

# 2017 WEATHER SUMMARY

## West Henrico Co. - Glen Allen, VA

### THE MOST UNUSUAL RECORD

#### Local Glen Allen Hailstorm

On May 27, 2017, a thunderstorm approached the Springfield Park area from the west southwest coming roughly down Route 64. At 5:36 PM Glen Allen had a wind gust to 29 mph that was followed by the beginning of small hail that was approximately 0.5 inches in diameter and lasted for about one minute. At 5:38 PM large hail began to fall that was approximately 1.5 to 2.0 inches in diameter. Note the time on the radar capture image is 5:38 PM and you can see the area of hail at its maximum diameter. The area of hail was bounded by Nuckols Road on the north, Springfield Road on the east, Broad Street on the south, and Innsbrook on the west. The Springfield Park Glen Allen station is located at the center of this perimeter. Some of the hailstones were flat like platelets about three quarters of an inch thick and some were even larger upwards to 2 inches. See image three in the link below that shows many of the hailstones. Our area was fortunate however because the large hail soon tapered back to ½ inch in approximately 1 minute. The hail stopped by 5:40 PM and only the rain continued. The rain ended at 6:25 PM but was soon followed by a second thunderstorm giving rain from 6:35 PM and ended at 11:35 PM as the second thunderstorm was followed by general area of rain. Many roofs were replaced this summer in the area covered by this storm.

<http://www.glenallenweather.com/historylinks/2017/may/2017-05-27 Hail.pdf>

#### Thunderstorms

The strongest thunderstorm was on May 27, 2017 which was rated so high mainly because of the large hail associated with the storm. Thunder was heard on 26 days in 2017 at Glen Allen. The average is 38.9 days per year. 2017 set the record low number of 26 thunderstorms. July had 7 thunder days which was the greatest for one month in 2017 and most weren't that strong. Most were weak as 16 of the 26 were rated as category one the weakest. The May 27, 2017 storm was rated a 5 because of the large hail.

16 (Cat. 1), 4 (Cat. 2), 4 (Cat. 3), 1 (Cat. 4), 1 (Cat. 5)

## Temperature

**YEAR-** The mean temperature for 2017 at Glen Allen was 60.45°F which was positive departure of 1.3°F. This was the warmest year at Glen Allen since 2012 with an average of 60.52°F which is the Glen Allen record. The Richmond International Airport had a mean of 60.49°F which made 2017 the 8<sup>th</sup> warmest year in the past 137 years. Glen Allen had 38 days that the maximum temperature was  $\geq 90^{\circ}\text{F}$  which was 6 days below the normal. The maximum temperature at Glen Allen was  $\leq 32^{\circ}\text{F}$  for the high temperature five times. Glen Allen had 69 days when the minimum temperature was  $\leq 32^{\circ}\text{F}$ . Glen Allen's lowest record was 63 days with the minimum temperature of  $\leq 32^{\circ}\text{F}$  days in 2012. The Airport had 64 days that the low temperature was  $\leq 32^{\circ}\text{F}$ . The lowest minimum temperature of 2017 at Glen Allen was 2.5°F on January 8<sup>th</sup> and 9<sup>th</sup>.

**MONTH-** The coldest month for 2017 was December with a mean temperature of 39.2°F. December also had the greatest number of days (20) with the minimum temperature  $\leq 32^{\circ}\text{F}$ . February had the greatest positive departure from normal -9.7°F. April had the second greatest positive departure of 5.9°F. January had the third greatest positive departure of 5.3°F. The months of February, April, and October were all record warm months at Glen Allen. December had the greatest negative departure from average of -3.6°F.

July had 21 days with the maximum temperature  $\geq 90^{\circ}\text{F}$  which was the greatest number for any month. July had 24 nights that the minimum temperature was 70°F or more. Only 2012 had more with 26 nights in one month. The warmest minimum temperature for the year was 78.1°F on July 13<sup>th</sup>. The number of days that the minimum temperature was  $\geq 70^{\circ}\text{F}$  in 2017 was 48 days and the average is 46.5 at Glen Allen.

**DAY-** The hottest temperature of 2017 in Glen Allen occurred on July 22<sup>nd</sup> with a maximum temperature of 98.8°F. The average highest annual high temperature for Glen Allen is 99.2°F. The hottest day was July 13<sup>th</sup> with a daily mean of 87.1°F and the coldest day of the year occurred on January 09<sup>th</sup> with the daily mean temperature of 14.2°F. The lowest minimum temperature for 2017 at Glen Allen was 2.5°F recorded on January 7<sup>th</sup> and 8<sup>th</sup>, 2017.

**RANGE-** The greatest temperature range for the year at Glen Allen was 42°F, which occurred on February 18, 2017 with a high temperature of 74.5°F and a low temperature of 32.5°F.

The smallest temperature range for the year at Glen Allen was 1.8°F, which occurred on December 9, 2017 with a high temperature of 33.7°F and a low temperature of 31.9°F during an all-day snow.

## PRECIPITATION

**YEAR-** The total number of days this year with measurable precipitation at Glen Allen was 117 days and the total precipitation for 2017 was only 3 days from tying the record low of 114 days in 2010. Glen Allen's total precipitation was 40.30 inches. The average annual precipitation for Glen Allen is 46.19 inches or a negative departure of 5.89 inches. The total precipitation for 2017 for the Airport was 37.96 inches. The average annual precipitation for the Richmond Airport is 43.60 inches or a negative departure of 5.64 inches.

**MONTH-** May had 15 days with measurable precipitation, which was the most of any of the months of 2017 and the most on record for the Glen Allen Station is 17. There were 72 days with a daily precipitation amount  $\geq 0.10$  inches. There were 11 days with daily precipitation amount  $\geq 1.00$  inch and 0 days with more than 2.00 inches. May was the wettest month with 5.83 inches, the second wettest May on record. February was the driest month of 2017 with only 0.54 inches and set the record for the driest February on record with a -2.34 inch departure.

**CALENDAR-** The most precipitation recorded in a day occurred on June 16, 2017 with 1.93 inches which was the second greatest June rainfall since 2009 with 2.13 inches. The daily record for Glen Allen in all months is 3.75 inches, which occurred on August 27, 2011 during Hurricane Irene.

**24-HOUR PERIOD-** The maximum precipitation in a 24-hour period for 2017 was 2.30 inches on October 11 - 12, 2017. The record for Glen Allen is 3.83 inches that occurred on August 27-28, 2011 during Hurricane Irene.

**HOURLY-** The greatest one-hour rainfall intensity during 2017 was 1.40 inches on June 16<sup>th</sup>. The record one-hour precipitation intensity for the Glen Allen station is 2.13 inches on June 3, 2009. The maximum precipitation of 1.05 inches on October 24<sup>th</sup> set a new one-hour record for the month of October.

**FIVE-MINUTES-** The greatest five-minute precipitation rate for 2017 was only 0.25 inches, which fell on May 5<sup>th</sup> 2017. The record for the most intense five-minute precipitation at Glen Allen was 0.67 inches, which occurred on August 10<sup>th</sup> 2013.

**DROUGHT-** The longest dry period of 2017 was September 19th to October 6th with no precipitation for 19 days. This is a new record for the Glen Allen station. Another long 17 day period with only a trace of rain occurred from July 6th to July 22nd. Seven months of the year were below average but they were not consecutive months like 2014 when Glen Allen had seven consecutive months with below average precipitation.

## WIND

**YEAR-** The highest wind gust for the year was 46 mph from the south that occurred on March 1, 2017 at 1146 hours in advance of a strong cold front. This was the highest wind at Glen Allen since 6-25-2012 when a gust to 47 mph occurred in a thunderstorm.

**MONTH-** The windiest month in 2017 was March with a wind run of 2,438.8 miles. This was the 4<sup>th</sup> windiest month ever recorded at the Glen Allen station. August was the month with the least wind of only 1061.9 miles.

**DAY-** The windiest day for 2017 was on February 7, 2017 with a wind run of 204.3 miles. This was also the highest daily wind run recorded at Glen Allen since October 9, 2016 when 206.8 miles was recorded. The second windiest day was January 12, 2017 when a wind run of 194.8 miles was recorded. The record wind run for Glen Allen during a calendar day was 284.1 miles set during Hurricane Irene on August 27<sup>th</sup> 2011.

## SNOW

**YEAR-** The 2017 Glen Allen total snowfall for the winter (2016 - 2017) was 6.6 inches and the total snow for 2017 was 11.9 inches. There were 9 days during 2017 that Glen Allen had measurable snowfall and most were very light except one snow on January 6<sup>th</sup> and 7<sup>th</sup> of 2017 when a snow of 6.5 inches occurred. There were 5 days (average is 9.8 days) in 2017 with more than a trace of snow on the ground at sunset, eight of these occurring in January. The maximum snow on the ground at sunset during 2017 was 6 inches on January 7<sup>th</sup>. The Airport recorded 9.4 inches of snow for the year.

**MONTH-** The greatest monthly snowfall total for Glen Allen in 2017 was 6.6 inches in the month of January which averages 6.3 inches.

**STORM-** The most snow to fall in any one storm was 6.5 inches that occurred on January 7<sup>th</sup>. The greatest snow in a calendar day in 2017 was also 6.5 inches on January 7<sup>th</sup>.

## **BAROMETRIC PRESSURE**

**YEAR-** The highest barometric pressure recorded for the year was 30.85 inches of mercury on January 9, 2017, the highest barometer since February 15, 2015 when the pressure was 30.87 inches. The lowest barometric pressure for the year was 29.24 inches of mercury which was recorded on October 29<sup>th</sup> which was the lowest pressure since March 2014 when the pressure was 29.13 inches.

**MONTH-** March had the highest average barometric pressure of any month in 2017 which was 30.16 inches the highest since December 2016. May had the lowest average barometer reading of any month at 29.89 inches the lowest since August 2011 when 29.88 was recorded.

## **RELATIVE HUMIDITY**

**YEAR-** February's average relative humidity of 60.3% was the lowest for any month of 2017. The highest relative humidity was recorded in October with an average relative humidity of 76.1%. The lowest daily relative humidity for the year was 15% recorded on March 9, 2017. January, and April set a new record high relative humidity for the month.

## **SKY COVER**

The cloudiness average value is based on (0 as clear), (1 as partly cloudy), and (2 as cloudy).

**MONTH-** January with (1.63) was not only the cloudiest month of 2017 but is now the cloudiest month on record at Glen Allen. February was also very cloudy and averaged 1.23 and was the second cloudiest February. Oct with (0.94) was the clearest month of 2017. The cloudiest season was the spring of 2017 with the average of the three months being 1.11. The fall season was the clearest with the average of the three months being 1.00.

## SEASON RECORDS

### Glen Allen Winter – Dec. 2016 to February 2017

This was the warmest and 2<sup>nd</sup> driest winter on record for Glen Allen although 2012 was almost as warm. February was the warmest on record with a +9.7°F departure and January also had a positive +5.3 departure. January had 16 consecutive days that the temperature stayed above freezing which was a new record for Glen Allen. The winter overall was +4.5°F warmer than average and 0.56 inches drier than normal. The winter had only one snow of any significance on January 7<sup>th</sup> with 6.5 inches and February had only a trace of snow and only 0.54 inches of precipitation. Glen Allen's total winter snowfall was only 6.6 inches. January was the cloudiest month ever recorded for Glen Allen and February was a little above average in cloudiness.

### Richmond International Airport Winter Records:

The airport from January 11<sup>th</sup> to January 27<sup>th</sup> recorded a period of 17 days the temperature stayed above freezing; this has never happened before in the past 120 years of records for Richmond. The closest previous record was 14 days from January 1 to January 14 in 2005.

February was the 3<sup>rd</sup> warmest on record since 1880 with a 49.0°F mean temperature. The Airport had 7.1 inches of snow for the winter season which was the least since 2012. It was the 8<sup>th</sup> warmest winter on record for Richmond since 1897. At the Airport it was the 5<sup>th</sup> driest February in the past 146 years

### Glen Allen Spring – March to May 2017

Spring was 1.2 °F warmer than average. April was the warmest on record with a + 5.9 °F departure. May was -2.1 below the average. On March 1 preceding a cold front, Glen Allen had a 46 mile-per-hour gust which was the highest wind ever recorded here for March.

On April 29 and 30<sup>th</sup> the minimum temperature never dropped below 72° which was the warmest minimum ever recorded for Glen Allen.

There was one day with pea size hail observed on April 7<sup>th</sup> and on May 27, 2017 hail as large as 2 inches fell at Glen Allen. Many of the roofs in our area were replaced during the summer due to hail damage.

The first 90° day didn't come until May 17<sup>th</sup>. Spring 2017 was also the third wettest on record with 12.01 inches of precipitation. Both April and May were above average but

March's precipitation was below average. The spring had no measurable snow in March which was a new record for Glen Allen.

### Richmond International Airport Spring Records:

April was warmest on record for Richmond and the 14<sup>th</sup> warmest spring. Richmond had a low temperature of 73° on the 29<sup>th</sup> and 70° on the 30<sup>th</sup> and had never seen a 70° minimum temperature before this year. Richmond's previous high minimum temperature was 69° in 1922.

### **Glen Allen Summer – June to August 2017**

Summer was - 0.3° cooler than average and 0.18 inches drier than average. July and August rainfall was below average but June was +0.70 inches above average. The summer had 35 of the year's thirty-eight 90° days. This was the 4<sup>th</sup> least humid summer. There were 17 days with no measurable precipitation from July 6 to 22, which ties the maximum number of consecutive days at this station with no measurable precipitation. The previous record was 17 days.

### **Richmond International Airport Summer Records:**

The mean temperature for July was 81.3°F and tied for the 10<sup>th</sup> hottest July since 1897. The summer overall was 0.8°F warmer than average because of the hot July and was also the driest since 2014.

Only 18 years in the past 130 years have been drier for Richmond and the Airport had 1.86 inches less than Glen Allen. June's precipitation departure was 1.60 inches and July was -2.26 inches; only August was above average.

### **Glen Allen AUTUMN – SEPTEMBER to NOVEMBER 2017**

The fall was +0.7 ° above average mean temperature and departure of +0.42 inches in precipitation. T h e longest dry period of 2017 was September 19th to October 6th with no precipitation for 19 days. This is a new record for the Glen Allen station. October ended up the clearest October on record for 2017.

### **Richmond International Airport Autumn Records:**

The Airport had 7.86 inches of precipitation in the fall season which was the least since 2007 when 5.43 inches was recorded. Only October of the 3 fall months was above average in precipitation. The hurricane season was very active in 2017 with 3 major hurricanes for the season Harvey, Irma, and Maria. The Richmond area was very fortunate not to be affected by any of these very strong storms.

## Annual Records

2017 was the second driest year on record at Glen Allen with a total of 40.30 inches, a -5.89 inch departure. The Richmond International Airport had 37.96 inches which was a -5.64 inch departure based on the 30 year average of 43.60 inches and the driest year since 2014 when 35.74 inches was recorded.

Glen Allen's 2017 annual temperature average was 60.45°F which was a +1.3°F departure from the 9-year average and the warmest year since 2012. The Richmond International Airport's 2017 annual temperature average was 58.9°F with a +1.6°F departure based on the 30-year average of 58.9°F.

In 2017 Glen Allen had the third least snowfall on record with 11.9 inches. The 9-year average is 17.1 inches or a departure of -5.2 inches. The largest yearly total was 36.7 inches in 2010 and the least snow of 1.8 inches fell in 2011.

The Richmond International Airport had 10.2 inches of snow in 2017 and its 30-year average is 10.3 inches, a departure of negative 0.1 inches. This is the least annual snowfall at the Airport since 2013 when 8.6 inches of snow was recorded.

2017 at Glen Allen with a wind run of 21,656 miles was the 4<sup>th</sup> windiest year in the past nine years. The average annual wind run at Glen Allen is 19,184 miles.

During the Year 2017 at Glen Allen there were a total of:

2 Days with Glaze

3 Days with Sleet

13 Days with Snow

2 Days with Hail

23 Days with Fog

26 Days with Thunder

168 Days with Dew

40 Days with Frost