May & Spring Review

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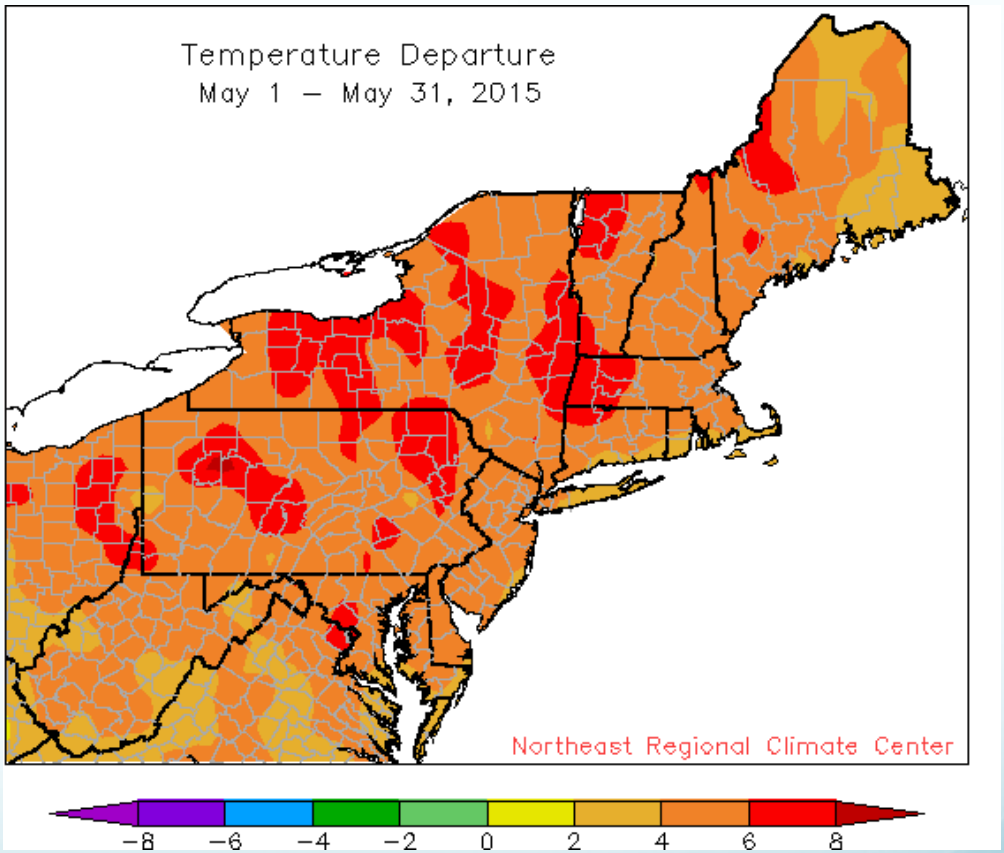
May Temperatures

- Record warm May for the Northeast
  - 5.4°F above normal
  - CT, MA, NH, & RI were record warm
  - Other 8 states: top 11 warmest May



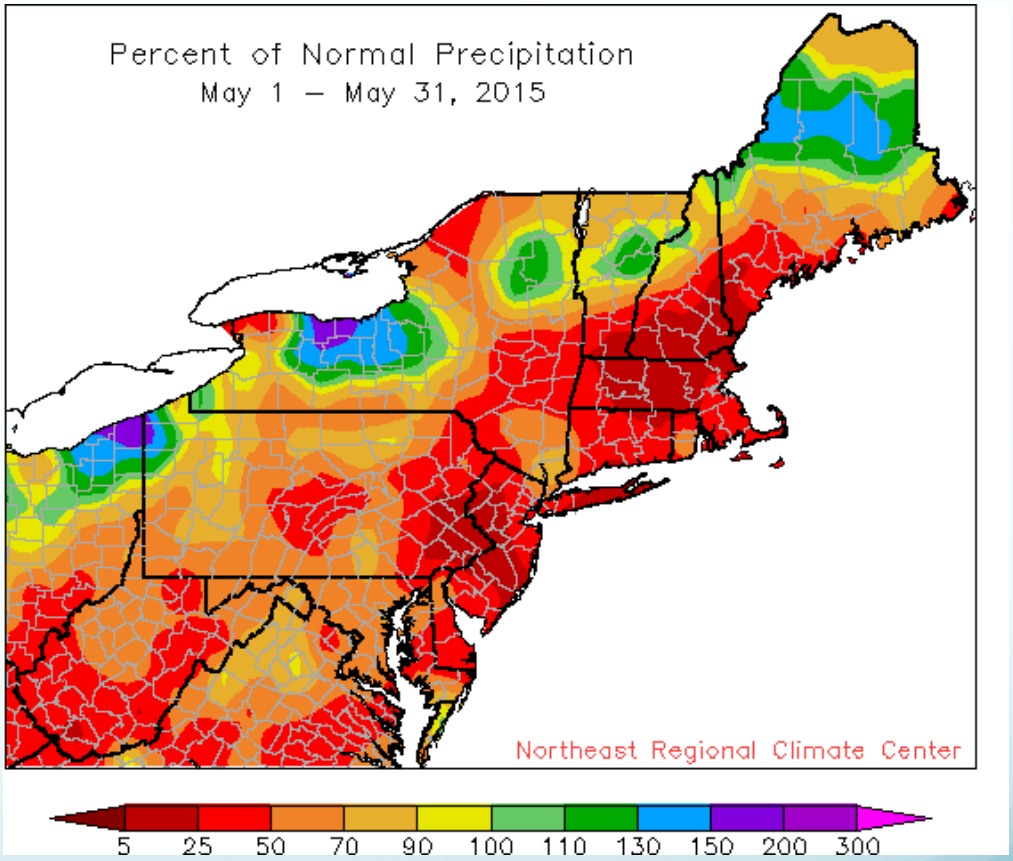
May Temperatures

- Of the 35 airport climate sites…
  - 7 sites had a record-warm May
  - Another 27 sites: top 12 warmest May

Location	May 1-31, 2015	Normal	Departure	Rank (warmest)
Binghamton, NY	62.1	55.8	6.3	1
Burlington, VT	63.6	56.3	7.3	1
Concord, NH	61.8	55.8	6.0	1
Hartford, CT	66.0	59.5	6.5	1
Rochester, NY	64.0	57.0	7.0	1
Scranton, PA	66.3	58.6	7.7	1
Washington, DC	73.2	66.0	7.2	1
Albany, NY	65.6	58.3	7.3	2
Allentown, PA	66.3	59.9	6.4	2
Atlantic City, NJ	66.5	61.1	5.4	2
Bridgeport, CT	63.1	59.1	4.0	2
Harrisburg, PA	68.9	62.1	6.8	2
Islip, NY	62.7	58.6	4.1	2
Kennedy Ap, NY	64.2	60.6	3.6	2
Newark, NJ	68.2	62.7	5.5	2
Philadelphia, PA	70.1	63.9	6.2	2
Portland, ME	59.5	53.9	5.6	2
Central Park, NY	68.5	62.4	6.1	3
Dulles Ap, VA	68.9	63.2	5.7	3
LaGuardia Ap, NY	67.0	62.5	4.5	3
Providence, RI	62.9	58.5	4.4	3
Syracuse, NY	64.1	57.6	6.5	3
Worcester, MA	62.5	56.3	6.2	3
Wilmington, DE	68.1	62.8	5.3	4
Beckley, WV	65.2	59.8	5.4	5
Buffalo, NY	62.6	56.9	5.7	5
Williamsport, PA	65.9	59.7	6.2	5
Caribou, ME	55.7	51.5	4.2	6
Baltimore, MD	69.1	62.9	6.2	7
Elkins, WV	63.3	58.1	5.2	7
Erie, PA	63.1	57.4	5.7	7
Boston, MA	62.3	57.9	4.4	10
Pittsburgh, PA	66.2	60.1	6.1	11
Charleston, WV	68.6	63.7	4.9	12
Huntington, WV	67.7	64.0	3.7	

May Precipitation

- Northeast saw 59% of normal precip
  - 15th driest May
  - 7 states had top 16 driest May

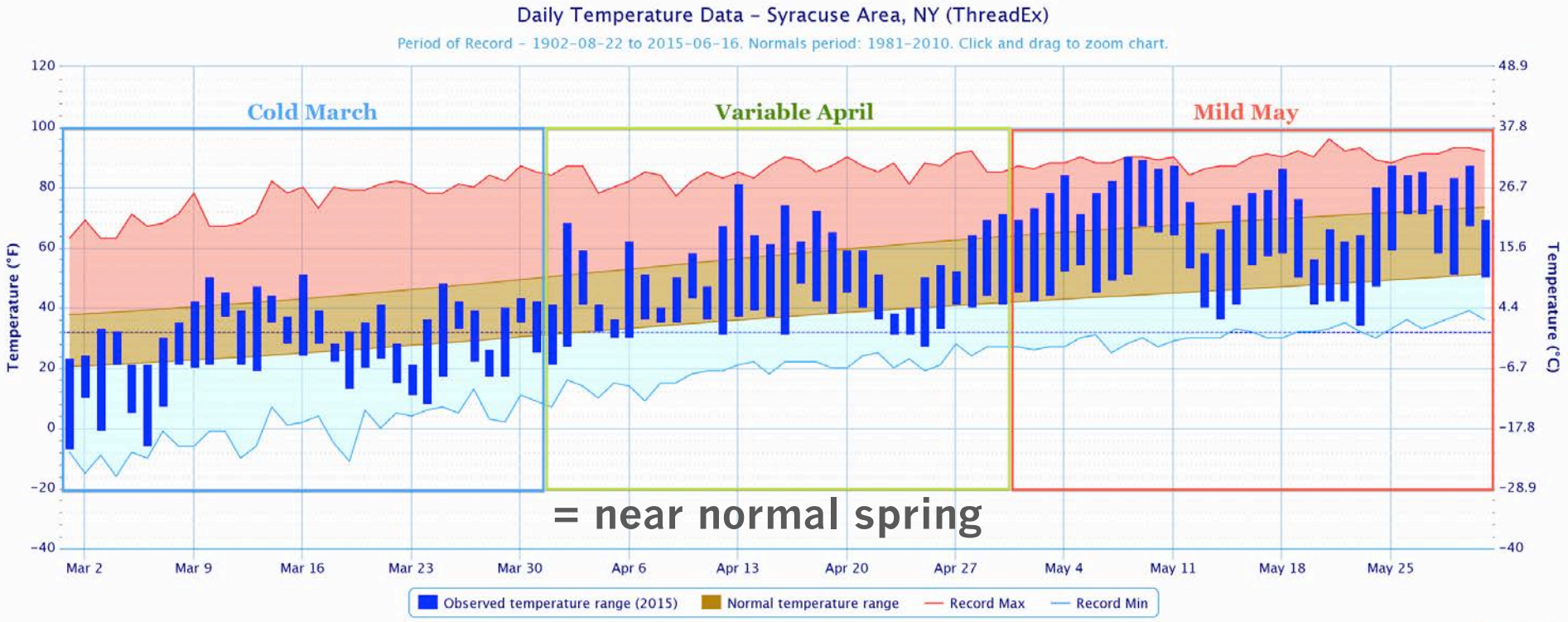


May Precipitation

- Of the 35 airport climate sites…
  - 3 sites had record-dry Mays
  - 15 sites: top 16 driest May
  - 2 sites: 20th wettest May

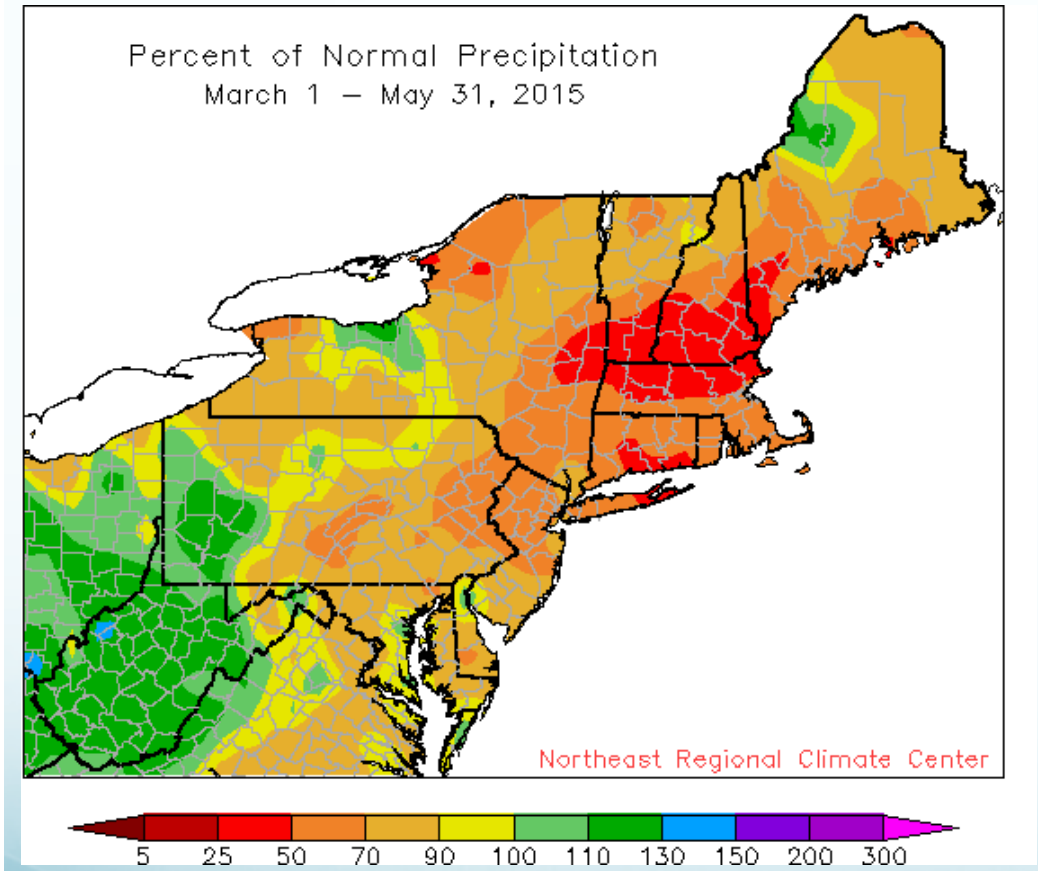
Location	May 1-31, 2015	Normal	% of normal	Rank (driest)
Islip, NY	0.42	3.78	11%	1
Kennedy Ap, NY	0.46	3.94	12%	1
Worcester, MA	0.60	4.19	14%	1
Concord, NH	0.65	3.66	18%	5
Allentown, PA	0.82	4.14	20%	2
Atlantic City, NJ	0.71	3.35	21%	8
Huntington, WV	1.09	4.70	23%	5
Beckley, WV	1.14	4.66	24%	3
Albany, NY	1.05	3.61	29%	6
Bridgeport, CT	1.15	3.80	30%	6
Hartford, CT	1.33	4.35	31%	9
Philadelphia, PA	1.19	3.71	32%	13
Boston, MA	1.22	3.49	35%	16
Elkins, WV	1.79	5.12	35%	7
Charleston, WV	1.94	4.80	40%	16
LaGuardia Ap, NY	1.61	3.79	42%	7
Central Park, NY	1.86	4.19	44%	
Washington, DC	1.92	3.99	48%	
Scranton, PA	1.72	3.52	49%	16
Baltimore, MD	2.10	3.99	53%	
Dulles Ap, VA	2.46	4.55	54%	12
Portland, ME	2.31	4.01	58%	
Wilmington, DE	2.39	3.95	61%	
Pittsburgh, PA	2.47	3.95	63%	
Caribou, ME	2.75	3.33	83%	
Williamsport, PA	3.07	3.66	84%	
Burlington, VT	2.92	3.45	85%	
Harrisburg, PA	3.52	3.79	93%	
Binghamton, NY	3.41	3.57	96%	
Buffalo, NY	3.31	3.46	96%	
Erie, PA	3.46	3.44	101%	
Providence, RI	3.69	3.55	104%	
Rochester, NY	3.41	2.87	119%	
Newark, NJ	4.93	4.09	121%	20 wettest
Syracuse, NY	3.93	3.22	122%	20 wettest

Spring Temperatures



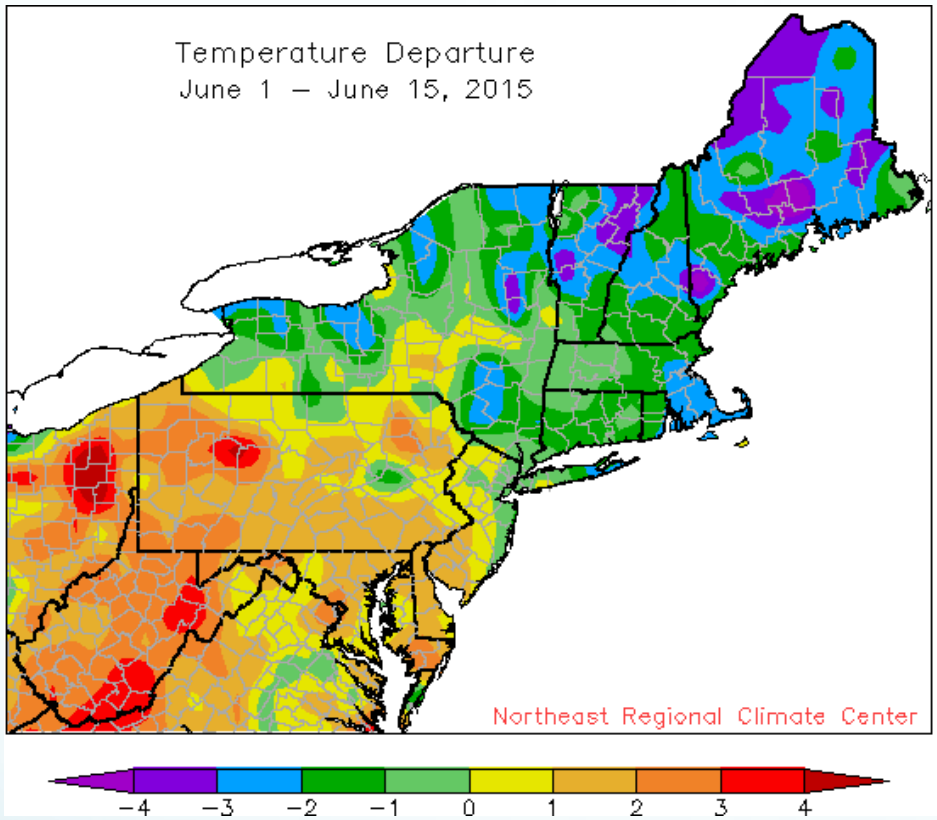
- Northeast & 11 states within 1°F of normal
- Of the 35 airport climate sites…
  - 26 sites within 1°F of normal
  - 7 sites: top 20 warmest springs

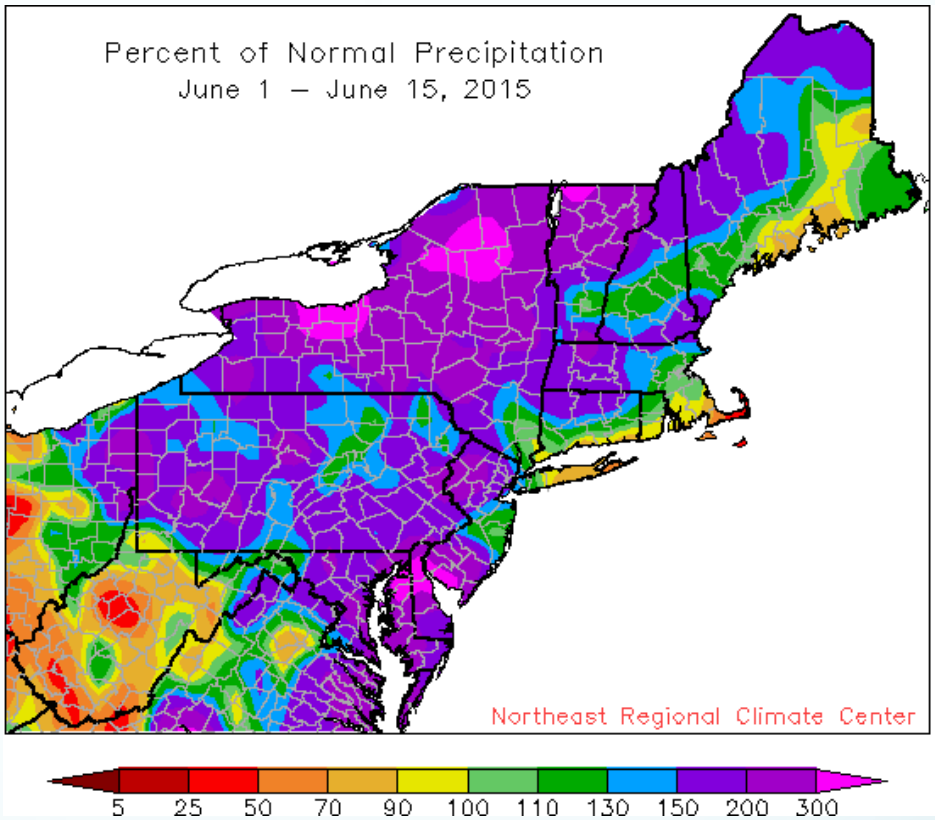
Spring Precipitation



- Northeast saw 78% of normal precip
  - 17th driest spring
  - 7 states had top 16 driest spring
- Of the 35 airport climate sites…
  - 13 sites: top 20 driest spring
  - 2 sites: top 20 wettest spring

June 1-15

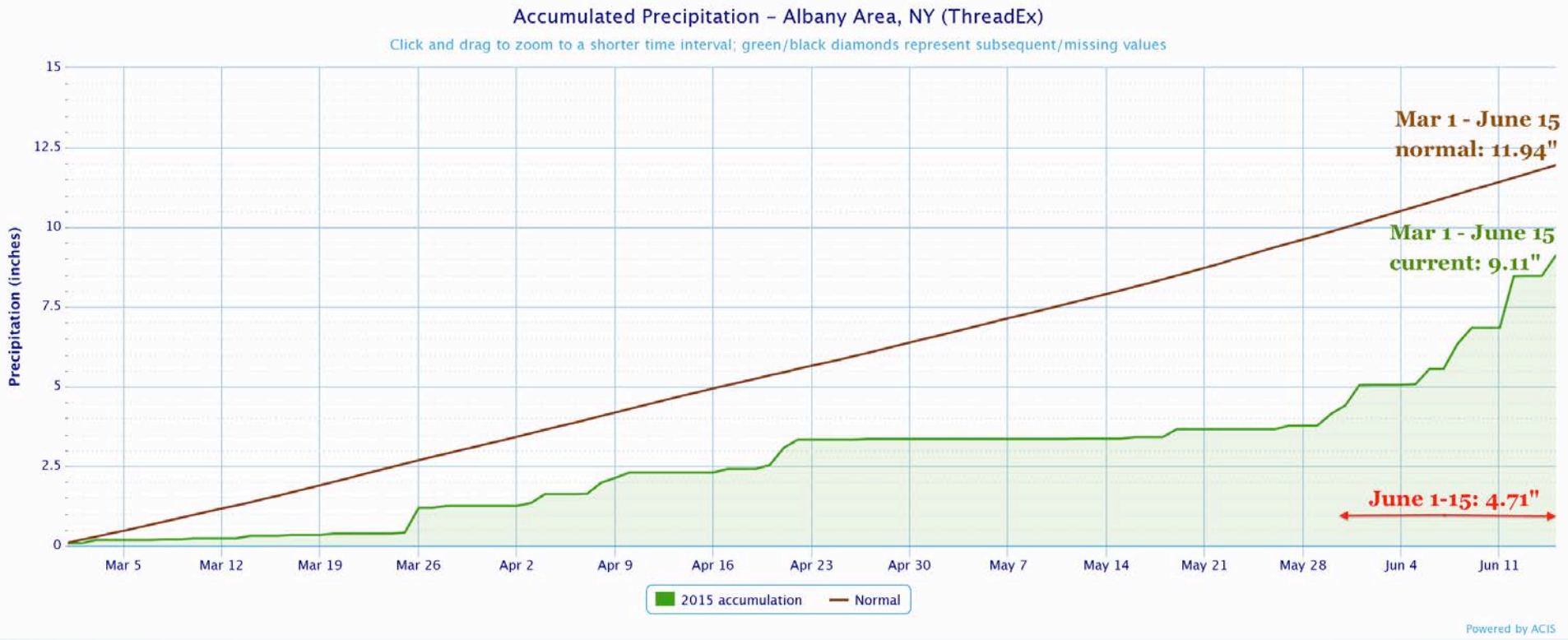




- Temps from 4°F below normal to 4°F above normal
  - 21 sites saw above-normal temps

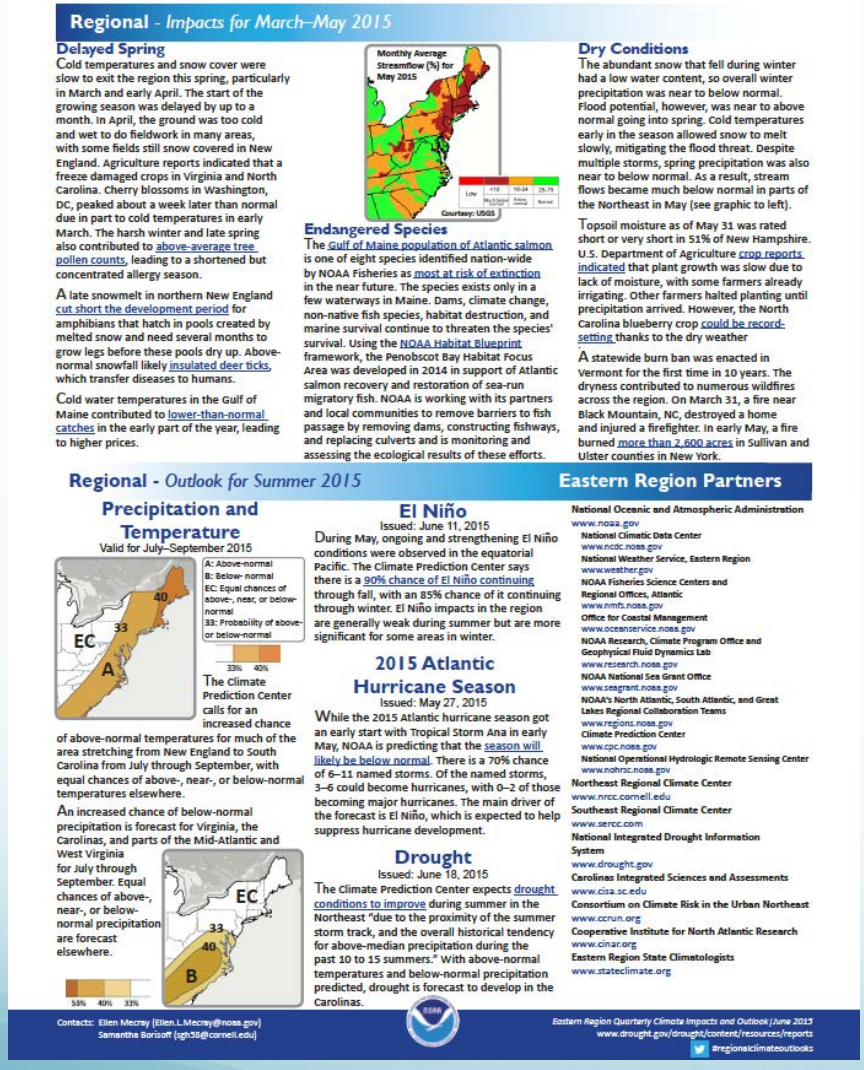
- Quite wet for most areas
  - Binghamton, NY: record-wet start to month
  - Another 19 sites: top 20 wet start

Still Dry



- Despite recent rain, some areas still below normal for precip
- Areas of abnormal dryness and moderate drought remain

Latest Quarterly Reports



Regional - *Impacts for March–May 2015*

Delayed Spring

Cold temperatures and snow cover were slow to exit the region this spring, particularly in March and early April. The start of the growing season was delayed by up to a month. In April, the ground was too cold and wet to do fieldwork in many areas, with some fields still snow covered in New England. Agriculture reports indicated that a freeze damaged crops in Virginia and North Carolina. Cherry blossoms in Washington, DC, peaked about a week later than normal due in part to cold temperatures in early March. The harsh winter and late spring also contributed to above-average tree pollen counts, leading to a shortened but concentrated allergy season.

A late snowmelt in northern New England cut short the development period for amphibians that hatch in pools created by melted snow and need several months to grow legs before these pools dry up. Above-normal snowfall likely insulated deer ticks, which transfer diseases to humans.

Cold water temperatures in the Gulf of Maine contributed to lower-than-normal catches in the early part of the year, leading to higher prices.

Monthly Average Streamflow (%) for May 2015

Courtesy: USGS

Endangered Species

The Gulf of Maine population of Atlantic salmon is one of eight species identified nation-wide by NOAA Fisheries as most at risk of extinction in the near future. The species exists only in a few waterways in Maine. Dams, climate change, non-native fish species, habitat destruction, and marine survival continue to threaten the species' survival. Using the NOAA Habitat Blueprint framework, the Penobscot Bay Habitat Focus Area was developed in 2014 in support of Atlantic salmon recovery and restoration of sea-run migratory fish. NOAA is working with its partners and local communities to remove barriers to fish passage by removing dams, constructing fishways, and replacing culverts and is monitoring and assessing the ecological results of these efforts.

Dry Conditions

The abundant snow that fell during winter had a low water content, so overall winter precipitation was near to below normal. Flood potential, however, was near to above normal going into spring. Cold temperatures early in the season allowed snow to melt slowly, mitigating the flood threat. Despite multiple storms, spring precipitation was also near to below normal. As a result, stream flows became much below normal in parts of the Northeast in May (see graphic to left).

Topsoil moisture as of May 31 was rated short or very short in 51% of New Hampshire. U.S. Department of Agriculture crop reports indicated that plant growth was slow due to lack of moisture, with some farmers already irrigating. Other farmers halted planting until precipitation arrived. However, the North Carolina blueberry crop could be record-setting thanks to the dry weather

A statewide burn ban was enacted in Vermont for the first time in 10 years. The dryness contributed to numerous wildfires across the region. On March 31, a fire near Black Mountain, NC, destroyed a home and injured a firefighter. In early May, a fire burned more than 2,600 acres in Sullivan and Ulster counties in New York.

Regional - *Outlook for Summer 2015*

Eastern Region Partners

Precipitation and Temperature

Valid for July–September 2015

A: Above-normal
B: Below- normal
EC: Equal chances of above-, near, or below-normal
33: Probability of above- or below-normal

33% 40%

The Climate Prediction Center calls for an increased chance of above-normal temperatures for much of the area stretching from New England to South Carolina from July through September, with equal chances of above-, near-, or below-normal temperatures elsewhere.

An increased chance of below-normal precipitation is forecast for Virginia, the Carolinas, and parts of the Mid-Atlantic and West Virginia for July through September. Equal chances of above-, near-, or below-normal precipitation are forecast elsewhere.

50% 40% 33%

El Niño

Issued: June 11, 2015

During May, ongoing and strengthening El Niño conditions were observed in the equatorial Pacific. The Climate Prediction Center says there is a 90% chance of El Niño continuing through fall, with an 85% chance of it continuing through winter. El Niño impacts in the region are generally weak during summer but are more significant for some areas in winter.

2015 Atlantic Hurricane Season

Issued: May 27, 2015

While the 2015 Atlantic hurricane season got an early start with Tropical Storm Ana in early May, NOAA is predicting that the season will likely be below normal. There is a 70% chance of 6–11 named storms. Of the named storms, 3–6 could become hurricanes, with 0–2 of those becoming major hurricanes. The main driver of the forecast is El Niño, which is expected to help suppress hurricane development.

Drought

Issued: June 18, 2015

The Climate Prediction Center expects drought conditions to improve during summer in the Northeast "due to the proximity of the summer storm track, and the overall historical tendency for above-median precipitation during the past 10 to 15 summers." With above-normal temperatures and below-normal precipitation predicted, drought is forecast to develop in the Carolinas.

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Eastern Region State Climatologists
www.stateclimate.org

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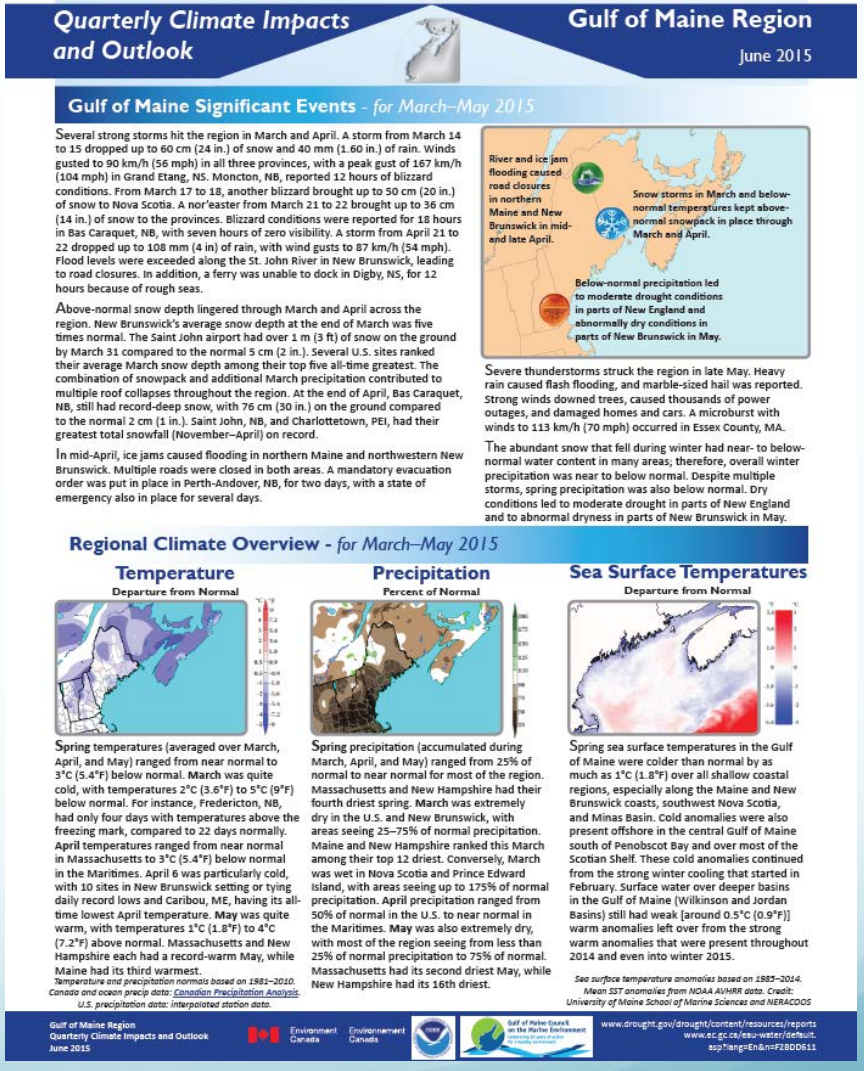

Quarterly Climate Impacts and Outlook

Gulf of Maine Region

June 2015

Gulf of Maine Significant Events - *for March–May 2015*

Several strong storms hit the region in March and April. A storm from March 14 to 15 dropped up to 60 cm (24 in.) of snow and 40 mm (1.60 in.) of rain. Winds gusted to 90 km/h (56 mph) in all three provinces, with a peak gust of 167 km/h (104 mph) in Grand Etang, NS. Moncton, NB, reported 12 hours of blizzard conditions. From March 17 to 18, another blizzard brought up to 50 cm (20 in.) of snow to Nova Scotia. A nor'easter from March 21 to 22 brought up to 36 cm (14 in.) of snow to the provinces. Blizzard conditions were reported for 18 hours in Bas Caraquet, NB, with seven hours of zero visibility. A storm from April 21 to 22 dropped up to 108 mm (4 in) of rain, with wind gusts to 87 km/h (54 mph). Flood levels were exceeded along the St. John River in New Brunswick, leading to road closures. In addition, a ferry was unable to dock in Digby, NS, for 12 hours because of rough seas.

Above-normal snow depth lingered through March and April across the region. New Brunswick's average snow depth at the end of March was five times normal. The Saint John airport had over 1 m (3 ft) of snow on the ground by March 31 compared to the normal 5 cm (2 in.). Several U.S. sites ranked their average March snow depth among their top five all-time greatest. The combination of snowpack and additional March precipitation contributed to multiple roof collapses throughout the region. At the end of April, Bas Caraquet, NB, still had record-deep snow, with 76 cm (30 in.) on the ground compared to the normal 2 cm (1 in.). Saint John, NB, and Charlottetown, PEI, had their greatest total snowfall (November–April) on record.

In mid-April, ice jams caused flooding in northern Maine and northwestern New Brunswick. Multiple roads were closed in both areas. A mandatory evacuation order was put in place in Perth-Andover, NB, for two days, with a state of emergency also in place for several days.

Severe thunderstorms struck the region in late May. Heavy rain caused flash flooding, and marble-sized hail was reported. Strong winds downed trees, caused thousands of power outages, and damaged homes and cars. A microburst with winds to 113 km/h (70 mph) occurred in Essex County, MA.

The abundant snow that fell during winter had near- to below-normal water content in many areas; therefore, overall winter precipitation was near to below normal. Despite multiple storms, spring precipitation was also below normal. Dry conditions led to moderate drought in parts of New England and to abnormal dryness in parts of New Brunswick in May.

Regional Climate Overview - *for March–May 2015*

Temperature

Departure from Normal

Spring temperatures (averaged over March, April, and May) ranged from near normal to 3°C (5.4°F) below normal. March was quite cold, with temperatures 2°C (3.6°F) to 5°C (9°F) below normal. For instance, Fredericton, NB, had only four days with temperatures above the freezing mark, compared to 22 days normally. April temperatures ranged from near normal in Massachusetts to 3°C (5.4°F) below normal in the Maritimes. April 6 was particularly cold, with 10 sites in New Brunswick setting or tying daily record lows and Caribou, ME, having its all-time lowest April temperature. May was quite warm, with temperatures 1°C (1.8°F) to 4°C (7.2°F) above normal. Massachusetts and New Hampshire each had a record-warm May, while Maine had its third warmest.

Temperature and precipitation normals based on 1981–2010. Canada and ocean precip data: Canadian Precipitation Analysis. U.S. precipitation data: interpolated station data.

Precipitation

Percent of Normal

Spring precipitation (accumulated during March, April, and May) ranged from 25% of normal to near normal for most of the region. Massachusetts and New Hampshire had their fourth driest spring. March was extremely dry in the U.S. and New Brunswick, with areas seeing 25–75% of normal precipitation. Maine and New Hampshire ranked this March among their top 12 driest. Conversely, March was wet in Nova Scotia and Prince Edward Island, with areas seeing up to 175% of normal precipitation. April precipitation ranged from 50% of normal in the U.S. to near normal in the Maritimes. May was also extremely dry, with most of the region seeing from less than 25% of normal precipitation to 75% of normal. Massachusetts had its second driest May, while New Hampshire had its 16th driest.

Sea Surface Temperatures

Departure from Normal

Spring sea surface temperatures in the Gulf of Maine were colder than normal by as much as 1°C (1.8°F) over all shallow coastal regions, especially along the Maine and New Brunswick coasts, southwest Nova Scotia, and Minas Basin. Cold anomalies were also present offshore in the central Gulf of Maine south of Penobscot Bay and over most of the Scotian Shelf. These cold anomalies continued from the strong winter cooling that started in February. Surface water over deeper basins in the Gulf of Maine (Wilkinson and Jordan Basins) still had weak [around 0.5°C (0.9°F)] warm anomalies left over from the strong warm anomalies that were present throughout 2014 and even into winter 2015.

Sea surface temperature anomalies based on 1985–2014. Mean SST anomalies from NOAA AVHRR data. Credit: University of Maine School of Marine Sciences and NERACOOS

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Contact Information

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- 607-255-1751

Upcoming Webinars

- Tuesday, July 28 at 9:30 am
  - June review & severe weather
- Thursday, August 27 at 9:30 am
  - July review & TBD