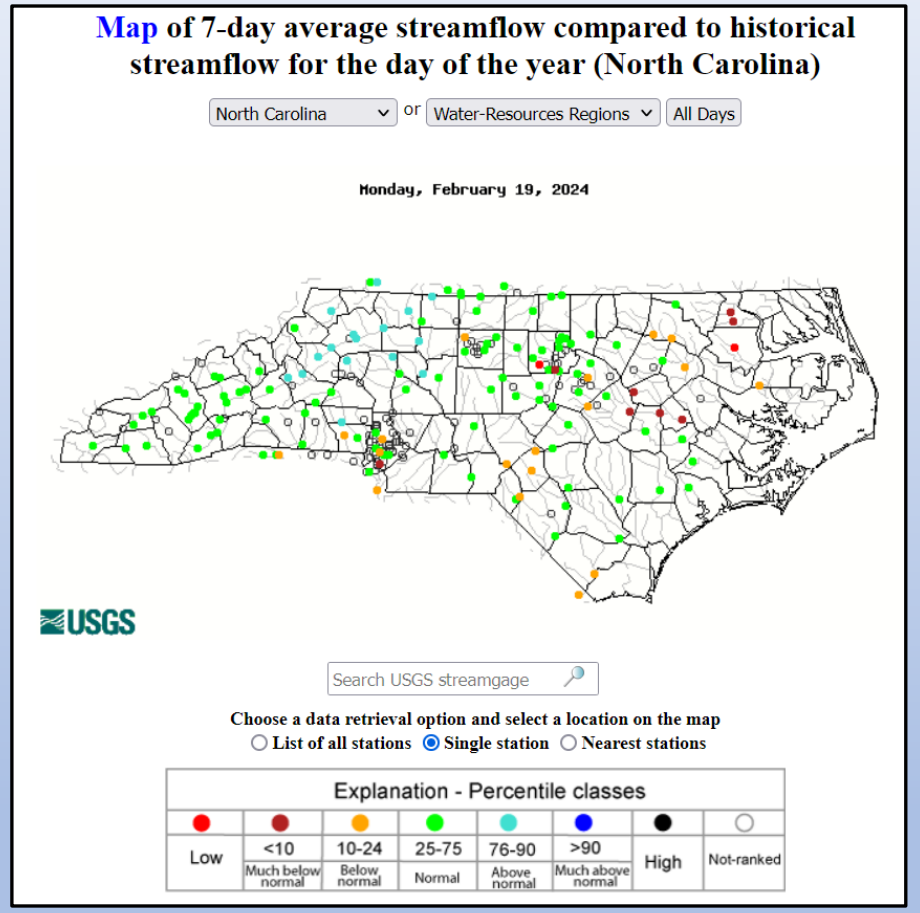


Streamflow:

- Last Month



- Current Month

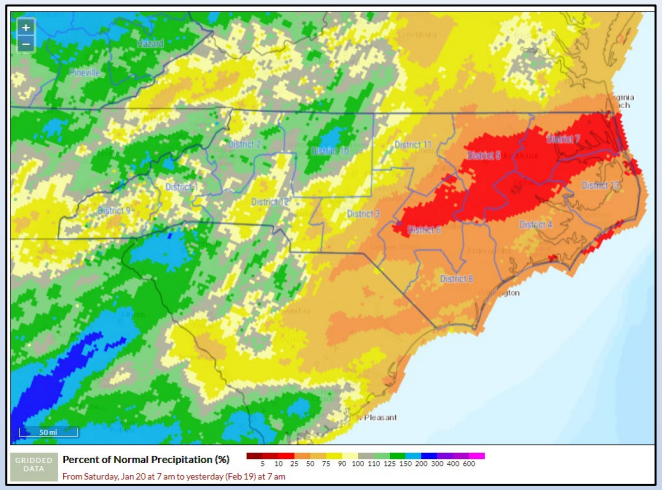


Near normal flows generally west, decline in flows most pronounced in NE Coastal Plain watersheds.

Source: https://waterwatch.usgs.gov/index.php?m=pa07d&r=nc&w=map

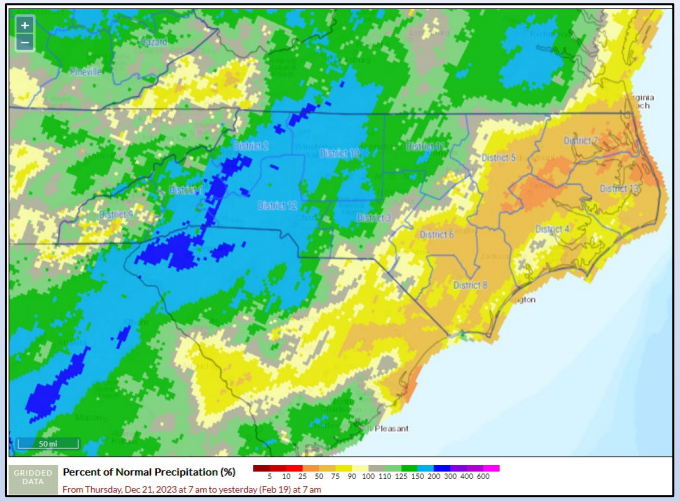
Percent of Normal Precip & SPI, *FWIP* *(Ending 0700 2/19)*

30-Day % of Normal



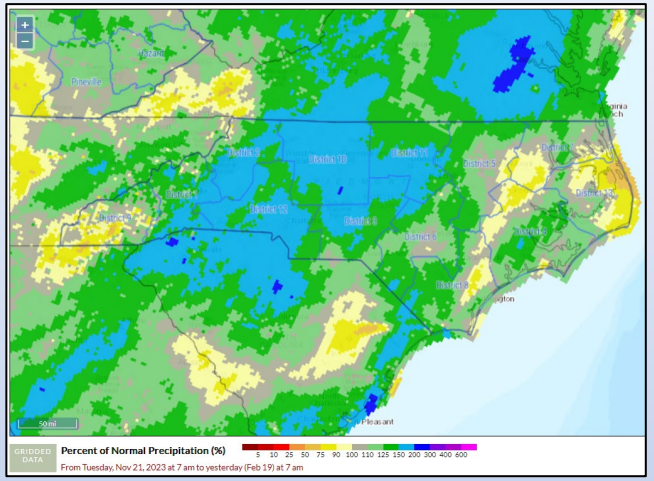
Driest areas at ~12-15% of normal at 1-Month scale.

60-Day % of Normal



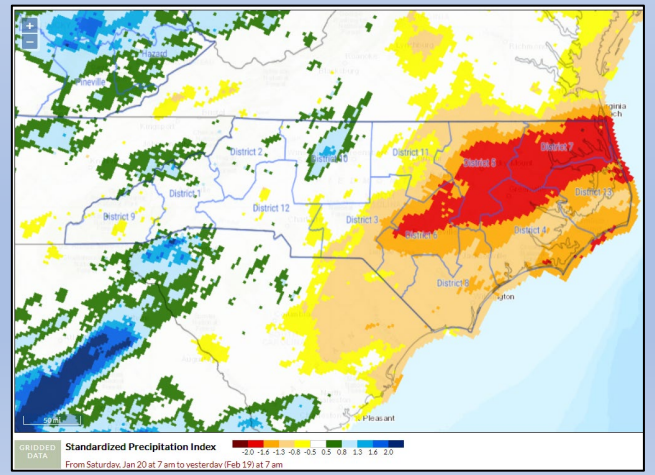
Driest areas at ~40-50% of normal at 2-Month scale.

90-Day % of Normal

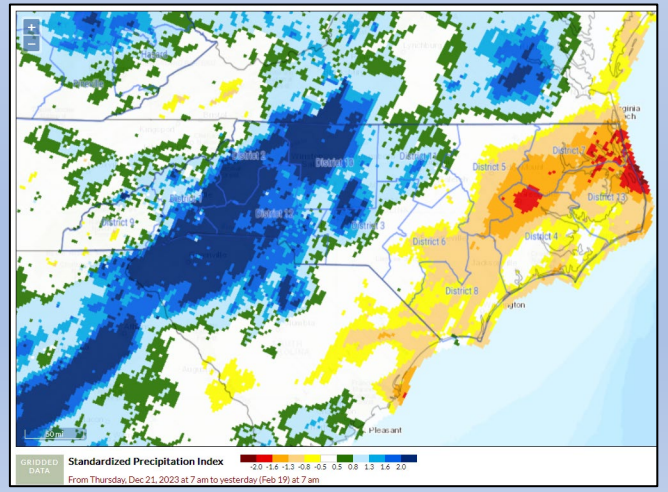


Driest areas ~ 70% of normal at 3-Month scale.

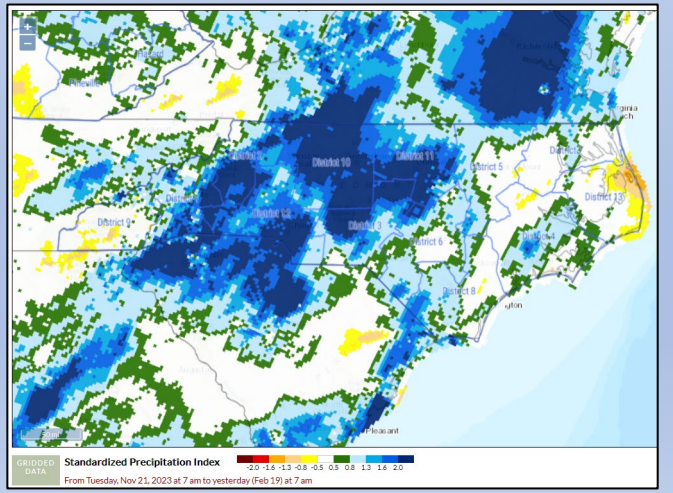
30-Day SPI



60-Day SPI



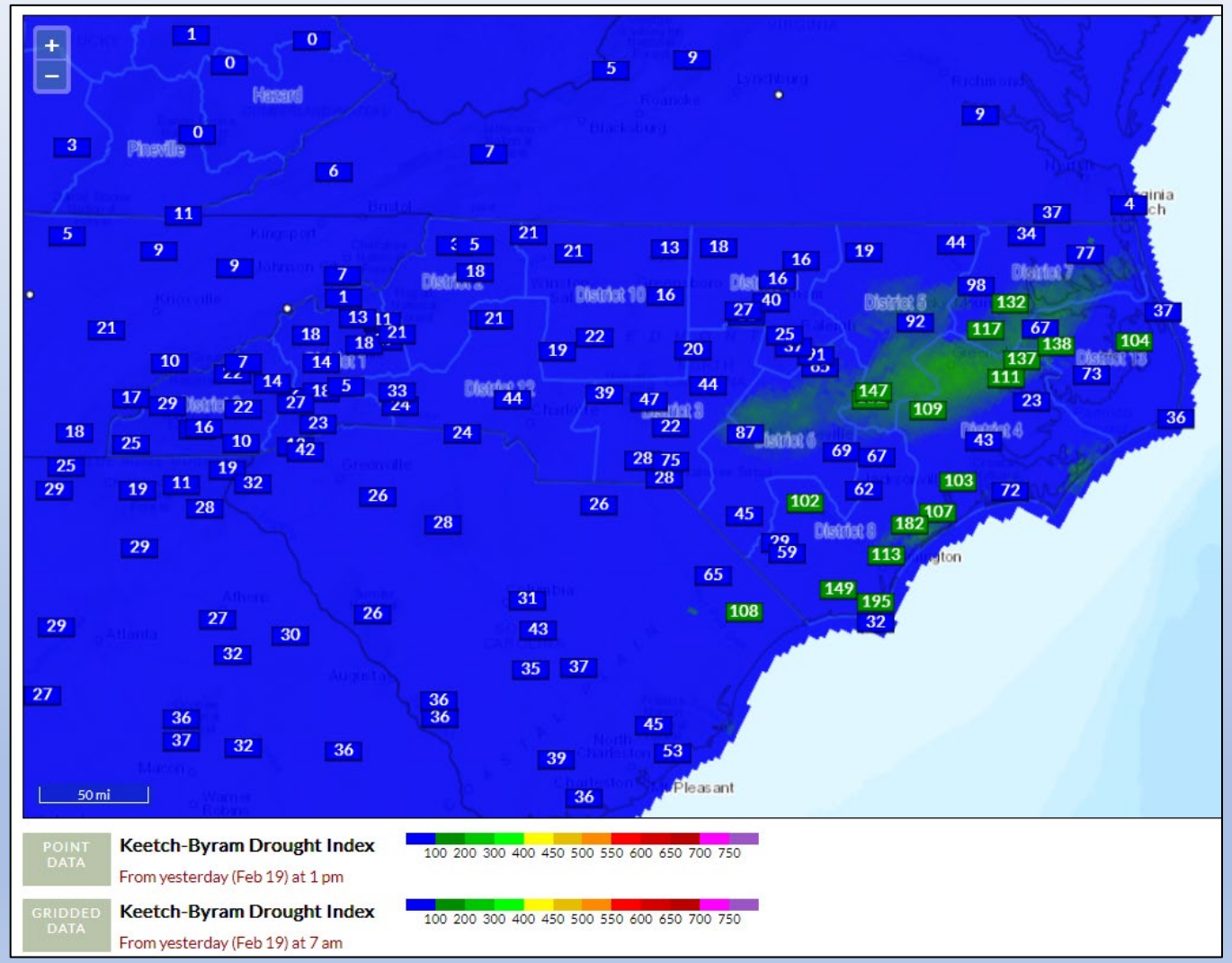
90-Day SPI

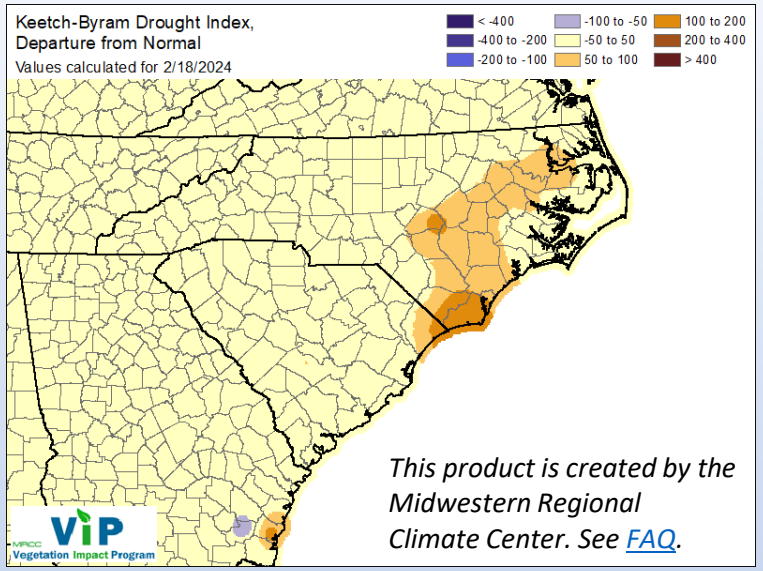


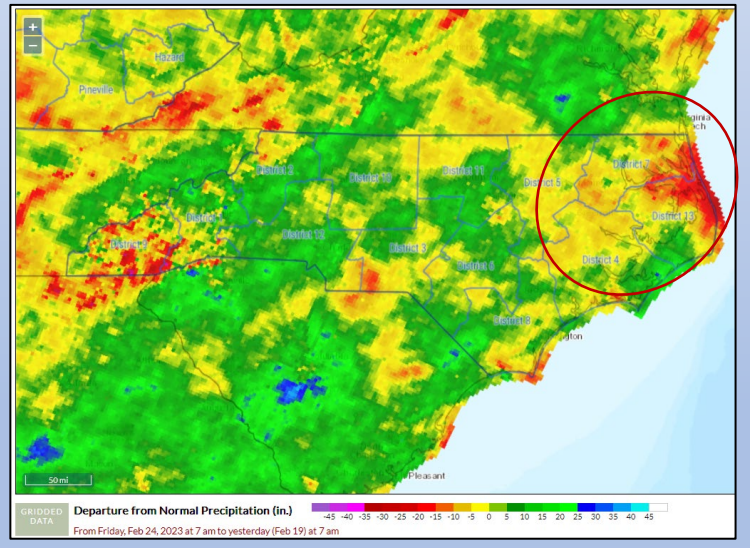
Description of Standardized Precipitation Index

KBDI - Gridded & Station Points

FWIP (Point calculation from WIMS @ 1300 on 2/19/24, SCO created Grid ending 0700 2/19/24)







General improvement still showing for much of state. However, 12-Mo departures of 8 - 14 inches still exist in some locations. Compounded by different timescales of onset. Note NE Coastal Plain.

North Carolina Drought Update

Created By: North Carolina Drought Management Advisory Council — www.ncdrought.org | NC Climate Office — climate.ncsu.edu | NC State — @NCSCO

For the assessment period ending **Feb. 13, 2024**

*From the US Drought Monitor, with input from the **NC DMAC***

The Main Takeaway

More of eastern NC is showing as Abnormally Dry (D0) this week, which reflects the limited rainfall since mid-January and a few signs of dryness on the landscape.

This Week's Summary

Over the past month, western North Carolina has stayed wet while eastern areas have begun to dry out. While they were wet in December, since the beginning of 2024, sites such as Morehead City and Hatteras are about 3.5 inches below their normal precipitation, with rain events such as last weekend's underperforming.

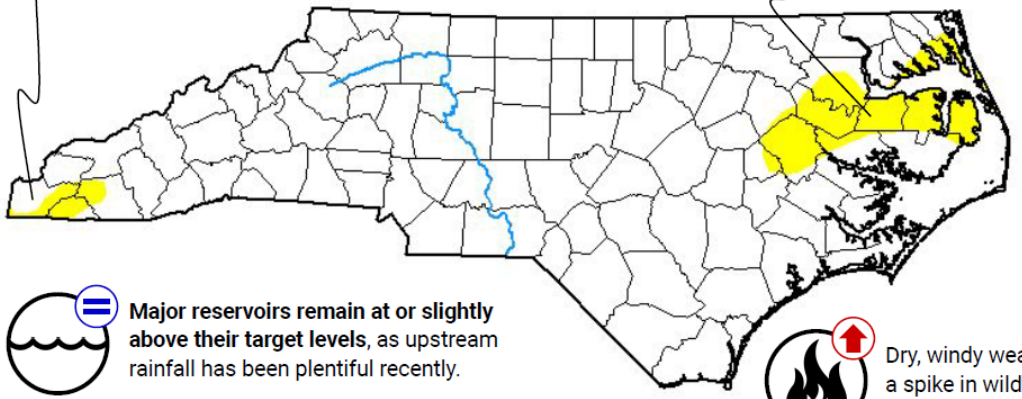
Next Week's Outlook

A cold front moving through on Friday night and Saturday morning will bring in cooler air for the weekend, but only light precipitation, with rainfall totals of less than a tenth of an inch expected in most areas.

For your local drought status, visit **www.ncdrought.org**

Murphy picked up 1.83 inches of rain last week and is 2.57 inches above normal so far in 2024.

The Hoke well in Washington County has seen its **groundwater levels fall below the historical 10th percentile** for the month of February.



Major reservoirs remain at or slightly above their target levels, as upstream rainfall has been plentiful recently.

Dry, windy weather late last week saw a spike in wildfire activity, with **163 fires burning 268 acres** for the week.

Last Week's Drought Status

Statewide Coverage by Category

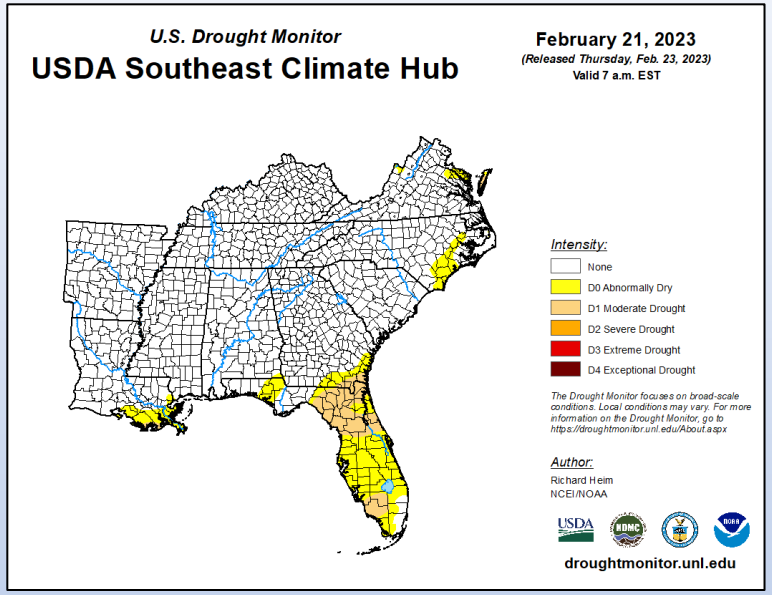
Category	Current Coverage	Change Since Last Week
D0: Abnormally Dry	7.41%	+4.59%
D1: Moderate Drought	0.00%	0.00%
D2: Severe Drought	0.00%	0.00%
D3: Extreme Drought	0.00%	0.00%
D4: Exceptional Drought	0.00%	0.00%

For Assessment Period ending 2/13/24

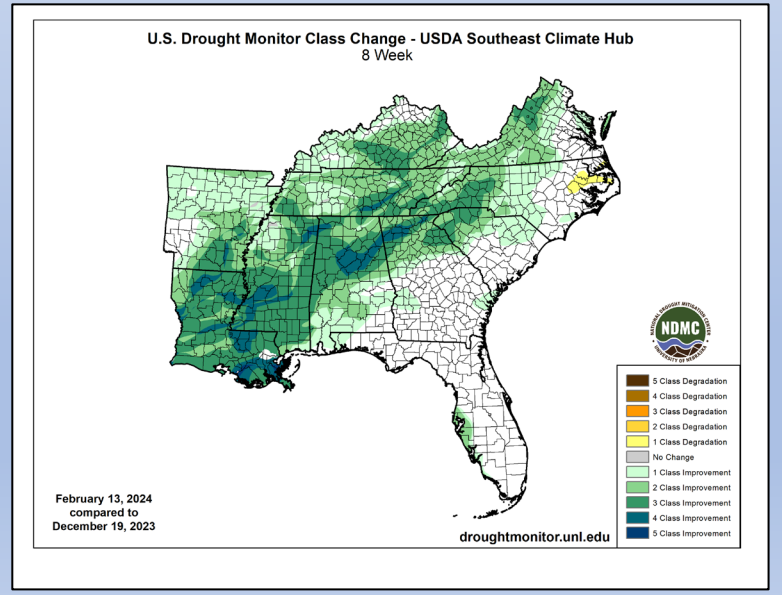
Drought Monitor (USDM)

The USDM map is released every Thursday morning, with data valid through Tuesday at 7am Eastern.

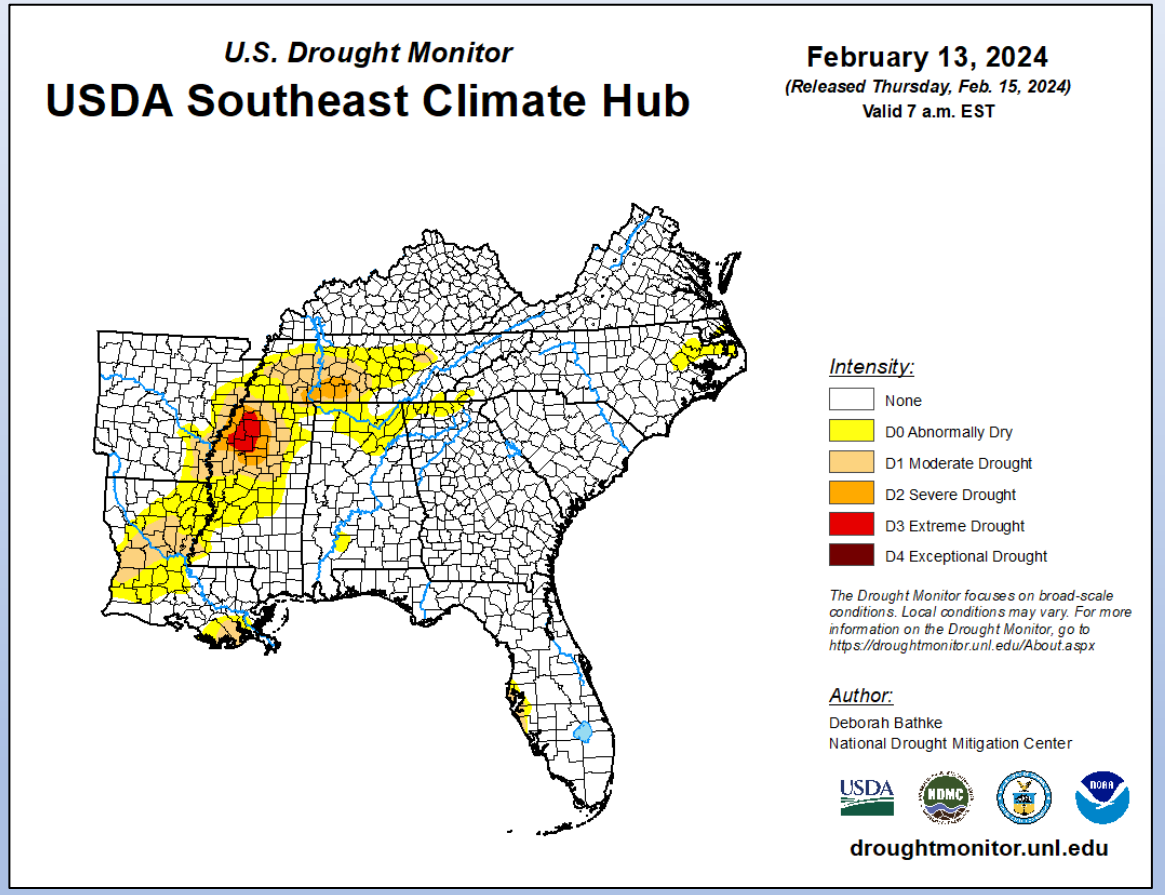
Last Year:



2-Month Change Map:



Current Week:

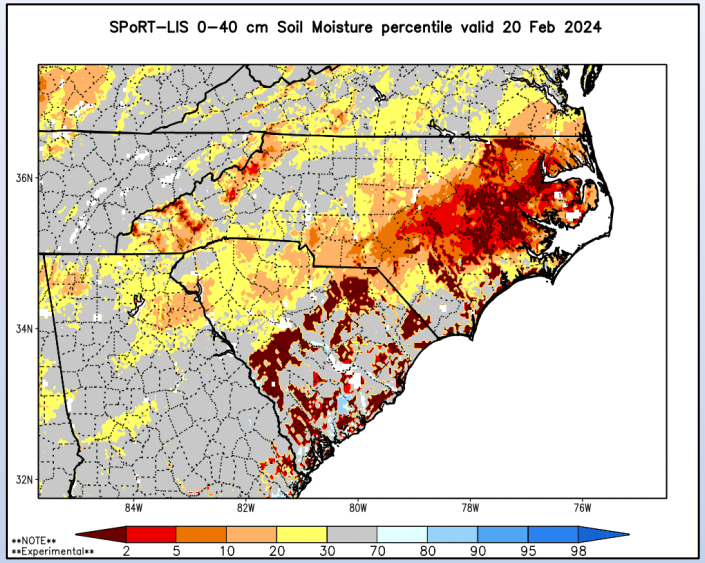


Sources: https://droughtmonitor.unl.edu/Maps/CompareTwoWeeks.aspx

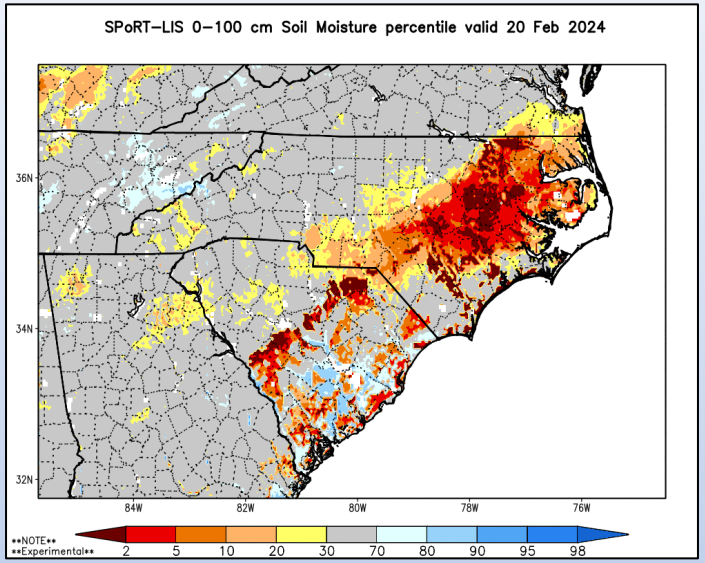
NASA SPoRT-LIS Soil Moisture

2/20/24

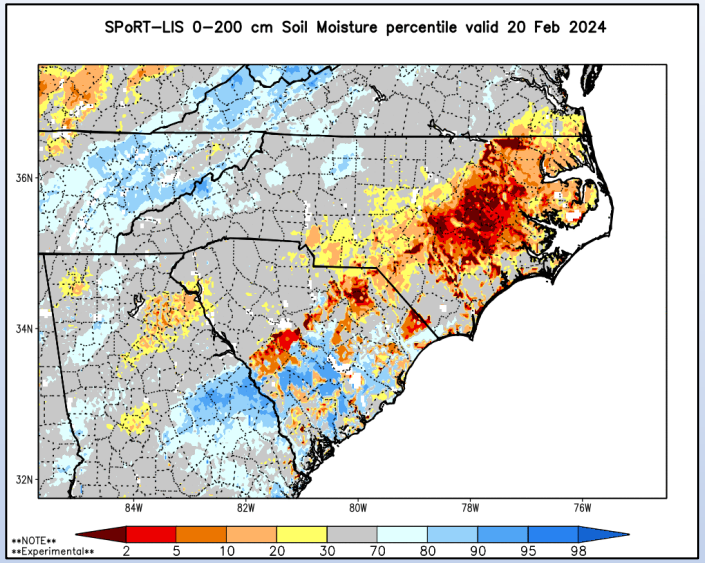
0-40cm Percentile



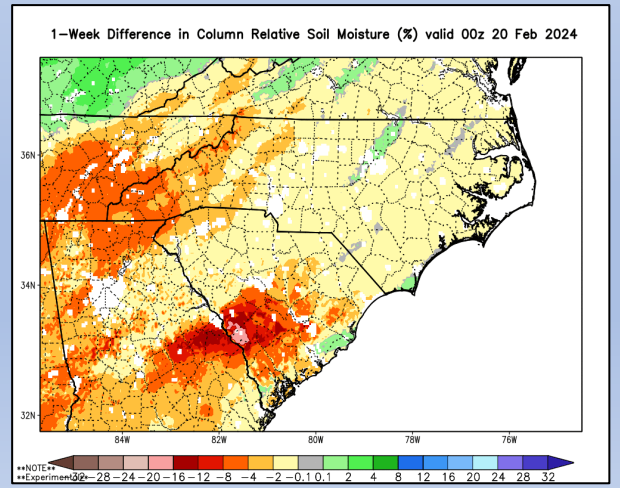
0-100cm Percentile

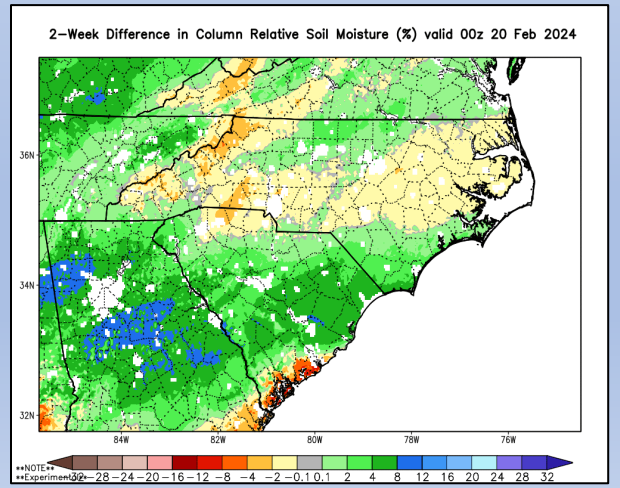


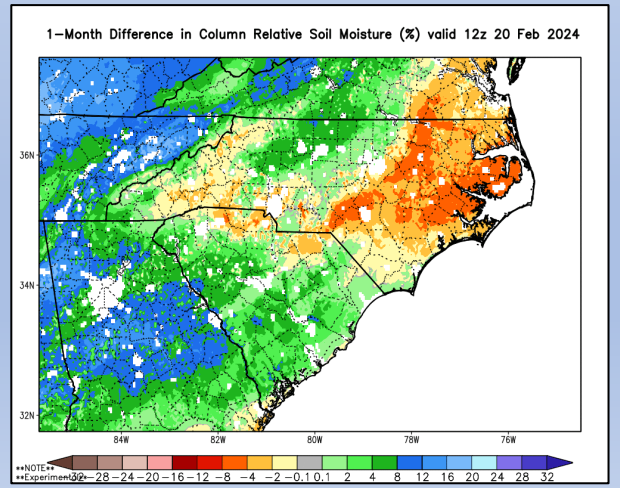
0-200cm Percentile

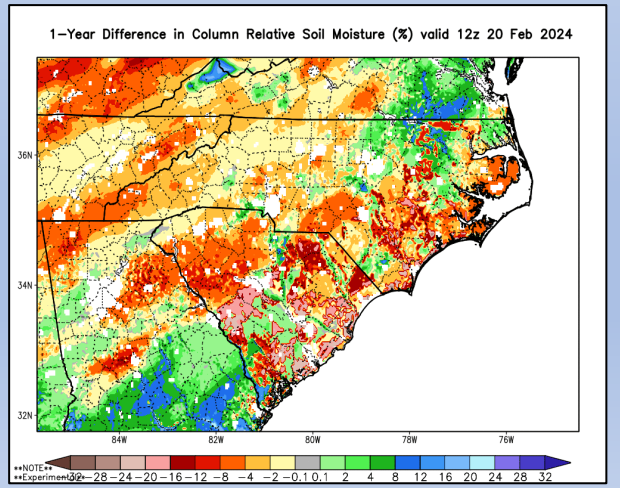


Most significant modeled dryness at all levels increasing in the Northeastern Coastal Plain (above). Ignore darkest red polygons as they are processing artifacts (above).





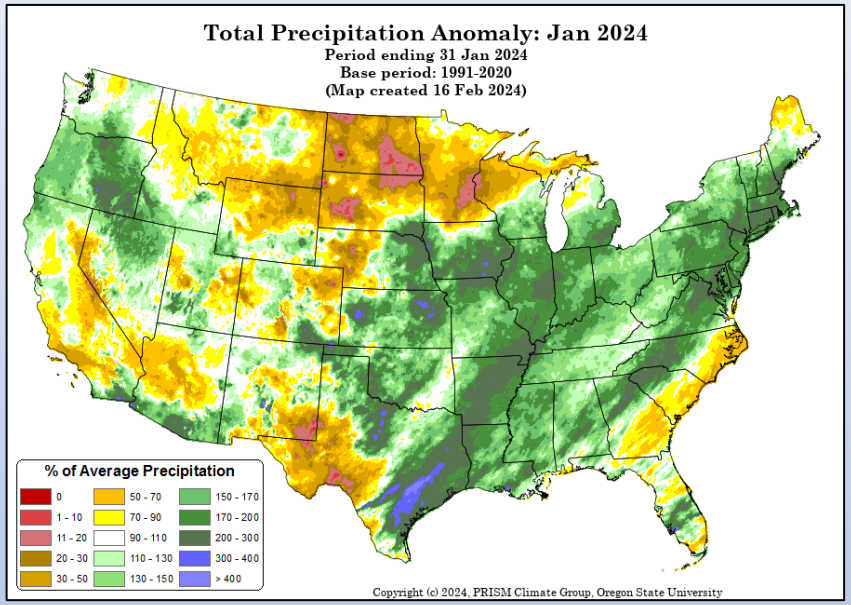


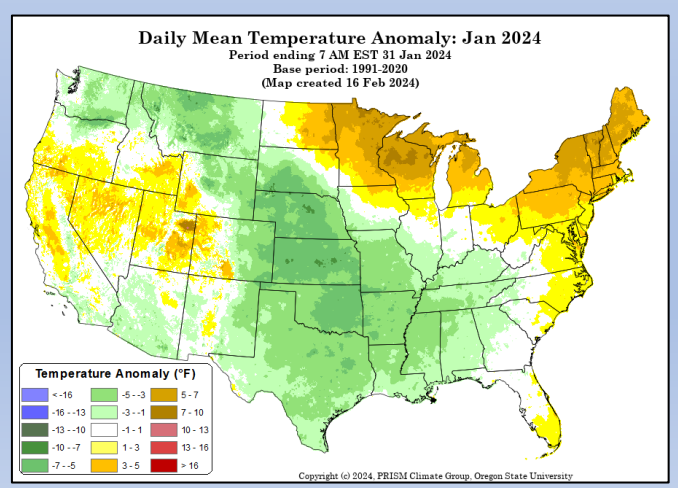


Precip and Temp Anomalies – US Context

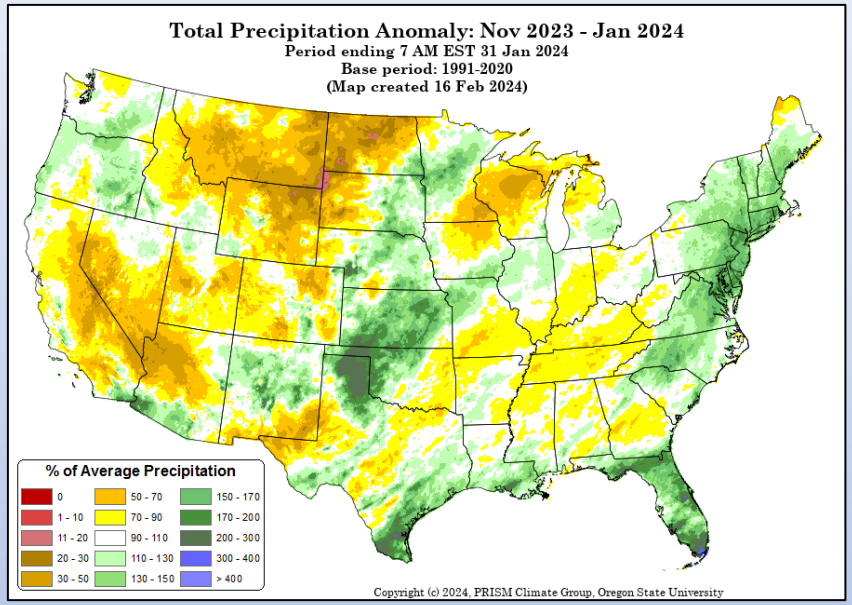
Source: https://prism.oregonstate.edu/mtd/

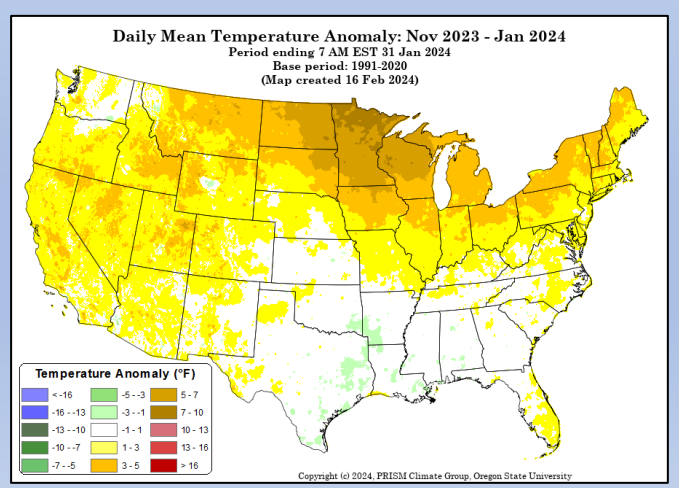
1-Month Comparison (Jan 24’)



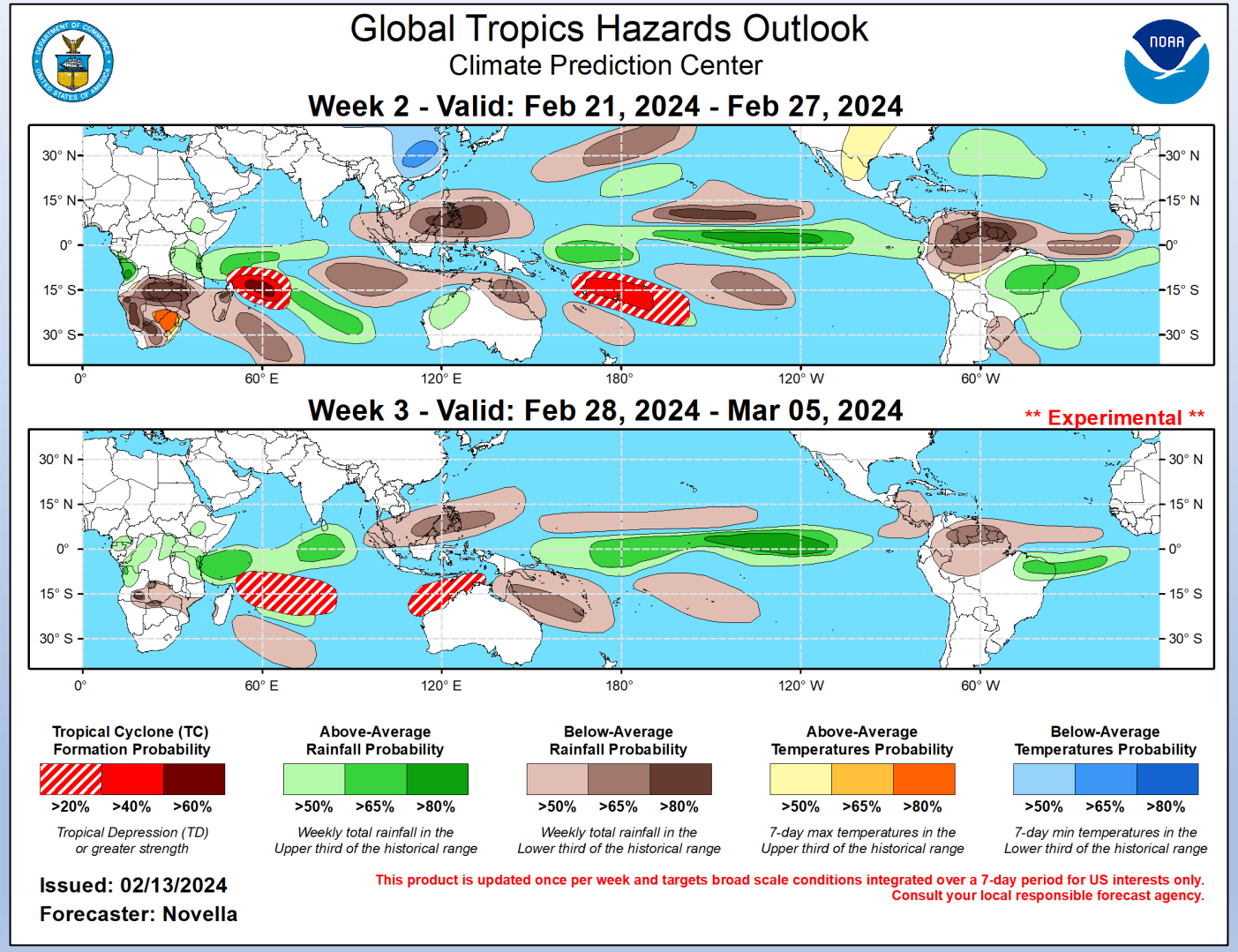


3-Month Comparison (Nov-Jan 24’)





Global Tropical Hazards Outlook



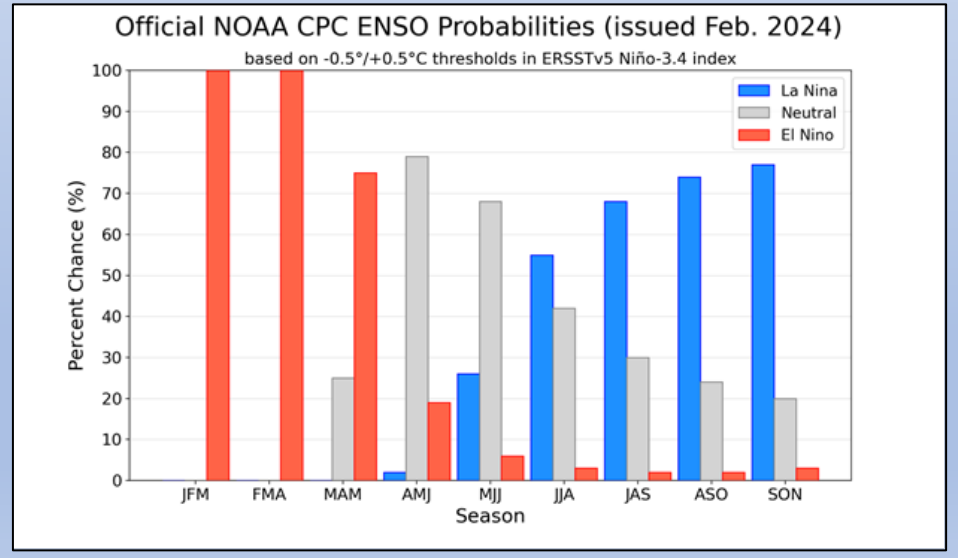
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/ghaz/index.php

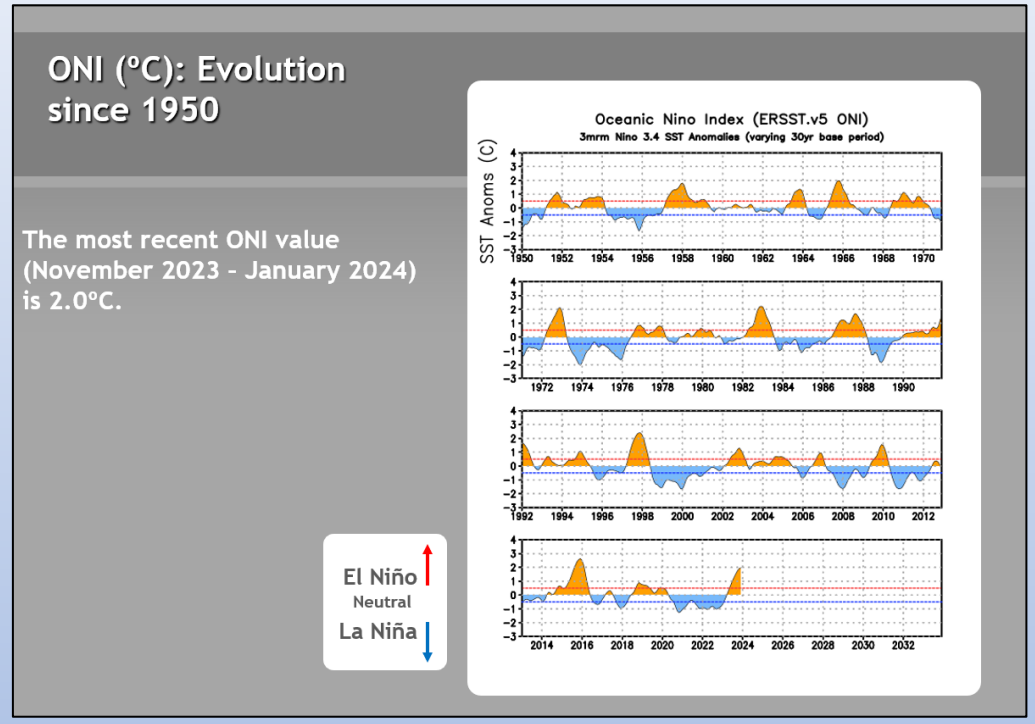
ENSO Notes from the CPC (2/20/24 Update)

ENSO Alert System Status: **El Niño Advisory / La Niña Watch**

A transition from El Niño to ENSO-neutral is likely by April-June 2024 (79% chance), with increasing odds of La Niña developing in June-August 2024 (55% chance).

ENSO, or El Nino Southern Oscillation, is a fluctuation in the sea surface temperature (SST) in the equatorial Pacific Ocean. Research has shown that even slight changes in the SST, particularly in area 3.4, can influence weather in North America. Generally, when SSTs are lower than normal, known as La Nina, NC has drier than normal conditions and can have more fire occurrence. However, La Nina also can lead to more tropical activity. El Nino, on the other hand, usually means wetter weather for NC, but less opportunity for tropical landfalls due to increased wind shear. In order to declare a La Nina, the departure from average SST must be at least -0.5° C (line shown in green) for 3 consecutive months. For El Nino, the departure must be at least 0.5° C above average for 3 consecutive months.





From the most recent CPC Diagnostic Discussion (ENSO Diagnostics Discussion):

The most recent IRI plume indicates a transition to ENSO-neutral during spring 2024, with La Niña potentially developing during summer 2024. Even though forecasts made through the spring season tend to be less reliable, there is a historical tendency for La Niña to follow strong El Niño events. The forecast team is in agreement with the latest model guidance, with some uncertainty around the timing of transitions to ENSO-neutral and, following that, La Niña. Even as the current El Niño weakens, impacts on the United States could persist through April 2024 (see CPC seasonal outlooks for probabilities of temperature and precipitation). In summary, a transition from El Niño to ENSO-neutral is likely by April-June 2024 (79% chance), with increasing odds of La Niña developing in June-August 2024 (55% chance).

Slide Source: *https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.ppt*

Climate Discussion

- Updated spring outlook from CPC was released on 2/15. It keeps an area of above-normal precipitation over the Southeast, which the discussion still relates to lingering impacts of El Niño. This feels a bit optimistic, given the expected weakening of El Niño, and how our February weather hasn't seen the same frequency or intensity of rain events as we had earlier in the season, but we'll see if we get a return of any wet weather early in the spring. Of note, the Climate Forecast System's recent weekly forecasts have been showing a wetter pattern for the first two weeks of March.

- At the moment, we can say that the current El Niño continues to hold its strength fairly well, with sea surface temperatures in the central Pacific remaining 1 to 1.5°C above normal. That's right in line with a moderate-strength El Niño like we expected going into the winter.

- However, looking at the temperature anomalies from the surface down into the ocean, we're now seeing a fairly distinct area of cooler water now reaching farther west and bubbling up to near the ocean's surface. That's a good sign that this El Niño's days are numbered, and it should fade fairly quickly over the next few months. That's exactly what model forecasts are showing at the moment, likely shifting back to neutral conditions by mid-spring.

- That doesn't necessarily mean a shift back to drier conditions, as it **could** just mean more variable weather this spring without the heavy hand of El Niño in the atmosphere. (Past springs following an El Niño winter have ranged from wet, as in 1998, to near-normal, as in 1992, to dry, as in 2016, so there's no strong lean in any direction, climatologically speaking.)

Climate Discussion

- One longer-range forecast, the Climate Forecast System version 2 (CFSv2), is currently showing exactly this sort of variability during our spring months. It puts most of North Carolina in near-normal precipitation for March, with any lingering wet weather from El Niño confined to our south, then shifting back to wetter conditions statewide in April, although that sort of pattern does not appear to be El Niño-related. The current May forecast shows us straddling the line between wetter weather to our north and drier weather to the south. In terms of temperatures, it shows us near normal in March then warmer than normal for April and May.

- I wouldn't take this forecast too literally as an exact timeline for how our spring weather will play out, but I do think it paints a reasonable picture of the sort of variability we may see this spring (i.e., not every month is likely to be wet or dry, but we may see a mixture of both).

- Beyond that, it is looking more likely that we may shift back into a La Niña pattern later this year, although it's still a bit too early to say when it may emerge and how strong that event might be. That could be a double-edged sword for our precipitation.

- La Niñas tend to see increased Atlantic tropical activity due to weakened upper-level winds across the tropics that favors more storm formation, and sea surface temperatures in the Atlantic remain historically warm, so both of those could make for an active hurricane season this year, potentially bringing more storms and rainfall our way by late summer or early fall. After that, La Niñas do tend to be drier for us by the late fall and early winter, so we could be looking at a drier end to the year -- although again, there is a long way to go until we get there.

Fire Danger Related Materials

including Self-Briefing & Situational Awareness Links

Daily WIMS Observations and NFDRS Estimates

Averaged by FDRA SIG Group
This is available on the FWIP at: https://products.climate.ncsu.edu/fwip/nfdrs.php?data=ob&state=NC

- The averaged values are derived from the SIG Station Outputs for a particular FDRA
  (SIG station names shown in bold on the live link above)
- You can toggle the percentiles on/off, displaying below the actual calculated values
  these percentiles are based on analysis of "All Days" for entire calendar year range through 2021 for these stations

Daily WIMS Forecast Observations and NFDRS Estimates are also available

Averaged by FDRA SIG Group
This is available on the FWIP at: https://products.climate.ncsu.edu/fwip/nfdrs.php?data=fc

Daily Observations for 2/20/24

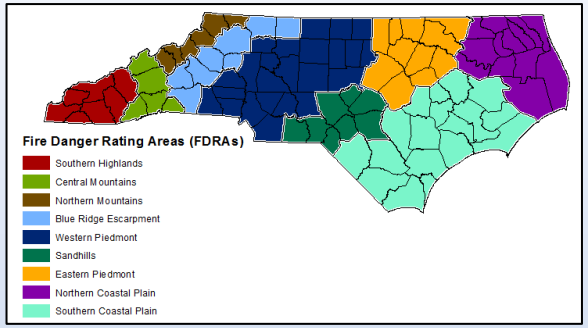
Averages by FDRA

FDRA	STATION_COUNT	NFDR_DATE	BI	ERC	IC	SC	KBDI	1HR	10HR	100HR	1000HR	HRB	WOODY	TEMP	RH	WIND	PRECIP	DUR
Southern Highlands	3	2024-02-20	132.10 96.8%	67.13 99.7%	16.43 96.9%	56.00 89.8%	20.00	9.29 5.6%	11.83 3.9%	19.69 59.7%	23.59 93.9%	30.00	50.00	53.3°F	23.0%	S 4.0 mph	0.00 in.	0.0
Central Mountains	3	2024-02-20	107.93 89.9%	61.23 97.7%	10.30 89.0%	39.27 79.9%	24.33	10.84 24.4%	11.98 4.1%	18.51 49.8%	22.73 92.5%	30.00	50.00	54.7°F	25.0%	SE 2.0 mph	0.00 in.	0.0
Northern Highlands	2	2024-02-20	118.80 90.4%	45.95 87.9%	10.10 88.8%	64.80 90.7%	13.50	11.75 28.5%	13.12 9.2%	19.08 50.6%	23.49 91.2%	50.00	80.00	48.0°F	32.5%	WSW 8.5 mph	0.00 in.	0.0
Blue Ridge Escarpment	3	2024-02-20	120.43 89.5%	66.57 98.4%	15.20 91.4%	47.30 80.3%	27.33	9.22 14.7%	10.48 2.0%	15.81 15.0%	20.32 50.8%	30.00	56.67	55.7°F	26.7%	SSE 4.0 mph	0.00 in.	0.0
Western Piedmont	3	2024-02-20	105.50 84.5%	59.03 92.9%	9.43 74.5%	39.20 78.9%	33.33	11.15 43.9%	12.98 14.3%	17.93 49.4%	22.95 94.8%	30.00	50.00	55.7°F	31.3%	ENE 4.7 mph	0.00 in.	0.0
Sandhills	3	2024-02-20	63.07 97.4%	48.27 67.5%	9.47 54.9%	22.43 99.9%	64.00	10.57 46.1%	13.03 15.8%	17.51 40.5%	22.28 86.8%	36.67	63.33	57.7°F	30.3%	NE 4.7 mph	0.00 in.	0.0
Eastern Piedmont	4	2024-02-20	110.03 76.3%	50.55 69.6%	8.03 53.7%	51.45 76.4%	61.00	12.29 51.1%	13.22 14.1%	17.74 39.7%	22.39 89.0%	30.00	60.00	51.3°F	39.5%	ENE 6.3 mph	0.00 in.	0.0
Southern Coastal	7	2024-02-20	100.04 82.0%	43.99 68.9%	10.77 81.3%	48.09 86.7%	111.43	11.02 35.5%	15.41 26.9%	19.08 46.5%	23.51 95.3%	50.00	90.00	58.0°F	36.1%	NE 8.0 mph	0.00 in.	0.0
Northern Coastal	4	2024-02-20	87.88 68.3%	37.88 57.6%	7.00 54.4%	41.28 73.2%	106.50	12.62 58.4%	15.01 34.8%	19.34 52.8%	23.76 96.9%	50.00	90.00	53.5°F	44.3%	E 8.3 mph	0.00 in.	0.0

Fuel Model X is composed of 1-hr, 10-hr and live fuels (when dormant act as dead fuels) – hence responsiveness to rapid drying. All FDRAs within NC (except Sandhills) utilize FM-X at the present time.

Weekly Outlook - FDRA General Fire Danger Forecast Matrix:

- Available on the FWIP within the "Resources for NCFS" page.
- The operation link is: https://products.climate.ncsu.edu/fwip/outlook.php
- The matrix updates daily - please review the tool notes below for more details.
- For the 9 FDRAs in North Carolina



Weekly Outlook

Southern Coastal FDRA - General Fire Danger Forecast

For planning purposes only; forecast is subject to change

Four or more RED blocks in a day signals the potential for a **Critical Fire Day**

DAY	TUE 20-Feb	WED 21-Feb	THU 22-Feb	FRI 23-Feb	SAT 24-Feb	SUN 25-Feb	MON 26-Feb
Avg. Max. Temp. (°F)	57	58	64	66	61	62	71
Avg. Min. Humidity (%)	39	37	38	64	38	30	38
Avg. 20' Wind Speed (mph)	8	6	4	11	7	5	7
Avg. Wind Direction*	NE	NNE	S	WSW	NW	WSW	SW
Avg. Probability of Precip. (%)	1	0	44	69	5	1	1
Days Since a Wetting Rain**	8.6	9.6	10.6				
Forecast ERC (Fuel Model X)	34.5	30.4	32.9	30.8	37.9	42.8	43.3
Forecast BI (Fuel Model X)	82.8	71.1	75.3	99.5	91.9	84.9	95.9
Forecast IC (Fuel Model X)	5.7	4.4	5.3	8.0	7.9	8.0	10.4
Forecast 100-Hr. FMC	18.8	18.2	17.7	17.8	17.9	17.5	16.7
Forecast 1000-Hr. FMC	23.5	23.5	23.4	23.2	23.0	22.8	22.6
KBDI	108.6						

Data Source:

- Weather forecasts come from the National Weather Service's Digital Forecast Database. The wind speed and direction, and probability of precipitation, are calculated as averages of the 1 am, 7 am, 1 pm, and 7 pm forecasts. The 20-foot wind speed is estimated from the 10-meter forecast using the log wind profile method.
- Days since a wetting rain is calculated using a combination of historical data (to determine the most recent wetting rain event) and forecasted precipitation amounts. These forecasted amounts are only available for the first three days of the forecast period.
- Fire danger forecasts for the next 7 days are issued by National Weather Service through WIMS. KBDI is only available on the first forecast day since the NFDRS Forecast product does not include precipitation amounts, which are used to adjust KBDI from day to day

Values in the table above are averages from 7 stations in this FDRA:

- **Finch's Station** (317501)
- **Beaufort** (317801)
- **New Bern** (319004)
- **Turnbull Creek** (319302)
- **Hofmann Forest** (319507)
- **Whiteville** (319701)
- **Sunny Point** (319803)

Weekly Outlook

Southern Highlands FDRA - General Fire Danger Forecast

For planning purposes only; forecast is subject to change

Four or more RED blocks in a day signals the potential for a **Critical Fire Day**

DAY	TUE 20-Feb	WED 21-Feb	THU 22-Feb	FRI 23-Feb	SAT 24-Feb	SUN 25-Feb	MON 26-Feb
Avg. Max. Temp. (°F)	51	55	58	53	49	57	63
Avg. Min. Humidity (%)	34	39	49	52	43	35	44
Avg. 20' Wind Speed (mph)	4	4	10	14	13	9	9
Avg. Wind Direction*	S	S	SSW	WNW	NW	W	WSW
Avg. Probability of Precip. (%)	1	1	91	19	6	8	5
Days Since a Wetting Rain**	7.7	8.7	9.7				
Forecast ERC (Fuel Model X)	61.2	50.4	48.4	33.3	47.4	50.9	52.2
Forecast BI (Fuel Model X)	129.6	108.9	170.3	138.4	170.5	144.0	149.0
Forecast IC (Fuel Model X)	11.3	6.2	9.4	5.9	8.8	9.5	11.6
Forecast 100-Hr. FMC	19.1	18.2	17.6	17.7	18.1	18.1	17.4
Forecast 1000-Hr. FMC	23.6	23.6	23.7	23.6	23.4	23.3	23.1
KBDI	17.0						

Data Source:

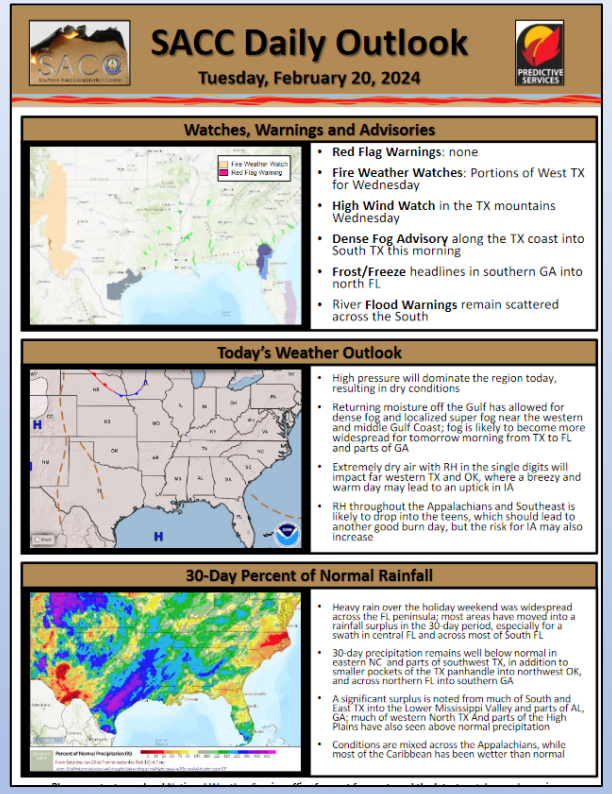
- Weather forecasts come from the National Weather Service's Digital Forecast Database. The wind speed and direction, and probability of precipitation, are calculated as averages of the 1 am, 7 am, 1 pm, and 7 pm forecasts. The 20-foot wind speed is estimated from the 10-meter forecast using the log wind profile method.
- Days since a wetting rain is calculated using a combination of historical data (to determine the most recent wetting rain event) and forecasted precipitation amounts. These forecasted amounts are only available for the first three days of the forecast period.
- Fire danger forecasts for the next 7 days are issued by National Weather Service through WIMS. KBDI is only available on the first forecast day since the NFDRS Forecast product does not include precipitation amounts, which are used to adjust KBDI from day to day

Values in the table above are averages from 3 stations in this FDRA:

- **Tusquitee** (315602)
- **Locust Gap** (315802)
- **Highlands** (315803)

Two of Nine FDRAs Shown: 2/19/24 PM Run

Southern Area Daily Outlook Page:



SACC Daily Outlook
Tuesday, February 20, 2024

Watches, Warnings and Advisories

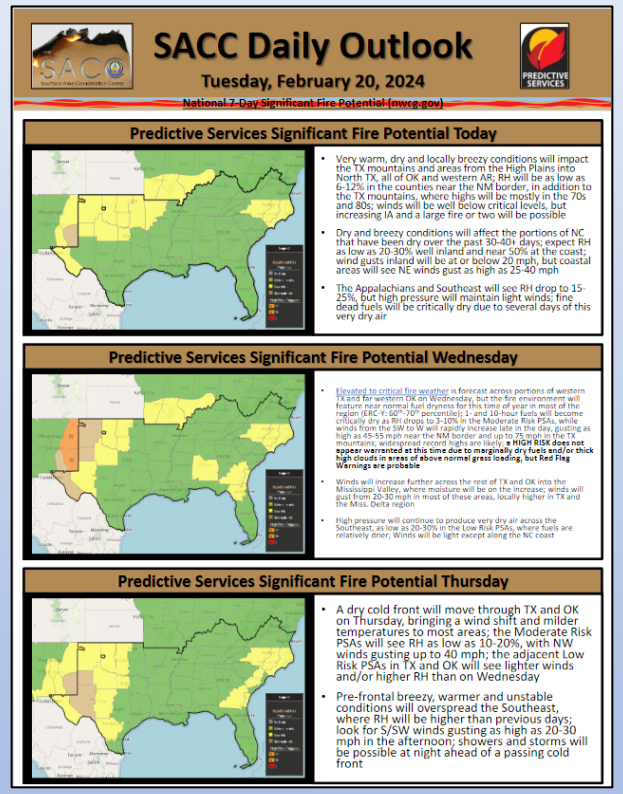
- **Red Flag Warnings**: none
- **Fire Weather Watches**: Portions of West TX for Wednesday
- **High Wind Watch** in the TX mountains Wednesday
- **Dense Fog Advisory** along the TX coast into South TX this morning
- **Frost/Freeze** headlines in southern GA into north FL
- River **Flood Warnings** remain scattered across the South

Today's Weather Outlook

- High pressure will dominate the region today, resulting in dry conditions
- Returning moisture off the Gulf has allowed for dense fog and localized super fog near the western and middle Gulf Coast; fog is likely to become more widespread for tomorrow morning from TX to FL and parts of GA
- Extremely dry air with RH in the single digits will impact far western TX and OK, where a breezy and warm day may lead to an uptick in IA
- RH throughout the Appalachians and Southeast is likely to drop into the teens, which should lead to another good burn day, but the risk for IA may also increase

30-Day Percent of Normal Rainfall

- Heavy rain over the holiday weekend was widespread across the FL peninsula; most areas have moved into a rainfall surplus in the 30-day period, especially for a swath in central FL and across most of South FL
- 30-day precipitation remains well below normal in eastern NC and parts of southwest TX, in addition to smaller pockets of the TX panhandle into northwest OK, and across northern FL into southern GA
- A significant surplus is noted from much of South and East TX into the Lower Mississippi Valley and parts of AL, GA; much of western North TX And parts of the High Plains have also seen above normal precipitation
- Conditions are mixed across the Appalachians, while most of the Caribbean has been wetter than normal



SACC Daily Outlook
Tuesday, February 20, 2024
National 7-Day Significant Fire Potential (nwcg.gov)

Predictive Services Significant Fire Potential Today

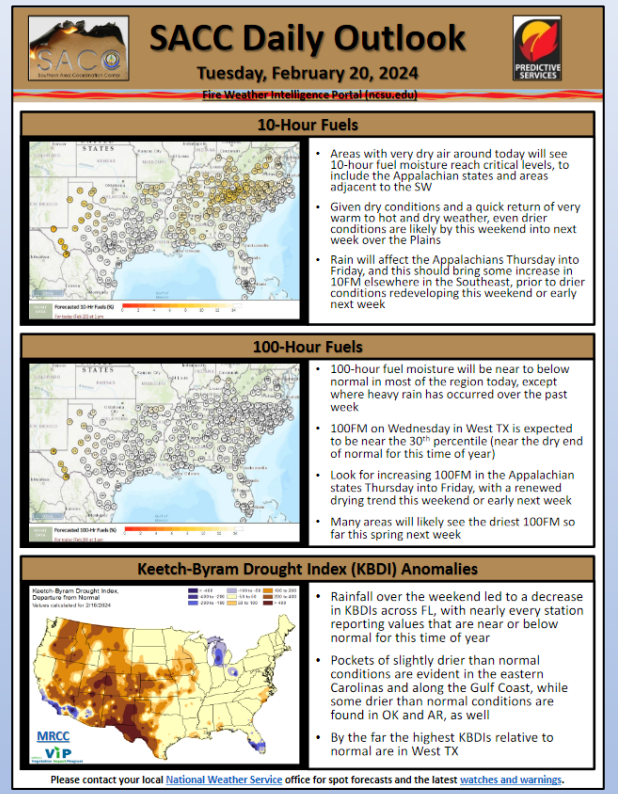
- Very warm, dry and locally breezy conditions will impact the TX mountains and areas from the High Plains into North TX, all of OK and western AR; RH will be as low as 6-12% in the counties near the NM border, in addition to the TX mountains, where highs will be mostly in the 70s and 80s; winds will be well below critical levels, but increasing IA and a large fire or two will be possible
- Dry and breezy conditions will affect the portions of NC that have been dry over the past 30-40+ days; expect RH as low as 20-30% well inland and near 50% at the coast; wind gusts inland will be at or below 20 mph, but coastal areas will see NE winds gust as high as 25-40 mph
- The Appalachians and Southeast will see RH drop to 15-25%, but high pressure will maintain light winds; fine dead fuels will be critically dry due to several days of this very dry air

Predictive Services Significant Fire Potential Wednesday

- Elevated to critical fire weather is forecast across portions of western TX and far western OK on Wednesday, but the fire environment will feature near normal fuel dryness for this time of year in most of the region (ERC-Y: 60th-70th percentile); 1- and 10-hour fuels will become critically dry as RH drops to 3-10% in the Moderate Risk PSAs, while winds from the SW to W will rapidly increase late in the day, gusting as high as 45-55 mph near the NM border and up to 75 mph in the TX mountains; widespread record highs are likely; **a HIGH RISK does not appear warranted at this time due to marginally dry fuels and/or thick high clouds in areas of above normal grass loading, but Red Flag Warnings are probable**
- Winds will increase further across the rest of TX and OK into the Mississippi Valley, where moisture will be on the increase; winds will gust from 20-30 mph in most of these areas, locally higher in TX and the Miss. Delta region
- High pressure will continue to produce very dry air across the Southeast, as low as 20-30% in the Low Risk PSAs, where fuels are relatively drier; Winds will be light except along the NC coast

Predictive Services Significant Fire Potential Thursday

- A dry cold front will move through TX and OK on Thursday, bringing a wind shift and milder temperatures to most areas; the Moderate Risk PSAs will see RH as low as 10-20%, with NW winds gusting up to 40 mph; the adjacent Low Risk PSAs in TX and OK will see lighter winds and/or higher RH than on Wednesday
- Pre-frontal breezy, warmer and unstable conditions will overspread the Southeast, where RH will be higher than previous days; look for S/SW winds gusting as high as 20-30 mph in the afternoon; showers and storms will be possible at night ahead of a passing cold front



SACC Daily Outlook
Tuesday, February 20, 2024
Fire Weather Intelligence Portal (ncsu.edu)

10-Hour Fuels

- Areas with very dry air around today will see 10-hour fuel moisture reach critical levels, to include the Appalachian states and areas adjacent to the SW
- Given dry conditions and a quick return of very warm to hot and dry weather, even drier conditions are likely by this weekend into next week over the Plains
- Rain will affect the Appalachians Thursday into Friday, and this should bring some increase in 10FM elsewhere in the Southeast, prior to drier conditions redeveloping this weekend or early next week

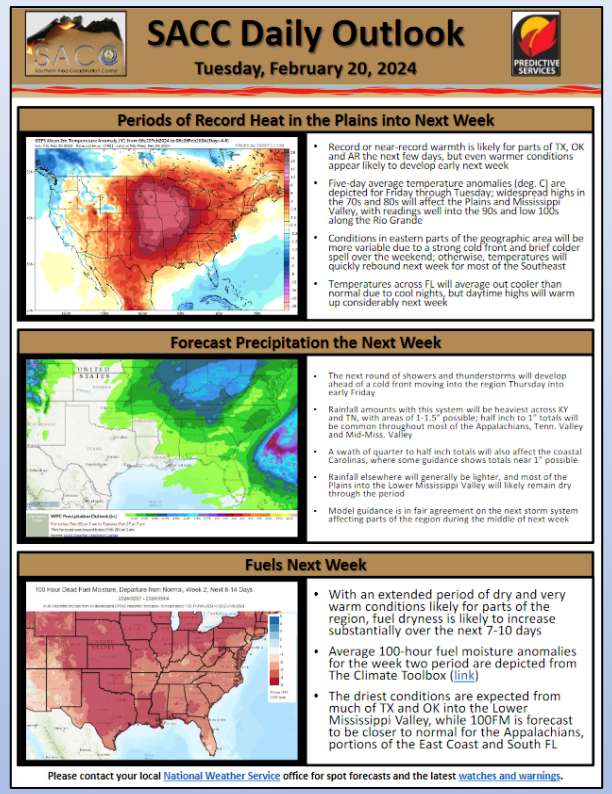
100-Hour Fuels

- 100-hour fuel moisture will be near to below normal in most of the region today, except where heavy rain has occurred over the past week
- 100FM on Wednesday in West TX is expected to be near the 30th percentile (near the dry end of normal for this time of year)
- Look for increasing 100FM in the Appalachian states Thursday into Friday, with a renewed drying trend this weekend or early next week
- Many areas will likely see the driest 100FM so far this spring next week

Keetch-Byram Drought Index (KBDI) Anomalies

- Rainfall over the weekend led to a decrease in KBDIs across FL, with nearly every station reporting values that are near or below normal for this time of year
- Pockets of slightly drier than normal conditions are evident in the eastern Carolinas and along the Gulf Coast, while some drier than normal conditions are found in OK and AR, as well
- By the far the highest KBDIs relative to normal are in West TX

Please contact your local National Weather Service office for spot forecasts and the latest watches and warnings.



SACC Daily Outlook
Tuesday, February 20, 2024

Periods of Record Heat in the Plains into Next Week

- Record or near-record warmth is likely for parts of TX, OK and AR the next few days, but even warmer conditions appear likely to develop early next week
- Five-day average temperature anomalies (deg. C) are depicted for Friday through Tuesday; widespread highs in the 70s and 80s will affect the Plains and Mississippi Valley, with readings well into the 90s and low 100s along the Rio Grande
- Conditions in eastern parts of the geographic area will be more variable due to a strong cold front and brief colder spell over the weekend; otherwise, temperatures will quickly rebound next week for most of the Southeast
- Temperatures across FL will average out cooler than normal due to cool nights, but daytime highs will warm up considerably next week

Forecast Precipitation the Next Week

- The next round of showers and thunderstorms will develop ahead of a cold front moving into the region Thursday into early Friday
- Rainfall amounts with this system will be heaviest across KY and TN, with areas of 1-1.5" possible; half inch to 1" totals will be common throughout most of the Appalachians, Tenn. Valley and Mid-Miss. Valley
- A swath of quarter to half inch totals will also affect the coastal Carolinas, where some guidance shows totals near 1" possible
- Rainfall elsewhere will generally be lighter, and most of the Plains into the Lower Mississippi Valley will likely remain dry through the period
- Model guidance is in fair agreement on the next storm system affecting parts of the region during the middle of next week

Fuels Next Week

- With an extended period of dry and very warm conditions likely for parts of the region, fuel dryness is likely to increase substantially over the next 7-10 days
- Average 100-hour fuel moisture anomalies for the week two period are depicted from The Climate Toolbox (link)
- The driest conditions are expected from much of TX and OK into the Lower Mississippi Valley, while 100FM is forecast to be closer to normal for the Appalachians, portions of the East Coast and South FL

Please contact your local National Weather Service office for spot forecasts and the latest watches and warnings.

Product is generally updated weekdays unless increased activity in the Geographic Area (2/20 Outlook shown)

https://gacc.nifc.gov/sacc/resources/predictive/sacc-daily-outlook.pdf

NC DAQ Air Quality Forecast - *Three Day Outlook*

The North Carolina Division of Air Quality issues forecasts for fine particulate matter year-round and ozone from March through October. Forecasts and discussions are updated each afternoon for the next three days, and are sometimes updated in the morning to reflect the latest ambient conditions.

View: ◉ The latest forecast discussion ○ The afternoon forecast discussion from Feb 19, 2024 Display

This forecast was issued on **Tuesday, February 20, 2024** at **3:08 pm**. This forecast is currently valid.

Today's Air Quality Conditions

Current daily average particle pollution levels are in the low Code Yellow range in the western Piedmont as forecast. Elsewhere across the state, particle pollution levels are in the Code Green range statewide.

For a display of the most recent Air Quality Index (AQI) conditions throughout the day, visit the Ambient Information Reporter (AIR) tool.

General Forecast Discussion

Through Wednesday, strong high pressure will remain entrenched across the region. This will likely result in an increasingly stagnant air mass, with strong overnight temperature inversions. Overnight into morning hourly particle pollution levels may elevate into the low to mid Code Yellow range -- especially across interior portions -- before gradually lowering as afternoon vertical mixing and winds disperse elevated concentrations.

Outlook

Thursday, a weak shortwave in fast westerly flow aloft will approach from the west, as a surface low and attendant cold front also approach. With the surface high breaking down, air mass stagnation may reduce some on Thursday, but lingering upstream particle pollution may continue to advect into the region as winds veer to southwesterly. Will leave the forecast upper Code Green for now and continue to monitor the state of the upstream air mass in the coming forecast cycles.

On Friday, a cold front will cross the state and usher in a cooler and drier air mass that should lower particle pollution levels back into the Code Green range.

Author: *McLamb - NC Division of Air Quality*

Extended Air Quality Outlook

The forecast Air Quality Index value for each pollutant represents the highest value expected within each county, so some areas and monitors may see lower values. We use the best information and techniques available to ensure the quality and accuracy of the forecasts we provide to the public. Note that ranges do *not* include the nine-county Triad region, which is covered by the Forsyth County Office of Environmental Assistance and Protection.

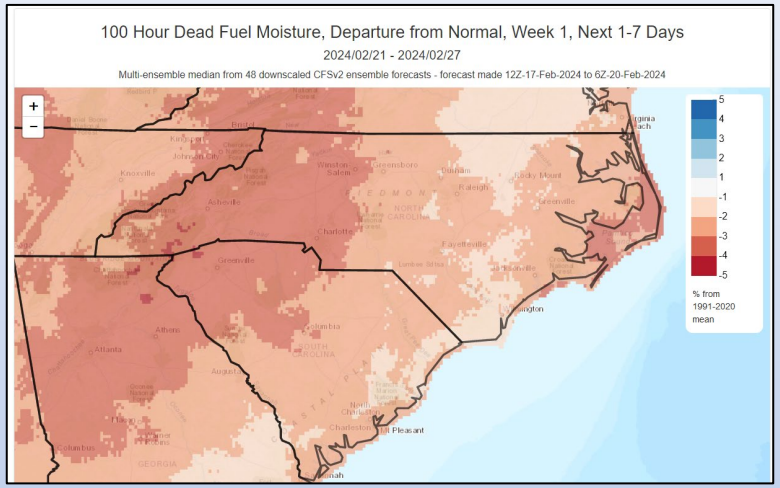
Forecast Day	AQI Range	Category Range	Download KML
Tuesday (Feb 20)	42 to 47	Green	download
Wednesday (Feb 21)	47 to 52	Green to Yellow	download
Thursday (Feb 22)	45 to 50	Green	download
Friday (Feb 23)	35	Green	download

From: ***https://airquality.climate.ncsu.edu/discussion/?view=latest***
DAQ Air Quality Portal: ***https://airquality.climate.ncsu.edu/***

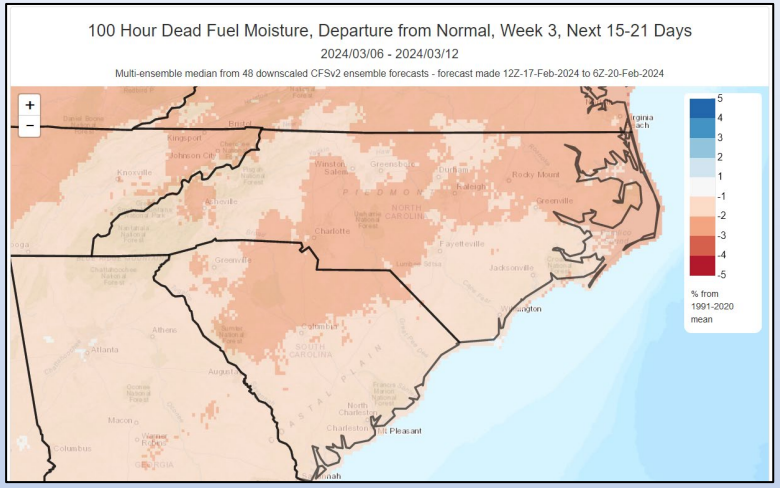
Modeled Departure from Normal by Week: 100-hr Fuels

Output relies on experimental forecast outputs and is subject to change

Week-1



Week-3



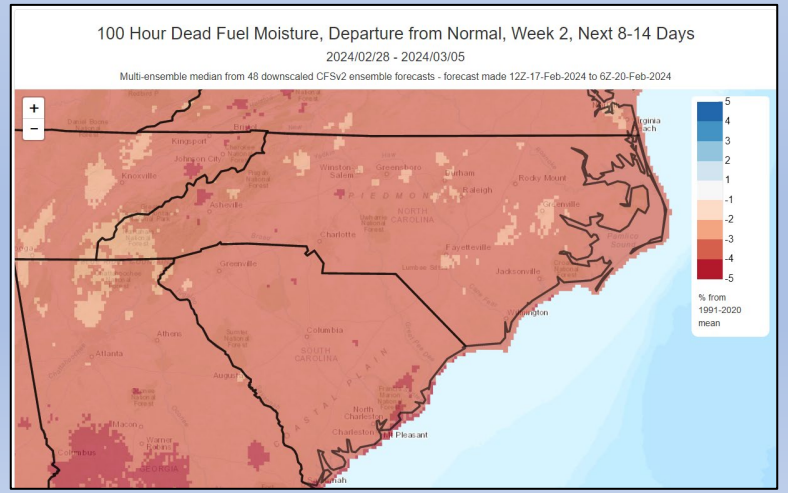
This output can provide insight into general drying trends.

Note more pronounced drying depicted for Weeks 1 & 2. Week 3 & 4 shows potential for fuel moistures to return to more near normal.

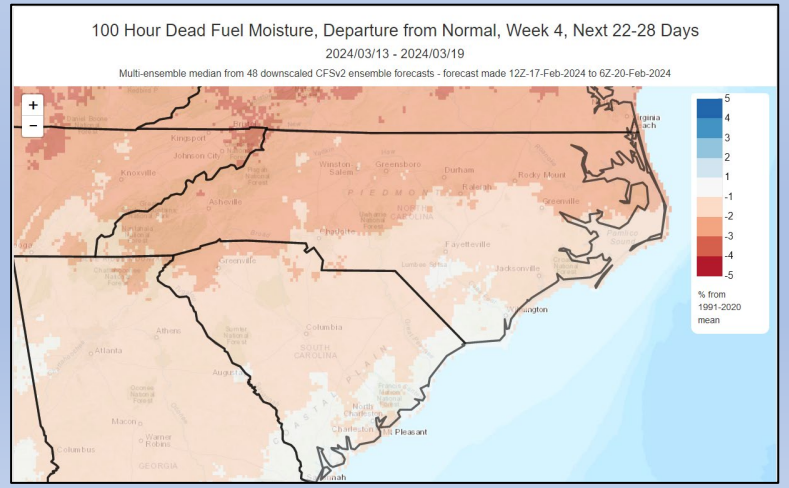
Relates to interactions of warmer/colder temps, moist/dry air masses, precip amt/duration and overnight RH recovery trends.

Important to note that there is significant forecast uncertainty as you go further out in time.

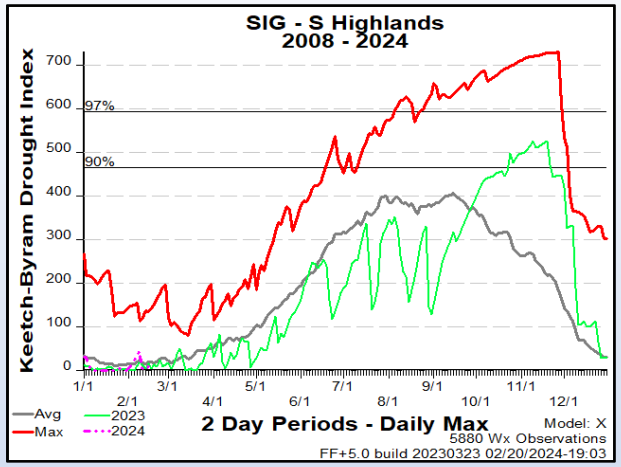
Week-2

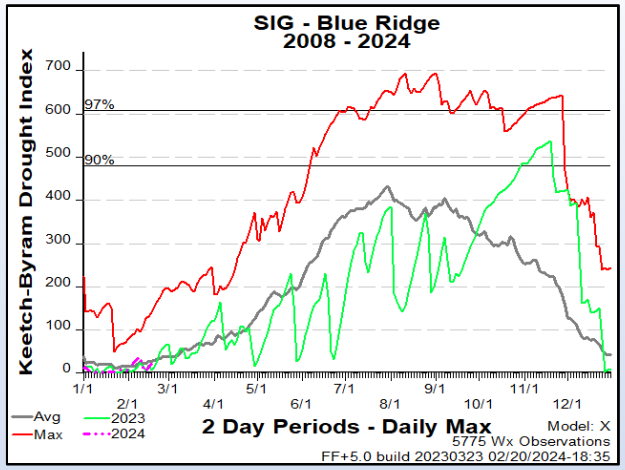


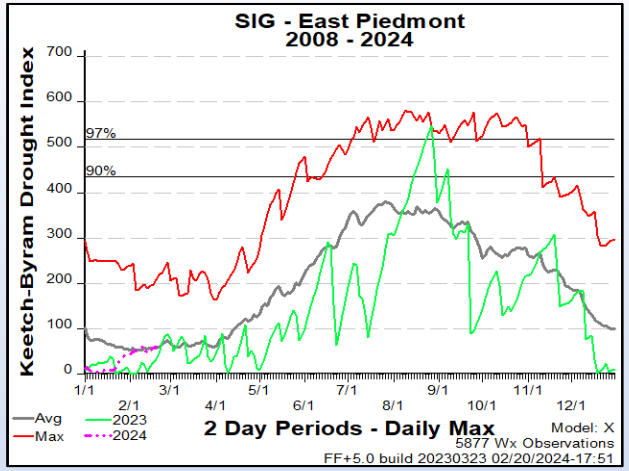
Week-4

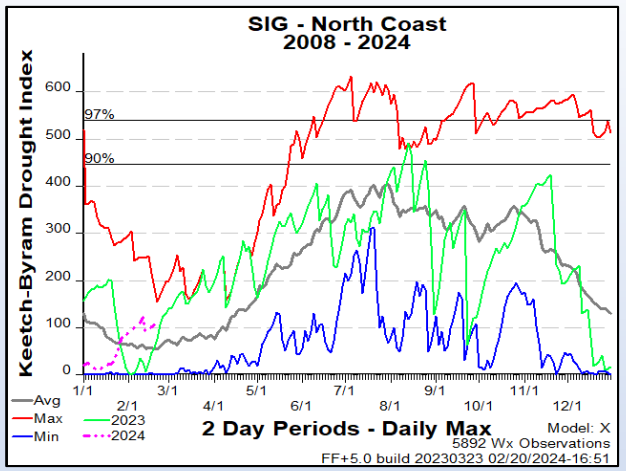


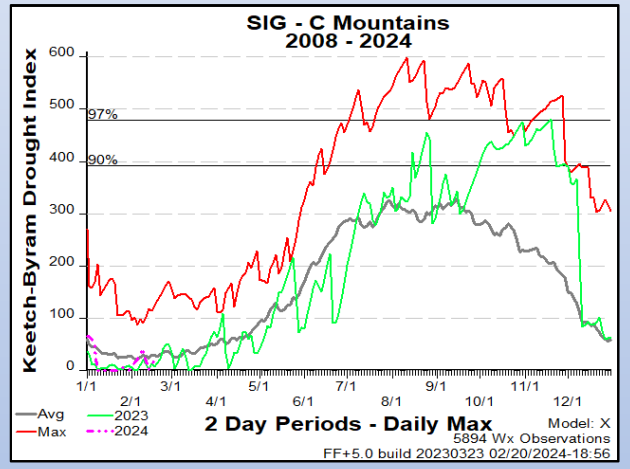
From: https://climatetoolbox.org/tool/Climate-Mapper , 100-hr Map Link

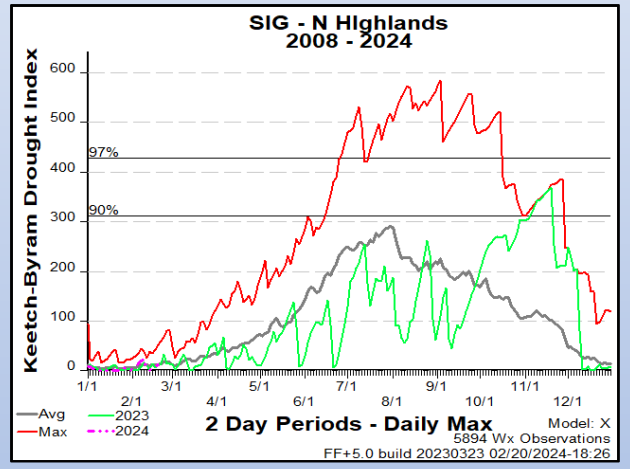


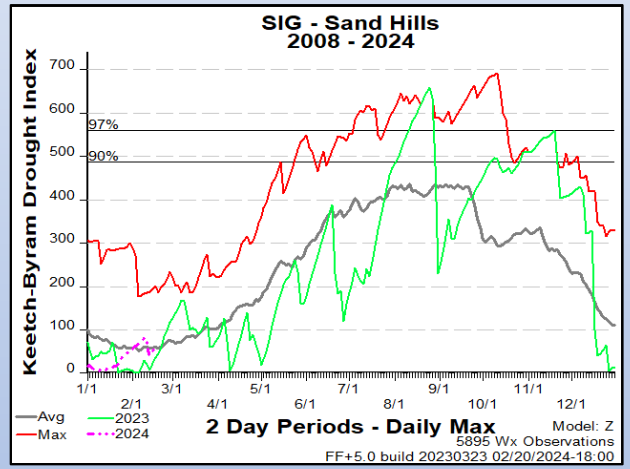


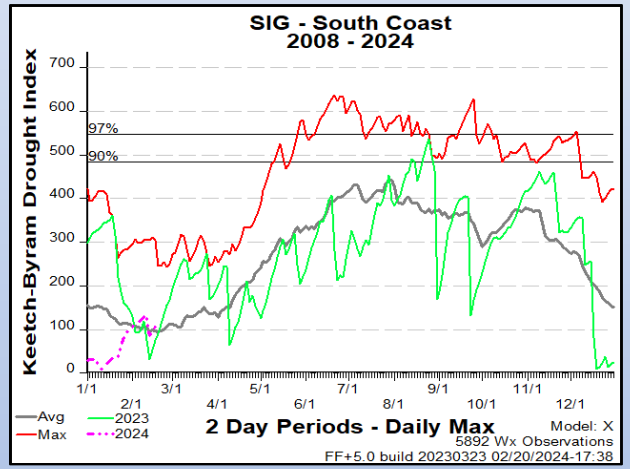


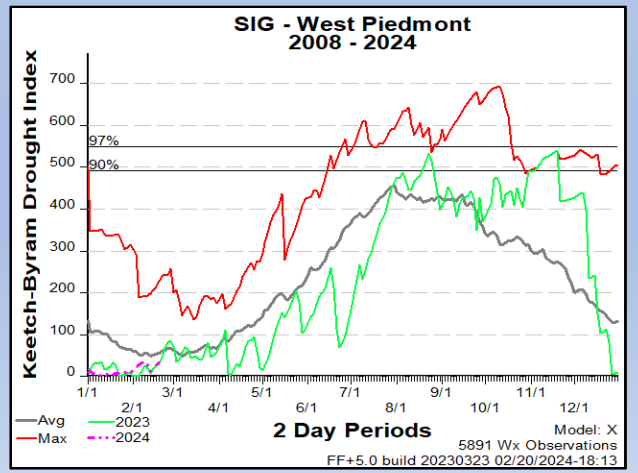






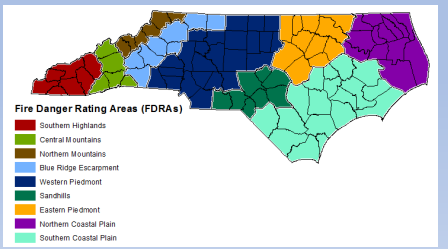


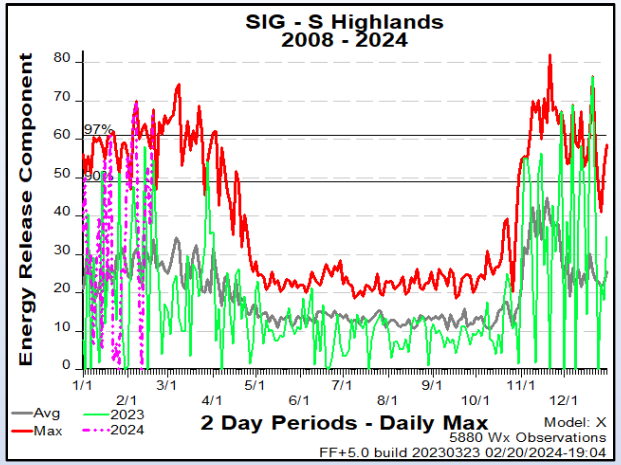


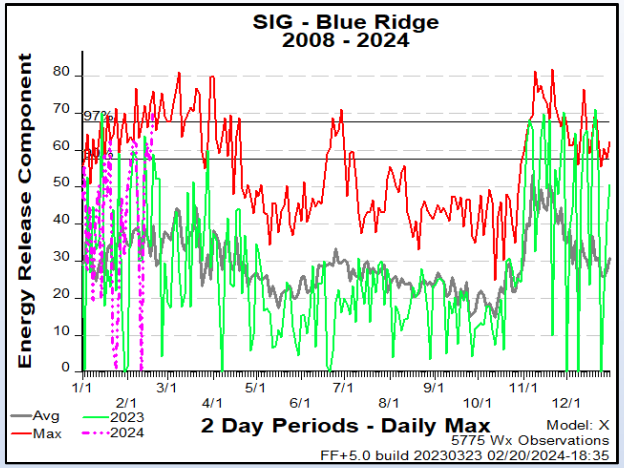


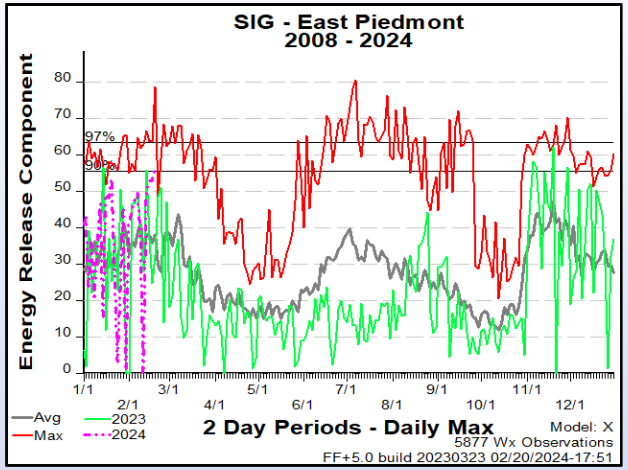
FDRA Outputs from FF+ Run: KBDI

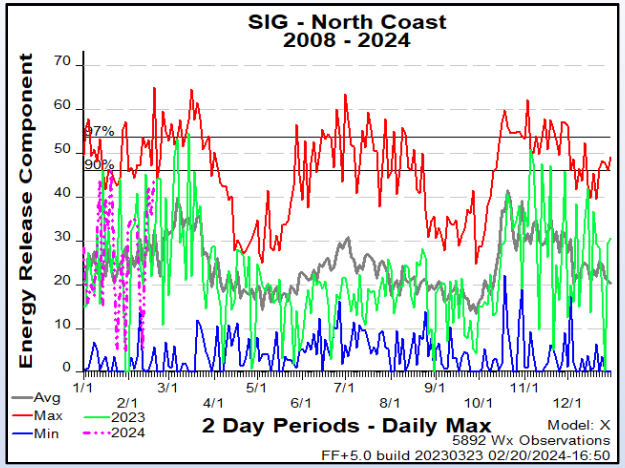
(2008-2024 Data, ending 2/20/24)

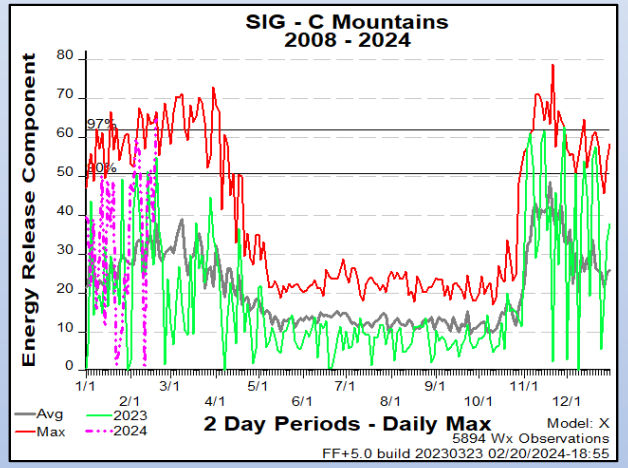


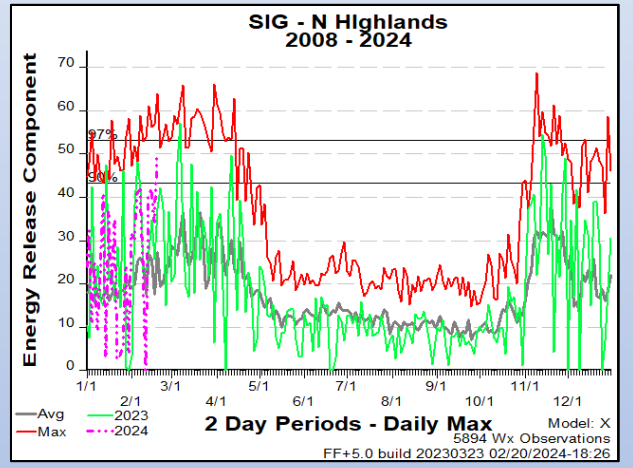


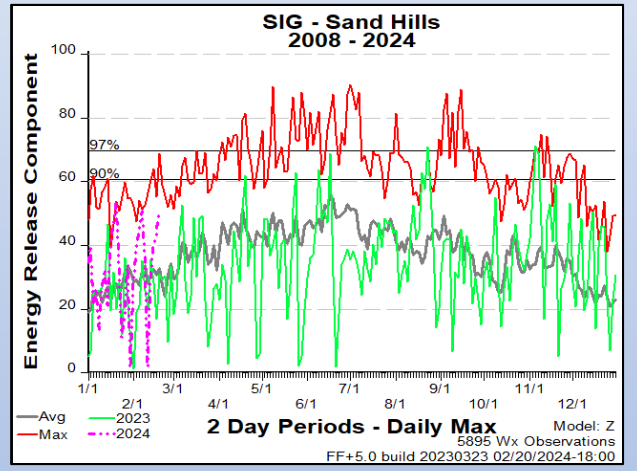


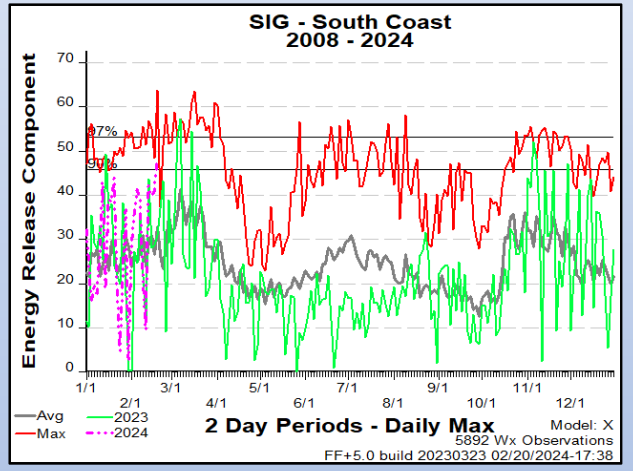


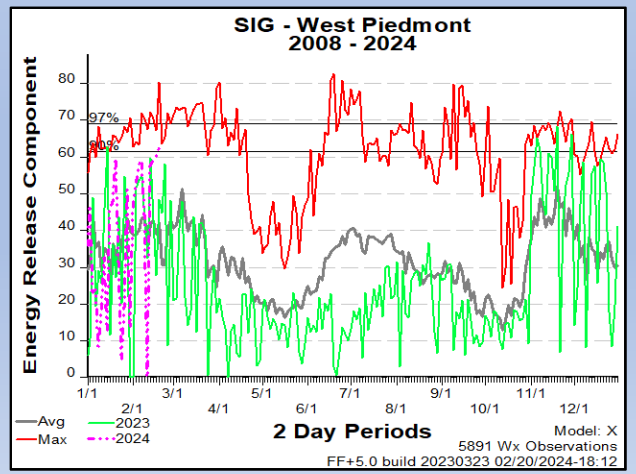












FDRA Outputs from FF+ Run: ERC

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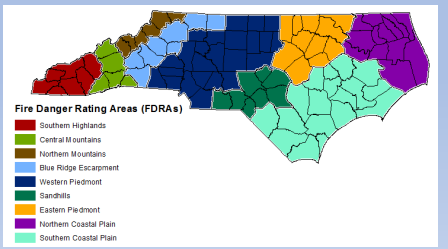

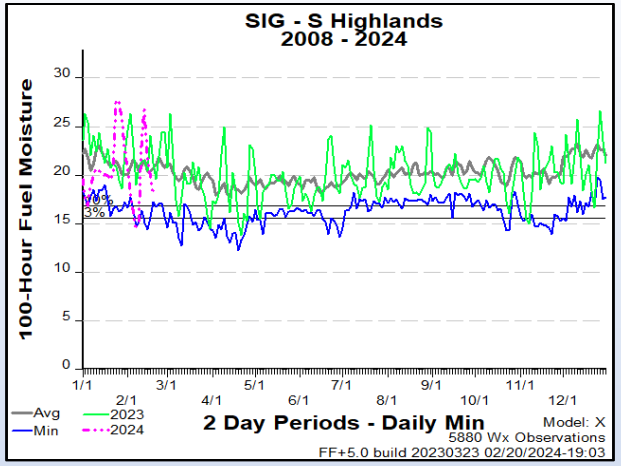

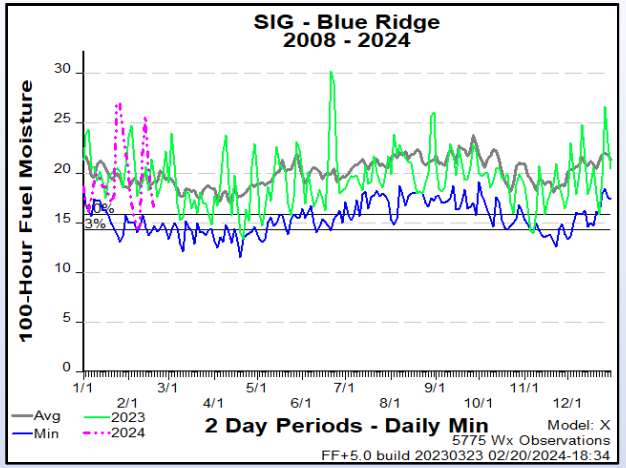

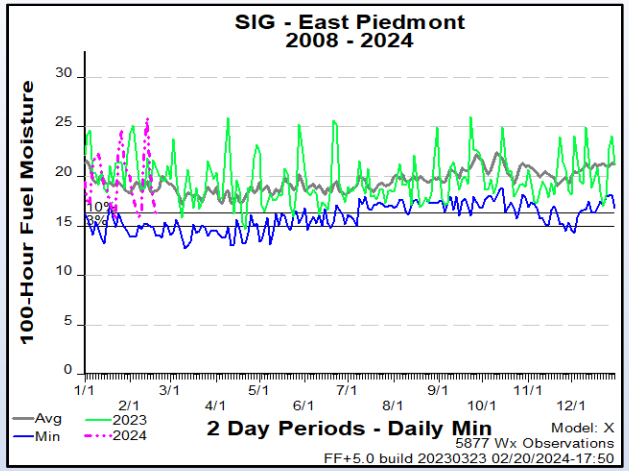

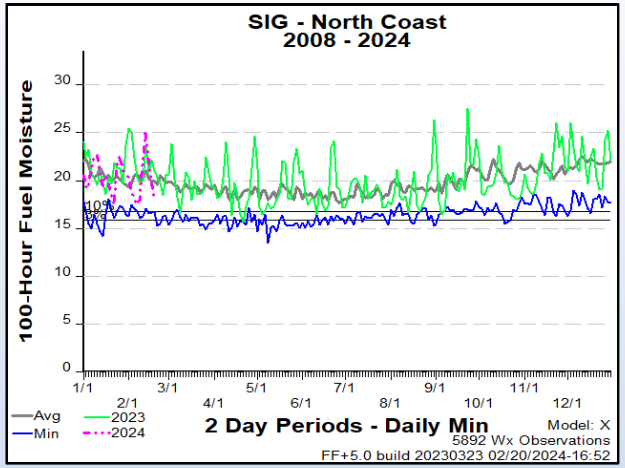

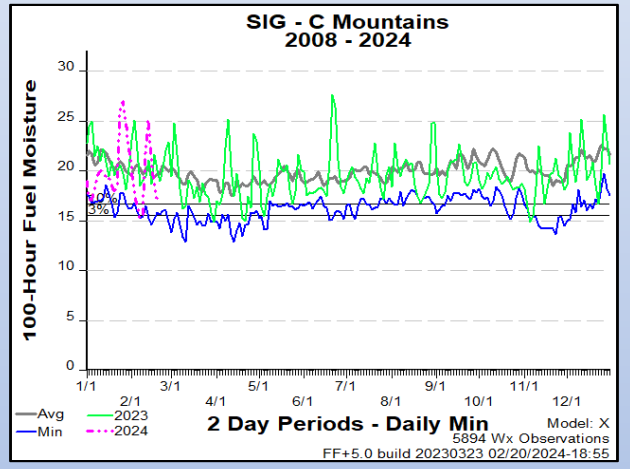

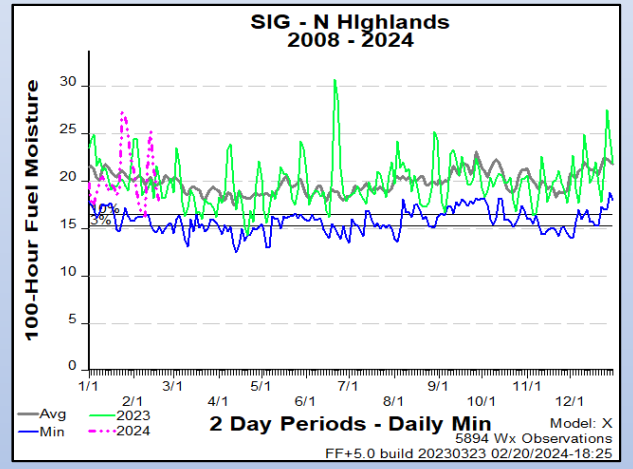

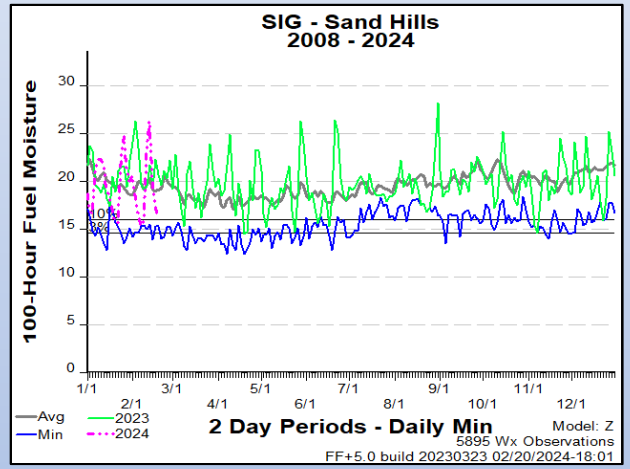

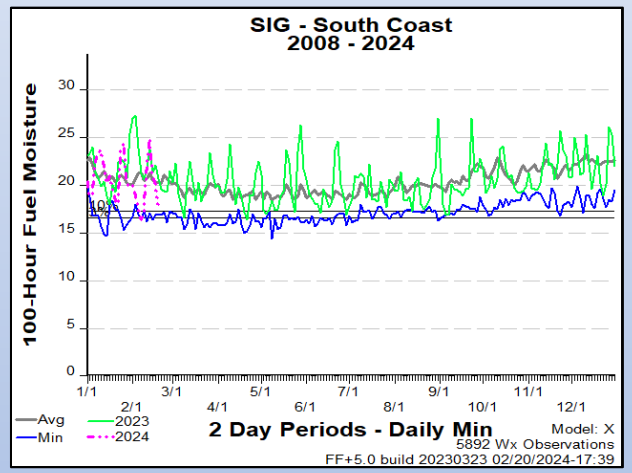

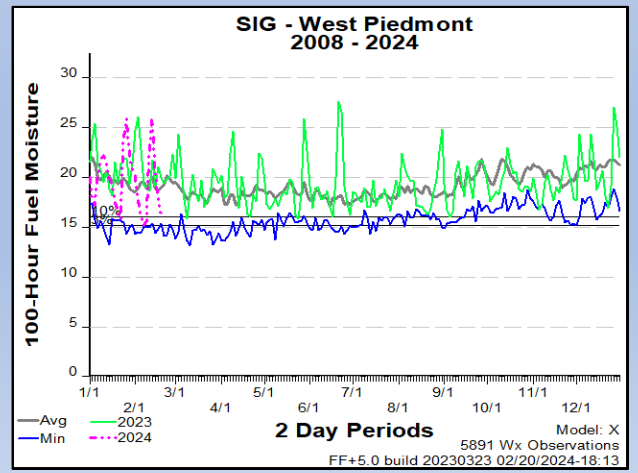

FDRA Outputs from FF+ Run: 100-Hr

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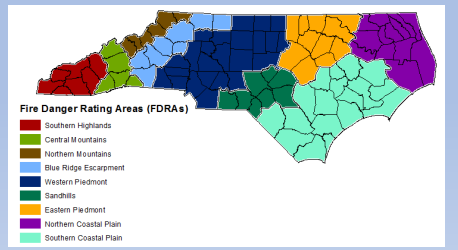

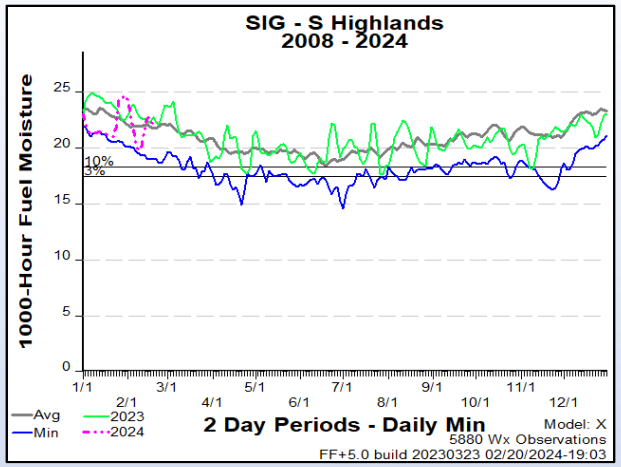

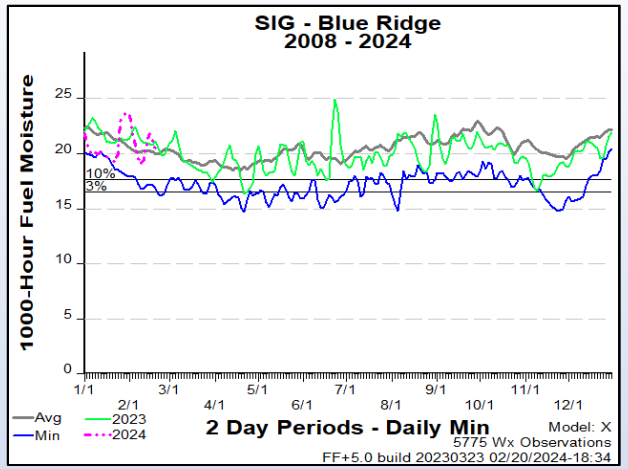

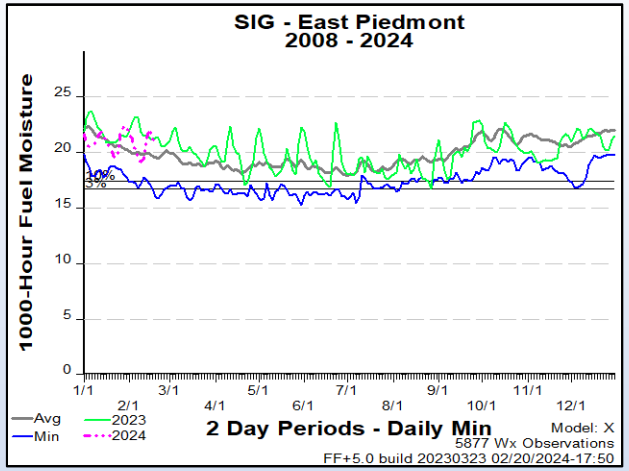

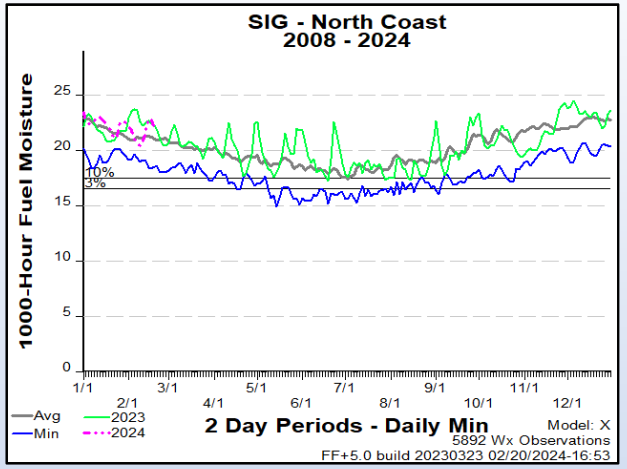

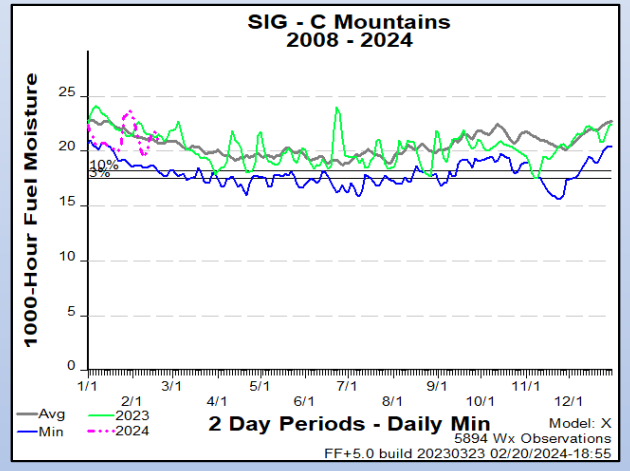

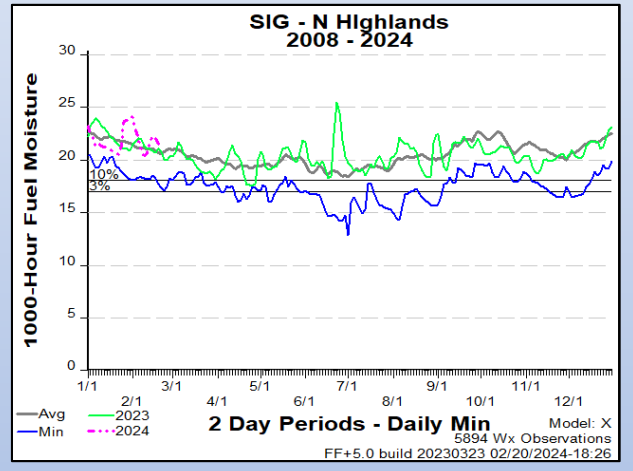

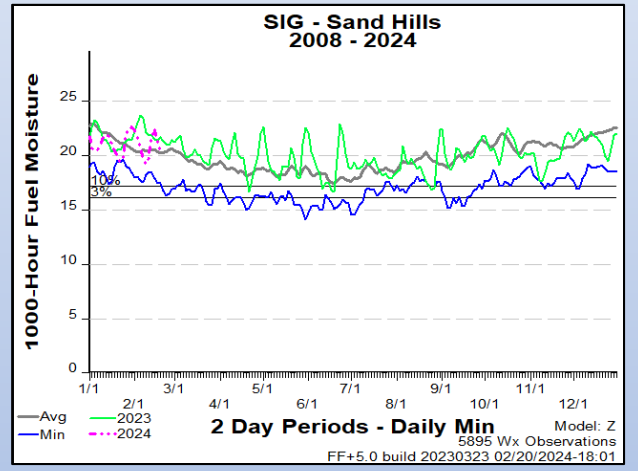

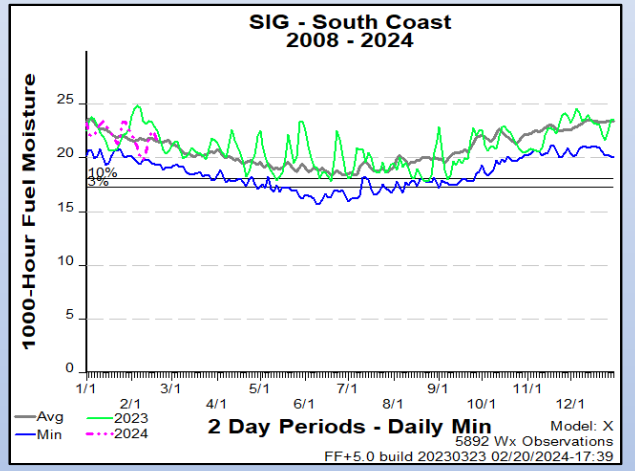

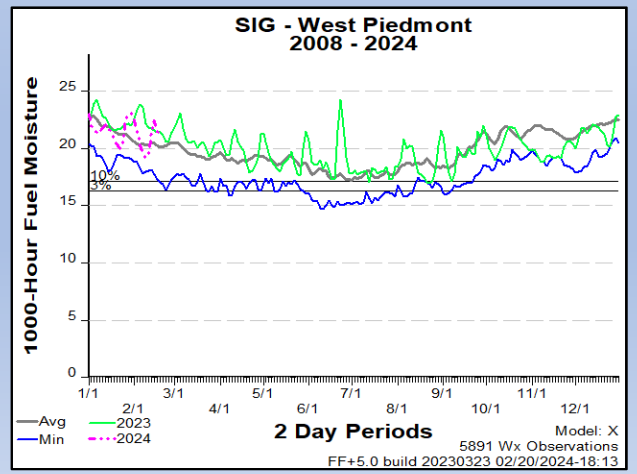

FDRA Outputs from FF+ Run: 1000-Hr

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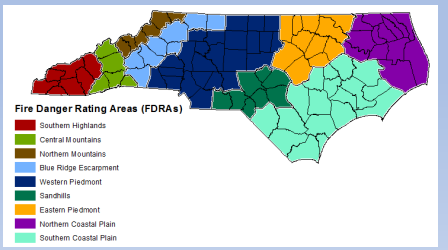
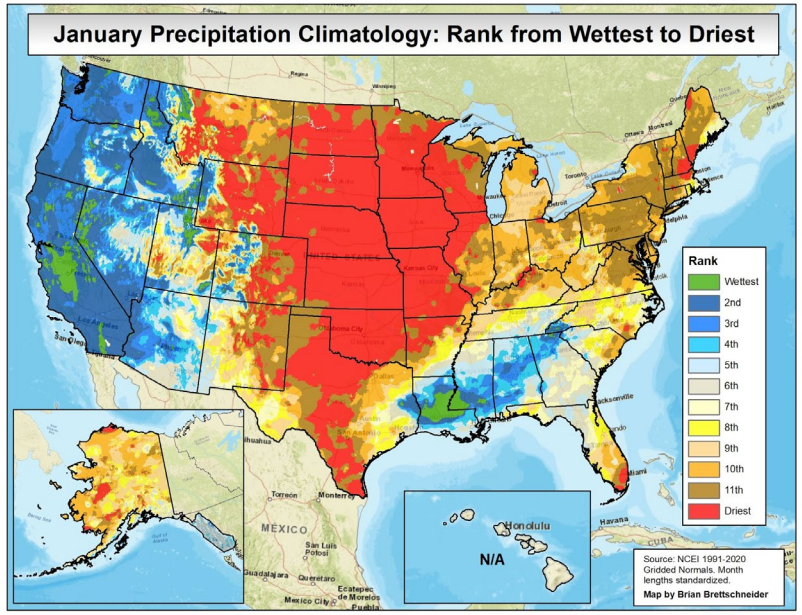
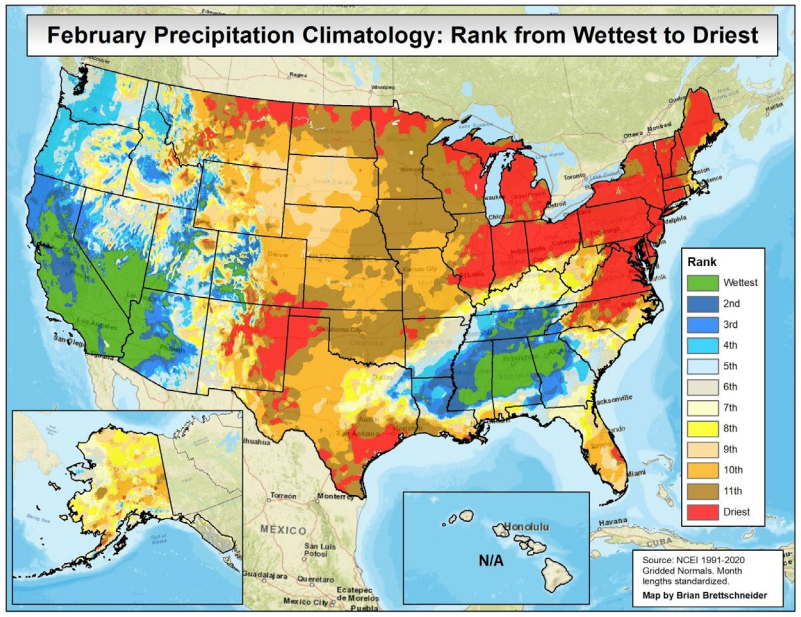
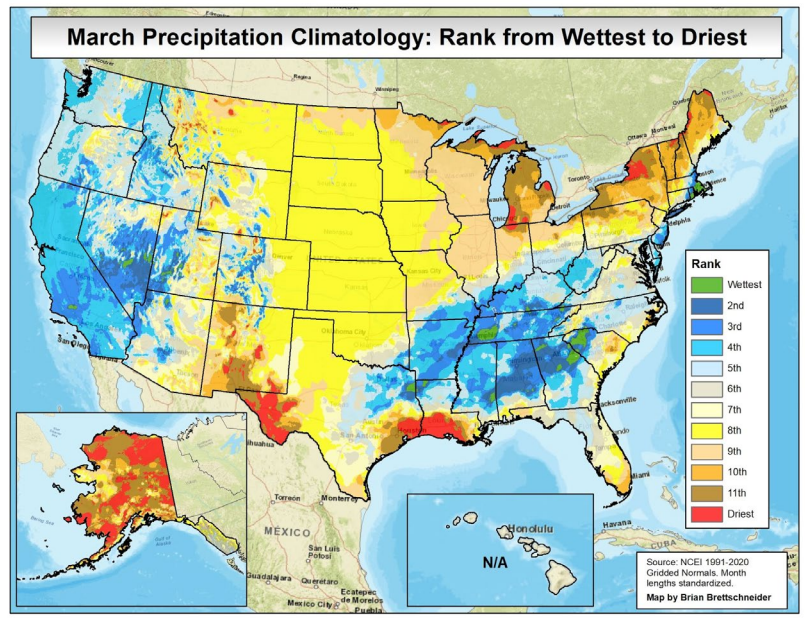
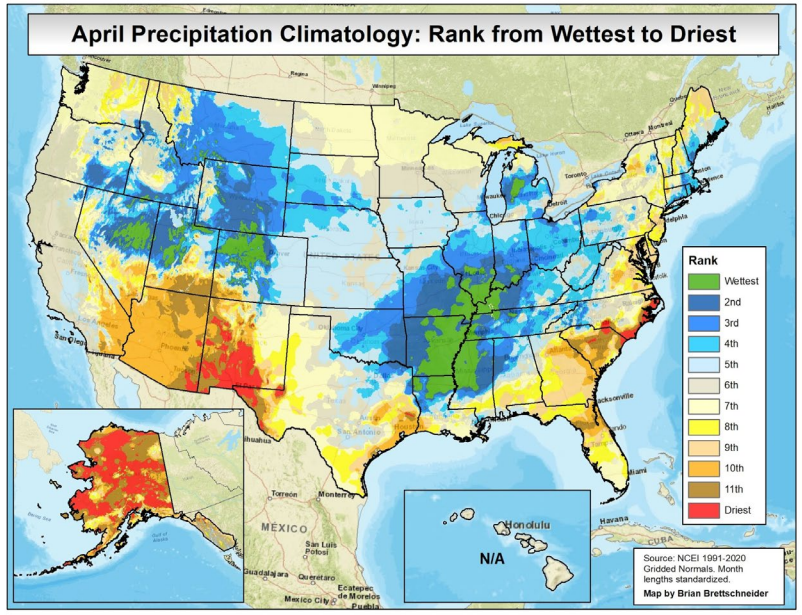


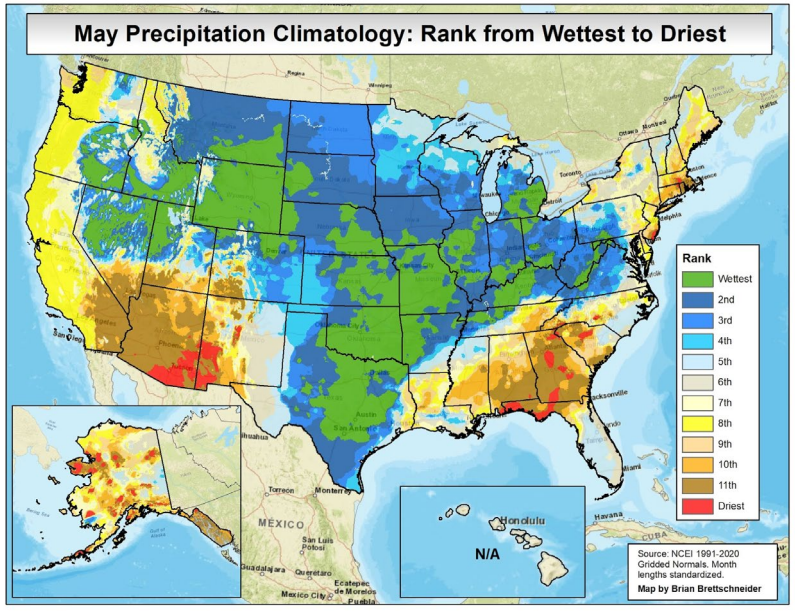
Ranked Monthly Precip Climatology based on Climate Normals: Jan – June (1991-2020)

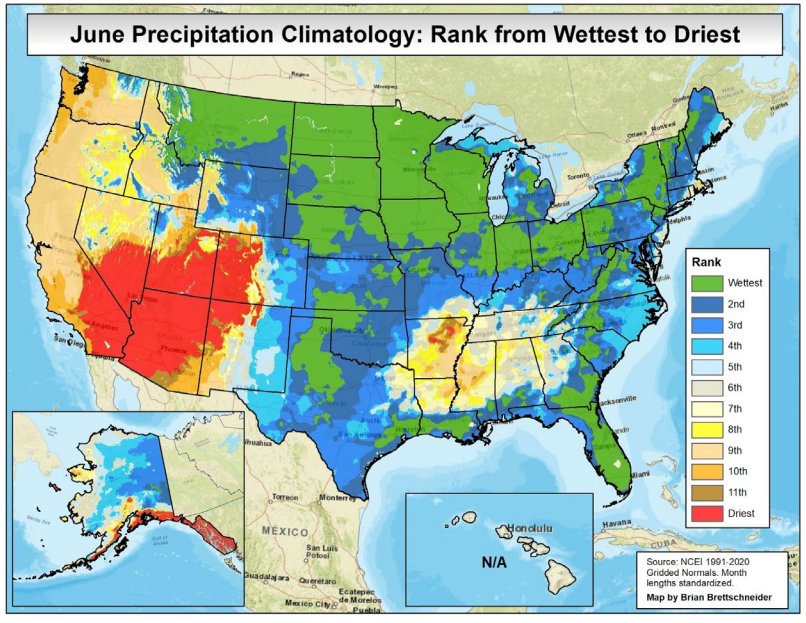










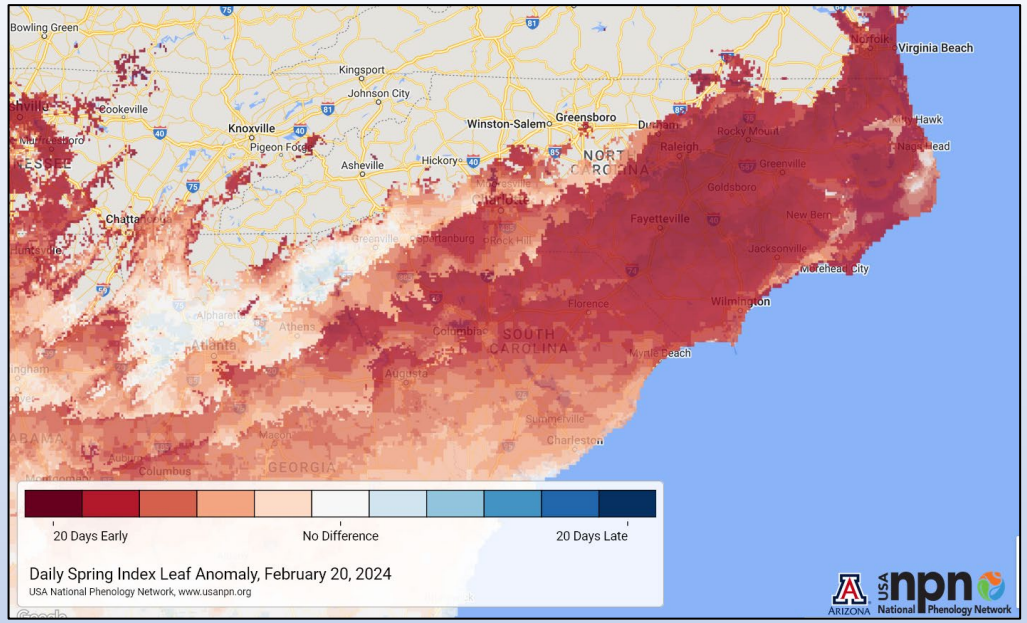


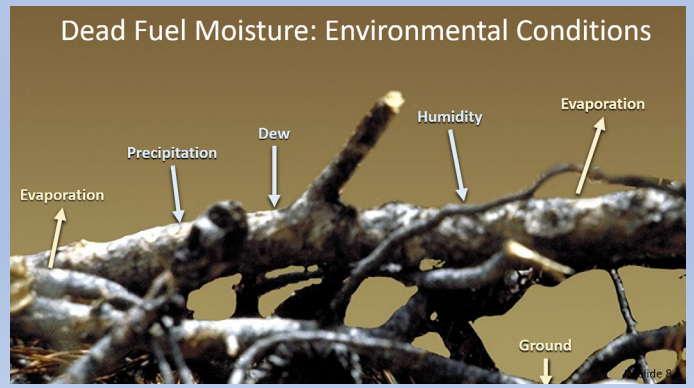
http://us-climate.blogspot.com/search?updated-max=2021-07-07T19:16:00-07:00&max-results=10&start=5&by-date=false

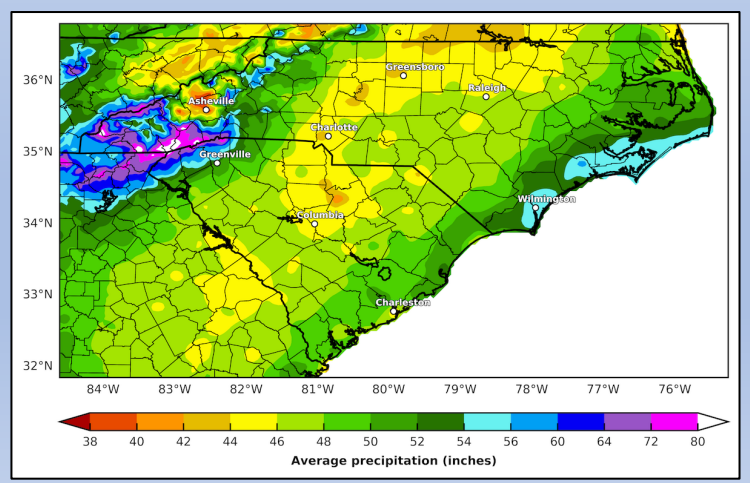
Looking towards Spring

A few things to consider include:

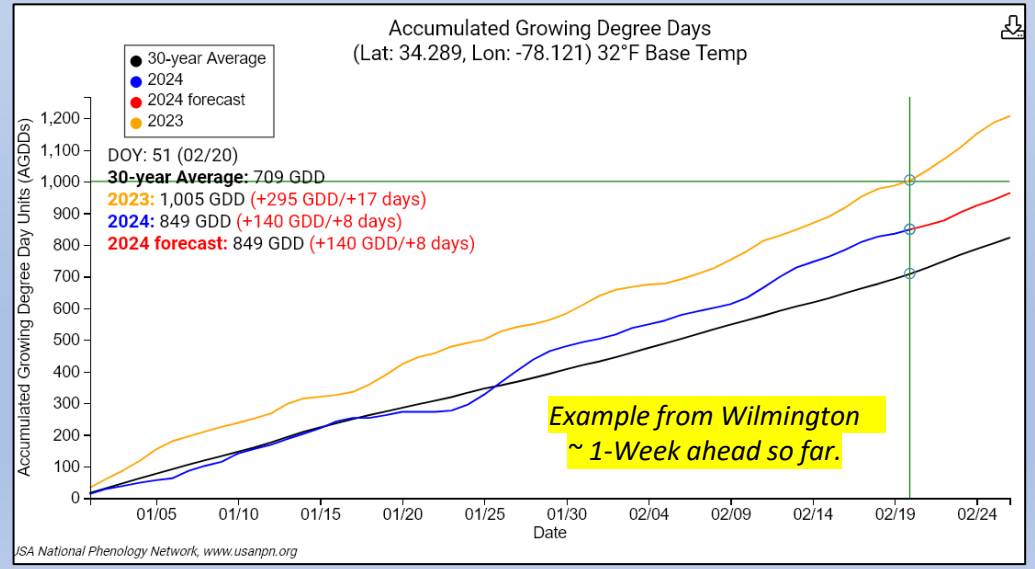
- Live and Dead Fuel Conditions
  - Seasonality of “Green”
  - Waxy Leaved Shrubs - Volatility
  - Dead Fuel Moistures
  - Frost/Freeze Events
  - Accumulation of Growing Degree Days
- Available Soil Moisture, Drought Inputs
- Weather Events, Dry Air masses





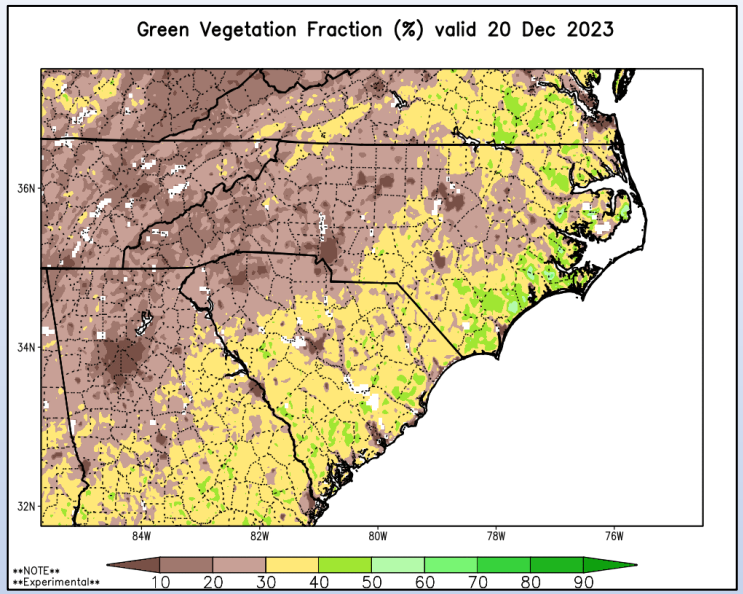


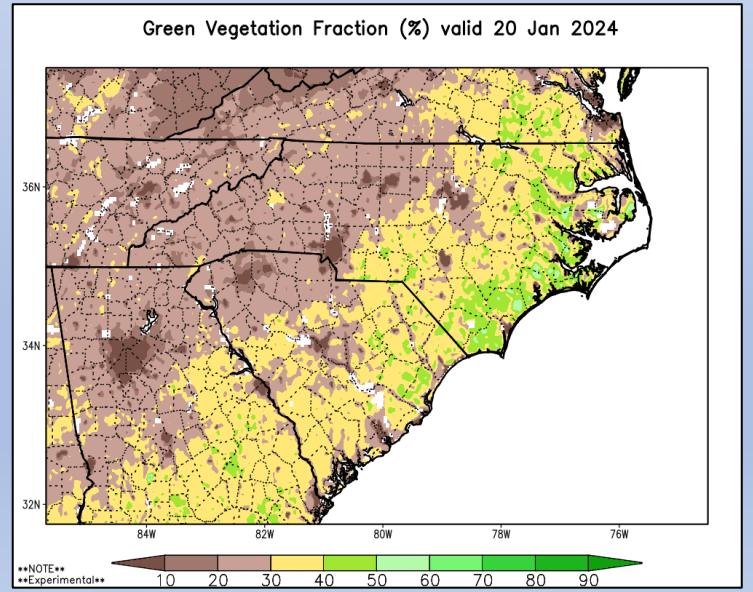
https://www.cisa.sc.edu/atlas/carolinas-precip-map.html

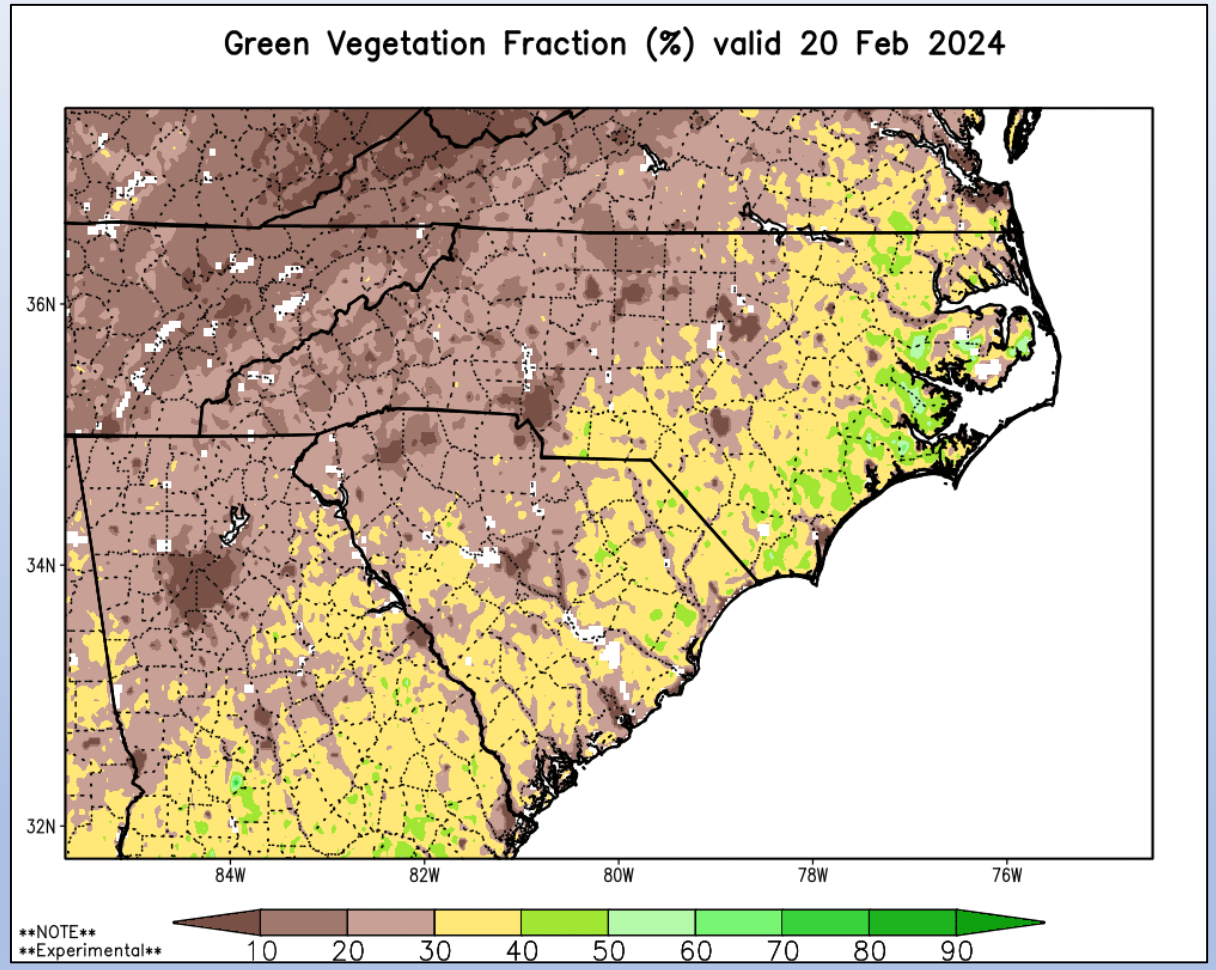


https://data.usanpn.org/vis-tool/#/explore-phenological-findings

Green Veg Fraction – 3 Month Modeled Changes

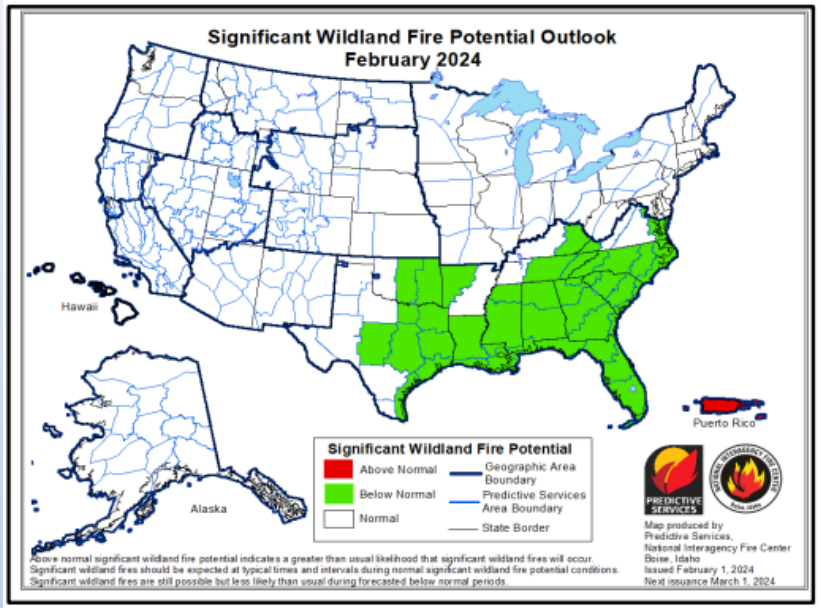


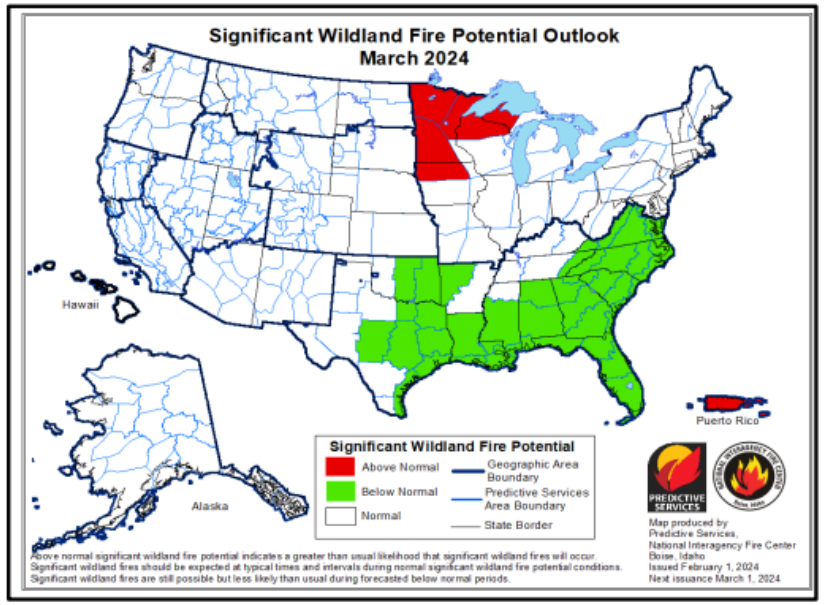


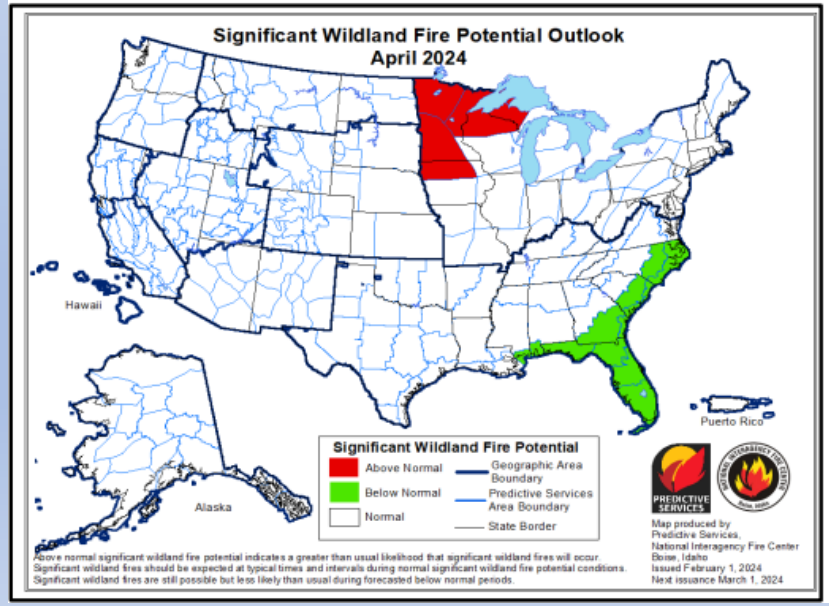


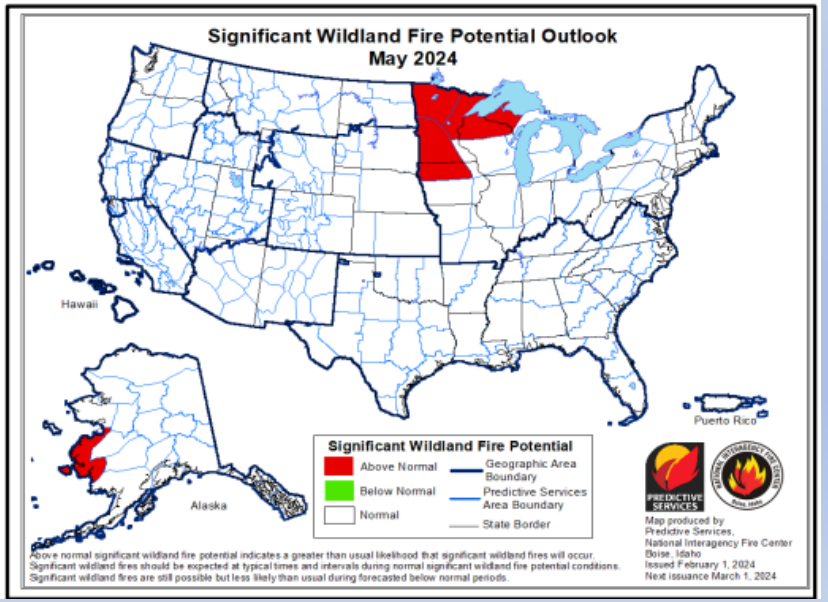
Significant Wildland Fire Potential Outlook:

Updated 2/1/24 – Next Update on 3/1/24









A significant fire is one that requires resources from outside the district (other than aviation). IA potential is based more on shorter term weather factors. Just a few days of dry weather can increase IA activity considerably as we have seen this year.

***Forecast uncertainty could easily lead to an expansion of "Normal" or "Above Normal" Fire Potential if abnormally dry conditions expand/worsen going into Spring.**

Especially for portions of the NC Coastal Plain already showing significant rainfall deficits at 1-month scale. Spring "Green-Up" has the potential to rapidly draw down available soil moisture.

General Fire Activity Discussion:

- For February - IA activity has increased across the state, as wetting rain events began to decrease in amounts and frequency. Overnight recoveries have still been generally good, helping recharge smaller dead fuels. Overall drought conditions have improved for most western counties. Some eastern counties have only seen ~15% of normal precip for the past 30-days.

- **Days where alignment of breezy conditions overlapping with dry soils, dormancy impacts and drying smaller fuels have seen IA increase.**

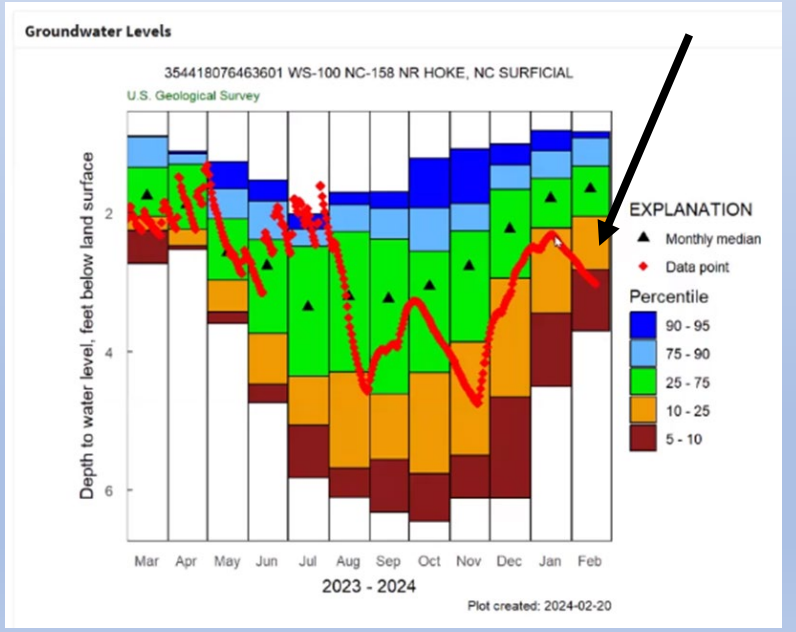
- MTD "209" Criteria Fires:
  - Harnett - Bass Lake - 2/5/2024; (Due to Residence Destroyed)
  - Cherokee - Bonnie Brae - 2/6/2024 (Final Size: 210 acres)
  - Cumberland - Ramsey St - 2/14/2024 (Due to Residence Destroyed)
  - Scotland - Nashville Church - 2/17/2024 (Final Size: 317 acres)

- Predictive Services Significant WF Potential Outlook, See Slide #38:
  - The next update for the 4-month outlook will be 3/1
    - There is still significant forecast uncertainty more than 7-10 days out in storm system track and potential rainfall amounts. Drought impacts to the state were/still are significant, with some locations still having 12-mo deficits of 6"-14" or more.
    - Reminder that Significant WF Potential is not a predictor of "IA Fire" activity for a particular location but suggests larger geographic areas likely requiring larger incident mobilization/out of area support.
    - Good chance of seeing the outlook adjust more to normal +, if the dry spell in the Coastal Plain continues along with drying conditions elsewhere.

- See slides 3-8 for <u>general trends</u> in fire occurrence and acres in a monthly context.
  - We will see daylength continue to increase moving towards summer, along with longer fuel exposure/heating.
  - General trends are subject to local factors (time and space) including drought, fire problem, abnormal weather events, etc.

- The approach of Spring
  - Likely to see continued wide swings in temps, warming degree days generally near normal to +/- 1 week ahead on some species and then chance of frost/freeze damage.
  - The image to the right is of red maple flowering along with road shoulder grasses typical of this time period.
  - The drought well (right) shows current water levels are in the less than 10th percentile for the month in the same area.
  - If Spring "Green-Up" begins to occur without significant rainfall, we will see a rapid drawdown of soil moisture in the most impacted areas (especially those with unmanaged artificial drainage).

Image of Van Swamp Game Land, Beaufort/Washington Counties



Surficial Monitoring Well (NCDEQ) – Near Van Swamp Game Land --

Broader Fuels/Indices Discussion:

- Drought conditions have greatly improved for the western portion of the state, through December and early February.
  - There has been a recent increase in D0, or abnormally dry conditions over the past month to the east (see Slides #17 & 18).
  - KBDI values are generally well below 100, except in previously mentioned areas – but a continued note of caution: Warm temperatures are required to see KBDI substantially increase from day to day. Recent dryness in surface fuels due to lack of rain and dry/warm air are not adequately represented in KBDI outputs during the dormant season. Low KBDI values in the winter are not reflective of overall potential. It is a tool that is very useful in the growing season.
  - 1000-hr fuels have continued to trend more towards seasonal normals, while 100-hr fuels have seen spikes in drying due to lack of rain & other shorter-term weather inputs (see FDRA Fuel Slides).
  - Duff/Organic consumption and smoldering will remain a concern for any fires occurring in remaining drought impacted areas not sufficiently recharged or those that begin to see enhanced drying during green-up.

- Refer to the FDRA Indices and FM slides for FDRA Specific Seasonal Trends.

- A rapid change from a short-duration weather event aligning with dry dormant fuels can lead to significant enhancement of area-wide fire danger and local fire behavior this time of year.

- Fire danger and difficulty of control would likely increase (above normal seasonal evolution) if we see continued abnormal dryness moving into Spring 2024, in combination with vegetation breaking dormancy/rapidly drawing down available soil moisture. This will have to be monitored closely moving into Spring.