

# DOWNTOWN SOUTH

*RALEIGH, NORTH CAROLINA*

## DEVELOPMENT OF SYNTHETIC SUMMER THUNDERSTORM AND HURRICANE

PROJECT NUMBER: KAN-19020  
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## DOWNTOWN SOUTH

### *Development of Synthetic Summer Thunderstorm and Hurricane*

#### GENERAL DESCRIPTION

The Downtown South development will encompass several parcels located between Lake Wheeler Road and S. Wilmington Street along the I-40 corridor. Proposed development for Downtown South will be a mixed-use development combining lodging, retail, multi-family residential, recreation, and other uses. Both proprietary and green stormwater infrastructure (GSI) techniques will be implemented to improve the water quality of stormwater runoff in the post-development condition. The purpose of this memo is to document the data utilized and calculation methodology for the development of a synthetic, representative summer thunderstorm event and a synthetic hurricane event; each to be used as part of subsequent pre- vs. post-development downstream impact analyses for each phase of the Downtown South development.

#### GENERAL METHODOLOGY

The general approach taken to develop a representative summer thunderstorm and hurricane event, each to be applied across the Walnut Creek watershed as part of subsequent pre- vs. post-development downstream impact analyses, was to analyze rainfall data from a sample of historic precipitation events recorded by both USGS gage stations and rain gages listed within the North Carolina State Climate Office. Rainfall data recorded for the sample of historic precipitation events was analyzed to determine the average rainfall depth, duration, distribution, and storm movement across the Walnut Creek watershed (i.e., lateral velocity) if evident.

#### Synthetic Summer Thunderstorm

- Historic rainfall data was downloaded and compiled for the following USGS gage stations and sample storm events:

Table 1. USGS Gage Stations and Sample Storms

USGS Gage Stations	Sample Storm
02087337 (Walnut Creek at Buck Jones Rd)	8/20/2018
0208734210 (Walnut Creek at Trailwood Drive)	11/13/2018
0208734795 (Walnut Creek at S. Wilmington St)	4/8/2018
02087359 (Walnut Creek at Sunnybrook Dr)	8/2/2019
	5/29/2020
	9/1/2020
	11/12/2020

- The total precipitation depth and duration was calculated at each of the above referenced USGS gage stations for each of the sample storm events.
- The average precipitation depth and duration was calculated, which excluded the total rainfall depth of 0.08 inches and duration of 75 minutes observed at the Sunnybrook Dr. gage during the 8/2/2019 storm. The 11/13/2018 and 5/29/2020 storm events exhibited much longer rainfall durations (over 900 minutes and 700 minutes, respectively) and were also omitted from the calculation of the average precipitation depth and

duration. These two storm events exhibited more of a slow and steady rain rather than a typical flashy summer thunderstorm, which was the concern of this project type.

- The average velocity of the synthetic summer thunderstorm was calculated by identifying the time delay in the peak intensity of each of the seven sample storm events as they progressed from the most upstream USGS gage **02087337** (Walnut Creek at Buck Jones Rd) to the most downstream USGS gage **02087359** (Walnut Creek at Sunnybrook Dr). River station numbers from the effective HEC-RAS model for Walnut Creek were used to determine the approximate distance between each USGS gage.
  - Any calculations that yielded either a 0 or negative time difference in the peak intensity were disregarded for calculation of the average velocity. This is noted by the cells highlighted orange in the calculations provided in Section 1 of the enclosed report.
- The percent total duration and percent total precipitation was calculated at each USGS gage time increment recorded for the sample storm events. The percent total precipitation was first calculated by tabulating the cumulative precipitation depth at each time increment and dividing by the total rainfall depth. The percent total duration was calculated by first tabulating the cumulative duration at each time increment and dividing by the total rainfall duration. The calculation of percent total duration and percent total precipitation for each of the sample storms was completed to get dimensionless unit hyetographs (unit intensity over unit time) that would be utilized to determine a representative average between the sample storms.
- The rainfall distribution (to be applied to the synthetic summer thunderstorm) was generated by plotting the percent total duration (“T/TTotal”) vs. percent total precipitation (“P/PTotal”) at each of the above referenced USGS gages for each of the sample storm events. The 11/13/2018 and 5/29/2020 storms were omitted from development of the rainfall distribution since they were determined to not be characteristic of a typical summer thunderstorm. All “T/TTotal” and “P/PTotal” values were plotted and a line of best fit was generated to represent the characteristic average.
- The line of best fit equation was applied to determine a representative dimensionless unit hyetograph that would be applied for the summer thunderstorm. The appropriate “T/TTotal” and “P/PTotal” for each 5-minute increment of the synthetic summer thunderstorm. Each incremental “P/PTotal” value was then multiplied by the average total precipitation depth of 2.54 inches to determine the precipitation depth to be applied at each 5-minute increment.
- The resulting final rainfall distribution, which incorporates the previously determined rainfall depth of 2.54 inches and duration of 4.5 hours, can be applied to each of the above referenced USGS gages utilizing the average storm velocity of 12 miles per hour, the distance between the gages, and movement of the storm from west to east over the Walnut Creek watershed. With this information, a typical summer storm can be generated and applied across the Walnut Creek Watershed.

## Synthetic Hurricane

- Historic hourly rainfall data was downloaded from the NC Climate Office for the RDU International Airport Station (ID: KRDU) and the Johnston County Central Crops Research Station (ID: CLAY) for the following Hurricanes: Floyd (September 1999), Fran (September 1996), Florence (September 2018), and Matthew (October 2016).
- The total rainfall duration and depth was calculated for each of the two above referenced rain gages for each of the four above referenced hurricanes. The Johnston County Central Crops Research Station reported negligible rainfall during Matthew and was therefore omitted from the calculation of average rainfall duration and depth.
- The average rainfall depth was calculated to be 6.37 inches and a 10% factor of safety was added to bring the total to 7.0 inches. The 10% was added to account for spatial variability in rainfall and to bring the value closer to rainfall depths recorded at the two above referenced rain gages during hurricane Floyd, also a two-day event.
  - The RDU International Airport station and Johnston County Central Crops Research Station received 6.49 inches and 7.33 inches, respectively, of rain during hurricane Floyd.
- The rainfall distribution (to be applied to the synthetic hurricane) was generated by plotting the percent total duration (“T/TTotal”) vs. percent total precipitation (“P/PTotal”) at each of the two above referenced USGS gages for each of the four above referenced hurricanes. Since the Johnston County Central Crops Research Station reported negligible rainfall during hurricane Matthew, that dataset as omitted. All “T/TTotal” and “P/PTotal” values were plotted and a line of best fit was generated to represent the characteristic average.
- The line of best fit equation was applied to determine the appropriate “T/TTotal” and “P/PTotal” for each 5-minute increment of the synthetic hurricane. Each incremental “P/PTotal” value was then multiplied by the previously determined precipitation depth of 7.0 inches to determine the precipitation depth at each 5-minute increment.
- NOAA was used to research historical hurricane tracks to determine if any translation should be applied to the synthetic hurricane across the Walnut Creek watershed. It was noted that the majority of North Carolina hurricanes exhibited a south-to-north trajectory and would typically not move laterally from east to west across the Walnut Creek watershed. It is anticipated that the final hurricane rainfall distribution will be applied uniformly across the Walnut Creek watershed.

**DISCUSSION OF RESULTS**

Historic rainfall data recorded by USGS gage stations and the NC Climate Office has been utilized to generate a representative summer thunderstorm and hurricane event, which can each be applied across the Walnut Creek watershed as part of subsequent downstream impact analyses associated with the Downtown South development. It should be noted that only a sample of historic rainfall events has been utilized to generate the representative rainfall depth, duration, distribution, and storm velocity (i.e. lateral movement across the watershed) for the synthetic summer thunderstorm and hurricane event. The characteristic dimensionless unit hyetograph of the synthetic summer thunderstorm and hurricane event could be further validated by increasing the sample size of historic rainfall events used for the calculation of representative storm parameters. Specific results for the synthetic summer thunderstorm and hurricane event are described in further detail below.

**Synthetic Summer Thunderstorm**

Table 2 below shows a summary of characteristics determined for the synthetic summer thunderstorm. The total rainfall depth and duration was determined to be 2.68 inches and 4.5 hours, respectively, which falls between a 2- and 5-year storm event for Raleigh, NC. The rainfall distribution (Figure 1 below) shows that the peak intensity of about 1.1 inches per hour occurs about 50 minutes from the begin thunderstorm. The average lateral velocity (i.e. movement across the watershed) of the representative summer thunderstorm was determined to be about 12 miles per hour, or 17.5 ft/s; this storm velocity can applied across the Walnut Creek watershed moving from west to east.

Table 2. Synthetic Summer Thunderstorm Characteristics

<b><u>Calculated Average Parameters</u></b>	
-Rainfall Distribution	See Calculations in Section 1
-Rainfall Duration	4 hours and 30 minutes
-Rainfall Depth	2.54"
Storm Velocity	Averages about 12 mi/hr
Buck Jones Rd. Gage	Storm Start at T 0
Lake Johnson Dam Gage	Storm Start at T+15 minutes
Trailwood Dr. Gage	Storm Start at T+20 minutes
S. Wilmington St. Gage	Storm Start at T+40 minutes
S. State St. Gage	Storm Start at T+45 minutes
Sunnybrook Rd. Gage	Storm Start at T+ 60 minutes

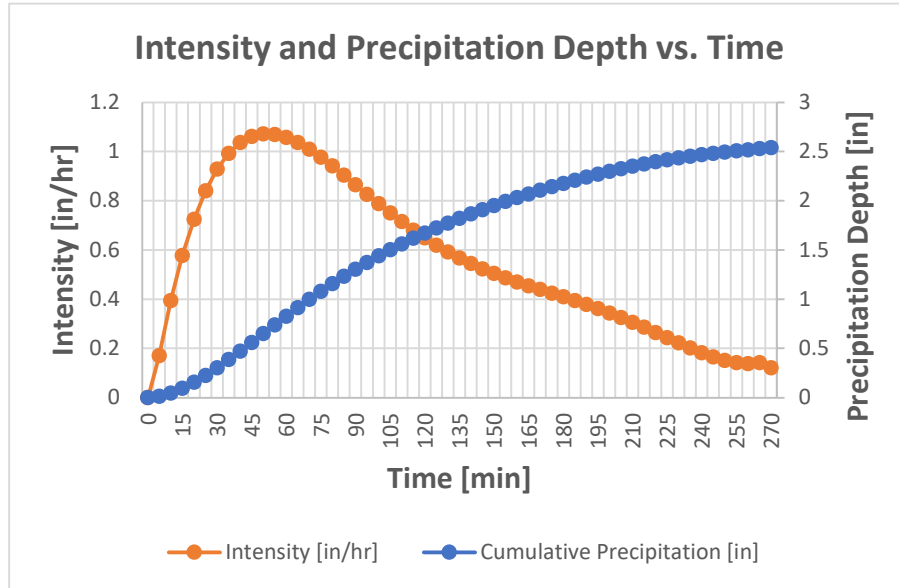


Figure 1. Synthetic Summer Thunderstorm Distribution

### Synthetic Hurricane

Table 3 below shows a summary of characteristics determined for the synthetic hurricane. The total rainfall depth and duration was determined to be 7.0 inches and 48 hours, respectively, which falls between a 25- and 50-year storm event for Raleigh, NC. The rainfall distribution (Figure 1 below) shows that the peak intensity fluctuates throughout the duration of the storm which indicates the effect of banding, the rotation of hurricane “bands” that result in oscillating periods light and heavy rainfall.

Table 3. Synthetic Hurricane Characteristics

<b>Calculated Average Parameters</b>	
-Rainfall Distribution	Fluctuating Intensity
-Rainfall Duration	48 hours
-Rainfall Depth	7.0”, incorporates 10% FS

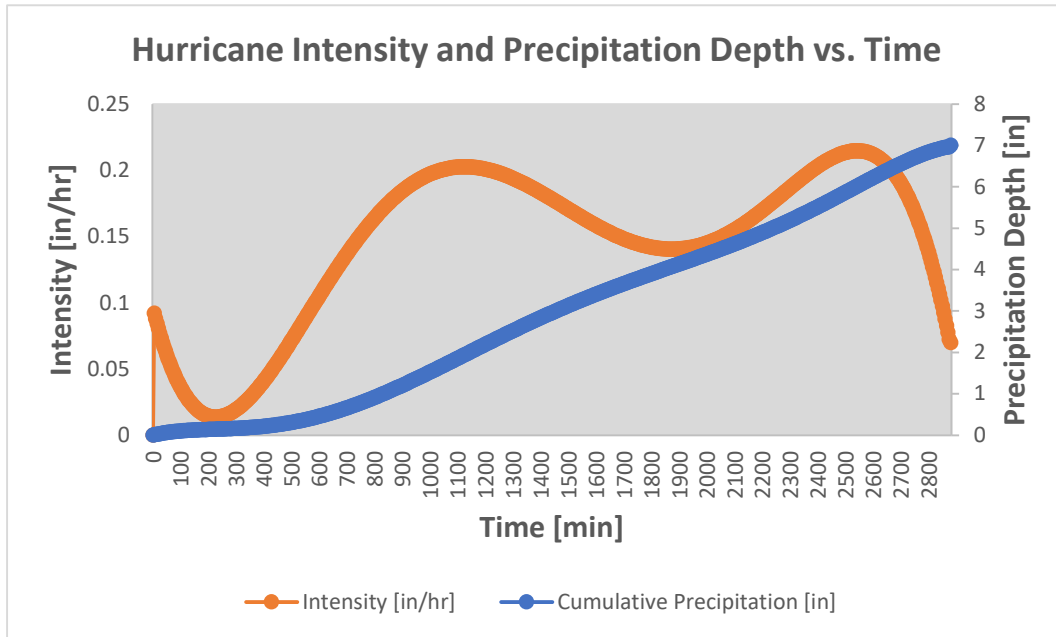


Figure 2. Synthetic Hurricane Distribution

Figure 3 below shows information on historic hurricane trajectories that was gathered from NOAA. With the exception of hurricane Florence, the majority of significant North Carolina hurricanes (including Fran and Floyd) were observed to have exhibited a primarily south-to-north tract. Since the Walnut Creek watershed flows from west to east, it is anticipated that the entire watershed would be impacted simultaneously by a significant hurricane, and very minimal (if any) movement of the storm from east to west would occur. Therefore, it is anticipated that the synthetic hurricane will be applied uniformly to all precipitation gages that are currently being modeled for the downstream analysis.

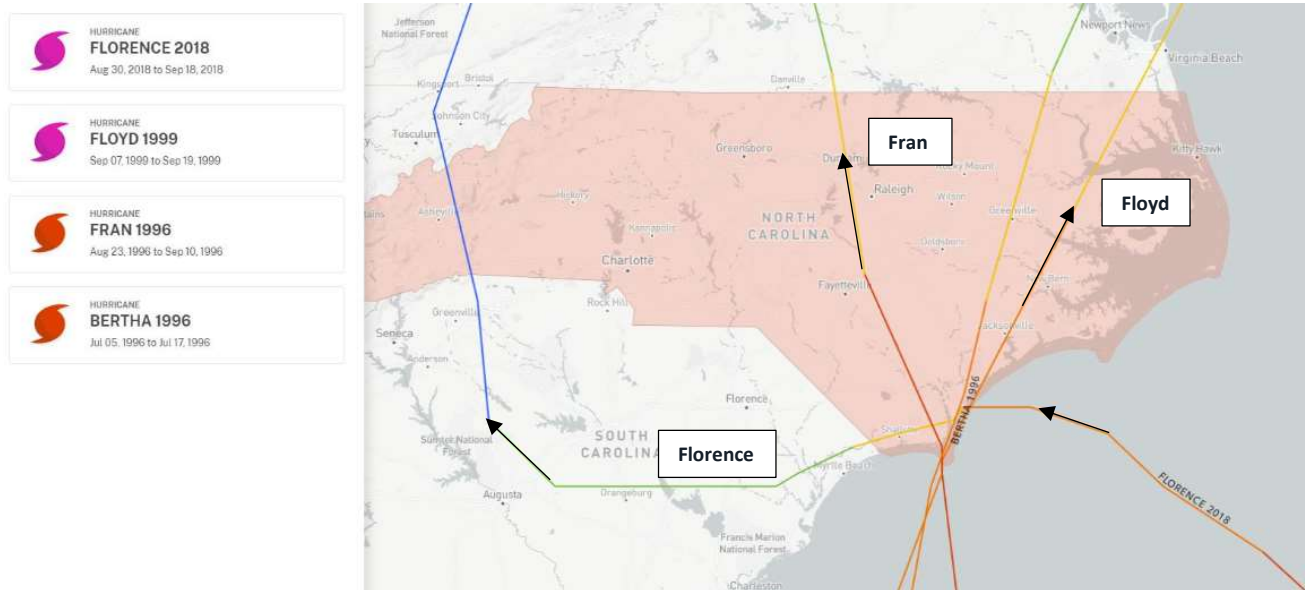


Figure 3. Historic Hurricane Trajectories

<b>1</b>	SYNTHETIC SUMMER THUNDERSTORM CALCULATIONS
<b>2</b>	SYNTHETIC HURRICANE CALCULATIONS



*SYNTHETIC SUMMER THUNDERSTORM  
CALCULATIONS*

## Construction of Synthetic Summer Thunderstorm

Cells highlighted orange indicate values omitted from the calculation

### Calculated Average Parameters

-Rainfall Distribution	
-Rainfall Duration	4 hours and 30 minutes
-Rainfall Depth	2.68"
Storm Velocity	Averages about 12 mi/hr
Buck Jones Rd. Gage	Storm Start at T 0
Lake Johnson Dam Gage	Storm Start at T+15 minutes
Trailwood Dr. Gage	Storm Start at T+20 minutes
S. Wilmington St. Gage	Storm Start at T+40 minutes
S. State St. Gage	Storm Start at T+45 minutes
Sunnybrook Rd. Gage	Storm Start at T+ 60 minutes

USGS Gage Stations	Sample Storm
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	5/29/2020
	9/1/2020
	11/12/2020

### Calculation of Average Rainfall Depth

Storm	Buck Jones Gage Depth [in]	Trailwood Gage Depth [in]	S. Wilmington St. Gage Depth [in]	Sunnybrook Gage Depth [in]
8/20/2018	2.77	3.64	2.75	2.14
11/13/2018	3.63	3.37	3.34	3.02
4/8/2019	1.92	2.13	1.77	1.26
8/2/2019	1.84	1.37	1.4	0.08
5/29/2020	1.96	1.12	0.66	0.67
9/1/2020	2.05	2.78	4.15	4.19
11/12/2020	3.6	4.13	3.48	3.46
<b>Average [inches]</b>	<b>2.68</b>			

### Calculation of Average Rainfall Duration

Storm	Buck Jones Gage Rainfall Duration [min]	Trailwood Gage Rainfall Duration [min]	S. Wilmington St. Gage Rainfall Duration [min]	Sunnybrook Gage Rainfall Duration [min]
8/20/2018	240	240	195	195
11/13/2018	905	920	945	930
4/8/2019	315	325	330	330
8/2/2019	155	165	180	75
5/29/2020	725	710	735	735
9/1/2020	215	225	255	210
11/12/2020	400	425	420	420
<b>Average [minutes]</b>	<b>275.8</b>			

**Calculation of Average Storm Velocity**

Gage Station	Walnut Creek RS	Upstream Distance [ft]	Cumulative Stream Distance [ft]	Translation Time [min]
Buck Jones Rd	86943.9	-	-	Start at T 0
Lake Johnson Dam	73004.1	13939.8	13939.8	13.3
Trailwood Rd	66279.9	6724.2	20664.0	19.7
S. Wilmington St.	45936.1	20343.8	41007.8	39.1
S. State St.	40465.4	5470.7	46478.5	44.3
Sunnybrook Dr.	22534.3	17931.1	64409.6	61.4

Storm	Buck Jones Time of Peak Rainfall	Trailwood Time of Peak Rainfall	S. Wilmington St. Time of Peak Rainfall	Sunnybrook Time of Peak Rainfall
8/20/2018	8/20/2018 0:05	8/20/2018 0:05	8/20/2018 0:30	8/20/2018 0:45
11/13/2018	-	-	-	-
4/8/2019	4/8/2019 19:00	4/8/2019 19:00	4/8/2019 19:15	4/8/2019 19:15
8/2/2019	8/2/2019 19:55	8/2/2019 20:25	8/2/2019 20:30	8/2/2019 20:45
5/29/2020	5/29/2020 6:10	5/29/2020 6:15	5/29/2020 7:00	5/29/2020 7:00
9/1/2020	8/31/2020 22:10	8/31/2020 21:45	8/31/2020 22:15	8/31/2020 22:30
11/12/2020	11/12/2020 8:50	11/12/2020 9:10	11/12/2020 8:15	11/12/2020 9:10

Storm	Buck Jones To Trailwood Travel Time [min]	Trailwood to S. Wilmington St. Travel Time [min]	S. Wilmington St. to Sunnybrook Travel Time [min]
8/20/2018	0	25	15
11/13/2018	-	-	-
4/8/2019	0	15	0
8/2/2019	30	5	15
5/29/2020	5	45	0
9/1/2020	-25	30	15
11/12/2020	20	-55	55
<b>Average Rainfall Delay [min]</b>	<b>18</b>	<b>24</b>	<b>20</b>
<b>Stream Distance Between [ft]</b>	<b>20664.0</b>	<b>20343.8</b>	<b>23401.8</b>
<b>Average Storm Velocity [ft/s]</b>	<b>19</b>	<b>14</b>	<b>20</b>
<b>[mi/hr]</b>	<b>12.8</b>	<b>9.6</b>	<b>13.3</b>

<b>Overall Average Storm Velocity [mi/hr]</b>	12
<b>[ft/s]</b>	17.5

**Calculation of Delay in Peak Discharge**

Storm	Buck Jones Time of Peak Discharge	Trailwood Time of Peak Discharge	S. Wilmington St. Time of Peak Discharge	Sunnybrook Time of Peak Discharge
8/20/2018	8/20/2018 1:20	8/20/2018 1:35	8/20/2018 2:15	8/20/2018 9:00
11/13/2018	11/13/2018 1:35	11/13/2018 2:10	11/13/2018 2:45	11/13/2018 7:00
4/8/2019	4/8/2018 20:30	4/8/2018 21:10	4/8/2018 21:37	4/9/2018 5:15
8/2/2019	8/2/2019 21:12	8/2/2019 21:05	8/2/2019 21:15	8/3/2019 4:45
5/29/2020	5/29/2020 7:20	5/29/2020 8:05	5/29/2020 13:30	5/30/2020 1:00
9/1/2020	9/1/2020 0:45	9/1/2020 1:05	9/1/2020 0:45	9/1/2020 5:50
11/12/2020	11/12/2020 9:25	11/12/2020 10:10	11/12/2020 16:30	11/12/2020 18:00

\*This information indicates delay of peak discharge and not velocity of storm

Storm	Buck Jones To Trailwood Delay [min]	Trailwood to S. Wilmington St. Delay [min]	S. Wilmington St. to Sunnybrook Delay [min]
8/20/2018	15	40	405
11/13/2018	35	35	255
4/8/2019	40	27	458
8/2/2019	-7	10	450
5/29/2020	45	325	690
9/1/2020	20	-20	305
11/12/2020	45	380	90
<b>Average Peak Delay [min]</b>	<b>33</b>	<b>161</b>	<b>427</b>
	<b>30 minutes</b>	<b>2 hours 40 minutes</b>	<b>7 hours 15 minutes</b>

Calculation of Rainfall Distribution

8/20/2018 STORM

Time	Buck Jones Rd T/TTotal	Buck Jones Rd P/PTotal	Trailwood T/Total	Trailwood P/Ptotal	S. Wilmington T/Total	S. Wilmington P/Ptotal	Sunnybrook T/TTotal	Sunnybrook P/PTotal
0	0	0.004385965	0	0.005347594	0	0	0	0
5	0.020833333	0.004385965	0.020833333	0.005347594	-	-	-	-
10	0.041666667	0.00877193	0.041666667	0.00802139	-	-	-	-
15	0.0625	0.00877193	0.0625	0.00802139	0.076923077	0.090909091	0.076923077	0.172566372
20	0.083333333	0.013157895	0.083333333	0.00802139	-	-	-	-
25	0.104166667	0.030701754	0.104166667	0.034759358	-	-	-	-
30	0.125	0.039473684	0.125	0.040106952	0.153846154	0.443636364	0.153846154	0.402654867
35	0.145833333	0.092105263	0.145833333	0.07486631	-	-	-	-
40	0.166666667	0.144736842	0.166666667	0.187165775	-	-	-	-
45	0.1875	0.276315789	0.1875	0.259358289	0.230769231	0.701818182	0.230769231	0.632743363
50	0.208333333	0.346491228	0.208333333	0.347593583	-	-	-	-
55	0.229166667	0.399122807	0.229166667	0.419786096	-	-	-	-
60	0.25	0.464912281	0.25	0.483957219	0.307692308	0.829090909	0.307692308	0.721238938
65	0.270833333	0.486842105	0.270833333	0.513368984	-	-	-	-
70	0.291666667	0.526315789	0.291666667	0.548128342	-	-	-	-
75	0.3125	0.561403509	0.3125	0.590909091	0.384615385	0.927272727	0.384615385	0.880530973
80	0.333333333	0.657894737	0.333333333	0.652406417	-	-	-	-
85	0.354166667	0.675438596	0.354166667	0.679144385	-	-	-	-
90	0.375	0.714912281	0.375	0.711229947	0.461538462	0.963636364	0.461538462	0.969026549
95	0.395833333	0.754385965	0.395833333	0.745989305	-	-	-	-
100	0.416666667	0.815789474	0.416666667	0.783422446	-	-	-	-
105	0.4375	0.859649123	0.4375	0.796791444	0.538461538	0.967272727	0.538461538	0.973451327
110	0.458333333	0.864035088	0.458333333	0.799465241	-	-	-	-
115	0.479166667	0.864035088	0.479166667	0.802139037	-	-	-	-
120	0.5	0.872807018	0.5	0.804812834	0.615384615	0.970909091	0.615384615	0.977876106
125	0.520833333	0.872807018	0.520833333	0.831550802	-	-	-	-
130	0.541666667	0.872807018	0.541666667	0.85026738	-	-	-	-
135	0.5625	0.872807018	0.5625	0.85026738	0.692307692	0.974545455	0.692307692	0.977876106
140	0.583333333	0.877192982	0.583333333	0.860962567	-	-	-	-
145	0.604166667	0.907894737	0.604166667	0.909090909	-	-	-	-
150	0.625	0.938596491	0.625	0.949197861	0.769230769	0.992727273	0.769230769	0.991150442
155	0.645833333	0.942982456	0.645833333	0.973262032	-	-	-	-
160	0.666666667	0.947368421	0.666666667	0.973262032	-	-	-	-
165	0.6875	0.956140351	0.6875	0.973262032	0.846153846	0.992727273	0.846153846	0.995575221
170	0.708333333	0.960526316	0.708333333	0.973262032	-	-	-	-
175	0.729166667	0.960526316	0.729166667	0.973262032	-	-	-	-
180	0.75	0.960526316	0.75	0.973262032	0.923076923	0.996363636	0.923076923	0.995575221
185	0.770833333	0.964912281	0.770833333	0.973262032	-	-	-	-
190	0.791666667	0.978070175	0.791666667	0.973262032	-	-	-	-
195	0.8125	0.978070175	0.8125	0.975935829	1	1	1	1
200	0.833333333	0.98245614	0.833333333	0.978609626	-	-	-	-
205	0.854166667	0.986842105	0.854166667	0.978609626	-	-	-	-
210	0.875	0.986842105	0.875	0.981283422	-	-	-	-
215	0.895833333	0.986842105	0.895833333	0.983957219	-	-	-	-
220	0.916666667	0.99122807	0.916666667	0.986631016	-	-	-	-
225	0.9375	0.995614035	0.9375	0.989304813	-	-	-	-
230	0.958333333	0.995614035	0.958333333	0.994652406	-	-	-	-
235	0.979166667	0.995614035	0.979166667	0.997326203	-	-	-	-
240	1	1	1	1	-	-	-	-

4/8/2019 STORM

Time	Buck Jones Rd T/TTotal	Buck Jones Rd P/PTotal	Trailwood T/Total	Trailwood P/Ptotal	S. Wilmington T/Total	S. Wilmington P/Ptotal	Sunnybrook T/TTotal	Sunnybrook P/PTotal
0	0	0	0	0.004694836	0	0.005649718	0	0.023809524
5	0.015873016	0.005555556	0.015384615	0.004694836	-	-	-	-
10	0.031746032	0.011111111	0.030769231	0.009389671	-	-	-	-
15	0.047619048	0.022222222	0.046153846	0.014084507	0.045454545	0.02259887	0.045454545	0.055555556
20	0.063492063	0.05	0.061538462	0.070422535	-	-	-	-
25	0.079365079	0.055555556	0.076923077	0.122065728	-	-	-	-
30	0.095238095	0.061111111	0.092307692	0.126760563	0.090909091	0.084745763	0.090909091	0.071428571
35	0.111111111	0.061111111	0.107692308	0.126760563	-	-	-	-
40	0.126984127	0.066666667	0.123076923	0.126760563	-	-	-	-
45	0.142857143	0.066666667	0.138461538	0.131455399	0.136363636	0.09039548	0.136363636	0.095238095
50	0.158730159	0.066666667	0.153846154	0.131455399	-	-	-	-
55	0.174603175	0.066666667	0.169230769	0.131455399	-	-	-	-
60	0.19047619	0.066666667	0.184615385	0.131455399	0.181818182	0.129943503	0.181818182	0.103174603
65	0.206349206	0.066666667	0.2	0.131455399	-	-	-	-
70	0.222222222	0.066666667	0.215384615	0.131455399	-	-	-	-
75	0.238095238	0.072222222	0.230769231	0.230769231	0.227272727	0.129943503	0.227272727	0.103174603
80	0.253968254	0.116666667	0.246153846	0.131455399	-	-	-	-
85	0.26984127	0.2	0.261538462	0.154929577	-	-	-	-
90	0.285714286	0.322222222	0.276923077	0.267605634	0.272727273	0.13559322	0.272727273	0.420634921
95	0.301587302	0.372222222	0.292307692	0.366197183	-	-	-	-
100	0.317460317	0.416666667	0.307692308	0.41314554	-	-	-	-
105	0.333333333	0.438888889	0.323076923	0.464788732	0.318181818	0.372881356	0.318181818	0.5
110	0.349206349	0.444444444	0.338461538	0.474178404	-	-	-	-
115	0.365079365	0.477777778	0.353846154	0.483568075	-	-	-	-
120	0.380952381	0.5	0.369230769	0.502347418	0.363636364	0.435028249	0.363636364	0.531746032
125	0.396825397	0.533333333	0.384615385	0.525821596	-	-	-	-
130	0.412698413	0.561111111	0.4	0.544600939	-	-	-	-
135	0.428571429	0.577777778	0.415384615	0.563380282	0.409090909	0.480225989	0.409090909	0.547619048
140	0.444444444	0.627777778	0.430769231	0.582159624	-	-	-	-
145	0.46031746	0.677777778	0.446153846	0.615023474	-	-	-	-
150	0.476190476	0.716666667	0.461538462	0.694835681	0.454545455	0.564971751	0.454545455	0.626984127
155	0.492063492	0.744444444	0.476923077	0.737089202	-	-	-	-
160	0.507936508	0.766666667	0.492307692	0.755868545	-	-	-	-
165	0.523809524	0.783333333	0.507692308	0.779342723	0.5	0.694915254	0.5	0.746031746
170	0.53968254	0.8	0.523076923	0.812206573	-	-	-	-
175	0.555555556	0.811111111	0.538461538	0.845070423	-	-	-	-
180	0.571428571	0.827777778	0.553846154	0.854460094	0.545454545	0.81920904	0.545454545	0.793650794
185	0.587301587	0.833333333	0.569230769	0.863849765	-	-	-	-
190	0.603174603	0.838888889	0.584615385	0.868544601	-	-	-	-
195	0.619047619	0.85	0.6	0.873239437	0.590909091	0.847457627	0.590909091	0.825396825
200	0.634920635	0.861111111	0.615384615	0.882629108	-	-	-	-
205	0.650793651	0.866666667	0.630769231	0.887323944	-	-	-	-
210	0.666666667	0.877777778	0.646153846	0.892018779	0.636363636	0.875706215	0.636363636	0.865079365
215	0.682539683	0.888888889	0.661538462	0.901408451	-	-	-	-
220	0.698412698	0.9	0.676923077	0.910798122	-	-	-	-
225	0.714285714	0.911111111	0.692307692	0.920187793	0.681818182	0.90960452	0.681818182	0.928571429
230	0.73015873	0.922222222	0.707692308	0.9342723	-	-	-	-
235	0.746031746	0.927777778	0.723076923	0.938967136	-	-	-	-
240	0.761904762	0.933333333	0.738461538	0.943661972	0.727272727	0.943502825	0.727272727	0.936507937
245	0.777777778	0.933333333	0.753846154	0.943661972	-	-	-	-
250	0.793650794	0.938888889	0.769230769	0.948356808	-	-	-	-
255	0.80952381	0.944444444	0.784615385	0.953051643	0.772727273	0.95480226	0.772727273	0.952380952
260	0.825396825	0.955555556	0.8	0.957746479	-	-	-	-
265	0.841269841	0.961111111	0.815384615	0.96713615	-	-	-	-
270	0.857142857	0.972222222	0.830769231	0.971830986	0.818181818	0.971751412	0.818181818	0.976190476
275	0.873015873	0.977777778	0.846153846	0.981220657	-	-	-	-
280	0.888888889	0.983333333	0.861538462	0.985915493	-	-	-	-
285	0.904761905	0.988888889	0.876923077	0.985915493	0.863636364	0.988700565	0.863636364	0.984126984
290	0.920634921	0.988888889	0.892307692	0.990610329	-	-	-	-
295	0.936507937	0.994444444	0.907692308	0.990610329	-	-	-	-
300	0.952380952	0.994444444	0.923076923	0.990610329	0.909090909	0.994350282	0.909090909	0.992063492
305	0.968253968	0.994444444	0.938461538	0.995305164	-	-	-	-
310	0.984126984	0.994444444	0.953846154	0.995305164	-	-	-	-
315	1	1	0.969230769	0.995305164	0.954545455	0.994350282	0.954545455	0.992063492
320	-	-	0.984615385	0.995305164	-	-	-	-
325	-	-	1	1	-	-	-	-
330	-	-	-	-	1	1	1	1

8/2/2019 STORM

Time	Buck Jones Rd T/TTotal	Buck Jones Rd P/PTotal	Trailwood T/Total	Trailwood P/Ptotal	S. Wilmington T/Total	S. Wilmington P/Ptotal	Sunnybrook T/TTotal	Sunnybrook P/PTotal
0	0	0.027322404	0	0.007352941	0	0.007142857	0	0.285714286
5	0.032258065	0.027322404	0.03030303	0.022058824	-	-	-	-
10	0.064516129	0.027322404	0.060606061	0.022058824	-	-	-	-
15	0.096774194	0.049180328	0.090909091	0.029411765	0.083333333	0.2	0.2	0.714285714
20	0.129032258	0.131147541	0.121212121	0.029411765	-	-	-	-
25	0.161290323	0.202185792	0.151515152	0.029411765	-	-	-	-
30	0.193548387	0.344262295	0.181818182	0.029411765	0.166666667	0.2	0.4	0.714285714
35	0.225806452	0.469945355	0.212121212	0.029411765	-	-	-	-
40	0.258064516	0.612021858	0.242424242	0.073529412	-	-	-	-
45	0.290322581	0.74863388	0.272727273	0.154411765	0.25	0.35	0.6	0.714285714
50	0.322580645	0.81420765	0.303030303	0.220588235	-	-	-	-
55	0.35483871	0.846994536	0.333333333	0.330882353	-	-	-	-
60	0.387096774	0.863387978	0.363636364	0.426470588	0.333333333	0.385714286	0.8	0.857142857
65	0.419354839	0.879781421	0.393939394	0.522058824	-	-	-	-
70	0.451612903	0.907103825	0.424242424	0.588235294	-	-	-	-
75	0.483870968	0.93442623	0.454545455	0.727941176	0.416666667	0.578571429	1	1
80	0.516129032	0.945355191	0.484848485	0.727941176	-	-	-	-
85	0.548387097	0.950819672	0.515151515	0.801470588	-	-	-	-
90	0.580645161	0.956284153	0.545454545	0.889705882	0.5	0.807142857	-	-
95	0.612903226	0.956284153	0.575757576	0.911764706	-	-	-	-
100	0.64516129	0.956284153	0.606060606	0.933823529	-	-	-	-
105	0.677419355	0.956284153	0.636363636	0.955882353	0.583333333	0.921428571	-	-
110	0.709677419	0.956284153	0.666666667	0.970588235	-	-	-	-
115	0.741935484	0.961748634	0.696969697	0.970588235	-	-	-	-
120	0.774193548	0.967213115	0.727272727	0.970588235	0.666666667	0.957142857	-	-
125	0.806451613	0.972677596	0.757575758	0.977941176	-	-	-	-
130	0.838709677	0.983606557	0.787878788	0.977941176	-	-	-	-
135	0.870967742	0.983606557	0.818181818	0.977941176	0.75	0.971428571	-	-
140	0.903225806	0.989071038	0.848484848	0.977941176	-	-	-	-
145	0.935483871	0.994535519	0.878787879	0.985294118	-	-	-	-
150	0.967741935	0.994535519	0.909090909	0.992647059	0.833333333	0.978571429	-	-
155	1	1	0.939393939	0.992647059	-	-	-	-
160	-	-	0.96969697	0.992647059	-	-	-	-
165	-	-	1	1	0.916666667	0.992857143	-	-
170	-	-	-	-	-	-	-	-
175	-	-	-	-	-	-	-	-
180	-	-	-	-	1	1	-	-



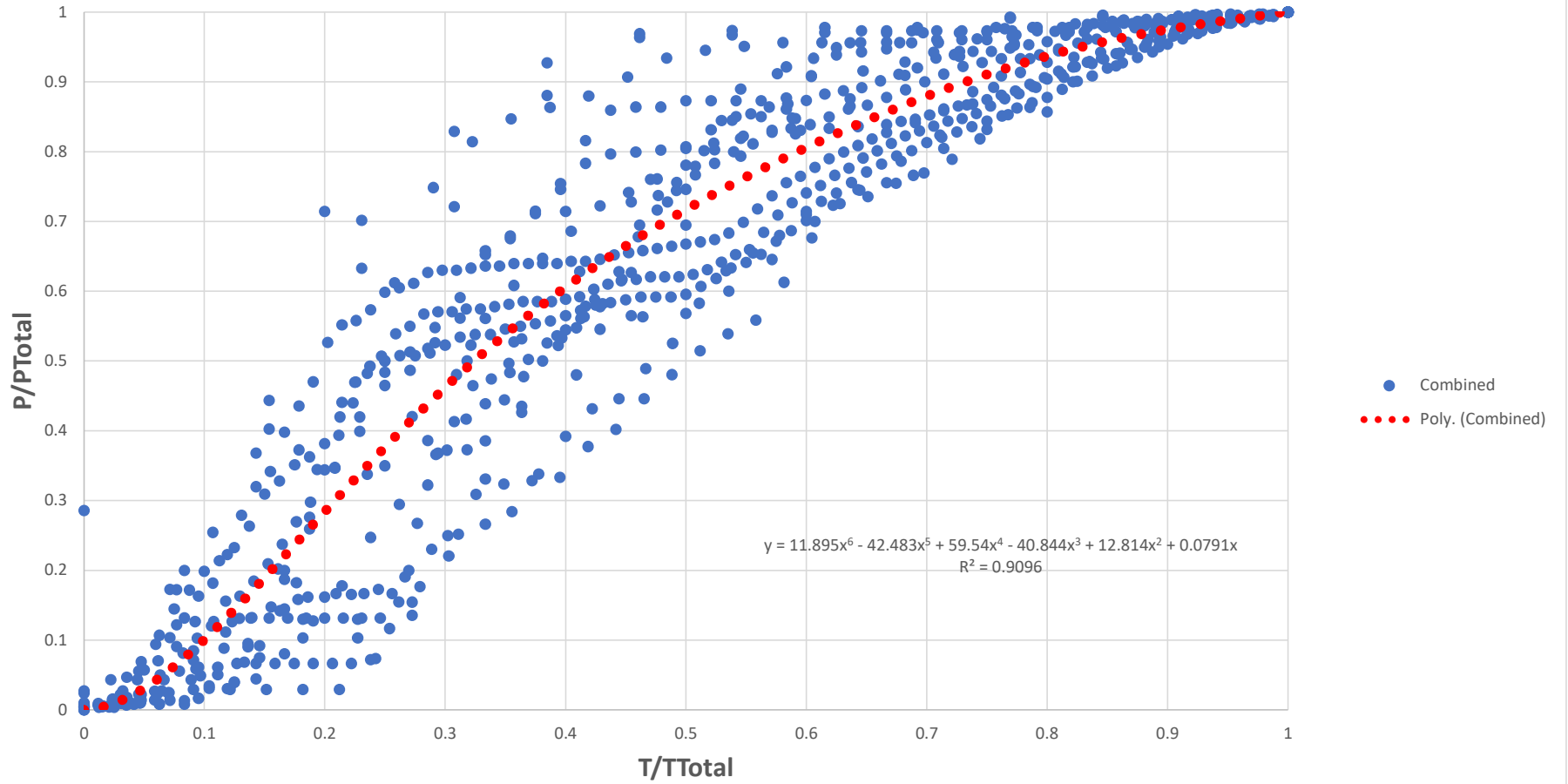


11/12/2020 STORM

Time	Buck Jones Rd T/TTotal	Buck Jones Rd P/PTotal	Trailwood T/Total	Trailwood P/Ptotal	S. Wilmington T/Total	S. Wilmington P/Ptotal	Sunnybrook T/TTotal	Sunnybrook P/PTotal
0	0	0.003816794	0	0.003546099	0	0.004545455	0	0.003134796
5	0.0125	0.003816794	0.011764706	0.007092199	-	-	0.011904762	0.009404389
10	0.025	0.003816794	0.023529412	0.007092199	-	-	0.023809524	0.015673981
15	0.0375	0.011450382	0.035294118	0.007092199	0.035714286	0.018181818	0.035714286	0.047021944
20	0.05	0.057251908	0.047058824	0.010638298	-	-	0.047619048	0.068965517
25	0.0625	0.106870229	0.058823529	0.014184397	-	-	0.05952381	0.094043887
30	0.075	0.145038168	0.070588235	0.024822695	0.071428571	0.172727273	0.071428571	0.103448276
35	0.0875	0.171755725	0.082352941	0.081560284	-	-	0.083333333	0.131661442
40	0.1	0.198473282	0.094117647	0.102836879	-	-	0.095238095	0.163009404
45	0.1125	0.213740458	0.105882353	0.120567376	0.107142857	0.254545455	0.107142857	0.181818182
50	0.125	0.232824427	0.117647059	0.156028369	-	-	0.119047619	0.222570533
55	0.1375	0.263358779	0.129411765	0.163120567	-	-	0.130952381	0.278996865
60	0.15	0.309160305	0.141176471	0.184397163	0.142857143	0.368181818	0.142857143	0.319749216
65	0.1625	0.328244275	0.152941176	0.209219858	-	-	0.154761905	0.34169279
70	0.175	0.351145038	0.164705882	0.237588652	-	-	0.166666667	0.398119122
75	0.1875	0.36259542	0.176470588	0.269503546	0.178571429	0.372727273	0.178571429	0.435736677
80	0.2	0.381679389	0.188235294	0.29787234	-	-	0.19047619	0.470219436
85	0.2125	0.419847328	0.2	0.343971631	-	-	0.202380952	0.526645768
90	0.225	0.469465649	0.211764706	0.393617021	0.214285714	0.440909091	0.214285714	0.551724138
95	0.2375	0.492366412	0.223529412	0.439716312	-	-	0.226190476	0.55799373
100	0.25	0.5	0.235294118	0.482269504	-	-	0.238095238	0.573667712
105	0.2625	0.507633588	0.247058824	0.507092199	0.25	0.5	0.25	0.598746082
110	0.275	0.507633588	0.258823529	0.539007092	-	-	0.261904762	0.605015674
115	0.2875	0.511450382	0.270588235	0.54964539	-	-	0.273809524	0.611285266
120	0.3	0.522900763	0.282352941	0.567375887	0.285714286	0.518181818	0.285714286	0.626959248
125	0.3125	0.534351145	0.294117647	0.570921986	-	-	0.297619048	0.630094044
130	0.325	0.538167939	0.305882353	0.570921986	-	-	0.30952381	0.630094044
135	0.3375	0.538167939	0.317647059	0.574468085	0.321428571	0.522727273	0.321428571	0.63322884
140	0.35	0.545801527	0.329411765	0.574468085	-	-	0.333333333	0.636363636
145	0.3625	0.549618321	0.341176471	0.578014184	-	-	0.345238095	0.636363636
150	0.375	0.553435115	0.352941176	0.581560284	0.357142857	0.527272727	0.357142857	0.639498433
155	0.3875	0.557251908	0.364705882	0.585106383	-	-	0.369047619	0.639498433
160	0.4	0.564885496	0.376470588	0.585106383	-	-	0.380952381	0.639498433
165	0.4125	0.572519084	0.388235294	0.585106383	0.392857143	0.536363636	0.392857143	0.639498433
170	0.425	0.580152672	0.4	0.588652482	-	-	0.404761905	0.642633229
175	0.4375	0.583969466	0.411764706	0.592198582	-	-	0.416666667	0.642633229
180	0.45	0.58778626	0.423529412	0.602836879	0.428571429	0.545454545	0.428571429	0.645768025
185	0.4625	0.591603053	0.435294118	0.609929078	-	-	0.44047619	0.652037618
190	0.475	0.591603053	0.447058824	0.617021277	-	-	0.452380952	0.655172414
195	0.4875	0.591603053	0.458823529	0.617021277	0.464285714	0.563636364	0.464285714	0.65830721
200	0.5	0.595419847	0.470588235	0.620567376	-	-	0.476190476	0.661442006
205	0.5125	0.606870229	0.482352941	0.620567376	-	-	0.488095238	0.664576803
210	0.525	0.618320611	0.494117647	0.620567376	0.5	0.568181818	0.5	0.667711599
215	0.5375	0.633587786	0.505882353	0.624113475	-	-	0.511904762	0.670846395
220	0.55	0.641221374	0.517647059	0.631205674	-	-	0.523809524	0.673981191
225	0.5625	0.652671756	0.529411765	0.641843972	0.535714286	0.6	0.535714286	0.68338558
230	0.575	0.671755725	0.541176471	0.65248227	-	-	0.547619048	0.699059561
235	0.5875	0.687022901	0.552941176	0.659574468	-	-	0.55952381	0.717868339
240	0.6	0.709923664	0.564705882	0.684397163	0.571428571	0.645454545	0.571428571	0.736677116
245	0.6125	0.729007634	0.576470588	0.709219858	-	-	0.583333333	0.755485893
250	0.625	0.740458015	0.588235294	0.726950355	-	-	0.595238095	0.764890282
255	0.6375	0.755725191	0.6	0.741134752	0.607142857	0.7	0.607142857	0.77429467
260	0.65	0.770992366	0.611764706	0.75177305	-	-	0.619047619	0.789968652
265	0.6625	0.782442748	0.623529412	0.765957447	-	-	0.630952381	0.799373041
270	0.675	0.79389313	0.635294118	0.776595745	0.642857143	0.745454545	0.642857143	0.808777429
275	0.6875	0.801526718	0.647058824	0.790780142	-	-	0.654761905	0.818181818
280	0.7	0.812977099	0.658823529	0.80141844	-	-	0.666666667	0.827586207
285	0.7125	0.820610687	0.670588235	0.812056738	0.678571429	0.786363636	0.678571429	0.843260188
290	0.725	0.828244275	0.682352941	0.822695035	-	-	0.69047619	0.846394984
295	0.7375	0.835877863	0.694117647	0.829787234	-	-	0.702380952	0.852664577
300	0.75	0.84351145	0.705882353	0.836879433	0.714285714	0.804545455	0.714285714	0.858934169
305	0.7625	0.851145038	0.717647059	0.843971631	-	-	0.726190476	0.865203762
310	0.775	0.86259542	0.729411765	0.84751773	-	-	0.738095238	0.868338558
315	0.7875	0.870229008	0.741176471	0.854609929	0.75	0.831818182	0.75	0.87460815
320	0.8	0.877862595	0.752941176	0.865248227	-	-	0.761904762	0.880877743
325	0.8125	0.889312977	0.764705882	0.875886525	-	-	0.773809524	0.887147335
330	0.825	0.900763359	0.776470588	0.882978723	0.785714286	0.863636364	0.785714286	0.896551724
335	0.8375	0.908396947	0.788235294	0.893617021	-	-	0.797619048	0.905956113
340	0.85	0.919847328	0.8	0.904255319	-	-	0.80952381	0.915360502

345	0.8625	0.927480916	0.811764706	0.911347518	0.821428571	0.9	0.821428571	0.921630094
350	0.875	0.935114504	0.823529412	0.921985816	-	-	0.833333333	0.927899687
355	0.8875	0.942748092	0.835294118	0.929078014	-	-	0.845238095	0.934169279
360	0.9	0.954198473	0.847058824	0.932624113	0.857142857	0.922727273	0.857142857	0.940438871
365	0.9125	0.961832061	0.858823529	0.939716312	-	-	0.869047619	0.946708464
370	0.925	0.969465649	0.870588235	0.946808511	-	-	0.880952381	0.94984326
375	0.9375	0.977099237	0.882352941	0.953900709	0.892857143	0.95	0.892857143	0.959247649
380	0.95	0.984732824	0.894117647	0.964539007	-	-	0.904761905	0.965517241
385	0.9625	0.988549618	0.905882353	0.971631206	-	-	0.916666667	0.968652038
390	0.975	0.992366412	0.917647059	0.975177305	0.928571429	0.972727273	0.928571429	0.97492163
395	0.9875	0.996183206	0.929411765	0.978723404	-	-	0.94047619	0.978056426
400	1	1	0.941176471	0.985815603	-	-	0.952380952	0.984326019
405	-	-	0.952941176	0.989361702	0.964285714	0.986363636	0.964285714	0.987460815
410	-	-	0.964705882	0.989361702	-	-	0.976190476	0.990595611
415	-	-	0.976470588	0.996453901	-	-	0.988095238	0.993730408
420	-	-	0.988235294	0.996453901	1	1	1	1
425	-	-	1	1				

### Summer Thunderstorm Percent Total - Precipitation vs. Duration

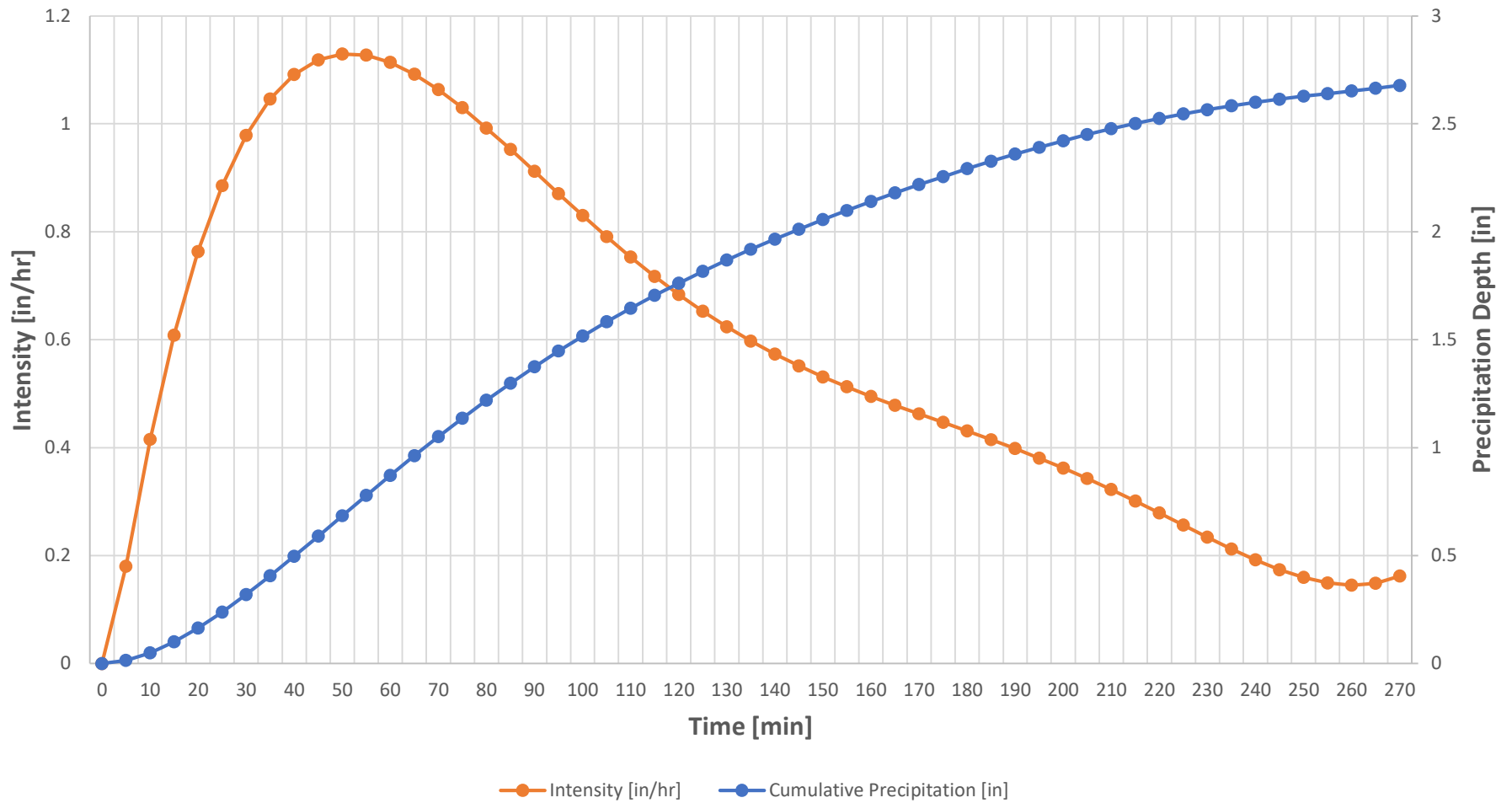


**Summer Thunderstorm Line of Best Fit - Rainfall Generation**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
0	0	0	0	0	0
5	0.018518519	0.005606715	0.014999437	0.180	0.015
10	0.037037037	0.018541148	0.04960245	0.415	0.035
15	0.055555556	0.037485442	0.100283422	0.608	0.051
20	0.074074074	0.061268334	0.163908917	0.764	0.064
25	0.092592593	0.088854918	0.237710288	0.886	0.074
30	0.111111111	0.11933675	0.319257211	0.979	0.082
35	0.12962963	0.151922302	0.406432137	1.046	0.087
40	0.148148148	0.185927755	0.497405673	1.092	0.091
45	0.166666667	0.220768146	0.590612886	1.118	0.093
50	0.185185185	0.255948852	0.684730533	1.129	0.094
55	0.203703704	0.291057427	0.77865521	1.127	0.094
60	0.222222222	0.325755777	0.871482428	1.114	0.093
65	0.240740741	0.359772687	0.962486616	1.092	0.091
70	0.259259259	0.39289669	1.051102041	1.063	0.089
75	0.277777778	0.424969281	1.13690466	1.030	0.086
80	0.296296296	0.455878476	1.219594891	0.992	0.083
85	0.314814815	0.485552722	1.298981307	0.953	0.079
90	0.333333333	0.513955144	1.374965262	0.912	0.076
95	0.351851852	0.541078145	1.447526427	0.871	0.073
100	0.37037037	0.566938345	1.516709267	0.830	0.069
105	0.388888889	0.59157187	1.582610429	0.791	0.066
110	0.407407407	0.615029984	1.645367058	0.753	0.063
115	0.425925926	0.63737507	1.705146042	0.717	0.060
120	0.444444444	0.658676947	1.76213417	0.684	0.057
125	0.462962963	0.679009549	1.816529229	0.653	0.054
130	0.481481481	0.698447928	1.86853201	0.624	0.052
135	0.5	0.717065625	1.918339248	0.598	0.050
140	0.518518519	0.734932366	1.966137483	0.574	0.048
145	0.537037037	0.752112119	2.012097844	0.552	0.046
150	0.555555556	0.768661487	2.056371758	0.531	0.044
155	0.574074074	0.78462845	2.099087586	0.513	0.043
160	0.592592593	0.800051453	2.140348176	0.495	0.041
165	0.611111111	0.814958836	2.180229349	0.479	0.040
170	0.62962963	0.829368614	2.218779298	0.463	0.039
175	0.648148148	0.8432886	2.256018924	0.447	0.037
180	0.666666667	0.856716872	2.291943086	0.431	0.036
185	0.685185185	0.869642589	2.326522779	0.415	0.035
190	0.703703704	0.882047147	2.359708236	0.398	0.033
195	0.722222222	0.893905688	2.391432953	0.381	0.032
200	0.740740741	0.905188947	2.421618641	0.362	0.030
205	0.759259259	0.91586545	2.450181095	0.343	0.029
210	0.777777778	0.925904052	2.477036998	0.322	0.027
215	0.796296296	0.935276827	2.502111638	0.301	0.025
220	0.814814815	0.943962297	2.525347555	0.279	0.023
225	0.833333333	0.95194901	2.546714114	0.256	0.021
230	0.851851852	0.959239463	2.566217996	0.234	0.020
235	0.87037037	0.965854371	2.583914616	0.212	0.018
240	0.888888889	0.971837279	2.599920467	0.192	0.016
245	0.907407407	0.977259519	2.614426387	0.174	0.015
250	0.925925926	0.98222552	2.627711745	0.159	0.013
255	0.944444444	0.986878451	2.640159561	0.149	0.012
260	0.962962963	0.991406222	2.652272541	0.145	0.012
265	0.981481481	0.996047821	2.66469004	0.149	0.012
270	1	1.0011	2.678205947	0.162	0.014

# Summer Thunderstorm

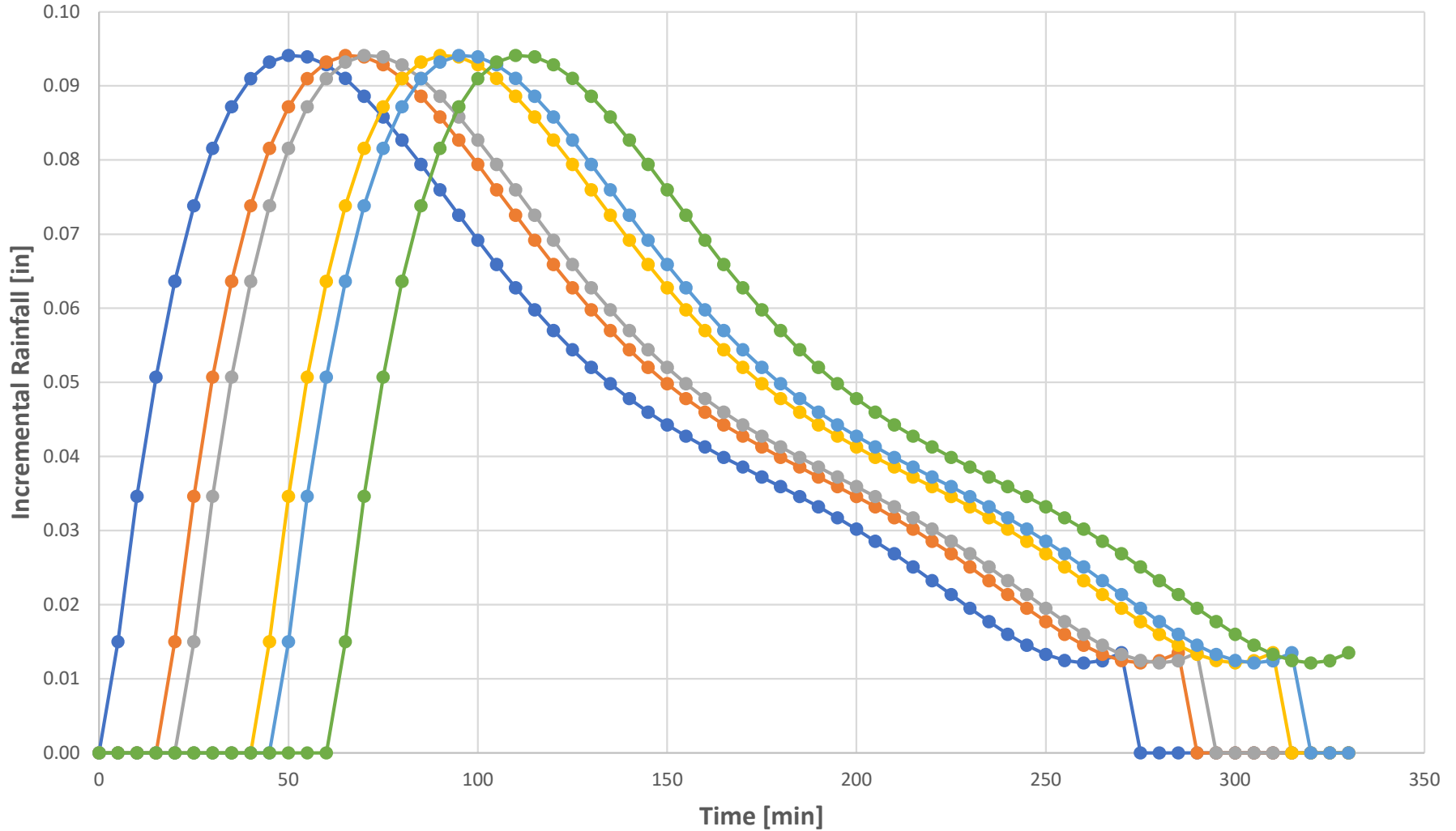
## Intensity and Precipitation Depth vs. Time



Generation of Synthetic Summer Thunderstorm

Time [mins]	Buck Jones Rd. Gage	Lake Johnson Dam Gage	Trailwood Dr. Gage	S. Wilmington St. Gage	S. State St. Gage	Sunnybrook Rd. Gage
0	0.00	0.00	0.00	0.00	0.00	0.00
5	0.01	0.00	0.00	0.00	0.00	0.00
10	0.03	0.00	0.00	0.00	0.00	0.00
15	0.05	0.00	0.00	0.00	0.00	0.00
20	0.06	0.01	0.00	0.00	0.00	0.00
25	0.07	0.03	0.01	0.00	0.00	0.00
30	0.08	0.05	0.03	0.00	0.00	0.00
35	0.09	0.06	0.05	0.00	0.00	0.00
40	0.09	0.07	0.06	0.00	0.00	0.00
45	0.09	0.08	0.07	0.01	0.00	0.00
50	0.09	0.09	0.08	0.03	0.01	0.00
55	0.09	0.09	0.09	0.05	0.03	0.00
60	0.09	0.09	0.09	0.06	0.05	0.00
65	0.09	0.09	0.09	0.07	0.06	0.01
70	0.09	0.09	0.09	0.08	0.07	0.03
75	0.09	0.09	0.09	0.09	0.08	0.05
80	0.08	0.09	0.09	0.09	0.09	0.06
85	0.08	0.09	0.09	0.09	0.09	0.07
90	0.08	0.09	0.09	0.09	0.09	0.08
95	0.07	0.08	0.09	0.09	0.09	0.09
100	0.07	0.08	0.08	0.09	0.09	0.09
105	0.07	0.08	0.08	0.09	0.09	0.09
110	0.06	0.07	0.08	0.09	0.09	0.09
115	0.06	0.07	0.07	0.09	0.09	0.09
120	0.06	0.07	0.07	0.08	0.09	0.09
125	0.05	0.06	0.07	0.08	0.08	0.09
130	0.05	0.06	0.06	0.08	0.08	0.09
135	0.05	0.06	0.06	0.07	0.08	0.09
140	0.05	0.05	0.06	0.07	0.07	0.08
145	0.05	0.05	0.05	0.07	0.07	0.08
150	0.04	0.05	0.05	0.06	0.07	0.08
155	0.04	0.05	0.05	0.06	0.06	0.07
160	0.04	0.05	0.05	0.06	0.06	0.07
165	0.04	0.04	0.05	0.05	0.06	0.07
170	0.04	0.04	0.04	0.05	0.05	0.06
175	0.04	0.04	0.04	0.05	0.05	0.06
180	0.04	0.04	0.04	0.05	0.05	0.06
185	0.03	0.04	0.04	0.05	0.05	0.05
190	0.03	0.04	0.04	0.04	0.05	0.05
195	0.03	0.04	0.04	0.04	0.04	0.05
200	0.03	0.03	0.04	0.04	0.04	0.05
205	0.03	0.03	0.03	0.04	0.04	0.05
210	0.03	0.03	0.03	0.04	0.04	0.04
215	0.03	0.03	0.03	0.04	0.04	0.04
220	0.02	0.03	0.03	0.04	0.04	0.04
225	0.02	0.03	0.03	0.03	0.04	0.04
230	0.02	0.03	0.03	0.03	0.03	0.04
235	0.02	0.02	0.03	0.03	0.03	0.04
240	0.02	0.02	0.02	0.03	0.03	0.04
245	0.01	0.02	0.02	0.03	0.03	0.03
250	0.01	0.02	0.02	0.03	0.03	0.03
255	0.01	0.02	0.02	0.03	0.03	0.03
260	0.01	0.01	0.02	0.02	0.03	0.03
265	0.01	0.01	0.01	0.02	0.02	0.03
270	0.01	0.01	0.01	0.02	0.02	0.03
275	0.00	0.01	0.01	0.02	0.02	0.03
280	0.00	0.01	0.01	0.02	0.02	0.02
285	0.00	0.01	0.01	0.01	0.02	0.02
290	0.00	0.00	0.01	0.01	0.01	0.02
295	0.00	0.00	0.00	0.01	0.01	0.02
300	0.00	0.00	0.00	0.01	0.01	0.02
305	0.00	0.00	0.00	0.01	0.01	0.01
310	0.00	0.00	0.00	0.01	0.01	0.01
315	0.00	0.00	0.00	0.00	0.01	0.01
320	0.00	0.00	0.00	0.00	0.00	0.01
325	0.00	0.00	0.00	0.00	0.00	0.01
330	0.00	0.00	0.00	0.00	0.00	0.01

# Summer Thunderstorm Incremental Rainfall vs. Time



- Buck Jones Rd. Gage
- Lake Johnson Dam Gage
- Trailwood Dr. Gage
- S. Wilmington St. Gage
- S. State St. Gage
- Sunnybrook Rd. Gage

# *SYNTHETIC HURRICANE CALCULATIONS*



## Construction of Synthetic Hurricane

Cells highlighted orange indicate values omitted from the calculation

### Calculated Average Parameters

-Rainfall Distribution	Fluctuating Intensity	
-Rainfall Duration	48	hours
-Rainfall Depth	7.0	inches, incorporates 10% FS

### Summary of Duration and Depth

Hurricane	Duration [hrs]	Duration [days]	RDU International Rainfall Depth [in]	Johnston Co. Stn Rainfall Depth [in]	Hurricane Average [in]
Floyd	50	2	6.49	7.33	6.91
Fran	20	1	5.07	6.40	5.74
Florence	90	4	6.85	5.69	6.27
Matthew	20	1	6.58	0.00	6.58
<b>Gage Station Average</b>	<b>45</b>	<b>2</b>	<b>6.25</b>	<b>6.47</b>	<b>6.37</b>

NC Climate Office Rainfall Data

Hurricane Floyd

Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
1999-09-14 10:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999-09-14 11:00:00	0.00	0.00	0.00	0.02	0.06	0.06	0.01	0.02
1999-09-14 12:00:00	0.00	0.00	0.00	0.04	0.04	0.10	0.01	0.04
1999-09-14 13:00:00	0.00	0.00	0.00	0.06	0.02	0.12	0.02	0.06
1999-09-14 14:00:00	0.01	0.01	0.00	0.09	0.00	0.12	0.02	0.08
1999-09-14 15:00:00	0.00	0.01	0.00	0.11	0.00	0.12	0.02	0.10
1999-09-14 16:00:00	0.03	0.04	0.01	0.13	0.00	0.12	0.02	0.13
1999-09-14 17:00:00	0.00	0.04	0.01	0.15	0.01	0.13	0.02	0.15
1999-09-14 18:00:00	0.00	0.04	0.01	0.17	0.00	0.13	0.02	0.17
1999-09-14 19:00:00	0.00	0.04	0.01	0.19	0.00	0.13	0.02	0.19
1999-09-14 20:00:00	0.00	0.04	0.01	0.21	0.00	0.13	0.02	0.21
1999-09-14 21:00:00	0.00	0.04	0.01	0.23	0.00	0.13	0.02	0.23
1999-09-14 22:00:00	0.00	0.04	0.01	0.26	0.00	0.13	0.02	0.25
1999-09-14 23:00:00	0.00	0.04	0.01	0.28	0.00	0.13	0.02	0.27
1999-09-15 00:00:00	0.02	0.06	0.01	0.30	0.00	0.13	0.02	0.29
1999-09-15 01:00:00	0.01	0.07	0.01	0.32	0.00	0.13	0.02	0.31
1999-09-15 02:00:00	0.00	0.07	0.01	0.34	0.00	0.13	0.02	0.33
1999-09-15 03:00:00	0.00	0.07	0.01	0.36	0.00	0.13	0.02	0.35
1999-09-15 04:00:00	0.00	0.07	0.01	0.38	0.00	0.13	0.02	0.38
1999-09-15 05:00:00	0.11	0.18	0.03	0.40	0.01	0.14	0.02	0.40
1999-09-15 06:00:00	0.00	0.18	0.03	0.43	0.00	0.14	0.02	0.42
1999-09-15 07:00:00	0.16	0.34	0.05	0.45	0.03	0.17	0.02	0.44
1999-09-15 08:00:00	0.05	0.39	0.06	0.47	0.12	0.29	0.04	0.46
1999-09-15 09:00:00	0.09	0.48	0.07	0.49	0.13	0.42	0.06	0.48
1999-09-15 10:00:00	0.06	0.54	0.08	0.51	0.07	0.49	0.07	0.50
1999-09-15 11:00:00	0.08	0.62	0.10	0.53	0.12	0.61	0.08	0.52
1999-09-15 12:00:00	0.09	0.71	0.11	0.55	0.11	0.72	0.10	0.54
1999-09-15 13:00:00	0.07	0.78	0.12	0.57	0.05	0.77	0.11	0.56
1999-09-15 14:00:00	0.08	0.86	0.13	0.60	0.13	0.90	0.12	0.58
1999-09-15 15:00:00	0.16	1.02	0.16	0.62	0.09	0.99	0.14	0.60
1999-09-15 16:00:00	0.14	1.16	0.18	0.64	0.13	1.12	0.15	0.63
1999-09-15 17:00:00	0.06	1.22	0.19	0.66	0.21	1.33	0.18	0.65
1999-09-15 18:00:00	0.17	1.39	0.21	0.68	0.38	1.71	0.23	0.67
1999-09-15 19:00:00	0.26	1.65	0.25	0.70	0.47	2.18	0.30	0.69
1999-09-15 20:00:00	0.44	2.09	0.32	0.72	0.53	2.71	0.37	0.71
1999-09-15 21:00:00	0.40	2.49	0.38	0.74	0.34	3.05	0.42	0.73
1999-09-15 22:00:00	0.38	2.87	0.44	0.77	0.36	3.41	0.47	0.75
1999-09-15 23:00:00	0.52	3.39	0.52	0.79	0.36	3.77	0.51	0.77
1999-09-16 00:00:00	0.24	3.63	0.56	0.81	0.14	3.91	0.53	0.79
1999-09-16 01:00:00	0.31	3.94	0.61	0.83	0.44	4.35	0.59	0.81
1999-09-16 02:00:00	0.44	4.38	0.67	0.85	0.55	4.90	0.67	0.83
1999-09-16 03:00:00	0.61	4.99	0.77	0.87	0.40	5.30	0.72	0.85
1999-09-16 04:00:00	0.41	5.40	0.83	0.89	0.43	5.73	0.78	0.88
1999-09-16 05:00:00	0.34	5.74	0.88	0.91	0.58	6.31	0.86	0.90
1999-09-16 06:00:00	0.29	6.03	0.93	0.94	0.42	6.73	0.92	0.92
1999-09-16 07:00:00	0.28	6.31	0.97	0.96	0.31	7.04	0.96	0.94
1999-09-16 08:00:00	0.09	6.40	0.99	0.98	0.20	7.24	0.99	0.96
1999-09-16 09:00:00	0.07	6.47	1.00	1.00	0.08	7.32	0.999	0.98
1999-09-16 10:00:00	0.01	6.48	-	-	0.01	7.33	1.00	1.00
1999-09-16 11:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 12:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 13:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 14:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 15:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 16:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 17:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 18:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 19:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 20:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 21:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 22:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-16 23:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 00:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 01:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 02:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 03:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 04:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 05:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 06:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 07:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 08:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 09:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 10:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 11:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 12:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 13:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 14:00:00	0.00	6.48	-	-	0.00	-	-	-

Hurricane Floyd

Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
1999-09-17 15:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 16:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 17:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 18:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 19:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 20:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 21:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 22:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-17 23:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-18 00:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-18 01:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-18 02:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-18 03:00:00	0.00	6.48	-	-	0.00	-	-	-
1999-09-18 04:00:00	0.01	6.49	-	-	0.00	-	-	-
1999-09-18 05:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 06:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 07:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 08:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 09:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 10:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 11:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 12:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 13:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 14:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 15:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 16:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 17:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 18:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 19:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 20:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 21:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 22:00:00	0.00	6.49	-	-	0.00	-	-	-
1999-09-18 23:00:00	0.00	6.49	-	-	0.00	-	-	-

Hurricane Fran

Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/Ttotal
1996-09-05 12:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996-09-05 13:00:00	0.00	0.00	0.00	0.07	0.01	0.01	0.00	0.04
1996-09-05 14:00:00	0.09	0.09	0.02	0.13	0.04	0.05	0.01	0.09
1996-09-05 15:00:00	0.14	0.23	0.05	0.20	0.03	0.08	0.01	0.13
1996-09-05 16:00:00	0.01	0.24	0.05	0.27	0.01	0.09	0.01	0.17
1996-09-05 17:00:00	0.10	0.34	0.07	0.33	0.01	0.10	0.02	0.22
1996-09-05 18:00:00	0.15	0.49	0.10	0.40	0.00	0.10	0.02	0.26
1996-09-05 19:00:00	0.00	0.49	0.10	0.47	0.04	0.14	0.02	0.30
1996-09-05 20:00:00	0.18	0.67	0.13	0.53	0.17	0.31	0.05	0.35
1996-09-05 21:00:00	0.20	0.87	0.17	0.60	0.21	0.52	0.08	0.39
1996-09-05 22:00:00	0.45	1.32	0.26	0.67	0.33	0.85	0.13	0.43
1996-09-05 23:00:00	0.75	2.07	0.41	0.73	0.47	1.32	0.21	0.48
1996-09-06 00:00:00	1.00	3.07	0.61	0.80	0.28	1.60	0.25	0.52
1996-09-06 01:00:00	0.54	3.61	0.71	0.87	0.53	2.13	0.33	0.57
1996-09-06 02:00:00	0.80	4.41	0.87	0.93	1.01	3.14	0.49	0.61
1996-09-06 03:00:00	0.66	5.07	1.00	1.00	1.22	4.36	0.68	0.65
1996-09-06 04:00:00	0.00	5.07	-	-	1.88	6.24	0.98	0.70
1996-09-06 05:00:00	0.00	5.07	-	-	0.05	6.29	0.98	0.74
1996-09-06 06:00:00	0.00	5.07	-	-	0.01	6.30	0.98	0.78
1996-09-06 07:00:00	0.00	5.07	-	-	0.01	6.31	0.99	0.83
1996-09-06 08:00:00	0.00	5.07	-	-	0.00	6.31	0.99	0.87
1996-09-06 09:00:00	0.00	5.07	-	-	0.03	6.34	0.99	0.91
1996-09-06 10:00:00	0.00	5.07	-	-	0.02	6.36	0.99	0.96
1996-09-06 11:00:00	0.00	5.07	-	-	0.01	6.37	1.00	1.00
1996-09-06 12:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 13:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 14:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 15:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 16:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 17:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 18:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 19:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 20:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 21:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 22:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-06 23:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 00:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 01:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 02:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 03:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 04:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 05:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 06:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 07:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 08:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 09:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 10:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 11:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 12:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 13:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 14:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 15:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 16:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 17:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 18:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 19:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 20:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 21:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 22:00:00	0.00	5.07	-	-	0.00	6.37	-	-
1996-09-07 23:00:00	0.00	5.07	-	-	0.03	6.40	-	-

Hurricane Florence

Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
2018-09-13 16:00:00	0.16	0.16	0.02	0.00	0.03	0.03	0.01	0.00
2018-09-13 17:00:00	0.10	0.26	0.04	0.01	0.00	0.03	0.01	0.01
2018-09-13 18:00:00	0.00	0.26	0.04	0.02	0.00	0.03	0.01	0.02
2018-09-13 19:00:00	0.01	0.27	0.04	0.03	0.02	0.05	0.01	0.03
2018-09-13 20:00:00	0.00	0.27	0.04	0.05	0.22	0.27	0.05	0.04
2018-09-13 21:00:00	0.01	0.28	0.04	0.06	0.00	0.27	0.05	0.06
2018-09-13 22:00:00	0.00	0.28	0.04	0.07	0.01	0.28	0.05	0.07
2018-09-13 23:00:00	0.00	0.28	0.04	0.08	0.00	0.28	0.05	0.08
2018-09-14 00:00:00	0.00	0.28	0.04	0.09	0.01	0.29	0.05	0.09
2018-09-14 01:00:00	0.00	0.28	0.04	0.10	0.00	0.29	0.05	0.10
2018-09-14 02:00:00	0.00	0.28	0.04	0.11	0.03	0.32	0.06	0.11
2018-09-14 03:00:00	0.01	0.29	0.04	0.13	0.02	0.34	0.06	0.12
2018-09-14 04:00:00	0.00	0.29	0.04	0.14	0.00	0.34	0.06	0.13
2018-09-14 05:00:00	0.01	0.30	0.04	0.15	0.01	0.35	0.06	0.15
2018-09-14 06:00:00	0.00	0.30	0.04	0.16	0.09	0.44	0.08	0.16
2018-09-14 07:00:00	0.01	0.31	0.05	0.17	0.05	0.49	0.09	0.17
2018-09-14 08:00:00	0.00	0.31	0.05	0.18	0.03	0.52	0.09	0.18
2018-09-14 09:00:00	0.00	0.31	0.05	0.19	0.04	0.56	0.10	0.19
2018-09-14 10:00:00	0.00	0.31	0.05	0.20	0.05	0.61	0.11	0.20
2018-09-14 11:00:00	0.05	0.36	0.05	0.22	0.13	0.74	0.13	0.21
2018-09-14 12:00:00	0.01	0.37	0.05	0.23	0.17	0.91	0.16	0.22
2018-09-14 13:00:00	0.01	0.38	0.06	0.24	0.07	0.98	0.17	0.24
2018-09-14 14:00:00	0.00	0.38	0.06	0.25	0.18	1.16	0.20	0.25
2018-09-14 15:00:00	0.16	0.54	0.08	0.26	0.19	1.35	0.24	0.26
2018-09-14 16:00:00	0.42	0.96	0.14	0.27	0.21	1.56	0.27	0.27
2018-09-14 17:00:00	0.52	1.48	0.22	0.28	0.12	1.68	0.30	0.28
2018-09-14 18:00:00	0.04	1.52	0.22	0.30	0.05	1.73	0.30	0.29
2018-09-14 19:00:00	0.10	1.62	0.24	0.31	0.05	1.78	0.31	0.30
2018-09-14 20:00:00	0.06	1.68	0.25	0.32	0.23	2.01	0.35	0.31
2018-09-14 21:00:00	0.11	1.79	0.26	0.33	0.26	2.27	0.40	0.33
2018-09-14 22:00:00	0.15	1.94	0.28	0.34	0.31	2.58	0.45	0.34
2018-09-14 23:00:00	0.10	2.04	0.30	0.35	0.19	2.77	0.49	0.35
2018-09-15 00:00:00	0.30	2.34	0.34	0.36	0.17	2.94	0.52	0.36
2018-09-15 01:00:00	0.41	2.75	0.40	0.37	0.06	3.00	0.53	0.37
2018-09-15 02:00:00	0.18	2.93	0.43	0.39	0.16	3.16	0.56	0.38
2018-09-15 03:00:00	0.25	3.18	0.46	0.40	0.04	3.20	0.56	0.39
2018-09-15 04:00:00	0.10	3.28	0.48	0.41	0.09	3.29	0.58	0.40
2018-09-15 05:00:00	0.20	3.48	0.51	0.42	0.17	3.46	0.61	0.42
2018-09-15 06:00:00	0.18	3.66	0.53	0.43	0.14	3.60	0.63	0.43
2018-09-15 07:00:00	0.18	3.84	0.56	0.44	0.09	3.69	0.65	0.44
2018-09-15 08:00:00	0.03	3.87	0.56	0.45	0.02	3.71	0.65	0.45
2018-09-15 09:00:00	0.00	3.87	0.56	0.47	0.00	3.71	0.65	0.46
2018-09-15 10:00:00	0.00	3.87	0.56	0.48	0.01	3.72	0.65	0.47
2018-09-15 11:00:00	0.00	3.87	0.56	0.49	0.00	3.72	0.65	0.48
2018-09-15 12:00:00	0.03	3.90	0.57	0.50	0.00	3.72	0.65	0.49
2018-09-15 13:00:00	0.02	3.92	0.57	0.51	0.26	3.98	0.70	0.51
2018-09-15 14:00:00	0.32	4.24	0.62	0.52	0.04	4.02	0.71	0.52
2018-09-15 15:00:00	0.04	4.28	0.62	0.53	0.02	4.04	0.71	0.53
2018-09-15 16:00:00	0.00	4.28	0.62	0.55	0.00	4.04	0.71	0.54
2018-09-15 17:00:00	0.00	4.28	0.62	0.56	0.04	4.08	0.72	0.55
2018-09-15 18:00:00	0.00	4.28	0.62	0.57	0.07	4.15	0.73	0.56
2018-09-15 19:00:00	0.09	4.37	0.64	0.58	0.03	4.18	0.73	0.57
2018-09-15 20:00:00	0.06	4.43	0.65	0.59	0.04	4.22	0.74	0.58
2018-09-15 21:00:00	0.03	4.46	0.65	0.60	0.01	4.23	0.74	0.60
2018-09-15 22:00:00	0.01	4.47	0.65	0.61	0.00	4.23	0.74	0.61
2018-09-15 23:00:00	0.03	4.50	0.66	0.63	0.04	4.27	0.75	0.62
2018-09-16 00:00:00	0.03	4.53	0.66	0.64	0.09	4.36	0.77	0.63
2018-09-16 01:00:00	0.10	4.63	0.68	0.65	0.00	4.36	0.77	0.64
2018-09-16 02:00:00	0.07	4.70	0.69	0.66	0.03	4.39	0.77	0.65
2018-09-16 03:00:00	0.05	4.75	0.69	0.67	0.05	4.44	0.78	0.66
2018-09-16 04:00:00	0.07	4.82	0.70	0.68	0.11	4.55	0.80	0.67
2018-09-16 05:00:00	0.03	4.85	0.71	0.69	0.06	4.61	0.81	0.69
2018-09-16 06:00:00	0.06	4.91	0.72	0.70	0.02	4.63	0.81	0.70
2018-09-16 07:00:00	0.00	4.91	0.72	0.72	0.03	4.66	0.82	0.71
2018-09-16 08:00:00	0.02	4.93	0.72	0.73	0.11	4.77	0.84	0.72
2018-09-16 09:00:00	0.08	5.01	0.73	0.74	0.09	4.86	0.85	0.73
2018-09-16 10:00:00	0.02	5.03	0.73	0.75	0.02	4.88	0.86	0.74
2018-09-16 11:00:00	0.01	5.04	0.74	0.76	0.03	4.91	0.86	0.75
2018-09-16 12:00:00	0.02	5.06	0.74	0.77	0.03	4.94	0.87	0.76
2018-09-16 13:00:00	0.01	5.07	0.74	0.78	0.00	4.94	0.87	0.78
2018-09-16 14:00:00	0.00	5.07	0.74	0.80	0.01	4.95	0.87	0.79
2018-09-16 15:00:00	0.02	5.09	0.74	0.81	0.04	4.99	0.88	0.80
2018-09-16 16:00:00	0.05	5.14	0.75	0.82	0.01	5.00	0.88	0.81
2018-09-16 17:00:00	0.03	5.17	0.75	0.83	0.00	5.00	0.88	0.82
2018-09-16 18:00:00	0.02	5.19	0.76	0.84	0.06	5.06	0.89	0.83
2018-09-16 19:00:00	0.03	5.22	0.76	0.85	0.00	5.06	0.89	0.84
2018-09-16 20:00:00	0.02	5.24	0.76	0.86	0.00	5.06	0.89	0.85
2018-09-16 21:00:00	0.01	5.25	0.77	0.87	0.00	5.06	0.89	0.87

Hurricane Florence

Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
2018-09-16 22:00:00	0.08	5.33	0.78	0.89	0.12	5.18	0.91	0.88
2018-09-16 23:00:00	0.10	5.43	0.79	0.90	0.02	5.20	0.91	0.89
2018-09-17 00:00:00	0.08	5.51	0.80	0.91	0.12	5.32	0.93	0.90
2018-09-17 01:00:00	0.02	5.53	0.81	0.92	0.02	5.34	0.94	0.91
2018-09-17 02:00:00	0.14	5.67	0.83	0.93	0.28	5.62	0.99	0.92
2018-09-17 03:00:00	0.05	5.72	0.84	0.94	0.03	5.65	0.99	0.93
2018-09-17 04:00:00	0.27	5.99	0.87	0.95	0.00	5.65	0.99	0.94
2018-09-17 05:00:00	0.19	6.18	0.90	0.97	0.00	5.65	0.99	0.96
2018-09-17 06:00:00	0.60	6.78	0.99	0.98	0.01	5.66	0.99	0.97
2018-09-17 07:00:00	0.04	6.82	1.00	0.99	0.00	5.66	0.99	0.98
2018-09-17 08:00:00	0.03	6.85	1.00	1.00	0.00	5.66	0.99	0.99
2018-09-17 09:00:00	0.00	6.85	-	-	0.01	5.67	1.00	1.00
2018-09-17 10:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 11:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 12:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 13:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 14:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 15:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 16:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 17:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 18:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 19:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 20:00:00	0.00	6.85	-	-	0.00	5.67	-	-
2018-09-17 21:00:00	0.00	6.85	-	-	0.01	5.68	-	-
2018-09-17 22:00:00	0.00	6.85	-	-	0.01	5.69	-	-
2018-09-17 23:00:00	0	6.85	-	-	0.00	5.69	-	-

Hurricane Matthew

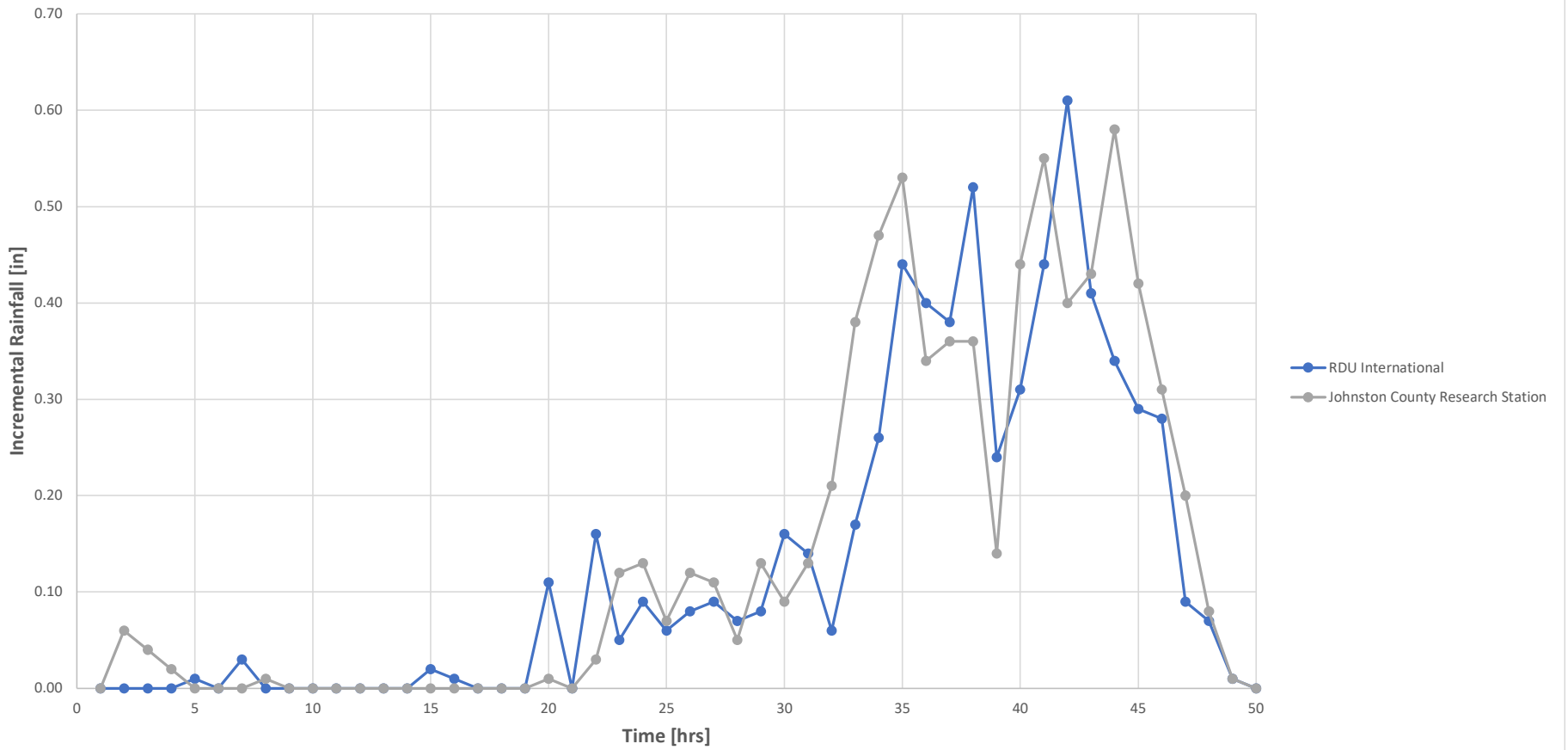
Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
2016-10-08 02:00:00	0.03	0.03	0.00	0.00	0.00	-	-	-
2016-10-08 03:00:00	0.13	0.16	0.02	0.04	0.00	-	-	-
2016-10-08 04:00:00	0.14	0.30	0.05	0.07	0.00	-	-	-
2016-10-08 05:00:00	0.06	0.36	0.05	0.11	0.00	-	-	-
2016-10-08 06:00:00	0.09	0.45	0.07	0.15	0.00	-	-	-
2016-10-08 07:00:00	0.04	0.49	0.07	0.19	0.00	-	-	-
2016-10-08 08:00:00	0.18	0.67	0.10	0.22	0.00	-	-	-
2016-10-08 09:00:00	0.11	0.78	0.12	0.26	0.00	-	-	-
2016-10-08 10:00:00	0.27	1.05	0.16	0.30	0.00	-	-	-
2016-10-08 11:00:00	0.51	1.56	0.24	0.33	0.00	-	-	-
2016-10-08 12:00:00	0.44	2.00	0.30	0.37	0.00	-	-	-
2016-10-08 13:00:00	0.79	2.79	0.42	0.41	0.00	-	-	-
2016-10-08 14:00:00	0.90	3.69	0.56	0.44	0.00	-	-	-
2016-10-08 15:00:00	0.85	4.54	0.69	0.48	0.00	-	-	-
2016-10-08 16:00:00	0.71	5.25	0.80	0.52	0.00	-	-	-
2016-10-08 17:00:00	0.46	5.71	0.87	0.56	0.00	-	-	-
2016-10-08 18:00:00	0.29	6.00	0.91	0.59	0.00	-	-	-
2016-10-08 19:00:00	0.18	6.18	0.94	0.63	0.00	-	-	-
2016-10-08 20:00:00	0.08	6.26	0.95	0.67	0.00	-	-	-
2016-10-08 21:00:00	0.03	6.29	0.96	0.70	0.00	-	-	-
2016-10-08 22:00:00	0.00	6.29	0.96	0.74	0.00	-	-	-
2016-10-08 23:00:00	0.03	6.32	0.96	0.78	0.00	-	-	-
2016-10-09 00:00:00	0.07	6.39	0.97	0.81	0.00	-	-	-
2016-10-09 01:00:00	0.05	6.44	0.98	0.85	0.00	-	-	-
2016-10-09 02:00:00	0.06	6.50	0.99	0.89	0.00	-	-	-
2016-10-09 03:00:00	0.04	6.54	0.99	0.93	0.00	-	-	-
2016-10-09 04:00:00	0.03	6.57	1.00	0.96	0.00	-	-	-
2016-10-09 05:00:00	0.01	6.58	1.00	1.00	0.00	-	-	-
2016-10-09 06:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 07:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 08:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 09:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 10:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 11:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 12:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 13:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 14:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 15:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 16:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 17:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 18:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 19:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 20:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 21:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 22:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-09 23:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 00:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 01:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 02:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 03:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 04:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 05:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 06:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 07:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 08:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 09:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 10:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 11:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 12:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 13:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 14:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 15:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 16:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 17:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 18:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 19:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 20:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 21:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 22:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-10 23:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 00:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 01:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 02:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 03:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 04:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 05:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 06:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 07:00:00	0.00	6.58	-	-	0.00	-	-	-

Hurricane Matthew

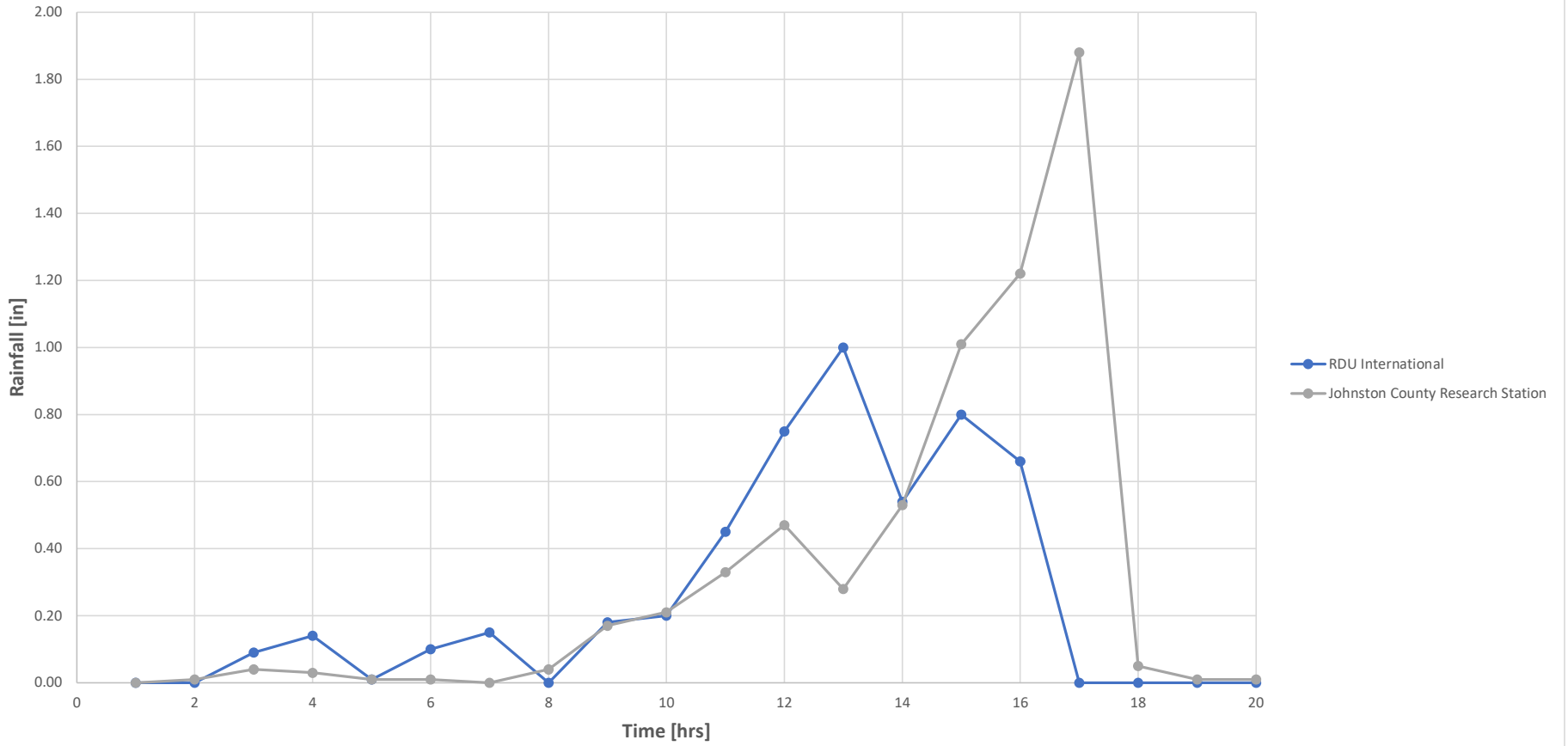
Time	RDU Airport Incremental Rainfall [in]	RDU Airport Cumulative Rainfall [in]	RDU Airport P/Ptotal	RDU Airport T/Ttotal	JoCo Station Incremental Rainfall [in]	JoCo Station Cumulative Rainfall [in]	JoCo Station P/Ptotal	JoCo Station T/TTtotal
2016-10-11 08:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 09:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 10:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 11:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 12:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 13:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 14:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 15:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 16:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 17:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 18:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 19:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 20:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 21:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 22:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-11 23:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 00:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 01:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 02:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 03:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 04:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 05:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 06:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 07:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 08:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 09:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 10:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 11:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 12:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 13:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 14:00:00	0.00	6.58	-	-	0.00	-	-	-
2016-10-12 15:00:00	0.00	6.58	-	-	0.00	-	-	-



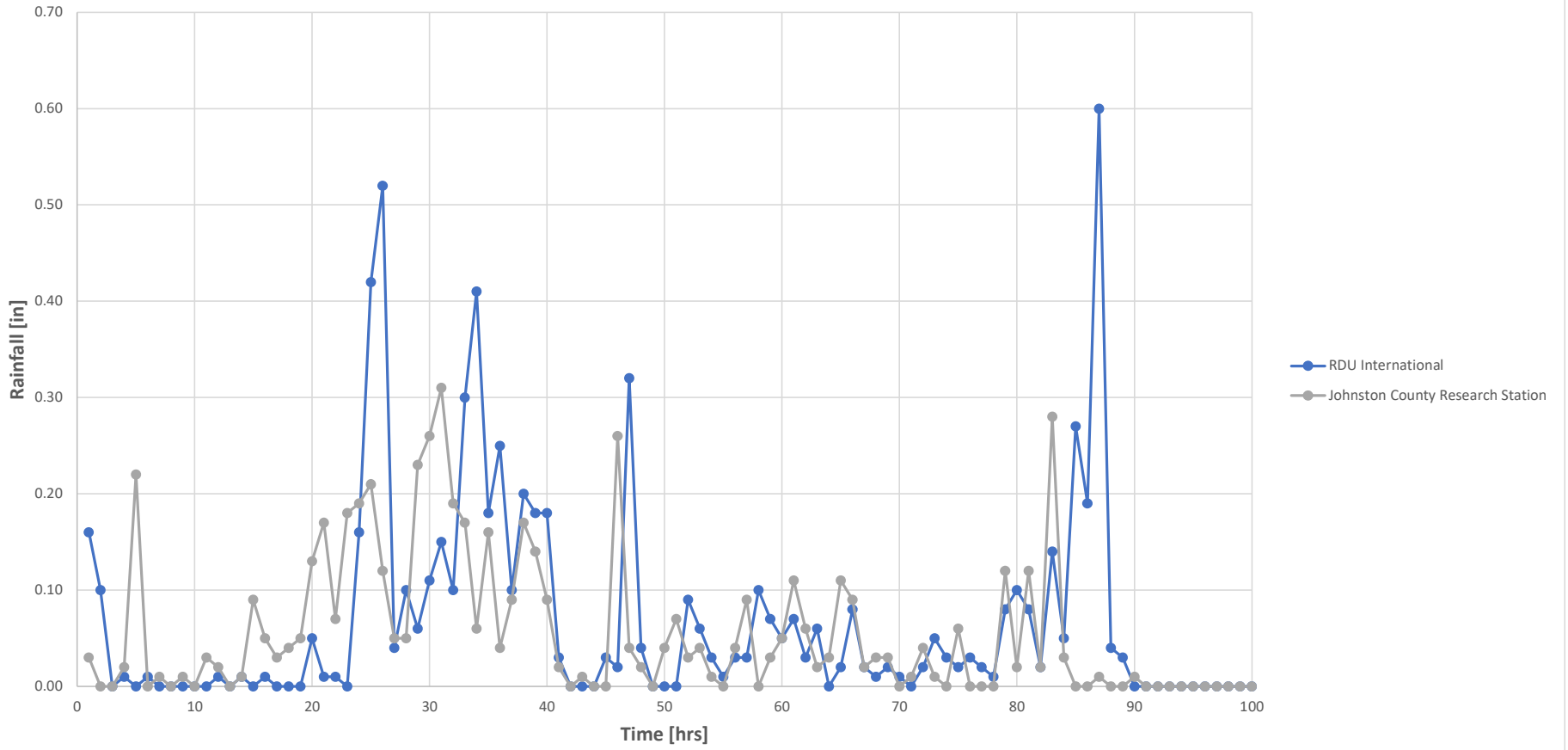
### Hurricane Floyd



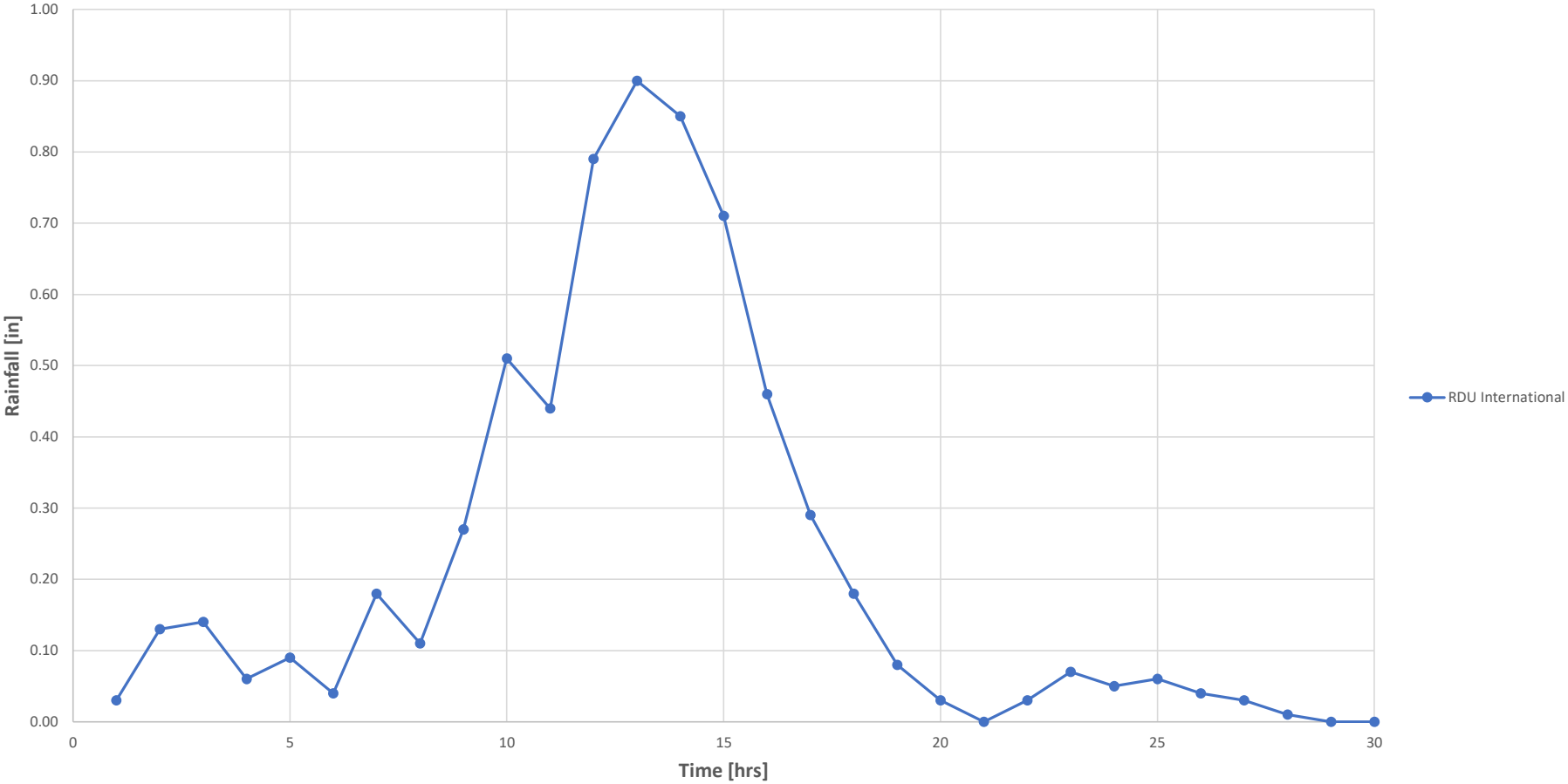
### Hurricane Fran



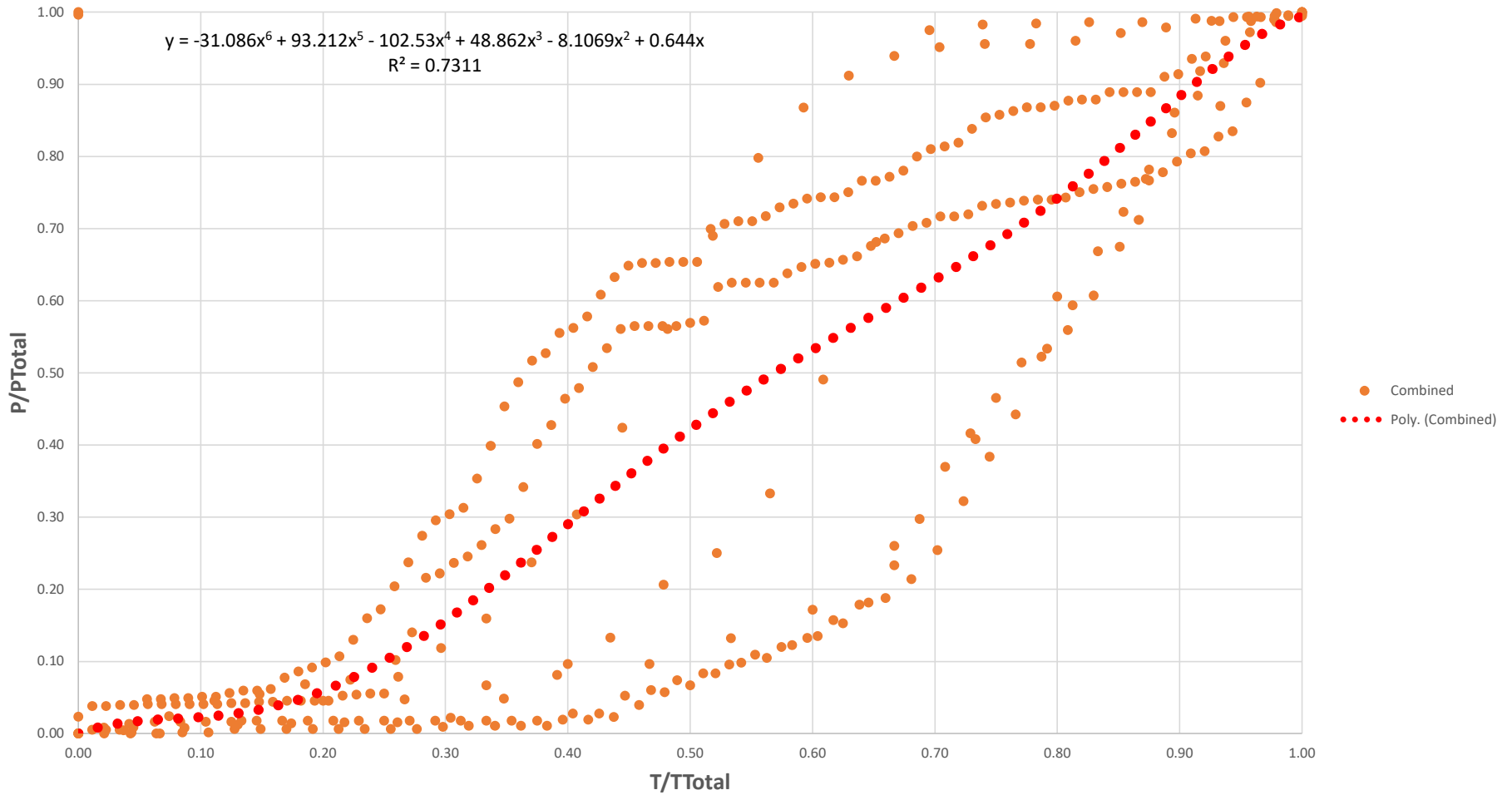
### Hurricane Florence



### Hurricane Matthew



Percent Total - Precipitation vs. Duration



**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
0	0	0	0	0	0
5	0.001736111	0.001093875	0.007669298	0.09203157	0.007669298
10	0.003472222	0.002140402	0.015006628	0.088047966	0.00733733
15	0.005208333	0.003141081	0.022022514	0.084190628	0.007015886
20	0.006944444	0.004097391	0.028727323	0.080457707	0.006704809
25	0.008680556	0.005010789	0.03513127	0.076847364	0.006403947
30	0.010416667	0.00588271	0.041244418	0.073357779	0.006113148
35	0.012152778	0.006714569	0.04707668	0.069987144	0.005832262
40	0.013888889	0.007507756	0.052637819	0.066733667	0.005561139
45	0.015625	0.008263645	0.057937449	0.063595568	0.005299631
50	0.017361111	0.008983585	0.06298504	0.060571086	0.00504759
55	0.019097222	0.009668907	0.067789912	0.057658469	0.004804872
60	0.020833333	0.010320918	0.072361244	0.054855984	0.004571332
65	0.022569444	0.010940908	0.07670807	0.05216191	0.004346826
70	0.024305556	0.011530144	0.080839282	0.049574539	0.004131212
75	0.026041667	0.012089876	0.08476363	0.047092181	0.003924348
80	0.027777778	0.012621331	0.088489727	0.044713157	0.003726096
85	0.029513889	0.013125717	0.092026043	0.042435803	0.003536317
90	0.03125	0.013604224	0.095380916	0.040258469	0.003354872
95	0.032986111	0.014058021	0.098562542	0.038179519	0.003181627
100	0.034722222	0.014488258	0.101578987	0.036197331	0.003016444
105	0.036458333	0.014896066	0.104438178	0.034310298	0.002859191
110	0.038194444	0.015282556	0.107147913	0.032516824	0.002709735
115	0.039930556	0.015648823	0.109715858	0.030815329	0.002567944
120	0.041666667	0.015995941	0.112149545	0.029204247	0.002433687
125	0.043402778	0.016324966	0.11445638	0.027682025	0.002306835
130	0.045138889	0.016636936	0.116643641	0.026247123	0.00218726
135	0.046875	0.016932871	0.118718475	0.024898015	0.002074835
140	0.048611111	0.017213772	0.120687908	0.023693189	0.001969432
145	0.050347222	0.017480623	0.122558836	0.022451146	0.001870929
150	0.052083333	0.017734392	0.124338036	0.021350401	0.0017792
155	0.053819444	0.017976025	0.12603216	0.020329481	0.001694123
160	0.055555556	0.018206456	0.127647737	0.019386928	0.001615577
165	0.057291667	0.018426598	0.129191179	0.018521297	0.001543441
170	0.059027778	0.018637348	0.130668775	0.017731155	0.001477596
175	0.060763889	0.018839587	0.132086698	0.017015083	0.001417924
180	0.0625	0.019034178	0.133451005	0.016371675	0.001364306
185	0.064236111	0.01922197	0.134767633	0.015799538	0.001316628
190	0.065972222	0.019403791	0.136042407	0.015297293	0.001274774
195	0.067708333	0.019580458	0.137281038	0.014863572	0.001238631
200	0.069444444	0.019752768	0.138489123	0.014497022	0.001208085
205	0.071180556	0.019921503	0.139672148	0.014196301	0.001183025
210	0.072916667	0.020087431	0.140835488	0.01396008	0.00116334
215	0.074652778	0.020251302	0.141984409	0.013787046	0.00114892
220	0.076388889	0.020413852	0.143124067	0.013675893	0.001139658
225	0.078125	0.020575801	0.144259511	0.013625333	0.001135444
230	0.079861111	0.020737854	0.145395685	0.013634088	0.001136174
235	0.081597222	0.020900701	0.146537426	0.013700892	0.001141741
240	0.083333333	0.021065017	0.147689467	0.013824493	0.001152041
245	0.085069444	0.021231463	0.148856438	0.01400365	0.001166971
250	0.086805556	0.021400683	0.150042866	0.014237137	0.001186428
255	0.088541667	0.021573311	0.151253177	0.014523737	0.001210311
260	0.090277778	0.021749961	0.152491698	0.014862248	0.001238521
265	0.092013889	0.021931238	0.153762654	0.015251478	0.001270956
270	0.09375	0.022117731	0.155070175	0.015690249	0.001307521
275	0.095486111	0.022310013	0.156417391	0.016177394	0.001348116

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
280	0.097222222	0.022508647	0.157810938	0.016711759	0.001392647
285	0.098958333	0.02271418	0.159251955	0.017292201	0.001441017
290	0.100694444	0.022927146	0.160745087	0.017917591	0.001493133
295	0.102430556	0.023148067	0.162293988	0.018586808	0.001548901
300	0.104166667	0.023377449	0.163902217	0.019298748	0.001608229
305	0.105902778	0.023615788	0.165573243	0.020052314	0.001671026
310	0.107638889	0.023863566	0.167310445	0.020846424	0.001737202
315	0.109375	0.024121252	0.169117112	0.021680006	0.001806667
320	0.111111111	0.024389302	0.170996446	0.022552002	0.001879333
325	0.112847222	0.024668161	0.172951559	0.023461362	0.001955113
330	0.114583333	0.02495826	0.17498548	0.02440705	0.002033921
335	0.116319444	0.025260019	0.17710115	0.025388042	0.00211567
340	0.118055556	0.025573845	0.179301427	0.026403323	0.002200277
345	0.119791667	0.025900135	0.181589085	0.027451892	0.002287658
350	0.121527778	0.026239272	0.183966815	0.028532758	0.00237773
355	0.123263889	0.026591628	0.186437226	0.029644942	0.002470412
360	0.125	0.026957564	0.189002849	0.030787475	0.002565623
365	0.126736111	0.027337429	0.191666133	0.031959401	0.002663283
370	0.128472222	0.027731562	0.194429447	0.033159774	0.002763314
375	0.130208333	0.028140289	0.197295085	0.034387658	0.002865638
380	0.131944444	0.028563927	0.200265263	0.035642131	0.002970178
385	0.133680556	0.029002781	0.20334212	0.03692228	0.003076857
390	0.135416667	0.029457144	0.20652772	0.038227203	0.0031856
395	0.137152778	0.029927302	0.209824054	0.039556009	0.003296334
400	0.138888889	0.030413527	0.213233039	0.040907819	0.003408985
405	0.140625	0.030916083	0.216756519	0.042281763	0.00352348
410	0.142361111	0.031435222	0.220396268	0.043676983	0.003639749
415	0.144097222	0.031971187	0.224153987	0.045092631	0.003757719
420	0.145833333	0.032524211	0.22803131	0.04652787	0.003877323
425	0.147569444	0.033094518	0.232029799	0.047981874	0.003998489
430	0.149305556	0.033682319	0.236150951	0.049453826	0.004121152
435	0.151041667	0.03428782	0.240396195	0.050942922	0.004245244
440	0.152777778	0.034911215	0.244766892	0.052448366	0.004370697
445	0.154513889	0.035552688	0.24926434	0.053969374	0.004497448
450	0.15625	0.036212415	0.253889771	0.055505171	0.004625431
455	0.157986111	0.036890564	0.258644353	0.057054993	0.004754583
460	0.159722222	0.037587291	0.263529194	0.058618086	0.004884841
465	0.161458333	0.038302745	0.268545336	0.060193708	0.005016142
470	0.163194444	0.039037068	0.273693763	0.061781124	0.005148427
475	0.164930556	0.03979039	0.278975397	0.063379611	0.005281634
480	0.166666667	0.040562834	0.284391102	0.064988455	0.005415705
485	0.168402778	0.041354516	0.289941682	0.066606953	0.005550579
490	0.170138889	0.042165542	0.295627883	0.068234412	0.005686201
495	0.171875	0.042996009	0.301450395	0.069870148	0.005822512
500	0.173611111	0.043846009	0.307409852	0.071513487	0.005959457
505	0.175347222	0.044715624	0.313506833	0.073163766	0.00609698
510	0.177083333	0.045604929	0.31974186	0.074820328	0.006235027
515	0.178819444	0.046513991	0.326115404	0.076482531	0.006373544
520	0.180555556	0.047442869	0.332627883	0.078149739	0.006512478
525	0.182291667	0.048391615	0.33927966	0.079821326	0.006651777
530	0.184027778	0.049360274	0.346071049	0.081496677	0.00679139
535	0.185763889	0.050348883	0.353002315	0.083175184	0.006931265
540	0.1875	0.051357474	0.360073669	0.084856251	0.007071354
545	0.189236111	0.052386069	0.367285276	0.08653929	0.007211607
550	0.190972222	0.053434685	0.374637253	0.088223722	0.007351977
555	0.192708333	0.054503331	0.382129668	0.089908978	0.007492415

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
560	0.194444444	0.055592012	0.389762543	0.091594498	0.007632875
565	0.196180556	0.056700723	0.397535854	0.093279731	0.007773311
570	0.197916667	0.057829454	0.405449532	0.094964135	0.007913678
575	0.199652778	0.05897819	0.413503463	0.096647178	0.008053932
580	0.201388889	0.060146908	0.421697491	0.098328336	0.008194028
585	0.203125	0.06133558	0.430031416	0.100007093	0.008333924
590	0.204861111	0.06254417	0.438504994	0.101682944	0.008473579
595	0.206597222	0.063772639	0.447117944	0.103355391	0.008612949
600	0.208333333	0.06502094	0.455869939	0.105023947	0.008751996
605	0.210069444	0.066289022	0.464760617	0.106688132	0.008890678
610	0.211805556	0.067576826	0.473789573	0.108347474	0.009028956
615	0.213541667	0.06888429	0.482956366	0.110001512	0.009166793
620	0.215277778	0.070211345	0.492260515	0.111649791	0.009304149
625	0.217013889	0.071557917	0.501701504	0.113291867	0.009440989
630	0.21875	0.072923929	0.511292779	0.114927303	0.009577275
635	0.220486111	0.074309294	0.520991752	0.11655567	0.009712973
640	0.222222222	0.075713926	0.530839797	0.118176549	0.009848046
645	0.223958333	0.077137729	0.540822258	0.119789528	0.009982461
650	0.225694444	0.078580605	0.550938442	0.121394203	0.010116184
655	0.227430556	0.08004245	0.561187623	0.122990179	0.010249182
660	0.229166667	0.081523157	0.571569046	0.12457707	0.010381423
665	0.230902778	0.083022613	0.582081921	0.126154497	0.010512875
670	0.232638889	0.084540702	0.592725428	0.127722089	0.010643507
675	0.234375	0.086077301	0.603498718	0.129279482	0.01077329
680	0.236111111	0.087632286	0.614400912	0.130826323	0.010902194
685	0.237847222	0.089205527	0.6254311	0.132362264	0.011030189
690	0.239583333	0.09079689	0.636588348	0.133886966	0.011157247
695	0.241319444	0.092406239	0.647871689	0.135400098	0.011283342
700	0.243055556	0.094033343	0.659280134	0.136901337	0.011408445
705	0.244791667	0.09567832	0.670812664	0.138390366	0.011532531
710	0.246527778	0.09734076	0.682468237	0.139866878	0.011655573
715	0.248263889	0.099020597	0.694245785	0.141330572	0.011777548
720	0.25	0.100717676	0.706144215	0.142781155	0.01189843
725	0.251736111	0.102431837	0.71816241	0.144218341	0.012018195
730	0.253472222	0.104162917	0.730299231	0.145641853	0.012136821
735	0.255208333	0.105910751	0.742553516	0.147051419	0.012254285
740	0.256944444	0.107675171	0.75492408	0.148446777	0.012370565
745	0.258680556	0.109456003	0.76740972	0.14982767	0.012485639
750	0.260416667	0.111253074	0.780009207	0.15119385	0.012599487
755	0.262152778	0.113066205	0.792721297	0.152545074	0.01271209
760	0.263888889	0.114895216	0.805544722	0.153881109	0.012823426
765	0.265625	0.116739924	0.8184782	0.155201727	0.012933477
770	0.267361111	0.118600143	0.831520425	0.156506708	0.013042226
775	0.269097222	0.120475684	0.844670078	0.157795838	0.013149653
780	0.270833333	0.122366356	0.857925821	0.15906891	0.013255743
785	0.272569444	0.124271967	0.871286298	0.160325726	0.013360477
790	0.274305556	0.126192321	0.884750139	0.161566093	0.013463841
795	0.276041667	0.12812722	0.898315958	0.162789823	0.013565819
800	0.277777778	0.130076465	0.911982353	0.163996739	0.013666395
805	0.279513889	0.132039852	0.925747908	0.165186667	0.013765556
810	0.28125	0.134017179	0.939611195	0.166359442	0.013863287
815	0.282986111	0.13600824	0.95357077	0.167514904	0.013959575
820	0.284722222	0.138012827	0.967625179	0.168652901	0.014054408
825	0.286458333	0.14003073	0.981772953	0.169773285	0.014147774
830	0.288194444	0.142061739	0.996012612	0.170875917	0.01423966
835	0.289930556	0.144105642	1.010340668	0.171960663	0.014330055



**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
840	0.291666667	0.146162223	1.024761617	0.173027395	0.01441895
845	0.293402778	0.148231268	1.03926795	0.174075994	0.014506333
850	0.295138889	0.15031256	1.053860145	0.175106343	0.014592195
855	0.296875	0.15240588	1.068536673	0.176118334	0.014676528
860	0.298611111	0.154511009	1.083295995	0.177111864	0.014759322
865	0.300347222	0.156627726	1.098136565	0.178086838	0.01484057
870	0.302083333	0.15875581	1.113056828	0.179043163	0.014920264
875	0.303819444	0.160895038	1.128055225	0.179980756	0.014998396
880	0.305555556	0.163045187	1.143130186	0.180899538	0.015074962
885	0.307291667	0.165206032	1.158280139	0.181799436	0.015149953
890	0.309027778	0.167377347	1.173503505	0.182680383	0.015223365
895	0.310763889	0.169558908	1.188798698	0.183542317	0.015295193
900	0.3125	0.171750486	1.20416413	0.184385183	0.015365432
905	0.314236111	0.173951856	1.219598207	0.185208931	0.015434078
910	0.315972222	0.176162789	1.235099333	0.186013516	0.015501126
915	0.317708333	0.178383057	1.250665908	0.186798899	0.015566575
920	0.319444444	0.180612431	1.266296329	0.187565048	0.015630421
925	0.321180556	0.182850682	1.28198899	0.188311933	0.015692661
930	0.322916667	0.185097582	1.297742285	0.189039533	0.015753294
935	0.324652778	0.1873529	1.313554604	0.18974783	0.015812319
940	0.326388889	0.189616408	1.329424338	0.190436812	0.015869734
945	0.328125	0.191887875	1.345349877	0.191106472	0.015925539
950	0.329861111	0.194167072	1.361329612	0.19175681	0.015979734
955	0.331597222	0.196453769	1.377361931	0.192387827	0.016032319
960	0.333333333	0.198747737	1.393445225	0.192999533	0.016083294
965	0.335069444	0.201048746	1.409577887	0.193591942	0.016132662
970	0.336805556	0.203356567	1.425758309	0.194165071	0.016180423
975	0.338541667	0.205670971	1.441984888	0.194718946	0.016226579
980	0.340277778	0.20799173	1.458256021	0.195253593	0.016271133
985	0.342013889	0.210318616	1.474570108	0.195769046	0.016314087
990	0.34375	0.212651401	1.490925553	0.196265343	0.016355445
995	0.345486111	0.214989857	1.507320764	0.196742527	0.016395211
1000	0.347222222	0.217333759	1.523754151	0.197200644	0.016433387
1005	0.348958333	0.21968288	1.54022413	0.197639748	0.016469979
1010	0.350694444	0.222036994	1.556729121	0.198059894	0.016504991
1015	0.352430556	0.224395878	1.57326755	0.198461143	0.016538429
1020	0.354166667	0.226759307	1.589837846	0.198843561	0.016570297
1025	0.355902778	0.229127058	1.606438448	0.199207217	0.016600601
1030	0.357638889	0.23149891	1.623067797	0.199552187	0.016629349
1035	0.359375	0.233874641	1.639724342	0.199878547	0.016656546
1040	0.361111111	0.236254031	1.656406541	0.200186382	0.016682198
1045	0.362847222	0.23863686	1.673112856	0.200475777	0.016706315
1050	0.364583333	0.241022911	1.689841758	0.200746824	0.016728902
1055	0.366319444	0.243411967	1.706591726	0.200999619	0.016749968
1060	0.368055556	0.245803811	1.723361247	0.201234259	0.016769522
1065	0.369791667	0.24819823	1.740148818	0.201450849	0.016787571
1070	0.371527778	0.25059501	1.756952943	0.201649496	0.016804125
1075	0.373263889	0.25299394	1.773772135	0.20183031	0.016819193
1080	0.375	0.255394807	1.790604919	0.201993407	0.016832784
1085	0.376736111	0.257797405	1.807449828	0.202138905	0.016844909
1090	0.378472222	0.260201523	1.824305405	0.202266926	0.016855577
1095	0.380208333	0.262606957	1.841170205	0.202377597	0.0168648
1100	0.381944444	0.265013502	1.858042792	0.202471046	0.016872587
1105	0.383680556	0.267420955	1.874921743	0.202547408	0.016878951
1110	0.385416667	0.269829114	1.891805644	0.202606819	0.016883902
1115	0.387152778	0.272237779	1.908693096	0.20264942	0.016887452

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
1120	0.388888889	0.274646752	1.925582709	0.202675353	0.016889613
1125	0.390625	0.277055837	1.942473106	0.202684767	0.016890397
1130	0.392361111	0.27946484	1.959362924	0.202677811	0.016889818
1135	0.394097222	0.281873567	1.97625081	0.202654638	0.016887887
1140	0.395833333	0.284281827	1.993135427	0.202615407	0.016884617
1145	0.397569444	0.286689433	2.01001545	0.202560276	0.016880023
1150	0.399305556	0.289096196	2.026889568	0.20248941	0.016874117
1155	0.401041667	0.291501932	2.043756482	0.202402973	0.016866914
1160	0.402777778	0.293906457	2.06061491	0.202301136	0.016858428
1165	0.404513889	0.296309591	2.077463583	0.202184069	0.016848672
1170	0.40625	0.298711155	2.094301245	0.20205195	0.016837662
1175	0.407986111	0.301110971	2.111126658	0.201904954	0.016825413
1180	0.409722222	0.303508866	2.127938597	0.201743264	0.016811939
1185	0.411458333	0.305904666	2.144735852	0.201567062	0.016797255
1190	0.413194444	0.308298202	2.16151723	0.201376534	0.016781378
1195	0.414930556	0.310689305	2.178281552	0.20117187	0.016764323
1200	0.416666667	0.31307781	2.195027657	0.200953261	0.016746105
1205	0.418402778	0.315463552	2.211754399	0.2007209	0.016726742
1210	0.420138889	0.317846372	2.228460648	0.200474985	0.016706249
1215	0.421875	0.320226111	2.24514529	0.200215713	0.016684643
1220	0.423611111	0.322602611	2.261807231	0.199943287	0.016661941
1225	0.425347222	0.324975719	2.27844539	0.199657909	0.016638159
1230	0.427083333	0.327345284	2.295058706	0.199359786	0.016613316
1235	0.428819444	0.329711157	2.311646133	0.199049126	0.016587427
1240	0.430555556	0.33207319	2.328206645	0.19872614	0.016560512
1245	0.432291667	0.334431241	2.344739231	0.198391038	0.016532587
1250	0.434027778	0.336785167	2.361242901	0.198044037	0.01650367
1255	0.435763889	0.339134829	2.37771668	0.197685353	0.016473779
1260	0.4375	0.341480093	2.394159614	0.197315203	0.016442934
1265	0.439236111	0.343820823	2.410570765	0.19693381	0.016411151
1270	0.440972222	0.346156888	2.426949214	0.196541394	0.01637845
1275	0.442708333	0.348488162	2.443294063	0.19613818	0.016344848
1280	0.444444444	0.350814517	2.459604429	0.195724395	0.016310366
1285	0.446180556	0.353135831	2.475879451	0.195300265	0.016275022
1290	0.447916667	0.355451983	2.492118286	0.19486602	0.016238835
1295	0.449652778	0.357762857	2.50832011	0.194421891	0.016201824
1300	0.451388889	0.360068337	2.524484119	0.19396811	0.016164009
1305	0.453125	0.362368312	2.540609529	0.193504912	0.016125409
1310	0.454861111	0.364662672	2.556695573	0.193032531	0.016086044
1315	0.456597222	0.36695131	2.572741507	0.192551206	0.016045934
1320	0.458333333	0.369234125	2.588746604	0.192061173	0.016005098
1325	0.460069444	0.371511014	2.604710161	0.191562673	0.015963556
1330	0.461805556	0.373781481	2.620631489	0.191055946	0.015921329
1335	0.463541667	0.37604663	2.636509926	0.190541235	0.015878436
1340	0.465277778	0.378305168	2.652344824	0.190018782	0.015834898
1345	0.467013889	0.380557408	2.66813556	0.189488831	0.015790736
1350	0.46875	0.382803263	2.683881529	0.188951629	0.015745969
1355	0.470486111	0.38504265	2.699582148	0.188407421	0.015700618
1360	0.472222222	0.387275487	2.715236852	0.187856455	0.015654705
1365	0.473958333	0.389501699	2.7308451	0.187298979	0.015608248
1370	0.475694444	0.39172121	2.746406371	0.186735241	0.01556127
1375	0.477430556	0.393933949	2.761920162	0.186165492	0.015513791
1380	0.479166667	0.396139848	2.777385993	0.185589982	0.015465832
1385	0.480902778	0.398338841	2.792803407	0.185008962	0.015417414
1390	0.482638889	0.400530865	2.808171964	0.184422685	0.015368557
1395	0.484375	0.402715862	2.823491247	0.183831402	0.015319283

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
1400	0.486111111	0.404893774	2.838760861	0.183235366	0.015269614
1405	0.487847222	0.407064548	2.853980431	0.182634832	0.015219569
1410	0.489583333	0.409228134	2.869149602	0.182030052	0.015169171
1415	0.491319444	0.411384484	2.884268042	0.181421282	0.01511844
1420	0.493055556	0.413533554	2.899333544	0.180808775	0.015067398
1425	0.494791667	0.415675303	2.914351505	0.180192787	0.015016066
1430	0.496527778	0.417809691	2.92931597	0.179573573	0.014964464
1435	0.498263889	0.419936684	2.944228585	0.178951387	0.014912616
1440	0.5	0.42205625	2.959089126	0.178326486	0.01486054
1445	0.501736111	0.424168359	2.973897386	0.177699125	0.01480826
1450	0.503472222	0.426272985	2.988653183	0.177069559	0.014755797
1455	0.505208333	0.428370105	3.003356353	0.176438043	0.01470317
1460	0.506944444	0.430459699	3.018006756	0.175804834	0.014650403
1465	0.508680556	0.432541749	3.032604271	0.175170186	0.014597516
1470	0.510416667	0.434616242	3.047148801	0.174534355	0.01454453
1475	0.512152778	0.436683167	3.061640267	0.173897594	0.014491466
1480	0.513888889	0.438742515	3.076078614	0.173260159	0.014438347
1485	0.515625	0.440794281	3.090463806	0.172622304	0.014385192
1490	0.517361111	0.442838464	3.104795829	0.171984283	0.014332024
1495	0.519097222	0.444875065	3.119074692	0.171346348	0.014278862
1500	0.520833333	0.446904088	3.133300421	0.170708753	0.014225729
1505	0.522569444	0.448925539	3.147473067	0.17007175	0.014172646
1510	0.524305556	0.450939428	3.1615927	0.169435591	0.014119633
1515	0.526041667	0.45294577	3.17565941	0.168800527	0.014066711
1520	0.527777778	0.454944579	3.189673311	0.168166807	0.014013901
1525	0.529513889	0.456935875	3.203634534	0.167534682	0.013961224
1530	0.53125	0.458919679	3.217543234	0.1669044	0.0139087
1535	0.532986111	0.460896017	3.231399585	0.16627621	0.013856351
1540	0.534722222	0.462864916	3.245203782	0.165650358	0.013804196
1545	0.536458333	0.464826406	3.258956039	0.16502709	0.013752257
1550	0.538194444	0.466780523	3.272656593	0.164406651	0.013700554
1555	0.539930556	0.468727301	3.2863057	0.163789285	0.013649107
1560	0.541666667	0.470666781	3.299903637	0.163175236	0.013597936
1565	0.543402778	0.472599005	3.313450699	0.162564744	0.013547062
1570	0.545138889	0.474524018	3.326947203	0.16195805	0.013496504
1575	0.546875	0.476441867	3.340393486	0.161355394	0.013446283
1580	0.548611111	0.478352604	3.353789903	0.160757013	0.013396418
1585	0.550347222	0.480256283	3.367136832	0.160163143	0.013346929
1590	0.552083333	0.482152959	3.380434667	0.159574021	0.013297835
1595	0.553819444	0.484042693	3.393683824	0.158989878	0.013249157
1600	0.555555556	0.485925545	3.406884736	0.158410948	0.013200912
1605	0.557291667	0.487801581	3.420037858	0.157837461	0.013153122
1610	0.559027778	0.489670868	3.433143661	0.157269645	0.013105804
1615	0.560763889	0.491533476	3.446202639	0.156707729	0.013058977
1620	0.5625	0.493389477	3.4592153	0.156151936	0.013012661
1625	0.564236111	0.495238949	3.472182175	0.155602492	0.012966874
1630	0.565972222	0.497081967	3.485103809	0.155059617	0.012921635
1635	0.567708333	0.498918614	3.49798077	0.154523532	0.012876961
1640	0.569444444	0.500748973	3.510813642	0.153994454	0.012832871
1645	0.571180556	0.502573128	3.523603025	0.1534726	0.012789383
1650	0.572916667	0.50439117	3.53634954	0.152958184	0.012746515
1655	0.574652778	0.506203188	3.549053825	0.152451417	0.012704285
1660	0.576388889	0.508009276	3.561716534	0.151952508	0.012662709
1665	0.578125	0.50980953	3.57433834	0.151461667	0.012621806
1670	0.579861111	0.511604048	3.586919931	0.150979097	0.012581591
1675	0.581597222	0.513392931	3.599462014	0.150505002	0.012542083

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
1680	0.583333333	0.515176282	3.611965313	0.150039582	0.012503298
1685	0.585069444	0.516954207	3.624430566	0.149583035	0.012465253
1690	0.586805556	0.518726813	3.636858529	0.149135558	0.012427963
1695	0.588541667	0.520494211	3.649249974	0.148697343	0.012391445
1700	0.590277778	0.522256512	3.661605689	0.148268581	0.012355715
1705	0.592013889	0.524013832	3.673926478	0.14784946	0.012320788
1710	0.59375	0.525766287	3.686213158	0.147440166	0.01228668
1715	0.595486111	0.527513996	3.698466565	0.147040881	0.012253407
1720	0.597222222	0.52925708	3.710687547	0.146651784	0.012220982
1725	0.598958333	0.530995663	3.722876968	0.146273054	0.012189421
1730	0.600694444	0.53272987	3.735035707	0.145904865	0.012158739
1735	0.602430556	0.534459827	3.747164656	0.145547387	0.012128949
1740	0.604166667	0.536185665	3.759264721	0.145200789	0.012100066
1745	0.605902778	0.537907515	3.771336824	0.144865236	0.012072103
1750	0.607638889	0.539625509	3.783381899	0.144540891	0.012045074
1755	0.609375	0.541339784	3.795400891	0.144227912	0.012018993
1760	0.611111111	0.543050475	3.807394762	0.143926456	0.011993871
1765	0.612847222	0.544757722	3.819364485	0.143636675	0.011969723
1770	0.614583333	0.546461666	3.831311045	0.143358718	0.01194656
1775	0.616319444	0.548162447	3.84323544	0.143092732	0.011924394
1780	0.618055556	0.549860212	3.855138678	0.14283886	0.011903238
1785	0.619791667	0.551555104	3.867021781	0.14259724	0.011883103
1790	0.621527778	0.553247272	3.878885782	0.142368009	0.011864001
1795	0.623263889	0.554936864	3.890731723	0.142151298	0.011845941
1800	0.625	0.556624031	3.90256066	0.141947236	0.011828936
1805	0.626736111	0.558308924	3.914373656	0.141755949	0.011812996
1810	0.628472222	0.559991697	3.926171785	0.141577557	0.01179813
1815	0.630208333	0.561672504	3.937956134	0.141412179	0.011784348
1820	0.631944444	0.563351501	3.949727794	0.141259927	0.011771661
1825	0.633680556	0.565028846	3.96148787	0.141120912	0.011760076
1830	0.635416667	0.566704698	3.973237473	0.140995239	0.011749603
1835	0.637152778	0.568379215	3.984977724	0.140883012	0.011740251
1840	0.638888889	0.57005256	3.996709752	0.140784327	0.011732027
1845	0.640625	0.571724893	4.008434691	0.140699279	0.01172494
1850	0.642361111	0.573396379	4.020153688	0.140627958	0.011718997
1855	0.644097222	0.575067181	4.031867892	0.140570449	0.011714204
1860	0.645833333	0.576737465	4.043578462	0.140526835	0.01171057
1865	0.647569444	0.578407397	4.055286561	0.140497192	0.011708099
1870	0.649305556	0.580077143	4.06699336	0.140481592	0.011706799
1875	0.651041667	0.581746872	4.078700036	0.140480106	0.011706676
1880	0.652777778	0.583416751	4.090407769	0.140492797	0.011707733
1885	0.654513889	0.585086951	4.102117746	0.140519724	0.011709977
1890	0.65625	0.58675764	4.113831158	0.140560943	0.011713412
1895	0.657986111	0.58842899	4.1255492	0.140616505	0.011718042
1900	0.659722222	0.590101171	4.137273071	0.140686455	0.011723871
1905	0.661458333	0.591774355	4.149003974	0.140770835	0.011730903
1910	0.663194444	0.593448714	4.160743114	0.140869681	0.01173914
1915	0.664930556	0.59512442	4.1724917	0.140983025	0.011748585
1920	0.666666667	0.596801646	4.184250941	0.141110895	0.011759241
1925	0.668402778	0.598480565	4.19602205	0.141253312	0.011771109
1930	0.670138889	0.600161349	4.207806241	0.141410293	0.011784191
1935	0.671875	0.601844173	4.219604729	0.141581851	0.011798488
1940	0.673611111	0.603529209	4.231418728	0.141767992	0.011813999
1945	0.675347222	0.605216631	4.243249455	0.14196872	0.011830727
1950	0.677083333	0.606906613	4.255098124	0.14218403	0.011848669
1955	0.678819444	0.608599326	4.26696595	0.142413915	0.011867826

**Best Fit Line Storm Characteristics**

Time [min]	T/Total	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
1960	0.680555556	0.610294945	4.278854147	0.142658361	0.011888197
1965	0.682293667	0.611993642	4.290763926	0.142917349	0.011909779
1970	0.684027778	0.613695591	4.302696497	0.143190855	0.011932571
1975	0.685763889	0.615400962	4.314653068	0.14347885	0.011956571
1980	0.6875	0.617109928	4.326634843	0.143781298	0.011981775
1985	0.689236111	0.61882266	4.338643023	0.144098159	0.01200818
1990	0.690972222	0.620539329	4.350678805	0.144429388	0.012035782
1995	0.692708333	0.622260106	4.362743383	0.144774932	0.012064578
2000	0.694444444	0.623985158	4.374837944	0.145134734	0.012094561
2005	0.696180556	0.625714657	4.386963672	0.145508731	0.012125728
2010	0.697916667	0.627448768	4.399121743	0.145896855	0.012158071
2015	0.699652778	0.629187659	4.411313329	0.146299031	0.012191586
2020	0.701388889	0.630931497	4.423539594	0.146715178	0.012226265
2025	0.703125	0.632680446	4.435801694	0.14714521	0.012262101
2030	0.704861111	0.634434671	4.448100781	0.147589035	0.012299086
2035	0.706597222	0.636194333	4.460437994	0.148046555	0.012337213
2040	0.708333333	0.637959595	4.472814466	0.148517665	0.012376472
2045	0.710069444	0.639730617	4.48523132	0.149002255	0.012416855
2050	0.711805556	0.641507557	4.497689671	0.149500207	0.012458351
2055	0.713541667	0.643290573	4.510190621	0.1500114	0.01250095
2060	0.715277778	0.645079821	4.522735263	0.150535704	0.012544642
2065	0.717013889	0.646875456	4.535324678	0.151072984	0.012589415
2070	0.71875	0.648677628	4.547959936	0.151623097	0.012635258
2075	0.720486111	0.65048649	4.560642094	0.152185896	0.012682158
2080	0.722222222	0.652302191	4.573372196	0.152761226	0.012730102
2085	0.723958333	0.654124876	4.586151274	0.153348925	0.012779077
2090	0.725694444	0.655954692	4.598980342	0.153948826	0.012829069
2095	0.727430556	0.657791782	4.611860405	0.154560753	0.012880063
2100	0.729166667	0.659636285	4.624792449	0.155184527	0.012932044
2105	0.730902778	0.661488341	4.637777446	0.155819959	0.012984997
2110	0.732638889	0.663348086	4.65081635	0.156466854	0.013038904
2115	0.734375	0.665215654	4.663910101	0.157125011	0.013093751
2120	0.736111111	0.667091176	4.677059619	0.157794221	0.013149518
2125	0.737847222	0.668974781	4.690265808	0.158474269	0.013206189
2130	0.739583333	0.670866595	4.703529553	0.159164932	0.013263744
2135	0.741319444	0.672766741	4.716851718	0.159865982	0.013322165
2140	0.743055556	0.674675341	4.73023315	0.160577182	0.013381432
2145	0.744791667	0.676592512	4.743674674	0.161298287	0.013441524
2150	0.746527778	0.678518368	4.757177094	0.162029048	0.013502421
2155	0.748263889	0.680453022	4.770741195	0.162769206	0.0135641
2160	0.75	0.682396582	4.784367736	0.163518495	0.013626541
2165	0.751736111	0.684349153	4.798057456	0.164276643	0.01368972
2170	0.753472222	0.686310838	4.811811071	0.16504337	0.013753614
2175	0.755208333	0.688281734	4.82562927	0.165818388	0.013818199
2180	0.756944444	0.690261937	4.83951272	0.166601402	0.01388345
2185	0.758680556	0.692251538	4.853462062	0.167392109	0.013949342
2190	0.760416667	0.694250625	4.867477912	0.168190199	0.01401585
2195	0.762152778	0.696259282	4.881560858	0.168995354	0.014082946
2200	0.763888889	0.698277589	4.895711462	0.169807248	0.014150604
2205	0.765625	0.700305623	4.909930258	0.170625547	0.014218796
2210	0.767361111	0.702343454	4.924217751	0.171449912	0.014287493
2215	0.769097222	0.704391152	4.938574416	0.172279991	0.014356666
2220	0.770833333	0.70644878	4.953000702	0.173115429	0.014426286
2225	0.772569444	0.708516397	4.967497024	0.17395586	0.014496322
2230	0.774305556	0.710594058	4.982063766	0.174800911	0.014566743
2235	0.776041667	0.712681814	4.996701283	0.1756502	0.014637517

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
2240	0.777777778	0.714777771	5.011409895	0.17650334	0.014708612
2245	0.779513889	0.716887787	5.026189889	0.177359932	0.0147739994
2250	0.78125	0.719006082	5.04104152	0.17821957	0.014851631
2255	0.782986111	0.721134626	5.055965007	0.179081841	0.014923487
2260	0.784722222	0.723273445	5.070960533	0.179946322	0.014995527
2265	0.786458333	0.72542256	5.086028249	0.180812582	0.015067715
2270	0.788194444	0.727581988	5.101168264	0.181680183	0.015140015
2275	0.789930556	0.729751738	5.116380654	0.182548676	0.01521239
2280	0.791666667	0.731931816	5.131665454	0.183417607	0.015284801
2285	0.793402778	0.734122222	5.147022663	0.184286509	0.015357209
2290	0.795138889	0.736322949	5.162452239	0.185154909	0.015429576
2295	0.796875	0.738533987	5.177954099	0.186022326	0.01550186
2300	0.798611111	0.740755317	5.193528122	0.186888268	0.015574022
2305	0.800347222	0.742986916	5.209174141	0.187752236	0.01564602
2310	0.802083333	0.745228755	5.224891952	0.188613722	0.01571781
2315	0.803819444	0.747480797	5.240681302	0.189472207	0.015789351
2320	0.805555556	0.749743001	5.256541899	0.190327166	0.015860597
2325	0.807291667	0.752015319	5.272473405	0.191178064	0.015931505
2330	0.809027778	0.754297696	5.288475434	0.192024355	0.01600203
2335	0.810763889	0.756590071	5.304547558	0.192865486	0.016072124
2340	0.8125	0.758892375	5.320689299	0.193700896	0.016141741
2345	0.814236111	0.761204533	5.336900134	0.194530011	0.016210834
2350	0.815972222	0.763526465	5.353179488	0.19535225	0.016279354
2355	0.817708333	0.765858081	5.36952674	0.1961767024	0.016347252
2360	0.819444444	0.768199286	5.385941218	0.196973732	0.016414478
2365	0.821180556	0.770549976	5.402422198	0.197771765	0.01648098
2370	0.822916667	0.77291004	5.418968907	0.198560505	0.016546709
2375	0.824652778	0.775279362	5.435580517	0.199339322	0.01661161
2380	0.826388889	0.777657815	5.452256149	0.20010758	0.016675632
2385	0.828125	0.780045266	5.468994868	0.200894631	0.016738719
2390	0.829861111	0.782441575	5.485795686	0.201609818	0.016800818
2395	0.831597222	0.784846591	5.502657559	0.202342473	0.016861873
2400	0.833333333	0.787260159	5.519579386	0.203061921	0.016921827
2405	0.835069444	0.789682114	5.536560008	0.203767475	0.016980623
2410	0.836805556	0.79211228	5.553598212	0.204458438	0.017038203
2415	0.838541667	0.794550478	5.57069272	0.205134105	0.017094509
2420	0.840277778	0.796996516	5.5878422	0.205793758	0.01714948
2425	0.842013889	0.799450196	5.605045256	0.206436673	0.017203056
2430	0.84375	0.80191131	5.622300432	0.207062112	0.017255176
2435	0.845486111	0.804379641	5.63960621	0.207669328	0.017305777
2440	0.847222222	0.806854964	5.656961007	0.208257566	0.017354797
2445	0.848958333	0.809337043	5.674363178	0.208826058	0.017402172
2450	0.850694444	0.811825636	5.691811014	0.209374027	0.017447836
2455	0.852430556	0.814320489	5.709302738	0.209900686	0.017491724
2460	0.854166667	0.816821339	5.726836507	0.210405236	0.01753377
2465	0.855902778	0.819327913	5.744410413	0.210886869	0.017573906
2470	0.857638889	0.82183993	5.762022477	0.211344767	0.017612064
2475	0.859375	0.824357097	5.779670652	0.211778099	0.017648175
2480	0.861111111	0.826879113	5.797352821	0.212186025	0.017682169
2485	0.862847222	0.829405665	5.815066795	0.212567695	0.017713975
2490	0.864583333	0.831936432	5.832810316	0.212922248	0.017743521
2495	0.866319444	0.83447108	5.85058105	0.213248811	0.017770734
2500	0.868055556	0.837009266	5.868376592	0.213546501	0.017795542
2505	0.869791667	0.839550637	5.886194461	0.213814424	0.017817869
2510	0.871527778	0.842094828	5.9040321	0.214051676	0.01783764
2515	0.873263889	0.844641463	5.921886879	0.214257341	0.017854778

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
2520	0.875	0.847190157	5.939756086	0.214430491	0.017869208
2525	0.876736111	0.84974051	5.957636936	0.21457019	0.017880849
2530	0.878472222	0.852292116	5.97552656	0.214675488	0.017889624
2535	0.880208333	0.854844552	5.993422012	0.214745426	0.017895452
2540	0.881944444	0.857397388	6.011320264	0.21477903	0.017898253
2545	0.883680556	0.85995018	6.029218208	0.214775321	0.017897943
2550	0.885416667	0.862502473	6.047112649	0.214733302	0.017894442
2555	0.887152778	0.865053799	6.065000314	0.214651969	0.017887664
2560	0.888888889	0.867603678	6.082877839	0.214530305	0.017877525
2565	0.890625	0.87015162	6.100741779	0.214367283	0.01786394
2570	0.892361111	0.872697121	6.118588601	0.214161861	0.017846822
2575	0.894097222	0.875239663	6.136414683	0.213912989	0.017826082
2580	0.895833333	0.877778718	6.154216317	0.213619605	0.017801634
2585	0.897569444	0.880313745	6.171989703	0.213280632	0.017773386
2590	0.899305556	0.882844187	6.189730952	0.212894985	0.017741249
2595	0.901041667	0.885369478	6.207436082	0.212461566	0.01770513
2600	0.902777778	0.887889037	6.225101021	0.211979264	0.017664939
2605	0.904513889	0.890402268	6.242721601	0.211446958	0.01762058
2610	0.90625	0.892908565	6.26029356	0.210863513	0.017571959
2615	0.907986111	0.895407305	6.277812542	0.210227785	0.017518982
2620	0.909722222	0.897897854	6.295274094	0.209538615	0.017461551
2625	0.911458333	0.900379563	6.312673663	0.208794832	0.017399569
2630	0.913194444	0.902851768	6.330006601	0.207995256	0.017332938
2635	0.914930556	0.905313792	6.347268159	0.207138691	0.017261558
2640	0.916666667	0.907764943	6.364453486	0.20622393	0.017185328
2645	0.918402778	0.910204515	6.381557632	0.205249756	0.017104146
2650	0.920138889	0.912631788	6.398575544	0.204214937	0.017017911
2655	0.921875	0.915046025	6.415502063	0.203118228	0.016926519
2660	0.923611111	0.917446476	6.432331927	0.201958374	0.016829865
2665	0.925347222	0.919832376	6.44905977	0.200734107	0.016727842
2670	0.927083333	0.922202944	6.465680115	0.199444144	0.016620345
2675	0.928819444	0.924573383	6.482187381	0.198087193	0.016507266
2680	0.930555556	0.926894882	6.498575877	0.196661946	0.016388496
2685	0.932291667	0.929214613	6.5148398	0.195167085	0.016263924
2690	0.934027778	0.931515733	6.53097324	0.193601277	0.01613344
2695	0.935763889	0.933797382	6.546970172	0.191963178	0.015996932
2700	0.9375	0.936058686	6.562824458	0.19025143	0.015854286
2705	0.939236111	0.938298753	6.578529846	0.188464663	0.015705389
2710	0.940972222	0.940516675	6.59407997	0.186601492	0.015550124
2715	0.942708333	0.942711526	6.609468347	0.184660521	0.015388377
2720	0.944444444	0.944882366	6.624688376	0.182640341	0.015220028
2725	0.946180556	0.947028235	6.639733336	0.180539528	0.015044961
2730	0.947916667	0.94914816	6.65459639	0.178356648	0.014863054
2735	0.949652778	0.951241146	6.669270578	0.17609025	0.014674187
2740	0.951388889	0.953306184	6.683748817	0.173738872	0.014478239
2745	0.953125	0.955342246	6.698023903	0.171301038	0.014275086
2750	0.954861111	0.957348287	6.712088508	0.168775259	0.014064605
2755	0.956597222	0.959323244	6.725935178	0.166160032	0.013846669
2760	0.958333333	0.961266035	6.739556331	0.163453841	0.013621153
2765	0.960069444	0.963175562	6.752944261	0.160655157	0.01338793
2770	0.961805556	0.965050706	6.766091131	0.157762436	0.01314687
2775	0.963541667	0.966890331	6.778988974	0.154774121	0.012897843
2780	0.965277778	0.968693283	6.791629694	0.151688642	0.01264072
2785	0.967013889	0.970458387	6.804005062	0.148504413	0.012375368
2790	0.96875	0.972184452	6.816106715	0.145219838	0.012101653
2795	0.970486111	0.973870264	6.827926157	0.141833304	0.011819442

**Best Fit Line Storm Characteristics**

Time [min]	T/Ttotal	P/PTotal	Cumulative Precipitation [in]	Intensity [in/hr]	Incremental Precipitation [in]
2800	0.972222222	0.975514594	6.839454756	0.138343184	0.011528599
2805	0.973958333	0.977116189	6.850683742	0.13474784	0.011228987
2810	0.975694444	0.978673781	6.86160421	0.131045616	0.010920468
2815	0.977430556	0.980186078	6.872207114	0.127234846	0.010602904
2820	0.979166667	0.98165177	6.882483268	0.123313847	0.010276154
2825	0.980902778	0.983069528	6.892423345	0.119280923	0.009940077
2830	0.982638889	0.984438	6.902017875	0.115134363	0.00959453
2835	0.984375	0.985755816	6.911257246	0.110872443	0.00923937
2840	0.986111111	0.987021583	6.920131698	0.106493424	0.008874452
2845	0.987847222	0.988233889	6.928631327	0.101995552	0.008499629
2850	0.989583333	0.989391301	6.936746082	0.09737706	0.008114755
2855	0.991319444	0.990492362	6.944465762	0.092636165	0.00771968
2860	0.993055556	0.991535598	6.951780018	0.08777107	0.007314256
2865	0.994791667	0.99251951	6.958678348	0.082779964	0.00689833
2870	0.996527778	0.993442579	6.9651501	0.077661021	0.006471752
2875	0.998263889	0.994303263	6.971184467	0.0724124	0.006034367
2880	1	1	7.011125	0.07	0.039940533



Hurricane Intensity and Precipitation Depth vs. Time

