

Weather of 2011: Warm, Wet and Wild

2011 became infamous for natural disasters. Deadly earthquakes and tsunamis were soon followed by a series of some of the costliest and deadliest tornado outbreaks in the U.S. Then, after another summer of scorching record heat, back-to-back tropical systems dumped historic amounts of rain over the eastern half of Pennsylvania, leading to devastating floods. A record October snow storm also hammered much of the state.

New Year's Day was deceptively mild. It was the only day in January without sub-freezing temperatures. The rest of the month was simply brutal, with all but 3 of the last 27 days failing to reach above freezing. Meanwhile, howling winds and nearly continuous lake-effect snow hammered the area. From the 6th on, measurable snow fell on all but one day! The heaviest event was from the 11th-13th when 15.5" fell. An Arctic front late in the month led to a frigid low of -7 on the 24th. 49.1" of snow fell in January.

A ferocious blizzard roared across the middle of the country at the beginning of February. While 2+ feet of snow pounded the Midwest, our area endured an ice storm. Unlike January, temperatures in February were quite mild, with only a handful of days below freezing and little snowfall. However, another major winter storm dumped heavy sleet and snow on the 21st-22nd with 11.7" of snow/ice and 1.67" of precipitation. Heavy rain fell on the 25th, followed by a strong thunderstorm with hail and damaging winds on the 28th. 70% of the month's 5.37" of precipitation fell in the final nine days.

March came in like a lamb and went out like a lion. After a quiet first few days, a cold front on the 6th brought rain and snow. Torrential rains, totaling 2.45", fell on the 10th. A total of 3.25" of precipitation and 3.3" of snow fell March 9-11. The 3rd week of March was balmy, with temperatures reaching 70 on the 18th. A cold front on the 23rd brought a cluster of thunderstorms, one of which produced an EF-2 tornado that ravaged the Greensburg area to our west. March finished with sleet, snow & ice on the 30th-31st.

April had a winter-like start, with 4.5" of snow on the first two days. However, spring quickly came back on the 4th, which had a high of 71 and several strong thunderstorms. On the 10th, the high reached 80. Otherwise, incessant rains and turbulent spring thunderstorms rumbled across much of the state. On the 26th, I encountered one of the most severe thunderstorms I have ever seen, along Route 22 near the top of Rager Mountain. This storm had golf ball sized hail, buckets of rain and low, rotating clouds. The following 2 days, 7 tornadoes hit central PA. From April 25th-28th, an incredible 359 tornadoes hit the southern & eastern U.S., surpassing the April 3-4, 1974 "Super Outbreak." It was also the deadliest tornado outbreak since 1925, with at least 340 deaths.

May wasn't much calmer. 17 more tornadoes touched down in Pennsylvania throughout the month, often in remote mountain locations that very rarely see tornadoes. Most of these tornadoes occurred during the 4th week, when another massive outbreak hit the U.S., most notably Joplin, MO, where an EF5 twister devastated the city and killed over 160 people. Here, five consecutive days from the 23rd-27th had thunder, with nearly 2.5" of rainfall. The worst of the storms occurred on the 26th-27th in neighboring counties to the south & east, where very large hail, flooding rains and multiple tornadoes occurred. May ended on a hot note, with highs reaching 90 or higher the final 3 days.

A long, hot and dry spell began Memorial Day weekend. The 2nd week of June was the month's most active, with thunder observed on 4 days, and a very hot 93 on the

8th. There was a cooling trend, with a cool 63 on the 14th. Despite 10 days with thunder, June's weather was generally warm and uneventful, with well below normal rainfall.

Like January, July was brutal, but for opposite reasons. Temperatures reached 80 or higher on all but one day. 90+ readings occurred on 18 days, 9 consecutively from the 16th-24th. An extreme heat wave pushed the mercury to a rare 100 on the 22nd, along with a heat index of 119. Lawns baked due to the heat and lack of rain. Cooling thunderstorms finally reached the area on the 25th and 28th, before a very hot finish to July.

A number of drenching thunderstorms in August quelled developing drought conditions. Early on the 7th, a thunderstorm dumped an inch of rain in 15 minutes, and on the 9th, two strong storms dropped a combined 1.69" of rain. Strong thunderstorms also occurred the 14th-15th (1.22") and 25th (1.07"). On the 23rd, a rare 5.8-magnitude earthquake, centered over central VA, shook the entire eastern U.S. and even parts of southeast Canada. This event was quickly forgotten, however, as Hurricane Irene roared up the east coast, battering areas from North Carolina to Vermont with severe winds, torrential rains and flooding. Eastern PA suffered major flooding. While we were unscathed, several weather stations around Philadelphia had over 20" of rain in August!

The very active tropical season didn't let up in September, which started with sizzling hot temperatures in the 90s, before the remnants of Tropical Storm Lee stalled over the state from the 4th-10th, bringing more extreme amounts of rain and disastrous flooding to eastern PA, most notably along the Susquehanna River valley. Nearly six inches of rain fell here in Johnstown, with a nearby CoCoRaHS station recording over 8 inches from the storm and a whopping 12.28" of rain for the month. Several more modest rain and thunderstorm events in the area brought the month's total rain to 9.37", our wettest September on record. Areas around Harrisburg that were hit by Lee's training bands of torrential rains and many other big storms had 20+ inches of rain. Parts of eastern PA had more rain in August and September combined than in some entire years!

October began wet – and ended white. Over 2" of cold rain fell the first 3 days. On the 2nd, very early season snowflakes mixed in. Some of the higher elevations had their earliest measurable snowfall on record. However, temperatures quickly rebounded, reaching the 80s on the 8th and 9th. Rain was quite frequent again from the 12th on, with a couple of thunderstorms thrown in. The season's first frost and freeze didn't occur until the 23rd, but ironically, a very early, historic snow storm pummeled the state on the 29th. 11" of heavy, wet snow fell here, with over a foot at some higher elevations. The weight of the snow caused much damage and knocked power out for days in some areas. In records dating back to the late 1800s, there has been no other storm like it in October.

After the very early winter storm, the weather finally quieted down. November began mild, sunny and dry, with very little precipitation until the end of the 2nd week. A couple of heavy rain events during the middle and latter parts of the month pushed precipitation above normal again. While October was the first month since March with below normal temperatures, November's temperatures averaged 3.5°F above normal.

The damp, mild conditions continued into December, which, like most 2011 months, had above normal precipitation and temperatures. After virtually no snow in November, only 7.7" of snow was recorded in December and didn't stay on the ground long. There was a lack of any Arctic air, with only 4 sub-20 readings, and temperatures in December were much above normal, and 2011 finished with much above normal temperatures and precipitation. 56 days in 2011 had thunder – a very stormy year also.

2011 Westmont/Johnstown Area Weather Statistics

2011 Monthly and Annual Climate Summary											
Westmont 1 W, PA, Cambria County											
Observer Nate Mullins											
Station Observation Time: Midnight											
Lat: 40.317°, Long: - 78.974°, Elevation 1909'											
Temperature, ° F								Number of days			
Month	Mean Max	Mean Min	Mean Temp	Departure	Max Temp	Date	Min Temp	Date	Max ≥ 90	Max ≤ 32	Min ≤ 32
Jan	27.9	14.7	21.3	-4.6	47	1	-7	24	0	24	30
Feb	39.8	20.8	30.3	1.8	63	18	5	10	0	6	24
Mar	45.3	26.7	36.5	-0.9	70	18	10	3	0	1	23
Apr	60.6	41.3	51.0	2.6	83	27*	30	2*	0	0	4
May	72.5	52.1	62.3	3.6	92	31	37	6*	3	0	0
Jun	79.9	56.4	68.1	1.4	93	8	44	15*	2	0	0
Jul	89.6	62.1	75.8	5.1	100	22	50	2	18	0	0
Aug	81.6	59.0	70.3	1.3	91	4*	46	30*	4	0	0
Sep	72.0	55.1	63.6	1.2	95	3	40	16	2	0	0
Oct	58.3	41.2	49.7	-1.3	84	9	27	30	0	0	6
Nov	53.8	35.3	44.6	3.5	69	8	22	18	0	0	11
Dec	41.8	27.7	34.7	4.4	60	5	13	11	0	4	24
Year	60.3	41.0	50.7	1.5	100	7/22	-7	1/24	29	35	122
Precipitation, Inches				Number of days				Snow/ice, Inches			
Month	Total Precip	Departure	Max Day	Date	0.01" ≥	0.10" ≥	0.50" ≥	1.00" ≥	Total Snow	Max Day	Date
Jan	3.08	-0.73	0.42	26	26	12	0	0	49.1	7.5	12
Feb	5.37	1.95	1.52	21	16	12	3	2	18.6	10.0	21
Mar	6.67	2.80	2.45	10	13	12	4	2	9.5	2.3	11
Apr	7.84	4.03	1.00	16	21	16	6	1	4.5	2.8	2
May	5.24	0.93	1.02	25	17	13	4	1	0.0	-	-
Jun	2.32	-2.54	0.52	9	15	9	1	0	0.0	-	-
Jul	3.10	-2.01	0.82	25	10	6	3	0	0.0	-	-
Aug	6.90	2.80	1.69	9	15	11	5	3	0.0	-	-
Sep	9.37	5.22	1.89	6	16	15	6	2	0.0	-	-
Oct	6.45	3.18	1.21	2	17	15	5	1	11.0	10.8	29
Nov	4.62	0.97	1.53	22	13	9	2	1	0.7	0.6	11
Dec	4.25	0.92	1.06	7	16	10	3	1	7.7	3.0	17
Year	65.21	17.52	2.45	3/10	195	140	42	14	101.1	10.8	10/29
Note: * = also occurred on earlier dates that month											

Month	Special Obs - Number of days with:						Monthly summary comments
	Fog	Sleet	Glaze	Thunder	Hail	Dmg wind	
Jan	3	7	1	0	0	0	Very cold, snowy, windy, blustery
Feb	8	7	2	2	1	2	Variable, windy, wet/stormy, mild
Mar	9	4	1	2	1	1	Yo-yo temps, breezy, heavy rains
Apr	13	1	0	9	1	1	Early snow, very wet and stormy
May	12	0	0	7	0	0	Mild, frequent rains, hot finish
Jun	6	0	0	10	1	0	Warm, dry, many small t-storms
Jul	10	0	0	9	0	0	Extreme heat, dry until final week
Aug	9	0	0	9	0	0	Heavy t-storms, cooler, Irene east
Sep	15	0	0	6	0	0	Mild, very wet, Tropical Storm Lee
Oct	9	0	0	2	0	1	Variable, cool, wet, record snow
Nov	8	2	0	0	0	0	Mild all month, fair start, then wet
Dec	7	6	1	0	0	0	Mild, frequent precip, little snow
Year	109	27	5	56	4	5	Very wet & stormy, very warm