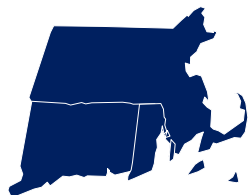




Southern



New England

December 2015

No snowflakes for November. Out with the snowflake graphic and in with the leafless tree above. Not much rain in November, either. Only 3 widespread rainfall events. A 30 day month. The Thanksgiving holiday weekend. Not the best set of circumstances for reporting numbers.

Quite the opposite occurred in November. On we grow! We are growing year over year. We are growing month over month. New observers in Fairfield and Tolland Counties in CT; Newport RI; Barnstable, Plymouth, Worcester, Middlesex, Essex, Hampshire and Franklin Counties in MA. And while looking over your reports for November, a new observer from Lexington MA started reporting the day before Thanksgiving. Welcome to all of the over 12 new observers that contributed to November's reports.

There will be more giving of thanks coming up in the segment about November's reporting numbers.

Real-time reporting with mPING

Weather radar has gotten so much better over the years, but it's not perfect. The earth is round and the radar beam is straight. That means some precipitation can be missed at lower altitudes far from the radar site. The radar makes an image every 5 minutes. Precipitation can appear within those 5 minutes. Dense fog? Radar doesn't have much of a chance. When winter weather arrives, radar has gotten better telling the difference between the rain, sleet, snow, but you can verify that.

For those that have GPS enabled mobile devices with access to the internet, you can provide the ground truth to what is occurring in real time, wherever you are within the US. There is an app for that 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.

Test	Rain
None	Freezing Rain
Rain/Snow	Drizzle
Hail	Freezing Drizzle
Wind Damage	Sleet/Ice Pellets
Tornado	Snow
Flood	Mixed Rain and Snow
Mudslide	Mixed Ice Pellets and Snow
Reduced Visibility	Mixed Rain and Ice Pellets

MPING REPORTING CHOICES

MPING RAIN/SNOW CHOICES

During significant weather events, the Weather Forecast Office in Taunton MA will adjust the zoom on the national map and display this [loop](#) of mPING reports on their large flat screen monitors in the operations area.

If you can, download and use the app and “ping” what is occurring in real time. Participation is purely optional, although helpful when we experience those events that have a mixed and changeable array of winter

precipitation. mPING does NOT replace any of your CoCoRaHS observations. More information can be found on its [site](#).

Detail and Summary for November 2015

Another dry month for most of the area, with one exception. This area of Southern New England is often the exception and the observing stations from this area are often exceptional. Most of Southern New England experienced 1"-3" of rainfall, but the exception is southeast MA, the area of Plymouth, the Cape and the Islands, reporting 3"-5".

Three widespread rain events, reported on the 11th -13th, 20th, 29th, and southeast MA reported a 1"+ rain event on the 23rd.

From the National Weather Service (NWS) Climate sites for Nov 2015.

Location	Station ID	Nov 2015 Precip	Nov departure from normal	Sept-Oct-Nov Precip	3 month departure from normal	June-Nov Precip	6 month departure from normal
Pittsfield MA	PSF	2.87"	-1.06"	9.71"	-2.89"	25.81"	0.57"
Bridgeport CT	BDR	1.23"	-2.16"	6.52"	-3.99"	15.81"	-5.73"
Hartford CT	BDL	2.20"	-1.69"	9.55"	-2.59"	21.39"	-3.21"
Worcester MA	ORH	1.76"	-2.52"	8.97"	-3.92"	21.39"	-3.63"
Providence RI	PVD	2.62"	-1.89"	8.61"	-3.75"	19.08"	-3.81"
Boston MA	BOS	2.07"	-1.92"	7.74"	-3.63"	17.03"	-4.80"

Back to Thanksgiving. Or was that the giving of thanks. In the 12 month period that ended in September 2015, it was pointed out from your Water Year Summaries that over 21,000 zeros were reported. Divide that number by 12 months makes the monthly average about 1750 zeros.

What did the dry month of November bring? Nearly 2500 zeros!! Over 3800 daily reports!! More stations reporting every day! More comments! More multi-day reports! Also noticed were more stations filling in missing reports in the first week of December. On we grow!

One small measurement to make. One giant impact that measurement makes upon the millions that depend upon water. Take in these next two pages of your reports, with thanks after Thanksgiving!

From your reports for November 2015

Observers reporting	169
Reported all 30 days	63
Completed by Multi-Day Reports	21
Missing 1 or 2 reports	33 *** Please look at your station data at the end of each month!!
Daily Reports	3867
Zero Reports	2495
Non-Zero Reports	1372
Comments	541
Multi-Day Reports	81
Highest Daily Report	2.53" from Oakdale CT (CT-NL-5) reported on 11/20

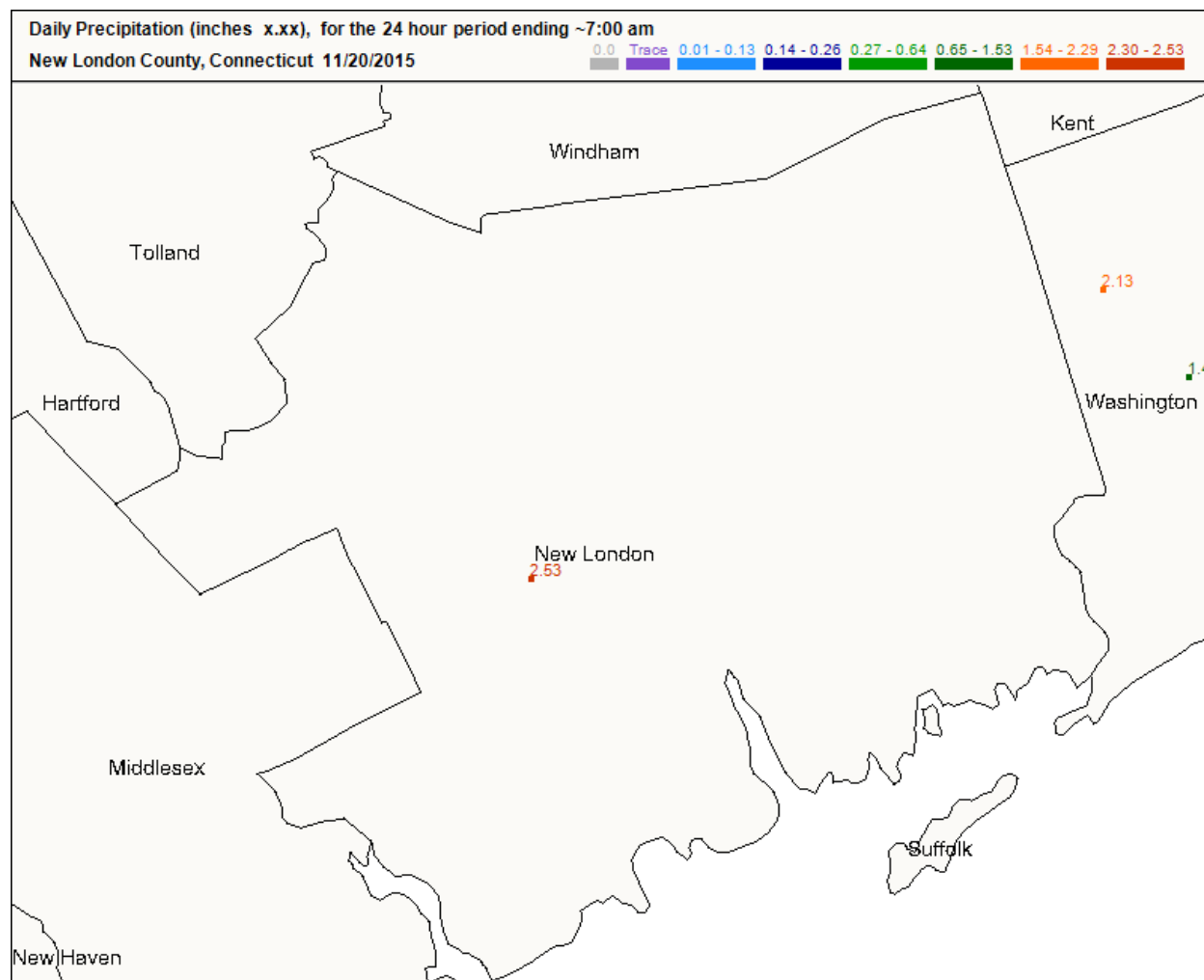
In previous newsletters, 25 or so stations with complete data appear next. That small of a number doesn't work well this month. Enjoy the variability in this list of over 50 stations. You captured it like no other network can.

Station	Location	Precip	County & State
MA-BE-4	Becket 5.6 SSW	2.08"	Berkshire MA
CT-LT-9	New Hartford Center 3.2 SW	2.39"	Litchfield CT
CT-FR-20	Westport 2.5 ENE	1.88"	Fairfield CT
CT-NH-16	Milford 1.8 E	1.63"	New Haven CT
MA-FR-10	Conway 0.9 SW	2.29"	Franklin MA
MA-FR-12	Sunderland 1.3 SE	1.85"	Franklin MA
MA-HS-14	Plainfield 2.4 ESE	2.28"	Hampshire MA
CT-HR-24	Collinsville 0.9 NW	2.50"	Hartford CT
CT-HR-8	North Granby 1.3 ENE	2.36"	Hartford CT
CT-HR-9	West Hartford 2.7 NNW	2.21"	Hartford CT
CT-HR-11	West Hartford 2.7 SSE	2.29"	Hartford CT
CT-HR-22	East Hartford 1.3 E	1.90"	Hartford CT
CT-HR-5	Enfield 1.5 SE	2.19"	Hartford CT
MA-WR-32	Auburn 1.9 ESE	1.89"	Worcester MA
MA-WR-28	Berlin 1.3 WSW	1.93"	Worcester MA
MA-WR-1	Milford 2.3 NNW	1.86"	Worcester MA
CT-WN-6	Dayville 2.0 ENE	2.41"	Windham CT
CT-WN-8	Moosup 1.7 NE	2.62"	Windham CT
RI-WS-25	Rockville 0.4 E	3.51"	Washington RI
RI-KN-2	East Greenwich 2.3 ESE	2.61"	Kent RI
RI-NW-4	Middletown 1.1 SW	1.68"	Newport RI
RI-NW-11	Tiverton 0.8 SSW	2.63"	Newport RI
RI-NW-5	Little Compton 1.7 NW	2.71"	Newport RI

MA-BR-2	Rehoboth 2.1 N	2.97"	Bristol MA
MA-BR-8	Dighton 1.1 WSW	2.82"	Bristol MA
MA-BR-14	Dartmouth 2.5 SSW	2.76"	Bristol MA
MA-MD-47	West Townsend 0.5 W	2.13"	Middlesex MA
MA-MD-12	Acton 1.3 SW	1.82"	Middlesex MA
MA-MD-51	Maynard 0.7 ESE	1.71"	Middlesex MA
MA-MD-54	Belmont 0.3 SE	1.89"	Middlesex MA
MA-MD-44	Medford 1.2 W	1.82"	Middlesex MA
MA-MD-11	Cambridge 0.9 NNW	1.95"	Middlesex MA
MA-ES-20	Haverhill 0.7 N	2.33"	Essex MA
MA-ES-1	Salisbury 3.7 NW	2.13"	Essex MA
MA-ES-2	Beverly 2.8 NW	2.00"	Essex MA
MA-ES-8	Marblehead 0.8 SW	2.26"	Essex MA
MA-NF-16	Bellingham 4.7 S	2.20"	Norfolk MA
MA-SF-4	Brighton 0.5 W	2.04"	Suffolk MA
MA-SF-10	Chelsea 0.8 N	1.92"	Suffolk MA
MA-SF-2	Winthrop 0.2 N	2.15"	Suffolk MA
MA-PL-12	East Bridgewater 1.7 WNW	3.07"	Plymouth MA
MA-PL-21	Bridgewater 0.1 ESE	2.96"	Plymouth MA
MA-PL-19	Rochester 1.2 NNW	3.39"	Plymouth MA
MA-PL-6	Middleborough 5.5 E	3.85"	Plymouth MA
MA-PL-5	Kingston 3.3 WNW	3.61"	Plymouth MA
MA-BA-8	Falmouth 1.8 WSW	3.19"	Barnstable MA
MA-BA-17	East Falmouth 1.2 WNW	3.09"	Barnstable MA
MA-BA-19	East Falmouth 0.7 NW	4.07"	Barnstable MA
MA-BA-11	East Falmouth 1.4 ESE	3.98"	Barnstable MA
MA-BA-45	Sandwich 0.9 NNE	2.81"	Barnstable MA
MA-BA-36	Harwich 2.6 ENE	4.82"	Barnstable MA
MA-BA-37	Orleans 0.8 W	4.71"	Barnstable MA
MA-BA-12	Orleans 1.1 E	5.29"	Barnstable MA
MA-BA-30	Eastham 0.6 SW	4.67"	Barnstable MA
MA-NT-1	Nantucket 3.8 WNW	4.58"	Nantucket MA
MA-DK-2	Vineyard Haven 0.8 WSW	4.51"	Dukes MA

Map of the Month – New London CT

Through London England runs the Thames River. Through New London CT, in New England, runs the Thames River.



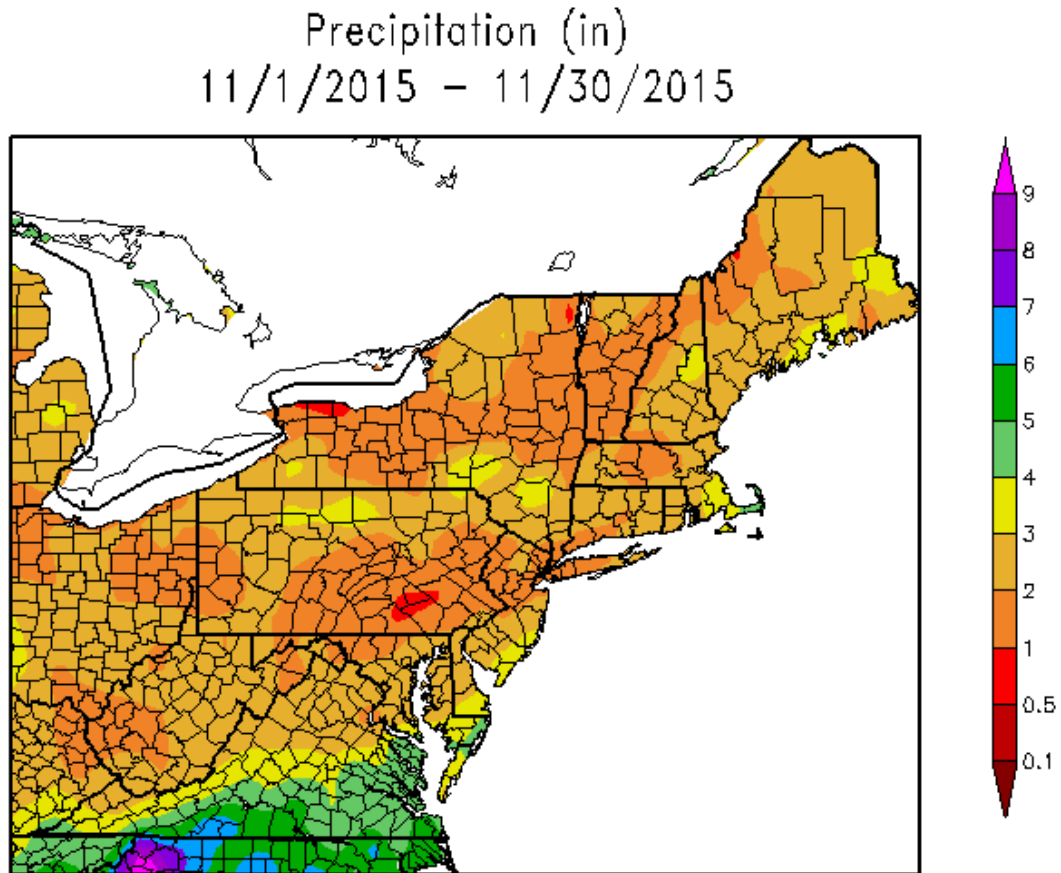
One Automated Surface Observation Station (ASOS) at Groton/New London airport. One NWS Cooperative observer in Norwich CT. And one CoCoRaHS observer.

As precipitation moves from west to east, the forecasters in Taunton MA wish they had more precipitation reports from New London County. From my visit to their office, I heard they don't put much trust into the tipping bucket that is part of the ASOS at Groton/New London Airport.

Whatever anyone can do to grow our network in New London County, please help this one lone observer, doing yeoman's work in an area known for its seafarers.

From the Climate Center for November 2015.

No change from the map compiled on the 1st of the month. There is a slight sliver of green for the 4"+ totals on Cape Cod, and a darker shade for the less than 2" totals in Worcester County and in southwest CT.



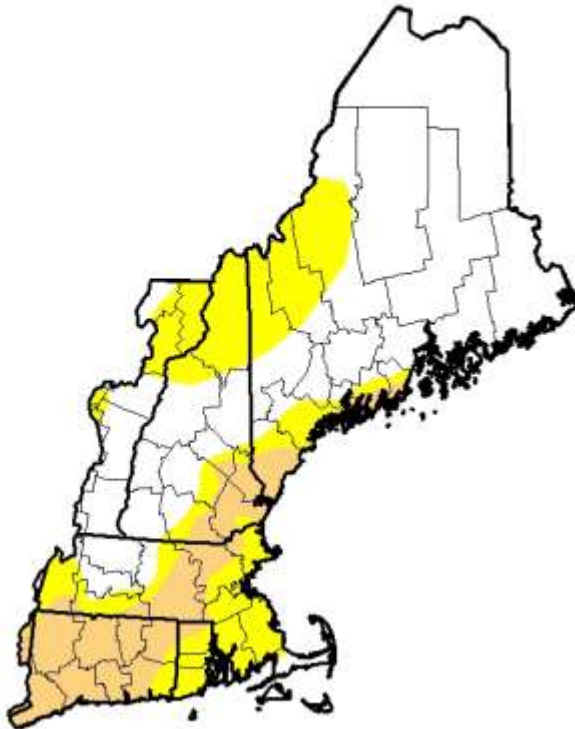
Generated 12/5/2015 at HPRCC using provisional data.

Regional Climate Centers

From the Drought Monitor.

Reporting stations from Cape Cod and the Islands proving that their locale is now drought free.

U.S. Drought Monitor New England Watershed



December 1, 2015

(Released Thursday, Dec. 3, 2015)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	69.58	40.42	15.42	0.00	0.00	0.00
Last Week 11/24/2015	69.58	40.42	15.42	0.00	0.00	0.00
3 Months Ago 9/1/2015	64.34	35.66	7.19	0.00	0.00	0.00
Start of Calendar Year 12/01/2014	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09/01/2015	49.31	50.69	20.91	0.00	0.00	0.00
One Year Ago 12/01/2014	82.75	17.25	3.55	0.00	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Simeral

Western Regional Climate Center



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

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

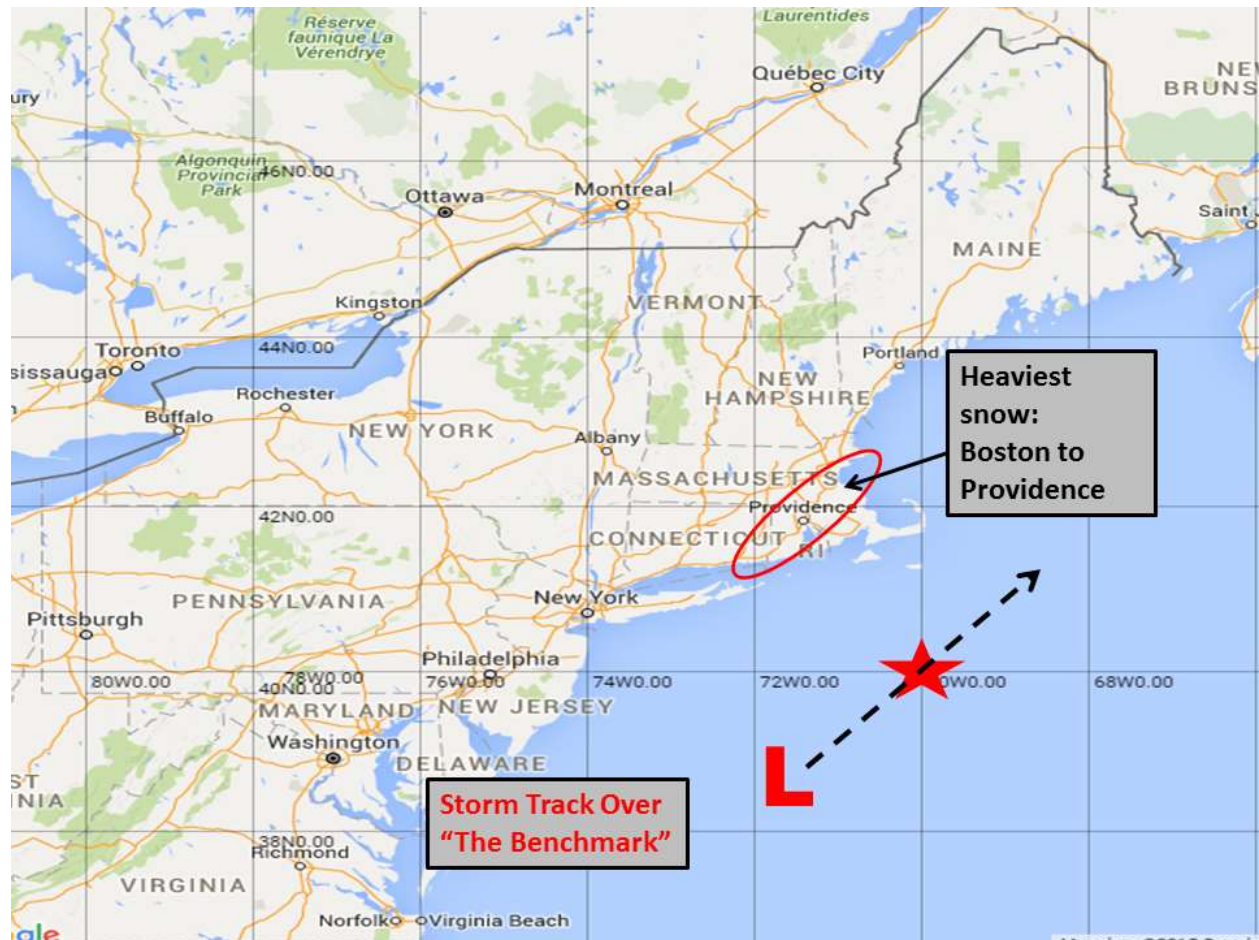
The Benchmark – 40°N 70°W

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

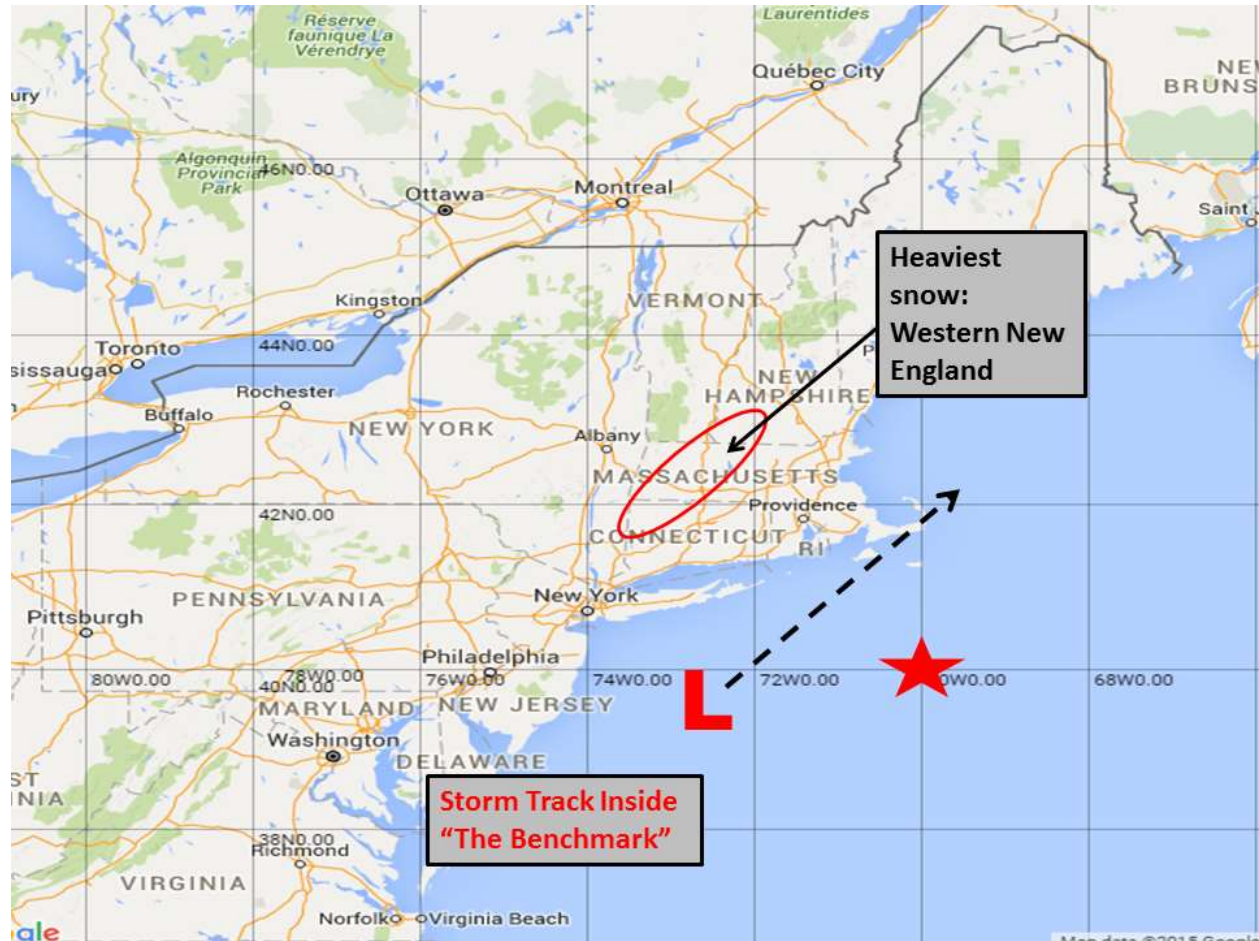
Many of us with an interest in weather have no doubt heard about “The Benchmark” when a winter storm is in the offing. You may be wondering what it is and what it has to do with our weather.

“The Benchmark” refers to the position on the map where 40°N latitude meets 70°W longitude. It serves as a reference point for storms tracking off the Eastern Seaboard.

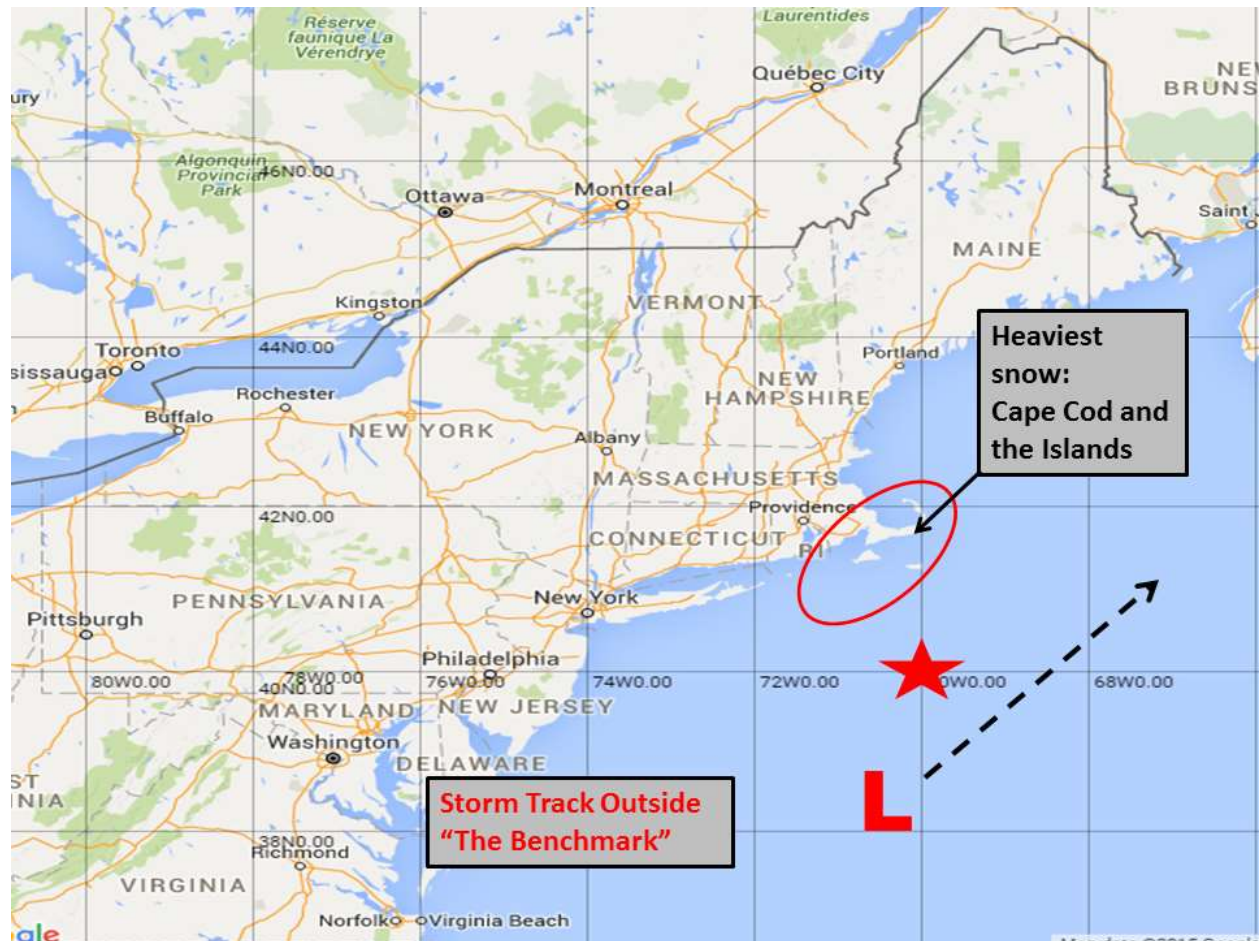
As you can see below, a storm that crosses near that point tends to produce the heaviest snow in the corridor from Providence to Boston (assuming it is cold enough to stay all snow!)



Storms that track “inside” 40°N / 70°W (closer to the coast) tend to cause the heaviest snow to shift farther inland, usually somewhere in western New England. Since the storm tracks closer to the coast, it also tends to bring milder air into the region, often changing snow to rain in coastal locations.



Conversely, storms that track “outside” the benchmark (farther offshore) only bring a glancing blow to southern New England, typically Cape Cod and the Islands, with little or no snow at all elsewhere.



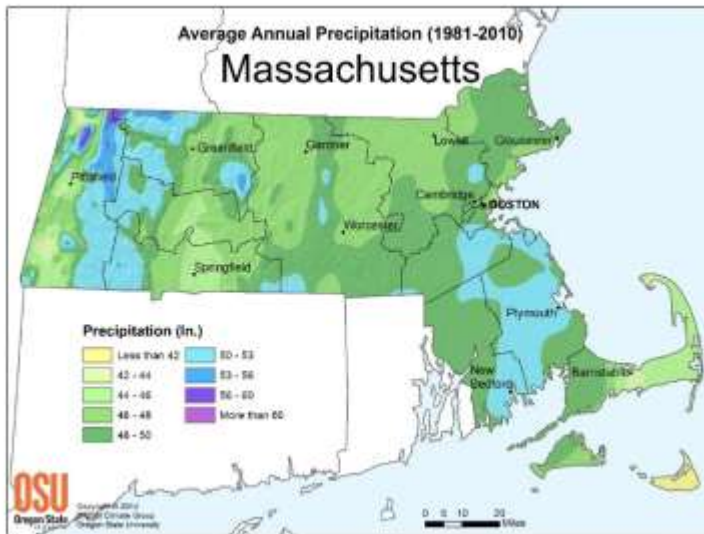
So the next time a winter storm is forecast to move up the coast, check out its track with respect to “The Benchmark” and see if you can determine where the heaviest snow will fall!

Editor’s note.

Look at this [loop](#) of forecast maps for the next 7 days. With the Benchmark in mind, watch as the surface high and low pressure systems move across the continent and along the East Coast.

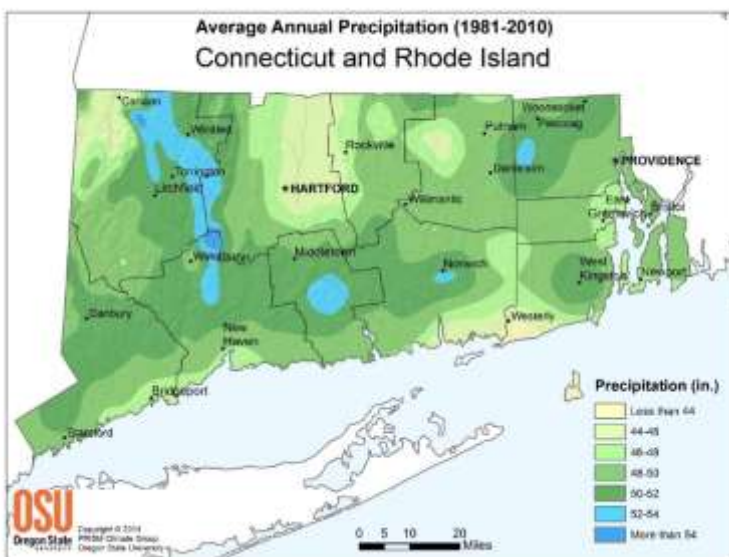
Average Precipitation

Aside from the variability that we are good at experiencing, measuring and reporting, most of the area has been below average on precipitation since Spring 2015. How do we know what is the average for our area?



At the end of the month, or a 3 month or a 12 month period, what can you or should you expect from precipitation? What makes it a dry period or a wet period? In Southern New England, we do not have a wet season or dry season. The only flaw on taking any yearly average and dividing it by 12 to get a monthly average is the

month of February. February has 10% fewer days, and usually is 10% drier than other months.



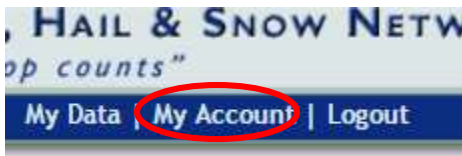
The maps to the left are from [PRISM](#) from Oregon State University. These maps are updated every 10 years and use the past 30 years to determine average precipitation. A simple guideline to follow for our area, and the emphasis on simple, is this: We should receive 1” liquid per week, 3”-4” liquid per month, 12”-13” of liquid in any 3 month

period, about 48”-52” per any 12 month period. This map shows some differences to that guideline, so adjust the values accordingly.

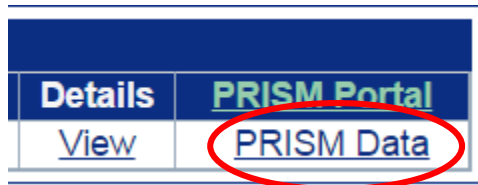
Another way to find your station's average precipitation is through your own CoCoRaHS account on the website.



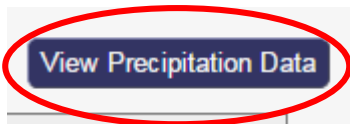
Login to your CoCoRaHS account.



Click on "My Account"



Low and to the right, click on the link for PRISM Data.



Click on the purple button "View Precipitation Data"

When the line chart displays, move your pointer over the chart to see certain month's values.

Let the exploration begin! You can spend however long you want in this portal selecting radio buttons and drop down menus. Have fun and learn.

Keep these average values in the back of your mind as the months go on and you want to make some sense out of any period's total of precipitation.

The end of the calendar year is a good time to look back at your own station's observations. Do you make a deposit? Make a withdrawal at the end of the year by looking at the [Station Precip Summary](#) and see how these past 1, 3, 6 or 12 months compare to the averages.

Wrap Up

December starts meteorological winter. We're off to a warm and dry start to it. The Winter Solstice arrives near midnight on the 21st to the 22nd.

Solstice, from the Latin “sol” (sun) and “sistere” (to stand still). Daylight will increase when we get into January.

Keep watch over your funnel and inner cylinder should rainfall occur before below freezing temperatures arrive afterwards. Keep changing the “NA” to “0” for new snow for those days that you have no snow. Keep your snow measuring tools ready. Keep reviewing snow measuring techniques, and the reporting form, mentioned at length in last month’s newsletter.

Perhaps, next month’s newsletter will start off with a snowflake graphic.

However you spend the holidays during December, my best wishes to you all. Take time to reflect upon the calendar year that is ending and renew yourself for the calendar year upcoming.

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