

ANALYSIS OF DATA FROM STATEN ISLAND, NY FOR TROPICAL STORM FLOYD

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Abstract

Precipitation is important in terms of land use planning and storm water management. Tropical storm Floyd visited the New York City metropolitan region September 15th -16th, 1999. Storm data was collected at the College of Staten Island's Center for Environmental Science Weather Station located at: UTM 18 572042 E , 4495149 N. Dates are given in Julian days and time was recorded as EST(daylight savings time).

The precipitation data was obtained with an 8" tipping bucket precipitation gauge equipped with a windshield. The precipitation data is plotted in figure 1.

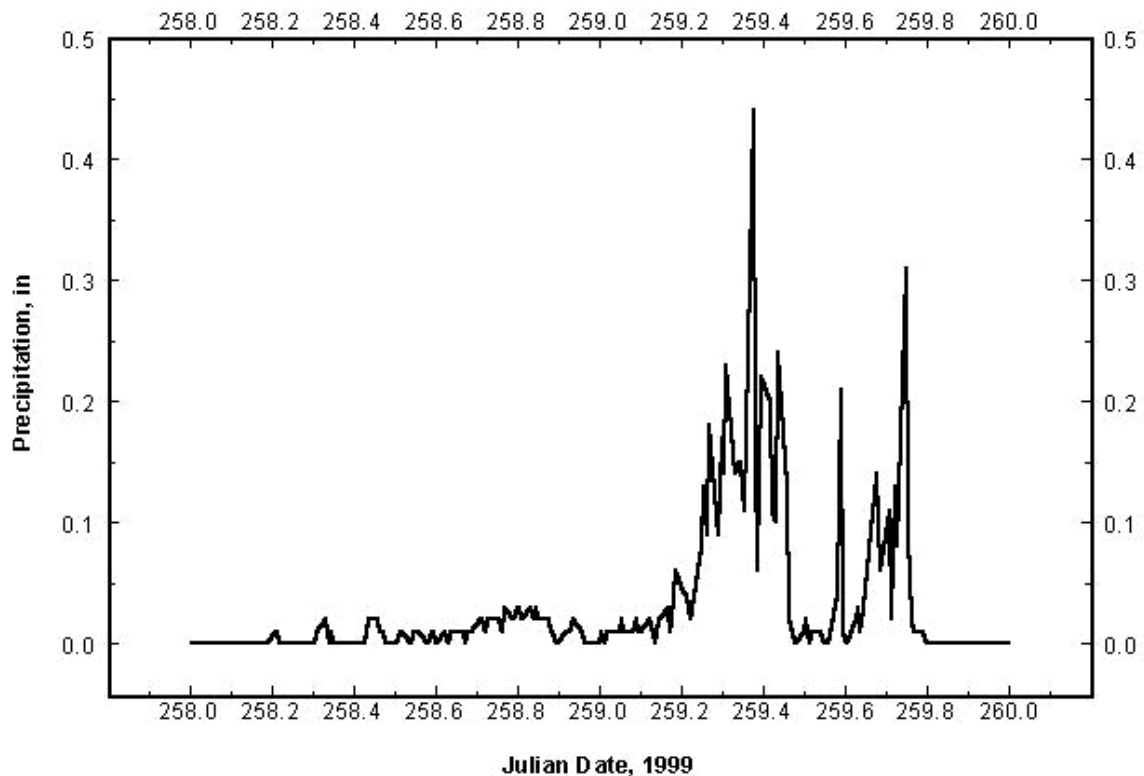


Figure 1: Plot of Precipitation vs. Time

Total rainfall for the storm was recorded as 6.08 inches. The most intense rainfall fell during a 6hr interval on September 16, 1999 (figure 2, Julian day 259)

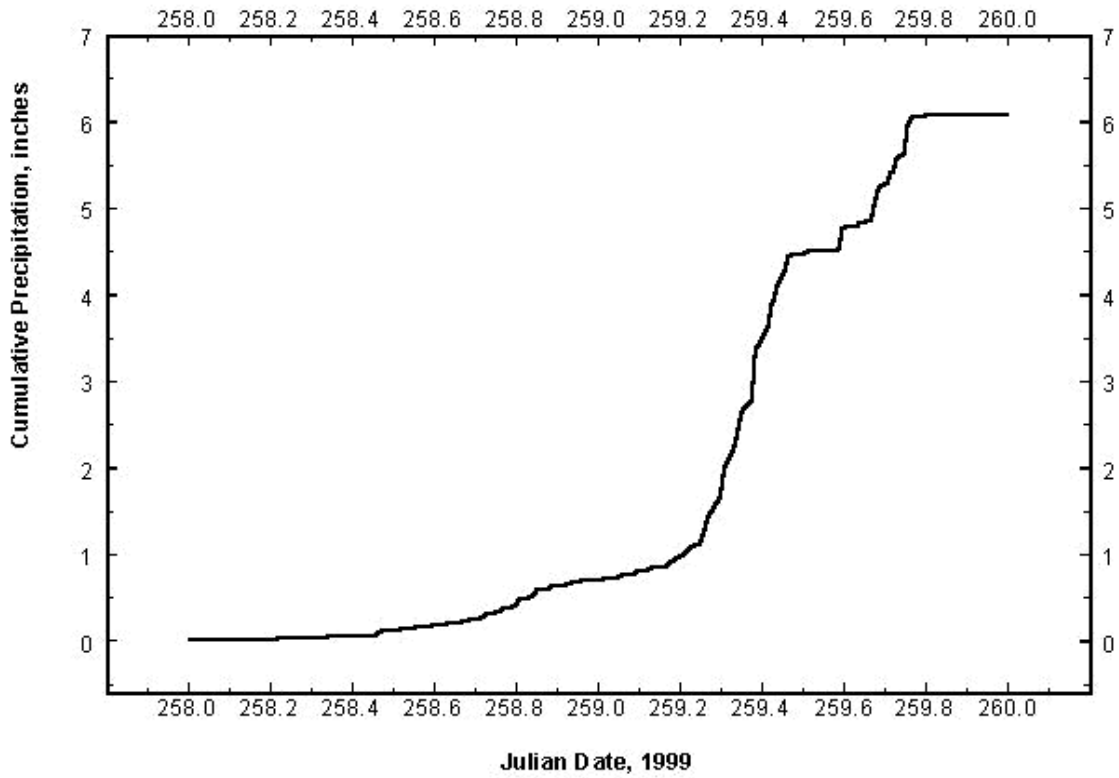


Figure 2: Plot of Cumulative Precipitation vs. Time.

The barometric pressure was measured with a solid-state barometric pressure sensor. A minimum barometric pressure of 28.96 inches was recorded during the storm (figure 3.)

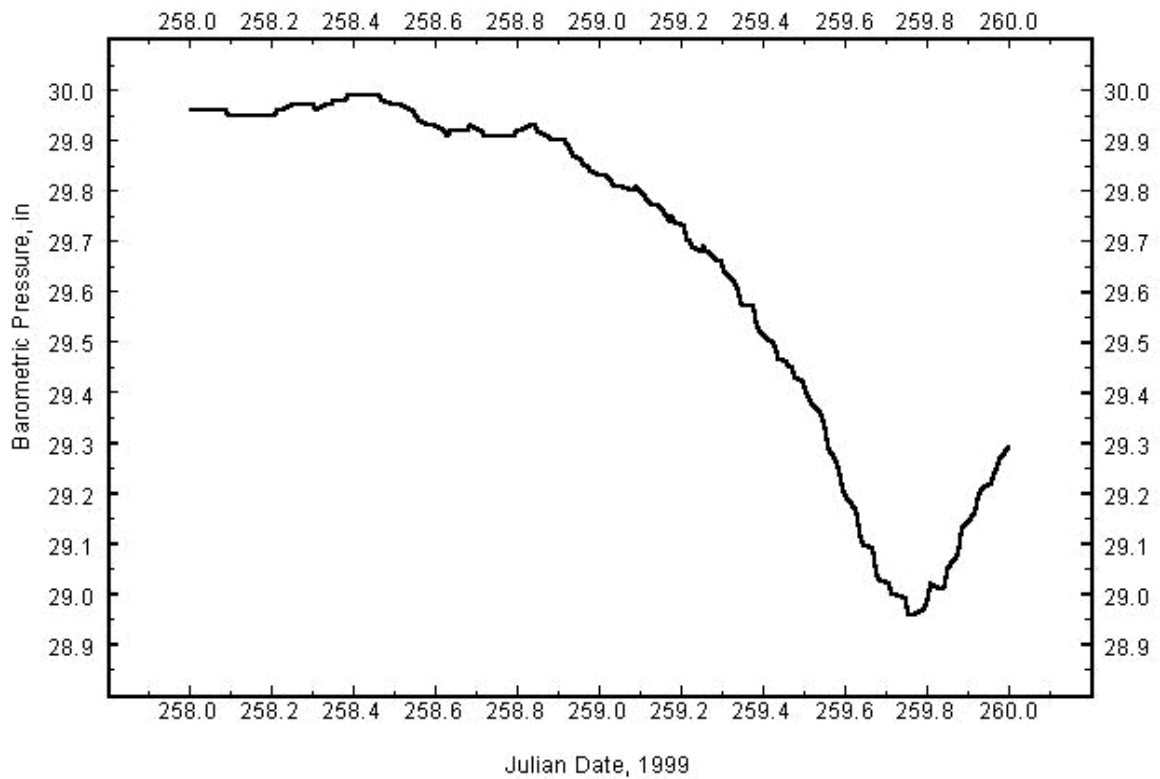


Figure 3: Plot of Barometric Pressure vs. Time

The wind speed was measured with a 3-cup anemometer. Data was recorded as 15-minute averages. A plot of the average wind speed vs. time is shown in figure 4.

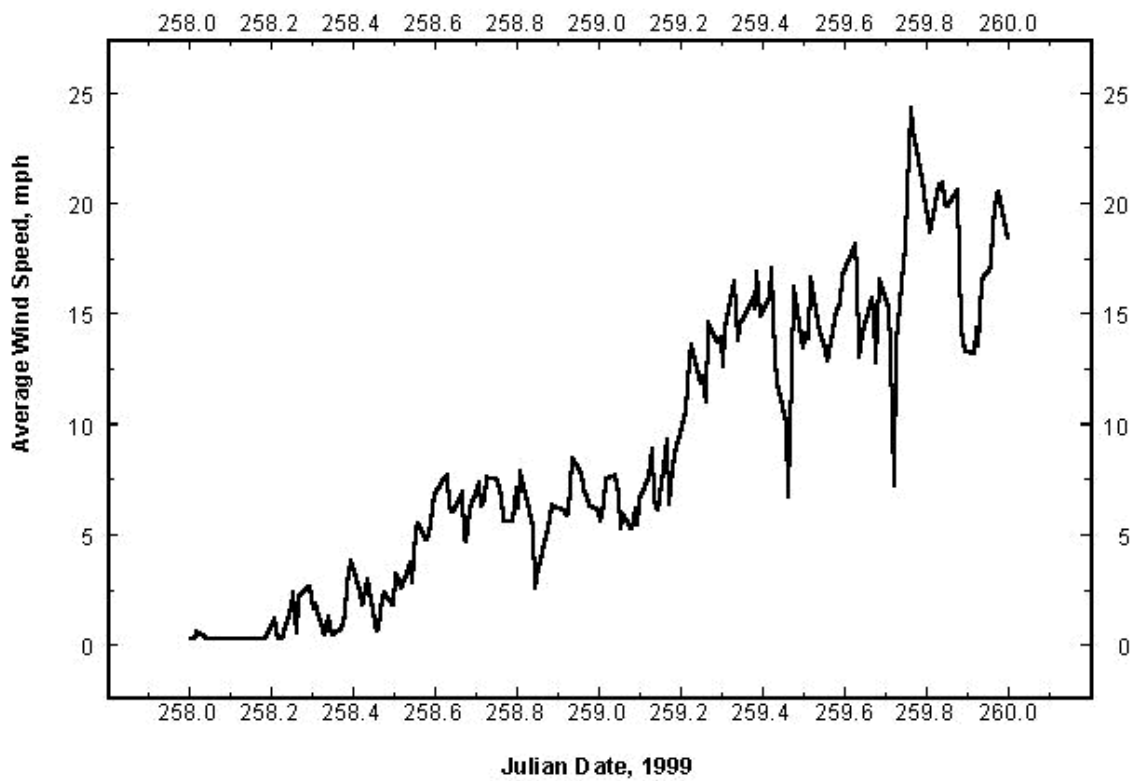


Figure 4: Plot of Average Wind Speed vs. Time

The wind direction was measured with a standard wind vane coupled to a low-torque potentiometer. Data was recorded as 15-minute averages. A plot of the average wind direction is shown in figure 5.

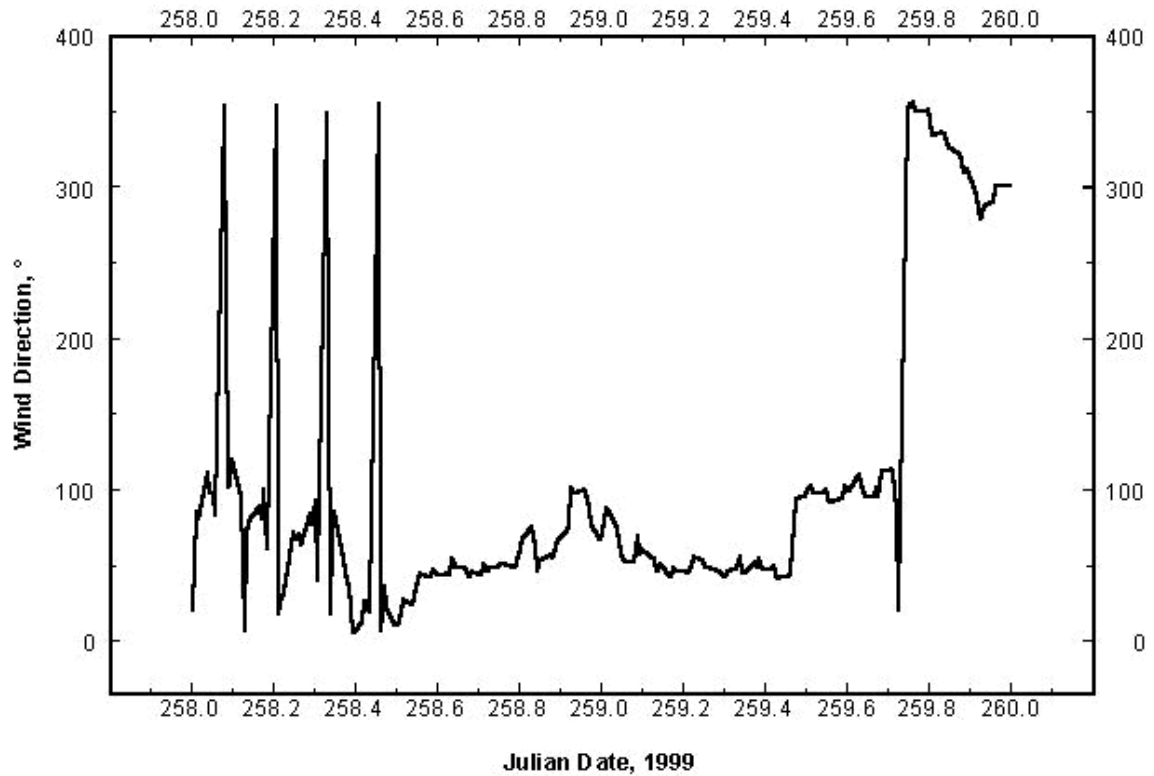


Figure 5: Plot of Average Wind Direction vs. Time

The Relative humidity was measured with a relative humidity sensor. Data was recorded as 15-minute averages. A plot of relative humidity vs. time is shown in figure 6.

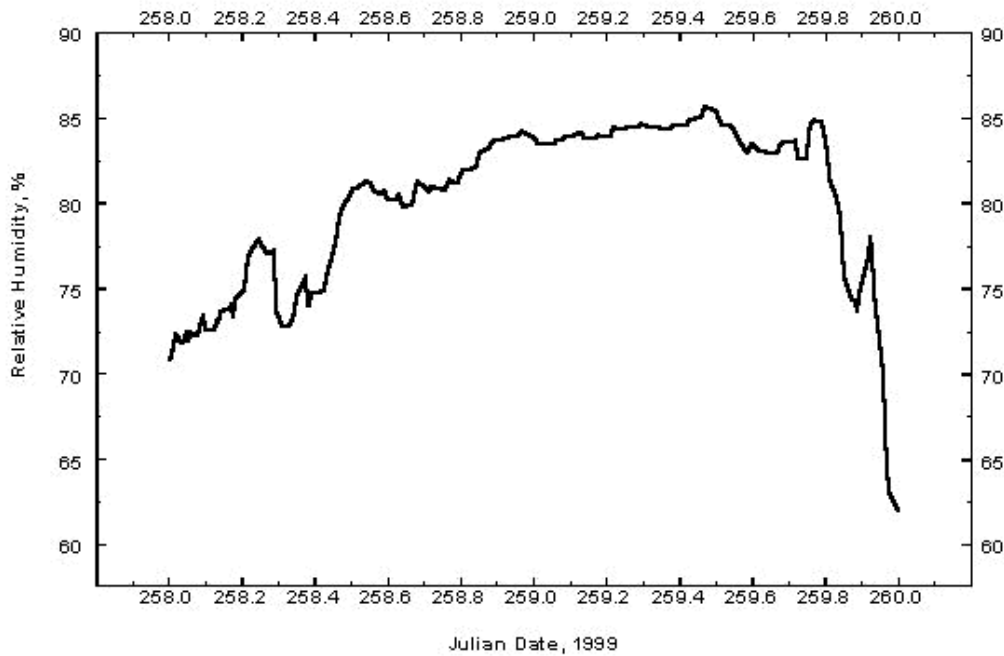


Figure 6: Plot of Relative Humidity vs. Time

Temperature was measured with a temperature sensor installed in a motor-aspirated shield. Data was recorded as 15-minute averages. A plot of temperature vs. time is shown in figure 7.



Figure 7: Plot of Temperature vs. Time.

Solar radiation was measured with a pyranometer. Data was recorded as 15-minute averages. A plot of solar radiation is shown in figure 8.

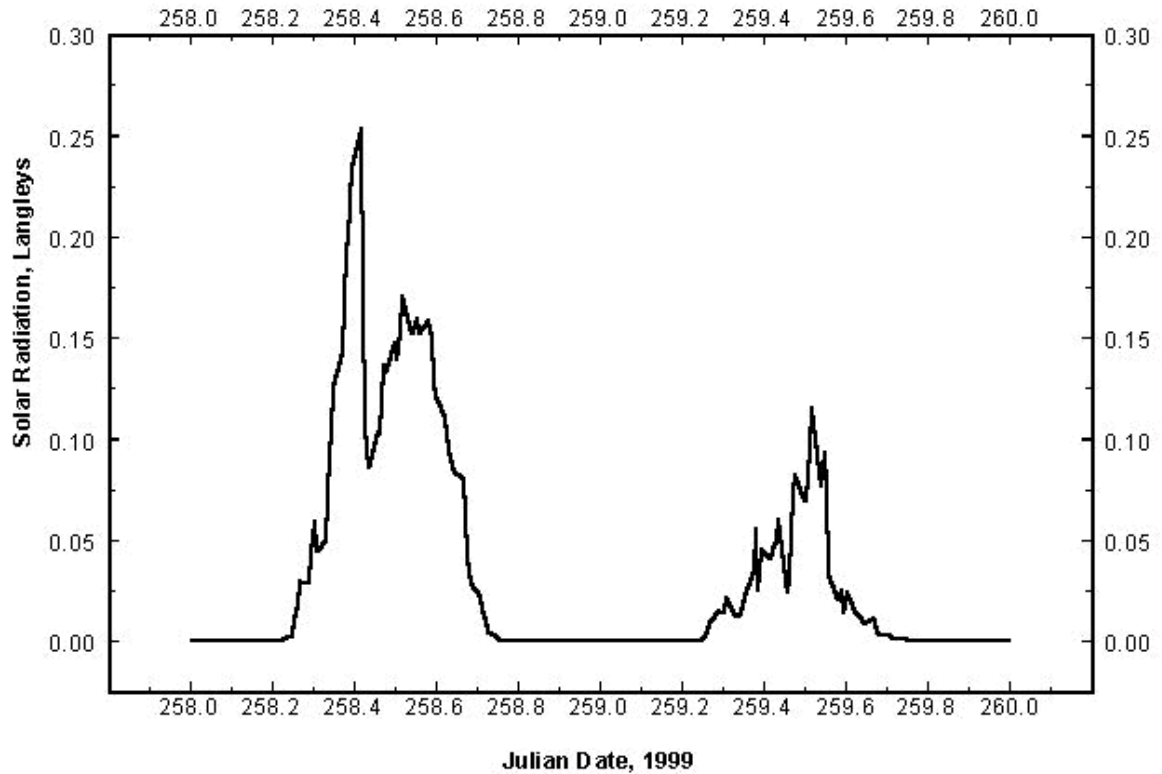
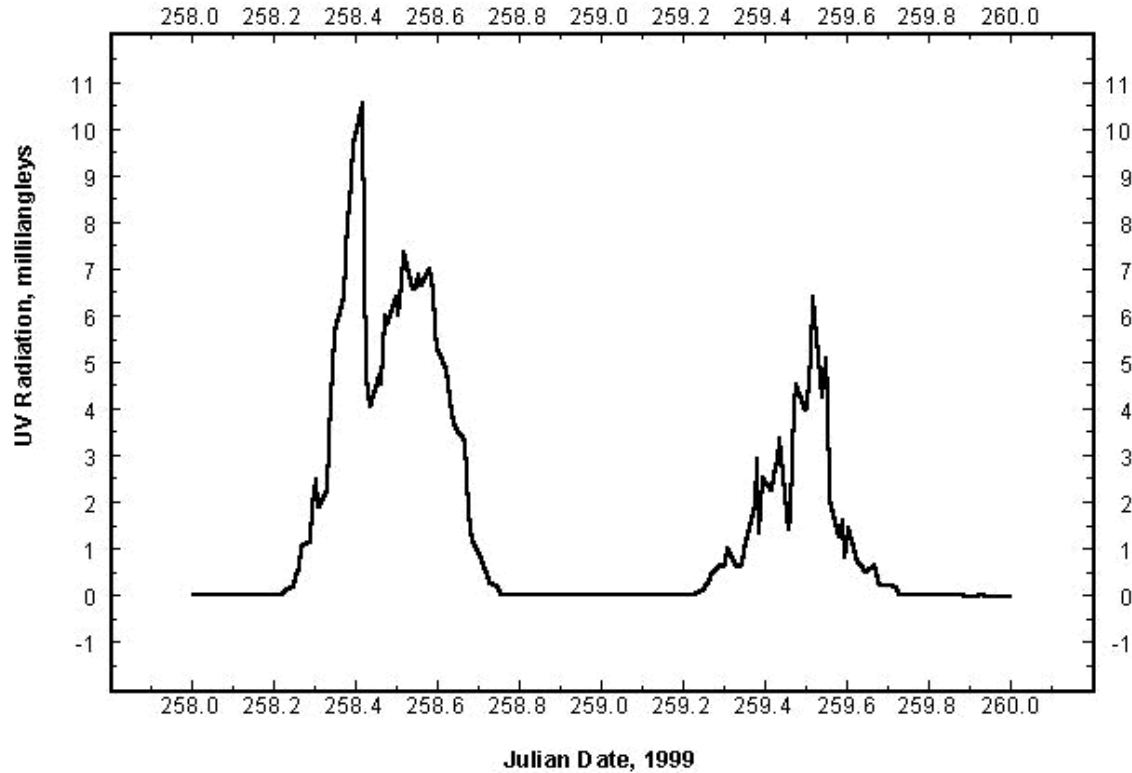


Figure 8: Plot of Solar Radiation vs. Time.

Ultraviolet radiation was measured using a radiometer. Data was recorded as 15-minute averages. A plot of UV radiation vs. time is shown in figure 9.

**Figure 9: Plot of UV Radiation vs. Time**

The data plotted in figure 1 and 2 show 53% of the total rainfall of 6.8 inches fell during a 6 hr period. The data plotted in figure 3 show the expected gradual decrease of barometric pressure during the tropical storm to a minimum pressure of 28.96 inches. Figure 4 shows the gradual increase of wind speed. The wind direction (figure 5) was from the east during the beginning of the storm and then abruptly changed to the north and northwest. The earlier spikes in figure 5 probably represent shifts in the wind direction from northeast to northwest to northeast. The gradual increase in relative humidity (figure 5) is followed by an abrupt decline as the storm moved northeast.