

Hydrologic Conditions in Massachusetts for January 2025

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DCR Office of Water Resources

Drought Management Task Force

February 6, 2025

Meeting Co-Chairs: EOEEA, MEMA



MA Drought Management Plan

Indices

Numbers in parentheses indicate number of data points across the state



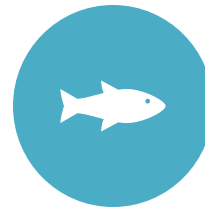
Precipitation (93)



Streamflow (59)



Groundwater (63)



Lakes and
Impoundments (20)



KBDI - Fire Danger
(36)



Evapotranspiration
(national map)

MA Drought Management Plan

Index Severity Levels

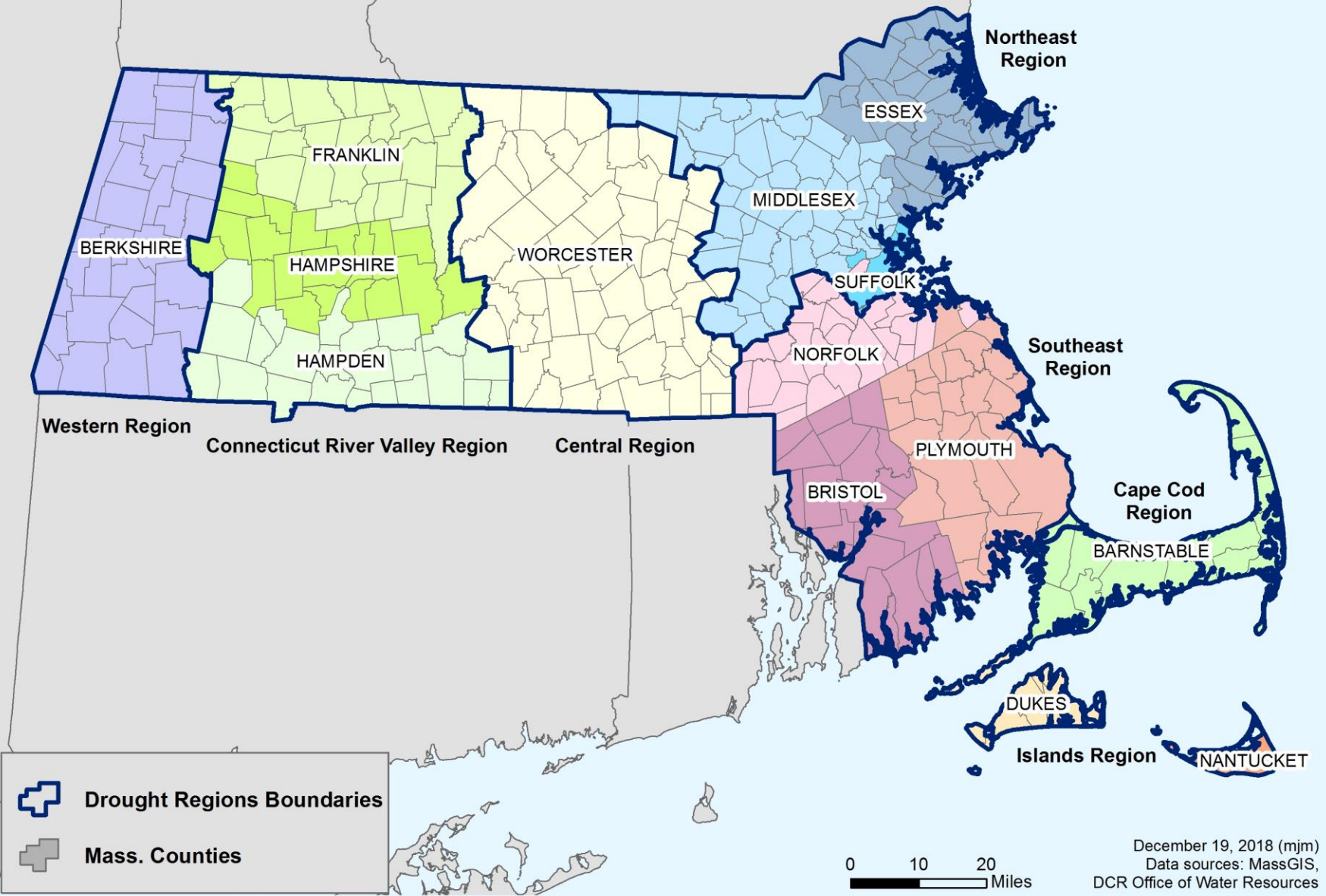
Index Severity Level	Percentiles for: Precipitation, Streamflow, Lakes and Impoundments, Groundwater, and Evapotranspiration	Keetch-Byram Drought Index
0	>30 th percentile	< 200
1	≤30 and >20	200-400
2	≤20 and >10	400-600
3	≤10 and >2	600-700
4	≤2	700-800

MA Drought Management Plan

Drought Levels



MASSACHUSETTS DROUGHT REGIONS with Counties



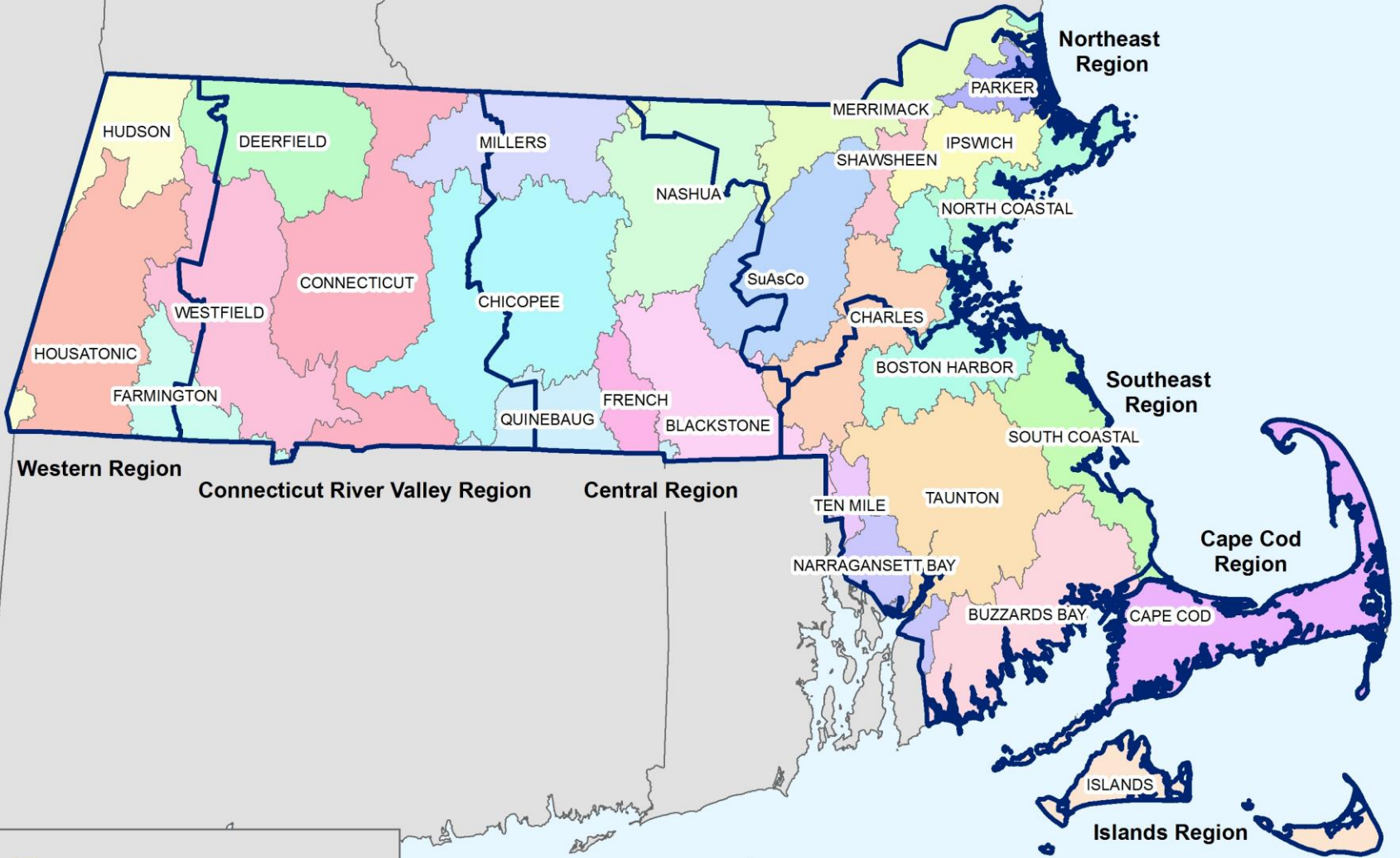
-  Drought Regions Boundaries
-  Mass. Counties

0 10 20
Miles

December 19, 2018 (mjm)
Data sources: MassGIS,
DCR Office of Water Resources

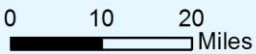


MASSACHUSETTS DROUGHT REGIONS with Watersheds



 Drought Regions Boundaries

 Mass. Counties



October 11, 2019 (mjm)
Data sources: MassGIS,
DCR Office of Water Resources

Task Force Member Updates



Hydrologic
Conditions



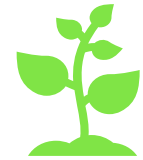
Weather &
Forecast



Water Supply
Impacts



Environmental
Impacts



Agricultural
Impacts



Fire Danger



Engineering/
Infrastructure
Impacts

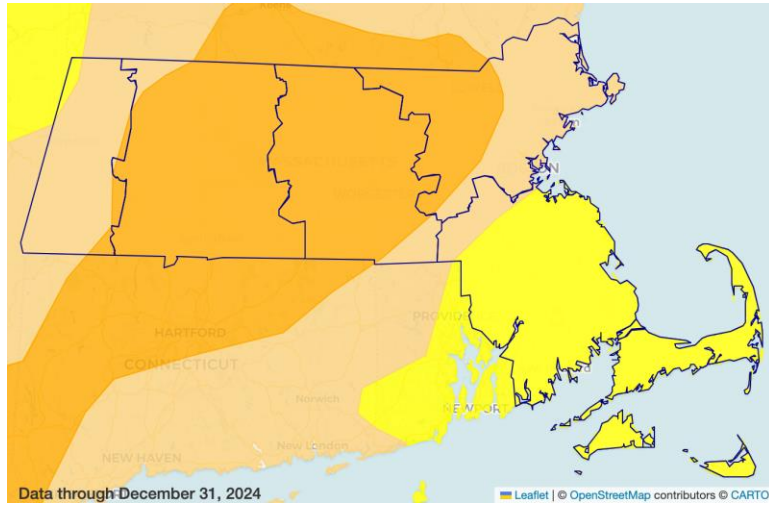


Public Health
Impacts

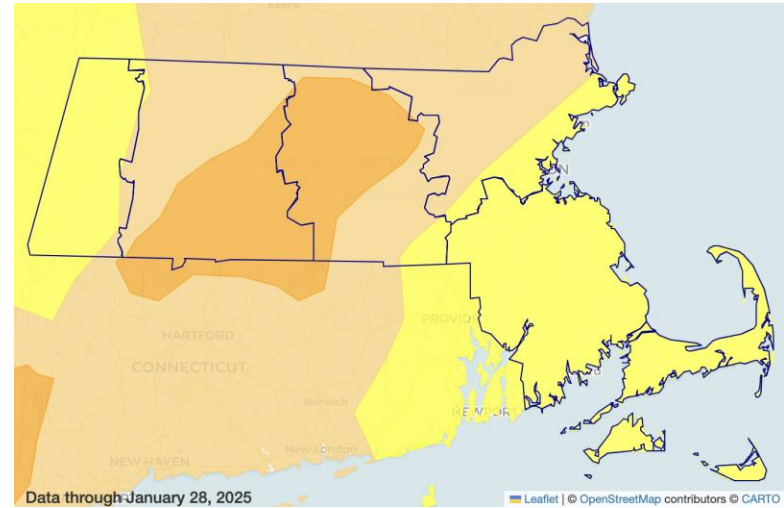
Recent Hydrologic History

- **Mid-August to October**
 - Below-normal precipitation drying out areas with impacts to streamflow
- **November**
 - Continued below-normal precipitation with some areas of normal precipitation from events late in the month
- **December**
 - Normal to above-normal precipitation improved conditions
 - Longer-term precipitation deficits and impacts to streamflow and groundwater
- **January**
 - Below-normal precipitation across the state
 - Continued impacts to streamflow and groundwater







US Drought Monitor

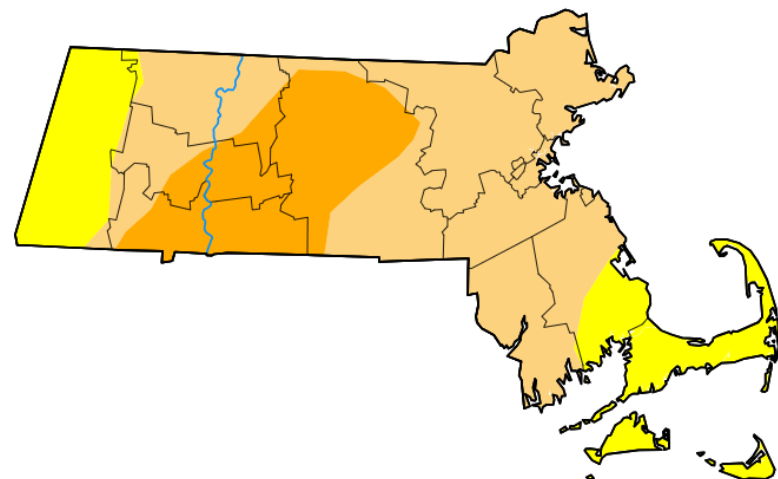


Data through December 31, 2024



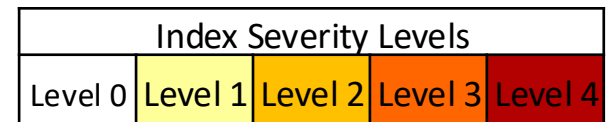
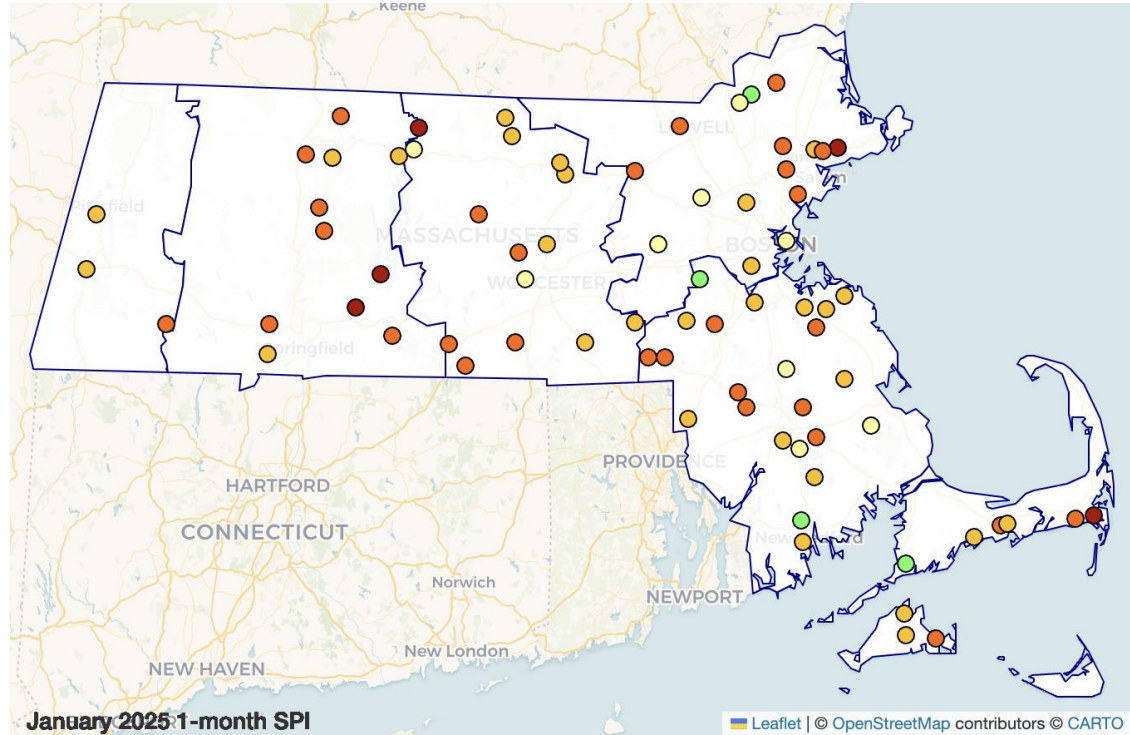
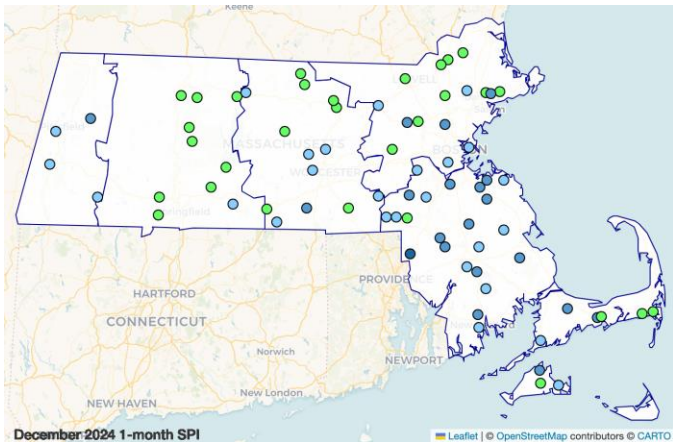
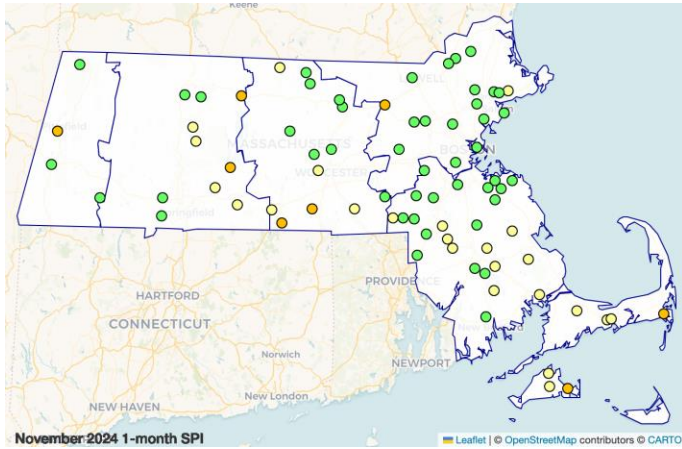
Data through January 28, 2025

	None			
	D0 (Abnormally Dry)	0	=	1
	D1 (Moderate Drought)	1	=	2
	D2 (Severe Drought)	2,3	=	3
	D3 (Extreme Drought)	4	=	4
	D4 (Exceptional Drought)			



Data through February 4, 2025

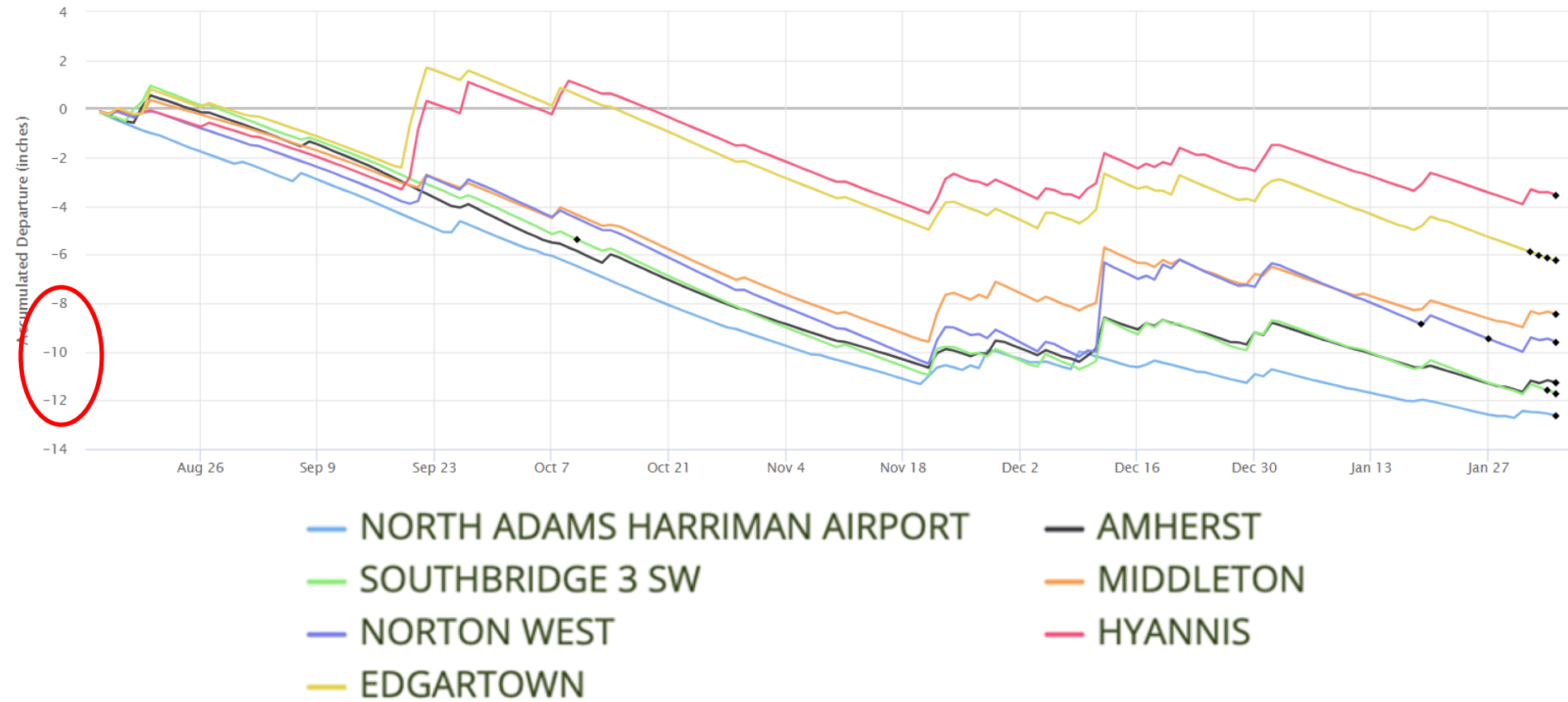
Standardized Precipitation Index



8-13" of Precipitation Deficit since mid-August

Accumulated Precipitation Departure from Normal (inches)

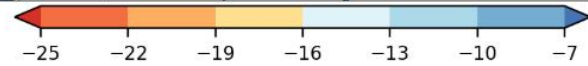
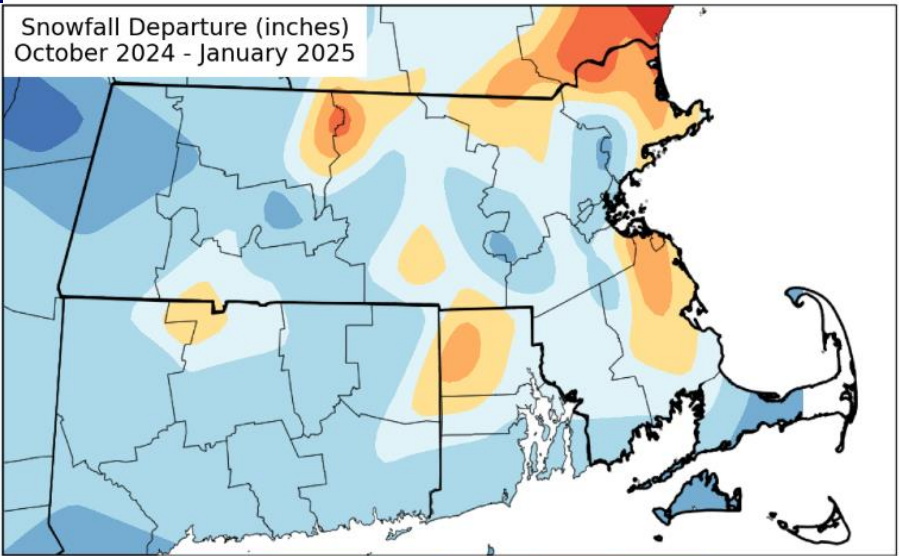
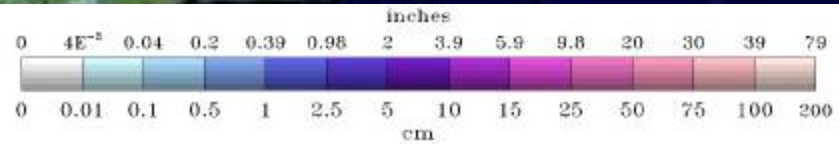
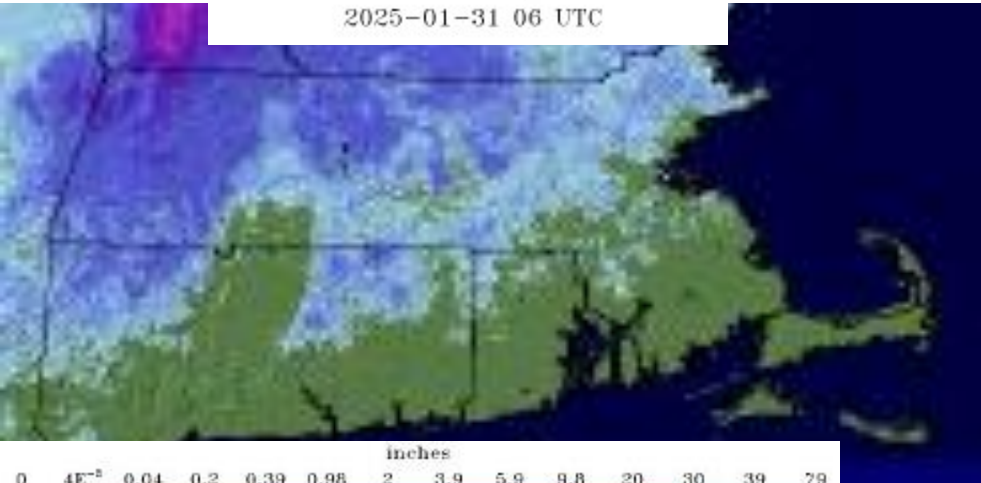
Black diamonds represent missing values



Snow

Snow Water Equivalent

2025-01-31 06 UTC



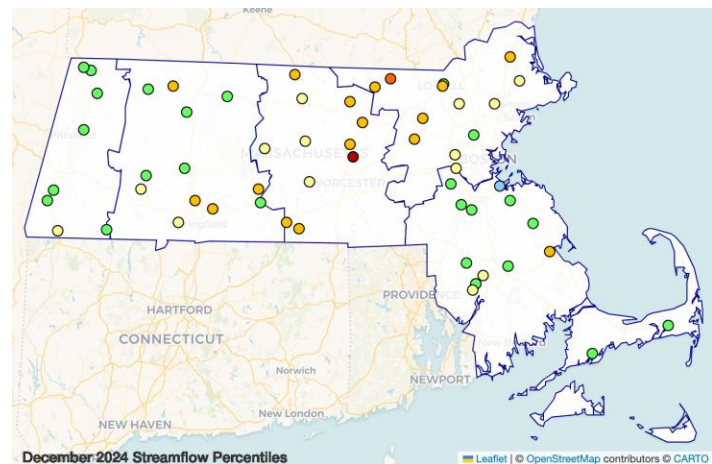
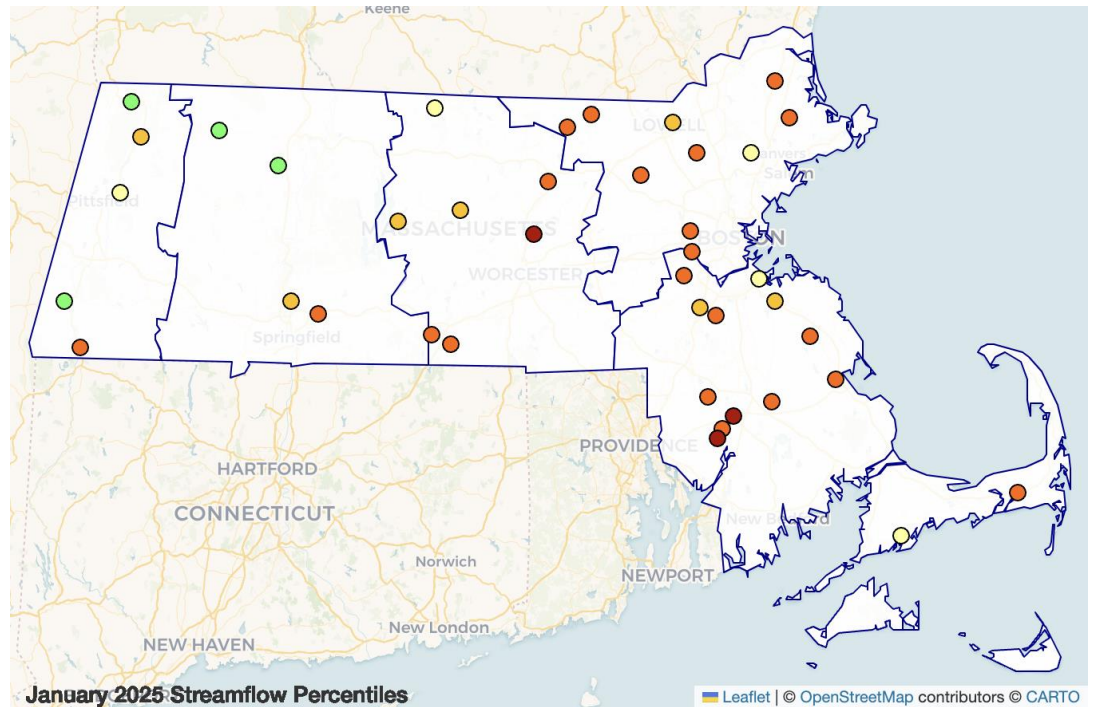
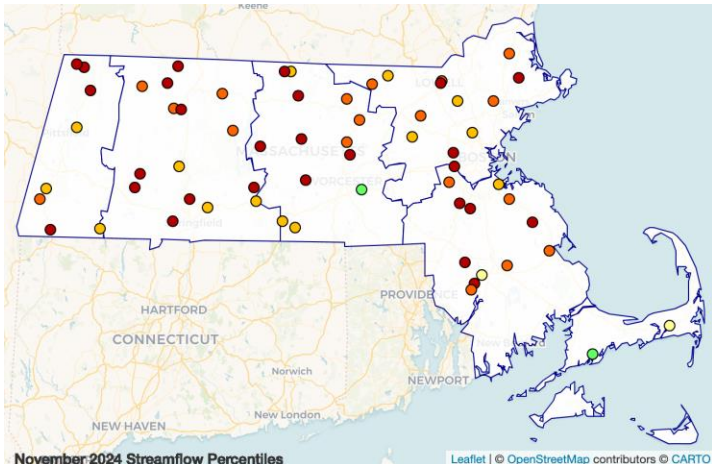
Standardized Precipitation Index as Percentile

REGION	NUMBER OF SITES	1-mo*	2-mo	3-mo	6-mo	9-mo	12-mo	24-mo	36-mo*
WESTERN	3	11	43	39	16	21	40	76	75
CTRV	11	8	24	16	6	13	29	79	74
CENTRAL	15	12	34	25	6	12	28	81	80
NORTHEAST	16	11	38	37	10	9	19	77	57
SOUTHEAST	23	14	55	43	14	20	45	76	69
CAPE COD	6	10	28	13	12	15	11	42	40
ISLANDS	3	11	38	17	10	28	26	20	35

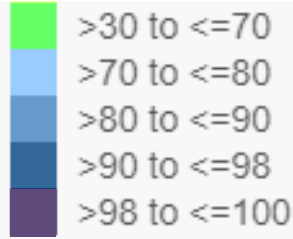
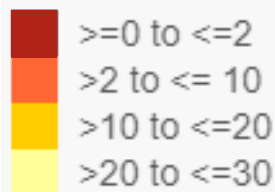
* 1- and 36-month SPI is for informational purposes only, not for drought determination. Of the 2- to 24-month look-back periods, the most relevant is selected each month depending on the phase of the drought - onset, during or recovery.
N/A: Not Available

Index Severity Levels				
Level 0	Level 1	Level 2	Level 3	Level 4

Streamflow Percentiles of Monthly Median



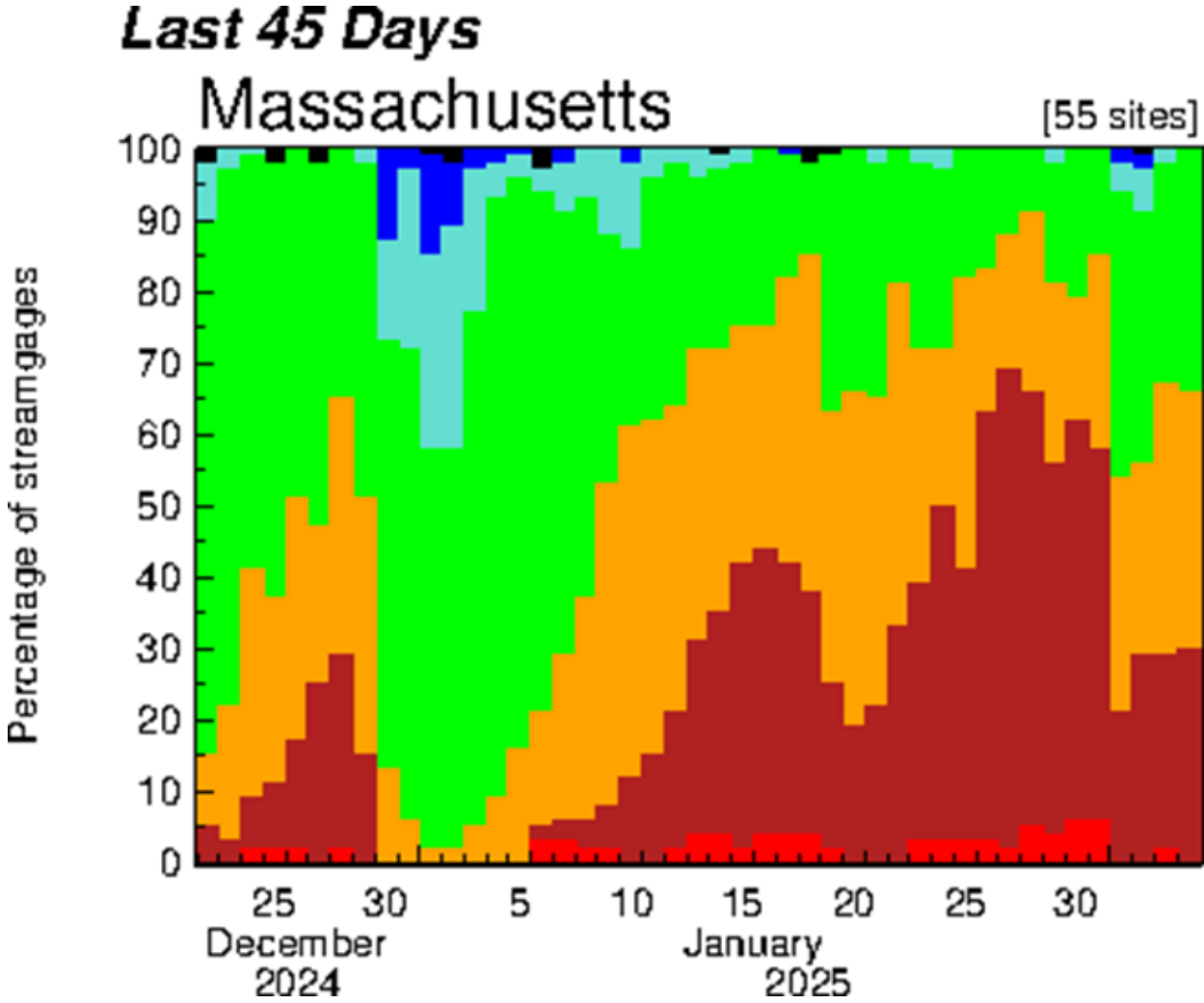
Percentiles



Index Severity Levels



Percent of Gages at Various Percentiles



Explanation - Percentile classes

Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

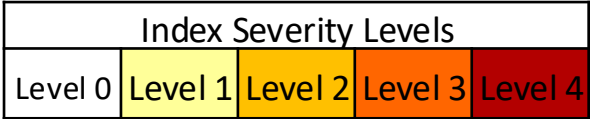
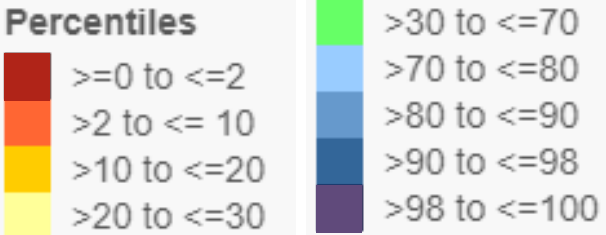
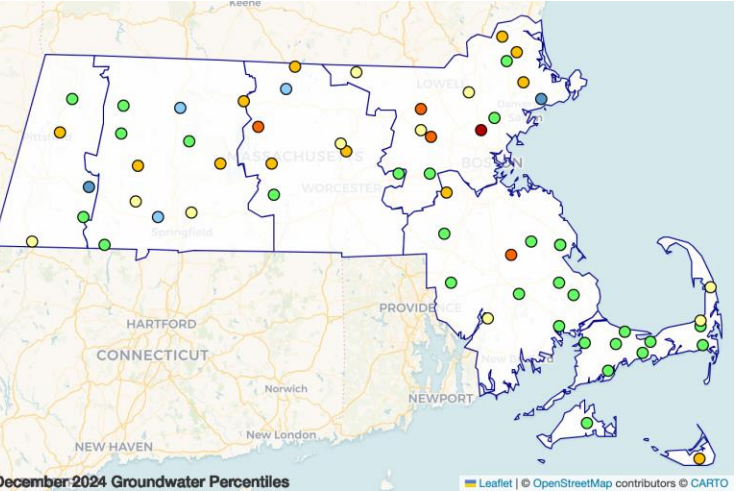
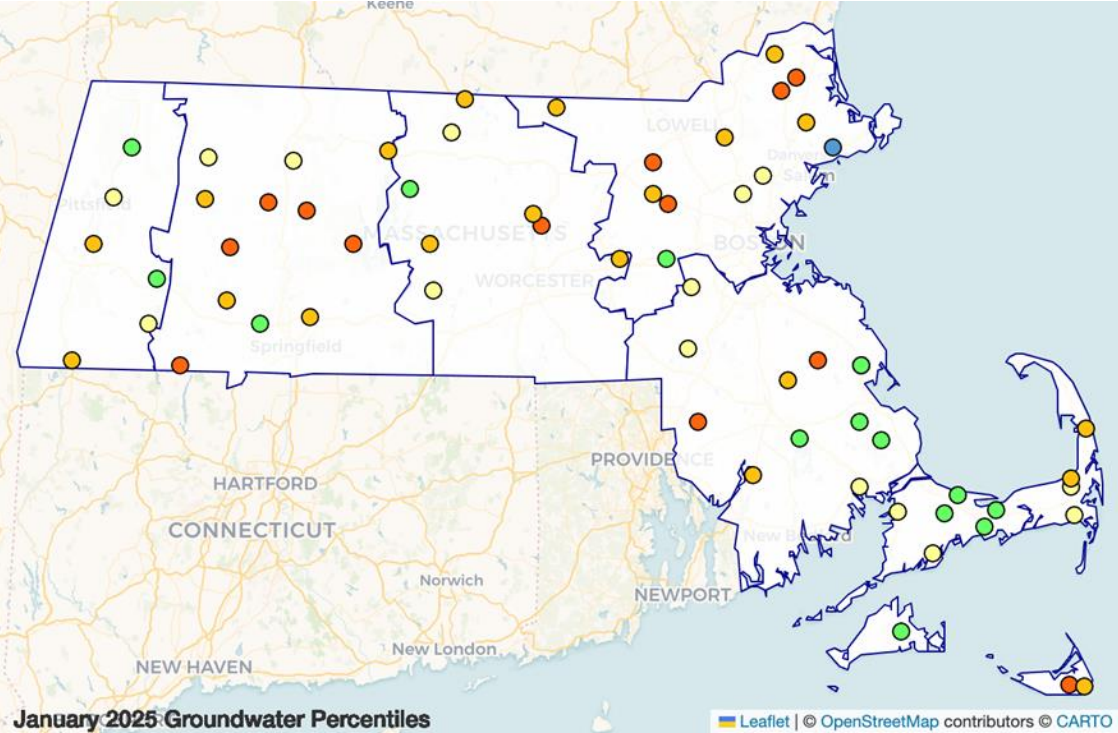
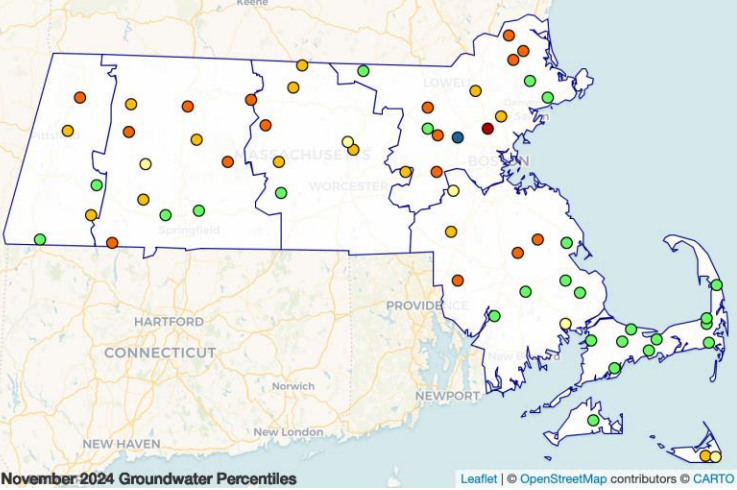
Streamflow Index

REGION	NUMBER OF GAGES REPORTING	≥0 TO ≤2 PERCENTILE	>2 TO ≤10 PERCENTILE	>10 TO ≤20 PERCENTILE	>20 TO ≤30 PERCENTILE	>90 PERCENTILE	MEDIAN OF INDIVIDUAL GAGE PERCENTILES
WESTERN	5	0	1	1	1	0	24
CTRV	4	0	1	1	0	0	30
CENTRAL	7	1	3	2	1	0	10
NORTHEAST	10	0	8	1	1	0	8
SOUTHEAST	12	2	7	2	1	0	7
CAPE COD	2	0	1	0	1	0	16

Notes: Not all gages report in all months due to ice, beaver dams or other conditions. The Islands region does not have any streamflow gages.

Index Severity Levels				
Level 0	Level 1	Level 2	Level 3	Level 4

Groundwater Percentiles



Groundwater Index

REGION	NUMBER OF WELLS REPORTING	≥0 TO ≤2 PERCENTILE	>2 TO ≤10 PERCENTILE	>10 TO ≤20 PERCENTILE	>20 TO ≤30 PERCENTILE	>90 PERCENTILE	MEDIAN OF INDIVIDUAL WELL PERCENTILES
WESTERN	6	0	0	2	2	0	25
CTRV	12	0	5	4	2	0	11
CENTRAL	8	0	1	4	2	0	15
NORTHEAST	13	0	4	5	2	0	15
SOUTHEAST	12	0	3	2	3	0	22
CAPE COD	10	0	0	2	4	0	27
ISLANDS	3	0	1	1	0	0	16

Index Severity Levels				
Level 0	Level 1	Level 2	Level 3	Level 4

Lakes & Impoundments

REGION	NUMBER OF SITES REPORTING	MEDIAN OF INDIVIDUAL PERCENTILES OR PERCENT FULL
WESTERN	1	100%
CTRV	2	22nd
CENTRAL	4	1st
NORTHEAST	3	4th
SOUTHEAST	2	29th
CAPE COD	1	25th

Notes:

DMP index severity levels do not necessarily reflect water supply status.

ID = insufficient data

Index Severity Levels				
Level 0	Level 1	Level 2	Level 3	Level 4

Drought Indices by Region

December 2024

Drought Index	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation (6-mos)	30	18	10	13	16	24 ^(3-mos)	16 ^(3-mos)
Streamflow	40	30	17	21	38	35	N/A
Groundwater	32	39	22	24	43	35	30
Lakes/ Impoundments	25	27	17	16	30	40	N/A
ET*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KBDI**	N/A	N/A	N/A	N/A	N/A	N/A	N/A

December declaration	Level 1	Level 2	Level 2	Level 2	Level 1	Level 1	Level 1
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Lakes & Impoundments Index does not reflect water supply status. This summary is provided for informational purposes. No changes in drought status are official until the Secretary of the Executive Office of Energy and Environmental Affairs makes the final drought declaration for the state after receiving a recommendation from the Drought Management Task Force. Data are preliminary and not final until all data are reported. N/A = not applicable. ID = insufficient data. *ET not reported outside growing season

**KBDI not reported Dec-March outside fire danger season

mos=month

Drought Levels				
Level 0	Level 1	Level 2	Level 3	Level 4

Drought Indices by Region

January 2025

Drought Index	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation (6-mos)	16	6	6	10	14	12	10
Streamflow	24	30	10	8	7	16	N/A
Groundwater	25	11	15	15	22	27	16
Lakes/ Impoundments	100%	22	1	4	29	25	N/A
ET*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KBDI**	N/A	N/A	N/A	N/A	N/A	N/A	N/A

January	Level 1	Level 2	Level 3	Level 3	Level 2	Level 2	Level 2
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Drought Levels				
Level 0	Level 1	Level 2	Level 3	Level 4