2012 Weather Summary

Sue A. Pfeiffer

Temperatures were again above average in 2012; this was the first year in local recorded weather history that all 12 months had above average temperatures (in 2011, all months except for November were above average in temperature).

JANUARY began with warm temperatures, but a cold front moved in on the 4th and 5th, dropping the low to 10°F. Temperatures rebounded until a second cold front passed through on the 15th and 16th; the low of 6°F, which occurred on both nights, was the low temperature for the year. Overall the month was warm with an average temperature above freezing, almost 8°F warmer than the previous year. Snowfall was well below average—only 4.8 inches accumulated. Most of this snow fell between the 17th and the 22nd, and by the 26th, the snowpack had completely melted. Despite the lack of significant snow accumulation, January was damp and dreary as we received some type of precipitation on 16 out of 31 days.

FEBRUARY was warm and extremely dry. High temperatures in the 40s and 50s occurred on 24 of 29 days and on only one occasion was a high below freezing recorded (28°F on the 13th). Only trace amounts of snowfall were recorded and the ground remained bare for the entire month. February was pleasant and calm except for one storm that passed through on the 25th, dropping 0.52 inches of rain and bringing along wind gusts over 50 mph. This storm provided most of the precipitation for the month as only 0.68 inches fell, well below the 30-year historical average of 4.24 inches. These warm temperatures and dry conditions allowed the horticulturists and arborists access to the collections to prune and mulch.

MARCH began with 4 days of precipitation that fell as a rain-snow mix, delivering some much-needed moisture to soils. This storm brought 1.73 inches of rain equivalence, including 1.8 inches of snow, but by March 6th all snow had melted away. The remainder of the month was dry; the month's total precipitation of 1.99 inches fell far below the 30-year historic average of 5.58 inches. The lack of snowfall in November and December of 2011, coupled with the below average precipitation during February and March and above average temperatures, left soils extremely dry. March was also a month of extreme temperatures—from the 18th to the 23rd we reached temperatures from 75°F to a record high of 82°F, which forced many plants into full

JON HETMAN

An incredibly mild winter led to very early bloom at the Arboretum, including these magnolias in flower on March 22, 2012.

bloom. These extreme highs were followed by extreme lows as temperatures dipped to 25°F and 26°F on March 26th and 27th respectively. These frosty conditions caused visible damage to many plants in full bloom, turning petals brown. The average high temperature for the month was 54°F, 10°F warmer than the 30-year historic average of 44°F. According to NOAA's National Climate Data Center, March 2012 was the warmest month on record in all of the lower 48 states; 15,000 weather related records (7,755 daytime records and 7,517 nighttime records) were broken and at least one record was broken in each of the 50 states.

APRIL was another warm month, with the average high temperature 6°F above the average and a record setting high temperature of 90°F on April 16th. Warm temperatures lead certain plants into early flowering but caused visible stress to others. The lack of moisture during the first three weeks was evident as buds dried up and fell off; twig dieback was observed on young shrubs and plants with shallow root systems. On April 23rd, 2.81 inches of much-needed precipitation fell. Following this rain event, many plants leafed out almost immediately, greening up the landscape. This spring was highly unusual, marked with lack of precipitation and high temperatures.

MAY provided typical spring weather; precipitation was frequent as we received rain 14 out of the first 17 days. This much-needed moisture continued the greening of the landscape as leaves emerged and plants recovered from earlier drought conditions. Warmer temperatures during April allowed many plants to flower earlier than usual, including those in our famous lilac collection. Fortunately, cooler temperatures during early May sustained lilac blooms until Lilac Sunday on May 13th. We reached a high of 85°F on the 27th and a low of 42°F on the 11th. Both temperature and precipitation were slightly above the historic averages.

JUNE began with six straight days of rain, cloudy conditions, and cooler temperatures with highs in the 50s and 60s (far below the mid 70s average for the month) and overnight lows in the 40s. A fast-moving storm came through on the 8th, delivering thunder, lightning, and an additional 0.41 inches of precipitation in a relatively short period of time. Minor damage was reported, with tree limbs down and a lightning strike on a mature white pine, which resulted in its decline and eventual removal. This opening week brought 2.24 inches of rain in total, leaving soils plenty moist. Mid-June saw temperatures return to normal with mostly sunny conditions. Temperatures continued to rise as we experienced a record breaking 3-day heat wave from the 20th to the 22nd with temperatures reaching 95°F. This sudden increase in temperature caused recent transplants to flag. Relief from the heat came on the afternoon of June 22nd as a thunderstorm delivered 0.67 inches of rain. Steady precipitation continued on the 24th and 25th and later that evening a violent thunderstorm delivered 2.43 inches of rain along with minor damage to the collections. Already moist soils could not absorb this rapidly falling rain, resulting in flooding and erosion damage in the collections and on secondary gravel roads. Overall, the cool temperatures early in the month were balanced by the heat wave during the latter part of the month, leaving us with above average temperatures for the month. Rainfall was 6.10 inches, well above the average of 4.31 inches for the month.

JULY was the warmest month of the year with highs mostly in the 80s and 90s. The month started off sunny and warm with minimal precipitation and consistently high temperatures in the 80s. A 6-day heat wave (temperatures 90°F or higher) occurred from July 13th to the 18th, peaking at 95°F on July 17th. Humidity was also high and the heat index reached above 100°F. Both people and plants were stressed; recent transplants, in particular, required vigilant monitoring and supplemental irrigation. A cold front moved in during the afternoon of the 18th bringing an evening of thunderstorms, hail, and a spectacular lightning show. The system dropped 1.53 inches of rain and brought with it more bearable temperatures in the 70s and low 80s. Storms on the 24th and 29th provided additional precipitation.

AUGUST was sunny, hot, and humid. Rain on the 1st and 2nd (1.21 inches total) and the monthly high temperature (92°F) on the 3rd lead to very high humidity—98%—during the first week. Several thunderstorms with intermittent rainfall from the 11th through the 18th delivered an additional 1.6 inches of precipitation. The remainder of the month provided ideal summer conditions—sunny days with high temperatures in the mid 80s and lows in the 60s. Arboretum visitation increased as these comfortable conditions set in. Overall it was a fairly typical August, with average high temperatures 5°F warmer than normal and below average precipitation.

SEPTEMBER rainfall was slightly below average and temperatures were slightly above average. We received 3.90 inches of rainfall this month, most of which fell during four well-spaced events on the 5th, 9th, 18th–19th, and 29th, providing consistent moisture to plants throughout the month. The storm that passed through on the evening of the 18th and into the 19th brought strong winds, with gusts of over 30 mph recorded. Temperatures were slightly above average; the high of the month was 85°F on the 8th and the low was 41°F on the 24th. The grounds continued to look lush and showed no signs that fall was on the way.

SUE A. PFEIFFER

A large sugar maple (*Acer saccharum*) limb broke and fell near the Centre Street Gate on September 8, 2012, a windy day with gusts over 20 mph.

OCTOBER started off with consistent rain events during 13 of the first 16 days but provided only 0.96 inches of rain in total. The first frost occurred on the 12th, ending the growing season at 194 days. The monthly high was 80°F on the 16th and the low was 31°F on the 12th. The main weather event of the month was the arrival of Superstorm Sandy, which was initially predicted to hit Boston head on. As the late season hurricane moved up the east coast its path shifted to the south as it swung around and plowed straight into the New Jersey–New York (Long Island) areas during the evening of the 29th. At the Arboretum, the storm arrived

JIM PAPARGIRIS

Autumn color was in full swing at the Arboretum on October 24, 2012.

with light rain and increasing winds on the 29th; a maximum wind gust of 25.3 mph was recorded in the early afternoon. On Monday, conditions intensified with wind gusts from 30 mph to a maximum of 50.3 mph (recorded at 2:15 and 2:30 p.m. at the Weld Hill Research Building). Sustained winds ranged from 20 to 23 mph throughout the afternoon. At 8:45 p.m. wind speed and gusts dropped suddenly and the atmospheric pressure and air temperature began to rise. We were very fortunate not to receive a direct hit from Superstorm Sandy, but there was some damage at the Arboretum. About two dozen trees were lost; many of these were older and located in natural areas. Despite the storm's 2.66 inches of rain, precipitation for the month remained below the 30-year historic average of 4.69 inches.

NOVEMBER was a relatively dry month with only 1.46 inches recorded (well below the 4.76 inch average). Half of that rain equivalence came from the winter's first snowfall, 2.5 inches overnight on the 7th–8th. Temperatures in the 50s quickly melted the snow. This storm brought high sustained winds with gusts over 30 mph on both days. A warm front brought temperatures into the mid 60s from the11th through the 13th, but this warm weather did not last as more seasonal temperatures in the 40s and low 50s set in for the remainder of the month. Overall temperatures were slightly above the historic average. We reached a high of 67°F on November 12th and a low of 26°F on the 29th.

DECEMBER was an extremely wet month with variable temperatures. We received a total of 7.11 inches of precipitation, of which 6.08 inches fell during the second half of the month. Most of the total precipitation arrived as rain except for 4 inches of snow on the 30th. Two large storms passed through bringing high winds and heavy rain; the event of December 21st and 22nd brought wind gusts of 35 mph and 30 mph and 0.8 inches of rain while the storm on the 27th brought gusts of over 40 mph and 2.49 inches of rain. We reached our highest temperature of 60°F on December 10th and the average high temperature for the month was 44.2°F, more than 5°F warmer than average. Daily high temperatures did not dip below the freezing mark until the final day of the year, when we reached only 29°F and had a low of 16°F. What a way to end this unusually warm year—with one of the coldest days of 2012!

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Arnold Arboretum Weather Station Data • 2012

	Avg. Max. (°F)	Avg. Min. (°F)	Avg. Temp. (°F)	Max. Temp. (°F)	Min. Temp. (°F)	Precipitation (inches)	Snowfall (inches)
JAN	41.1	24.2	32.7	59	6	3.62	4.80
FEB	44.3	25.9	35.1	57	13	0.68	
MAR	54.0	35.6	44.8	82	19	1.99	1.80
APR	62.3	41.1	51.7	90	29	3.54	
MAY	68.5	52.4	60.5	85	42	4.14	
JUN	74.9	56.9	65.9	95	47	6.10	
JUL	85.2	65.0	75.1	95	56	3.23	
AUG	83.8	64.0	73.9	92	53	2.92	
SEP	74.1	54.3	64.2	89	41	3.90	
OCT	64.4	46.1	55.3	80	31	4.28	
NOV	48.0	33.6	40.8	69	26	1.46	2.50
DEC	44.2	30.3	37.1	60	16	7.11	4.10

Average Maximum Temperature . . . . . **62.1°F**

Average Minimum Temperature . . . . . **44.1°F**

Average Temperature . . . . . **53.1°F**

Total Precipitation . . . . . **42.97 inches**

Total Snowfall in 2012 . . . . . **13.39 inches**

Snowfall During Winter 2011–2012 . . . . . **8.79 inches**

Warmest Temperature . . . . . **95°F on June 20, June 22, and July 17**

Coldest Temperature . . . . . **6°F on January 15 and January 16**

Last Frost Date . . . . . **29°F on April 1**

First Frost Date . . . . . **31°F on October 13**

Growing Season . . . . . **194 days**

Growing Degree Days . . . . . **3294.5 days**