



FloridaClimateCenter

Office of the State Climatologist

March 10, 2010

John A. Templer, Jr.
Whitfield & Eddy P.L.C
3737 Woodland Avenue
Suite 400
West Des Moines, Iowa 50266

To Whom It May Concern:

Included with this letter you will find information you requested from our office concerning weather observations for the area of Aventura, Florida. Hourly observations provided were taken from the Automated Surface Observing System (ASOS) stations located at the North Perry Airport, the Fort Lauderdale International Airport, the Opa Locka Airport and the Fort Lauderdale Executive Airport, which are approximately 7, 8, 9 and 14 miles from the location of interest, respectively. Daily observations were taken from the National Weather Service (NWS) Cooperative Network stations at Fort Lauderdale, FL, Fort Lauderdale Beach, FL, North Miami Beach, FL and Plantation, FL, which are approximately 11, 13, 5 and 13 miles from the location of interest, respectively. Data are provided for the entire months of June 2002 and July 2002, though the focus on this report will be from June 12, 2002 to July 7, 2002. Also attached is a list of conversions and meteorological identifiers that will help decipher the information. Two maps of the area, courtesy of Google Maps, have also been included. Note the locations of the stations and area of interest, marked by yellow push-pins or other identifiers.

The ASOS system serves as the nation's primary surface weather observing network and is designed to support weather forecast activities and aviation operations as well as the meteorological, hydrological, and climatological research communities. ASOS detects significant changes, disseminating hourly and special observations via the networks. These observations are on archive and were provided by the National Climate Data Center (NCDC).

Station	ASOS CALL SIGN	Rainfall Totals June 2002	Rainfall Totals July 2002	Rainfall Totals 06/12/02-07/07/02
North Perry Airport	KHWO	12.33"	12.90"	14.94"
Fort Lauderdale International Airport	KFLL	16.50"	9.00"	17.67"
Opa Locka Airport	KOPA	8.98"	13.10"	13.43"
Fort Lauderdale Executive Airport	KFXE	18.76"	9.79"	22.08"

Observations of precipitation were taken from the NWS Cooperative Network stations surrounding the area of interest (previously mentioned above). These cooperative (COOP) stations are sites where observations are taken or other services rendered by volunteers or contractors. Observers record temperature and precipitation daily and send those reports monthly to NCDC and a NWS office. The COOP stations vary in the times that they report the weather information they've collected, so these totals are for the 24-hour period, usually beginning/ending between 7:00AM and 9:00 AM, though some stations report outside of that time window. For example, daily data is collected by the cooperative station and is reported from 2pm to 2pm, which means rainfall that fell on a particular day (example: 05/20/08) could be reported the following day (example: 05/21/08).



The Florida State University Center for Ocean-Atmospheric Prediction Studies

2035 E. Paul Dirac Dr., 223 R.M. Johnson Bldg., Tallahassee, FL, 32306-2840

Ph: (850) 644-3417 Fx: (850) 644-5092

http://www.coaps.fsu.edu/climate_center



Daily values of temperatures and precipitation from each station are included with this report. Any variable listed as -999 represents a missing value for the day. Below you will find a table summarizing information from the months of June 2002 and July 2002, including the 26-day rainfall total from June 12, 2002 – July 7, 2002 from the NWS COOP stations previously mentioned.

Station	NWS COOP ID	Time of Observation	Rainfall Totals June 2002	Rainfall Totals July 2002	Rainfall Totals 06/12/02-07/07/02
Fort Lauderdale	083163	1700	12.78"	12.47"	14.71"
Fort Lauderdale Beach	083168	0900	11.79"	7.24"	13.87"
North Miami Beach	086315	0700	11.62"	12.01"	14.78"
Plantation	087189	0700	17.70"	9.63"	16.50"

The prior report (2005) from our office included a historical perspective of the rainfall amounts for the time period in question from the NWS COOP station in Fort Lauderdale (083163). The monthly rainfall normals for this station are based on rainfall data from 1971-2000 for the station and are furnished by the National Climatic Data Center in Asheville, NC. The June 2002 rainfall of 12.78" was 2.77" above normal (normal June rainfall: 10.01") and the July 2002 rainfall total of 12.47" was 5.77" above normal (normal July rainfall: 6.70").

At the time of the 2005 report, data was only available from the station from 1912-2004, with a gap of missing data from 1930-1939. Since 2005, efforts have been underway at NCDC to complete a 'data rescue' as part of their Climate Database Modernization Program (CDMP). This program was able to find and archive the data from the station from the 1930's. In addition to the 10 years of data that was rescued, four subsequent years of information (2005-2008) have also been added to the data record. The table below outlines the rankings of the monthly rainfall totals, along with the 26-day period of interest from both the prior report and the new report with the additional data.

	June 2002	July 2002	June – July 2002	June 12 – July 7, 2002
2005 Report	11 th	5 th	4 th	NA
Current Report	15 th	7 th	7 th	6 th

*additional information about the rankings is included. (see Weitz Information 2005 and Weitz Information 2010.)

A look at the historical perspective of floating 26-day rainfall totals over the entire period of record reveals that the 14.71" reported from June 12 – July 7, 2002 was not among the 20-top events. The wettest 26-day period on record for the COOP station in Fort Lauderdale was 31.82" in October (2-27) of 1924. The rainfall from this event was impacted by Hurricane #10 that made landfall on the Southwest Coast of Florida (near Naples) and traveled east across the state. After reviewing the remaining top 19 26-day totals, it was determined that each of those events were also influenced by tropical cyclone activity (Tropical Storm #5 and Hurricane # 6 in 1921 and Hurricane #4 in 1947.)

The 26-day period of incident (June 12 – July 7, 2002) took place during the beginning of the 2002 Hurricane Season. After researching the historical hurricane record, it was determined that no tropical depressions, storms or hurricanes were impacting the area during the time of incident. The peak of hurricane season usually occurs toward the end of August/beginning of September. A climatology of the origins of tropical systems in the Atlantic and their most likely tracks show that during the months of June and July the storms are more likely to form in areas that track away from South Florida. The summer months are the predominant precipitation season in Florida; more so in south Florida than the northern part of the state. The summer rains are brought on by a more active convective scheme, brought about by the moist humid air and warm temperatures. These convective rains are very localized in nature and can be responsible for either a passing shower or a torrential downpour. Convergent precipitation is another important element in the summer weather across the state. These convergent weather events are typically on a larger scale, such as tropical waves and cyclones, troughs of low-pressure, and fronts.

A review of the hourly observations from the four ASOS stations and surface charts for the specified time period could not identify a single weather event responsible for the series of heavy rainfall events during June 12 – July 7, 2002.

Surface analysis charts from June 12th-14th reveal a persistent trough over the South Florida area that interacted with an approaching weak cold front on June 15th. By the morning of the 16th, the cold front had become stationary over the peninsula and moved off the east coast of Florida by the morning of the 17th. A low-pressure system formed in the Gulf of Mexico, south of Louisiana on the morning of the 17th, as another trough pattern set up over central Florida. Another weak cold front entered the state from the north on the 18th before it lifted into Georgia and dissipated on the 19th. On June 19th, a trough approached the area from the east and settled along the peninsula on the morning of the 20th, with a tropical wave analyzed off the western tip of Cuba. Another trough set up in the eastern Gulf of Mexico on the 21st, and by the morning of the 22nd, the trough had pushed into the central part of the state, where it fluctuated in its position for the next few days. During the period of June 19th until the 23rd, a tropical wave moved from the east and passed over central and south Florida before it moved into the Gulf of Mexico. Florida came under the influence of the Bermuda High on the 24th, which brought easterly winds to portions of South Florida as a new tropical wave formed near the eastern part of Cuba on the 25th. Easterly flow continued over the next few days with a high-pressure system forming and centering in South Georgia/North Florida, while the tropical wave moved south of Cuba. Easterly winds along the eastern coast of Florida lead to the typical rainfall patterns found during the summer months. High-pressure system slips north into the Tennessee Valley by the evening of June 30th, leaving easterly flow into South Florida, with two tropical waves positioned west and south of Cuba. Another trough sets up over the peninsula on the morning of July 1st. The trough holds up through the 2nd and by 3rd a low-pressure system forms along the trough and moves to the northeast, leaving an outflow boundary in its wake. Another trough and associated low-pressure system set up in the western Gulf of Mexico on the 6th, with a tropical wave analyzed south of Cuba on July 7th.

Included along with the raw data from the NWS stations in the area, is a copy of the only Storm Event Report that was recorded from Broward County during the time period of interest. The report from June 23, 2002, describes a heavy rain event that impacted central Broward County, stating...

“Eight to ten inches of rain fell in central Broward County causing minor flooding in several houses.”

On the 23rd of June, the ASOS station at Fort Lauderdale Executive Airport reported a 24-hour rainfall total of 8.50”, while the station at North Perry Airport only reported 1.02” and only 2.92” was recorded at the Fort Lauderdale International Airport.

Based on the information provided, and review of historical rainfall totals, above normal rainfall impacted the Aventura, FL area June 12 – July 7, 2002.

I hereby certify that the data provided are true copies of the specified records and/or publications for the times, dates and places indicated thereon file at the Southeast Regional Climate Center in Chapel Hill, NC and the National Climatic Data Center in Asheville, NC.

Sincerely,



Melissa L. Griffin
Climate Research Assistant
Florida Climate Center
The Florida State University
(850) 644-0719