



CT Interagency Drought Workgroup NWS Update

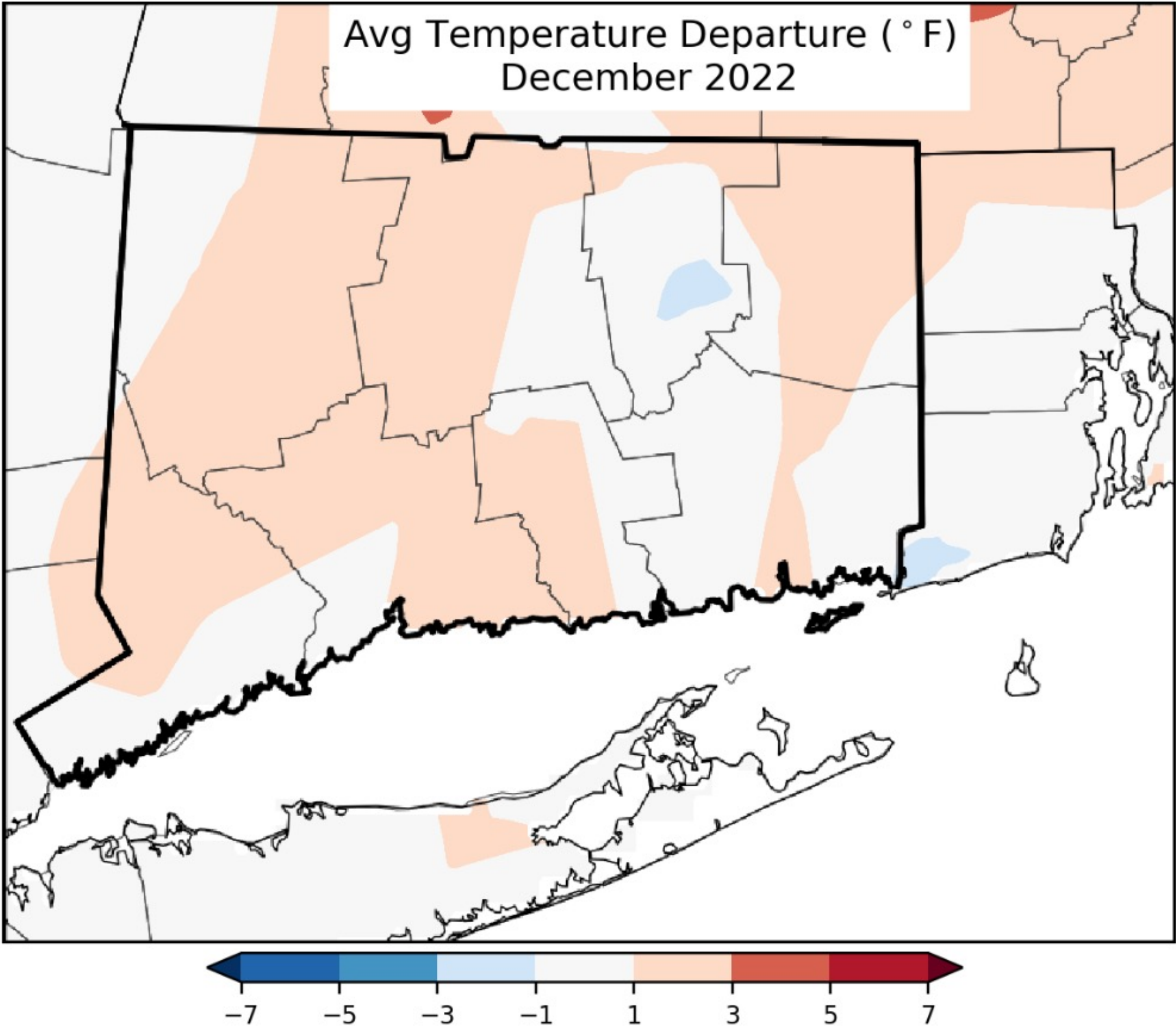
Thursday January 5th 2023

*Prepared by: NWS WFO Boston/Norton, MA
& NWS WFO Albany, NY*

Dec 2022 Temperature Departures



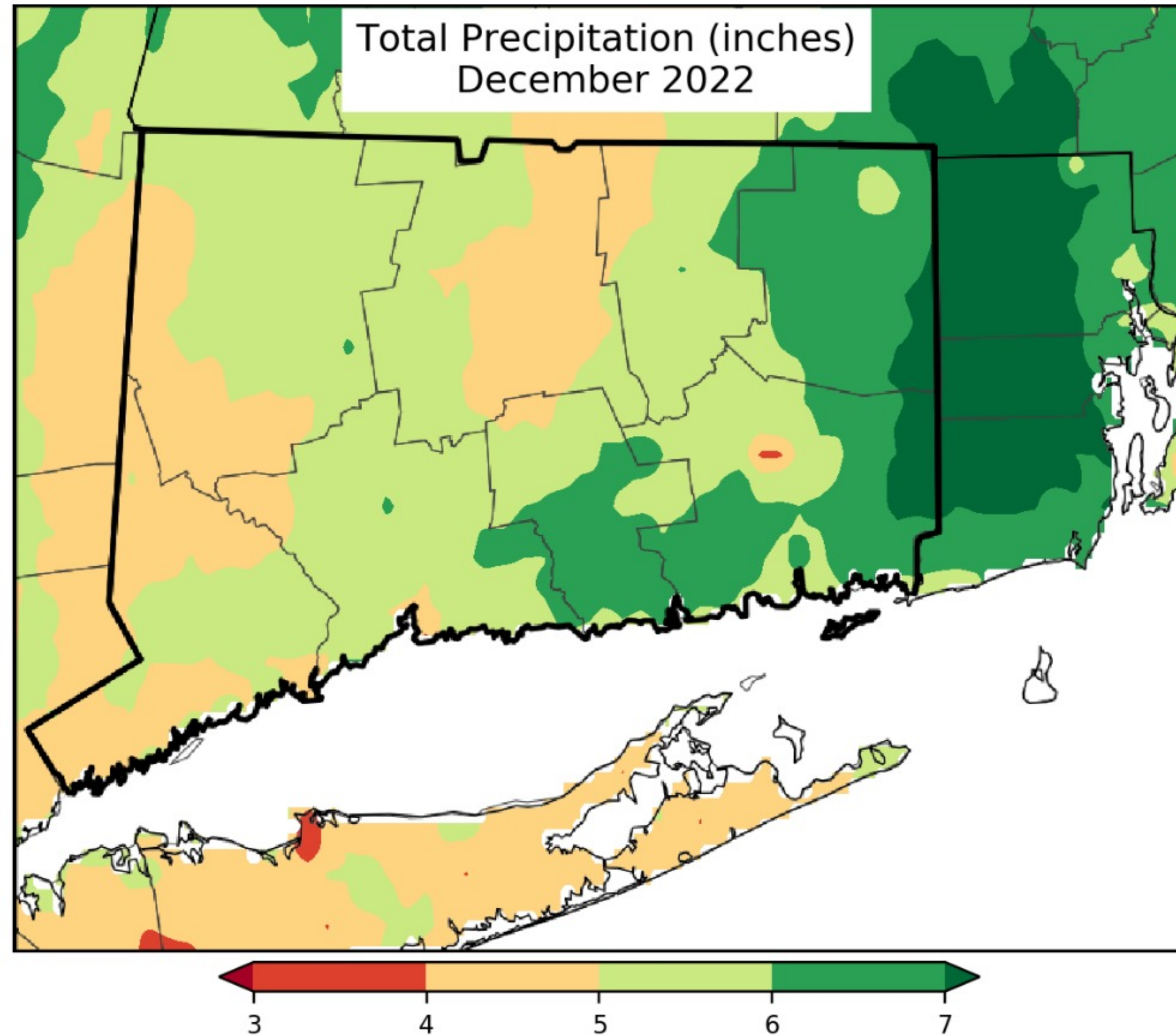
Boston/Norton MA
WEATHER FORECAST OFFICE



Dec 2022 Rainfall



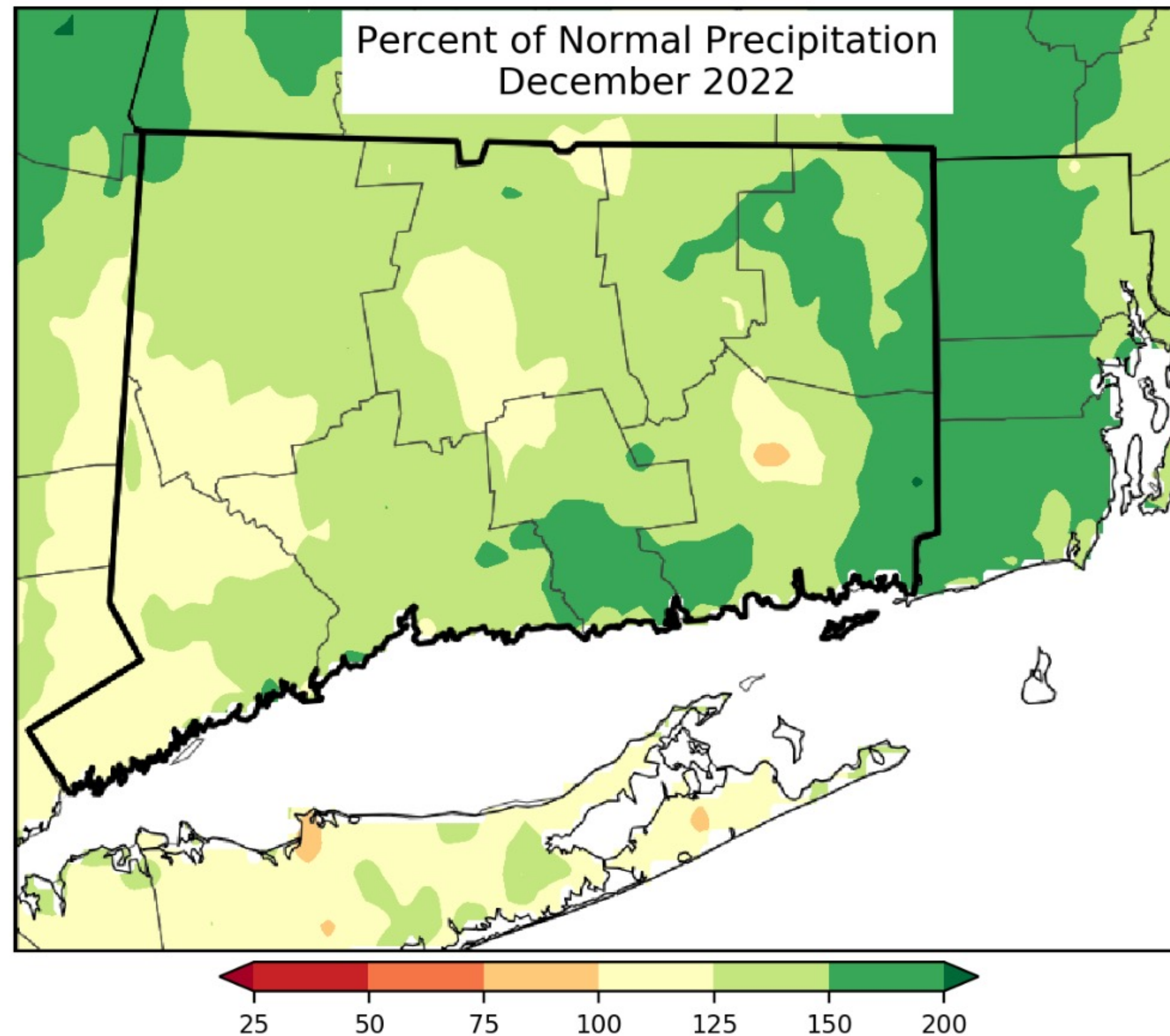
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Dec 2022 Rainfall Percent of Normal



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Rainfall Tables for 2 and 3 Months



Boston/Norton MA
WEATHER FORECAST OFFICE

CT 2-month Nov-Dec 22	Rainfall	Departure	Percent	Normal
Litchfield	8.82	0.57	107	8.25
Hartford	7.27	-1.13	87	8.40
Tolland	8.48	-0.19	98	8.67
Windham	7.84	-0.84	90	8.69
Fairfield	6.78	-1.60	81	8.38
New Haven	7.30	-0.76	91	8.06
Middlesex	M	M	M	8.66
New London	7.84	-0.95	89	8.79

CT 3-month Oct-Dec 22	Rainfall	Departure	Percent	Normal
Litchfield	13.63	0.55	104	13.08
Hartford	11.63	-1.68	87	13.31
Tolland	13.42	-0.01	100	13.43
Windham	12.33	-0.87	93	13.20
Fairfield	11.42	-1.50	88	12.92
New Haven	11.82	-0.88	93	12.70
Middlesex	M	M	M	14.03
New London	11.95	-1.13	91	13.08

Rainfall Tables for 5 and 6 Months



Boston/Norton MA
WEATHER FORECAST OFFICE

CT 5-month Aug-Dec 22	Rainfall	Departure	Percent	Normal
Litchfield	22.23	0.36	102	21.87
Hartford	20.96	-1.04	95	22.00 ▾
Tolland	23.76	2.39	111	21.37
Windham	23.77	2.24	110	21.53
Fairfield	18.63	-3.18	85	21.81
New Haven	22.45	1.85	109	20.60
Middlesex	M	M	M	22.07
New London	22.29	0.27	101	22.02

CT 6-month Jul-Dec 22	Rainfall	Departure	Percent	Normal
Litchfield	24.89	-1.56	94	26.45
Hartford	23.79	-2.78	90	26.57
Tolland	26.68	1.38	105	25.30
Windham	25.78	-0.02	100	25.80
Fairfield	21.06	-5.02	81	26.08
New Haven	24.21	-0.42	98	24.63
Middlesex	M	M	M	26.45
New London	23.27	-2.47	90	25.74

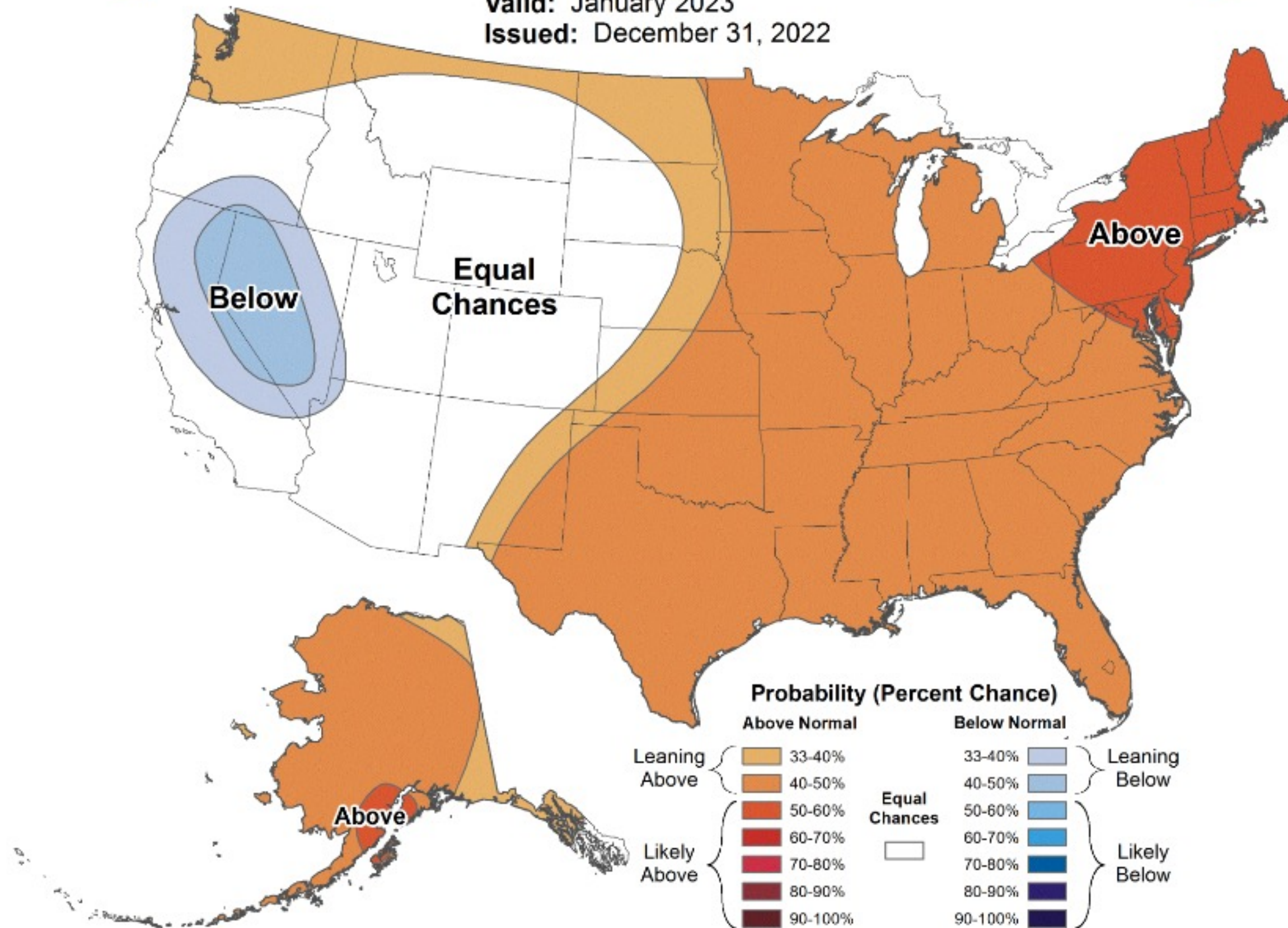
CPC Outlook for January



Boston/Norton MA
WEATHER FORECAST OFFICE

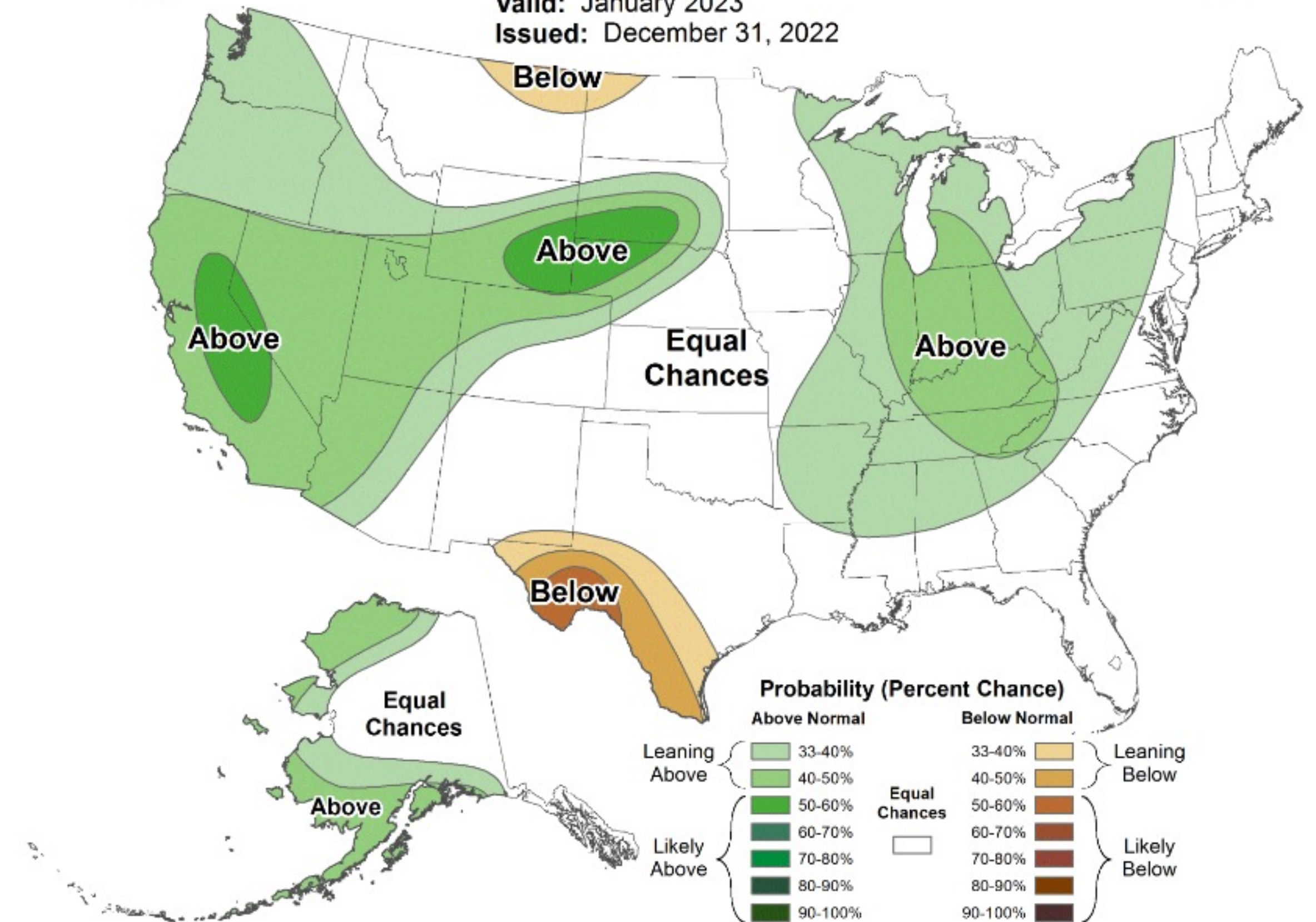
Monthly Temperature Outlook

Valid: January 2023
Issued: December 31, 2022



Monthly Precipitation Outlook

Valid: January 2023
Issued: December 31, 2022



Surface Reservoir Capacity Measurements and Trends

12/30/2022 Update

CT's Reservoir Systems Continue to Improve!

Thirty-four surface water systems measure their reservoir capacities weekly and report the readings to the Drinking Water Section (DWS). The attached table summarizes the most recent measurements in percent full and shows the week-to-week trend of their capacities.

Key takeaways:

$\geq 100\%$ of Normal $n=34$

22

Change since last week:

+6

State Average

87.6 % ↑

Last week:

81.3%

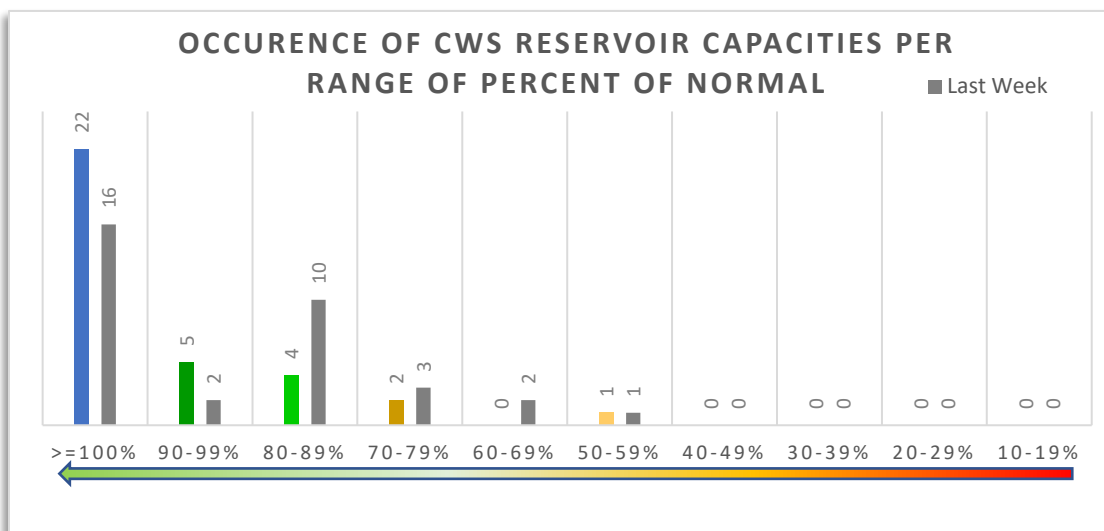
Average Percent of Normal

98.7% ↑

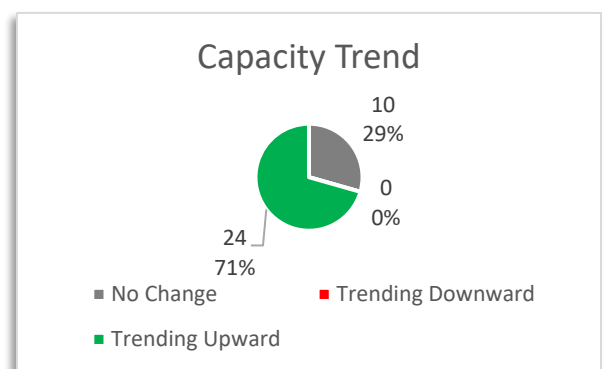
Last week:

92.6%

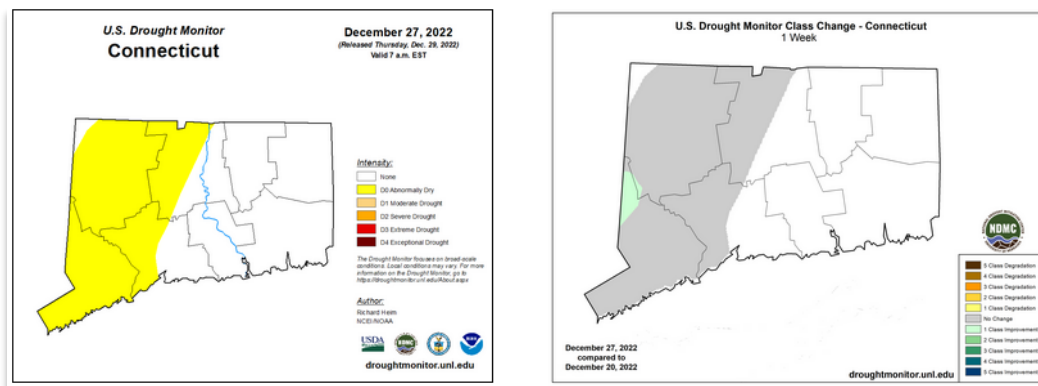
- 14 reservoir systems have reported that they are currently at 100% full (+3 since last week).



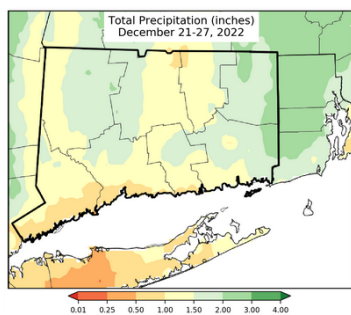
- The gray bars indicate last week's measurements and the colored bar is the current measurement. In non-drought conditions, the graph above would have all of the systems in the $\geq 100\%$ of normal column ($n=34$).
- 24 system's short-term week to week trend is upward (No change since last week).** 0 systems are trending downward in capacity from their previous measurements (**No change** since last week). 10 systems have had no change in capacity (No change since last week).



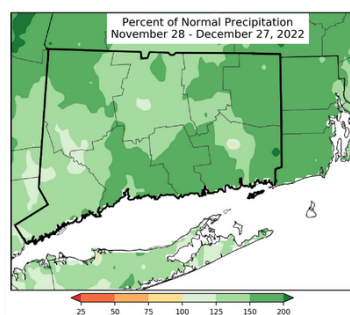
- **Two systems** have reported they are in the first stage of their drought plan. Several systems are requesting voluntary and mandatory water use conservation. (-2 since last week)
- **One system is in their 2nd drought stage.**
- **US Drought Monitor:** – Removed sliver of D1 near NY border.
- <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CT>



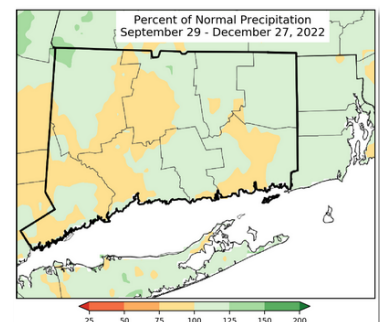
- Last USDM week, the entire state received rain between Dec. 21st to Dec 27th ranging from 0.5 to 3 inches. (Map 1). The 30-day Percent of Normal Precipitation map continues to show normal to above normal rainfall for the last 30 days (Map 2). The long-term trend over the last 90-days still shows small amounts of dryness in several areas of CT (Map 3). The 7-Day Streamflow map shows normal to above normal conditions in CT. Groundwater real time monitoring wells show normal measurements.



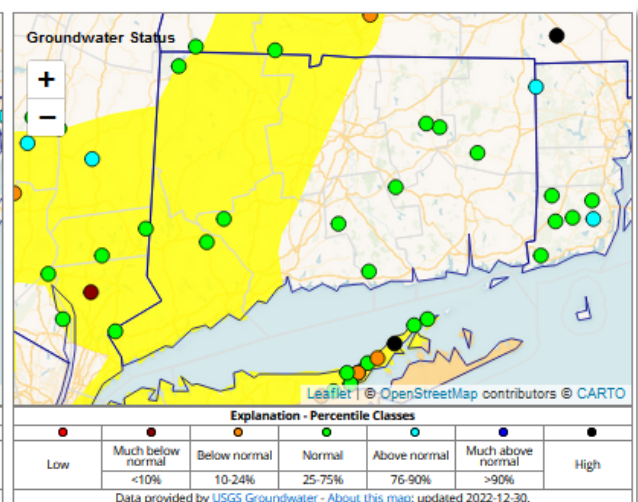
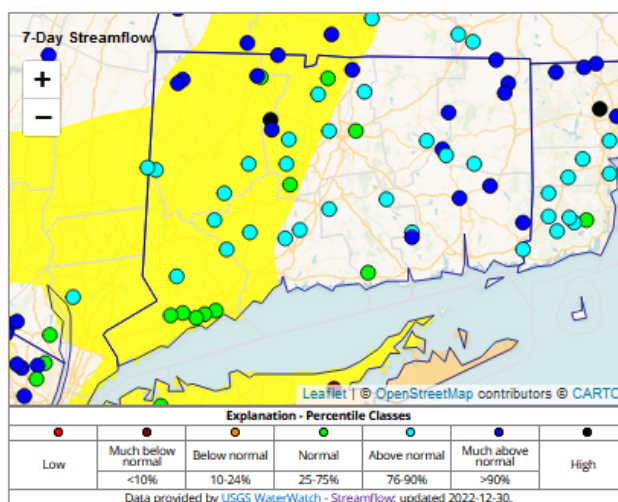
Map 1- 7 Day Total Precipitation



Map 2- 30 Day Percent of Normal Precipitation



Map 3 – 90 Day Percent of Normal Precipitation



PWSID	PWS Name	Most Recent Reading Date	Percent Full	Current Status	Trend	Historical Average	Percent of Normal	Previous Date	Previous Percent Full	County_Served
CT0570011	Aquarion Water Co of CT-Greenwich Syster	12/4/2022	44.50	No Drought Stage	↑	76.90	58	11/27/2022	42.20	FAIRFIELD
CT0150011	Aquarion Water Co of CT-Main System	12/4/2022	65.40	No Drought Stage	↑	88.40	74	11/27/2022	62.20	FAIRFIELD
CT1350011	Aquarion Water Co of CT-Stamford	12/4/2022	57.50	No Drought Stage	↑	72.80	79	11/27/2022	50.20	FAIRFIELD
CT1030021	South Norwalk Electric & Water	12/27/2022	66.10	No Drought Stage	↑	78.30	84	12/19/2022	57.00	FAIRFIELD
CT0340011	Danbury Water Department	12/18/2022	76.10	Advisory	↑	85.00	90	12/11/2022	72.70	FAIRFIELD
CT0090011	Bethel Water Dept	12/25/2022	100.00	No Drought Stage	--	96.90	103	12/18/2022	100.00	FAIRFIELD
CT1030011	Norwalk First Taxing District	12/25/2022	93.70	No Drought Stage	↑↑	90.60	103	12/18/2022	83.50	FAIRFIELD
CT0473011	CTWC - Northern Reg-Western System	12/22/2022	70.50	No Drought Stage	↑	87.50	81	12/15/2022	65.80	HARTFORD
CT0890011	New Britain Water Department	12/15/2022	60.20	Drought Alert	↑	69.60	87	12/8/2022	59.20	HARTFORD
CT0170011	Bristol Water Department	12/25/2022	90.50	Drought Advisory	↑	89.90	101	12/18/2022	81.50	HARTFORD
CT0770021	Manchester Water Department	12/25/2022	100.00	No Drought Stage	↑↑	95.90	104	12/18/2022	85.50	HARTFORD
CT0640011	Metropolitan District Commission	12/19/2022	90.50	No Drought Stage	↑	86.60	105	12/12/2022	89.40	HARTFORD
CT1310011	Southington Water Department	12/24/2022	86.90	No Drought Stage	↑	82.00	106	12/17/2022	77.20	HARTFORD
CT0980011	Aquarion Water Co of CT-Norfolk System	12/4/2022	100.00	No Drought Stage	--	99.60	100	11/27/2022	100.00	LITCHFIELD
CT1620011	Winsted Water Works	12/25/2022	100.00	No Drought Stage	--	98.90	101	12/18/2022	100.00	LITCHFIELD
CT1250011	Sharon Water & Sewer Commission	12/17/2022	100.00	No Drought Stage	--	97.90	102	12/10/2022	100.00	LITCHFIELD
CT1220011	Aquarion Water Co of CT-Salisbury Sys	12/4/2022	100.00	No Drought Stage	--	97.60	102	11/27/2022	100.00	LITCHFIELD
CT1430011	Torrington Water Company	12/4/2022	100.00	No Drought Stage	↑↑	80.90	124	11/27/2022	76.00	LITCHFIELD
CT0830021	Connecticut Valley Hospital	12/19/2022	100.00	No Drought Stage	--	97.70	102	12/12/2022	100.00	MIDDLESEX
CT0261031	CTWC - Shoreline Region-Chester System	12/22/2022	100.00	No Drought Stage	--	97.50	103	12/15/2022	100.00	MIDDLESEX
CT0830011	Middletown Water Department	12/25/2022	100.00	No Drought Stage	--	81.90	122	12/18/2022	100.00	MIDDLESEX
CT0880011	CTWC - Naugatuck Region-Central System	12/22/2022	81.60	No Drought Stage	↑	92.50	88	12/15/2022	76.10	NEW HAVEN
CT1510011	Waterbury Water Department	12/11/2022	83.30	No Drought Stage	↑	92.90	90	12/4/2022	80.60	NEW HAVEN
CT0800011	Meriden Water Division	12/18/2022	84.10	No Drought Stage	↑	90.20	93	12/11/2022	80.50	NEW HAVEN
CT0608011	CTWC - Shoreline Region-Guilford System	12/22/2022	84.70	No Drought Stage	↑	87.40	97	12/15/2022	75.10	NEW HAVEN
CT0930011	Regional Water Authority	12/18/2022	78.80	No Drought Stage	↑	79.30	99	12/11/2022	78.50	NEW HAVEN
CT1480011	Wallingford Water Department	12/23/2022	96.80	No Drought Stage	↑	83.40	116	12/9/2022	96.30	NEW HAVEN
CT1370011	Aquarion Water Co of CT-Mystic	12/4/2022	100.00	No Drought Stage	--	98.00	102	11/27/2022	100.00	NEW LONDON
CT0950011	New London Dept. of Public Utilities	12/25/2022	70.50	No Drought Stage	↑	67.30	105	12/18/2022	65.10	NEW LONDON
CT0580011	Jewett City Water Company	12/19/2022	98.40	No Drought Stage	↑↑	92.20	107	12/12/2022	74.20	NEW LONDON
CT0590011	Groton Utilities	12/19/2022	97.10	No Drought Stage	↑	90.00	108	12/12/2022	95.90	NEW LONDON
CT1040011	Norwich Public Utilities	12/24/2022	100.00	No Drought Stage	↑	90.20	111	12/10/2022	94.70	NEW LONDON
CT1340011	CTWC - Northern Reg-Stafford System	12/22/2022	100.00	No Drought Stage	↑	99.80	100	12/15/2022	99.20	TOLLAND
CT1630011	Windham Water Works	12/25/2022	100.00	No Drought Stage	--	100.00	100	12/18/2022	100.00	WINDHAM

		87.56		88.69	98.73	Ave Percent of Normal by County
↑	-Increase since last measurement (less than 10% increase)		Number of systems:			84.43 FAIRFIELD
↑↑	-Increase since last measurement (10% or greater increase)		Greater than or equal to 100% of Normal	22		97.33 HARTFORD
↓	-Decrease since last measurement (less than 10% decrease)		Between 90% and 99% of Normal	5		105.80 LITCHFIELD
↓↓	-Decrease since last measurement (10% or greater decrease)		Less than 90% of Normal	7		109.00 MIDDLESEX
--	- Same measurement as the previous measurement		At 100% Full	14		97.17 NEW HAVEN
						106.60 NEW LONDON
						100.00 TOLLAND

Department of Agriculture – Drought Status Report

Parameter	Reported Conditions			
	As of 10/6/22		As of 10/6/22	
	Report Date	Status	Report Date	Status
Palmer Drought Severity Index (map)	10/1/22	Entire state shows near normal conditions	12/31/22	Entire state showing an unusual moist spell.
Palmer drought severity index (data)	10/1/22	Northwest: -1.27 Central: -0.57 Coastal: -2.33	12/31/22	Northwest: 2.03 Central: 2.08 Coastal: 0.45
Precipitation needed to end drought (in.)	10/1/22	Northwest: 2.93 in Central: 0.75 in Coastal: 6.41 in	12/31/22	Northwest: 0 Central: 0 Coastal: 0
Crop Moisture (current map)	10/1/22	Entire state shows slightly dry or favorably moist.	12/31/22	Entire state shows abnormally moist.
Topsoil moisture (current map)	10/2/22	Data incomplete	1/1/23	No data available.
Topsoil moisture (current vs. 5 yr. mean)	10/5/22	Data incomplete	1/1/23	No data available.
Veg DRI (% of CT land area shown as pre-drought, moderate, severe or extreme)	10/2/22	Southern New Haven and Fairfield Counties still have areas of moderate and even severe drought. NW CT near Colebrook, Norfolk and Goshen also have small areas of moderate to severe drought.	1/1/23	No data available.
Drought Monitor Report for CT	10/6/22	Western CT still shows severe drought. Central and Coastal CT were mostly in moderate drought. Northeast CT, including NE New London have improved to “abnormally dry.”	12/27/22	Western CT showing abnormally dry.
NASS Crop Progress Report (New England)	10/2/22	According to the National Agricultural Statistics Service in New England, there were 6 days suitable for fieldwork for the week ending Sunday, October 2, 2022. Topsoil moisture supplies were 0 percent very short, 2 percent short, 87 percent adequate , and 11 percent surplus. Subsoil moisture supplies were 0 percent very short, 2 percent short, 97 percent adequate , and 1 percent surplus.	11/27/22	According to the National Agricultural Statistics Service in New England, there were 5 days suitable for fieldwork for the week ending Sunday, November 27, 2022. Topsoil moisture supplies were 0 percent very short, 3 percent short, 97 percent adequate, and 0 percent surplus. Subsoil moisture supplies were 0 percent very short, 3 percent short, 97 percent adequate, and 0 percent surplus.

Summary: Data from all of these indicators showed some abnormally dry, but no drought conditions present in the state at the end of December, 2022.

mbExplanatory notes:

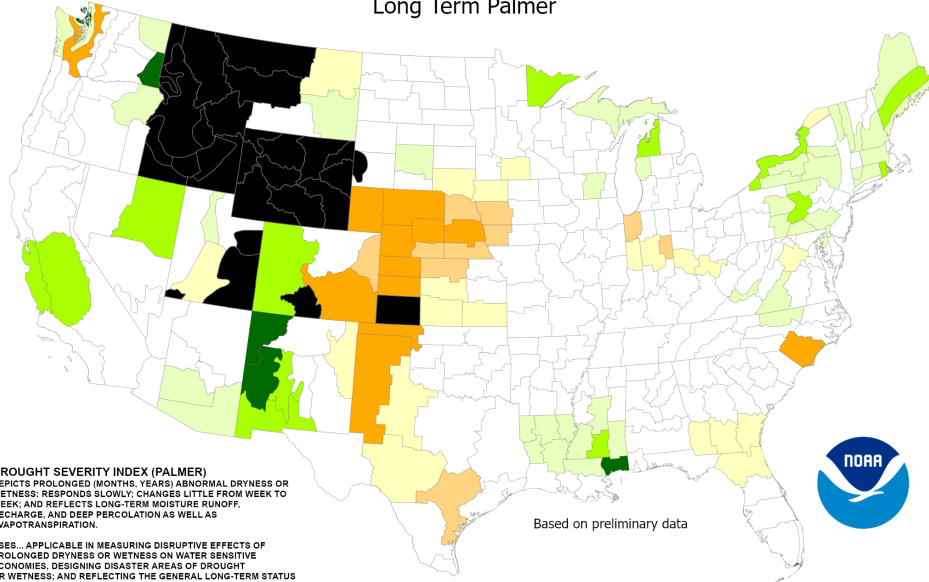
Palmer Drought Severity Index: The Palmer Drought Severity Index (PDSI) uses readily available temperature and precipitation data to estimate relative dryness. It is a standardized index that generally spans -10 (dry) to +10 (wet). Maps of operational agencies like NOAA typically show a range of -4 to +4, but more extreme values are possible.

Crop moisture index: The CMI gives the short-term or current status of purely agricultural drought or moisture surplus and can change rapidly from week to week. The CMI index indicates general conditions and not local variations caused by isolated rain. Input to the calculations include the weekly precipitation total and average temperature, division constants (water capacity of the soil, etc.) and previous history of the indices.

Topsoil moisture: Topsoil Moisture Monitoring maps are based on United States Department of Agriculture state reports of topsoil moisture conditions. Means are calculated from historical weekly data published by USDA/NASS using the closest date to the equivalent date for the year. Results are based on the short and very short %ages of topsoil moisture (upper 6 inches) reported by the USDA. Reports are based on subjective observations.

Vegetation Drought Response Index: VegDRI calculations integrate satellite-based observations of vegetation conditions, climate data, and other biophysical information such as land cover/land use type, soil characteristics, and ecological setting. The VegDRI maps that are produced deliver continuous geographic coverage over large areas, and have inherently finer spatial detail (1-km² resolution) than other commonly available drought indicators such as the U.S. Drought Monitor. The state statistics table is located here: <https://vegdrv.unl.edu/Home/VegDRITables.aspx?CT>.

Drought Severity Index by Division Weekly Value for Period Ending Dec 31, 2022 Long Term Palmer



DROUGHT SEVERITY INDEX (PALMER)
DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; RESPONDS SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK; AND REFLECTS LONG-TERM MOISTURE RUNOFF, RECHARGE, AND DEEP PERCOLATION AS WELL AS EVAPOTRANSPIRATION.

USES... APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES, DESIGNING DISASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL LONG-TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS AND STREAMS.

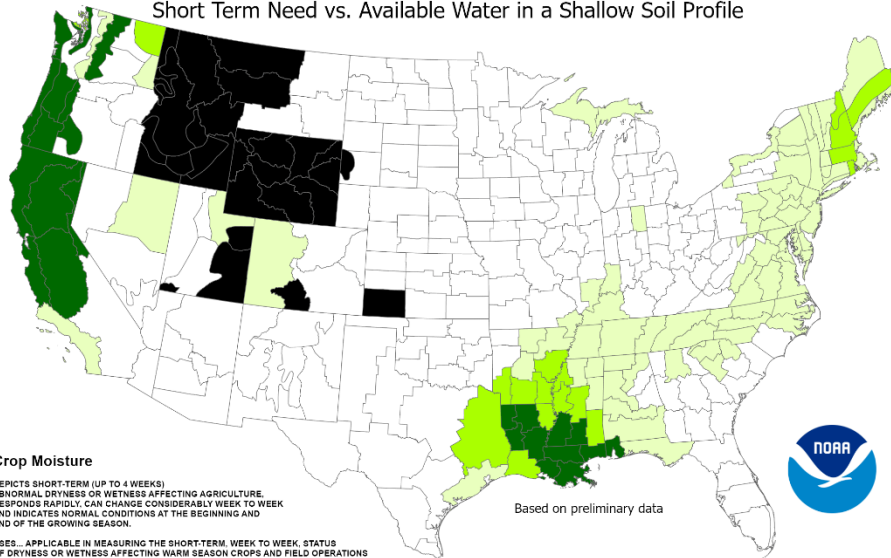
LIMITATIONS... IS NOT GENERALLY INDICATIVE OF SHORT-TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

Based on preliminary data



- 4.0 or less (Extreme Drought)
- 3.0 to -3.9 (Severe Drought)
- 2.0 to -2.9 (Moderate Drought)
- 1.9 to +1.9 (Near Normal)
- +2.0 to +2.9 (Unusual Moist Spell)
- +3.0 to +3.9 (Very Moist Spell)
- +4.0 and above (Extremely Moist)
- Missing/Incomplete

Crop Moisture Index by Division Weekly Value for Period Ending Dec 31, 2022 Short Term Need vs. Available Water in a Shallow Soil Profile



Crop Moisture

DEPICTS SHORT-TERM (UP TO 4 WEEKS) ABNORMAL DRYNESS OR WETNESS AFFECTING AGRICULTURE. RESPONDS RAPIDLY; CAN CHANGE CONSIDERABLY WEEK TO WEEK AND INDICATES NORMAL CONDITIONS AT THE BEGINNING AND END OF THE GROWING SEASON.

USES... APPLICABLE IN MEASURING THE SHORT-TERM, WEEK TO WEEK, STATUS OF DRYNESS OR WETNESS AFFECTING WARM SEASON CROPS AND FIELD OPERATIONS

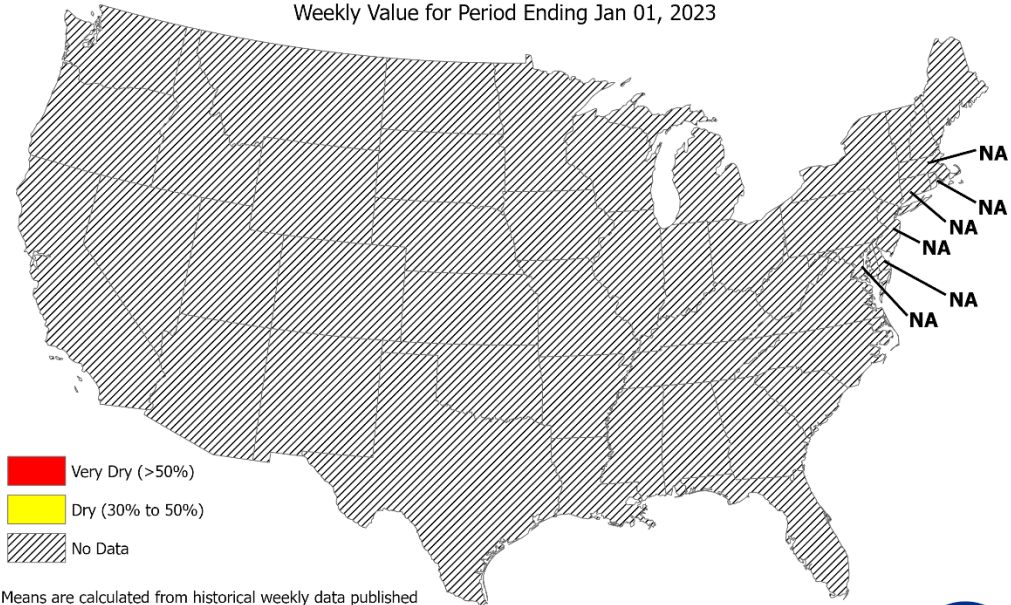
LIMITATIONS... MAY NOT BE APPLICABLE TO GERMINATING AND SHALLOW ROOTED CROPS WHICH ARE UNABLE TO EXTRACT THE DEEP OR SUBSOIL MOISTURE FROM A SHALLOW SOIL PROFILE, OR FOR COOL SEASON CROPS GROWING WHEN TEMPERATURES ARE AVERAGING BELOW ABOUT 55°F IT IS NOT GENERALLY INDICATIVE OF THE LONG-TERM (MONTHS, YEARS) DROUGHT OR WET SPELLS WHICH ARE DEPICTED BY THE DROUGHT SEVERITY INDEX.

Based on preliminary data



- 3.0 or less (Severely Dry)
- 2.0 to -2.9 (Excessively Dry)
- 1.0 to -1.9 (Abnormally Dry)
- 0.9 to +0.9 (Slightly Dry/Favorably Moist)
- +1.0 to +1.9 (Abnormally Moist)
- +2.0 to +3.0 (Wet)
- 3.0 and above (Excessively Wet)
- Missing/Incomplete

USDA Topsoil Moisture by Short-Very Short
 Percent of State Area
 Weekly Value for Period Ending Jan 01, 2023



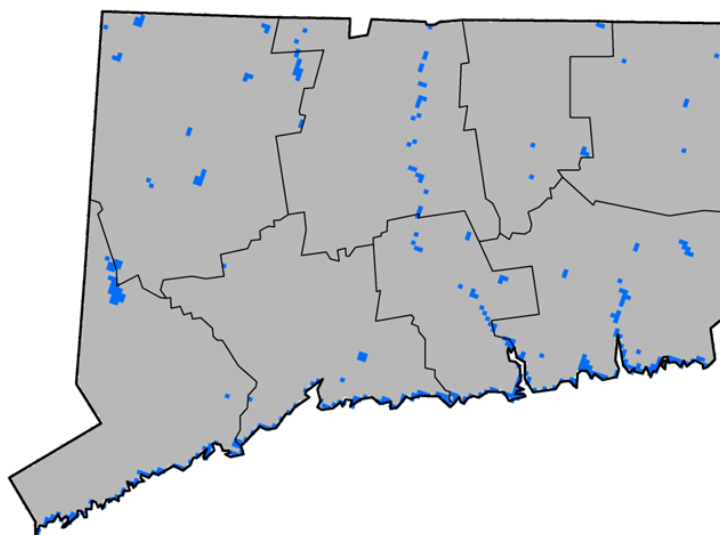
Means are calculated from historical weekly data published by USDA/NASS using the closest date to the equivalent date for this year.

Results are based on the short and very short percentages of topsoil moisture (upper 6 inches) reported by the USDA. Reports are based on subjective observations.



Vegetation Drought Response Index
 Complete: Connecticut

January 1, 2023



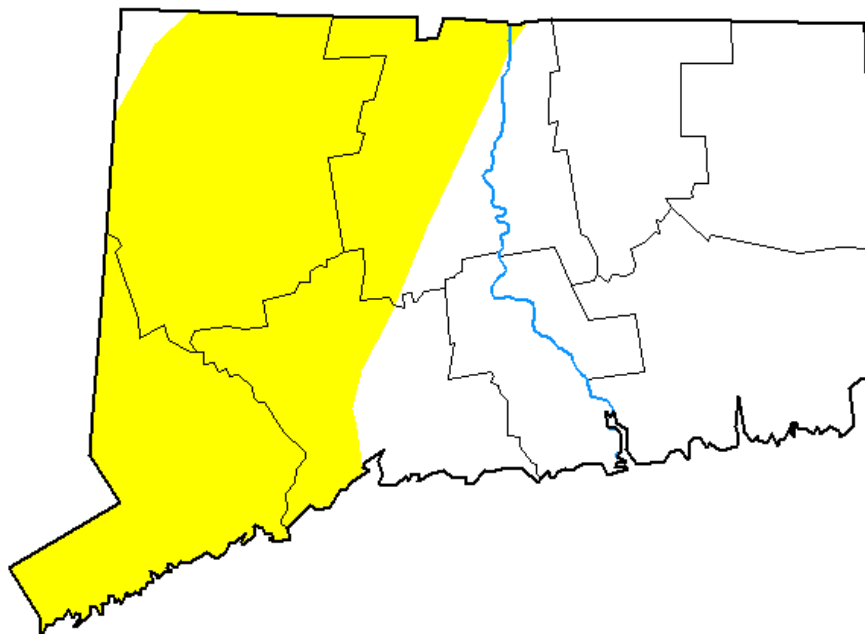
Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-drought stress
- Near Normal
- Unusually Moist
- Very Moist
- Extreme Moist
- Out of Season
- Water



U.S. Drought Monitor Connecticut

December 27, 2022
(Released Thursday, Dec. 29, 2022)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	53.82	46.18	0.00	0.00	0.00	0.00
Last Week 12-20-2022	53.82	46.18	1.20	0.00	0.00	0.00
3 Months Ago 09-27-2022	0.00	100.00	70.06	28.07	0.00	0.00
Start of Calendar Year 01-04-2022	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09-27-2022	0.00	100.00	70.06	28.07	0.00	0.00
One Year Ago 12-28-2021	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Richard Heim
NCEI/NOAA



droughtmonitor.unl.edu