



RI Drought Steering Committee NWS Update

Tuesday December 13th 2022

Prepared by: National Weather Service Boston/Norton, MA

Drought Indices from RI Water 2030



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WEATHER FORECAST OFFICE

Rhode Island Water 2030
Part 3

State Guide Plan 721

Table 2, Rhode Island Drought Indices and Phases

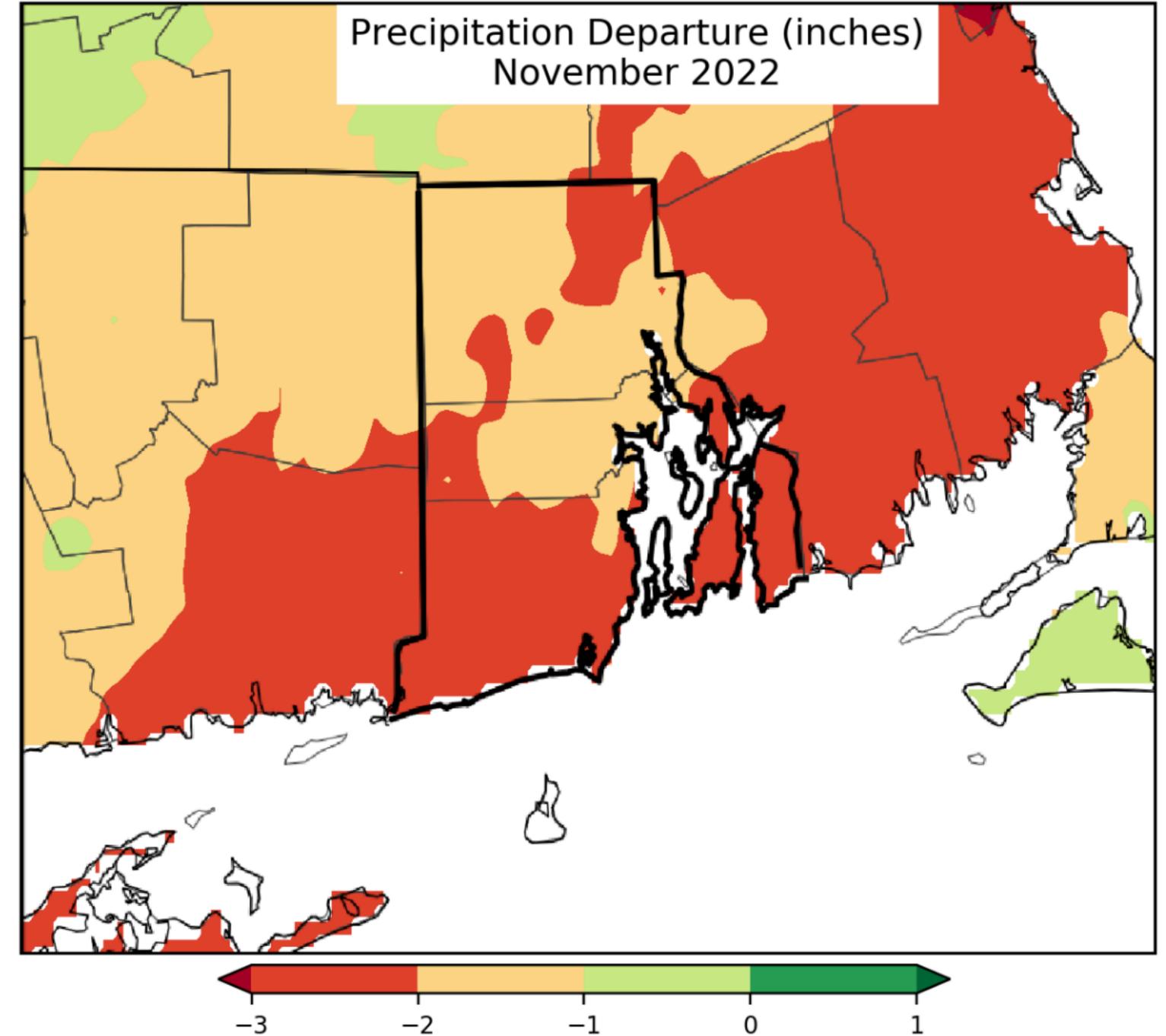
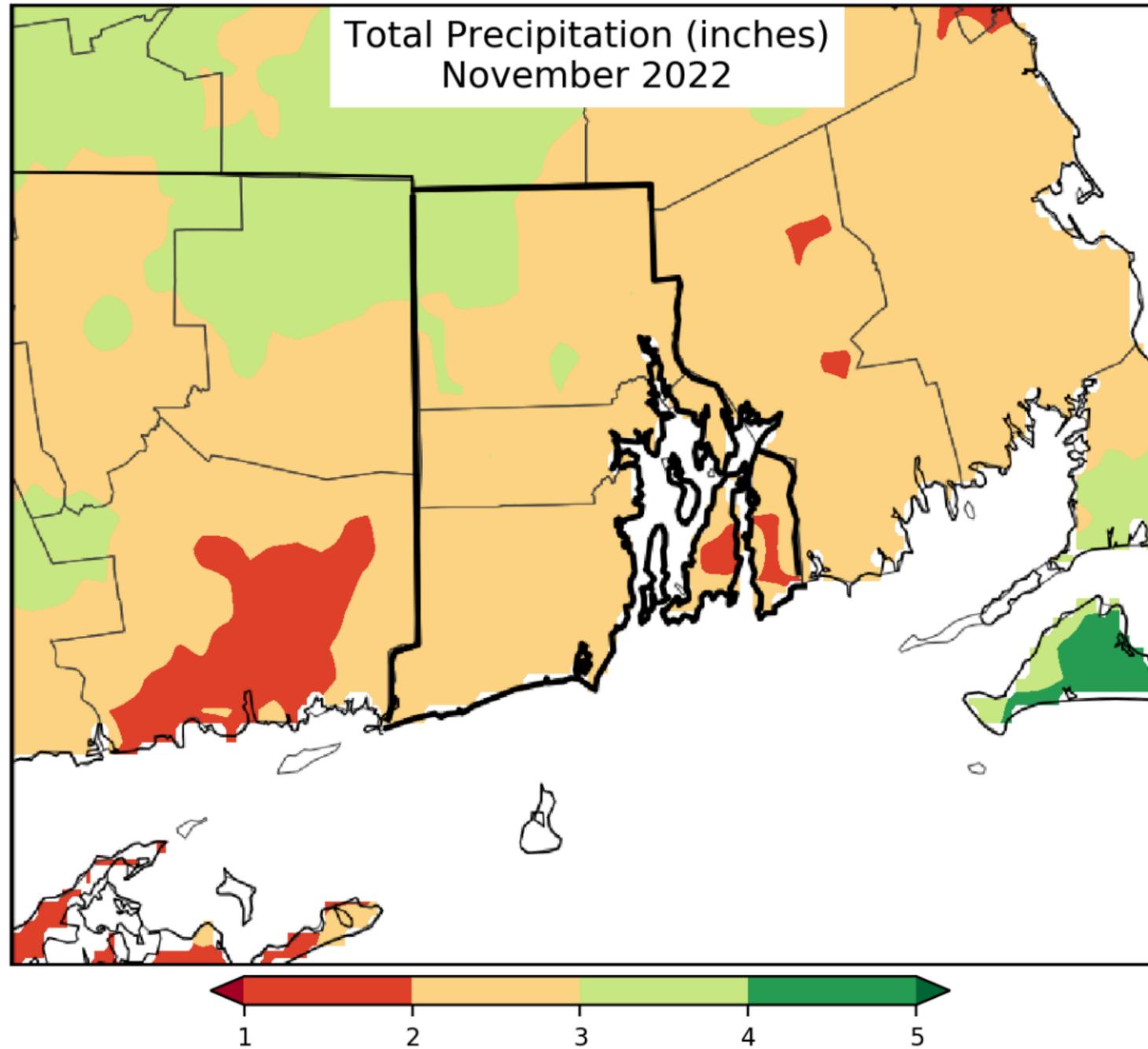
Drought Phase	Palmer Drought Index +	Crop Moisture Index	Precipitation +	Ground Water** +	Stream flow +	Reservoirs**
Normal	-1.0 to -1.99	0.0 to -1.0	Slightly Dry	1 month below normal 1 month below normal	2 consecutive months below normal	Reservoir levels at or near normal for the time of year
Advisory	-2.0 to -2.99	-1.0 to -1.9 Abnormally Dry	2 month cumulative below 65% of normal	At least 2 out of 3 months below normal	3 consecutive months below normal	Small index Reservoirs below normal
Watch	-3.0 to -3.99	-2.0 to -2.9 Excessively Dry	1 of the following criteria met: 3 month cum. <65% or 6 month cum. <70% or 12 month cum. <70%	4-5 consecutive months below normal	At least 4 out of 5 consecutive months below normal	Medium index Reservoirs below normal
Warning	-4.0 and below	> -2.9 Severely Dry	2 out of 3 of the above criteria met: 3 month cum. <65% and 6 month cum. <65% or 6 month cum. <65% and 12 month cum. <65% or 3 month cum. <65% and 12 month cum. <65%	6-7 consecutive months below normal observation wells recording monthly record lows	At least 6 out of 7 consecutive months below normal	Large index reservoirs below normal
Emergency	-4.0 and below	> -2.9 Severely dry	Same criteria as Warning and Previous month was Warning or Emergency	>7 months below normal Observation wells recording monthly record lows	>7 months below normal	Continuation of previous month's conditions

November 2022 Rainfall and Departure



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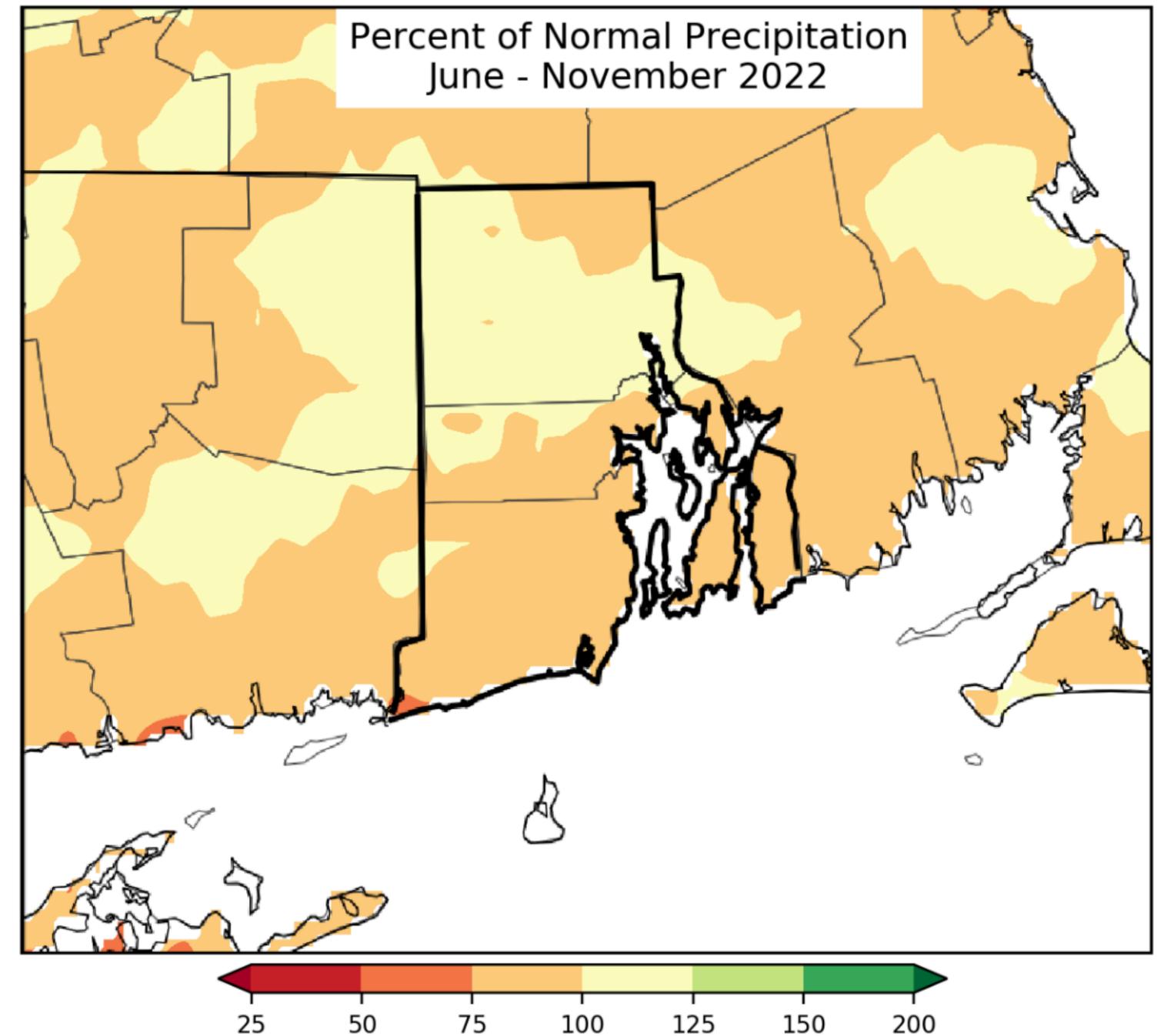
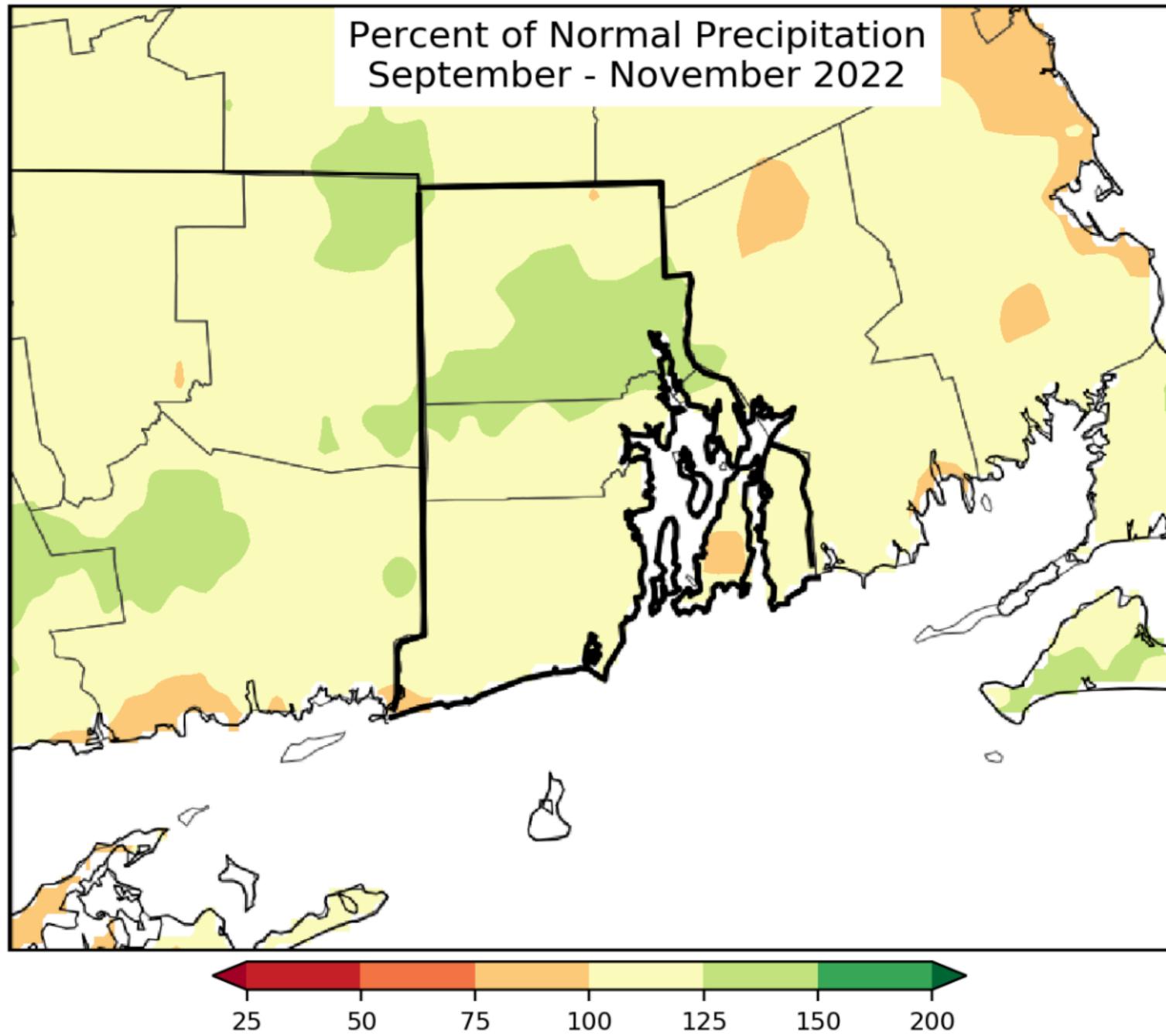
Generally 2 to 3 inches across RI with isolated higher and lower amounts



Sep-Nov and Jun-Nov Percent of Normal



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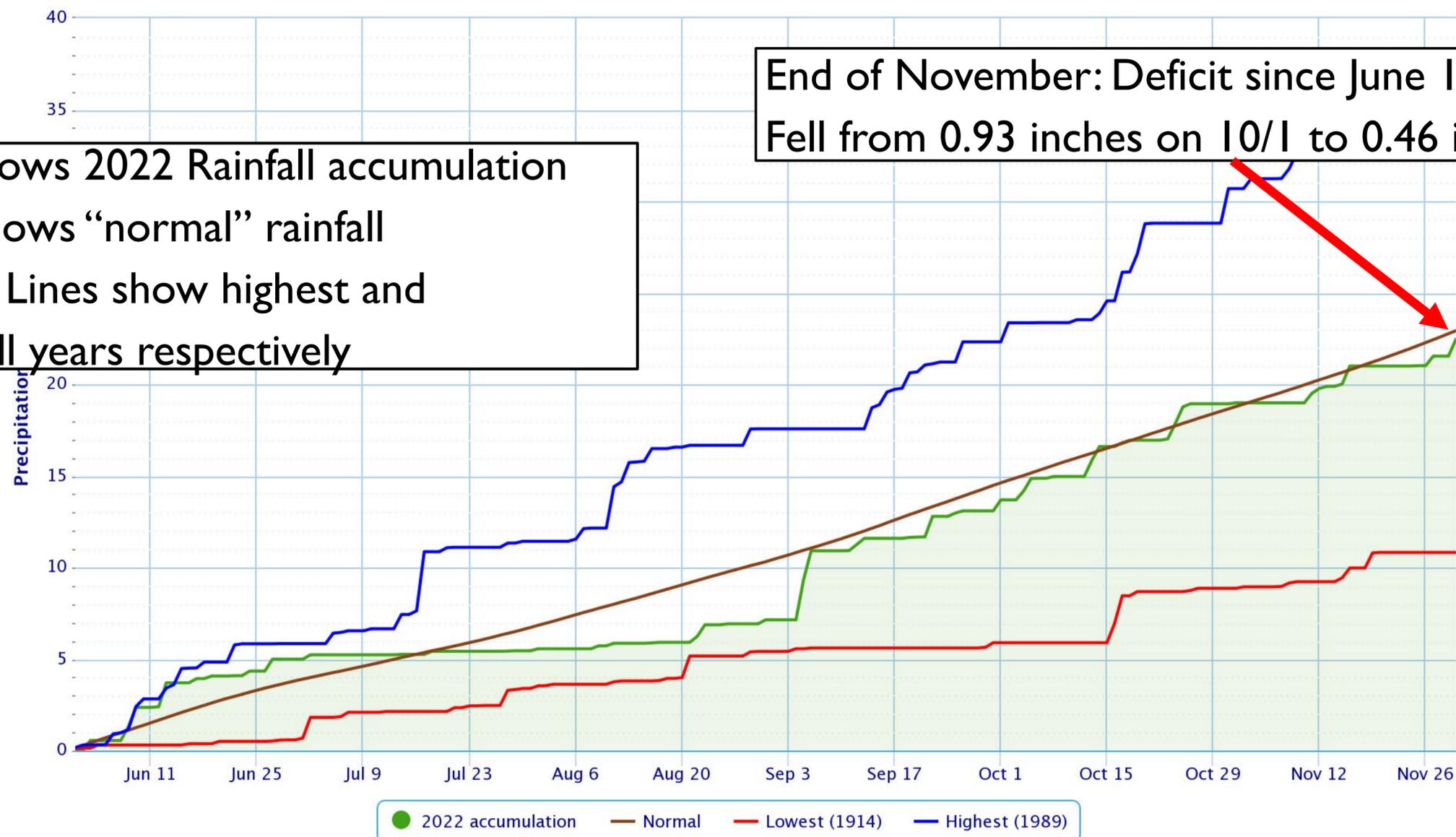
Rainfall Profile: Providence



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Accumulated Precipitation – Providence Area, RI (ThreadEx)

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



End of November: Deficit since June 1st
Fell from 0.93 inches on 10/1 to 0.46 inches

Green line shows 2022 Rainfall accumulation
Brown line shows “normal” rainfall
Blue and Red Lines show highest and lowest rainfall years respectively

Powered by ACIS

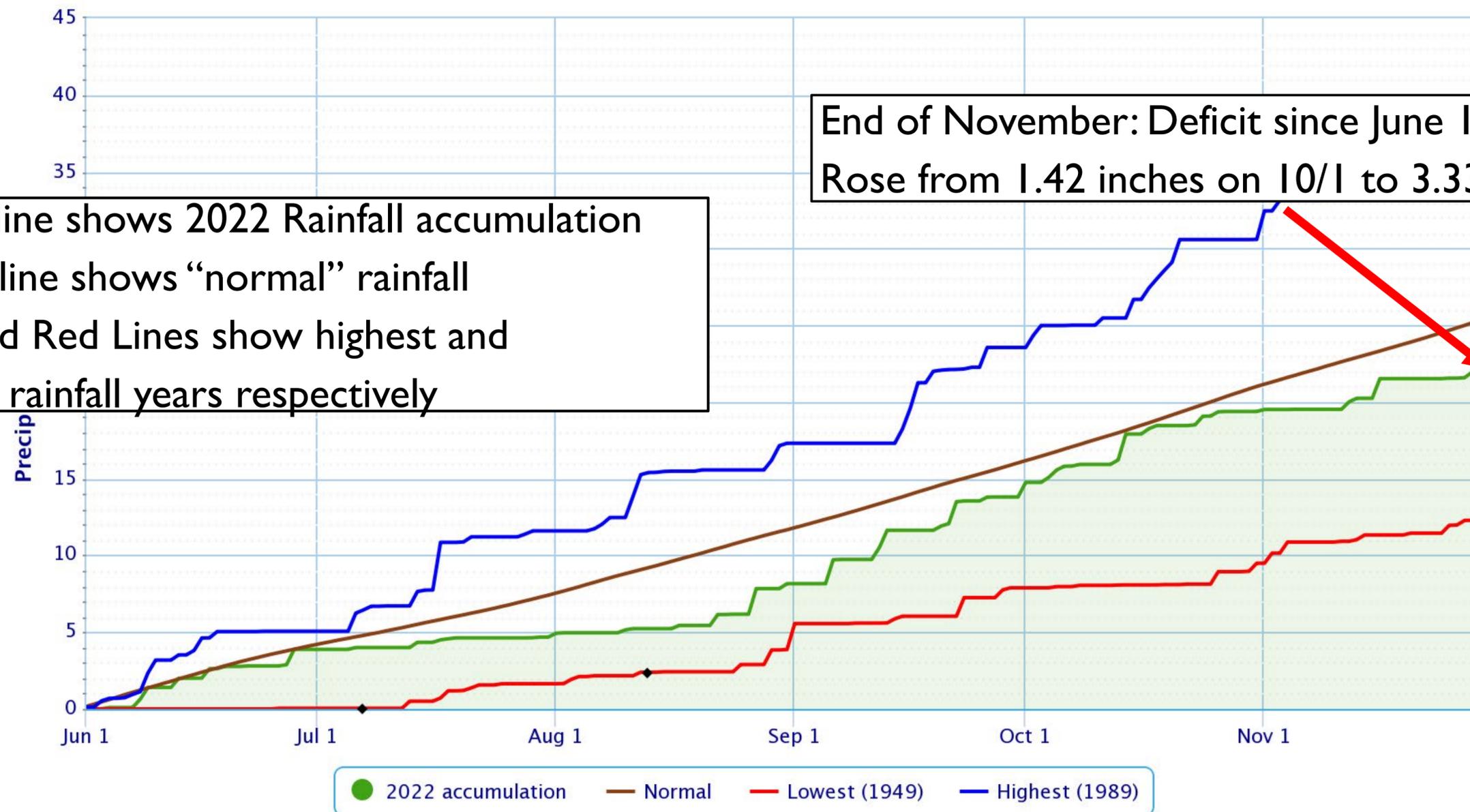
Rainfall Profile: Kingston



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Accumulated Precipitation – KINGSTON, RI

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



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November and Oct/Nov Rainfall by Region



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RI 1-month Nov 2022	Rainfall	Departure	Percent	Normal
Northwest	2.93	-1.56	65	4.49
Northeast	2.58	-1.69	60	4.27
Central West	2.72	-1.65	62	4.37
Central East	2.62	-1.74	60	4.36
Eastern	2.6	-1.55	63	4.15
Southern	2.09	-2.08	50	4.17
New Shoreham	2.5	-1.24	67	3.74

RI 2-month Oct-Nov 22	Rainfall	Departure	Percent	Normal
Northwest	7.76	-1.72	82	9.48
Northeast	7.40	-1.91	79	9.31
Central West	8.48	-0.75	92	9.23
Central East	8.02	-1.14	88	9.16
Eastern	7.72	-0.88	90	8.60
Southern	7.23	-1.49	83	8.72
New Shoreham	6.94	-1.57	82	8.51

- **1 month rainfall was well below normal**
- **6/7 drought regions at or below 65% (need 2 months below 65% for advisory criteria)**
- **2 month rainfall slightly below normal.**
- **All regions above 2 month drought advisory criteria of 65%**

3 and 6-Month Rainfall by Region



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RI 3-month Sep-Nov 22	Rainfall	Departure	Percent	Normal
Northwest	16.74	2.86	121	13.88
Northeast	16.20	2.81	121	13.39
Central West	15.06	1.54	111	13.52
Central East	15.82	2.58	119	13.24
Eastern	13.31	0.80	106	12.51
Southern	13.47	0.60	105	12.87
New Shoreham	11.56	-1.01	92	12.57

- **3 Month precipitation is near to above normal statewide**
- **Only New Shoreham region below normal**

RI 6-month Jun-Nov 22	Rainfall	Departure	Percent	Normal
Northwest	27.36	0.88	103	26.48
Northeast	25.93	0.51	102	25.42
Central West	23.29	-2.18	91	25.47
Central East	23.88	-0.55	98	24.43
Eastern	19.80	-3.25	86	23.05
Southern	20.56	-3.52	85	24.08
New Shoreham	19.02	-4.49	81	23.51

- **6 Month Rainfall ranging from near to slightly below normal**
- **Greatest deficits across Eastern, Southern, and New Shoreham regions**

Rainfall by Region Last 3 Months



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RI 1-month 2022	SEPT Percent	OCT Percent	NOV Percent	3-month Sep-Nov
Northwest	204	97	65	121
Northeast	216	96	60	121
Central West	153	119	62	111
Central East	191	113	60	119
Eastern	143	115	63	106
Southern	150	113	50	105
New Shoreham	114	93	67	92

- **Very wet September has offset below normal precipitation in November to yield a near to above normal 3 month precipitation departure**

12-Month Rainfall by Region



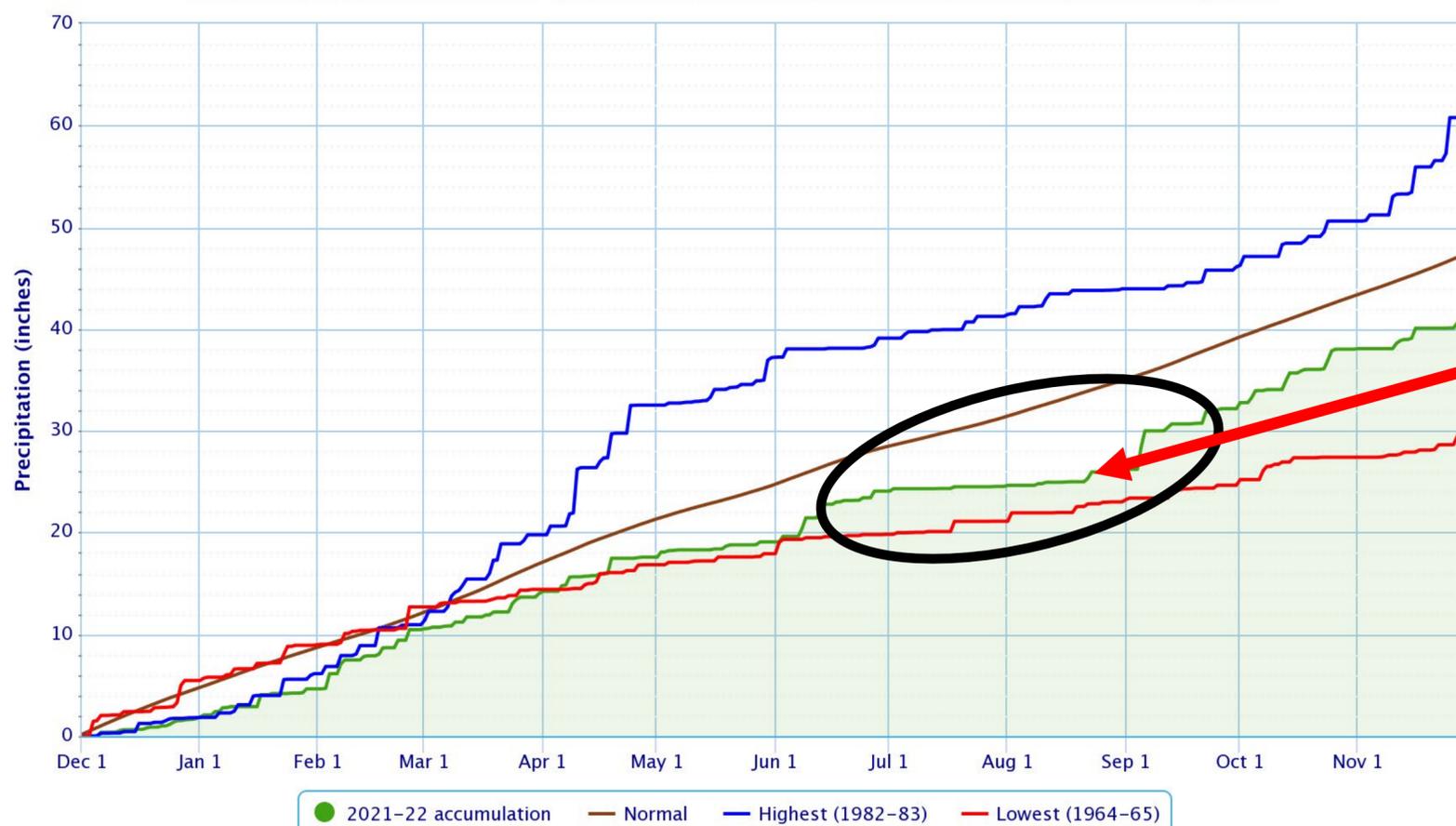
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RI 12-month Dec 21-Nov 22	Rainfall	Departure	Percent	Normal
Northwest	49.06	-4.72	91	53.78
Northeast	46.99	-4.67	91	51.66
Central West	44.40	-6.37	87	50.77
Central East	43.79	-6.52	87	50.31
Eastern	39.92	-7.71	84	47.63
Southern	42.78	-7.15	86	49.93
New Shoreham	38.79	-9.61	80	48.40

- **12 Month rainfall is slightly below normal**

Accumulated Precipitation – Providence Area, RI (ThreadEx)

Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



- **Below normal rainfall this year was driven by an exceptionally dry first half of the summer**
- **Otherwise a relatively normal year**

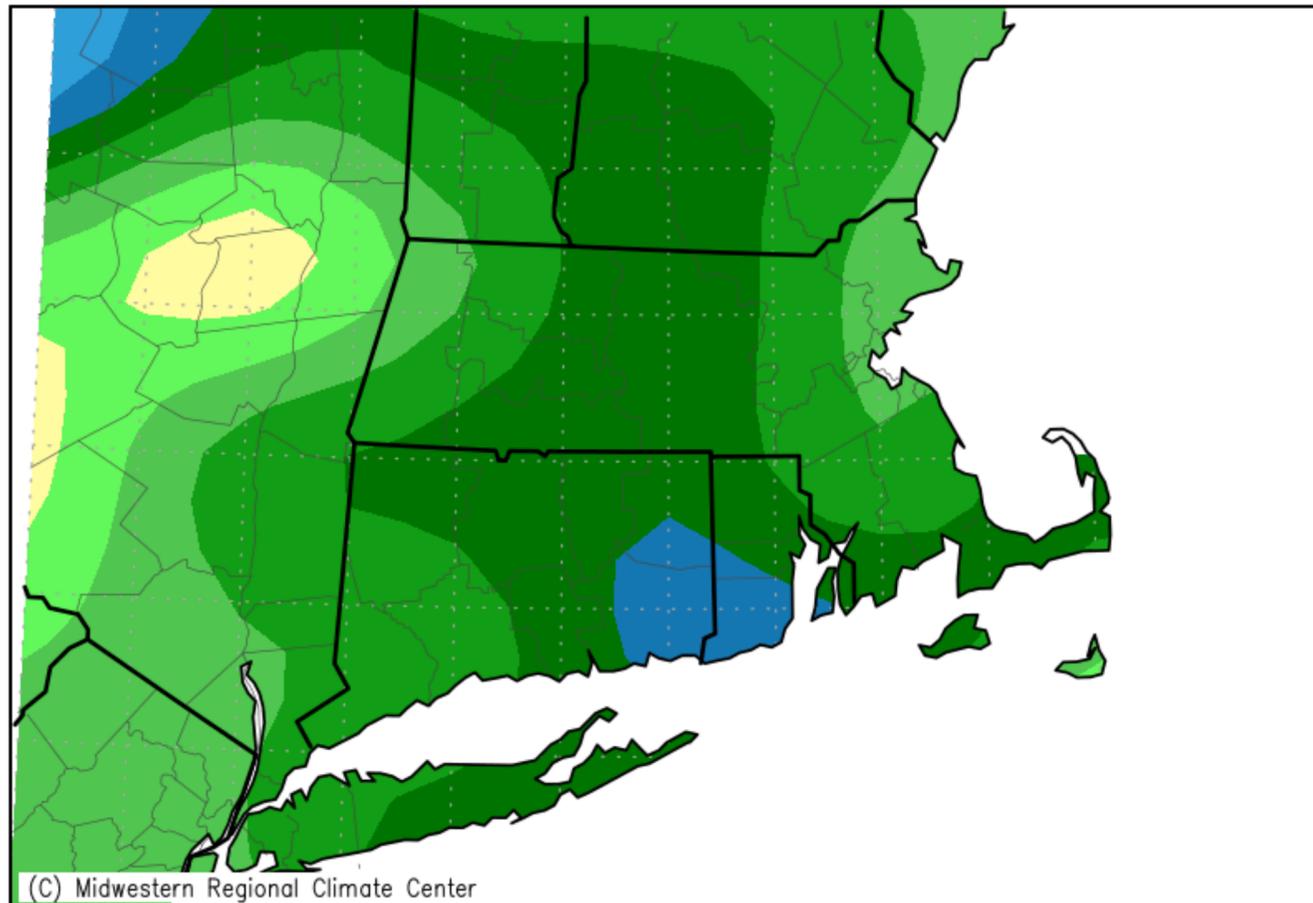
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December MTD Rainfall

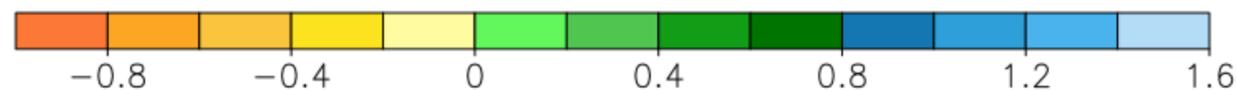


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Accumulated Precipitation (in): Departure from Mean
December 1, 2022 to December 12, 2022

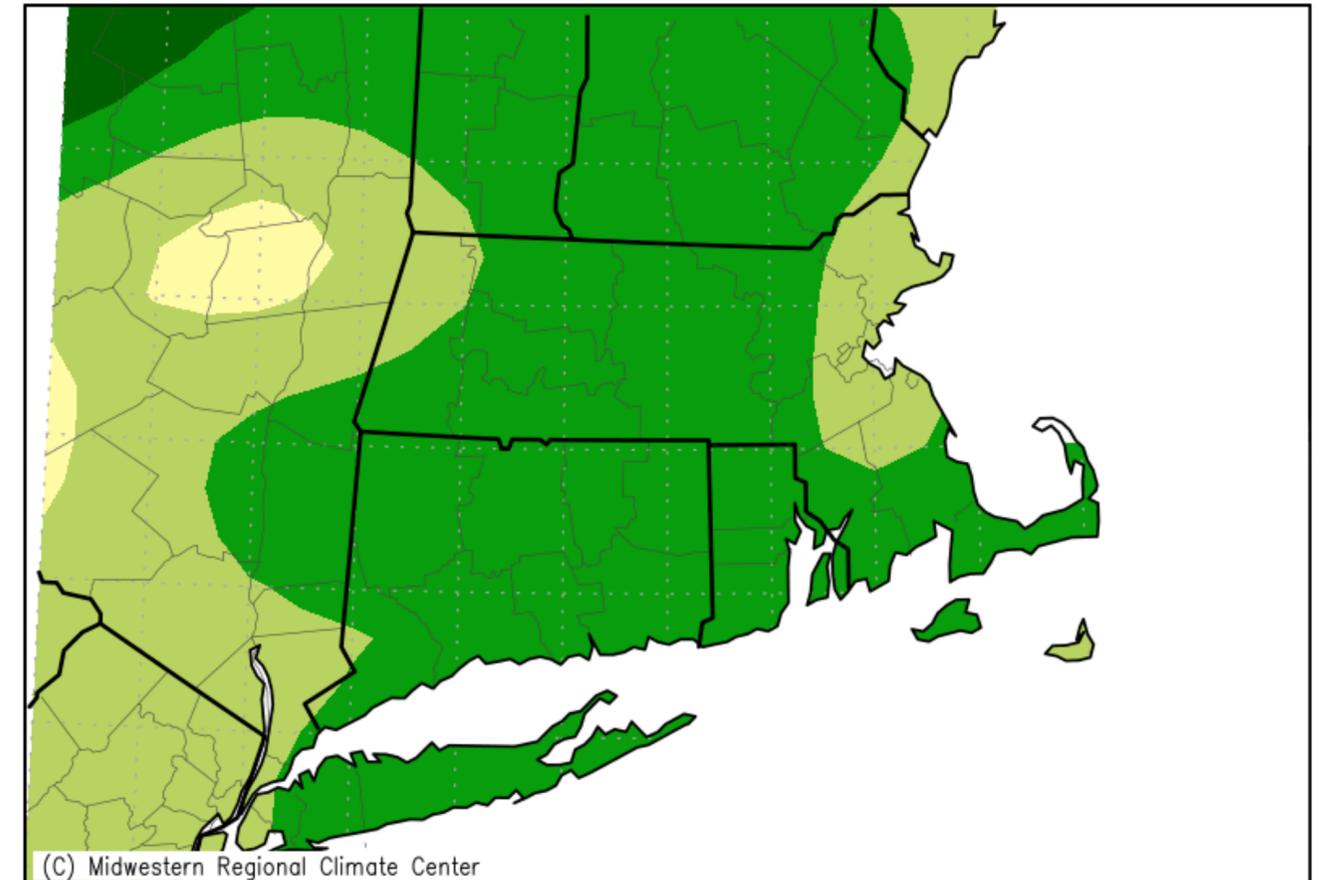


Mean period is 1991-2020.

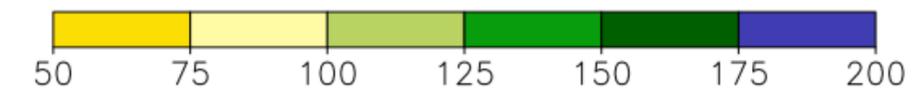


Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 12/12/2022 9:37:31 AM CST

Accumulated Precipitation: Percent of Mean
December 1, 2022 to December 12, 2022



Mean period is 1991-2020.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 12/12/2022 9:35:52 AM CST

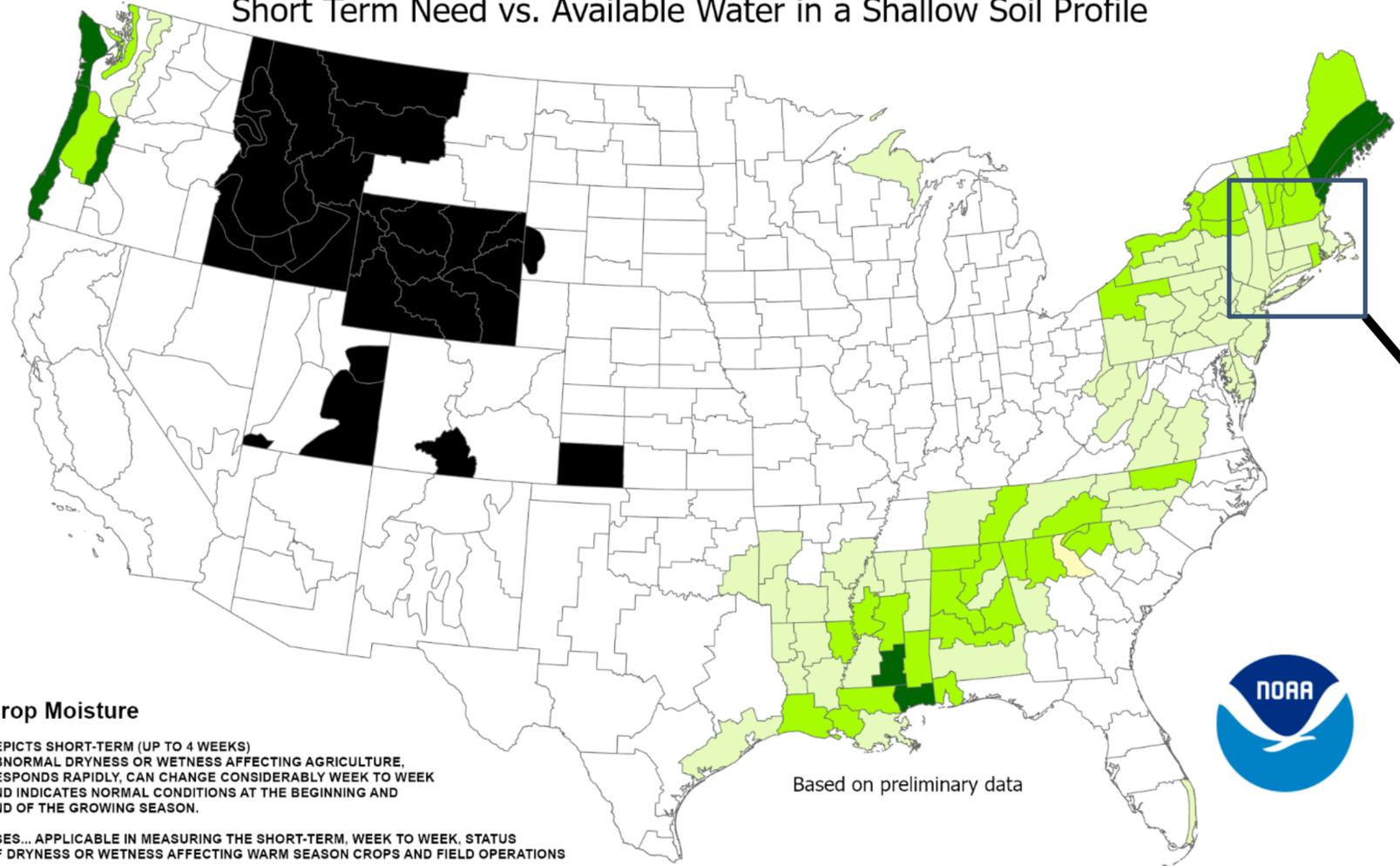
Crop Moisture Index

Valid through Week ending December 3rd

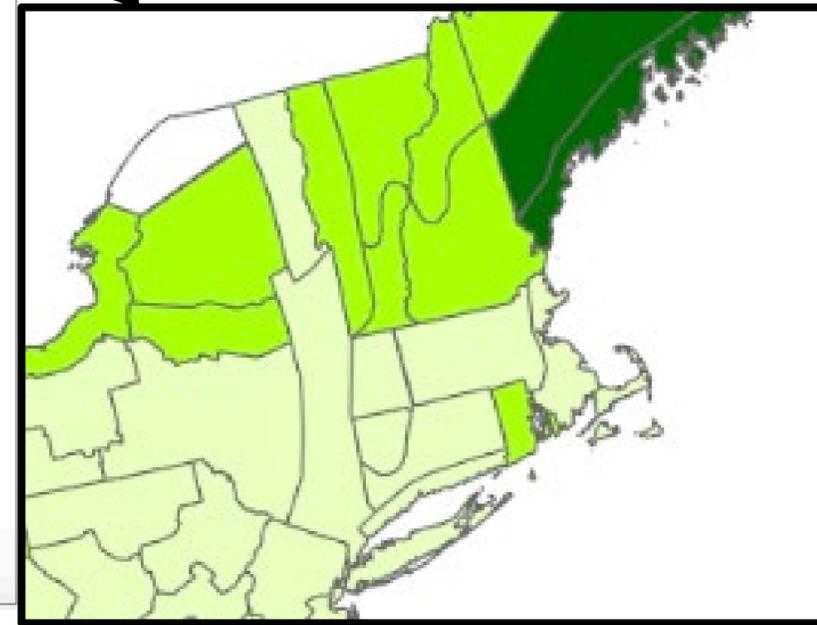


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Crop Moisture Index by Division
Weekly Value for Period Ending Dec 03, 2022
Short Term Need vs. Available Water in a Shallow Soil Profile



- CMI for RI: 2.09 Wet



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 55F. 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

Orange	-3.0 or less (Severely Dry)	Light Green	+1.0 to +1.9 (Abnormally Moist)
Dark Orange	-2.0 to -2.9 (Excessively Dry)	Yellow-Green	+2.0 to +3.0 (Wet)
Light Orange	-1.0 to -1.9 (Abnormally Dry)	Dark Green	3.0 and above (Excessively Wet)
White	-0.9 to +0.9 (Slightly Dry/Favorably Moist)	Black	Missing/Incomplete

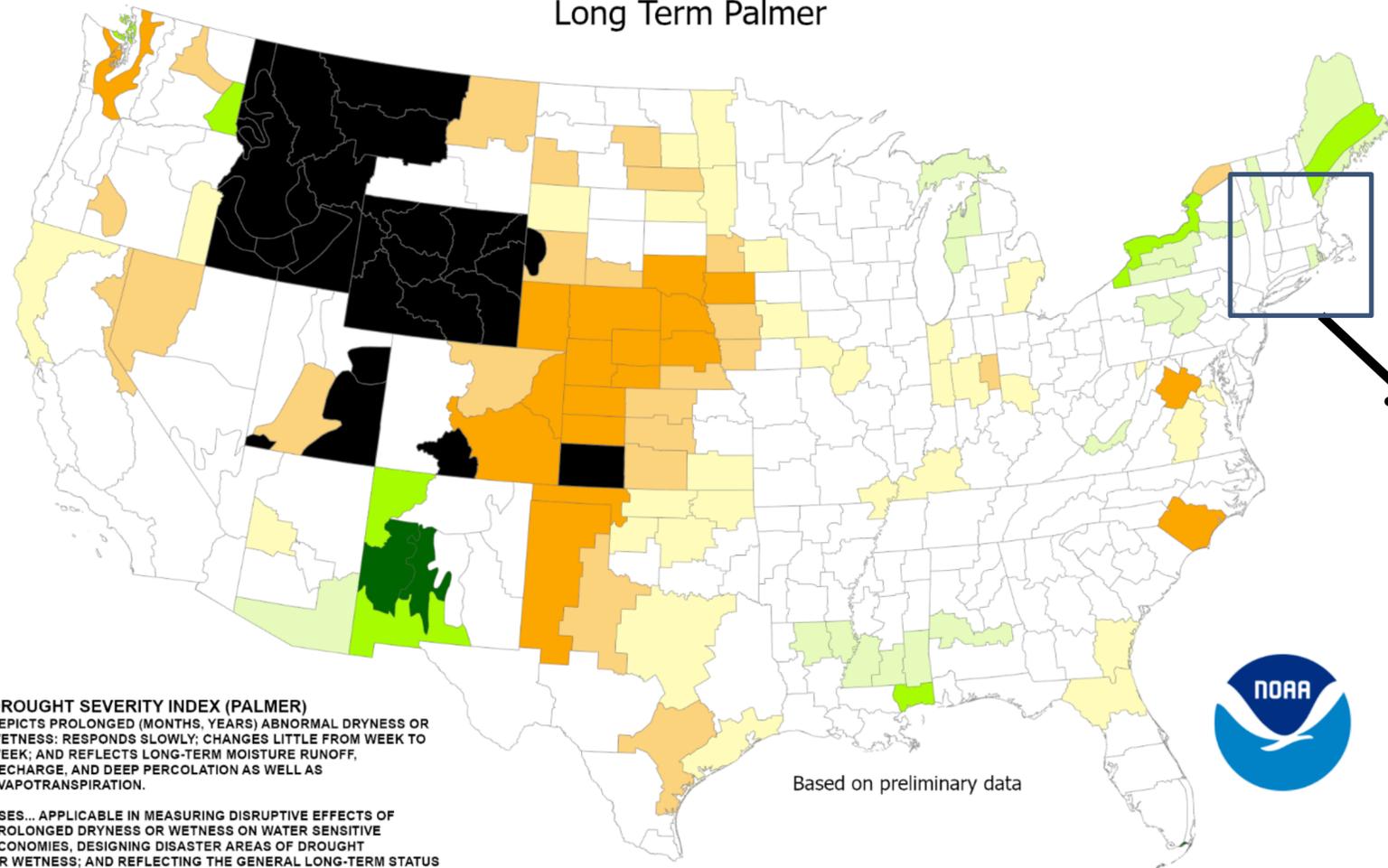


Palmer Drought Index

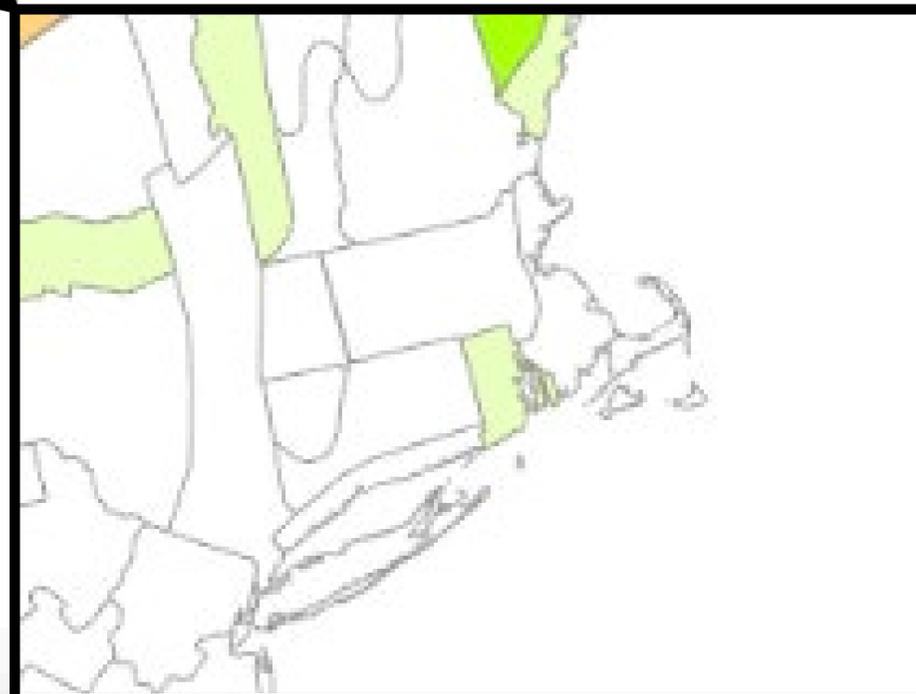


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Drought Severity Index by Division
Weekly Value for Period Ending Dec 03, 2022
Long Term Palmer



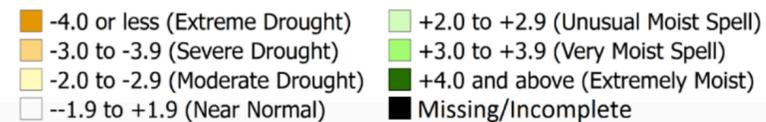
- Latest CPC PDSI calculation: 2.12
- “Unusual Moist Spell”



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).



Forecast Through 7 am Monday 12/19

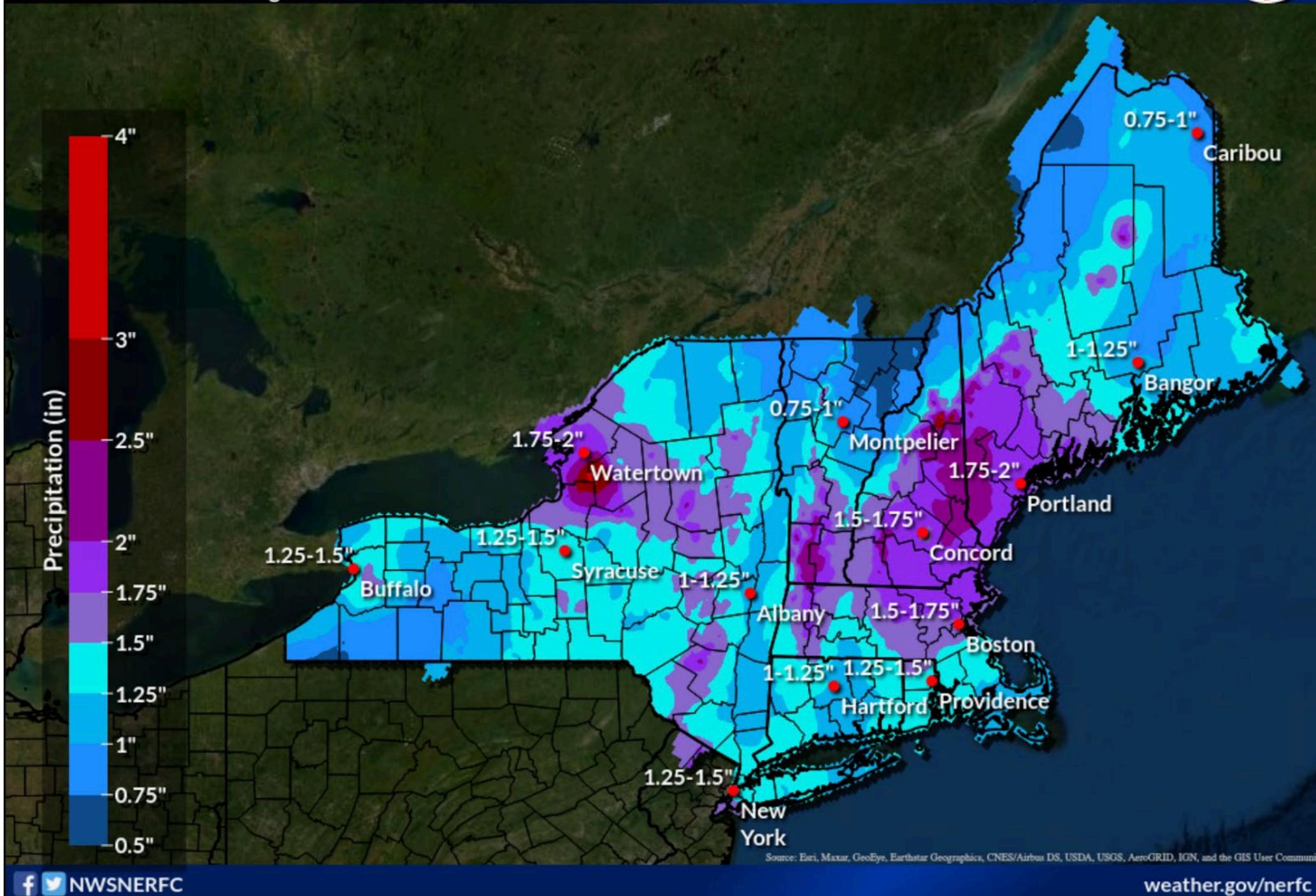


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7 Day WPC Precipitation Forecast

Valid Mon 7:00AM through Mon 7:00AM EST

River Forecast Center
Northeast RFC
Issued Dec 12, 2022 7:05 AM EST



Forecast through Monday

- Widespread 1.25 to 2 inches of liquid precipitation is forecast for southern New England over the next 7 days
- Current forecast for Rhode Island is 1.25 to 1.5 inches.
- Mainly from a storm system that will impact the region Friday into Saturday
- Precipitation more likely to be rain, but can't rule out some frozen precipitation for Rhode Island at this time

CPC 8-14 Day Outlook

December 19-25 2022



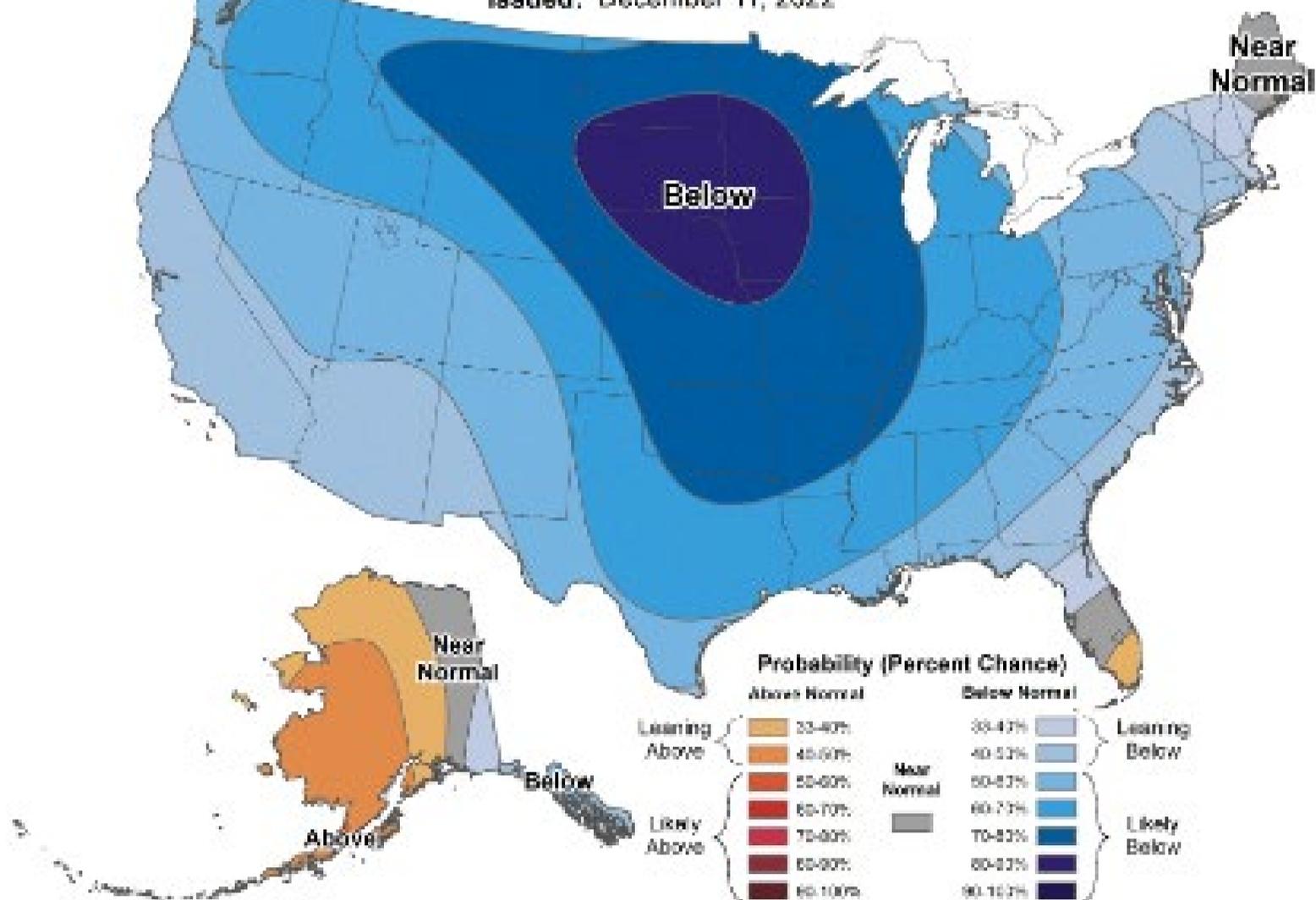
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8-14 Day Temperature Outlook



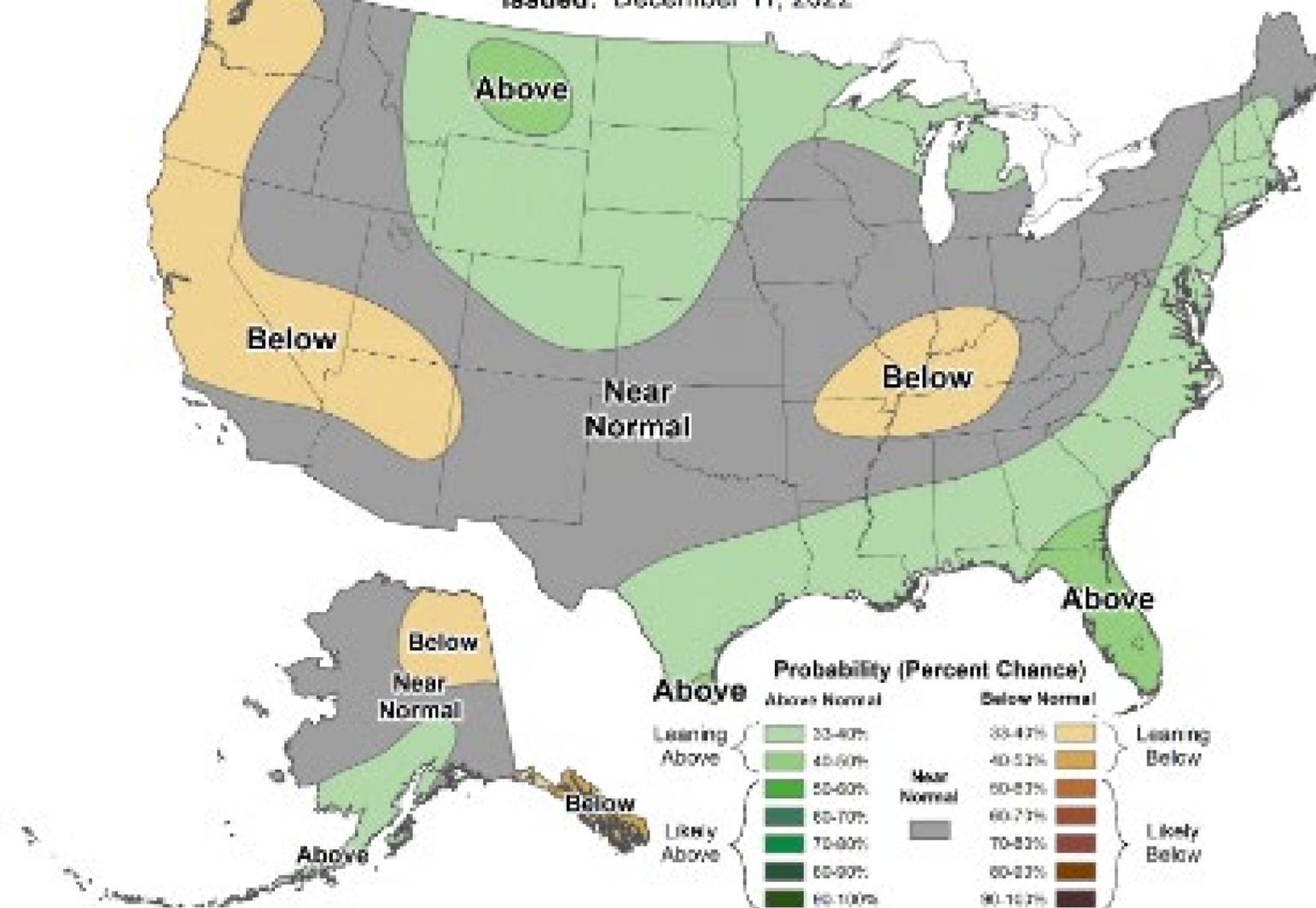
Valid: December 19 - 25, 2022
Issued: December 11, 2022



8-14 Day Precipitation Outlook



Valid: December 19 - 25, 2022
Issued: December 11, 2022



CPC Outlook for Dec/Jan/Feb



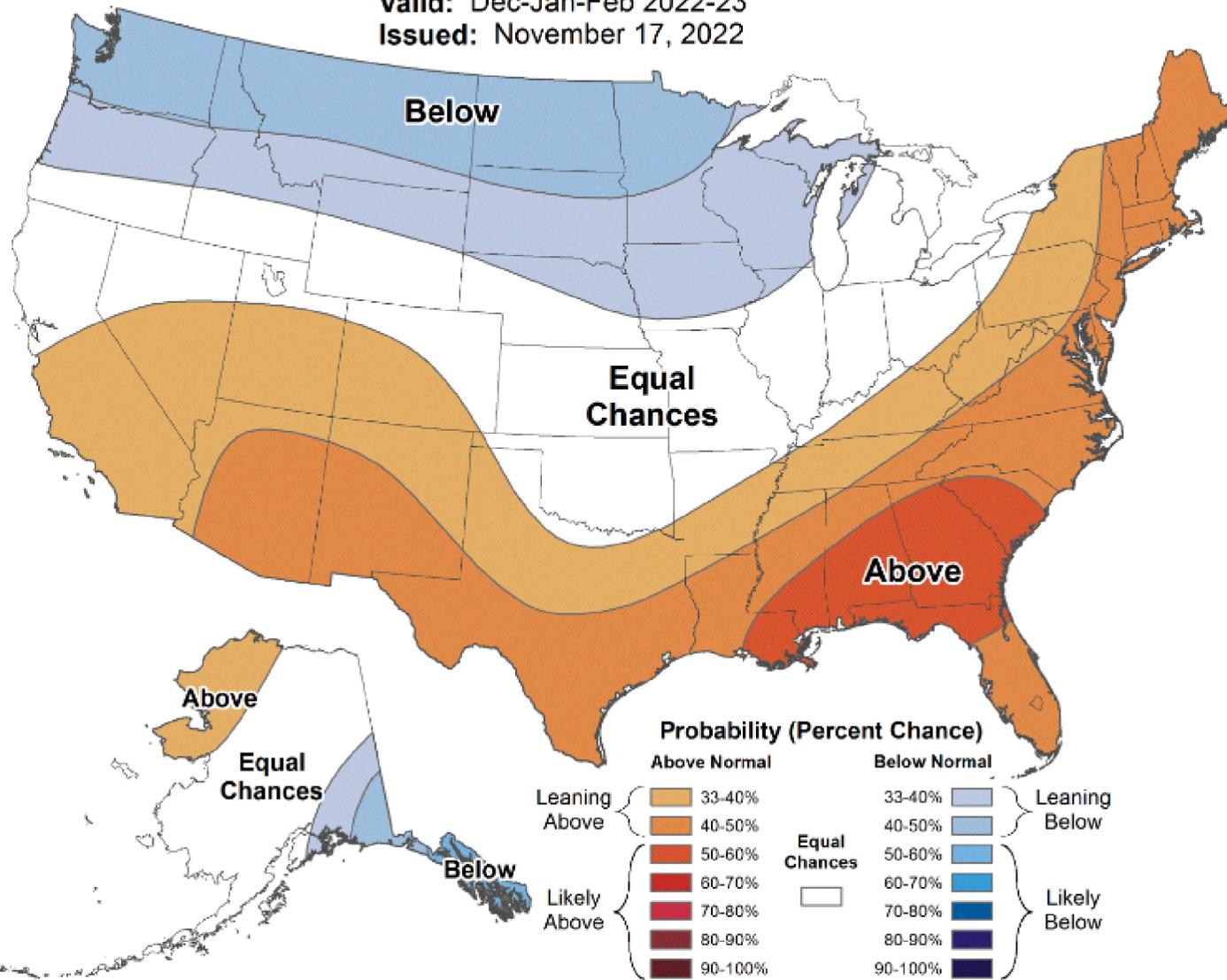
Boston/Norton MA
WEATHER FORECAST OFFICE



Seasonal Temperature Outlook



Valid: Dec-Jan-Feb 2022-23
Issued: November 17, 2022



Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2022-23
Issued: November 17, 2022

