

# Hydrologic Conditions in Massachusetts for *April 2025*

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DCR Office of Water Resources

## **Drought Management Task Force**

May 7, 2025

Meeting Co-Chairs: EOEEA, MEMA



# MA Drought Management Plan Indices

Numbers in parentheses indicate number of data points across the state



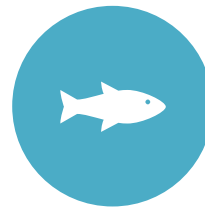
Precipitation (93)



Streamflow (63)



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 <sup>th</sup> 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

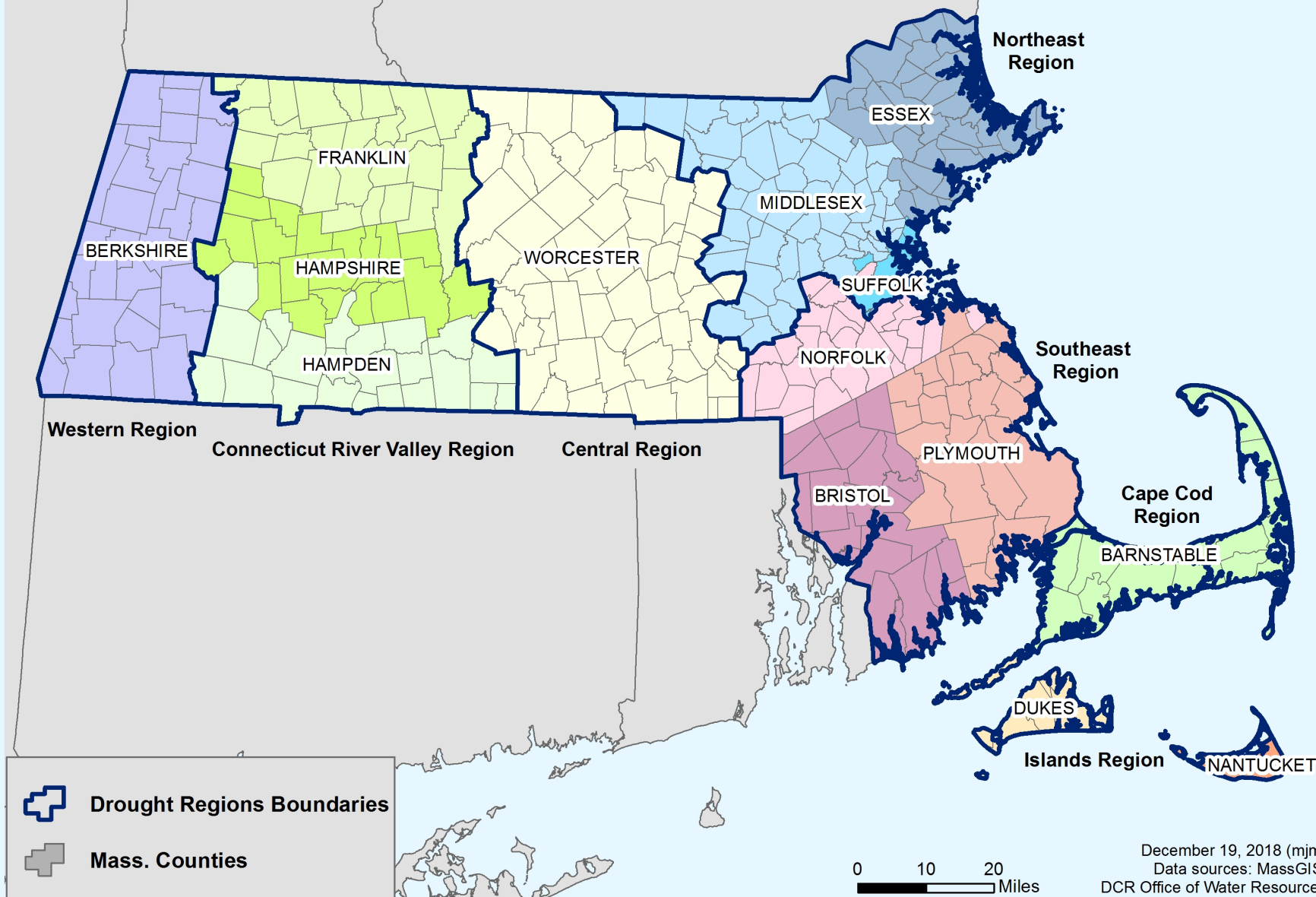
## Drought Levels





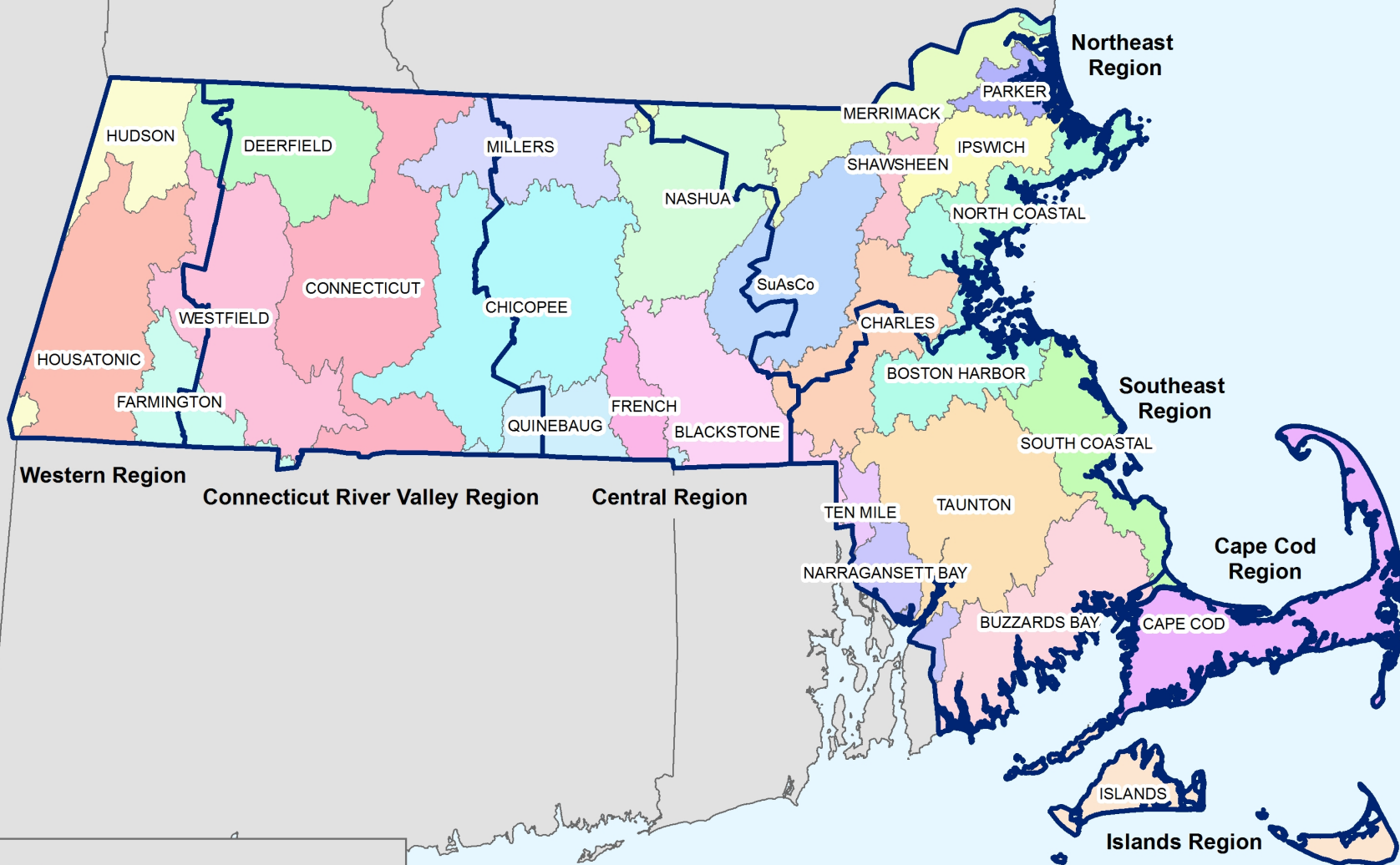
# MASSACHUSETTS DROUGHT REGIONS

with Counties





# MASSACHUSETTS DROUGHT REGIONS with Watersheds



Drought Regions Boundaries



Mass. Counties

0 10 20  
Miles

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



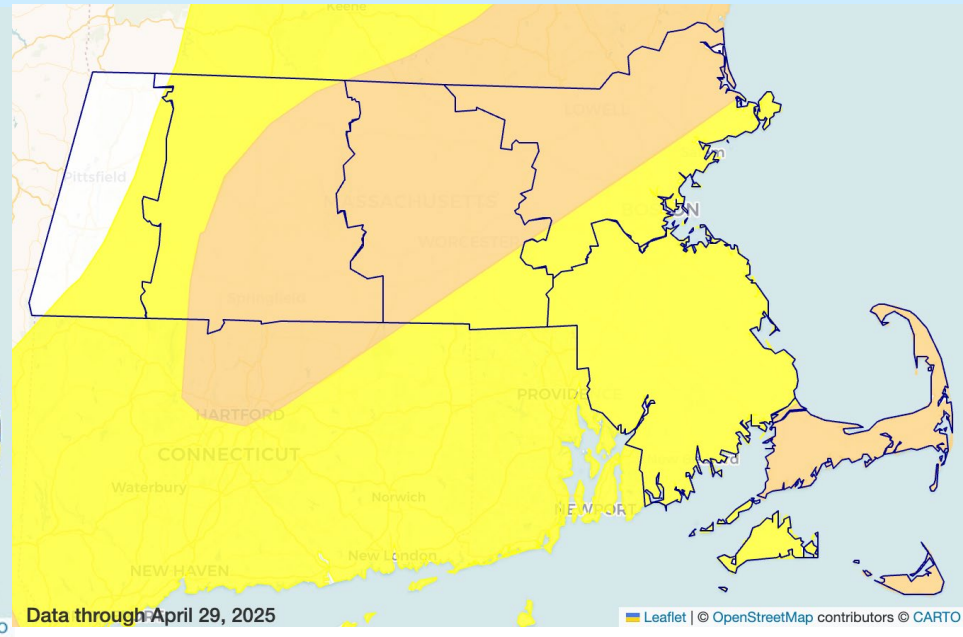
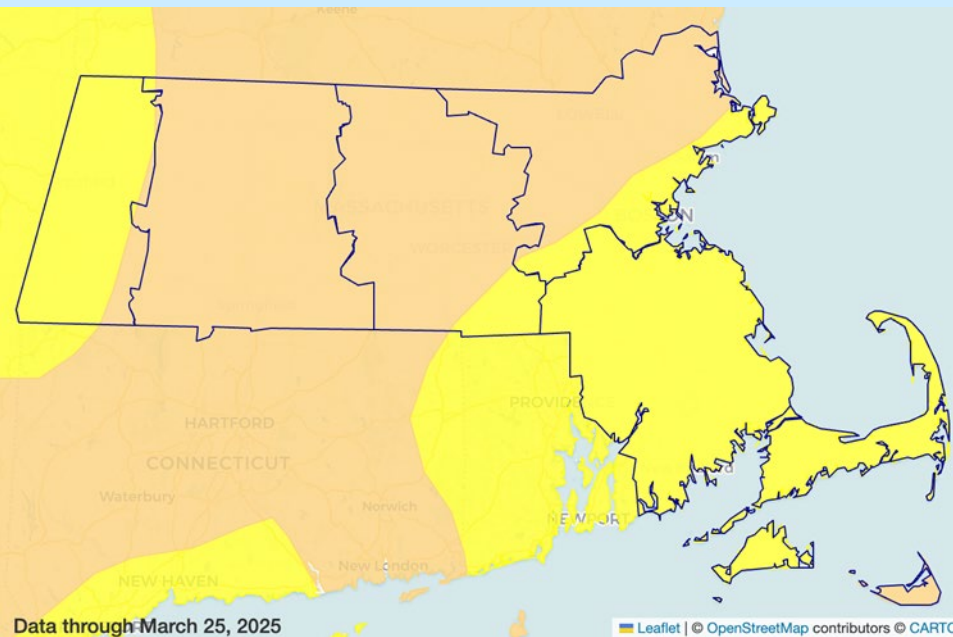
Public Health  
Impacts

# Recent Hydrologic History

- **Mid-August through November**
  - *Below-normal* precipitation drying out areas with impacts to streamflow and eventually groundwater
- **December-February**
  - Variable precipitation from *below normal to above normal*
  - Continued impacts to streamflow and groundwater with temporary relief in streamflow at times
- **March**
  - *Normal* precipitation
  - Improvements to streamflow and groundwater except in the Cape Cod and Islands Regions
- **April**
  - *Normal* precipitation but leaf-out occurred almost 20 days sooner than normal with minor degradation in streamflow and groundwater except for slight improvement on Cape Cod



# US Drought Monitor



None

D0 (Abnormally Dry)

D1 (Moderate Drought)

D2 (Severe Drought)

D3 (Extreme Drought)

D4 (Exceptional Drought)

**USDM**      **MA DMP**

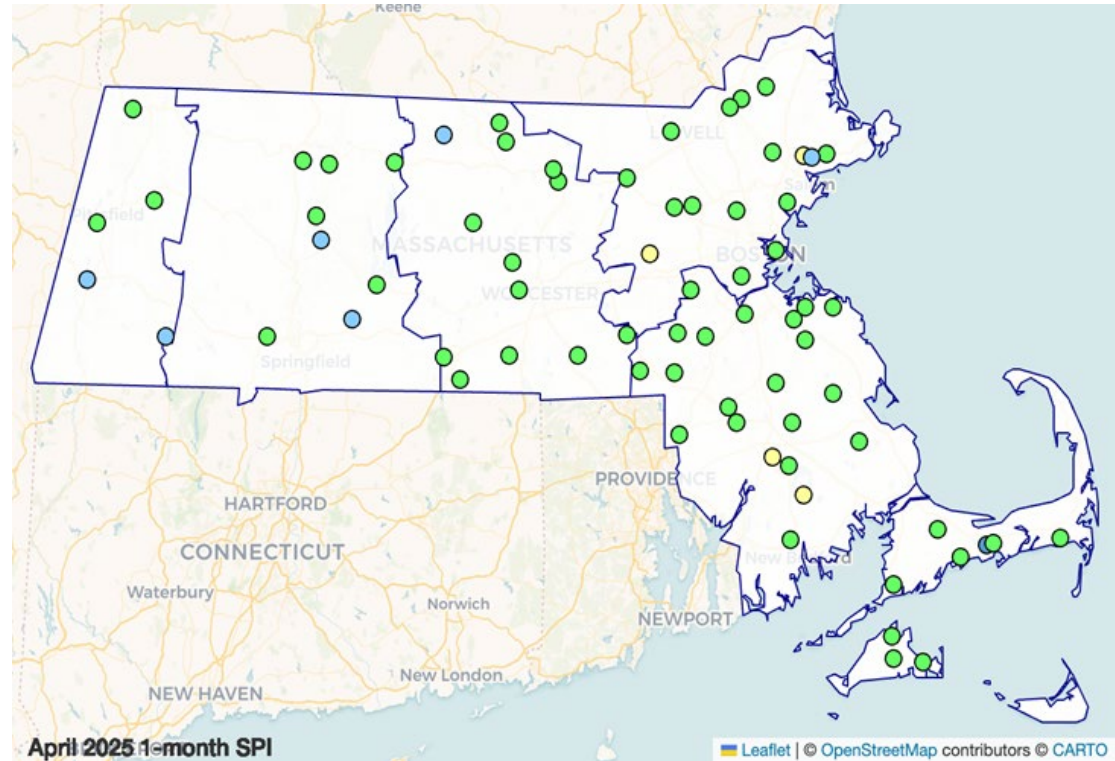
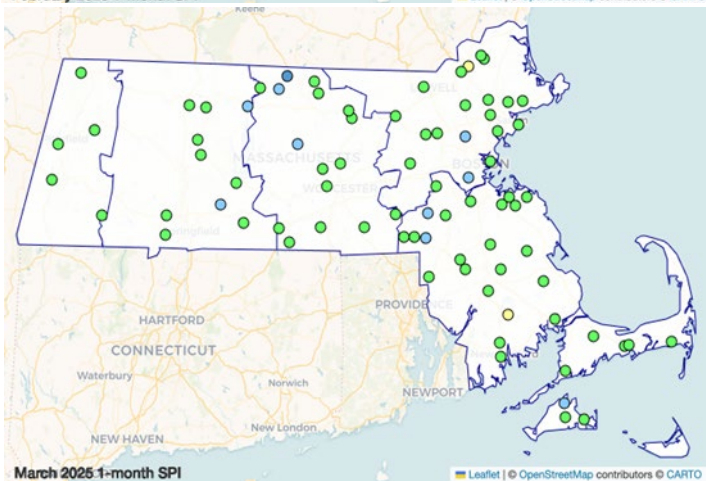
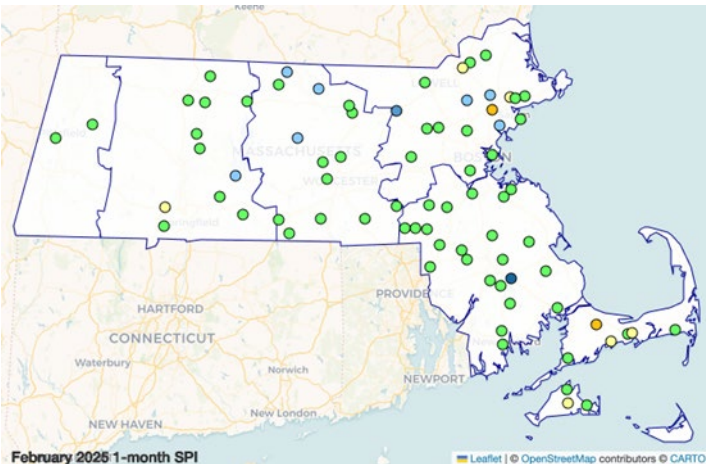
0      =      1

1      =      2

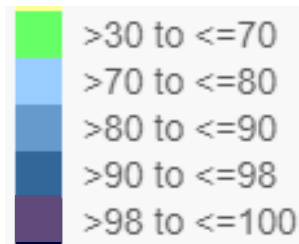
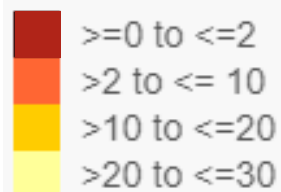
2,3      =      3

4      =      4

# Standardized Precipitation Index



## Percentiles



## Index Severity Levels



# 3-12" of Precipitation Deficit since mid-August

Accumulated Precipitation Departure from Normal (inches)

Black diamonds represent missing values



— PITTSFIELD MUNICIPAL AP  
— SOUTHBRIDGE 3 SW  
— NORTON WEST  
— EDGARTOWN

— AMHERST  
— MIDDLETON  
— HYANNIS

# 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	5	65	64	60	45	22	22	69	56
CTRV	8	56	60	58	29	9	16	74	61
CENTRAL	13	53	55	57	36	8	14	86	80
NORTHEAST	16	46	49	52	33	17	12	78	60
SOUTHEAST	21	44	44	42	37	12	19	79	70
CAPE COD	6	66	60	49	20	14	18	38	42
ISLANDS	3	65	69	69	38	22	39	37	48

Index Severity Levels

Level 0	Level 1	Level 2	Level 3	Level 4
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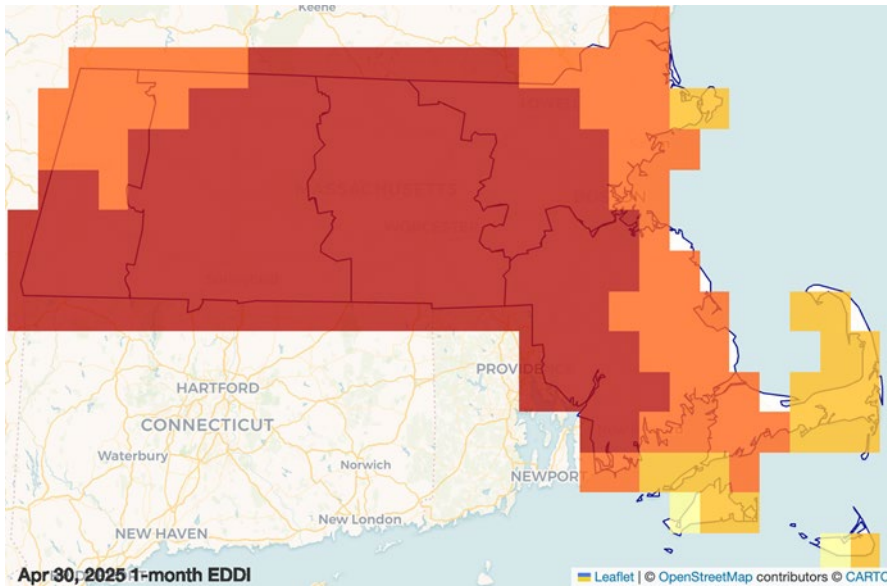
\* 1- and 36-month SPI is for informational purposes only, not for drought determination. Of the 2- to 24-month look-back periods, the most relevant is selected each month depending on the phase of the drought - onset, during or recovery.

N/A: Not Available

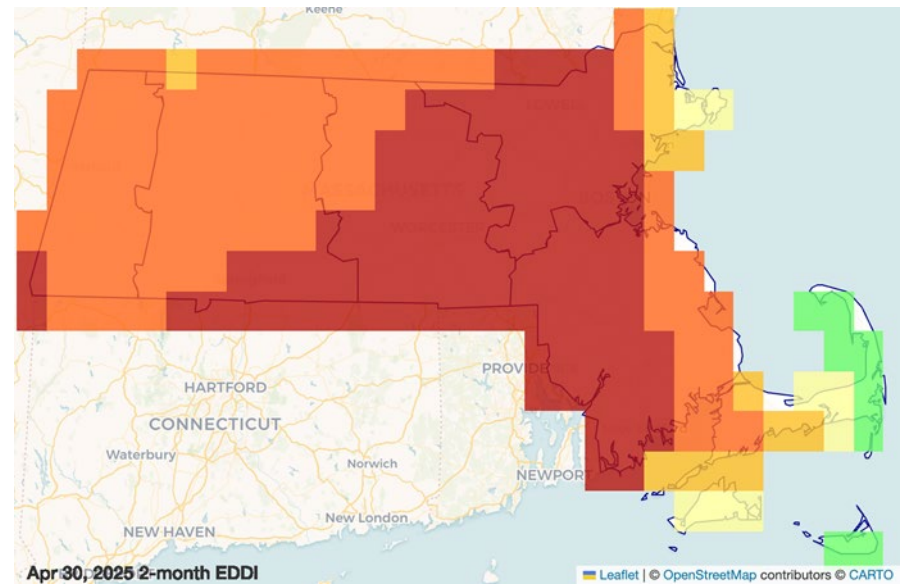


# Evapotranspiration

1-month

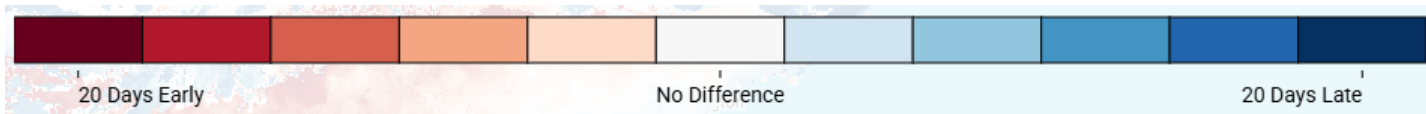
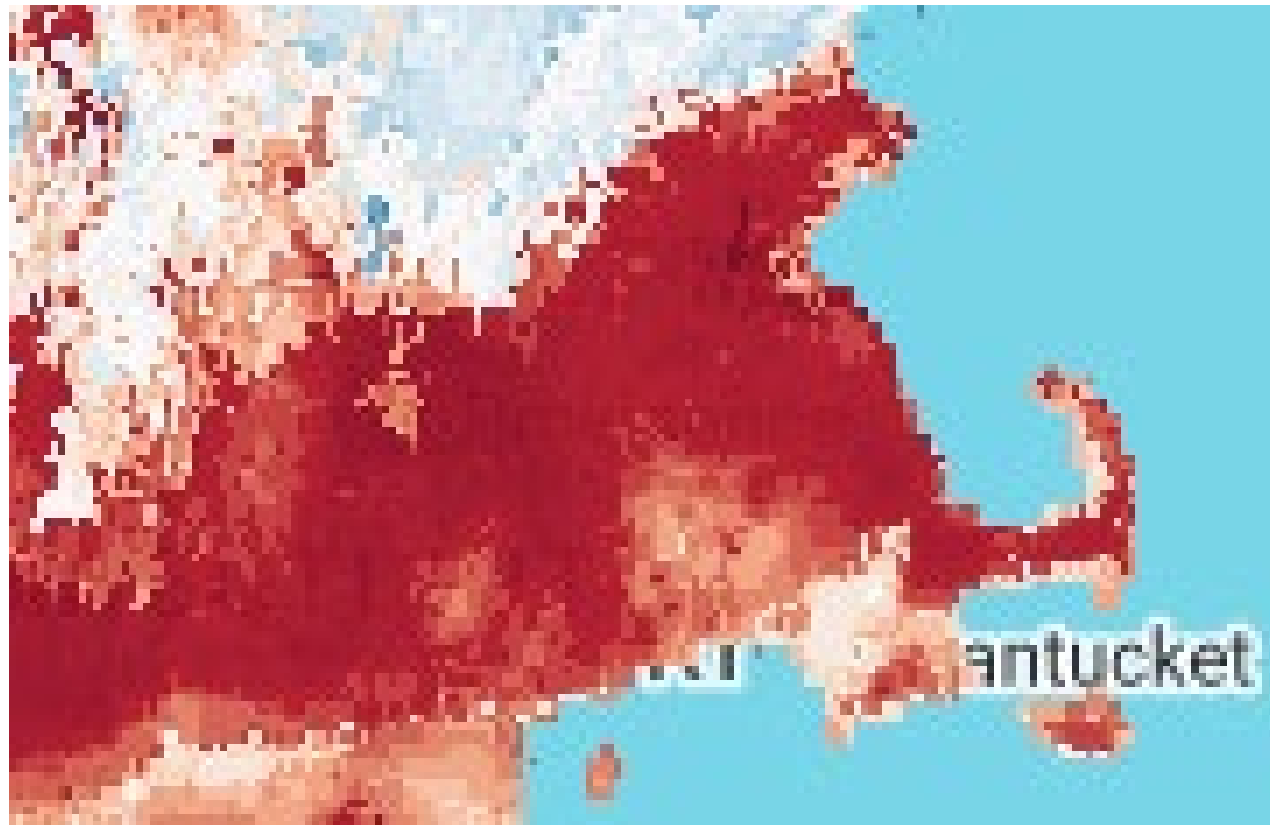


2-month

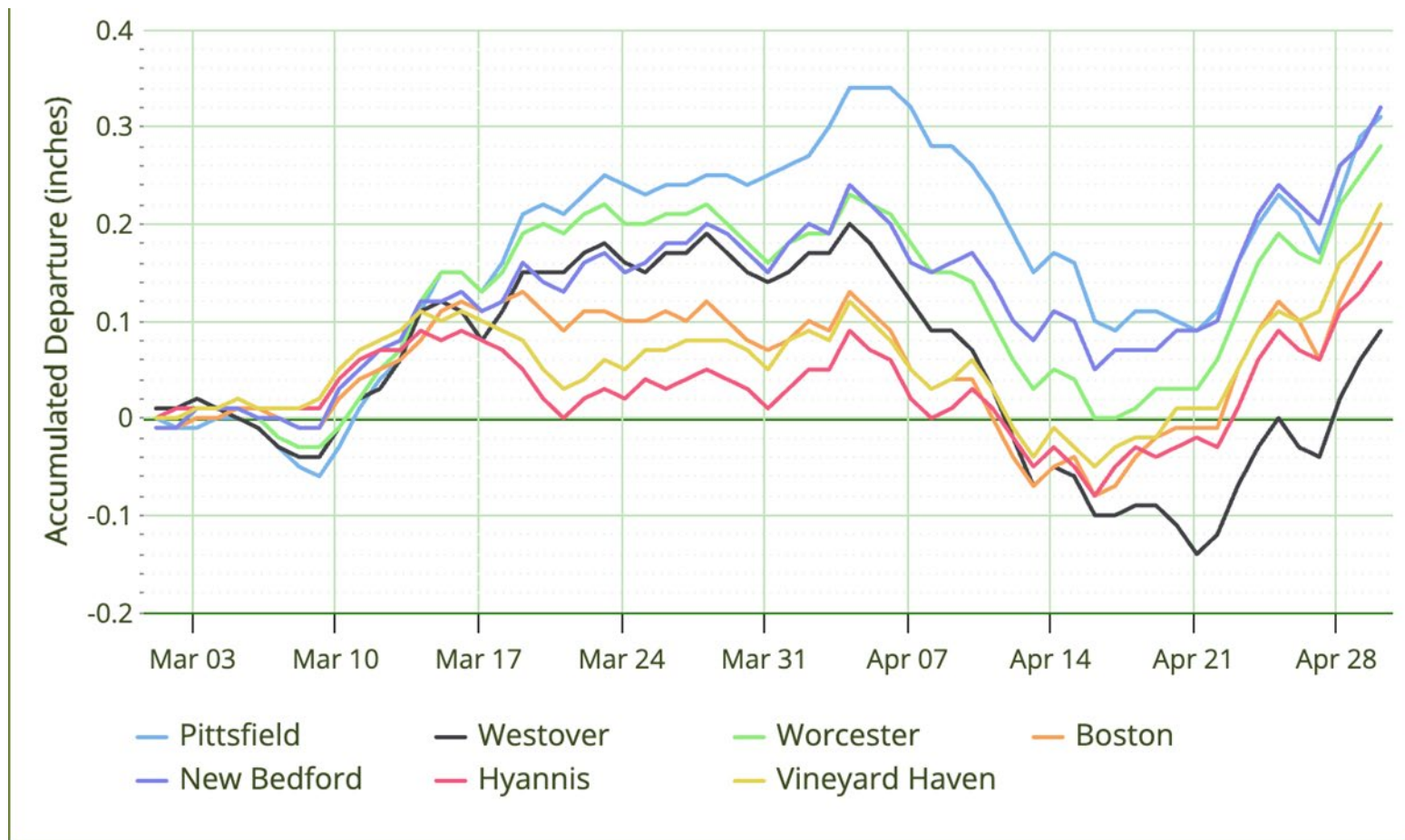


REGION	MEDIAN 2-MONTH EDDI (2025-04-30)
WESTERN	7
CTRV	7
CENTRAL	2
NORTHEAST	2
SOUTHEAST	2
CAPE COD	23
ISLANDS	24

# Spring Leaf Index Anomaly

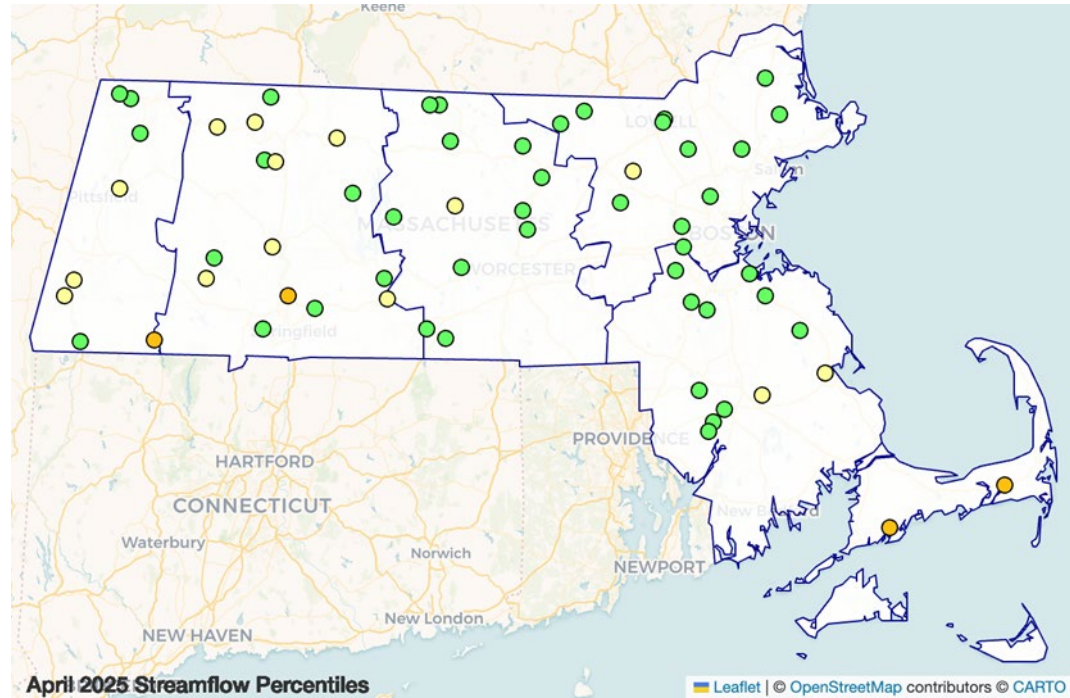
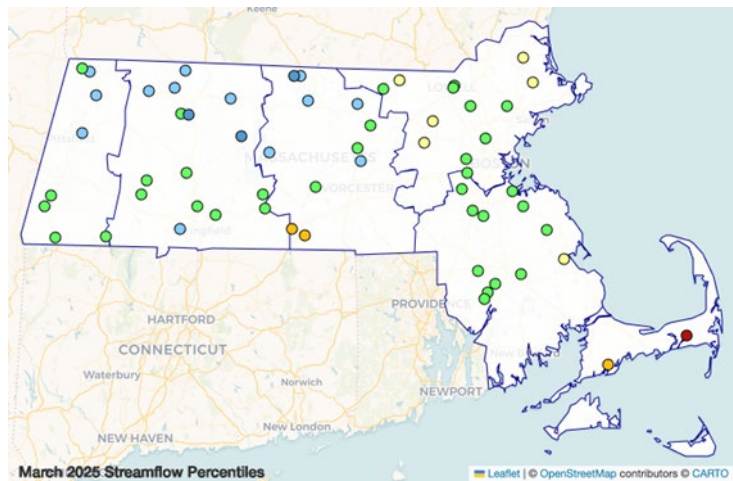
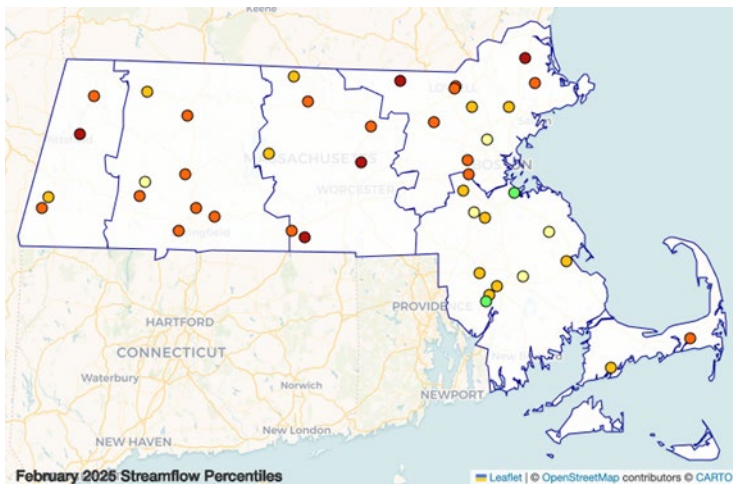


# Accumulated Potential Evapotranspiration Departure from 30-Year Average in inches

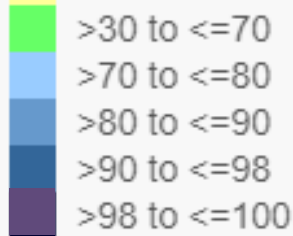
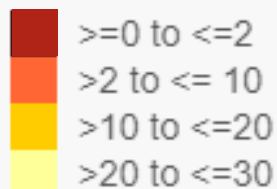


# Streamflow

## Percentiles of Monthly Median



### Percentiles

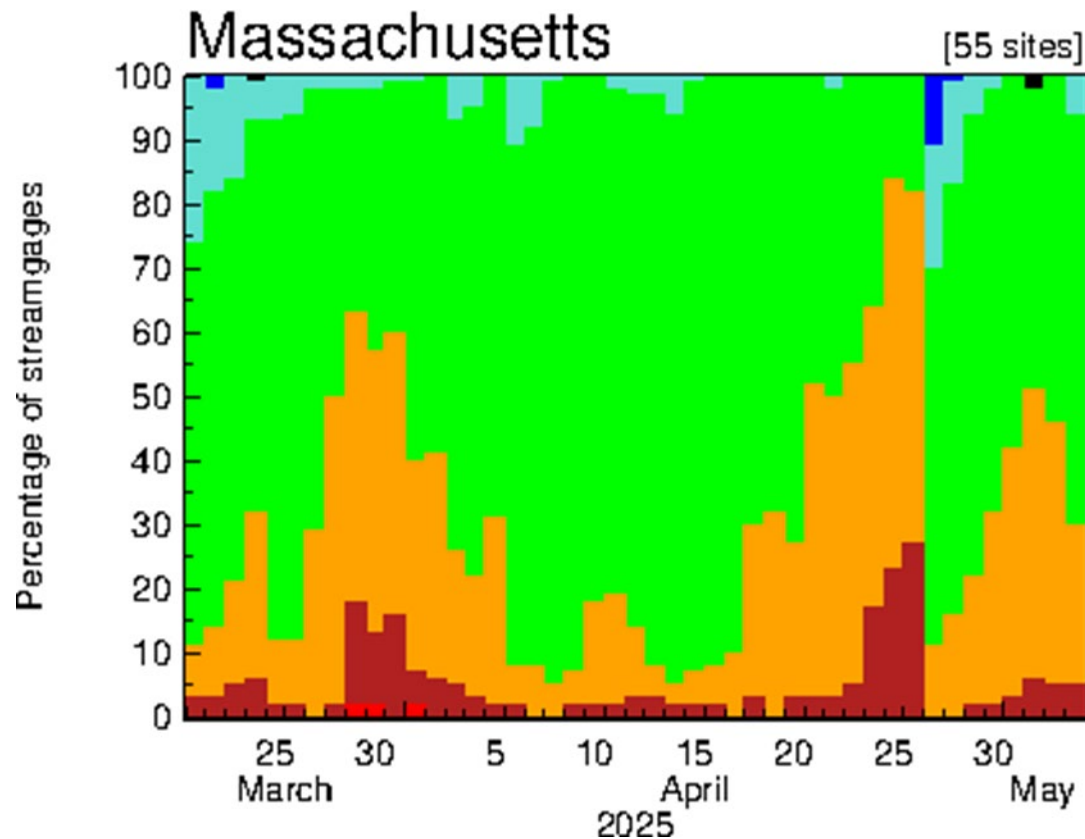


### Index Severity Levels





# 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	8	0	0	1	3	0	29
CTRV	15	0	0	1	7	0	30
CENTRAL	12	0	0	0	1	0	42
NORTHEAST	13	0	0	0	1	0	35
SOUTHEAST	12	0	0	0	2	0	36
CAPE COD	2	0	0	2	0	0	14

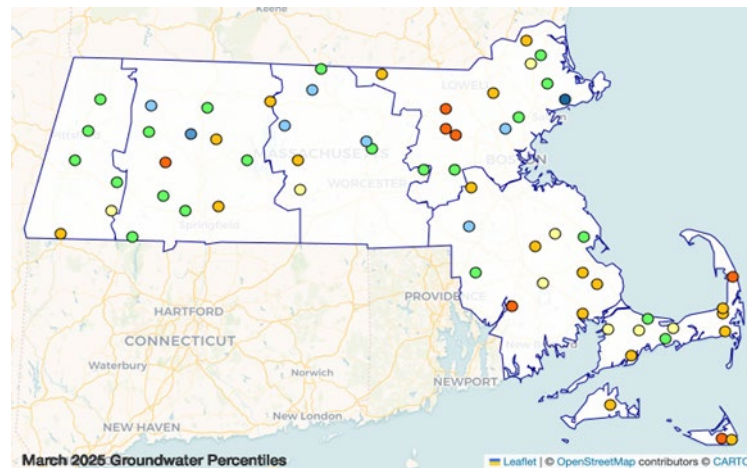
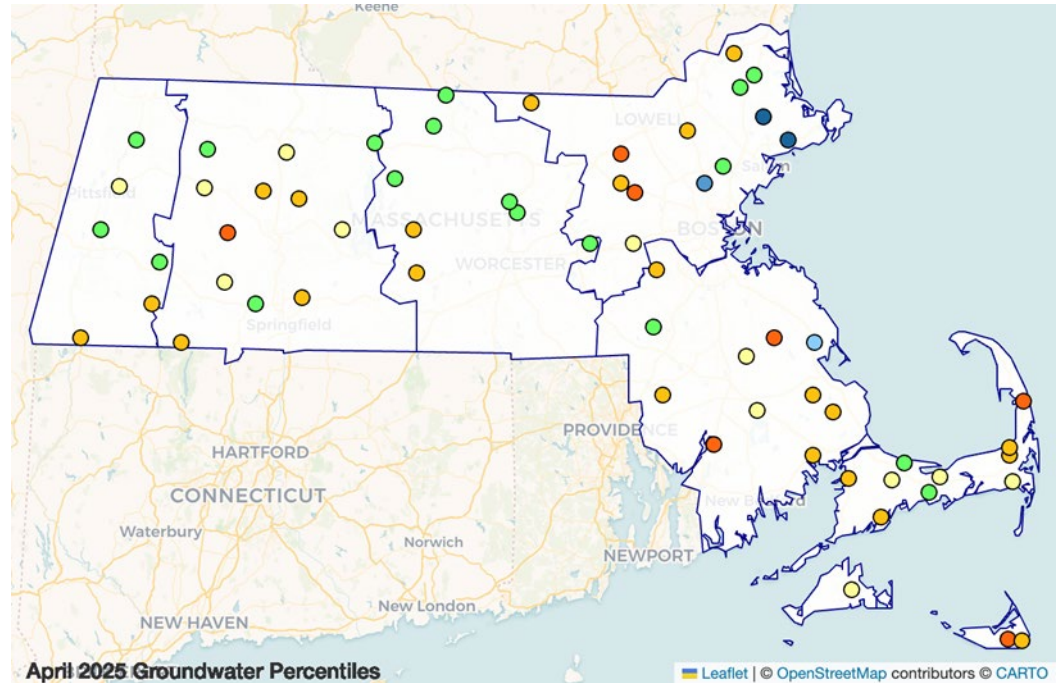
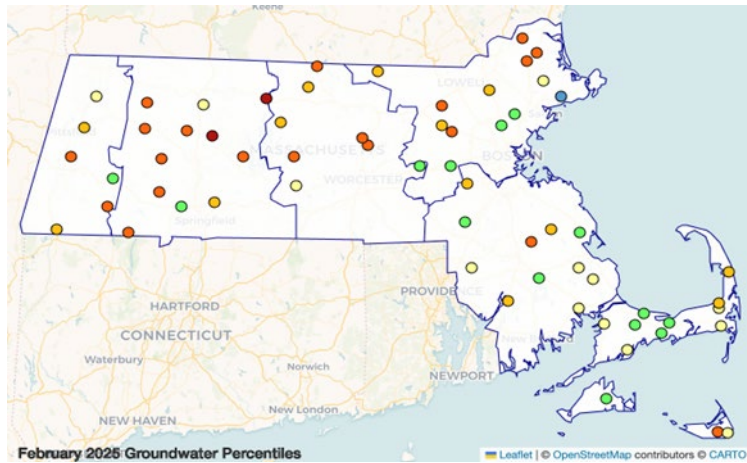
REGION	NUMBER OF GAGES IN NETWORK
WESTERN	8
CTRV	15
CENTRAL	13
NORTHEAST	13
SOUTHEAST	12
CAPE COD	2

Index Severity Levels

Level 0	Level 1	Level 2	Level 3	Level 4
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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.

# Groundwater Percentiles



## Percentiles



## Index Severity Levels



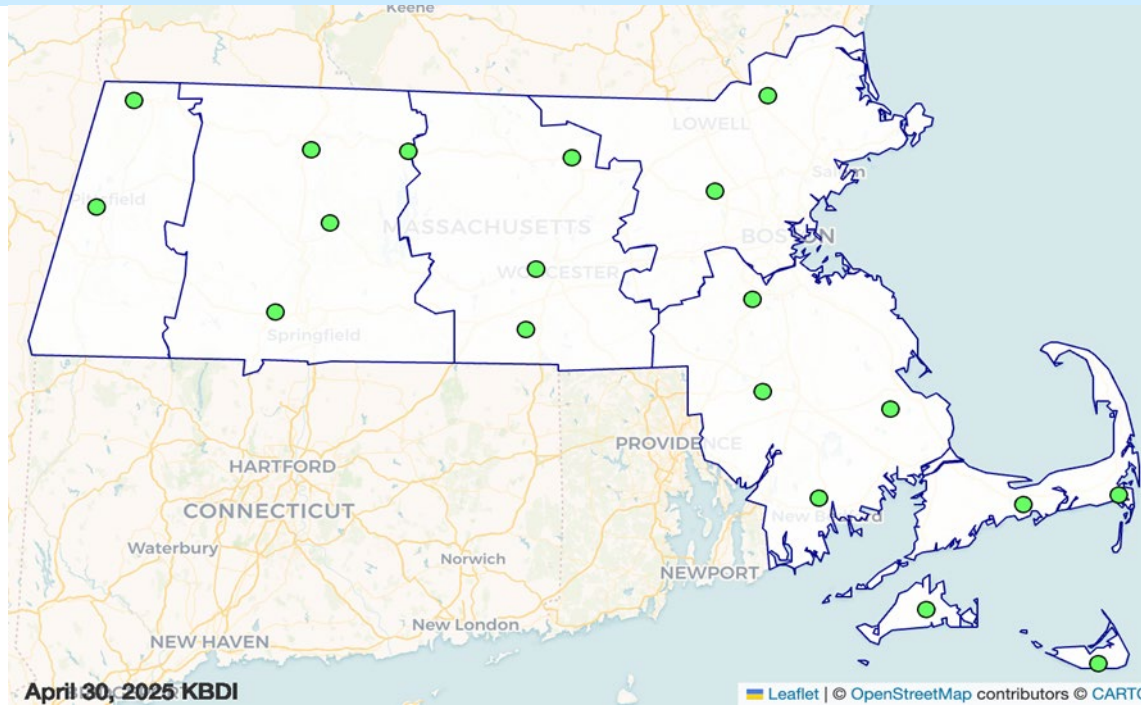
# Groundwater Index

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	1	0	31
CTRV	12	0	1	4	4	0	24
CENTRAL	8	0	0	2	0	0	39
NORTHEAST	13	0	2	4	1	2	28
SOUTHEAST	12	0	2	5	2	0	20
CAPE COD	10	0	1	4	3	0	20
ISLANDS	3	0	1	1	1	0	18

Index Severity Levels

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# KBDI - Top 8 inches of soil moisture



Point Values - KBDI Range

● $\geq 700$ to $\leq 800$	● $\geq 600$ to $< 700$	● $\geq 400$ to $< 600$	● $\geq 200$ to $< 400$	● $\geq 0$ to $< 200$
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REGION	NUMBER OF SITES REPORTING	HIGHEST OF SITE VALUES
WESTERN	2	24
CTRV	4	71
CENTRAL	3	48
NORTHEAST	2	66
SOUTHEAST	4	100
CAPE COD	2	79
ISLANDS	2	21

Index Severity Levels

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# Lakes & Impoundments

REGION	NUMBER OF SITES REPORTING	MEDIAN OF INDIVIDUAL PERCENTILES OR PERCENT FULL
WESTERN	2	100% full
CTRV	2	19th
CENTRAL	3	23rd
NORTHEAST	5	10th
SOUTHEAST	2	34th
CAPE COD	1	23rd

## Notes:

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

ID = insufficient data

ND = data unavailable

## Index Severity Levels

Level 0	Level 1	Level 2	Level 3	Level 4
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# Drought Indices by Region

## March 2025

Drought Index	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation (6-mos)	20	10	12	14	16	9	26
Streamflow	64	68	72	40	38	9	N/A
Groundwater	48	41	59	28	21	20	12
Lakes/ Impoundments	15	25	9	7	27	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

Month	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
<b>March Declaration</b>	<b>Level 1</b>	<b>Level 1</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 2</b>

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. ND = data unavailable \*ET not reported outside growing season \*\*KBDI not reported Dec-March outside fire danger season  
mos=months

### Index Severity Levels

Level 0	Level 1	Level 2	Level 3	Level 4
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# Drought Indices by Region

## April 2025

Drought Index	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation (6-mos)	45	29	36	33	37	20	38
Precipitation (9-mos)	22	9	8	17	12	14	22
Streamflow	29	30	42	35	36	14	N/A
Groundwater	31	24	39	28	20	20	18
Lakes/ Impoundments	100%	19	23	10	34	23	N/A
ET*	7	7	2	2	2	23	24
KBDI**	<200	<200	<200	<200	<200	<200	<200

Month	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
<b><i>April Recommendation</i></b>	<b><i>Level 1</i></b>	<b><i>Level 1</i></b>	<b><i>Level 0</i></b>	<b><i>Level 1</i></b>	<b><i>Level 1</i></b>	<b><i>Level 2</i></b>	<b><i>Level 1</i></b>
<b><i>March Declaration</i></b>	<b><i>Level 1</i></b>	<b><i>Level 1</i></b>	<b><i>Level 1</i></b>	<b><i>Level 2</i></b>	<b><i>Level 1</i></b>	<b><i>Level 2</i></b>	<b><i>Level 2</i></b>

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