

NWS Form E-5 (04-2006) (PRES. BY NWS Instruction 10-924)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA) Boston/Norton MA
		REPORT FOR: MONTH YEAR April 2021
MONTHLY REPORT OF HYDROLOGIC CONDITIONS		SIGNATURE Nicole M. Belk Senior Service Hydrologist
TO: Hydrologic Information Center, W/OS31 NOAA's National Weather Service 1325 East West Highway Silver Spring, MD 20910-3283	DATE May 11th 2021	

When no flooding occurs, include miscellaneous river conditions below the small box, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924).

An X inside this box indicates that no flooding occurred within this hydrologic service area.

April 2021 precipitation was mostly within an inch of normal across southern New England, with totals ranging from 3 to 5.5 inches. Lower precipitation totals of around 3 inches were noted in portions of north central CT, the Outer Cape and Nantucket. This rainfall was more than 1 inch below normal. Spot higher precipitation totals over 5.5 inches were noted along east coastal MA.

Temperatures averaged normal to around 2 degrees above normal. There was no freshwater flooding during April 2021 within NWS Boston/Norton's Hydrologic Service Area.

More details for major climate sites in southern New England are included in Table 1. Maps 3 and 4 show precipitation and precipitation departure from normal for April, as well as temperature departure from normal. Map 5 depicts temperature departure from normal.

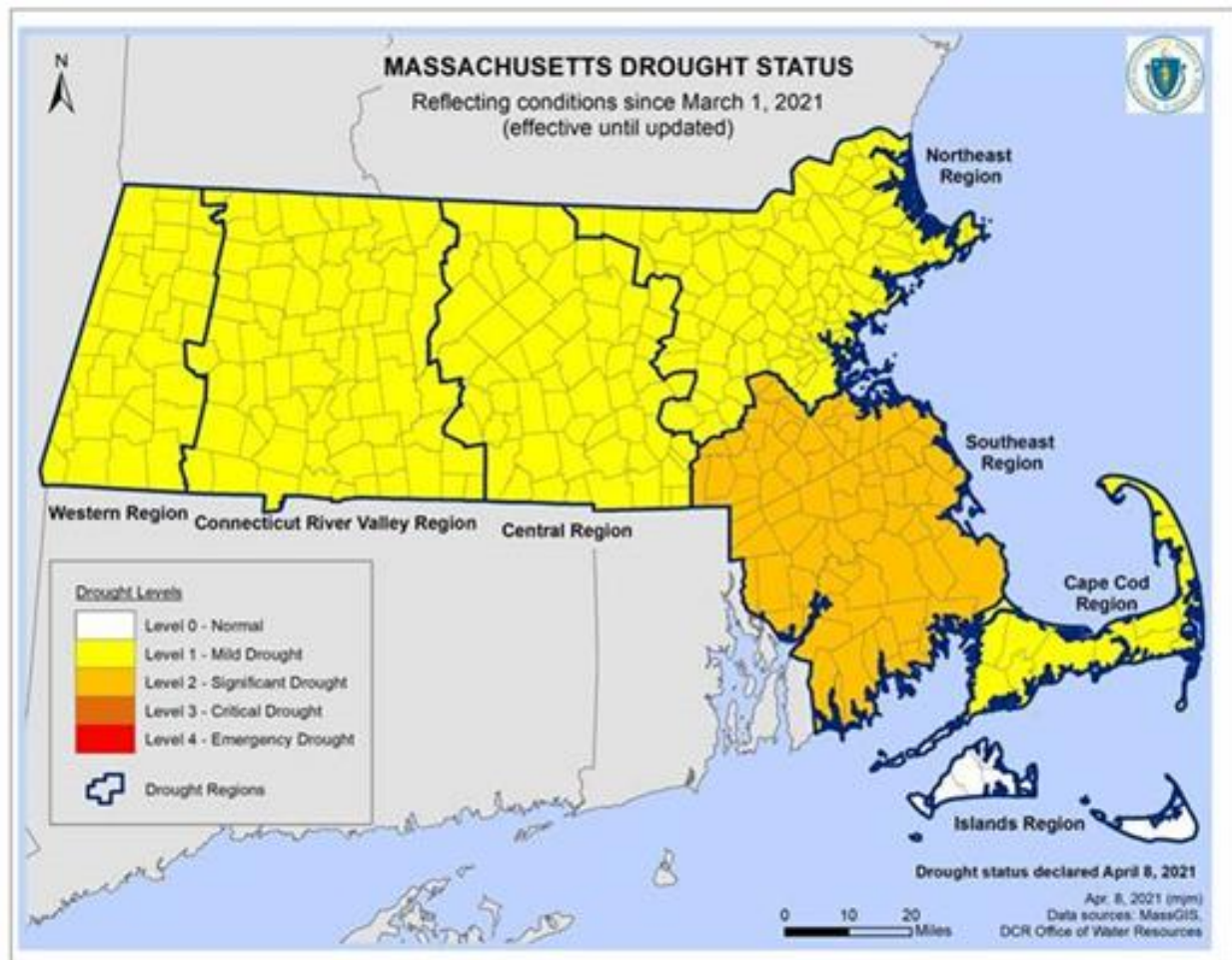
State Drought Declarations were in place in MA. No State Drought Declarations were in place in RI and CT.

<i>Location</i>	<i>April Liquid Equivalent Precipitation (Inches)</i>	<i>Precipitation Departure from Normal (Inches)</i>	<i>Temperature Departure from Normal (Degrees F)</i>
<i>Boston</i>	4.44	+0.81	+2.2
<i>Worcester</i>	3.13	-0.95	+1.8
<i>Providence</i>	3.25	-1.04	+1.2
<i>Hartford</i>	2.76	-1.12	+1.1

Table 1. April 2021 liquid equivalent precipitation and departure from normal, as well as temperature departure from normal for major climate sites within southern New England. Information is preliminary.

MA State Drought Declaration Update

Due to 2 months of below normal precipitation including a deficit of 1 to 3 inches across the Commonwealth during the month of March, the MA Drought Management Task Force (DMTF) convened on April 6th. On April 9th and following a recommendation from the MA DMTF, the MA Energy and Environmental Affairs (EEA) Secretary declared an expansion of the Level 1 – Mild Drought to include the Western, Connecticut River Valley, Central, Northeast and Cape Cod Drought Regions. The Southeast Drought Region was placed under a Level 2 – Significant Drought. The Islands remained under normal conditions.



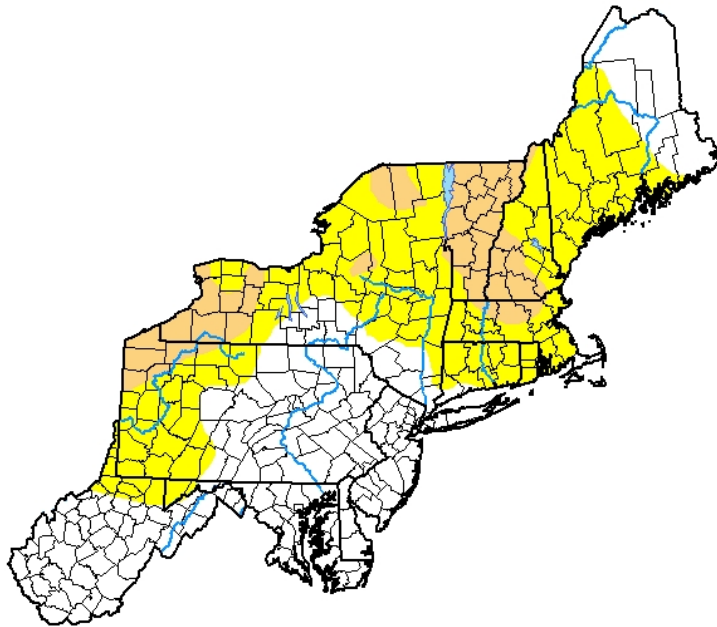
Map 1. MA Drought Declarations from April 9 2021, retroactive to March 1 2021.

U.S. Drought Monitor

During much of April, the US Drought Monitor depicted D0, or Abnormally Dry conditions over most of southern New England. Exceptions follow. D1, or Moderate Drought, was depicted over north central MA. Normal conditions were depicted over the Cape and Islands. Map 2 shows the USDM map effective April 27th 2021.

U.S. Drought Monitor Northeast

April 27, 2021
(Released Thursday, Apr. 29, 2021)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	45.90	54.10	13.54	0.00	0.00	0.00
Last Week <i>04-20-2021</i>	51.74	48.26	15.09	0.00	0.00	0.00
3 Months Ago <i>01-26-2021</i>	79.65	20.35	4.60	0.00	0.00	0.00
Start of Calendar Year <i>12-29-2020</i>	77.61	22.39	3.63	0.00	0.00	0.00
Start of Water Year <i>09-29-2020</i>	29.83	70.17	45.34	26.30	3.91	0.00
One Year Ago <i>04-28-2020</i>	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme 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>

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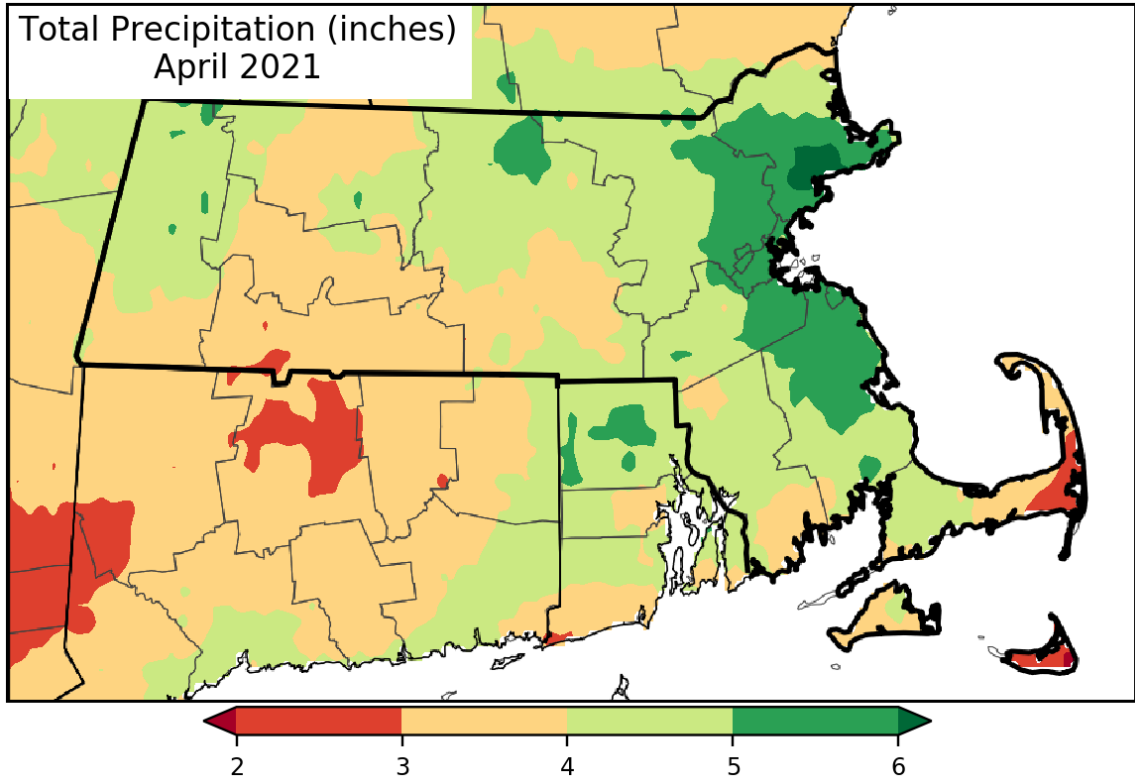


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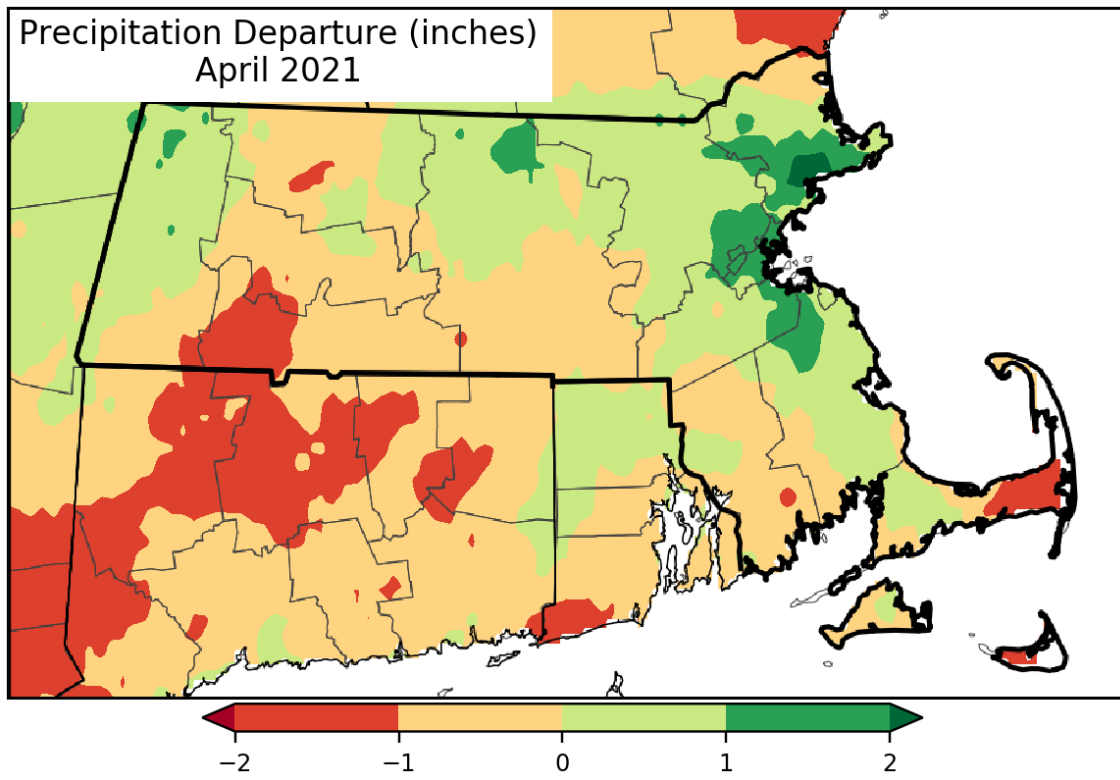
Map 2. U.S. Drought Monitor Map valid April 27th, 2021.

Streamflow and Groundwater:

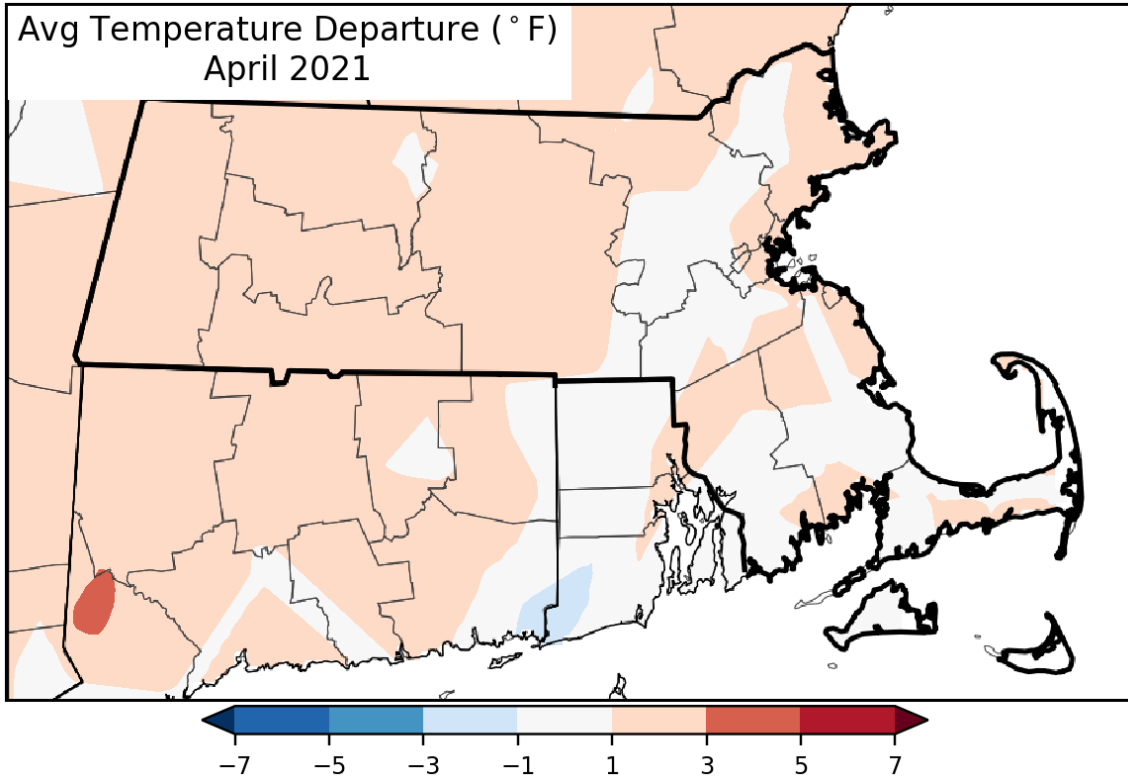
Streamflows across southern New England were mostly below normal during the first half of April. Then during the second half of the month, rain events gave area streamflows a boost to normal or above normal flows at times. In CT and RI, groundwater wells were mainly at normal levels, though a few wells in each State were above normal, and some below normal. Wells in MA had the most variation, with wells ranging from normal to much above normal for much of the Commonwealth. However, wells were generally running normal to much below normal near and south of the I-90 corridor in western and central MA, as well as south coastal MA, Cape Cod, and Martha's Vineyard.



Map 3: April 2021 liquid equivalent precipitation for southern New England. From the Northeast Regional Climate Center.



Map 4. April 2021 liquid equivalent precipitation departure from normal for southern New England. From the Northeast Regional Climate Center.



Map 5. Average temperature departure from normal across southern New England for April 2021.
From the Northeast Regional Climate Center.

Rhode Island Precipitation
National Weather Service Boston/Norton, MA
Preliminary Precipitation Data (inches) by Drought Region
Past 12 to 36 months ending April 2021
Includes CoCoRaHS Data

RI 1 month April 2021	Rainfall	Departure	Percent	Normal
Northwest	4.04	-0.66	86	4.70
Northeast	4.19	-0.54	89	4.73
Central West	4.51	-0.09	98	4.60
Central East	3.87	-0.49	89	4.36
Eastern	3.62	-1.20	75	4.82
Southern	3.71	-1.33	74	5.04
New Shoreham	3.74	-1.30	74	5.04

RI 2 month Mar-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	6.46	-3.69	64	10.15
Northeast	6.27	-3.48	64	9.75
Central West	7.67	-2.09	79	9.76
Central East	6.82	-2.55	73	9.37
Eastern	6.28	-4.22	60	10.50
Southern	6.94	-3.64	66	10.58
New Shoreham	6.73	-3.85	64	10.58

RI 3 month Feb-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	9.89	-4.22	70	14.11
Northeast	9.91	-3.39	75	13.30
Central West	11.42	-1.94	86	13.36
Central East	10.31	-2.35	81	12.66
Eastern	9.94	-4.33	70	14.27
Southern	11.24	-3.03	79	14.27
New Shoreham	13.57	-0.70	95	14.27

RI 6 month Nov 20-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	26.95	-1.24	96	28.19
Northeast	26.68	-0.22	99	26.90
Central West	29.13	2.35	109	26.78
Central East	26.50	1.25	105	25.25
Eastern	23.40	-3.37	87	26.77
Southern	27.87	-0.27	99	28.14
New Shoreham	29.83	1.69	106	28.14

RI 12 month May 20-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	44.32	-9.38	83	53.70
Northeast	45.12	-6.30	88	51.42
Central West	45.66	-5.11	90	50.77
Central East	42.86	-4.32	91	47.18
Eastern	37.85	-10.69	78	48.54
Southern	44.94	-7.93	85	52.87
New Shoreham	47.29	-5.58	89	52.87

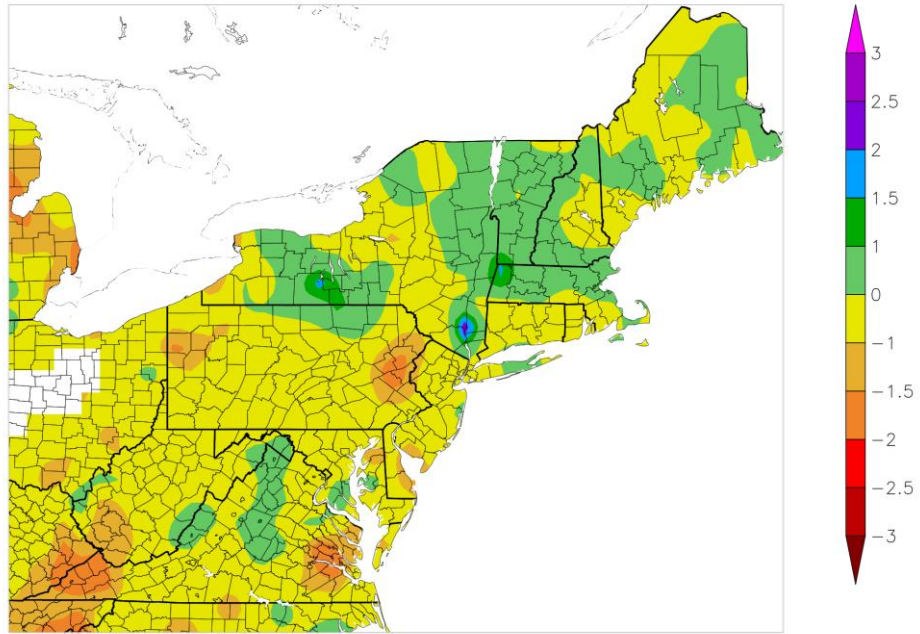
RI 24 month May 19-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	100.57	-6.83	94	107.40
Northeast	96.48	-6.36	94	102.84
Central West	101.39	-0.15	100	101.54
Central East	92.29	-2.07	98	94.36
Eastern	88.63	-8.45	91	97.08
Southern	102.08	-3.66	97	105.74
New Shoreham	96.87	-8.87	92	105.74

RI 36 month May 18-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	168.74	7.64	105	161.10
Northeast	161.77	7.51	105	154.26
Central West	169.70	17.39	111	152.31
Central East	156.65	15.11	111	141.54
Eastern	143.05	-2.57	98	145.62
Southern	163.32	4.71	103	158.61
New Shoreham	150.83	-7.78	95	158.61

RI 4 month Jan-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	12.68	-5.71	69	18.39
Northeast	12.63	-4.74	73	17.37
Central West	14.16	-3.27	81	17.43
Central East	12.51	-4.01	76	16.52
Eastern	11.95	-6.17	66	18.12
Southern	13.63	-4.75	74	18.38
New Shoreham	15.93	-2.45	87	18.38

RI 5 month Dec 20-Apr 21	Rainfall	Departure	Percent	Normal
Northwest	20.86	-2.37	90	23.23
Northeast	22.36	0.25	101	22.11
Central West	25.01	2.98	114	22.03
Central East	22.70	1.96	109	20.74
Eastern	19.24	-3.20	86	22.44
Southern	23.20	0.11	100	23.09
New Shoreham	24.07	0.98	104	23.09

Monthly SPI
4/1/2021 – 4/30/2021

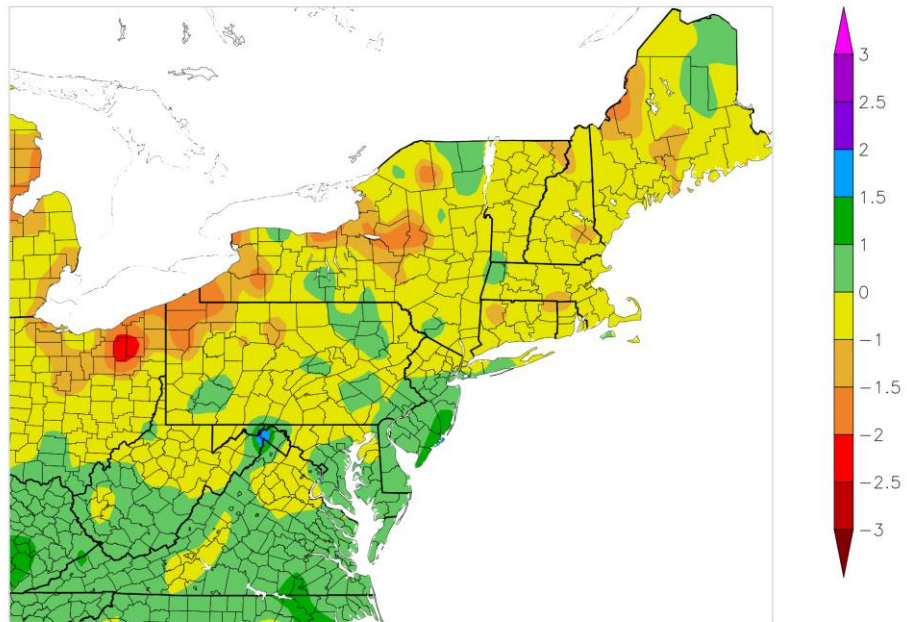


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NOAA Regional Climate Centers

Map 1. April 2021 SPI. From the NOAA Regional Climate Centers.

3-Month SPI
2/1/2021 – 4/30/2021

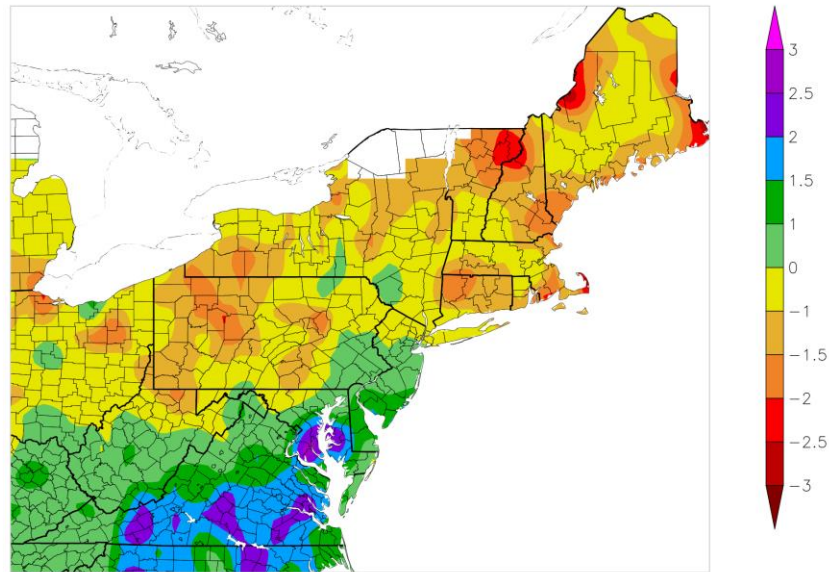


Generated 5/5/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

Map 2. Three-Month SPI ending April 2021. From the NOAA Regional Climate Centers.

12-Month SPI
5/1/2020 – 4/30/2021

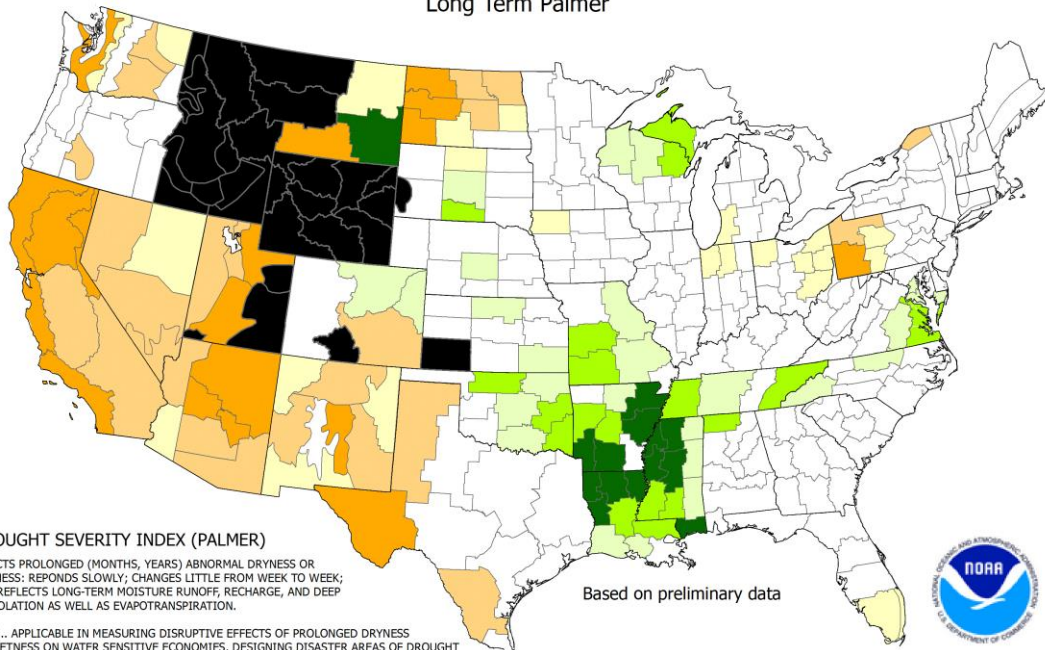


Generated 5/5/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

Map 3. Twelve month SPI ending April 2021. From the NOAA Regional Climate Centers.

Drought Severity Index by Division
Weekly Value for Period Ending May 01, 2021
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 OFFSHORT-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



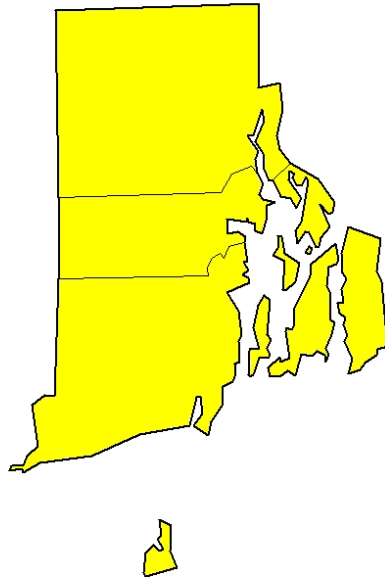
- -4.0 or less (Extreme Drought)
- -3.0 to -3.9 (Severe Drought)
- -2.0 to -2.9 (Moderate Drought)
- -1.9 to +1.9 (Near Normal)
- +2.0 to +2.9 (Unusual Moist Spell)
- +3.0 to +3.9 (Very Moist Spell)
- +4.0 and above (Extremely Moist)
- Missing/Incomplete

Map 4. Palmer Drought Index from the Climate Prediction Center, NOAA, dated 3/27/21.

RI Palmer is in the Normal range, -0.41.

**U.S. Drought Monitor
Rhode Island**

April 27, 2021
(Released Thursday, Apr. 29, 2021)
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Intensity:

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

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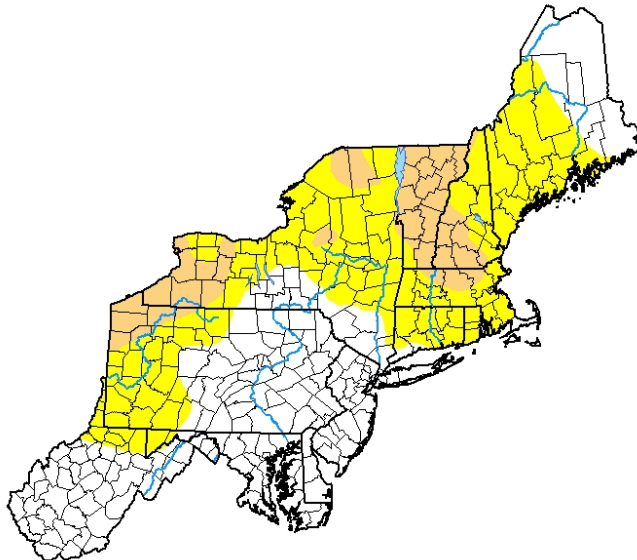


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Map 5. US Drought Monitor for Rhode Island. valid 4/27/2021.

**U.S. Drought Monitor
Northeast**

April 27, 2021
(Released Thursday, Apr. 29, 2021)
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Intensity:

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

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Map 6. US Drought Monitor for the Northeast US, valid 4/27/2021.