MASSACHUSETTS WATER RESOURCES COMMISSION

HYDROLOGIC CONDITIONS IN MASSACHUSETTS

FEBRUARY
2025

The Commonwealth of Massachusetts

Maura T. Healey, Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy and Environmental Affairs

FEBRUARY 2025 HYDROLOGIC CONDITIONS

SUMMARY OF CONDITIONS

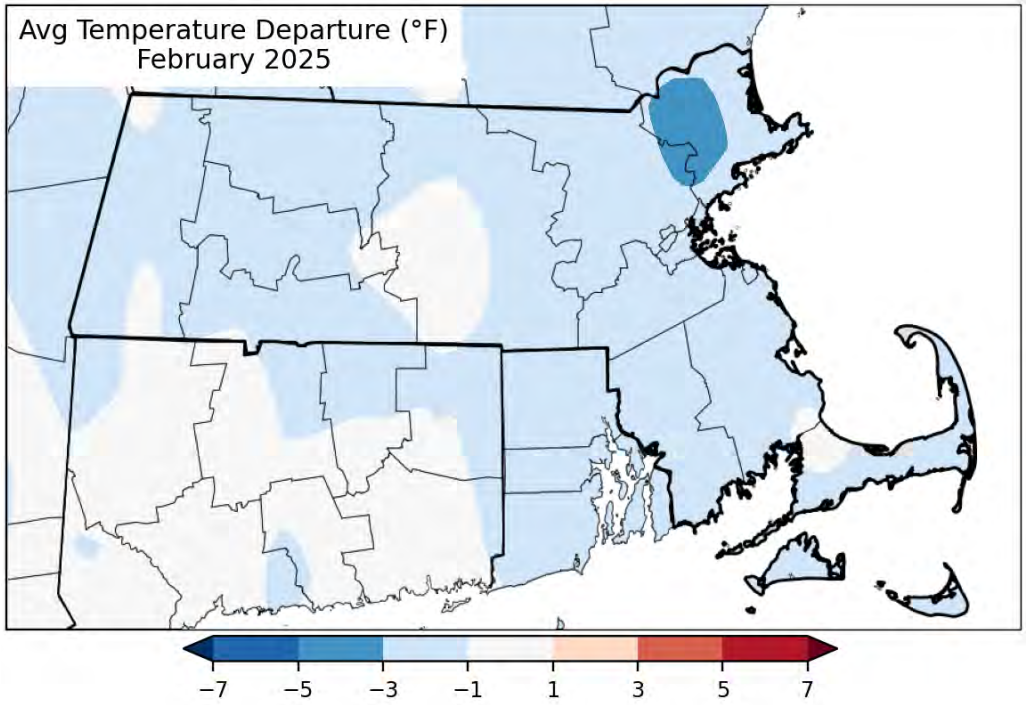
- Monthly average temperatures were near to below normal.
- Precipitation was below normal.
- There was up to 4 inches of water equivalent snow cover at the end of February in some areas.
- The Evaporative Demand Drought Index and Keetch-Byram Drought Index are not reported in February.
- Streamflow was below normal. All Regions are at elevated Index Severity Levels (ISLs). There were no reports of flooding or flood warnings in February.
- Groundwater levels were mostly below normal. All Regions are at elevated ISLs.
- Lake and impoundment levels were below normal. All Regions are at an elevated ISL except for Cape Cod.
- NOAA's March outlook shows equal chances for above-normal, normal, or below-normal temperatures and precipitation.
- NOAA's 3-month outlook shows chances leaning for above-normal temperatures and equal chances for above-normal, normal, or below-normal precipitation.
- Appendix II provides information on the Massachusetts Drought Management Plan (DMP) including ISL thresholds used in this report.

This report was prepared by the Massachusetts Department of Conservation and Recreation. Data may be preliminary. Analysis reflects automated calculations done 03/10/2025. Additional information, previous reports, and the Massachusetts Drought Dashboard with weekly updates to the drought indices can be found at: https://www.mass.gov/drought-monitoring

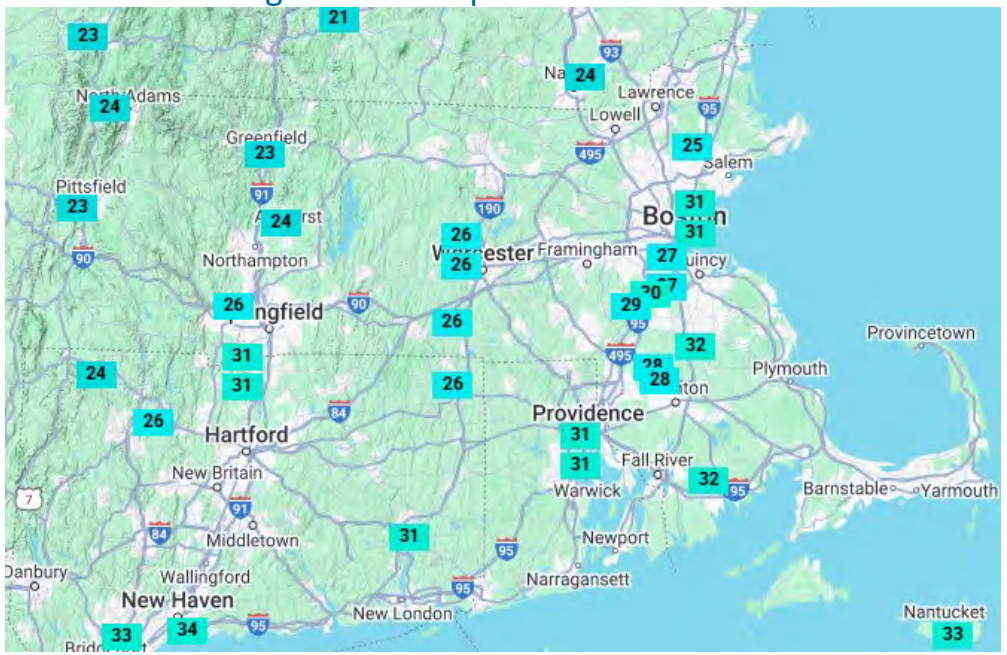
TEMPERATURE

Monthly average temperatures were near to below normal.

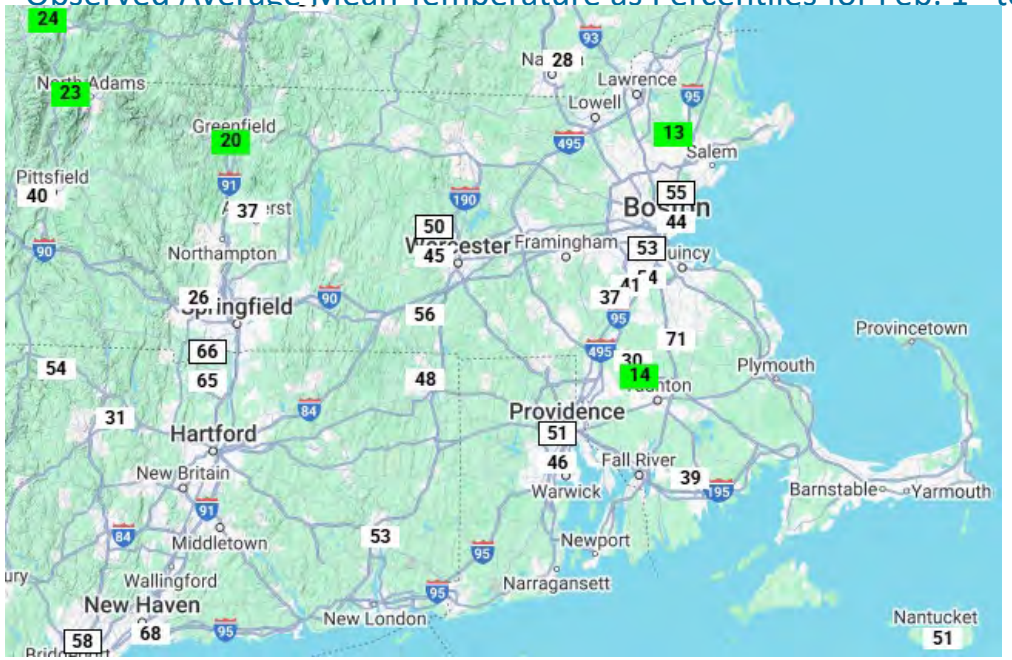
http://www.nrcc.cornell.edu/regional/monthly/monthly.html



Observed Average Mean Temperatures for Feb. 1st- 28th



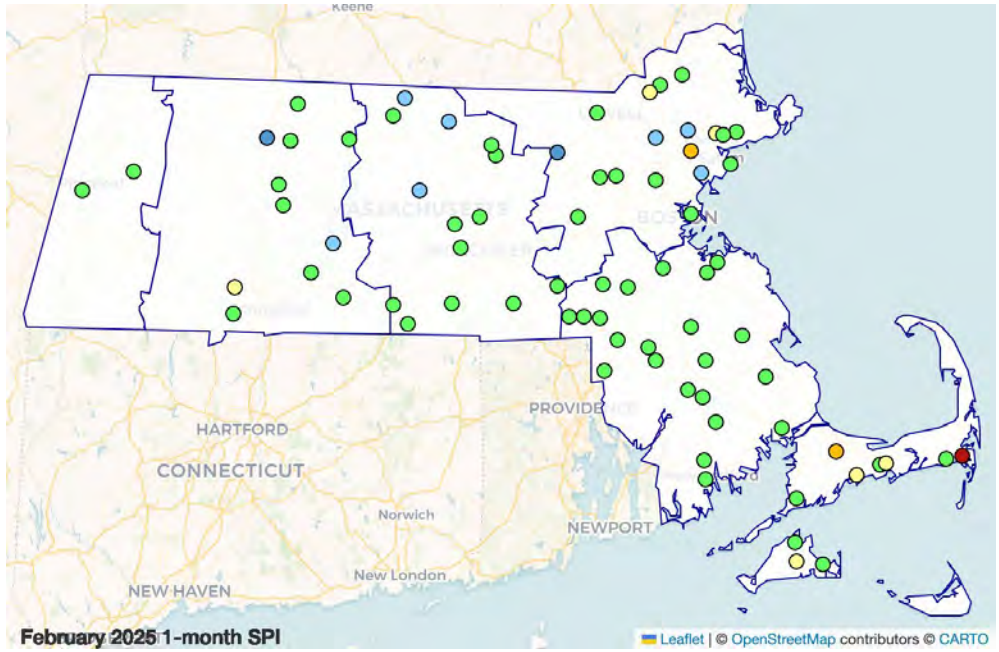
Observed Average Mean Temperature as Percentiles for Feb. 1st to 28th



https://sercc.oasis.unc.edu/Map.php?region=nrcc&

STANDARDIZED PRECIPITATION INDEX (SPI) AS A PERCENTILE

February precipitation was mostly normal. The 6-month look-backs for all Regions show deficits. In addition to the ISLs shown in the table below, Appendix I provides all the look-back periods.



≥0 to ≤2	>2 to ≤10	>10 to ≤20	>20 to ≤30	>30 to ≤70
>70 to ≤80	>80 to ≤90	>90 to ≤98	>98 to ≤100	

REGION	NUMBER OF SITES REPORTING	FEBRUARY MONTHLY AVERAGE (IN)	DEPARTURE FROM HISTORICAL (IN)	SPI PERCENTILE 1-MONTH	SPI PERCENTILE 3-MONTH	SPI PERCENTILE 6-MONTH
WESTERN	2	3.10	0.36	57	37	1
CTRV	11	3.06	0.05	53	30	1
CENTRAL	14	3.51	0.30	64	37	2
NORTHEAST	18	3.22	0.01	57	47	6
SOUTHEAST	22	3.44	-0.12	53	52	11
CAPE COD	7	2.51	-1.17	30	18	20
ISLANDS	3	3.23	-0.20	63	44	19

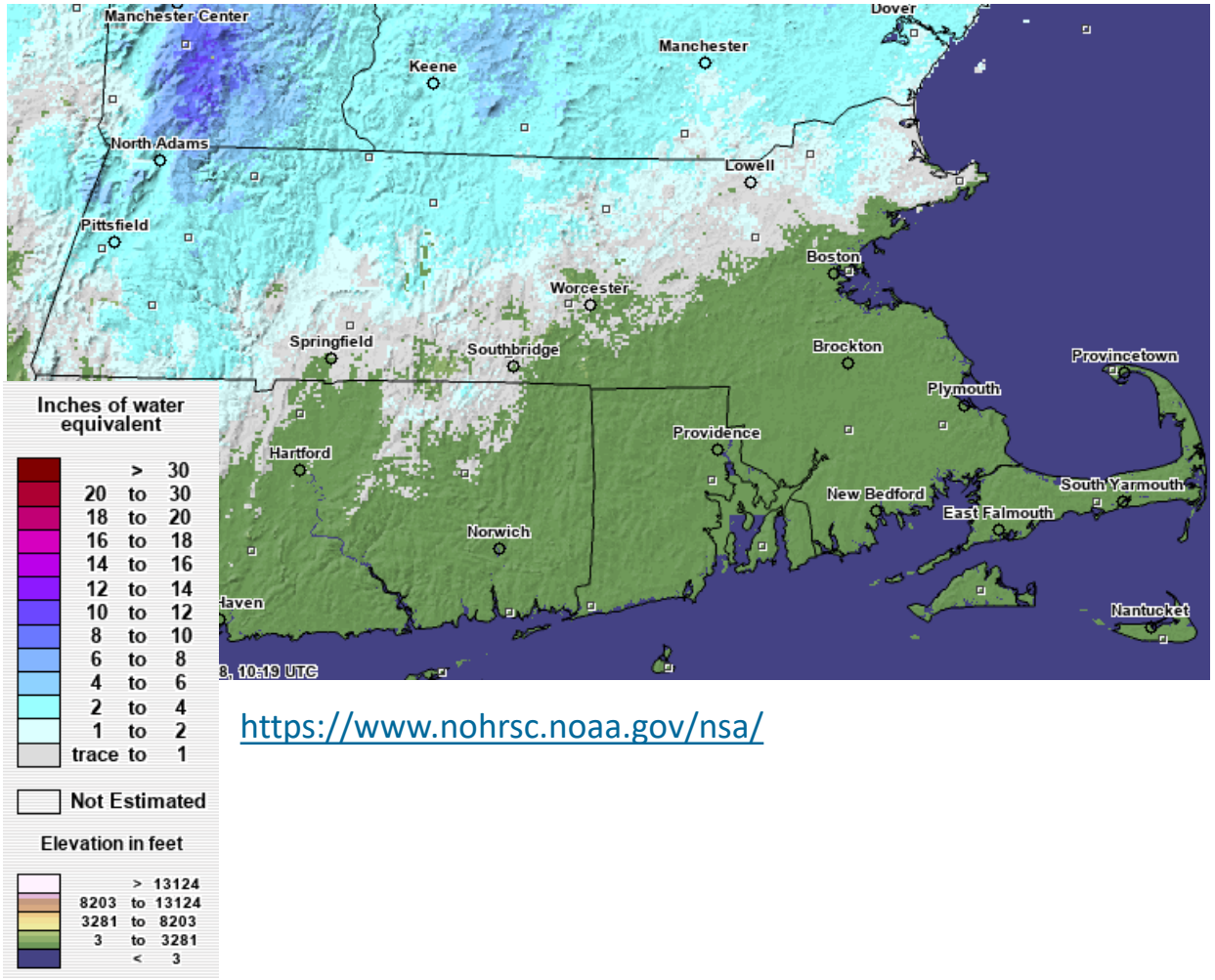
SPI is the Standardized Precipitation Index used in the Drought Management Plan (DMP) expressed here as a percentile and represents the variation from long-term precipitation.

DMP Index Severity Levels			
1	2	3	4

SNOW COVER

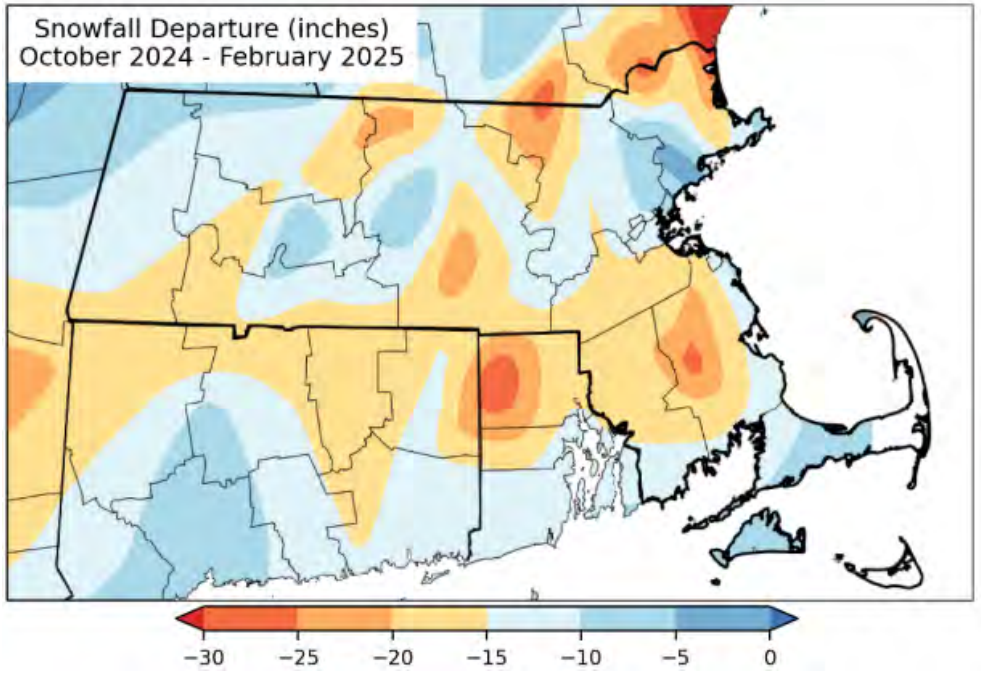
At the end of February there was 2-4-inches of snow water equivalent across the western to northeastern parts of the state. The season-to-date snowfall departure ranged from 0 to -30 inches.

Modeled Snow Water Equivalent for 2025 February 28, 6:00 UTC



https://www.nohrsc.noaa.gov/nsa/

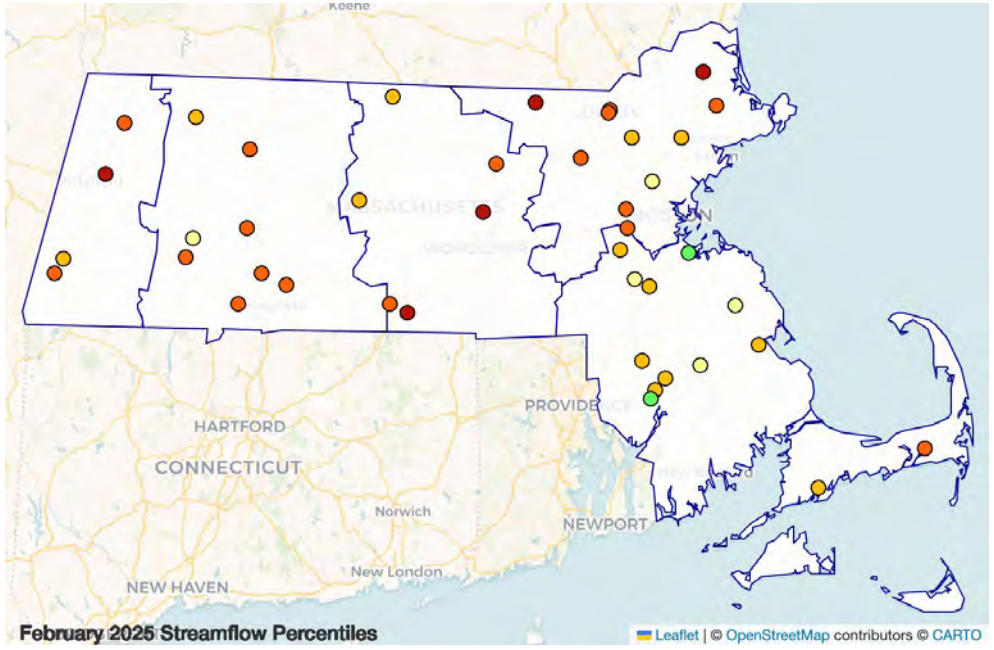
SEASON-TO-DATE SNOWFALL DEPARTURE



http://www.nrcc.cornell.edu/regional/monthly/monthly.html

February streamflow was below normal. All Regions are at an elevated ISLs. Twenty-one out of 63 gages did not report for February due to ice.

MEDIAN MONTHLY STREAMFLOW PERCENTILES COMPARED TO HISTORICAL VALUES



≥0 to ≤2	>2 to ≤10	>10 to ≤20	>20 to ≤30	>30 to ≤70
>70 to ≤80	>80 to ≤90	>90 to ≤98	>98 to ≤100	

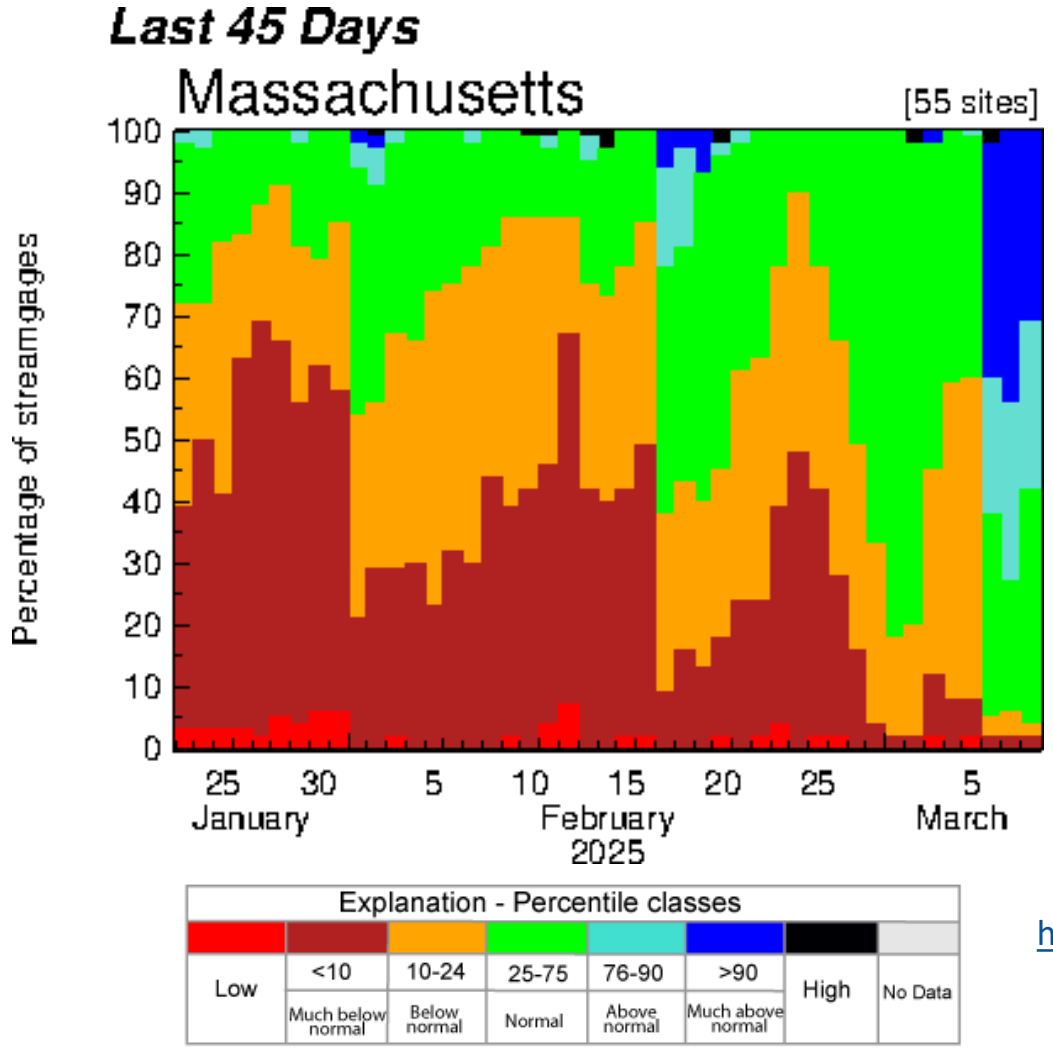
Note: Not all gages report in all months due to ice, beaver dams or other conditions. Streamflow index is not applicable to the Islands.

REGION	NUMBER OF GAGES REPORTING	NUMBER OF GAGES BELOW NORMAL ≥0 TO ≤30 PERCENTILE	NUMBER OF GAGES NORMAL >30 TO ≤70 PERCENTILE	NUMBER OF GAGES ABOVE NORMAL >70 TO ≤100 PERCENTILE	MEDIAN OF INDIVIDUAL GAGE PERCENTILES
WESTERN	4	4	0	0	9
CTRV	8	8	0	0	8
CENTRAL	6	6	0	0	6
NORTHEAST	11	11	0	0	8
SOUTHEAST	11	9	2	0	19
CAPE COD	2	2	0	0	13

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

DMP Index Severity Levels			
1	2	3	4

USGS TIME SERIES OF THE PERCENT OF GAGES AT THEIR RESPECTIVE PERCENTILE FLOWS FOR AVERAGE DAILY STREAMFLOWS COMPARED TO HISTORICAL VALUES



https://waterdata.usgs.gov/nwis/sw

The Boston/Norton and Albany NWS E-5 Monthly Reports of Hydrologic Conditions did not indicate river flooding at forecast points in its Massachusetts service area.

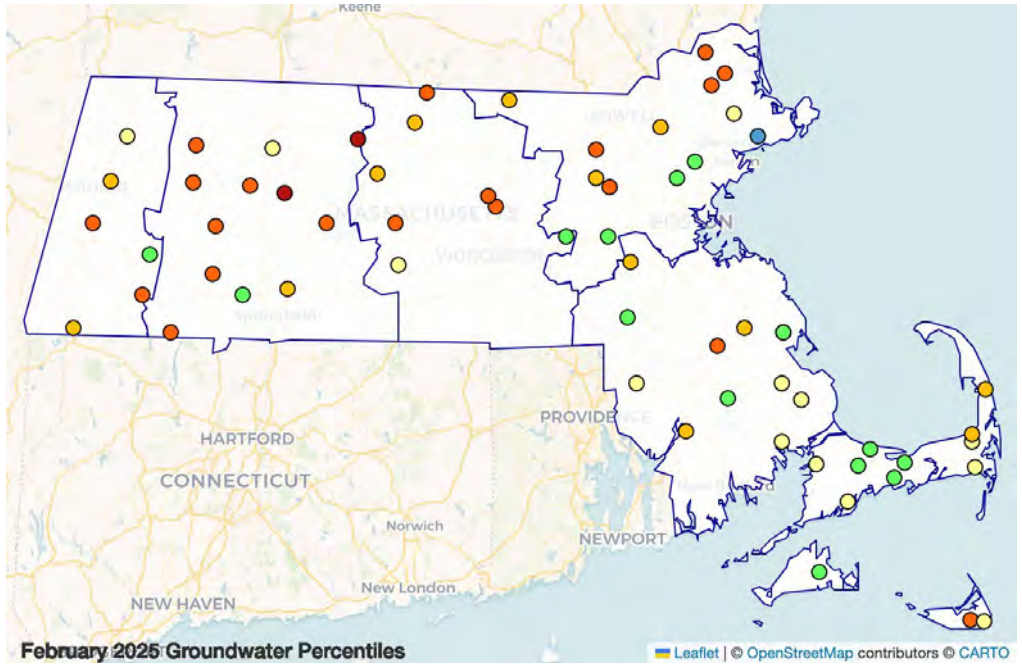
A search of the Iowa Mesonet database did not find any NWS flood warnings or local storm flooding reports. https://mesonet.agron.iastate.edu/vtec/search.php#eventsbypoint/-93.6530/41.5300

Image: Courtesy of NASA/JPL-Caltech

For real-time flood forecasts refer to the Northeast River Forecast Center: https://www.weather.gov/nerfc/

February groundwater levels were mostly below normal. All Regions are at elevated ISLs.

END OF MONTH GROUNDWATER COMPARED TO HISTORICAL IN THE CLIMATE RESPONSE NETWORK WELLS



≥0 to ≤2	>2 to ≤10	>10 to ≤20	>20 to ≤30	>30 to ≤70
>70 to ≤80	>80 to ≤90	>90 to ≤98	>98 to ≤100	

REGION	NUMBER OF WELLS REPORTING	NUMBER OF WELLS BELOW NORMAL ≥0 TO ≤30 PERCENTILE	NUMBER OF WELLS NORMAL >30 TO ≤70 PERCENTILE	NUMBER OF WELLS ABOVE NORMAL >70 TO ≤100 PERCENTILE	MEDIAN OF INDIVIDUAL WELL PERCENTILES
WESTERN	6	5	1	0	14
CTRV	12	11	1	0	7
CENTRAL	8	7	1	0	10
NORTHEAST	13	9	3	1	13
SOUTHEAST	12	9	3	0	25
CAPE COD	10	6	4	0	27
ISLANDS	3	2	1	0	21

DMP Index Severity Levels			
1	2	3	4

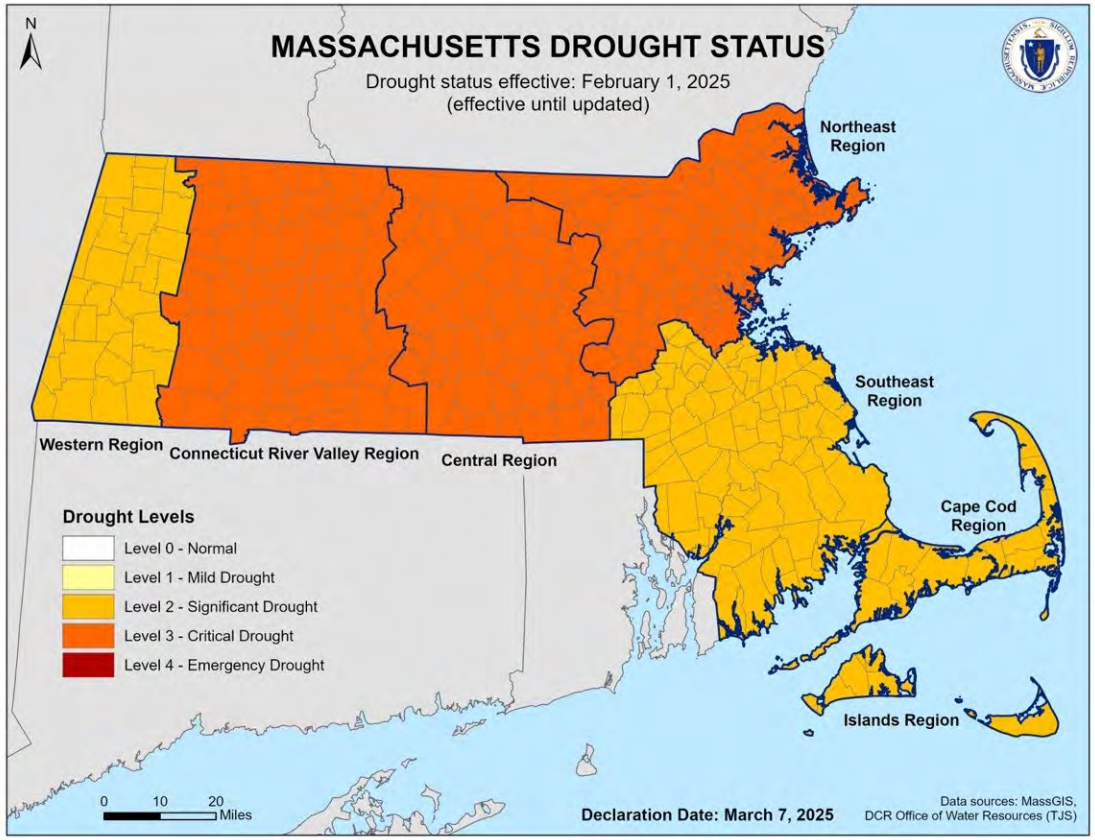
At the end of February, all but one of the reported lake and impoundment levels were below their 30th percentile. All Regions are at an elevated ISL except for Cape Cod where data wasn't available because of ice.

REGION	NUMBER OF SITES REPORTING	MEDIAN OF INDIVIDUAL PERCENTILES OR PERCENT FULL
WESTERN	2	15th
CTRV	2	17th
CENTRAL	3	10th
NORTHEAST	4	2nd
SOUTHEAST	1	3rd
CAPE COD	1	ND

DMP Index Severity Levels do not necessarily reflect water supply status.

DMP Index Severity Levels			
1	2	3	4

MASSACHUSETTS DROUGHT STATUS



On March 7, 2025, Massachusetts Energy and Environmental Affairs (EEA) Secretary Rebecca L. Tepper declared that starting from February 1, 2025, the Western, Southeast, Cape Cod, and Islands Regions are at Level 2 - Significant Drought and the Connecticut River Valley, Central, and Northeast Regions are at Level 3 – Critical Drought. This status remains in effect until further updated.

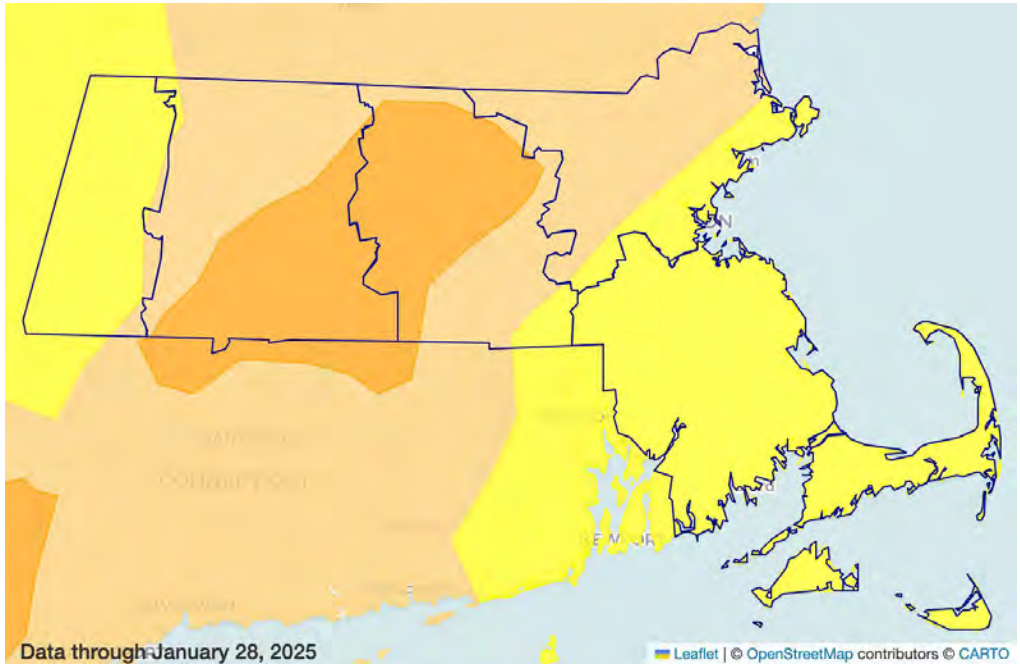
Drought Indices by Region February 2025

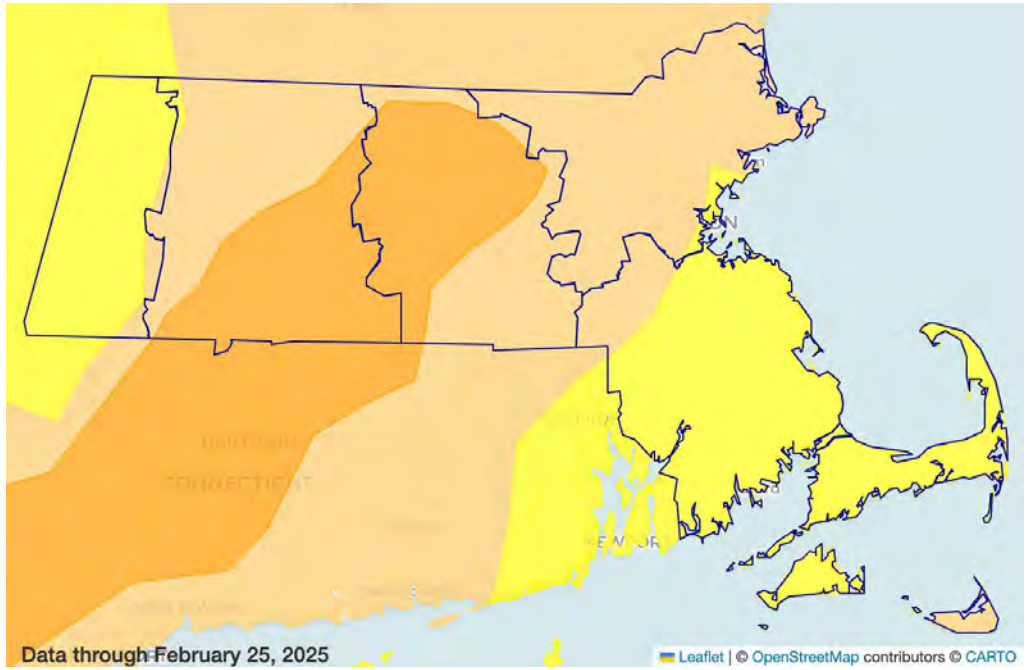
Drought Index	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation (6-mos)	1	1	2	6	11	20	8
Streamflow	9	9	6	8	23	13	N/A
Groundwater	14	7	10	13	25	27	21
Lakes/Impoundments	15	17	10	2	3	ND	N/A
ET	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KBDI	N/A	N/A	N/A	N/A	N/A	N/A	N/A

U.S. DROUGHT MONITOR (USDM)

At the end of February, the USDM showed areas of D2 (Severe Drought), D1 (Moderate Drought), and D0 (Abnormally Dry).

USDM maps are produced by the National Drought Mitigation Center (NDMC). For methods, weekly updates, and past maps see: https://droughtmonitor.unl.edu





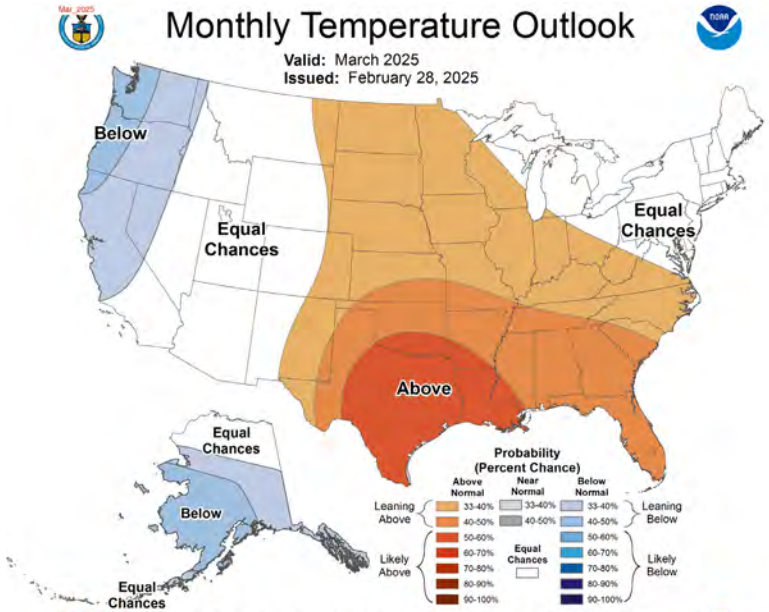
None
D0 (Abnormally Dry)
D1 (Moderate Drought)
D2 (Severe Drought)
D3 (Extreme Drought)
D4 (Exceptional Drought)
No Data

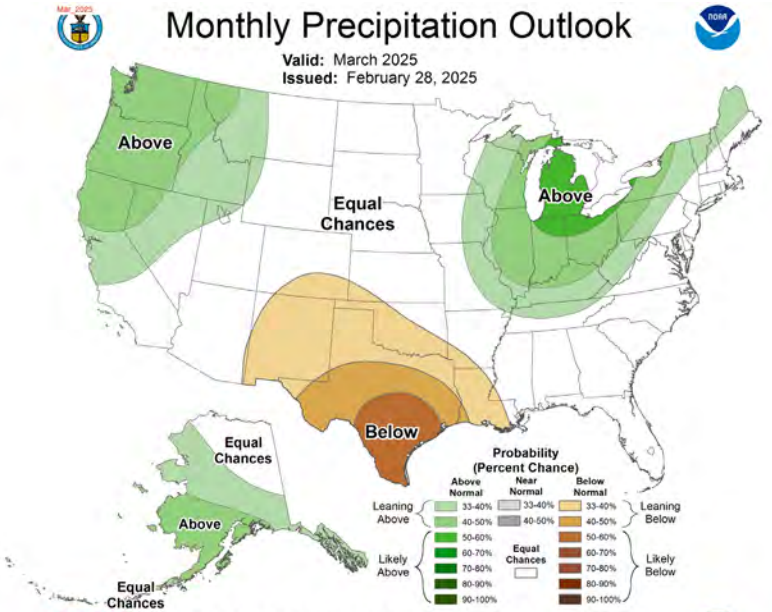
TEMPERATURE AND PRECIPITATION OUTLOOK

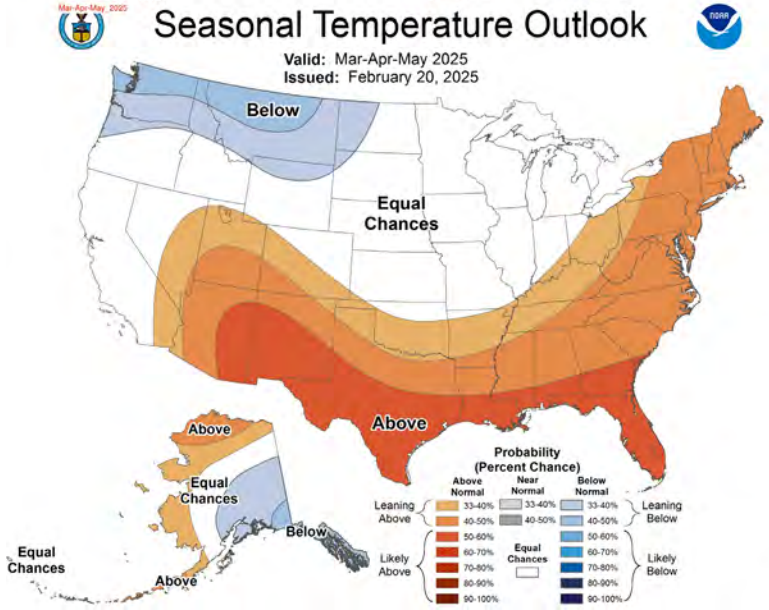
March: The monthly outlook issued 2/28 shows equal chances for above-normal, normal, or below-normal temperatures and precipitation.

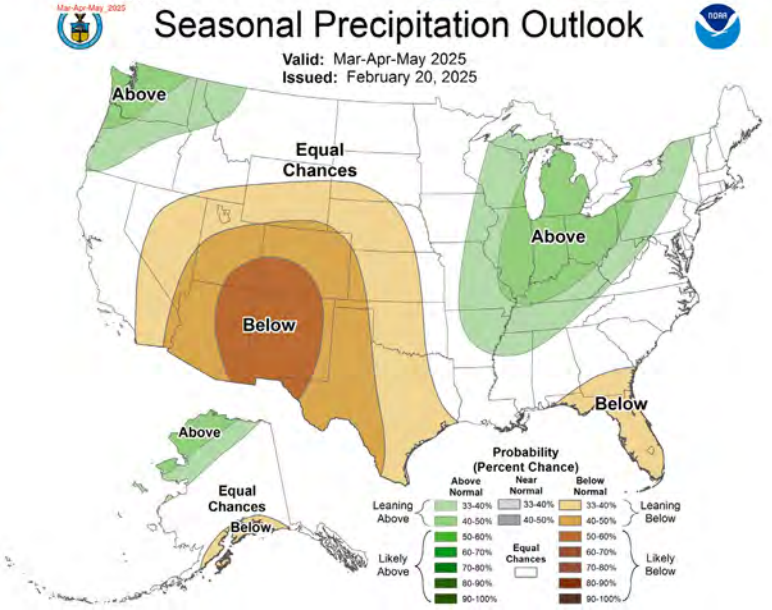
March through May: The seasonal outlook issued 2/20 shows chances leaning for above-normal temperatures and equal chances for above-normal, normal, or below-normal precipitation.

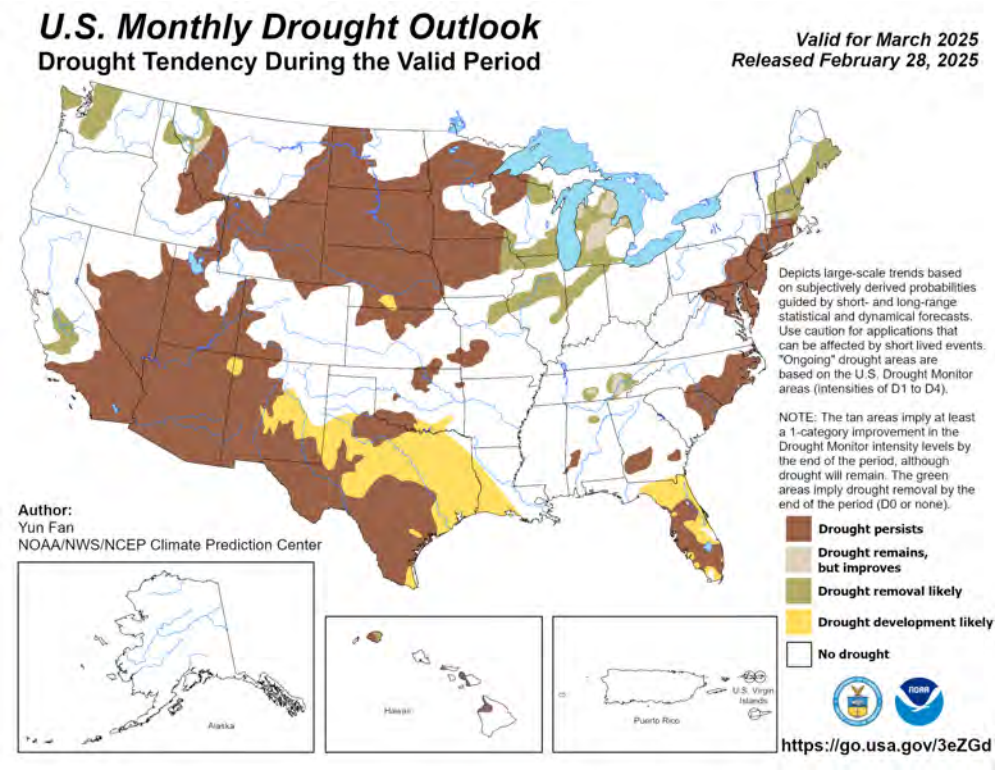
https://www.cpc.ncep.noaa.gov/

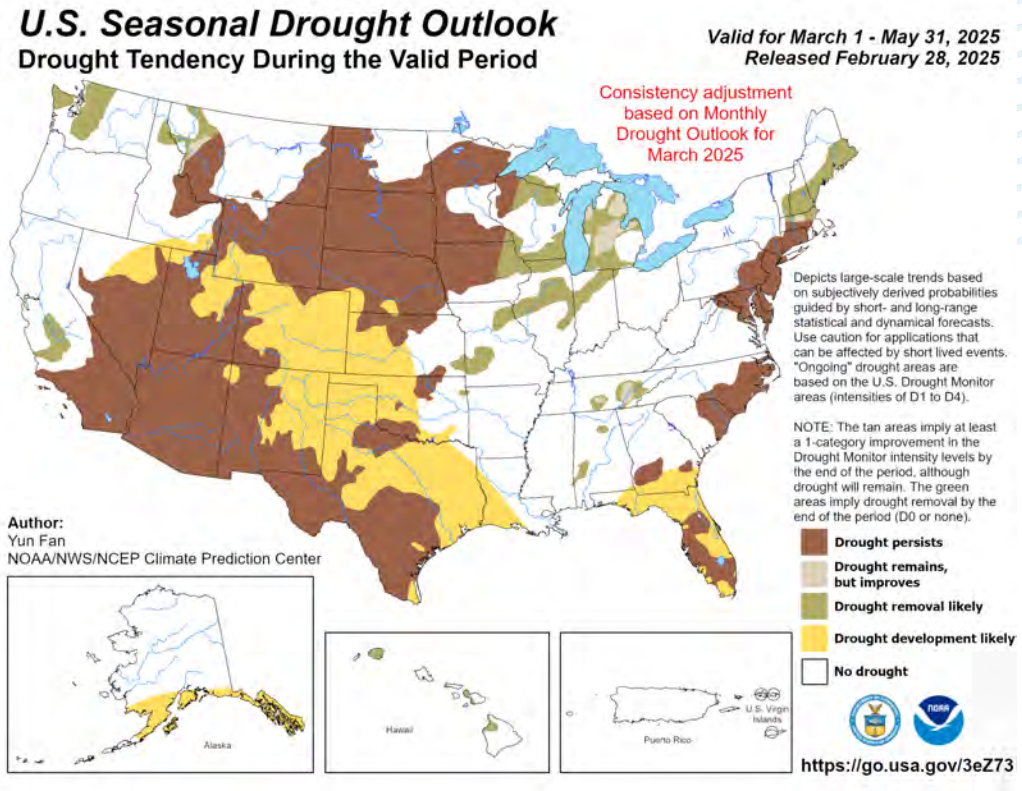












MONTHLY AND SEASONAL DROUGHT OUTLOOK

The monthly drought outlook released 2/28 shows drought persisting in the southern central part of the state and drought removal likely and improving in northern parts of the state and Nantucket.

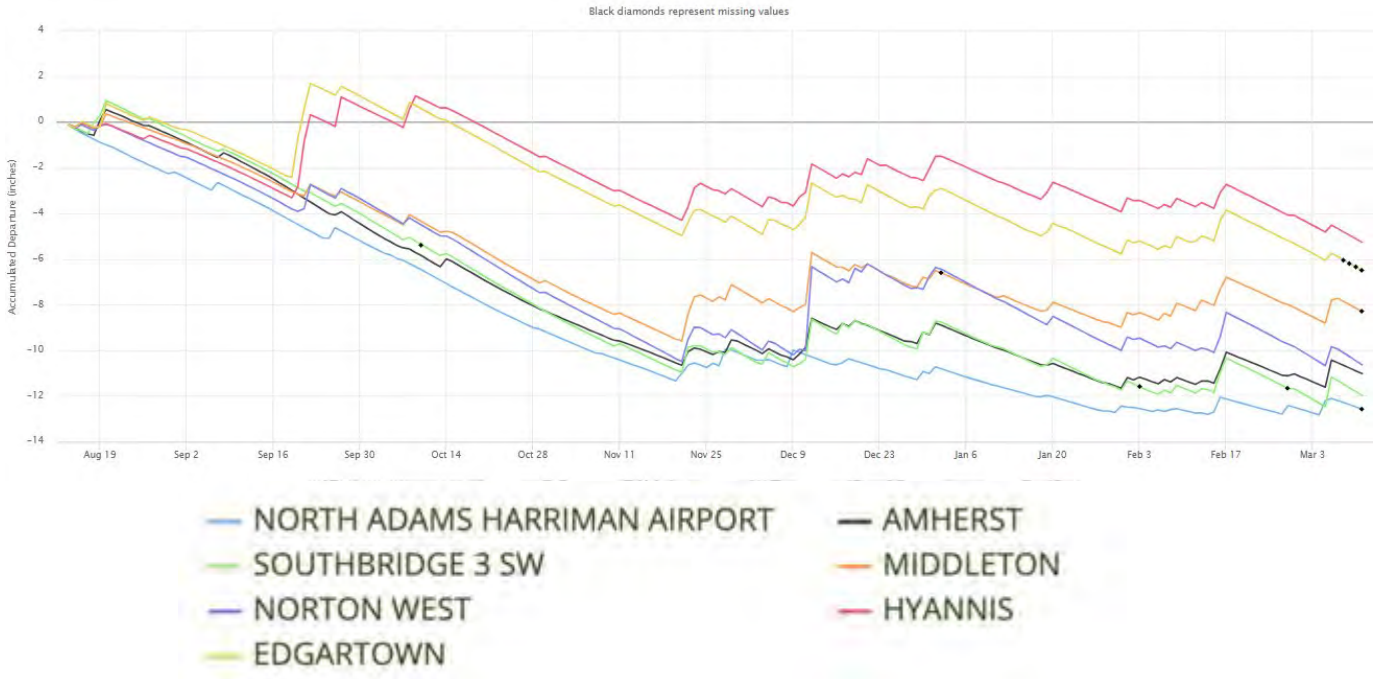
The seasonal outlook released 2/28 shows drought persisting in the southern central part of the state and drought removal likely and improving in northern parts of the state and Nantucket.

http://www.cpc.ncep.noaa.gov/products/Drought

ADDITIONAL PRECIPITATION DATA

Standardized Precipitation Index—February 2025 as percentiles

REGION	NUMBER OF SITES	1-mo	2-mo	3-mo	6-mo	9-mo	12-mo	24-mo	36-mo
WESTERN	2	57	12	37	1	16	37	69	61
CTRV	11	53	17	30	1	17	39	82	71
CENTRAL	14	64	23	37	2	5	38	86	78
NORTHEAST	18	57	26	47	6	8	30	81	54
SOUTHEAST	22	53	20	52	11	10	52	77	65
CAPE COD	7	30	7	18	20	6	14	42	36
ISLANDS	3	63	18	44	19	18	30	25	36



DMP Index Severity Levels

1	2	3	4

Accumulated Precipitation Departure from 30-Year Normals in Inches, starting mid-August

Graph does not consider starting condition's wetness/dryness; does not show summer heat waves with high evapotranspiration; and shows only one station per Drought Region. https://xmacis.rcc-acis.org/

ADDITIONAL PRECIPITATION DATA (CONT.)

Percent of Average Historical Precipitation—February 2025

REGION	NUMBER OF SITES REPORTING	HISTORICAL AVERAGE	FEBRUARY AVERAGE (IN)	DEPARTURE FROM HISTORICAL AVERAGE (IN)	PERCENT OF NORMAL
WESTERN	2	2.74	3.10	0.36	113%
CTRV	11	3.01	3.06	0.05	102%
CENTRAL	14	3.21	3.51	0.30	109%
NORTHEAST	18	3.21	3.22	0.01	100%
SOUTHEAST	22	3.56	3.44	-0.12	97%
CAPE COD	7	3.68	2.51	-1.17	68%
ISLANDS	3	3.43	3.23	-0.20	94%

DROUGHT MANAGEMENT PLAN INFORMATION

The Massachusetts Drought Management Plan (DMP) can be found at https://www.mass.gov/doc/massachusetts-drought-management-plan/download. The document provides details on the Drought Indices, how Drought Levels are determined, and actions associated with each drought level.

Index Severity Levels (Section 3.4 of the DMP)

SEVERITY LEVEL	STANDARDIZED PRECIPITATION INDEX (SPI)	STREAMFLOW	LAKES AND IMPOUNDMENTS	GROUNDWATER	EVAPOTRANSPIRATION	KEETCH-BRYAM DROUGHT INDEX (KBDI)
0	> 30th percentile					< 200
1	≤ 30 and > 20					200-400
2	≤ 20 and > 10					400-600
3	≤ 10 and > 2					600-700
4	≤ 2					700-800

Drought Levels (Section 3.1 of the DMP)

Level 0 Normal
Level 1 Mild Drought
Level 2 Significant Drought
Level 3 Critical Drought
Level 4 Emergency Drought

Massachusetts Water Resources Commission

Executive Office of Energy and Environmental Affairs

www.mass.gov/conservemawater

www.mass.gov/drought-management