

2011 WEATHER SUMMARY

West Henrico Co. - Glen Allen VA.

MOST UNUSUAL RECORDS

Earthquake

An extremely rare event for Virginia was the 5.8 magnitude earthquake that occurred on August 23 at 1351 and was the strongest in approximately 114 years. On May 5, 1897 in Giles County there was an earthquake estimated to be a 5.8 magnitude. We were also awakened on the 25th at 1:07 AM by a 4.5 magnitude earthquake as it rattled the metal pulls on the chest of drawers.

Hurricane Irene

Hurricane Irene made landfall near Cape Lookout, North Carolina on the morning of August 27th as a category 1 hurricane with maximum sustained winds near 85 mph. Irene then traveled northeast paralleling the Mid-Atlantic coast. The center of the cyclone was less than 15 miles off the coast of Ocean City just after 2 AM on August 28th. Richmond suffered a large number of power outages and at one time 70 to 75 percent of Richmond was without power. Many homes were hit by falling oak trees that were uprooted by the high winds. The Glen Allen weather center reported a gust of 52 mph from the north at 5:53 PM and our neighbor lost two large oak trees. The wind run was 281 miles on the 27th which set a new record for this station. Irene was an unusual storm as the west side of the storm was stronger than the northeast quadrant. But in this case, Henrico and Chesterfield Counties were on the west side of the storm and were among the hardest hit with wind damage in Virginia. The Richmond International Airport had a gust to 71 miles during Irene making it the worst wind storm since Hurricane Isabel. Glen Allen station recorded 3.85 inches of rain in a 24-hour period and 3.75 inches for the calendar day of August 27. The Richmond International Airport had 5.36 inches of rain on August 27 and 7.10 inches of rain for August.

Second Hottest Summer

The mean temperature for July in Richmond was 82.1 °F which was only 0.7 °F less than record for July that was set just last year. July 2011 was the hottest month on record at the three major airports in Northern Virginia. The mean temperature departures for the month were as follows: DCA was +5.3 °F, Dulles +5.3 °F and BWI +5.2 °F. Fewer temperature records were set in Richmond this year than 2010. Last year had 33 temperature records set and this year had only 22 temperature records broken.

Lightning

The most damaging weather event occurred on July 3 at 10:40 PM in a thunderstorm when lightning struck a tree and shed in my backyard approximately 50 feet from my weather station. This strike destroyed the anemometer, Davis transmitter module 6152 which included the sun, rain, wind, temperature and relative humidity. It also burned out the wireless leaf and soil moisture and temperature station transmitter number 6345. It also destroyed a leaf wetness sensor and precipitation sensor. It also destroyed the solar radiation sensor and intercom system and five thermometer probes one of which exploded. The current surge also destroyed four outlets and a new computer doing approximately \$3000 damage. The storm gave a 37 mph wind gust and 1.71 inches of rain.

LIGHTNING - THUNDER

The most severe thunderstorm locally for the year occurred on July 3 as stated above. The most damaging thunderstorms within the forecast area occurred on October 13 that produced three tornadoes one in Quantico in Prince William County, Boswell Tavern in Louisa County, and Woodhaven Shores in New Kent County, Virginia. This storm gave Glen Allen only 0.46 inches of rain and one close lightning strike. During a 20 hour period from the late afternoon of the 27th to the 28th the Washington Baltimore Weather Office issued 38 tornado warnings. This was the most tornado warnings issued for one event since 43 warnings were issued during roughly a 6 hour period on September 17, 2004 as the remnants of Ivan moved through the region.

TEMPERATURE

YEAR The average temperature for 2011 at Glen Allen was 58.7 °F which was +1.6° above the average. Last year there were 78 days that were equal to or greater than 90 °F which is a record for Richmond. This year Richmond recorded only 54 days.

Last year there was a record of 72 days at Glen Allen that the temperature climbed to 90°F or above; this year there were only 50 days.

The lowest temperature of 2011 in Glen Allen was 13°F recorded on January 23 and the Richmond Airport recorded 11 °F on the same date.

Glen Allen had 76 days that the temperature was less than or equal to 32° with only two days that the maximum temperature did not go above freezing. Last year there were 93 days that the minimum temperature dropped below freezing with six days with the maximum temperature freezing or less. Glen Allen's highest annual maximum temperature was 102° which occurred on July 22nd which was the second highest temperature ever recorded at this station. On July 12th at the airport the low temperature was 81 °F. This was the highest minimum temperature ever recorded for Richmond in its 114 years of records.

The lowest annual minimum temperature was only 13 °F which was recorded on January 22.

MONTH The coldest month for 2011 was January with a mean temperature of 34.8°. January also had the greatest number of days (28 days) with the minimum temperature equal to or less than 32°. December had the greatest positive departure from normal and February had the second greatest positive departure. The two months with the greatest negative departure from normal were March and June but both were less than 1° below the average. July had the greatest number of days (22 days) with the maximum temperature equal to or greater than 90 °F.

DAY The hottest day of 2011 was July 22nd with the daily mean temperature of 90.5 °F. The coldest day of the year occurred on January 22 with the daily mean temperature of 20.5 °F.

RANGE The greatest temperature range was 38 °F for the year which occurred on November 25 with a maximum of 72 °F and a minimum of temperature of 34 °F. The least temperature range for the year occurred on January 11th with a high temperature of 31 °F and a low temperature of 29 °F during an all-day light precipitation event.

PRECIPITATION

YEAR The total number of days this year with measurable precipitation was 122 days and the total precipitation for 2011 was 45.14 inches.

MONTH April had 13 days with measurable precipitation which was the most of any of the months of 2011. August had 6.65 inches which was the greatest monthly precipitation recorded in 2011. February had the least monthly total precipitation with only 1.53 inches.

CALENDAR The total precipitation recorded for August 27 was 3.75 inches, a new maximum precipitation record for a calendar day. The old record was 3.39 inches recorded on September 30, 2010.

24-HOUR PERIOD The maximum precipitation in a 24-hour period was 3.83 inches, a new maximum precipitation record for a 24-hour period on August 27 and 28th.

HOUR The maximum one hour rainfall intensity was 0.99 inches that occurred on August 25. The record one hour precipitation intensity for the Glen Allen weather station was 2.13 inches in one hour on June 3, 2009.

FIVE-MINUTE The greatest five-minute precipitation rate was 0.35 inches which fell on August 25 during a thunderstorm. The record for the most intense five-minute precipitation for Glen Allen was 0.55 inches that occurred on November 15, 2008.

DROUGHT The driest month was February with 1.53 inches of precipitation. February had the longest period without measurable precipitation for 2011 from February 11 to February 21 a period of 11 days. However, the most severe drought conditions occurred from July 10 to July 22 when only 0.01 inches rainfall was recorded in a 13 day period.

SNOW

YEAR The 2011 Glen Allen total snowfall was a mere 1.8 inches. There were only seven days during 2011 that had measurable snowfall and all were very light. The most snow in one storm was only 0.5 inches. December 2011 did not even have a snow flurry. Checking the Richmond records it was found that this had only occurred 12 times in the last 114 years.

MONTH The greatest monthly snowfall total for Glen Allen was only 1.5 inches in the month of January.

STORM The most snow to fall in anyone storm was a mere 0.5 inches that occurred on January 7th.

WIND

YEAR The highest wind gust for the year was 52 mph from the north that occurred on August 27 at 1753 hours.

MONTH The windiest month was April with a wind run of 2773.2 miles.

DAY The windiest day for 2011 was on August 27 when a wind run of 284.1 miles was set during tropical storm Irene. This is a new record wind run for Glen Allen during a calendar day.

BAROMETRIC PRESSURE

YEAR The highest barometric pressure recorded for the year was 30.69 inches of mercury recorded on December 11th. The lowest barometric pressure for the year was 29.20 inches of mercury recorded on August 27th.

MONTH December also had the highest average barometer pressure of 30.18 inches for the month. August had the lowest average barometer reading of 29.88.

RELATIVE HUMIDITY

YEAR February with an average relative humidity of 57.1 was the lowest for any month of 2011. The highest relative humidity was recorded for the month of September with an average relative humidity of 77.2 percent. The lowest relative humidity for the year was 10% recorded on February 19th and the high relative humidity for that day was only 28% in a very dry air mass.

SKY COVER

MONTH September was the cloudiest month of 2011 but January was a close second. The clearest month was July with June and November tied for second place.

SEASON RECORDS

WINTER SEASON - DECEMBER 2010 to FEBRUARY 2011

The season started early as December was the 6th coldest in the past 113 years. Richmond had its most notable storm on the 25th making a white Christmas with 2.7 inches of snow. The Airport had 4.6 inches and in Portsmouth & Norfolk it was nearly a foot of snow. It was the first snow on Christmas Day since 1993 when 0.1 inch occurred but it was the most snow on the 25th since 1962 when 4.3 inches occurred. January was warmer than December but was still a little below average in temperature. The end of winter was very mild as February was much warmer than average. February's mean at Glen Allen was 44.7 °F a +5.7 °F departure and a record warm February for this station. The mean temperature for Richmond was 44.8 °F, the eighth warmest in the past 114 years. Despite the warmth of the winter on January 26 a very heavy convective snow occurred at rush hour in Northern Virginia giving snowfall rates of 2 to 3 inches per hour at the height of the event. The final accumulations weren't that notable with only 3 to 8 inches for much of the Metro area. The timing and the intensity of the snowfall caused traffic gridlock that lasted deep into the night. There were countless reports of commuters needing 5 to 10 hours to get home from work while others abandoned their vehicles.

SPRING SEASON - MARCH to MAY 2011

The spring season was both warmer and wetter than average. The total precipitation at the Glen Allen station for the spring season was 11.81 inches. The most unusual weather in March was the hail that occurred near sunrise on the 21st. A thunderstorm passed north of the Glen Allen station around 7:10 AM and hail lasted about 2 minutes from 7:12 to 7:14 with a diameter of a quarter of an inch to one half of an inch. It is interesting to have hail with almost no wind or rain and to have the precipitation start as hail and to occur around sunrise.

On March 10 in the Baltimore-Washington forecast area had two tornadoes that damaged multiple structures near Chantilly, Virginia.

April was very warm and windy; the maximum temperature for April was 88° on the 24th and five days that had 85 °F. Thunderstorms on the April 16th gave Glen Allen 1.08 inches of rain with widespread rainfall amounts of 1 to 3 inches and local amounts of over 5 inches in the Blue Ridge. Rescues were necessary and roads were washed out in Frederick County, Maryland. Bridges were overtopped by water in Warren and Clark County and four tornadoes reported in the forecast area with two in Northern Virginia and two in Maryland. On April 27 in a 20 hour period the Baltimore-Washington Weather Service issued 38 tornado warnings. This ranks second in the total number of tornado warnings compared to the previous 43 tornado warnings issued on September 17, 2004 as a result of the remnants of hurricane Ivan moving through the area.

SUMMER SEASON - JUNE to AUGUST 2011

Richmond reported the mean temperature for June of 78° which tied for eighth place for the warmest since records started in 1880. Both 1880 and 1990 had a mean temperature of 78°F. On July 12, 2011 the Richmond Airport recorded an 81 °F minimum temperature which is the warmest night ever recorded for Richmond, Virginia. July was the third warmest for Richmond with last year being the warmest and 1993 second warmest in the past 114 years. July was the hottest month ever in Washington- Baltimore area. Also noteworthy at Reagan National Airport on four consecutive days the thermometer never dropped below 80°F. Also the temperature of 106°F recorded at Baltimore-Washington International Airport on the 22nd tied for the second highest daily temperature on record for Baltimore. The summer was the second hottest on record for Washington and for Dulles. On July 8 Glen Allen had a thunderstorm that gave 1.71 inches of rain and to the north flash floods occurred. In north central Maryland from Frederick to Baltimore down to Annapolis, rain rates of over 1 inch per hour with rainfall totals of around 3 inches were observed in a short period of time. August was much above in rainfall due to Hurricane Irene. Irene also gave a wind gust of 52 mph on the 27th which is a new record for the Glen Allen station. Richmond had 7.10 inches of rain for August making it the 25th wettest August in the past 125 years. On August 27 the Richmond Airport reported 5.36 inches of rain the most to fall on an August day since August 30, 2000 when 6.68 inches was recorded. To the north Irene's main impact was flooding. This is especially true for southern Maryland where tropical force winds and 8 to 12 inches of rain pounded the area.

FALL SEASON - SEPTEMBER to NOVEMBER 2011

The fall season was also above average in rainfall and temperature. On September 5th through the 9th more flooding occurred from the remnants of Tropical Storm Lee. The Glen Allen station recorded 4.70 inches of rain from this event. During the same period rainfall totals, especially in northern Virginia and lower southern Maryland and north central Maryland, where 10 to 20 inches of rainfall in just these few days caused major flooding. Richmond did not record any snow on October 29 however there was a little sleet mixed in with the rain for those that were very observant in the western Henrico County area. But areas like Westminster, Maryland and Winchester, Virginia saw 3 to 5 inches of snow. This event set new daily snowfall records at all three airports in Northern Virginia. This was the earliest snow for many areas of Northern Virginia and Maryland since the October 10th storm of 1979. Extreme long periods of power outages occurred in Connecticut and New England lasting about two weeks.