

Weekly Fire Danger Assessment NCFS - Region ONE

For Time Period:

Friday (4/28/23) to Thursday (5/4/23)

Created by: Jamie Dunbar

Fire Environment Staff Forester

NC Forest Service

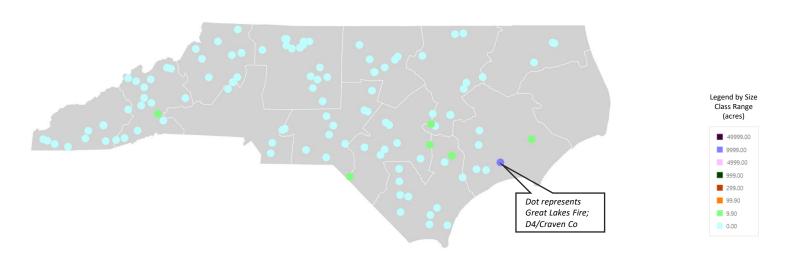
Past 7-Days Signal 14 Activity

	NCFS - Region 1								
	Previous 7-Day Fire Activity (Does Not Include Federal Ownerships)								
Data Source:	Signal 14 Regional Activity Summary Report (Signal 14 is a snapshot in time)								
Date Range:			4/20 - 4/26, 2023						
	Туре	Number		Acres					
,	Wildfires:		Unavailable at time	f Danient Duene notice					
Prescribed Fires	(State & Private Lands):		Unavailable at time of	or Report Preparation					

fiResponse Incident Location Map (for general context)

Date Range: 4/20 – 4/26, 2023

Report: Business Intelligence Module, Response Trends Map



Current and Forecasted Fire Danger Conditions by FDRA

R1

Regional Comments for this Week – R1

Last Resort Fire Notes

- Started 3/24/23
- 5.280 acres
- 100% Containment
- UAS IR Flights as needed
- Maintaining water holding operations

Great Lakes Fire Notes

- Started 4/19/23
- 32,400 acres at 30% Containment (as of evening update on 4/26)
- Being managed by SA Type 1 IMT (Red Team)
- Over 200 personnel, 16 Type-6 Engines, 19 Tractor Plow Units, 5 Aircraft assigned
- Refer to InciWeb Link for most current information: https://inciweb.nwcg.gov/incident-information/ncncf-great-lakes

General Notes:

- Pocosin fuels still very volatile at this point in the growing season
- Consumption of organics continued to be noted as a concern (as seen on Great Lakes Fire)
- Green-up processes are well along with corresponding depletion of soil moisture through the profile
- Dead fuel moistures are beginning to recover with higher RH's and predicted rain showers coming
- Initial Attack has generally declined over the past few days as a result of higher dead fuel moistures and + green-up influences
- Concern for lightning caused ignitions as we progress into our traditional lightning season.

From Today's SACC Daily Outlook Discussion for the Southern Area (SA)

- After widespread wetting rain through Sunday, a drying trend will take hold at least briefly next week as high pressure overspreads the South
- Dry weather taking hold over most of the region (SA) next week may linger into week two across northern portions of the region (SA)
- With green-up fully under way and areas of significant drought improvement likely the next 1-2 weeks, wildfire potential across the region (SA) should continue to decrease heading into mid- May, with the caveat that lightning-induced fires remain possible

Today's (4/27/23) 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

	Averages by FDRA																	
FDRA	STATION_COUNT	NFDR_DATE	ВІ	ERC	IC	SC	KBDI	1HR	10HR	100HR	1000HR	HRB	WOODY	TEMP	RH	WIND	PRECIP	DUR
Southern Highlands	3	2023-04-27	0.00 10.1%	0.00 11.0%	0.00 17.2%	0.00 9.6%	5.33	35.00 100.0%	33.85 99.3%	18.73 46.0%	22.42 76.3%	110.53	104.67	53.3°F	96.7%	ESE 2.3 mph	1.02 in.	16.3
Central Mountains	3	2023-04-27	0.00 8.7%	0.00 9.2%	0.00 15.5%	0.00 8.4%	50.67	35.00 100.0%	33.59 99.4%	20.09 62.9%	21.87 83.1%	157.97	137.33	54.0°F	98.0%	SSE 1.3 mph	0.37 in.	14.7
Northern Highlands	2	2023-04-27	0.00 12.2%	0.05 12.6%	0.00 21.8%	0.00 11.7%	25.00	30.42 89.7%	27.30 90.9%	16.98 21.0%	21.02 66.8%	142.85	136.00	51.0°F	96.5%	NE 0.5 mph	0.15 in.	7.0
Blue Ridge Escarpment	3	2023-04-27	0.00 10.1%	0.00 10.7%	0.00 16.6%	0.00 9.8%	103.33	34.52 100.0%	30.07 94.1%	18.15 34.2%	17.03 9.3%	128.50	119.67	53.0°F	98.3%	NE 3.7 mph	0.26 in.	8.7
Western Piedmont	3	2023-04-27	0.00 7.2%	0.00 7.6%	0.00 12.3%	0.00 6.9%	137.33	32.73 97.8%	28.35 93.6%	19.22 62.7%	21.74 87.4%	85.73	87.33	60.0°F	96.0%	E 3.0 mph	0.19 in.	5.7
Sandhills	3	2023-04-27	2.20 7.5%	2.90 7.1%	0.00 11.7%	0.20 7.5%	73.33	26.62 92.2%	31.21 97.3%	19.76 68.3%	21.15 77.5%	107.50	107.67	63.0°F	91.7%	NE 3.0 mph	0.47 in.	14.0
Eastern Piedmont	4	2023-04-27	5.75 7.1%	2.43 8.1%	0.18 10.9%	2.13 6.2%	58.50	24.77 91.1%	28.88 95.8%	18.90 55.5%	20.88 78.3%	123.33	119.25	60.8°F	87.3%	E 6.5 mph	0.19 in.	7.5
Southern Coastal	7	2023-04-27	12.20 8.9%	5.64 10.9%	0.63 16.0%	4.29 9.3%	165.71	23.54 90.7%	27.29 92.5%	19.14 46.5%	21.98 77.3%	212.04	187.29	69.7°F	78.3%	ENE 5.0 mph	0.45 in.	8.0
Northern Coastal	4	2023-04-27	5.38 8.4%	2.30 9.6%	0.10 12.2%	2.35 8.1%	279.75	24.84 89.6%	28.35 93.5%	18.40 38.0%	21.32 70.2%	117.70	138.75	65.3°F	75.0%	E 4.5 mph	0.22 in.	7.5

BI/ERC/IC/SC Percentiles (%) 0 10 20 30 40 50 60 70 80 90

Fuel Moisture Percentiles (%) 0 10 20 30 40 50 60 70 80 90

Important notes for next slide group:

A. Current ERC, KBDI, 100-Hr & 1000-Hr Graphics:

These are extracts from FF+ using weekly observation data downloaded from WIMS.

B. 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.

Tool Summary:

The forecast matrix was created using standard NFDRS and weather forecast data:

- Weather conditions and NFDRS outputs are forecasted over the next 7 days by NWS for SIG stations in each FDRA.
- Weather variable ranges and breakpoints were defined by FDRA stakeholders and relate to Pocket Card notes.
- Maximum temperatures in the Critical range are color-coded with shades of red to help visually distinguish daily variations. The brightest red color corresponds to temperatures of 100°F or greater.

Fire danger forecast indices and component values are grouped into three categories based on historical percentiles, assessed using the FF+ All Days filter through 2021:

- Low to Moderate (0 to 74th percentile); shown in blue-green
- High (75th to 89th percentile); shown in yellow
- Very High to Extreme (90th+ percentile); shown in red and labeled as Critical

Dead fuel moisture forecast values are grouped into three categories based on historical percentiles, assessed using the FF+ All Days filter through 2021:

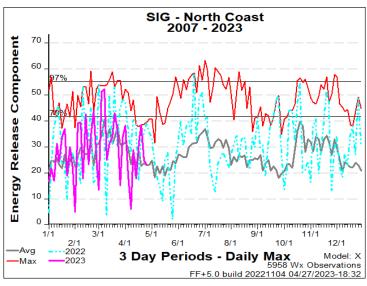
- Low to Moderate (26th to 100th percentile); shown in blue-green
- High (11th to 25th percentile); shown in yellow
- Very High to Extreme (0 to 10th percentile); shown in red and labeled as Critical

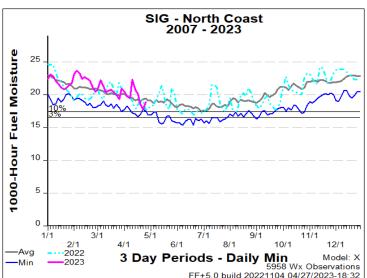
Other Notes:

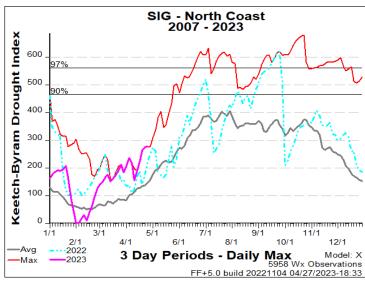
- Read the key and notes for each FDRA, included on the outlook matrix page.
- Forecasts are variable and can change significantly over a forecast cycle and across the landscape.
- This is another tool for gaining better situational awareness, and should be used for general planning purposes only.
- The outlook matrix is refreshed when an FDRA is selected, using the most recent forecast data available at that time. The 7th day may
 drop off or display partial data prior to the afternoon/evening forecast update.
- Daily updates to NFDRS forecasts occur around 1530 daily, while general weather forecasts are updated around 1730 daily.

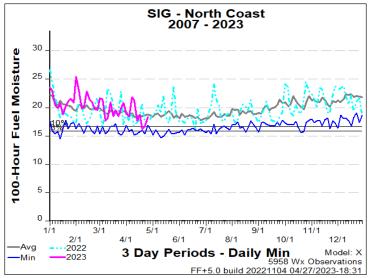
Region Specific – North Coast











Weekly Outlook

Northern 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	FRI 28-Apr	SAT 29-Apr	SUN 30-Apr	MON 01-May	TUE 02-May	WED 03-May	THU 04-May
Avg. Max. Temp. (°F)	72	80	75	71	71	69	72
Avg. Min. Humidity (%)	79	54	70	36	37	37	36
Avg. 20' Wind Speed (mph)	9	6	9	12	11	11	8
Avg. Wind Direction*	SE	WSW	S	W	WSW	W	WNW
Avg. Probability of Precip. (%)	96	57	82	4	7	3	3
Days Since a Wetting Rain**	0.0	1.0	0.0				
Forecast ERC (Fuel Model X)	6.3	12.3	10.3	16.1	30.0	29.6	24.5
Forecast BI (Fuel Model X)	25.8	28.2	32.1	47.5	86.5	77.0	53.1
Forecast IC (Fuel Model X)	1.0	1.7	1.8	4.8	9.6	8.1	5.1
Forecast 100-Hr. FMC	22.7	23.9	25.9	27.5	24.9	22.0	20.3
Forecast 1000-Hr. FMC	21.4	21.5	22.3	22.4	22.9	22.8	23.1
KBDI	279.8						

Data Source:

- Weather forecasts come from the National Weather Service's <u>Digital Forecast Database</u>. 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 <u>NFDRS Forecast</u> product does not include precipitation amounts,
 which are used to adjust KBDI from day to day

Values in the table above are averages from 4 stations in this FDRA:

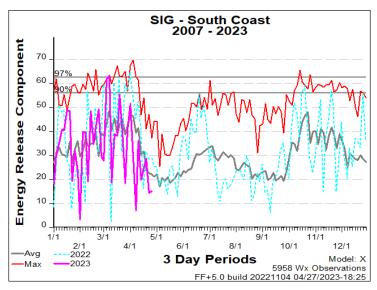
- Elizabeth City (311503)
 Greens Cross (313001)
 Pocosin Lakes (315201)
- Fairfield (317901)

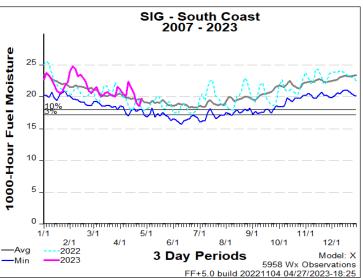
and season

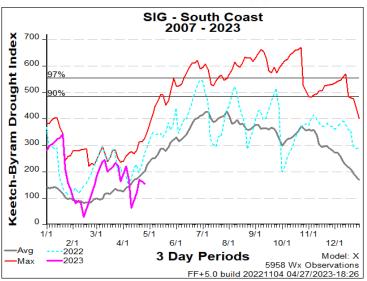
KEY	Low to Moderate Burning Conditions	Burning Conditions Can be High CAUTION	Burning Conditions Can be Critical WATCH OUT!			
Avg. Max. Temp.	Less than 45°F	Between 45°F and 55°F	Greater than 55°F			
Avg. Min. Humidity	Greater than 40%	Between 35% and 40%	Less than 35%			
Avg. 20' Wind Speed	Less than 10 mph	Between 10 mph and 15 mph	Greater than 15 mph			
Avg. Wind Direction*	Criticality of wind dire	ction is highly dependent on burn ope	rations and/or structures threatened.			
Days Since a Wetting Rain**	A wetting rain is defin	ed as 0.10" or greater. This is an avera	ge of the FDRA stations noted above.			
Energy Release Comp.	Less than 39.3	Between 39.3 and 48	Greater than 48			
Burning Index	Less than 78	Between 78 and 96.8	Greater than 96.8			
Ignition Component	Less than 9.3	Between 9.3 and 12.8	Greater than 12.8			
100-Hour Fuel Moisture	Greater than 17.7%	Between 16.8% and 17.7%	Less than 16.8%			
1000-Hour Fuel Moisture	Greater than 18.5%	Between 17.5% and 18.5%	Less than 17.5%			
KBDI	Less than 365	Between 365 and 463	Greater than 463			
Other factors to consider when determining fire danger: sky conditions, precipitation amount, number of days since rain,						

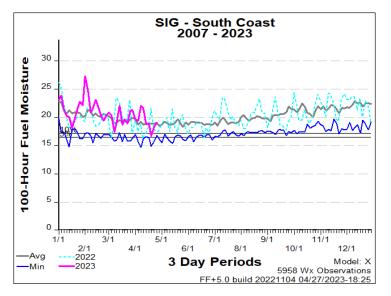
Region Specific – South Coast











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	FRI 28-Apr	SAT 29-Apr	SUN 30-Apr	MON 01-May	TUE 02-May	WED 03-May	THU 04-May
Avg. Max. Temp. (°F)	78	83	77	72	73	71	73
Avg. Min. Humidity (%)	69	49	66	35	38	36	34
Avg. 20' Wind Speed (mph)	7	5	11	11	11	9	8
Avg. Wind Direction*	S	WSW	SSW	W	WSW	W	WNW
Avg. Probability of Precip. (%)	78	73	86	4	6	2	2
Days Since a Wetting Rain**	0.0	1.0	0.0				
Forecast ERC (Fuel Model X)	8.0	14.8	12.5	20.2	25.3	24.7	24.5
Forecast BI (Fuel Model X)	21.4	29.3	41.3	48.9	57.2	50.5	41.1
Forecast IC (Fuel Model X)	1.1	2.4	3.3	6.0	7.5	6.2	4.9
Forecast 100-Hr. FMC	22.4	23.3	24.9	25.1	22.6	20.6	19.3
Forecast 1000-Hr. FMC	22.1	22.1	22.7	22.7	22.8	22.9	22.9
KBDI	165.7						

Data Source:

- Weather forecasts come from the National Weather Service's <u>Digital Forecast Database</u>. 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 <u>NFDRS Forecast</u> 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)

and season

Sunny Point (319803)

KEY	Low to Moderate Burning Conditions	Burning Conditions Can be High CAUTION	Burning Conditions Can be Critical WATCH OUT!
Avg. Max. Temp.	Less than 50°F	Between 50°F and 65°F	Greater than 65°F
Avg. Min. Humidity	Greater than 40%	Between 35% and 40%	Less than 35%
Avg. 20' Wind Speed	Less than 5 mph	Between 5 mph and 10 mph	Greater than 10 mph
Avg. Wind Direction*	Criticality of wind dire	ction is highly dependent on burn ope	rations and/or structures threatened.
Days Since a Wetting Rain**	A wetting rain is define	ed as 0.10" or greater. This is an avera	ge of the FDRA stations noted above.
Energy Release Comp.	Less than 36.4	Between 36.4 and 47.2	Greater than 47.2
Burning Index	Less than 68.3	Between 68.3 and 89.5	Greater than 89.5
Ignition Component	Less than 7.9	Between 7.9 and 12	Greater than 12
100-Hour Fuel Moisture	Greater than 18.2%	Between 17.3% and 18.2%	Less than 17.3%
1000-Hour Fuel Moisture	Greater than 19%	Between 18% and 19%	Less than 18%
KBDI	Less than 385	Between 385 and 486	Greater than 486
Other factors to consider who	en determining fire dang	ger: sky conditions, precipitation an	nount, number of days since rain,

Outlook Summary Table – R1

Summary Table by FDRA using count of colored blocks in a day's forecast.

Forecast Subject to Change

Key: 4+ Red Blocks on a Day = "Critical" Day Potential; Red Color

4+ Yellow or Combo of Yellow/Red = "High" Day Potential; Yellow Color

6+ Blue-Green Blocks = "Low to Mod" Potential Day; Blue-green Color

Date	Day of Wook	FDRA Matrix Summary - NCFS Region 1					
Date	Day of Week	North Coast	South Coast				
28-Apr	Fri	Low/Mod	Low/Mod				
29-Apr	Sat	Low/Mod	Low/Mod				
30-Apr	Sun	Low/Mod	Low/Mod				
1-May	Mon	Low/Mod	Low/Mod				
2-May	Tues	High	Low/Mod				
3-May	Wed	Low/Mod	Low/Mod				
4-May	Thurs	Low/Mod	Low/Mod				

Wakefield NWS (Fire Weather Planning Forecast Discussion):

```
National Weather Service WAKEFIELD VA 338 PM EDT Thu Apr 27, 2023
```

```
.DISCUSSION...
```

Strong area of low-pressure approaches from the southwest this evening and tracks across the region late tonight into Friday bringing widespread rain. Another low-pressure system will impact the region by Sunday. Cooler and drier conditions prevail early next week.

Newport/Morehead City NWS (Fire Weather Planning Forecast Discussion):

National Weather Service Newport/Morehead City NC 246 PM EDT Thu Apr 27, 2023

.DISCUSSION...

Higher humidity and widespread, wetting rainfall, is expected through Friday morning, along with gusty east to southeast winds. Thunderstorms will be possible as well during this time. Somewhat drier air arrives on Saturday, along with much warmer conditions. Another strong cold front then moves through with rain and thunderstorms on Sunday.

Of note, a very dry airmass moves back in next week.

Wilmington NWS (Fire Weather Planning Forecast Discussion):

National Weather Service Wilmington NC 320 PM EDT Thu Apr 27, 2023

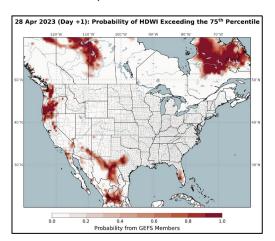
.DISCUSSION...

A warm front will move through tonight with widespread moderate to possibly heavy rain into early Friday. Drier conditions then expected through Saturday with wetter conditions again Saturday night into Sunday night as another storm system impacts the area. Cooler and drier conditions then likely into mid week.

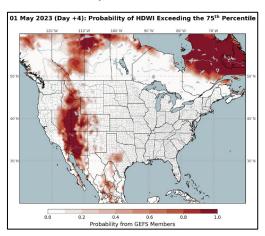
Fog potential for tonight is Moderate inland/Low coast.

Hot-Dry-Windy Index (HDW)

Friday > 75th Percentile

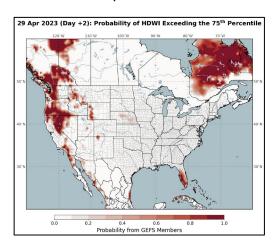


Monday > 75th Percentile

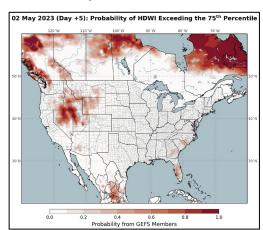


- Another visualization tool to pick up on broader weather, but with *limitations
- Only uses Max VPD (atmospheric moisture & temp) & Max Wind Speed to generate outputs
- Coarse Resolution 0.5 Degree Grid
- No Account of Local Fuel Conditions and Topo

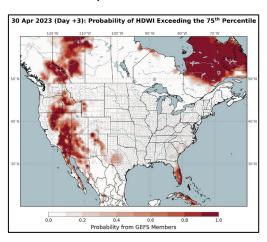
Saturday > 75th Percentile



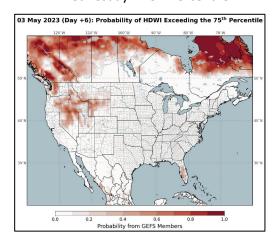
Tuesday > 75th Percentile



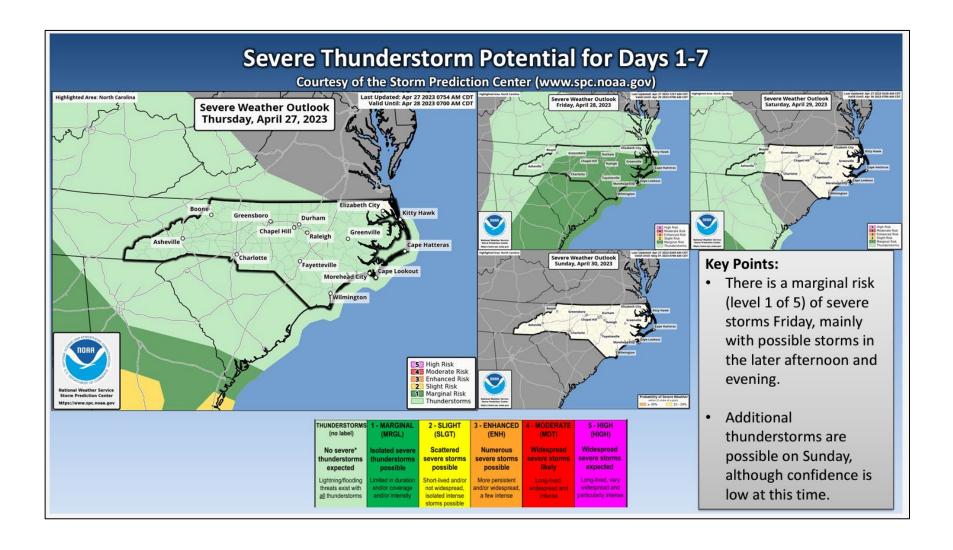
Sunday > 75th Percentile



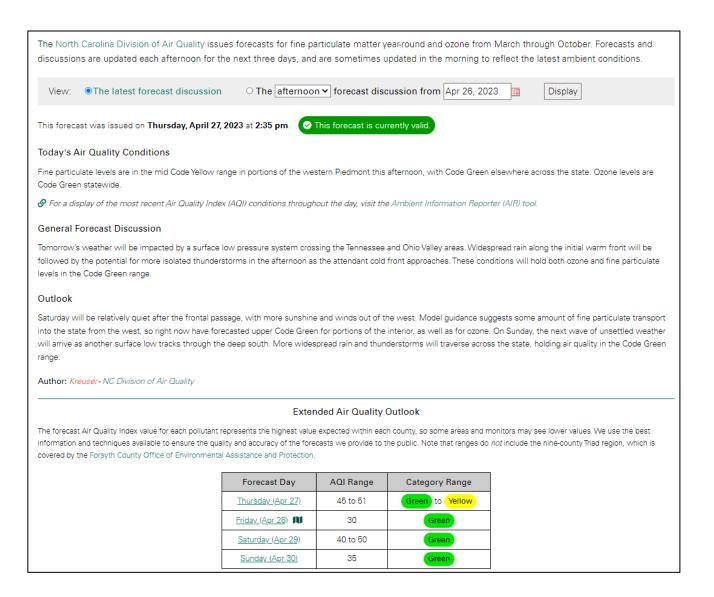
Wednesday > 75th Percentile



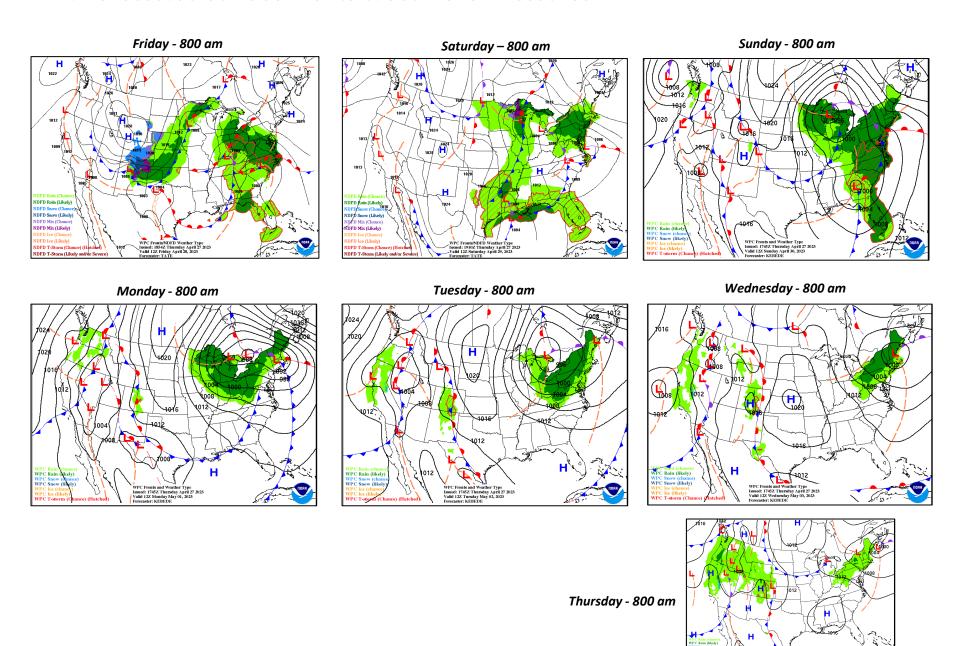
Severe Thunderstorm Potential for Days 1-7



NC DAQ Air Quality Forecast - Next Three Days

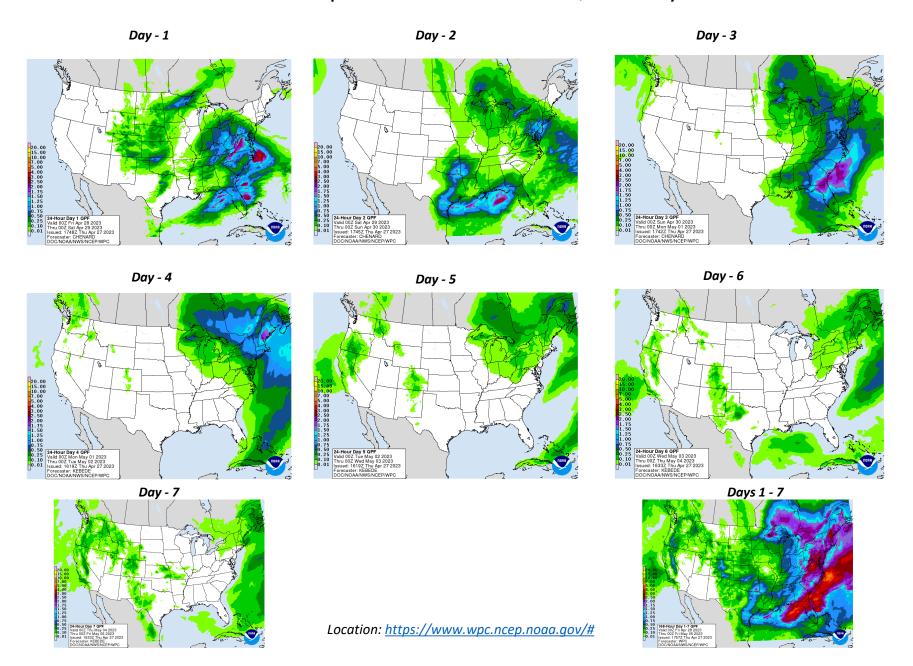


WPC Forecasted Surface Fronts & Sea-Level Pressures



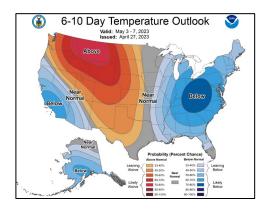
Location: https://www.wpc.ncep.noaa.gov/#

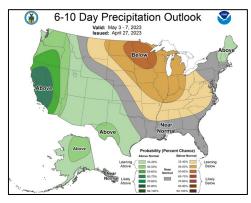
Quantitative Precipitation Forecast, 7-Day

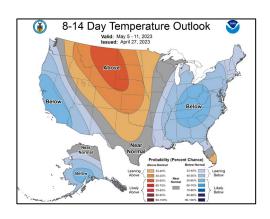


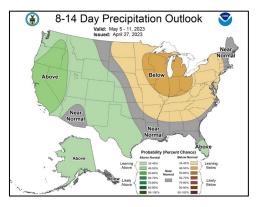
Temp & Precip Outlook

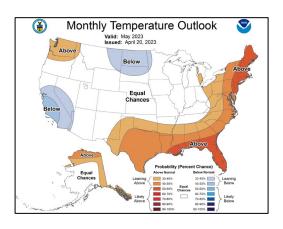
6-10 Day, 8-14 Day & Monthly (May)

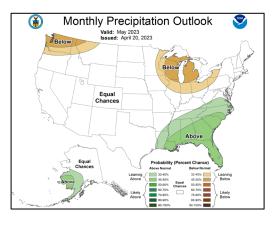








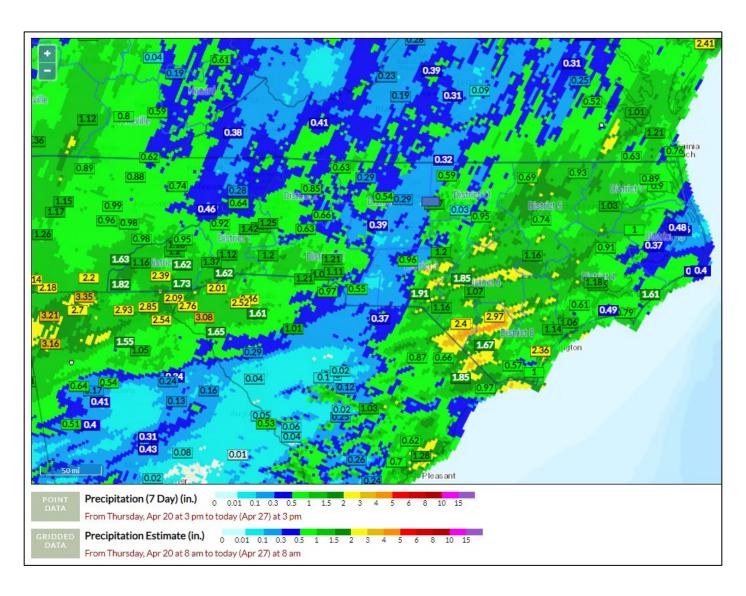




Source: https://www.cpc.ncep.noaa.gov/

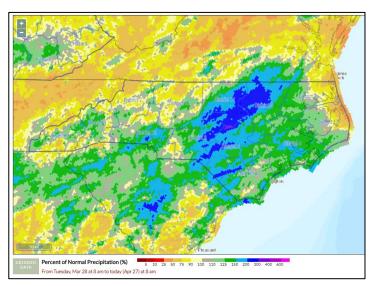
7 Day Precipitation Totals

FWIP (Point accumulation ending at 1500 on 4/27, Grid ending 0800 4/27)

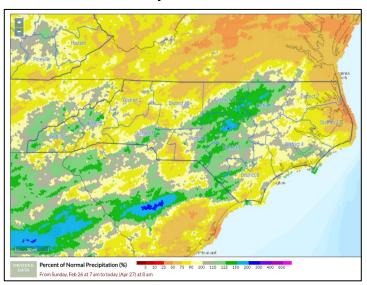


Percent of Normal Precip, FWIP (Ending 0800 4/27)

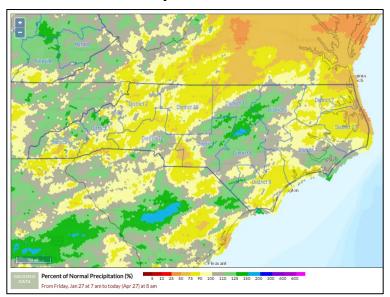
30-Day % of Normal



60-Day % of Normal

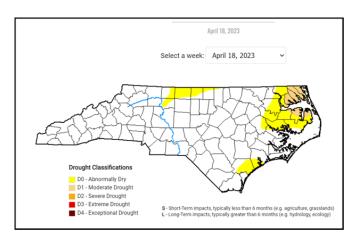


90-Day % of Normal

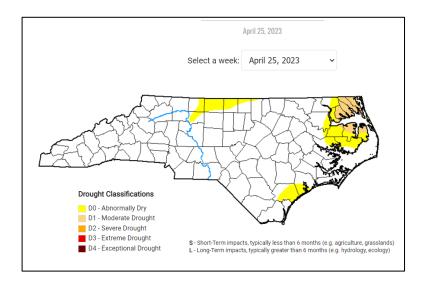


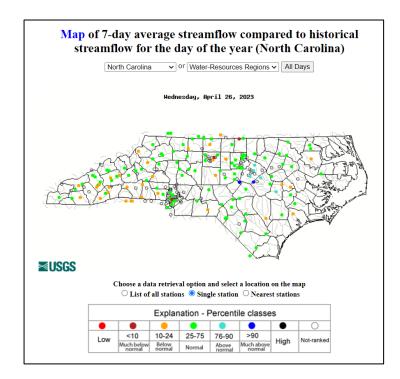
Drought Situation

Previous Week:



Current Week:



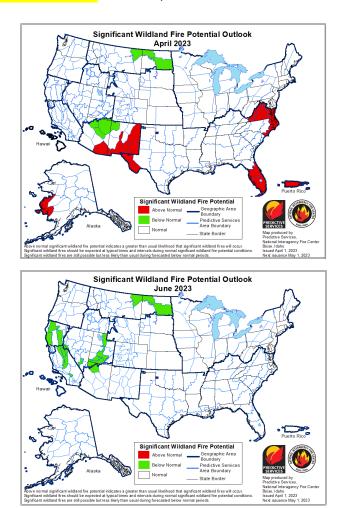


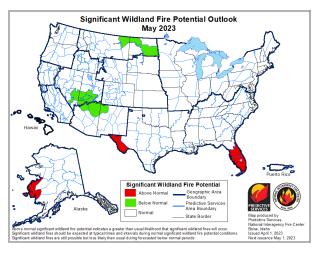
- D-0 Abnormally Dry Conditions Decreased (~8% of State)
- D-1 Moderate Drought in Several Counties. (~3% of State)
- 7-Day Stream flow averages have responded to rain influences in some areas; also note slow decline in both west and east.

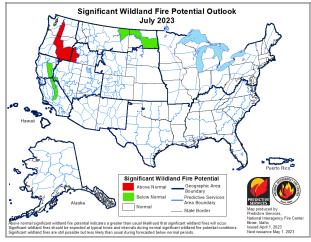
Sources: https://www.ncdrought.org/map-archives, https://www.ncdrought.org/map-archives, https://waterwatch.usgs.gov/index.php?m=pa07d&r=nc&w=map

Significant Wildland Fire Potential Outlook:

Updated 4/1/23 – Next Update on 5/1/23







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 already seen this year.

ENSO Notes from the CPC (4/17/23 Update)

ONI (°C): Evolution

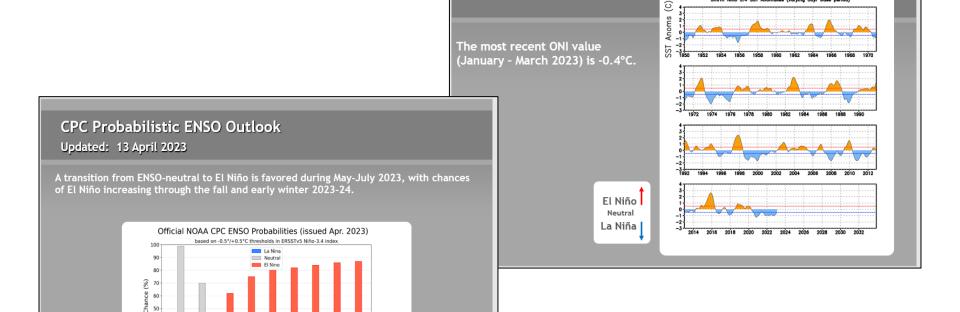
Oceanic Nino Index (ERSST.v5 ONI)

since 1950

ENSO Alert System Status: El Niño Watch

ENSO-neutral conditions are expected to continue through the Northern Hemisphere spring, followed by a 62% chance of El Niño

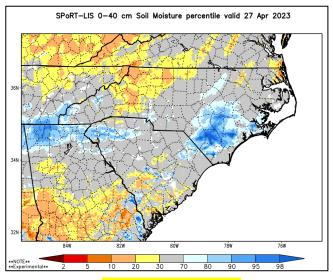
developing during May-July 2023.



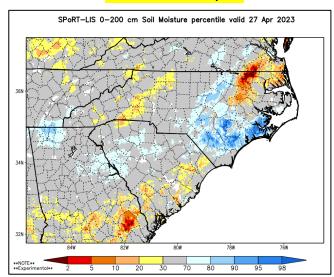
Slide Source: https://www.cpc.ncep.noaa.gov/products/analysis monitoring/lanina/enso evolution-status-fcsts-web.ppt

SPoRT Modeled Relative Soil Dryness

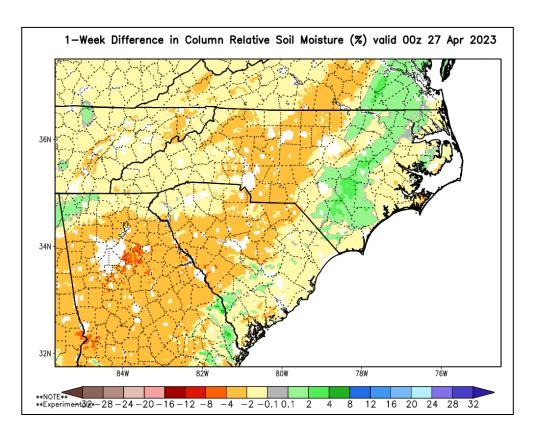
0-40 cm Depth



0-200 cm Depth



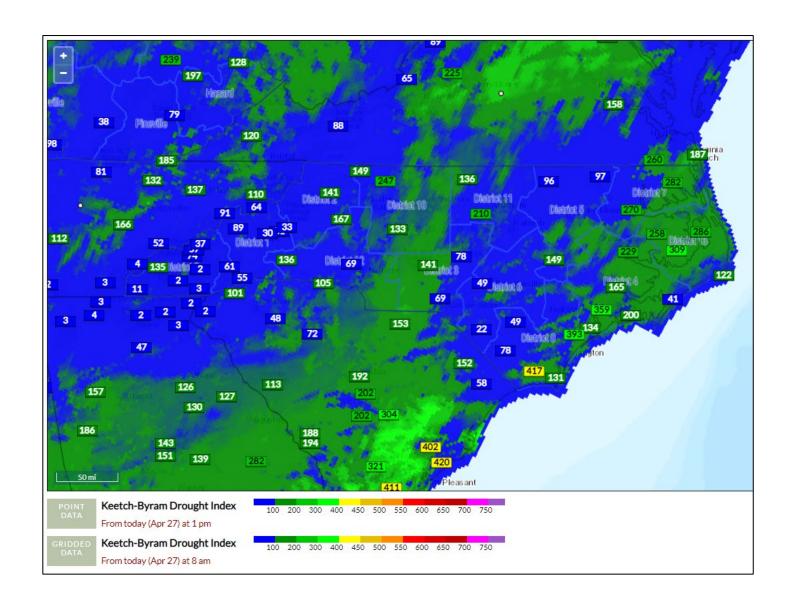
 Note areas of modeled improvement/degradation over the past week.



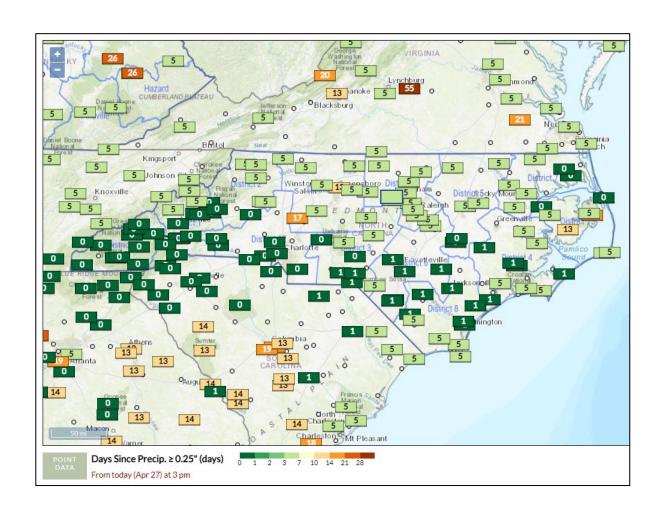
Source: https://weather.msfc.nasa.gov/sport/case_studies/lis_NC.html

KBDI - Gridded & Station Points

FWIP (Point calculation from 1300 on 4/27, Grid ending 0800 4/27)

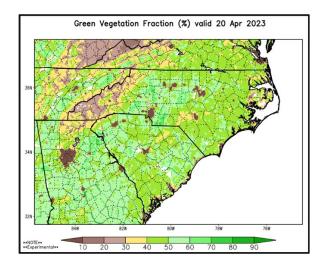


Days Since Daily Precip ≥ 0.25"



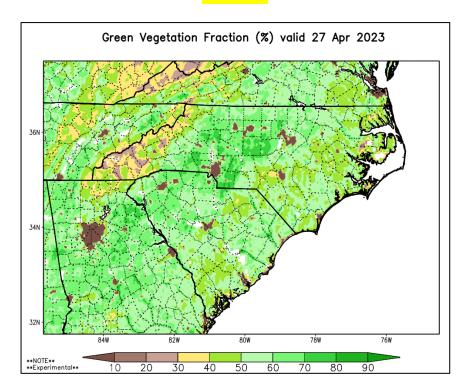
Green Fraction & Green-Up Anomaly

Last Week



- Green-up nearly complete in lower elevations, higher elevations progressing.
- General reminder that many live fuels, even when appearing "green" still lack full moisture content until completing spring regrowth processes. A couple examples being conifer needles and waxy leaf pocosin plants. Combining this live fuel condition with very dry dead fuels can create enhanced fire behavior.

Current



Link: https://weather.msfc.nasa.gov/cgi-bin/basicLooper.pl?category=lis NC&initialize=first®ex=gvf 20230228