

Community Collaborative Rain, Hail & Snow Network



Southern



New England

December 2019

The first round of snow came to some of us in November. Rain, sleet, snow, freezing rain. We got it all this month. Our feature article from Joe explains how we get all those different precipitation types during the winter months.

For those with GPS-enabled mobile devices, there is an app for those different precipitation types: mPING! Try it out throughout the winter and all year round. Add another aspect to your citizen science contributions.

Snow fall reporting and measuring is mentioned. Keep the focus on the Gauge Catch as the 1st reported value. Snow fall and its liquid equivalent are the 2nd and 3rd reported values.

A single month record was established with your Condition Monitoring Reports. One report a week is all that we seek. A way to put into a written context about your precipitation reports. A recent post on Twitter and some links to highlight even more about reporting about your Conditions.

We start off with The Grand List Observers. Let's get into it.

The “Grand” List

Congratulations to all of these observers from our three states who have recently passed a milestone of 1000 Daily Reports.

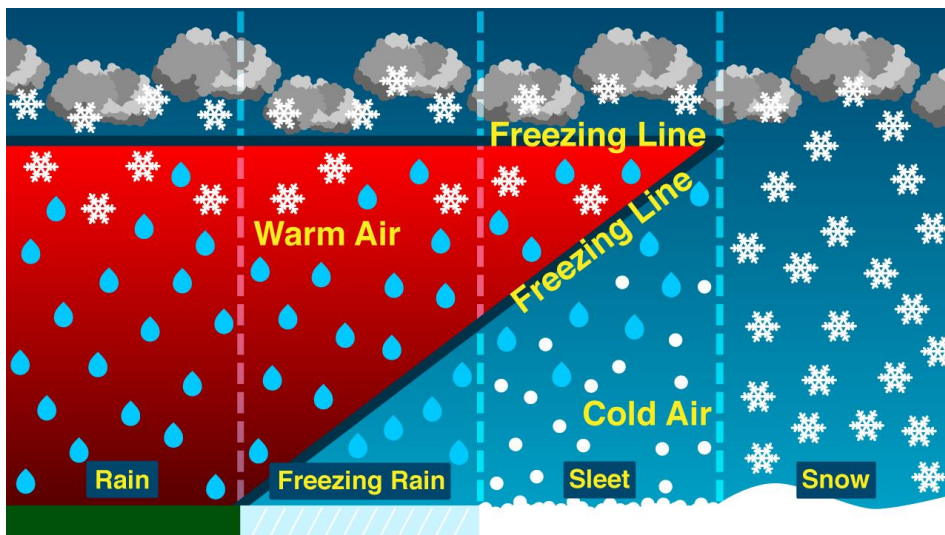
3000 Daily Reports

MA-BA-17 East Falmouth 1.2 WNW
MA-BA-12 Orleans 1.1 E
MA-ES-12 Boxford 2.4 S

Winter Precipitation Type

Thanks to last week's storm, we've already seen several types of wintry precipitation in southern New England: snow, sleet, freezing rain, and rain were all observed at some point during the storm for many of us. What causes each type of precipitation to fall? It has to do with how much warm air, if any, is present and how far that warm air extends up in the atmosphere (think from the ground to the level where the clouds are). We'll refer to the distance between the ground and clouds as a "layer" of air.

Check out the diagram below.



We'll follow it from right to left. If the entire layer is below freezing, then the precipitation falls as snow. If there is a small area where the temperature rises above freezing, but it remains cold near the ground, the snowflakes partially melt and refreeze as they reach the ground, forming sleet. These are small balls of ice that bounce around. It's not the same as hail which only occurs in thunderstorms. If the area of above-freezing air becomes deeper, but it remains cold right at the ground, then the snowflakes melt into rain drops, but the rain freezes upon contact with the ground, forming freezing rain. This causes trees, wires, and other objects to become

coated with ice. Finally, if most of the air between the clouds and the ground is above freezing, the precipitation falls as rain.

We rely on your Significant Weather Reports (SWRs) to tell us what is actually falling. If you can, send a SWR whenever you observe a change in precipitation type, such as snow to sleet, sleet to freezing rain, sleet to rain, etc.

We can see where precipitation is falling on Doppler Radar, and can get a sense of what type of precipitation is occurring, but often the radar is sampling what is happening a few thousand feet above the ground. Another option is to report precipitation type using the [mPing app](#), which is free and available for Android and iPhone. At NWS Boston, and many other NWS offices, we display a map of mPing reports to help us determine where the rain/snow line is or where icing is going to occur. mPing uses GPS-enabled mobile devices so you can report from wherever you are, not just at home!

Observer Tips

Significant Weather Reports: As the snow and rains occur this winter, keep our reporting criteria in mind, as we can alert our area NWS Forecast Offices in real time with what is occurring. Report criteria are

- 1" or more of rain in 1 hour or less. **2" or more of rain.**
- **First 3" of new snowfall. Final total, if 6" or more of snow.**
- Flooding.
- **Anything you feel is significant.**

Real Time Reporting with mPING: If you always wanted to submit a real time report, whether you are home or travelling, to say that the rain has changed to sleet or snow, to say that there is dense fog, there is an app for that for your GPS enabled mobile devices.

For both Apple and Android devices, where you download apps, search for mPING, which stands for “Meteorological Phenomena Identification Near the Ground.”

mPING is a research project being conducted by NOAA’s National Severe Storms Laboratory (NSSL) in Norman, Oklahoma. They are trying to make our weather radar and weather forecasts better from real time reports being submitted from GPS enabled mobile devices.

As winter precipitation occurs, and that fine line that always occurs in our area with sleet and snow mixing with and changing to rain, your reports from mPING can help verify or clarify what is being seen with weather radar.

We are look at the radar images and take it for being true. Understand that weather radar is not perfect. The earth is round and the radar beam is straight. The radar may not see what is occurring near your ground. mPING gives you another opportunity to report the “ground truth”

And none of this replaces your Daily, Multi-Day, Hail or Significant Weather Reports. All of this with mPING is supplemental to your efforts with CoCoRaHS.

More can be found at <https://mping.nssl.noaa.gov/>

Let’s look at some print screen as to how this all looks and works.

mPING

Meteorological Phenomena Identification Near the Ground




Report Type

Definitions

Select Report Type

Current Location

Submit Report



View Reports

Learn about what all of the precipitation types mean.

Be accurate. Select what it is you are reporting.

GPS must be turned on. Map of your present location will appear here.

As observers, we know this. Check over your report and then press submit!

Map will display a loop of reports. Each symbol and color means something.

ber 2019 Newsletter

Test

None

Rain/Snow

Hail

Wind Damage

Tornado

Flood

Mudslide

Reduced Visibility

Select a Report Type from here. As CoCoRaHS observers, there is one or two choices that we are drawn to. There are others.

Test

None

Rain/Snow

Rain

Freezing Rain

Drizzle

Freezing Drizzle

Ice Pellets/Sleet

Snow and/or Graupel

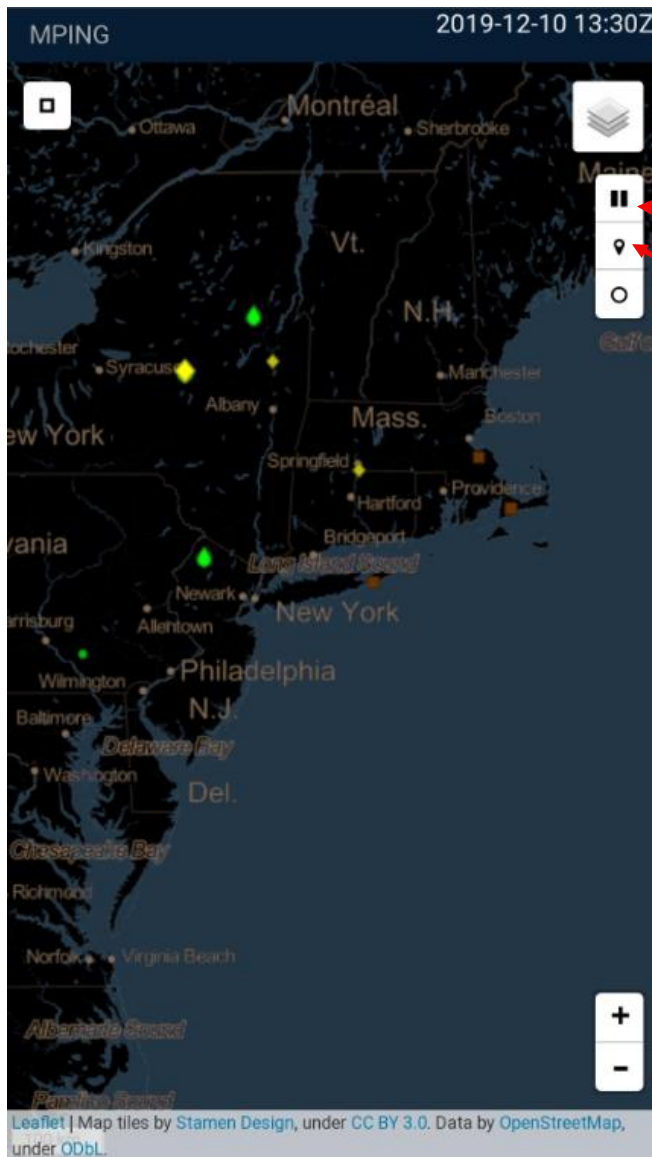
Mixed Rain and Snow

Mixed Ice Pellets and Snow

Mixed Freezing Rain and Ice Pellets

Mixed Rain and Ice Pellets

Under Rain/Snow, pick one that best describes what you are experiencing at the present time.



Snow Fall Measuring and Reporting: Mistakes happen with reporting, not with measuring. When the snow returns, focus on the Gauge Catch, report the melted contents of your gauge in the 1st value as you would with rain throughout the year.

Have more time and ambition? On to the next layer of measuring and reporting snow fall.

Two larger guidelines to pass on.

- 1) We work. We sleep. We have other activities.
- 2) Do the best that you can.

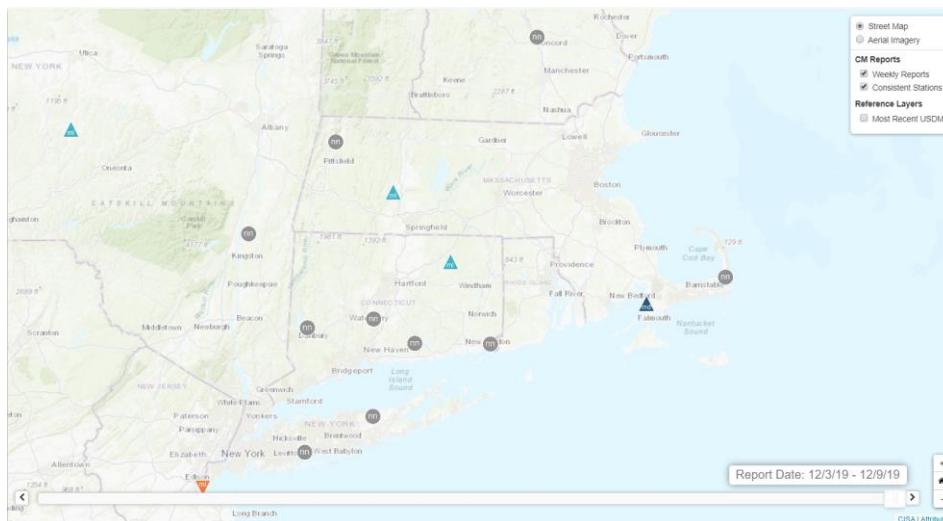
- ❄ Have an open spot, away from buildings and trees.
- ❄ Use a snow measuring board. Measuring off of grass, the picnic table, the wood deck near the house, can result in different amounts.
- ❄ Measure new snow to the nearest 0.1".
- ❄ Measure as soon as the snow ends or changes over to sleet/rain. Snow does settle, or melt, over time.
- ❄ For snow lasting several hours, measure, cut a core, and sweep your snow measuring board every 6 hours. Do so less than 6 hours can result in a higher reported amount. Do so more than 6 hours can result in a lower reported amount. Why? Snow settles over time.
- ❄ Snow Water Equivalent (SWE) is determined by cutting a core with your empty 4" diameter gauge and melting with a measured and known amount of hot tap water, or by weighing its contents.
- ❄ Core cuts will sometimes result in a different liquid amount than the liquid amount in the gauge. I know it's quicker to just duplicate the value, but it is striking to see so many reports of equal values of core and gauge catch, especially with wind and with mixed precipitation.

Writing measurements down is helpful with gauge catch and snow fall and SWE numbers to be tabulated.

On the Daily Report form, report the snow fall as the 2nd reported value, and the SWE as the 3rd reported value.

Condition Monitoring Reports: A single month record, led by reports from Massachusetts' stations.

One report a week is all that we seek. Develop a reputation of being a Consistent Station by submitting over 20 reports in a 52-week timeframe.



nn Orleans 3.0 S

Fri Dec 06 2019

about normal for December. Grass not growing anymore and not quite so green anymore

MA-BA-51 -- General Awareness,Plants And Wildlife,Tourism And Recreation

nn Stonington 0.5 NNE

Sat Dec 07 2019

About 0.7" of precipitation last week. The snow from early in the week was all melted by Thursday. Local reservoir is normal, moderately overflow.

CT-NL-18 -- General Awareness,Plants And Wildlife,Water Supply And Quality



NIDIS
@DroughtGov

Citizen scientist's knowledge about local weather can reveal much more than just daily rainfall alone. Condition Monitoring provides context. Learn about Condition Monitoring for @CoCoRaHS w/ new regional guidance. @DroughtCenter @CarolinasRISA cisa.sc.edu/PDFs/NIDIS%20C...



1:11 PM · Dec 9, 2019 · Twitter Web App

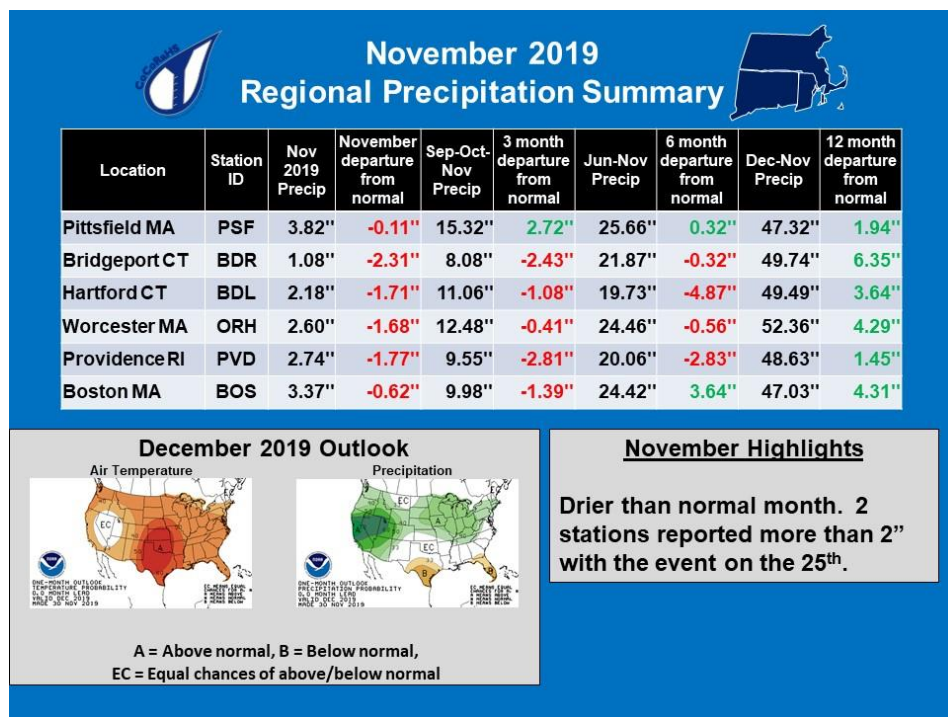
Even as we head into the dormant winter months, more is being mentioned about your Condition Monitoring Reports.

[Link for more](#) with a map of our area's reports

[Regional Guidance](#) for our Northeast.

Detail and Summary for November 2019

From the National Weather Service (NWS) Climate sites for Nov 2019.



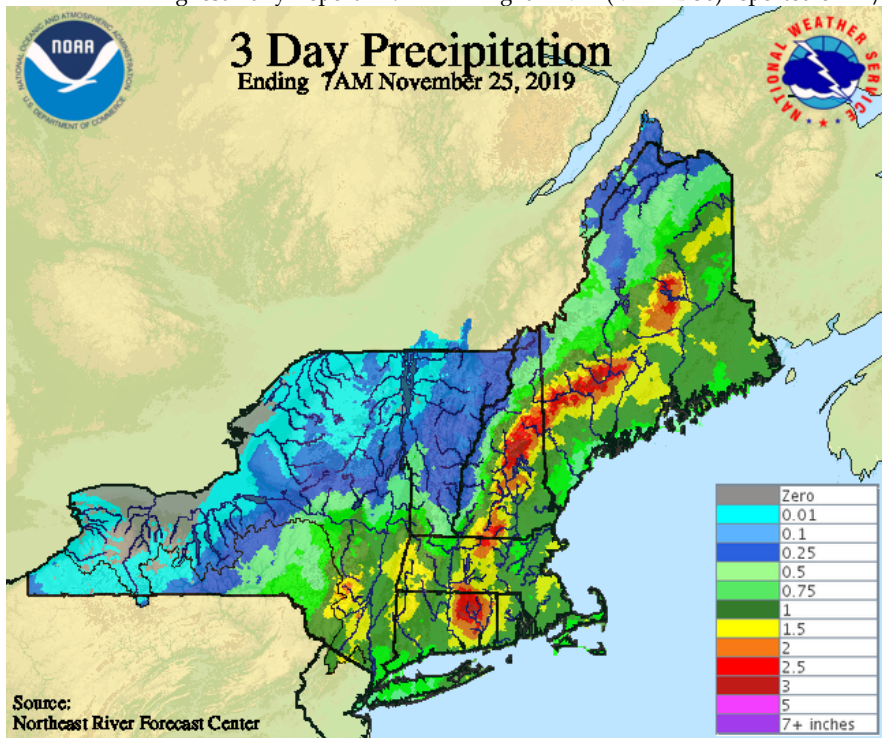
Rain reports started on the 1st. Rains in our south and east on the 5th and 6th. Our first measurable snow appears in the Berkshires and Franklin Counties on the 7th. Widespread rain for the 19th, continued with smaller events through the days the follow. The main event, with 2" rains in Plymouth County, noted with the map on the next page came from the rains on the 25th. Thanksgiving came in with some early rain, wind and ended with clear skies.

Take in the next section with appreciation of your efforts.

Commented [MS1]:

From your reports for November 2019

Observers reporting	391
Reported all 30 days	187
Completed by Multi-Day Reports	45
Missing 1 or 2 reports	60
Daily Reports	9591
Zero Reports	5181
Non-Zero Reports	4410
Daily Comments	1802
Multi-Day Reports	225
Condition Monitoring Reports	64
Significant Weather Reports	10
Snowfall Reports	5435
Snow Depth Reports	3139
Total SWE Reports	2190
Highest Daily Report	2.17" in Hingham MA (MA-PL-36) reported on 11/25



Keep the focus on the Gauge Catch. Keep a continuous record of precipitation measurements. Those that do not miss days, do not overlap a multi-day report over the beginning or end of the month with precip, do have their station total for the month listed here.

With any day, and the days are more noticable with snow events, reporting NA for precip will result in your station being excluded from this list. Report the melted contents of your gauge catch in the 1st reported value, and avoid reporting NA for precip on snow events.

Watershed	Watershed Name	Station Number	Station Name	Precip
01070004	Nashua			
0107000401	North Nashua River	MA-WR-44	Westminster 0.6 WSW	3.91"
0107000401	North Nashua River	MA-WR-22	Fitchburg 2.0 NNE	3.46"
0107000402	Headwaters Nashua River	MA-WR-56	Sterling 4.3 NW	3.29"
0107000402	Headwaters Nashua River	MA-WR-58	Lunenburg 0.6 NE	3.23"
0107000402	Headwaters Nashua River	MA-MD-25	Ayer 0.1 SW	2.76"
0107000403	Squannacook River	MA-MD-47	West Townsend 0.5 W	3.58"
01070005	Concord			
0107000501	Sudbury River	MA-MD-156	Marlborough 2.8 ENE	2.91"
0107000501	Sudbury River	MA-MD-89	Sudbury 3.6 W	2.89"
0107000502	Concord River	MA-WR-28	Berlin 1.3 WSW	2.94"
0107000502	Concord River	MA-WR-42	Northborough 2.3 N	3.02"
0107000502	Concord River	MA-MD-115	Hudson 1.4 NW	3.02"
0107000502	Concord River	MA-WR-55	Harvard 2.1 S	2.63"
0107000502	Concord River	MA-MD-12	Acton 1.3 SW	3.14"
0107000502	Concord River	MA-MD-51	Maynard 0.7 ESE	3.10"
0107000502	Concord River	MA-MD-62	Chelmsford 1.2 E	2.97"
01070006	Merrimack River			
0107000612	Stony Brook - Merrimack River	MA-MD-104	Littleton 2.8 NNW	3.05"
0107000613	Shawsheen River	MA-MD-52	Lexington 0.6 SW	2.88"
0107000613	Shawsheen River	MA-MD-96	Lexington 0.3 NE	3.73"
0107000613	Shawsheen River	MA-ES-48	Andover 0.6 E	3.67"
0107000614	Powwow River - Merrimack River	MA-ES-20	Haverhill 0.7 N	3.41"
0107000614	Powwow River - Merrimack River	MA-ES-59	Amesbury 1.2 N	3.99"
0107000614	Powwow River - Merrimack River	MA-ES-56	Newburyport 1.0 ESE	4.10"
01080201	Middle Connecticut			
0108020106	Manhan River - Connecticut River	MA-HS-8	Williamsburg 1.2 WSW	3.16"
0108020106	Manhan River - Connecticut River	MA-HS-26	Easthampton 0.5 SW	3.09"
0108020106	Manhan River - Connecticut River	MA-FR-12	Sunderland 1.3 SE	3.05"

0108020107	Batchelor Brook - Connecticut River	MA-HD-13	Springfield 4.1 W	2.67"
0108020107	Batchelor Brook - Connecticut River	MA-HD-23	Springfield 2.5 WNW	3.13"
01080202	Miller			
0108020202	Lower Millers River	MA-WR-40	Gardner 1.4 SSW	4.20"
01080203	Deerfield			
0108020303	North River	MA-FR-31	Colrain 3.7 WNW	3.16"
0108020303	North River	MA-FR-29	Colrain 0.8 WNW	2.56"
0108020305	Lower Deerfield River	MA-FR-17	Buckland 1.8 ESE	3.10"
0108020305	Lower Deerfield River	MA-FR-13	Conway 2.9 NW	3.20"
0108020305	Lower Deerfield River	MA-FR-25	Conway 2.7 NW	3.29"
0108020305	Lower Deerfield River	MA-FR-10	Conway 0.9 SW	2.98"
01080204	Chicopee			
0108020402	Ware River	MA-WR-54	Barre 1.4 NNE	3.95"
0108020403	Quaboag River	MA-WR-75	Warren 2.4 WSW	4.12"
0108020403	Quaboag River	MA-WR-63	Rutland 3.1 SW	3.96"
0108020404	Chicopee River	MA-HD-25	Ludlow 2.3 SW	3.78"
01080205	Lower Connecticut			
0108020501	Mill River - Connecticut River	CT-HR-82	Suffield 0.5 NNE	3.11"
0108020501	Mill River - Connecticut River	CT-HR-57	Suffield Depot 3.3 NNE	3.23"
0108020502	Scantic River	CT-TL-15	Central Somers 0.3 N	4.63"
0108020503	Park River	CT-HR-39	Farmington 1.6 SW	3.05"
0108020503	Park River	CT-HR-49	West Hartford 1.1 W	2.41"
0108020503	Park River	CT-HR-85	West Hartford 2.3 NNE	2.87"
0108020505	Roaring Brook - Connecticut River	CT-HR-6	Wethersfield 1.2 WSW	3.00"
0108020505	Roaring Brook - Connecticut River	CT-HR-84	East Hartford 2.0 SSE	4.07"
0108020505	Roaring Brook - Connecticut River	CT-HR-22	East Hartford 1.3 E	3.36"
0108020505	Roaring Brook - Connecticut River	CT-HR-7	Central Manchester 2.7 SW	3.68"
0108020506	Mattabesset River	CT-HR-15	Southington 3.0 E	2.99"
0108020506	Mattabesset River	CT-HR-80	Kensington 0.7 WSW	2.79"
0108020506	Mattabesset River	CT-HR-65	Newington 1.9 SSW	3.04"
0108020506	Mattabesset River	CT-MD-25	Middlefield 0.6 SE	2.71"
0108020507	Higganum Creek - Connecticut River	CT-MD-23	Higganum 0.7 N	2.81"
0108020507	Higganum Creek - Connecticut River	CT-MD-26	Higganum 0.8 NE	2.67"
0108020509	Eightmile River - Connecticut River	CT-MD-18	Essex Village 0.9 S	3.42"
01080206	Westfield			
0108020601	Headwaters Westfield River	MA-HS-7	Plainfield 2.2 SW	3.93"
0108020601	Headwaters Westfield River	MA-HS-14	Plainfield 2.4 ESE	3.37"
0108020603	Outlet Westfield River	MA-HD-28	Westfield 2.8 SE	2.76"
0108020603	Outlet Westfield River	MA-HD-29	West Springfield 1.6 SSW	2.78"
01080207	Farmington			
0108020701	Still River	CT-LT-15	Colebrook 1.0 NE	4.29"

0108020702	West Branch Farmington River	CT-LT-18	New Hartford Center 1.5 N	3.19"
0108020704	Headwaters Farmington River	CT-LT-9	New Hartford Center 3.2 SW	3.65"
0108020704	Headwaters Farmington River	CT-HR-71	Bristol 2.7 NNE	3.57"
0108020704	Headwaters Farmington River	CT-HR-28	North Canton 0.8 SSW	3.15"
0108020705	Salmon Brook	CT-HR-8	North Granby 1.3 ENE	3.23"
01090001	Charles			
0109000101	Plum Island Sound - Frontal Atlantic Ocean	MA-ES-19	West Newbury 1.8 SSE	3.78"
0109000101	Plum Island Sound - Frontal Atlantic Ocean	MA-ES-24	Newburyport 0.8 SW	4.13"
0109000102	Ipswich River	MA-MD-85	Wilmington 2.2 WNW	3.17"
0109000102	Ipswich River	MA-MD-125	Tewksbury 3.6 SSE	3.32"
0109000102	Ipswich River	MA-MD-45	Wilmington 1.5 NE	3.61"
0109000102	Ipswich River	MA-ES-58	Middleton 1.4 SSW	4.05"
0109000102	Ipswich River	MA-ES-12	Boxford 2.4 S	3.76"
0109000102	Ipswich River	MA-ES-2	Beverly 2.8 NW	3.54"
0109000103	Essex River - Frontal Atlantic Ocean	MA-ES-41	Danvers 0.8 ESE	3.89"
0109000104	Saugus River - Frontal Broad Sound	MA-MD-81	Wakefield 0.5 NNW	3.38"
0109000104	Saugus River - Frontal Broad Sound	MA-MD-126	Melrose 0.5 NE	3.36"
0109000104	Saugus River - Frontal Broad Sound	MA-ES-8	Marblehead 0.8 SW	4.51"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-123	Lexington 1.3 SE	3.21"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-7	Winchester 0.7 SE	3.17"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-44	Medford 1.2 W	3.36"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-11	Cambridge 0.9 NNW	3.61"
0109000105	Mystic River - Frontal Boston Harbor	MA-MD-152	Medford 0.6 W	3.45"
0109000106	Upper Charles River	MA-WR-1	Milford 2.3 NNW	3.04"
0109000106	Upper Charles River	MA-MD-106	Holliston 2.4 W	3.18"
0109000106	Upper Charles River	MA-MD-55	Holliston 0.7 W	3.34"
0109000106	Upper Charles River	MA-MD-42	Holliston 0.8 S	3.07"
0109000106	Upper Charles River	MA-MD-158	Sherborn 1.1 NW	2.96"
0109000106	Upper Charles River	MA-NF-11	Millis 2.0 SW	3.77"
0109000106	Upper Charles River	MA-NF-50	Millis 1.4 ENE	3.57"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-120	Natick 1.9 NNE	2.96"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-80	Lincoln 1.5 SW	2.66"
0109000107	Lower Charles River - Frontal Boston Harbor	MA-MD-71	Newton 2.2 NNW	2.68"
0109000108	Neponset River - Frontal Boston Harbor	MA-NF-1	Norwood 1.3 NW	3.46"
01090002	Cape Cod			
0109000201	North River - Frontal Massachusetts Bay	MA-PL-43	Hanson 0.7 NW	5.06"
0109000201	North River - Frontal Massachusetts Bay	MA-PL-5	Kingston 3.3 WNW	5.35"
0109000201	North River - Frontal Massachusetts Bay	MA-PL-30	Duxbury 3.7 W	5.62"
0109000201	North River - Frontal Massachusetts Bay	MA-PL-48	Marshfield 1.5 NNW	5.58"
0109000201	North River - Frontal Massachusetts Bay	MA-PL-47	Plymouth 1.1 NNW	4.90"
0109000202	Cape Cod	MA-BA-8	Falmouth 1.8 WSW	3.30"

0109000202	Cape Cod	MA-BA-2	Falmouth 3.1 NNW	3.70"
0109000202	Cape Cod	MA-BA-57	Falmouth 5.7 N	2.89"
0109000202	Cape Cod	MA-BA-50	Falmouth 5.4 NNE	3.52"
0109000202	Cape Cod	MA-BA-17	East Falmouth 1.2 WNW	2.92"
0109000202	Cape Cod	MA-BA-19	East Falmouth 0.7 NW	4.06"
0109000202	Cape Cod	MA-BA-11	East Falmouth 1.4 ESE	4.00"
0109000202	Cape Cod	MA-BA-18	Waquoit 0.6 SSW	3.78"
0109000202	Cape Cod	MA-BA-47	Mashpee 2.4 WSW	4.19"
0109000202	Cape Cod	MA-BA-45	Sandwich 0.9 NNE	3.81"
0109000202	Cape Cod	MA-BA-78	Mashpee 4.6 S	4.10"
0109000202	Cape Cod	MA-BA-10	East Sandwich 2.3 SE	4.70"
0109000202	Cape Cod	MA-BA-59	Barnstable 3.6 W	4.75"
0109000202	Cape Cod	MA-BA-22	Yarmouth 0.9 NNW	4.14"
0109000202	Cape Cod	MA-BA-77	South Dennis 1.0 NW	4.21"
0109000202	Cape Cod	MA-BA-80	Brewster 1.4 W	4.11"
0109000202	Cape Cod	MA-BA-52	Truro 0.8 E	4.43"
0109000202	Cape Cod	MA-BA-36	Harwich 2.6 ENE	4.36"
0109000202	Cape Cod	MA-BA-37	Orleans 0.8 W	2.93"
0109000202	Cape Cod	MA-BA-42	Orleans 1.8 S	4.33"
0109000202	Cape Cod	MA-BA-51	Orleans 3.0 S	4.29"
0109000202	Cape Cod	MA-BA-12	Orleans 1.1 E	3.11"
0109000202	Cape Cod	MA-BA-30	Eastham 0.6 SW	3.47"
0109000202	Cape Cod	MA-BA-43	Chatham 0.4 WSW	4.00"
0109000202	Cape Cod	MA-BA-65	Chatham 0.2 SSE	3.89"
0109000203	Mattapoisett River - Frontal Buzzards Bay	MA-BA-64	Sandwich 1.5 SSE	4.40"
0109000204	Paskamanset River - Frontal Buzzards Bay	MA-BR-14	Dartmouth 2.5 SSW	3.89"
0109000204	Paskamanset River - Frontal Buzzards Bay	MA-BR-52	New Bedford 4.3 N	4.22"
0109000205	Sakonnet Point - Frontal Rhode Island Sound	RI-NW-5	Little Compton 1.7 NW	3.69"
0109000205	Sakonnet Point - Frontal Rhode Island Sound	RI-NW-17	Tiverton 4.4 SSE	3.72"
0109000205	Sakonnet Point - Frontal Rhode Island Sound	RI-NW-7	Little Compton 0.6 E	4.11"
0109000205	Sakonnet Point - Frontal Rhode Island Sound	MA-BR-37	Westport 0.9 ESE	4.34"
0109000206	Elizabeth Islands - Marthas Vineyard	MA-DK-5	West Tisbury 2.9 N	3.37"
0109000206	Elizabeth Islands - Marthas Vineyard	MA-DK-9	West Tisbury 0.4 S	3.49"
01090003	Blackstone			
0109000301	Upper Blackstone River	MA-WR-41	Auburn 2.6 SW	3.40"
0109000301	Upper Blackstone River	MA-WR-43	Leicester 2.4 ESE	3.15"
0109000301	Upper Blackstone River	MA-WR-70	Grafton 1.5 W	3.14"
0109000302	Lower Blackstone River	RI-PR-50	Harrisville 1.2 SSE	3.59"
0109000302	Lower Blackstone River	RI-PR-28	North Smithfield 0.7 SE	3.46"
0109000302	Lower Blackstone River	RI-PR-55	Cumberland Hill 3.6 NNE	3.08"
01090004	Narragansett			

0109000401	Upper Taunton River	MA-BR-30	Taunton 3.9 N	3.86"
0109000401	Upper Taunton River	MA-NF-31	Stoughton 1.2 E	4.22"
0109000401	Upper Taunton River	MA-PL-22	East Bridgewater 0.3 WSW	4.19"
0109000401	Upper Taunton River	MA-PL-15	Abington 1.2 NNE	4.33"
0109000402	Middle Taunton River	MA-PL-31	Bridgewater 1.8 SE	4.13"
0109000403	Threemile River	MA-NF-19	Foxborough 1.8 SSW	3.36"
0109000403	Threemile River	MA-BR-55	NWS Boston/Norton 2.5 ESE	3.46"
0109000404	Ten Mile River	MA-BR-23	Attleboro 0.9 ENE	3.06"
0109000405	Wonnasquatucket River-Moshassuck River	RI-PR-33	Greenville 0.7 NNW	3.55"
0109000405	Woonasquatucket River-Moshassuck River	RI-PR-51	North Smithfield 0.6 S	3.45"
0109000405	Woonasquatucket River-Moshassuck River	RI-PR-53	Providence 1.7 N	2.98"
0109000406	Pawtuxet River	RI-KN-25	Coventry 2.7 WSW	3.18"
0109000406	Pawtuxet River	RI-KN-21	Coventry 1.9 NE	3.22"
0109000407	Palmer River	MA-BR-2	Rehoboth 2.1 N	3.33"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-3	Norton 1.8 NNE	3.81"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-16	Somerset 0.4 SSE	3.74"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-58	Dighton 3.3 NNW	3.49"
0109000408	Lower Taunton River - Frontal Mount Hope Bay	MA-BR-8	Dighton 1.1 WSW	4.09"
0109000409	Narragansett Bay	RI-WS-54	North Kingstown 2.7 WSW	3.45"
0109000409	Narragansett Bay	RI-WS-50	North Kingstown 3.1 NW	4.08"
0109000409	Narragansett Bay	RI-WS-31	Kingston 7.5 NNE	3.43"
0109000409	Narragansett Bay	RI-WS-44	North Kingston 1.5 SSW	3.56"
0109000409	Narragansett Bay	RI-KN-15	Warwick 4.3 SSW	3.19"
0109000409	Narragansett Bay	RI-KN-2	East Greenwich 2.3 ESE	3.71"
0109000409	Narragansett Bay	RI-PR-67	Providence 1.6 NE	3.16"
0109000409	Narragansett Bay	RI-NW-18	Jamestown 0.3 SSE	3.38"
0109000409	Narragansett Bay	RI-BR-5	Barrington 1.3 WNW	3.11"
0109000409	Narragansett Bay	RI-NW-4	Middletown 1.1 SW	2.93"
0109000409	Narragansett Bay	RI-NW-16	Portsmouth 1.3 S	3.79"
0109000409	Narragansett Bay	RI-NW-20	Tiverton 1.0 SSW	3.55"
01090005	Pawcatuck-Wood			
0109000502	Upper Pawcatuck River	RI-WS-46	Westerly 3.4 E	3.00"
0109000502	Upper Pawcatuck River	RI-WS-42	Richmond 4.6 NNE	3.25"
0109000502	Upper Pawcatuck River	RI-WS-37	Kingston 2.4 SW	3.69"
0109000503	Lower Pawcatuck River	CT-NL-40	Pawcatuck 1.8 SSE	3.78"
0109000503	Lower Pawcatuck River	RI-WS-47	Westerly 0.8 WNW	3.55"
0109000504	Frontal Block Island Sound	RI-WS-36	Charlestown 3.0 WSW	3.45"
0109000504	Frontal Block Island Sound	RI-WS-26	Charlestown 1.1 ENE	3.52"
0109000504	Frontal Block Island Sound	RI-WS-55	Wakefield 0.8 ENE	3.55"
01100001	Quinebaug			
0110000102	French River	MA-WR-68	Oxford 0.9 SSW	3.39"

0110000103	Fivemile River	CT-WN-4	East Killingly 1.3 SW	3.48"
0110000105	Moosup River	CT-WN-8	Moosup 1.7 NE	3.99"
0110000106	Pachaug River	CT-NL-21	Griswold 0.9 N	3.50"
01100002	Shetucket			
0110000201	Willimantic River	CT-TL-18	Hebron 5.3 NW	4.29"
0110000201	Willimantic River	CT-TL-24	Stafford Springs 0.8 NE	4.18"
0110000201	Willimantic River	CT-TL-2	Staffordville 0.4 NNW	4.25"
0110000202	Natchaug River	CT-TL-27	Wilmington 2.7 SE	3.69"
0110000202	Natchaug River	CT-TL-30	Mansfield Center 2.7 NE	3.68"
0110000203	Shetucket River	CT-NL-10	Norwich 2.5 NNE	3.96"
01100003	Thames			
0110000302	Thames River-Frontal New London Harbor	CT-NL-5	Oakdale 2.6 WNW	4.16"
0110000302	Thames River-Frontal New London Harbor	CT-NL-6	New London 1.0 NNW	3.48"
0110000302	Thames River-Frontal New London Harbor	CT-NL-8	Uncasville-Oxoboxo Valley 1.6 ENE	3.10"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-38	Old Lyme 3.4 ESE	3.13"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-29	East Lyme 0.5 SW	3.34"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-32	Niantic 1.1 SW	2.78"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-22	Central Waterford 2.7 SSW	2.93"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-46	Mystic 3.4 NW	3.76"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-37	Mystic 1.6 W	3.56"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-19	Mystic 0.9 W	3.09"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-24	Stonington 1.4 NNW	3.51"
0110000303	Mystic River - Frontal Fishers Island Sound	CT-NL-18	Stonington 0.5 NNE	3.35"
01100004	Quinnipiac			
0110000401	Quinnipiac River	CT-NH-14	Prospect 1.9 ENE	2.26"
0110000401	Quinnipiac River	CT-NH-44	Wallingford Center 1.9 WNW	2.27"
0110000401	Quinnipiac River	CT-NH-43	Wallingford Center 3.3 NNW	2.16"
0110000402	Hammonasset River - Frontal Long Island Sound	CT-NH-50	Madison Center 4.1 N	2.35"
0110000402	Hammonasset River - Frontal Long Island Sound	CT-MD-21	Killingworth 2.6 ESE	2.68"
0110000402	Hammonasset River - Frontal Long Island Sound	CT-MD-27	Clinton 3.7 N	3.01"
0110000403	Mill River - Frontal Long Island Sound	CT-NH-16	Milford 1.8 E	2.14"
0110000403	Mill River - Frontal Long Island Sound	CT-NH-39	West Haven 0.8 W	2.19"
0110000403	Mill River - Frontal Long Island Sound	CT-NH-57	New Haven 2.9 NNW	2.40"
01100005	Housatonic			
0110000501	Headwaters Housatonic River	MA-BE-11	Great Barrington 3.0 N	4.17"
0110000501	Headwaters Housatonic River	MA-BE-3	Stockbridge .2 NNE	4.29"
0110000501	Headwaters Housatonic River	MA-BE-10	Pittsfield 2.0 NNW	3.90"
0110000503	Konkapot River-Housatonic River	CT-LT-28	Canaan 4.2 ESE	2.71"
0110000504	Macedonia Brook - Housatonic River	CT-LT-20	Warren 2.4 WNW	4.03"
0110000506	Candlewood Lake-Housatonic River	CT-LT-22	New Milford 5.3 SSW	3.13"
0110000508	Still River - Housatonic River	CT-FR-43	Bethel 0.5 E	3.15"

0110000508	Still River - Housatonic River	CT-FR-41	Bethel 3.5 NNE	3.33"
0110000508	Still River - Housatonic River	CT-FR-9	Brookfield 3.3 SSE	3.31"
0110000512	Outlet Naugatuck River	CT-NH-47	Seymour 1.5 NE	2.24"
0110000512	Outlet Naugatuck River	CT-NH-22	Prospect 0.5 SW	2.89"
0110000513	Housatonic River - Frontal Long Island Sound	CT-FR-23	Shelton 1.3 W	2.58"
0110000513	Housatonic River - Frontal Long Island Sound	CT-FR-55	Shelton 2.7 SSE	1.96"
01100006	Saugatuck			
0110000601	Saugatuck River - Frontal Long Island Sound	CT-FR-64	Bethel 4.5 SSE	2.74"
0110000601	Saugatuck River - Frontal Long Island Sound	CT-FR-31	Newtown 4.6 SSW	3.03"
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-59	New Canaan 3.8 N	2.50"
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-29	Ridgefield 1.9 SSE	2.77"
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-3	New Canaan 1.9 ENE	2.27"
0110000602	Norwalk River - Frontal Norwalk Harbor	CT-FR-25	Norwalk 2.9 NNW	2.09"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-20	Westport 2.5 ENE	2.20"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-57	Trumbull 0.9 W	2.11"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-32	Monroe 0.8 W	2.53"
0110000603	Pequonnock River - Frontal Long Island Sound	CT-FR-26	Stratford 0.9 W	2.64"
0110000604	Mianus River-Rippowam River	CT-FR-39	Stamford 4.2 S	1.97"
0110000604	Mianus River-Rippowam River	CT-FR-50	Darien 2.8 NW	2.11"
02020006	Middle Hudson			
0202000603	Wynants Kill - Hudson River	NY-AB-23	Albany 0.7 SW	3.54"
02030203	Long Island Sound			
0203020300	Long Island Sound	NY-SF-114	Fishers Island 0.5 NE	3.03"

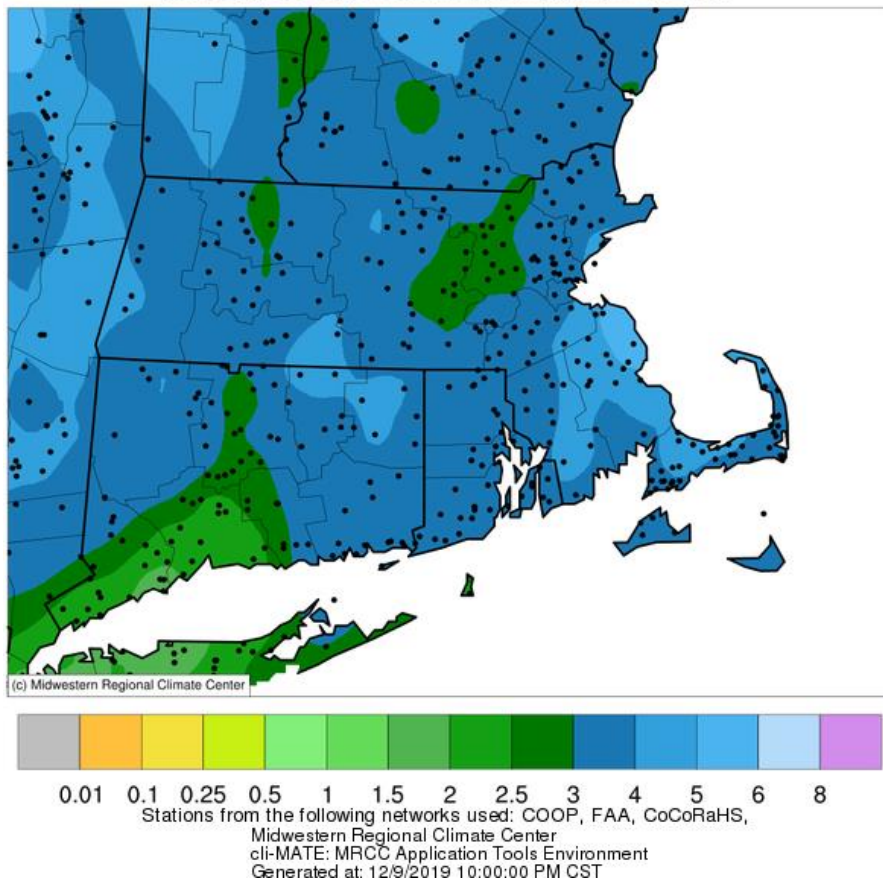
Green colors are under 3". Blue colors are over 3".

Over 5" in coastal Plymouth County. Yes, our observers reported that too.

At Bridgeport-Sikorsky Airport, BDR, 1.08". It's a good thing none of you live at any of the airports.

Accumulated Precipitation (in)

November 01, 2019 to November 30, 2019



“We do not live at the airport”

The CoCoRaHS stations listed averaged 3.42” of precip for November 2019. The list of airport stations averaged 2.56”. See for yourself by comparing your station to one of these.

Our network does not use automated gauges. And we do not live at the airport!

Location	Station ID	Nov 2019 Precip	Nov departure from normal	Sep-Oct-Nov Precip	3 month departure from normal	Jun-Nov Precip	6 month departure from normal	Dec-Nov Precip	12 month departure from normal
White Plains NY	HPN	1.96"	-2.01"	10.96"	-2.14"	23.27"	-1.95"	51.19"	1.84"
Danbury CT	DXR	2.04"	-2.21"	10.63"	-2.63"	19.42"	-7.44"	45.42"	-4.45"
New Haven CT	HVN	1.33"	-2.60"	9.28"	-3.26"	20.62"	-3.90"	46.73"	-0.38"
Meriden CT	MMK	1.64"	-2.29"	12.59"	0.05"	18.45"	-6.07"	48.02"	0.91"
Hartford CT	HFD	0.64"	-3.20"	11.14"	-0.32"	23.06"	-0.05"	48.02"	4.42"
Willimantic CT	IJD	2.69"	-1.64"	10.80"	-1.93"	20.72"	-4.18"	45.55"	-2.87"
New London CT	GON	2.60"	-1.71"	11.26"	-0.91"	25.99"	1.78"	52.77"	6.28"
Westerly RI	WST	3.15"	-1.37"	12.06"	-0.30"	29.55"	5.57"	58.33"	10.94"
Newport RI	UUU	2.57"	-1.90"	10.17"	-2.06"	23.22"	0.02"	48.61"	2.28"
New Bedford MA	EWB	2.37"	-2.28"	7.46"	-4.92"	21.51"	-2.21"	41.17"	-7.19"
Hyannis MA	HYA	3.99"	-0.49"	13.93"	1.47"	25.45"	2.57"	49.91"	2.22"
Nantucket MA	ACK	2.33"	-2.10"	12.68"	0.29"	17.73"	-5.15"	41.26"	-3.16"
Marthas Vineyard MA	MVY	2.73"	-1.81"	12.87"	0.06"	23.54"	0.52"	47.03"	1.87"
Taunton MA	TAN	3.91"	-0.59"	11.07"	-2.04"	21.42"	-3.15"	46.45"	-3.29"
Plymouth MA	PYM	2.86"	-1.80"	14.47"	1.81"	31.08"	7.19"	56.73"	7.58"
Norwood MA	OWD	3.34"	-1.15"	9.99"	-2.39"	20.58"	-3.40"	44.53"	-2.53"
Bedford MA	BED	2.77"	-1.52"	9.55"	-2.52"	21.99"	-1.37"	42.29"	-3.42"
Beverly MA	BVY	3.03"	-1.21"	9.22"	-3.35"	19.83"	-3.62"	41.89"	-4.29"
Lawrence MA	LWM	2.94"	-0.89"	9.86"	-1.65"	24.45"	1.78"	37.74"	-5.42"
Fitchburg MA	FIT	0.62"	-3.63"	7.10"	-5.28"	20.29"	-4.22"	42.07"	-5.07"
Orange MA	ORE	2.83"	-1.05"	13.38"	2.16"	27.84"	4.51"	49.65"	7.10"
Westfield MA	BAF	2.62"	-1.50"	11.28"	-2.08"	19.86"	-6.10"	44.45"	-3.94"
North Adams MA	AQW	3.37"	-0.59"	10.91"	-1.90"	23.94"	-2.57"	39.48"	-7.13"

Rulers of the Snow

We are the Rulers of the Snow. We define where the snow is and where it is not. 51 stations listed after our first measurable snow fall, who measure precip, snow fall and snow depth ALL 30 days of November. It would be great to see this list go beyond one page.

Make a snow fall and snow depth measurement and report, if you can safely do so, ***all year round***.

Station	Name	Nov 2019 Snowfall	Station	Name	Nov 2019 Snowfall
MA-FR-17	Buckland 1.8 ESE	1.6"	CT-MD-25	Middlefield 0.6 SE	0.0"
MA-FR-13	Conway 2.9 NW	1.4"	MA-WR-42	Northborough 2.3 N	0.0"
CT-TL-2	Staffordville 0.4 NNW	1.0"	MA-WR-75	Warren 2.4 WSW	0.0"
MA-FR-10	Conway 0.9 SW	0.5"	CT-NL-10	Norwich 2.5 NNE	0.0"
MA-FR-12	Sunderland 1.3 SE	0.2"	CT-NL-21	Griswold 0.9 N	0.0"
CT-LT-15	Colebrook 1.0 NE	0.1"	CT-NL-24	Stonington 1.4 NNW	0.0"
CT-HR-8	North Granby 1.3 ENE	0.1"	CT-NL-29	East Lyme 0.5 SW	0.0"
RI-PR-33	Greenville 0.7 NNW	0.1"	CT-NL-32	Niantic 1.1 SW	0.0"
RI-WS-42	Richmond 4.6 NNE	0.1"	CT-NL-6	New London 1.0 NNW	0.0"
MA-BR-8	Dighton 1.1 WSW	0.1"	RI-PR-51	North Smithfield 0.6 S	0.0"
MA-ES-12	Boxford 2.4 S	0.1"	RI-WS-37	Kingston 2.4 SW	0.0"
MA-NF-1	Norwood 1.3 NW	0.1"	RI-NW-18	Jamestown 0.3 SSE	0.0"
MA-BA-47	Mashpee 2.4 WSW	0.1"	RI-NW-7	Little Compton 0.6 E	0.0"
MA-BA-50	Falmouth 5.4 NNE	0.1"	RI-BR-5	Barrington 1.3 WNW	0.0"
CT-LT-9	New Hartford Center 3.2 SW	0.0"	MA-BR-55	NWS Boston/Norton 2.5 ESE	0.0"
CT-FR-25	Norwalk 2.9 NNW	0.0"	MA-MD-104	Littleton 2.8 NNW	0.0"
CT-FR-29	Ridgefield 1.9 SSE	0.0"	MA-MD-12	Acton 1.3 SW	0.0"
CT-FR-3	New Canaan 1.9 ENE	0.0"	MA-MD-125	Tewksbury 3.6 SSE	0.0"
CT-FR-9	Brookfield 3.3 SSE	0.0"	MA-MD-126	Melrose 0.5 NE	0.0"
CT-NH-43	Wallingford Center 3.3 NNW	0.0"	MA-MD-156	Marlborough 2.8 ENE	0.0"
CT-NH-57	New Haven 2.9 NNW	0.0"	MA-MD-62	Chelmsford 1.2 E	0.0"
MA-HD-25	Ludlow 2.3 SW	0.0"	MA-ES-41	Danvers 0.8 ESE	0.0"
CT-HR-22	East Hartford 1.3 E	0.0"	MA-ES-48	Andover 0.6 E	0.0"
CT-TL-18	Hebron 5.3 NW	0.0"	MA-BA-12	Orleans 1.1 E	0.0"
CT-TL-27	Willington 2.7 SE	0.0"	MA-BA-2	Falmouth 3.1 NNW	0.0"
CT-MD-21	Killingworth 2.6 ESE	0.0"			

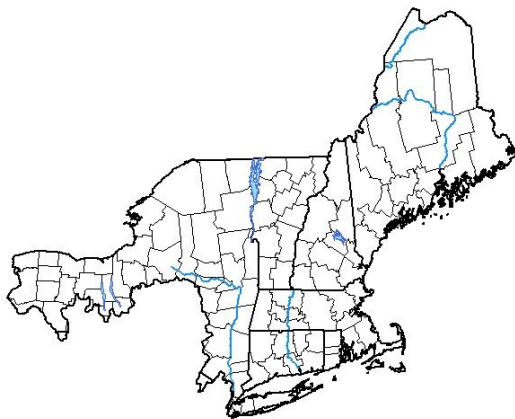
November 2019 as a calendar. A count of your Daily Reports by Date. Magenta colors are for the highest counts. Lime green color for the lowest counts.

Big changes from the beginning of the month to Thanksgiving weekend at the end of the month. 320 Reports per Day was our record reporting average for November.

November 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 351	2 320
3 320	4 323	5 329	6 337	7 330	8 345	9 314
10 313	11 314	12 325	13 327	14 321	15 317	16 307
17 300	18 319	19 336	20 322	21 317	22 318	23 315
24 314	25 327	26 319	27 318	28 313	29 291	30 289

Every drop counts and zeros do too!

U.S. Drought Monitor Northeast RFC



December 3, 2019
(Released Thursday, Dec. 5, 2019)
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0	D1	D2	D3	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week 11-26-2019	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 09-03-2019	90.94	9.06	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2019	94.65	5.35	0.00	0.00	0.00	0.00
Start of Water Year 10-01-2018	66.91	33.09	0.00	0.00	0.00	0.00
One Year Ago 12-04-2018	91.85	8.15	0.00	0.00	0.00	0.00

Intensity:

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

Author:

Deborah Bathke
National Drought Mitigation Center



droughtmonitor.unl.edu

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

Wrap up

December's weather is starting off with the same two-faced nature known for January's weather. Be sure your gauge is ready to handle whatever warm or cold precipitation comes its way. Sometimes there is a need to measure and write down what has fallen before the temperatures change.

Wind is a common element to our locale. Whether you reside in the coastal or inland locations, wind turbines appear in our landscape. Our next WxTalk Webinar in this Thursday, December 12th, at 1pm, on **Wind Meteorology as Super Hero: A Primer on Wind Energy and the Global Transition to Renewable Energy**. All of our WxTalk Webinars are recorded and uploaded on YouTube for later viewing and listening.

Do not let the cold and the darkness keep you completely inside. Be an observer of the outdoors. Take in the stillness and quiet that the early mornings and evenings have during this time of year. The Winter Solstice occurs on 11:19pm on Saturday December 21. Daylight will increase when we get into January.

Our best wishes to you all, however you spend your year-end holidays.

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