



Southern



New England

March 2017

March is the month for Madness. We awake from our winter's nap and season of darkness to get more observers in our network. Our annual recruiting drive is underway.

February had some Madness in it as well. The Blizzard from February 9th gets a little publicity with all of the Significant Weather Reports submitted. From eastern Pennsylvania to coastal Maine, 146 Significant Weather Reports were submitted as the snow fell at over 1" per hour in many places.

There is a change on our website, and a little background about it.

Selecting our "Map of the Month" feature is usually made early in the month. Franklin County is featured this month, decided well ahead of snow depths and stormy weather.

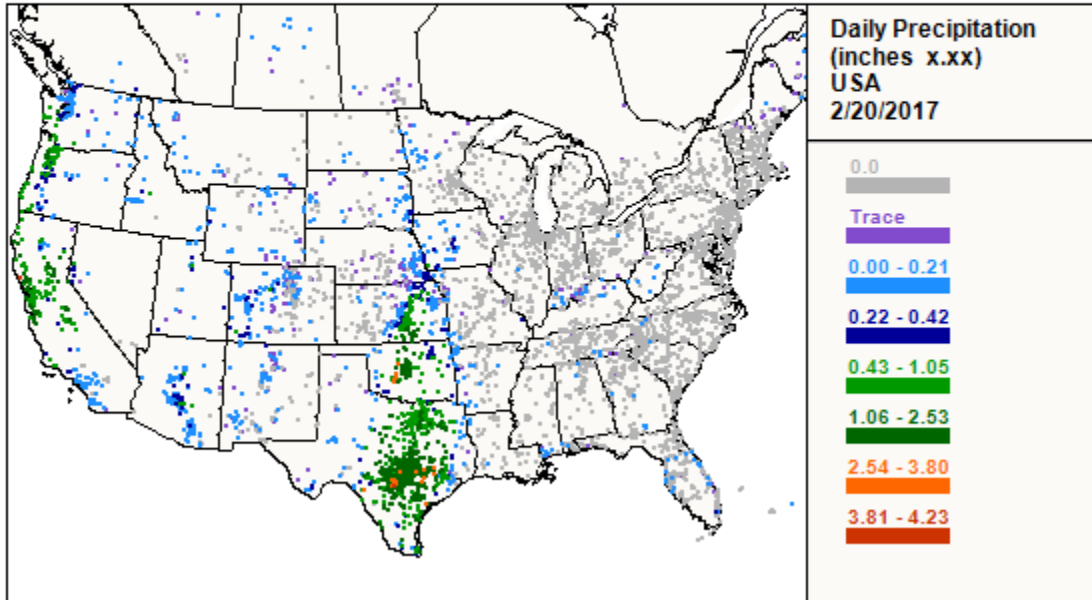
There was Madness in March of 2010. Rains came to our three states. Our last article explains it all in detail, with a little throwback from a newsletter nearly 7 years ago.

A changed look

Our network's website with the map of reports has a change to it.

Reports received today 2/20/2017 as of 10:29 AM EST

Daily	Multi-day	SigWx	Hail	Condition	ET
6,278	102	4	0	26	7



A count is displayed for each report type within the day. A quick explanation and background on each report type.

- Daily. Very basic. For your daily precipitation, snow fall and snow depth amounts.
- Multi-day. A report covering multiple days. Explained in our [May 2016 Newsletter](#).
- SigWx. Significant Weather Reports. Explained in our [April 2016 Newsletter](#).
- Hail. The “H” in CoCoRaHS. Explained in our [April 2016 Newsletter](#).
- Condition. Our new Condition Monitoring Reports. Explained in our [November 2016 Newsletter](#).
- ET. [Evapotranspiration](#). The “up” side of the water cycle. We have 2 observers in Massachusetts with a special gauge that measures how much liquid evaporates in a given day or time period. Couple the evaporation with precipitation and we can see if we are experiencing

a surplus or deficit of water in the cycle. The numbers of these reports should increase as the summer season comes upon us.

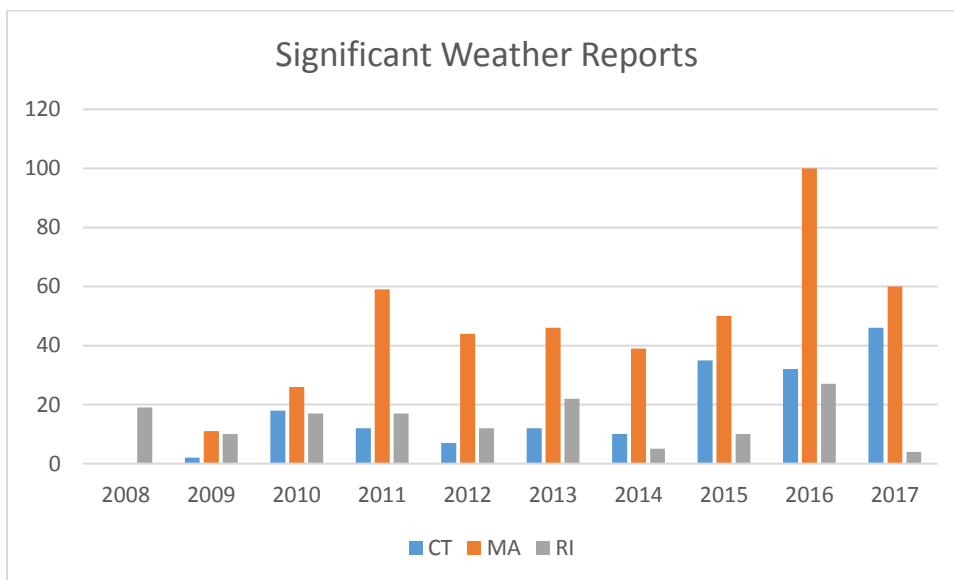
The new animated video of Comments has a good story behind it based upon an actual series of events that occurred locally and afar. I wish I could tell you all an equally as good as story with this changed look to the Home Page. Let's just say that the counts of observers and reports and report types that appears in each and every one of our newsletters has been noticed, imitated and has taken another form, displayed on our Home Page.

Crack a smile when you see this changed look on the Home Page and relate to the other observers across the network who are now having their different report types counted and displayed!

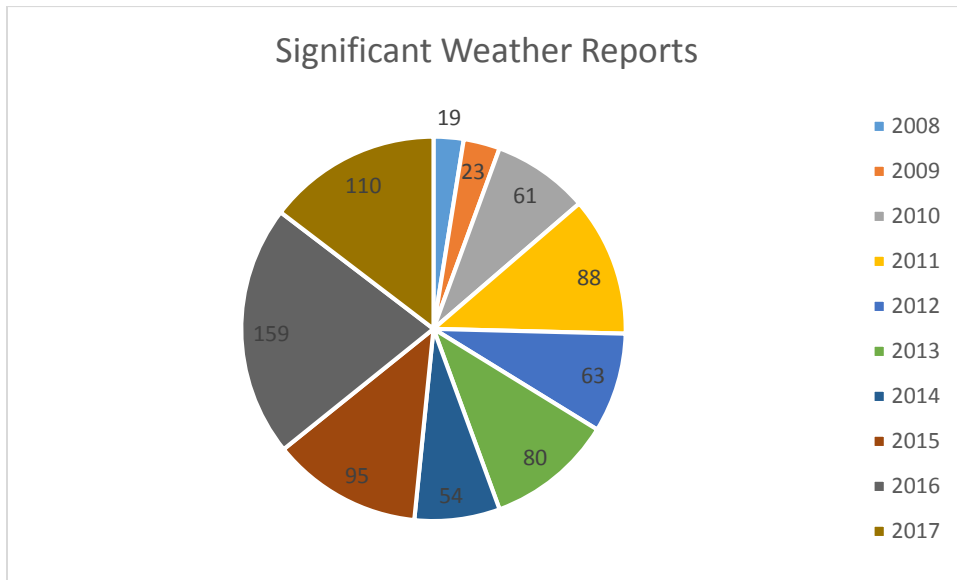
Significant Weather Reports

We counted them. Now is a good time to display them.

For our 3 states, a count by Year. We are only 2 months into Year 2017.



Because March has Pi Day on March 14th. A pie chart by Year.



A list of the Top 15 Events by total number of Significant Weather Reports submitted. Do you remember these events?

Event	Date	CT	MA	RI	Grand Total	Unique Observers
Blizzard	02/09/17	31	30	2	63	33
Snow in Eastern MA	01/07/17	3	16	1	20	12
Snow	02/05/16	0	16	2	18	13
2" rain New London to Worcester	10/21/16	6	8	2	16	13
Snow	12/17/16	7	8	1	16	16
Snow in October!	10/29/11	1	13	0	14	9
Snow	02/08/13	3	9	0	12	9
2" rain eastern CT to eastern MA	09/30/15	1	9	1	11	8
Snow	02/12/17	4	5	0	9	7
1"-3" rain	06/07/13	1	4	3	8	4
3"-6" snow	01/27/15	3	5	0	8	6
1" rain turned to 1" snow	04/03/16	0	5	3	8	7
6" snow in New London – Kent	02/10/10	3	0	4	7	2
Remnant rains of T.S. Irene	08/28/11	1	6	0	7	6
3"-8" snow	01/21/12	0	6	1	7	7

With Significant Weather Reports, let's be clear what we are trying to achieve. In real time, we are alerting your local National Weather Service Forecast Office immediately of Significant Weather occurring. The report comes across their screen(s) within a minute of you submitting it. Go deep into Page 21 of the [November 2016 newsletter](#) for an example.

It is an added dimension to your reporting and participation in our network. We report daily, report zeros, snow fall, snow depth, hail, and in weather conditions that are significant, we can submit a report in real time, calling attention to the conditions that are occurring; rain, wind, snow, or flooding.

Breaking yearly or state or event records with these reports is NOT what we are striving for. With an increase in the number of observers in the past year and more, the training, the newsletters, it's natural to see an increase in Significant Weather Reporting. This Top 15 list of Events is to call attention to these events, and for you to think of additional events that you may remember and are not on this list. Sandy in October 2012? Other 15"+ snow storms of 2010 and 2011? Not widespread? Not that many observers at the time?

Be safe. None of this is worth getting hurt for. The report is supplemental to your regular 24 hour report. Make note of start and stop times of the Significant Weather. A simple guideline to pass along is: 1" or more of rain or snow in 1 hour or less time.

You have the power to submit a Significant Weather Report that calls immediate attention to your locale. Use that unique power well throughout the year, regardless of the type of weather or whether it is localized or widespread.

Detail and Summary for February 2017

From the National Weather Service (NWS) Climate sites for Feb 2017.

Location	Station ID	Feb 2017 Precip	Feb departure from normal	Dec-Jan-Feb Precip	3 month departure from normal	Sep-Feb Precip	6 month departure from normal
Pittsfield MA	PSF	2.86"	0.18"	8.60"	0.00"	17.17"	-4.03"
Bridgeport CT	BDR	1.91"	-0.88"	8.62"	-0.60"	19.83"	0.10"
Hartford CT	BDL	2.49"	-0.40"	8.71"	-0.85"	16.36"	-5.34"
Worcester MA	ORH	2.44"	-0.79"	10.15"	-0.39"	23.88"	0.45"
Providence RI	PVD	2.22"	-1.07"	10.32"	-1.05"	21.35"	-2.38"
Boston MA	BOS	3.22"	-0.03"	10.72"	0.33"	20.26"	-1.50"

The month started with light snow, rain on the 8th, Blizzard on the 9th, snow on the 12th, record warm temps during the last third of the month, and a strong cold front on the 25th that brought rain and spun a tornado in Goshen and Conway MA, the 1st tornado in Massachusetts in February.

Not much drought relief for February or during these past 3 months. Snow storms, and all of the hoopla about snowfall amounts, can be misleading. We melt and measure all frozen precipitation to determine its liquid amount.

Along the lines of melting and measuring: There were a couple of stations that reported for all days, but barely 1.5" of precip for the month. These stations were deleted from the list of stations appearing in the next few pages, because it is very apparent that a melted precip amount was not done completely with the snowfall.

Please use our 4" diameter CoCoRaHS gauge all year round. There are times of the year, and this is one of them, where the usage of automated gauges instead of the CoCoRaHS gauge raises suspicions.

We believe in manual measurements over the use of automated equipment. It is more accurate, all year round. Any doubts, just ask that an upcoming newsletter includes a comparison of our network with our area airport ASOS precip amounts. You will be a believer too.

Take in this next section of your reports with appreciation of your efforts.

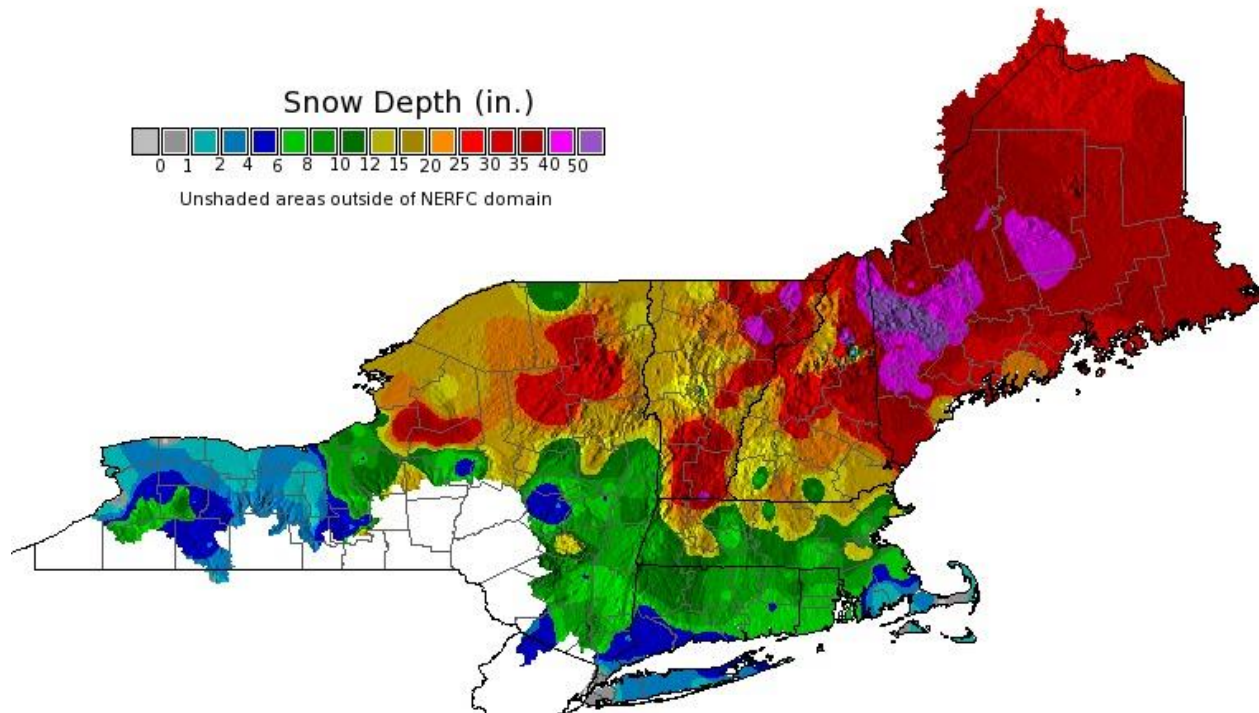
From your reports for February 2017

Observers reporting	260
Reported all 28 days	114
Completed by Multi-Day Reports	21
Missing 1 or 2 reports	36
Daily Reports	5626
Zero Reports	3568
Non-Zero Reports	2058
Daily Comments	1575
Multi-Day Reports	100
Condition Monitoring Reports	11
Significant Weather Reports	80
Snowfall Reports	4333
Snow Depth Reports	2692
Total SWE Reports	744
Highest Daily Report	2.05" from Cranston RI (RI-PR-17) reported on 2/10



Current Snow Depth

Ending 12Z February 17, 2017



Source: NOAA/NWS Northeast River Forecast Center, Taunton, MA

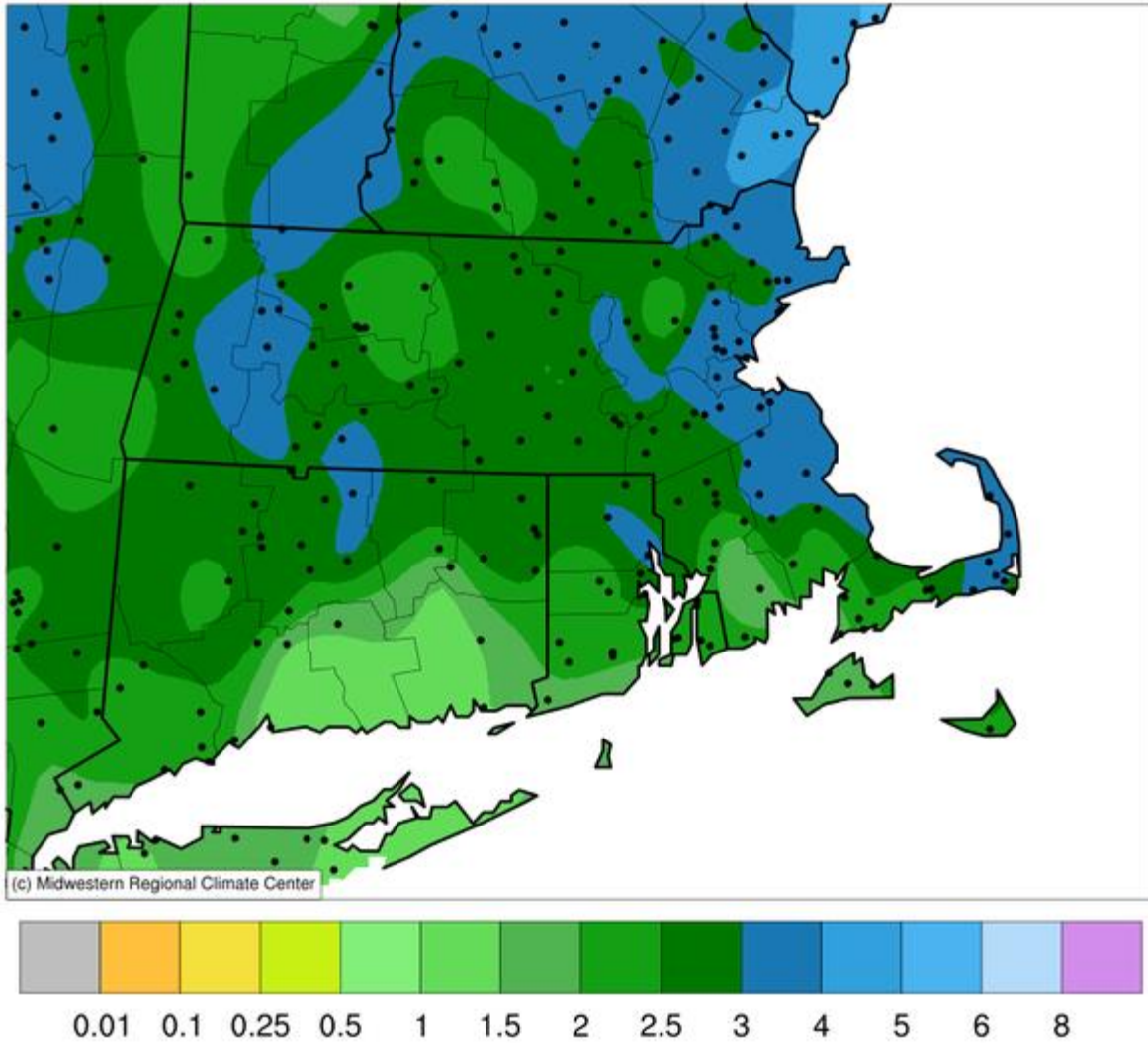
Watershed	Watershed Name	Station	Station Name	Precip
01060003	Piscataqua-Salmon Falls			
0106000310	Hamptom River - Frontal Atlantic Ocean	MA-ES-1	Salisbury 3.7 NW	3.85"
01070004	Nashua			
0107000401	North Nashua River	MA-WR-44	Westminster 0.6 WSW	2.72"
0107000401	North Nashua River	MA-WR-52	Fitchburg 2.3 N	2.44"
0107000401	North Nashua River	MA-WR-13	Leominster 1.5 S	2.81"
0107000402	Headwaters Nashua River	MA-WR-53	Clinton 0.2 E	3.13"
0107000403	Squannacook River	MA-MD-47	West Townsend 0.5 W	2.79"
01070005	Concord			
0107000502	Concord River	MA-WR-30	Shrewsbury 1.6 NNE	2.98"
0107000502	Concord River	MA-WR-42	Northborough 2.3 N	2.73"
0107000502	Concord River	MA-MD-61	Stow 2.3 NW	3.27"
0107000502	Concord River	MA-MD-12	Acton 1.3 SW	3.48"
0107000502	Concord River	MA-MD-51	Maynard 0.7 ESE	3.36"
0107000502	Concord River	MA-MD-62	Chelmsford 1.2 E	3.31"
01070006	Merrimack River			
0107000613	Shawsheen River	MA-MD-52	Lexington 0.6 SW	3.09"
0107000614	Powwow River - Merrimack River	MA-ES-3	Haverhill 3.6 WNW	4.15"
0107000614	Powwow River - Merrimack River	MA-ES-20	Haverhill 0.7 N	3.61"
0107000614	Powwow River - Merrimack River	MA-ES-4	Groveland 0.5 WSW	3.55"
01080201	Middle Connecticut			
0108020106	Manhan River - Connecticut River	MA-HS-8	Williamsburg 1.2 WSW	3.04"
0108020106	Manhan River - Connecticut River	MA-FR-12	Sunderland 1.3 SE	2.80"
0108020107	Batchelor Brook - Connecticut River	MA-HD-13	Springfield 4.1 W	3.80"
01080202	Miller			
01080203	Deerfield			
0108020305	Lower Deerfield River	MA-FR-17	Buckland 1.8 ESE	3.50"
0108020305	Lower Deerfield River	MA-FR-13	Conway 2.9 NW	3.66"
0108020305	Lower Deerfield River	MA-FR-10	Conway 0.9 SW	3.14"
01080204	Chicopee			
01080205	Lower Connecticut			
0108020501	Mill River - Connecticut River	CT-HR-5	Enfield 1.5 SE	3.15"
0108020502	Scantic River	CT-TL-15	Central Somers 0.3 N	3.01"
0108020503	Park River	CT-HR-39	Farmington 1.6 SW	3.28"
0108020503	Park River	CT-HR-11	West Hartford 2.7 SSE	2.46"
0108020505	Roaring Brook - Connecticut River	CT-HR-22	East Hartford 1.3 E	3.44"
0108020506	Mattabeset River	CT-HR-15	Southington 3.0 E	2.88"
01080206	Westfield			
0108020601	Headwaters Westfield River	MA-HS-7	Plainfield 2.2 SW	3.71"
01080207	Farmington			

0108020701	Still River	CT-LT-15	Colebrook 1.0 NE	3.21"
0108020702	West Branch Farmington River	MA-BE-4	Becket 5.6 SSW	3.08"
0108020704	Headwaters Farmington River	CT-LT-9	New Hartford Center 3.2 SW	3.01"
0108020704	Headwaters Farmington River	CT-HR-24	Collinsville 0.9 NW	2.96"
0108020704	Headwaters Farmington River	CT-HR-28	North Canton 0.8 SSW	2.96"
0108020705	Salmon Brook	CT-HR-8	North Granby 1.3 ENE	2.79"
0108020706	Outlet Farmington River	CT-HR-35	Weatogue 0.7 E	2.86"
01090001	Charles			
0109000101	Plum Island Sound - Frontal Atlantic Ocean	MA-ES-24	Newburyport 0.8 SW	3.52"
0109000102	Ipswich River	MA-MD-45	Wilmington 1.5 NE	2.86"
0109000102	Ipswich River	MA-ES-12	Boxford 2.4 S	3.13"
0109000102	Ipswich River	MA-ES-2	Beverly 2.8 NW	3.00"
0109000103	Essex River - Frontal Atlantic Ocean	MA-ES-22	Rockport 1.0 E	3.78"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-67	Lexington 2.3 SE	3.33"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-7	Winchester 0.7 SE	3.43"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-44	Medford 1.2 W	3.40"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-11	Cambridge 0.9 NNW	3.44"
0109000105	Mystic River - Frontal Boston Harbor	MA-SF-10	Chelsea 0.8 N	4.96"
0109000106	Upper Charles River	MA-WR-1	Milford 2.3 NNW	2.59"
0109000106	Upper Charles River	MA-MD-55	Holliston 0.7 W	2.94"
0109000106	Upper Charles River	MA-MD-42	Holliston 0.8 S	3.14"
0109000106	Upper Charles River	MA-NF-11	Millis 2.0 SW	2.99"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-71	Newton 2.2 NNW	2.49"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-43	Somerville 0.8 SSE	3.39"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-74	Somerville 0.7 SSE	3.04"
0109000108	Neponset River - Frontal Boston Harbor	MA-NF-1	Norwood 1.3 NW	2.85"
0109000109	Whitmans Pond - Frontal Boston Harbor	MA-NF-5	Weymouth 0.5 NW	4.20"
01090002	Cape Cod			
0109000202	Cape Cod	MA-BA-2	Falmouth 3.1 NNW	2.37"
0109000202	Cape Cod	MA-BA-50	Falmouth 5.4 NNE	2.81"
0109000202	Cape Cod	MA-BA-19	East Falmouth 0.7 NW	2.58"
0109000202	Cape Cod	MA-BA-47	Mashpee 2.4 WSW	2.83"
0109000202	Cape Cod	MA-BA-45	Sandwich 0.9 NNE	2.89"
0109000202	Cape Cod	MA-BA-27	Wellfleet 0.7 NW	4.00"
0109000202	Cape Cod	MA-BA-51	Orleans 3.0 S	3.69"
0109000202	Cape Cod	MA-BA-30	Eastham 0.6 SW	3.56"
0109000204	Paskamanset River - Frontal Buzzards Bay	MA-BR-14	Dartmouth 2.5 SSW	2.43"
0109000205	Skonnet Point - Frontal Rhode Island Sound	RI-NW-5	Little Compton 1.7 NW	2.20"
0109000205	Skonnet Point - Frontal Rhode Island Sound	RI-NW-7	Little Compton 0.6 E	2.29"
0109000206	Elizabeth Islands - Marthas Vineyard	MA-DK-5	West Tisbury 2.9 N	2.20"
0109000207	Nantucket Island	MA-NT-1	Nantucket 3.8 WNW	2.03"

01090003	Blackstone			
0109000301	Upper Blackstone River	MA-WR-41	Auburn 2.6 SW	2.26"
0109000301	Upper Blackstone River	MA-WR-43	Leicester 2.4 ESE	2.50"
0109000301	Upper Blackstone River	MA-WR-32	Auburn 1.9 ESE	3.14"
0109000302	Lower Blackstone River	RI-PR-50	Harrisville 1.2 SSE	3.04"
0109000302	Lower Blackstone River	RI-PR-45	Manville 0.4 WSW	3.54"
0109000302	Lower Blackstone River	MA-NF-26	Bellingham 2.4 S	2.90"
01090004	Narragansett			
0109000401	Upper Taunton River	MA-BR-30	Taunton 3.9 N	3.20"
0109000402	Middle Taunton River	MA-PL-31	Bridgewater 1.8 SE	3.61"
0109000403	Threemile River	MA-BR-33	Taunton 2.4 W	2.66"
0109000403	Threemile River	MA-BR-9	Taunton 2.6 NW	3.02"
0109000404	Ten Mile River	MA-BR-17	North Attleboro 0.8 E	3.18"
0109000404	Ten Mile River	MA-BR-23	Attleboro 0.9 ENE	2.45"
0109000405	Wonnasquatucket River-Moshassuck River	RI-PR-33	Greenville 0.7 NNW	3.20"
0109000405	Woonasquatucket River-Moshassuck River	RI-PR-51	North Smithfield 0.6 S	2.96"
0109000406	Pawtuxet River	RI-PR-17	Cranston 4.1 E	3.64"
0109000407	Palmer River	MA-BR-2	Rehoboth 2.1 N	2.44"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-3	Norton 1.8 NNE	3.09"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-16	Somerset 0.4 SSE	2.17"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-19	Somerset 2.0 NNE	2.50"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-8	Dighton 1.1 WSW	2.70"
0109000409	Narragansett Bay	RI-KN-2	East Greenwich 2.3 ESE	2.68"
0109000409	Narragansett Bay	RI-PR-32	Providence 2.3 NE	3.13"
0109000409	Narragansett Bay	RI-NW-4	Middletown 1.1 SW	1.87"
0109000409	Narragansett Bay	RI-NW-11	Tiverton 0.8 SSW	3.30"
01090005	Pawcatuck-Wood			
0109000501	Wood River	RI-WS-1	Hope Valley 3.7 S	2.77"
0109000502	Upper Pawcatuck River	RI-WS-32	Kingston 6.9 NNW	2.43"
0109000502	Upper Pawcatuck River	RI-WS-37	Kingston 2.4 SW	2.56"
0109000504	Frontal Block Island Sound	RI-WS-36	Charlestown 3.0 WSW	2.43"
01100001	Quinebaug			
0110000103	Fivemile River	CT-WN-4	East Killingly 1.3 SW	2.72"
0110000105	Mossup River	CT-WN-8	Moosup 1.7 NE	2.76"
0110000106	Pachaug River	CT-NL-21	Griswold 0.9 N	2.05"
01100002	Shetucket			
0110000201	Willimantic River	CT-TL-2	Staffordville 0.4 NNW	2.92"
0110000203	Shetucket River	CT-NL-10	Norwich 2.5 NNE	2.78"
01100003	Thames			
0110000302	Thames River-Frontal New London Harbor	CT-NL-7	Uncasville-Oxoboxo Valley 5.6 W	2.99"
0110000302	Thames River-Frontal New London Harbor	CT-NL-6	New London 1.0 NNW	2.81"

0110000302	Thames River-Frontal New London Harbor	CT-NL-8	Uncasville-Oxoboxo Valley 1.6 ENE	2.52"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-22	Central Waterford 2.7 SSW	2.78"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-18	Stonington 0.5 NNE	2.86"
01100004	Quinnipiac			
0110000401	Quinnipiac River	CT-NH-14	Prospect 1.9 ENE	3.00"
0110000402	Hammonasset River - Frontal Long Island Sound	CT-NH-33	Madison Center 1.4 WNW	2.53"
0110000402	Hammonasset River - Frontal Long Island Sound	CT-MD-11	Westbrook Center 1.5 NE	2.60"
0110000403	Mill River - Frontal Long Island Sound	CT-NH-16	Milford 1.8 E	2.46"
0110000403	Mill River - Frontal Long Island Sound	CT-NH-29	Hamden 3.0 WSW	2.55"
01100005	Housatonic			
0110000508	Still River - Housatonic River	CT-FR-41	Bethel 3.5 NNE	2.59"
0110000508	Still River - Housatonic River	CT-FR-9	Brookfield 3.3 SSE	2.67"
0110000510	Eightmile Brook - Housatonic River	CT-FR-44	Newtown 4.3 E	2.77"
0110000512	Outlet Naugatuck River	CT-NH-26	Prospect 1.5 NW	3.20"
0110000512	Outlet Naugatuck River	CT-NH-22	Prospect 0.5 SW	3.26"
0110000513	Housatonic River - Frontal Long Island Sound	CT-FR-23	Shelton 1.3 W	2.40"
01100006	Saugatuck			
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-29	Ridgefield 1.9 SSE	3.81"
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-25	Norwalk 2.9 NNW	2.48"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-20	Westport 2.5 ENE	2.14"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-32	Monroe 0.8 W	2.68"
0110000604	Mianus River-Rippowam River	CT-FR-35	Darien 1.8 ENE	1.79"

Accumulated Precipitation (in)
February 01, 2017 to February 28, 2017



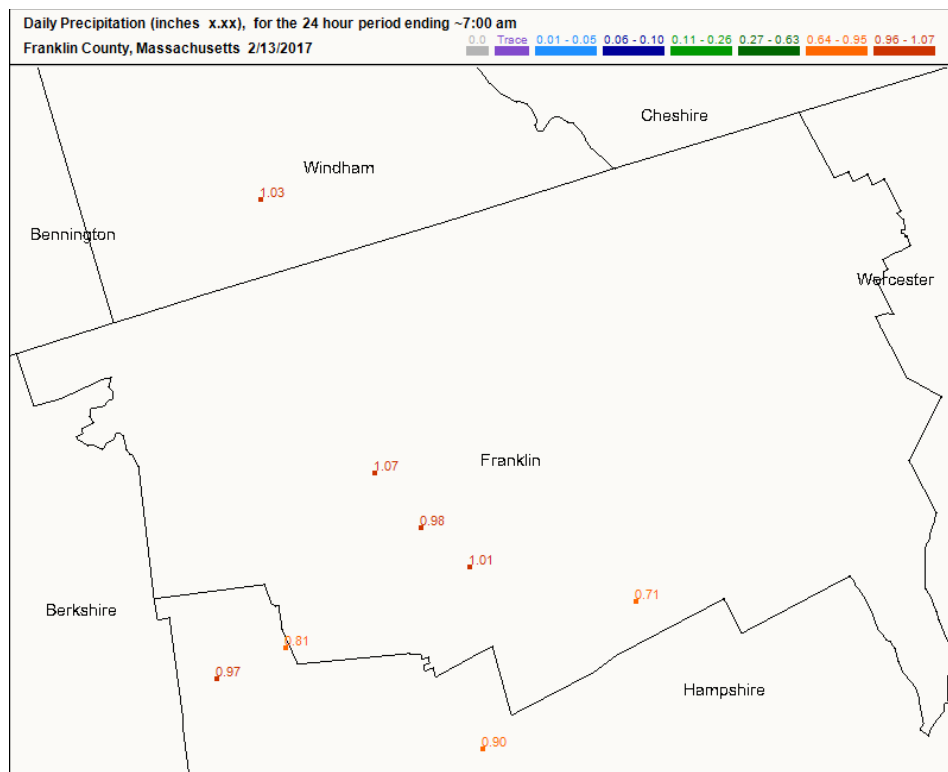
Map of the Month – Franklin County MA

Named after one of our nation’s Founding Fathers who watched the weather, Franklin County has 70,000 residents on 700 sq miles of land, making it the least populated county on the Massachusetts mainland.

At first look, it seems like a simple county with the Connecticut River flowing down the middle of it and hills on each side of that river. Go beyond the mainstem river and uncover more, 2 and 3 times more.

From the west the Deerfield River flows in, and from the east the Millers River flows in. A total of 1000 sq miles of watersheds, most of it from beyond the county borders, as far reaching as Stratton Mountain in Vermont, converging upon one point, the city of Greenfield MA. Flooding has occurred in Franklin County and the most recent and destructive event occurred when Hurricane Irene came through in late August 2011.

These 4 observers continue to do great work in Franklin County. We could use more observers in every town, on every hilltop and valley in this county that as has so much more water coming into it from beyond its borders. If you know of someone who believes that precipitation is important, March is a great month for them to get started with CoCoRaHS.

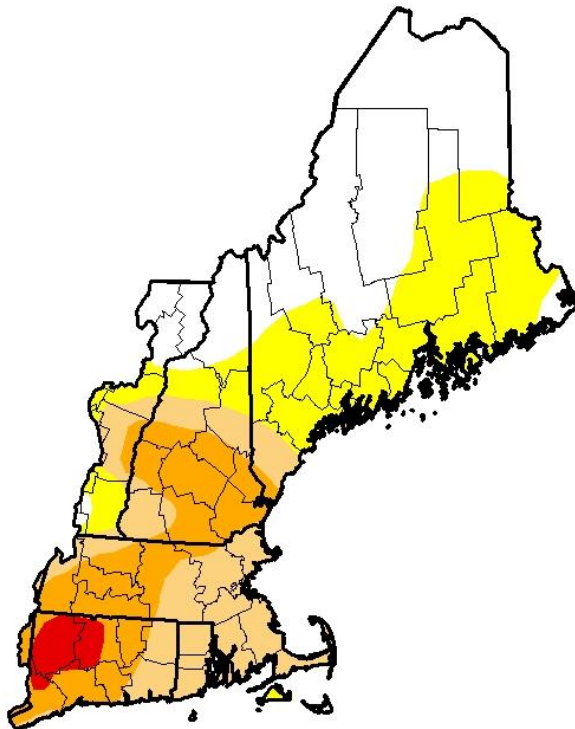


From the Drought Monitor.

Improvement over the State of Maine with the deep snows they received. Little to no improvement over our three states. March is a good time to resume making Condition Monitoring Reports.

Every drop counts and zeros do too!

U.S. Drought Monitor New England Watershed



February 28, 2017

(Released Thursday, Mar. 2, 2017)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	34.18	28.63	18.10	16.76	2.34	0.00
Last Week <i>2/21/2017</i>	34.18	27.84	18.89	16.76	2.34	0.00
3 Months Ago <i>11/29/2016</i>	7.58	12.47	33.88	35.98	10.09	0.00
Start of Calendar Year <i>1/3/2017</i>	14.71	12.55	48.74	19.42	4.58	0.00
Start of Water Year <i>9/27/2016</i>	26.52	15.24	18.41	25.39	14.44	0.00
One Year Ago <i>3/1/2016</i>	92.19	7.81	0.00	0.00	0.00	0.00

Intensity:

- 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. See accompanying text summary for forecast statements.

Author:
Richard Heim
NCEI/NOAA



<http://droughtmonitor.unl.edu/>

For a viewing explanation on the Drought Monitor, the CoCoRaHS animated video is on [YouTube](#).

Rulers of the Snow

In February, the snow came to the eastern sections of our area. Leaving out the NA's, 104 observers reported precip, 51 observers reported snow fall, 34 observers reported snow depth, and 30 observers reported all 3 for ALL days in February!!! Do read Page 3 from this [Newsletter](#). There can be others looking at your station reporting. You are the Rulers of the Snow.

Station	Name	Feb 2017 Snowfall	All Days Precip	All Days Snowfall	All Days Snow Depth
MA-ES-27	Amesbury 1.2 ENE	33.3"			
MA-ES-3	Haverhill 3.6 WNW	31.6"	✓	✓	
MA-MD-47	West Townsend 0.5 W	30.1"	✓		
MA-WR-8	Fitchburg 1.6 SSW	30.0"			
MA-SF-10	Chelsea 0.8 N	29.9"	✓		
MA-ES-20	Haverhill 0.7 N	29.2"	✓		
MA-MD-12	Acton 1.3 SW	29.2"	✓	✓	✓
MA-ES-1	Salisbury 3.7 NW	29.0"			
CT-TL-2	Staffordville 0.4 NNW	28.6"	✓		
MA-ES-4	Groveland 0.5 WSW	28.5"	✓	✓	✓
MA-WR-56	Sterling 4.3 NW	28.5"			
MA-WR-44	Westminster 0.6 WSW	27.9"	✓	✓	
MA-MD-52	Lexington 0.6 SW	27.8"	✓		✓
MA-MD-61	Stow 2.3 NW	27.6"	✓		
MA-HS-7	Plainfield 2.2 SW	27.0"	✓	✓	
RI-PR-33	Greenville 0.7 NNW	26.7"	✓	✓	✓
CT-TL-15	Central Somers 0.3 N	26.6"	✓		
MA-HS-10	Northampton 1.6 NE	26.5"			
MA-MD-66	Woburn 1.2 SE	26.5"			
MA-WR-13	Leominster 1.5 S	26.5"	✓	✓	
MA-PL-5	Kingston 3.3 WNW	26.3"			
MA-BE-10	Pittsfield 2.0 NNW	25.8"			
MA-ES-12	Boxford 2.4 S	25.8"	✓	✓	✓
MA-MD-51	Maynard 0.7 ESE	25.6"	✓	✓	✓
MA-MD-67	Lexington 2.3 SE	25.6"	✓		
CT-HR-35	Weatogue 0.7 E	25.6"	✓		
MA-ES-24	Newburyport 0.8 SW	25.5"	✓		
CT-HR-5	Enfield 1.5 SE	25.5"	✓		
MA-MD-55	Holliston 0.7 W	25.3"			
RI-PR-17	Cranston 4.1 E	25.0"	✓		

A Look Back at the March 2010 Flooding in Southern New England

By Joe DelliCarpini – Science & Operations Officer, NWS Taunton MA

Record rainfall and record flooding affected southern New England in March 2010. The weather pattern was affected by two large scale influences: El Niño, which transported deep moisture from the Tropics and a persistent blocking pattern over eastern Canada. This led to an increased flood potential early in the month as frequent rainfall events produced overly moist antecedent conditions. In essence, the “pump was primed” for significant flooding during the middle and end of March, as three consecutive slow-moving low pressure systems brought excessive rainfall to the region.

Round 1: March 13-15, 2010

A potent, slow moving low pressure system tracked from Virginia to south of Long Island. High pressure over eastern Canada provided a blocking mechanism and resulted in an anomalously strong low level easterly inflow of Atlantic moisture. A southerly upper level jet along the East Coast produced a deep plume of tropical moisture which fed into the system. Heavy rain affected a large portion of the northeast U.S. but the heaviest rain fell in eastern Massachusetts near a coastal front. As much as 7 to 10 inches of rain fell from Methuen and Gloucester southward through Plymouth and Brockton. Totals of 4 to 6 inches fell just to the west, from south central New Hampshire to the Worcester Hills, Rhode Island, and far northeast Connecticut.

On the MBTA Green Line D branch in Newton, undermining occurred along a 50 foot long stretch of track, resulting in a closure of that route. In Norwood, part of the airport runways and tarmac were inundated by floodwaters from the Neponset River, resulting in a closure of the airport for several days. Record flooding occurred on the Taunton River, resulting in the first flood-related shutdown of Route 44 in Taunton in over 40 years. In Topsfield, the Ipswich River flooded Route 1. At Waltham’s Moody Street Dam, water overtopped an upstream training wall; this wall keeps water

from flowing over the spillway. Significant erosion occurred at the site but the main portion of the dam remained stable until repairs could be made. Portions of Route 9 in Natick and Wellesley were shut down. Widespread urban flooding affected Boston, particularly on the south side of the city.

Record flooding occurred along the Pawtuxet River at Cranston RI. The river crested at 14.98 feet, ½ foot higher than its previous record which was set on June 7, 1982. Flooding occurred from Warwick to West Warwick and Cranston. In Warwick RI, roughly 100 homes were evacuated. About 40 businesses and 500 cars were flooded. Arctic Dam in West Warwick RI was monitored for overtopping, but held its own.

Round 2: March 21-23, 2010

The second event produced a lesser degree of flooding but served to keep rivers and streams at elevated levels. A low pressure system emerged out of the Gulf Coast and tracked steadily northeastward, producing heavy rain in southern New England. The speed of this system was at least partly responsible for relatively lower rainfall totals. As much as 3 to 5 inches of rain fell over Rhode Island producing moderate flooding in the Pawtuxet River basin, and renewed flooding on the Pawcatuck River. Elsewhere 1 to 3 inches of rain fell, with the lowest totals in the Connecticut River Valley. Even with these lower amounts, minor flooding still occurred along several rivers including the lower Connecticut.

Round 3: March 28-31, 2010

Yet another low pressure system emerged out of the Gulf Coast states. This system proceeded to track into the northeast U.S. as high pressure over the Canadian Maritimes slowed the system down. Once again, a southerly upper level jet was in place, providing a deep plume of tropical moisture which fed into this system over the course of several days. Anomalously strong low level easterly winds transported Atlantic moisture into the coastal front, which provided a focus for deep moisture convergence near the coast. Heavy rain fell from the mid-Atlantic region to Maine, but once again the axis of heaviest rain fell over southern New

England. As much as 6 to 10 inches of rain fell in Rhode Island and southern Connecticut; 5 to 8 inches fell in southeast Massachusetts; and 3 to 6 inches fell in central and northeast Massachusetts as well as northern Connecticut. Less than 3 inches of rain fell in southwest New Hampshire and northwest Massachusetts.

Flood impacts were severe. Moderate to major flooding affected many rivers and streams in southern New England. Rhode Island was especially hard hit, where non-emergency state employees were told not to report to work and several communities canceled school.

The Pawtuxet River crested at 20.8 feet and exceeded the record set just two weeks earlier. The river flooded large sections of neighborhoods, especially in Warwick, West Warwick and Cranston RI. The West Warwick Waste Water Treatment Plant was substantially inundated by floodwaters, resulting in the release of raw sewage into the river. The Warwick Mall was flooded by two feet of water resulting in a prolonged closure of the mall. A portion of I-95 was shut down in Cranston, as well as the Airport Connector, which provides access from I-95 to TF Green Airport (PVD) in Warwick. Sandbagging operations kept I-295 from being shut down, though there were ramps which were closed. The Scituate Reservoir, which feeds into the Pawtuxet River, recorded a pool elevation 6 feet higher than its previous record. Water flowed 3.5 feet above the flashboards. The reservoir had been spilling over its flashboards since late February and was a major contributor to the degree of flooding in Cranston.

Record flooding also occurred along the Pawcatuck River in southern Rhode Island. Numerous homes were impacted.

Record flooding also occurred along the Pawcatuck River in southern Rhode Island. Numerous homes were impacted and stretches of state roads in the area were closed. Flooding was so severe that the Pawcatuck River did not fall back below flood stage until April 12th. A mile of railroad track in Westerly was inundated resulting in a suspension of Amtrak service along the heavily traveled Boston to New York corridor. Blue Pond Dam failed in the headwaters of the Wood River in Hopkinton RI causing damage to infrastructure in that area. These floodwaters also drained into the Pawcatuck River, which exacerbated the flooding. Flooding was so severe on Chapman Pond, adjacent to the Pawcatuck River, that Route 91

and Pound Road were closed for 10 several days, cutting off access to an entire neighborhood. In Fall River MA, the force of the flood waters popped manhole covers and ripped up pavement and utilities. Along the Taunton River flooding exceeded the record set just two weeks earlier at the Bridgewater gauge. This resulted in another shutdown of Route 44 in Taunton MA. In Wayland, a duck boat was used to transport residents to and from their homes.

Flooding from elevated lake levels impacted homes and businesses in southeast Massachusetts. This included Norton Reservoir and Lake Winnecunnet in Norton MA; West Pond, Big Sandy Pond and Kings Pond in Plymouth; Assawompset Pond in Lakeville MA; Long Pond in Freetown and Lakeville; Forge Pond in Freetown; and South Wattupa Pond in Westport.



Photo: Flooding of the Warwick Mall from the Pawtuxet River in Rhode Island.

THE MARCH 2010 FLOODS

Reprinted from our May 2010 Newsletter. There are stations listed below that were reporting then as they do now.



An unusual jet stream pattern set the stage for 3 consecutive heavy rain episodes in southern New England in mid to late March. Three “cutoff” lows, which are upper level low pressure systems removed from the jet stream, developed over the course of two weeks and tracked south of New England. They tend to slow down weather systems at the surface, which can result in heavy rain.

Record monthly rainfall occurred at Boston (14.87 inches), Blue Hill Observatory (18.81 inches), and Providence (16.34 inches).

March CoCoRaHS rainfall totals are listed below:

Massachusetts March 2010 Rainfall Totals

Station	County	Total
Salisbury 3.7 NW	Essex	22.65
Winchester 0.7 SE	Middlesex	20.10
Jamaica Plain 1.3 NE	Suffolk	19.56
Blue Hill Obs – NWS	Norfolk	18.81 (Monthly Record)
Groveland 0.5 WSW	Essex	18.33
Dighton 1.1 WSW	Bristol	17.54
Boston 0.5 WSW	Suffolk	17.30
Taunton 2.6 NW	Bristol	17.25
Kingston 3.5 WSW	Plymouth	17.15
Kingston 3.3 WNW	Plymouth	16.81
Norton 1.8 NNE	Bristol	16.47
Norwood 1.3 NW	Norfolk	15.77
Weston 1.6 W	Middlesex	15.31
Marblehead 0.8 SW	Essex	15.23
Rehoboth 2.1 N	Bristol	15.22
Cambridge 0.9 NNW	Middlesex	14.94
Boston – Logan NWS	Suffolk	14.87 (Monthly Record)
Haverhill 3.6 WNW	Essex	14.84
Attleboro 2.9 E	Bristol	14.69
Franklin 0.7 NE	Norfolk	14.35
Milford 2.3 NNW	Worcester	13.16
Falmouth 3.1 NNW	Barnstable	10.81
Worcester Airport – NWS	Worcester	10.24
Falmouth 3.0 E	Barnstable	9.86
Yarmouth 2.3 SSE	Barnstable	9.68

Rhode Island March 2010 Rainfall Totals

Station	County	Total
Coventry Center	Kent	21.37
North Kingstown 3 N	Washington	19.53
East Greenwich 2.3 ESE	Kent	18.50
Hope Valley 3.7 S	Washington	17.62
Charlestown 3.9 NNW	Washington	17.36
Kingston 0.5 NW	Washington	17.00
West Glocester 3.4 SE	Providence	16.65
Narragansett 0.5 N	Washington	16.39
Warwick – TF Green NWS	Kent	16.34 (Monthly Record)
Cranston 4.1 E	Providence	16.13
Middletown 1.1 SW	Newport	15.05
Woonsocket 0.3 W	Providence	13.69
Manville 0.2 NE	Providence	13.69
Cranston 1.9 E	Providence	13.67
Woonsocket 1.3 ESE	Providence	13.61
Little Compton 1.7 NW	Newport	13.17

Connecticut March 2010 Rainfall Totals

Station	County	Total
Oakdale 2.6 WNW	New London	17.64
East Killingly 1.3 SW	Windham	15.19
Winsted 0.7 SE	Litchfield	13.28
North Grosvenor Dale	Windham	13.12
Prospect 1.8 NW	New Haven	12.01
Portland 0.9 S	Middlesex	10.90
Milford 2.9 ESE	New Haven	10.80
Brookfield 2.2 SSE	Fairfield	10.51
Darien 3.6 N	Fairfield	10.42
Bridgeport - NWS	Fairfield	10.19
Enfield 1.5 SE	Hartford	7.89
Wethersfield 1.2 WSW	Hartford	7.19
Windsor Locks – NWS	Hartford	6.81
Staffordville 0.4 NNW	Tolland	6.25

Wrap up

The first harvest of the New Year is upon us. Not from the ground, but from our trees. The harvest of sugar within maple sap is ongoing in our three states. Our northeast part of North America is the only place on our planet where it occurs. Taste it. Smell it. Savor it.

“A Winter that Mostly Wasn’t” is the title of the [latest blog](#) entry. Read on to see how the rest of the continental US fared these past three months.

We move our clocks ahead one hour for Daylight Saving Time on Sunday March 12. The strange time of the year of seeing a snow covered landscape in the setting sun at 7PM may occur again.

The vernal equinox occurs on Monday March 20th at 6:28AM. 12 hours of daylight and darkness for all points on our planet, as we begin our transition to summer. As the days get longer the storms get stronger.

From Nolan’s newsletter, there is a [Weather Talk Webinar](#) on the 20th, and there is a [webinar training class](#) that you can sign up for on the 30th.

CoCoRaHS is going to be featured on a PBS show, titled “[Crowd & The Cloud](#)”. “Crowd” meaning the general population. “The Cloud” representing the use of the internet, not anything precipitation or weather related. The [episode](#) that includes our network may air on Thursday April 6 at 9PM. Consult with your local PBS station’s programming for the exact date and time. There will be additional citizen-science projects featured besides our own in this episode and 3 additional episodes.

SkyWarn classes are starting this spring. CoCoRaHS observers are at an advantage in the SkyWarn community. We have rain gauges and rulers and we know why we use them! It is not a requirement, however, it is recommended to attend a SkyWarn session at some point. Learn about wind related hazards, more about your local NWS Forecast Office, and SkyWarn’s reporting criteria. Please look at your local NWS Forecast Office’s website for dates and times. BOX has their [schedule](#) available. The other two offices will have their schedule posted soon.

Thank you for all that you do for CoCoRaHS, whether in the past, present and in the days to come.