

Tropical Cyclone Report
Hurricane Wilma
15-25 October 2005

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Wilma formed and became an extremely intense hurricane over the northwestern Caribbean Sea. It had the all-time lowest central pressure for an Atlantic basin hurricane, and it devastated the northeastern Yucatan Peninsula. Wilma also inflicted extensive damage over southern Florida.

a. Synoptic History

Wilma had a complicated beginning. During the second week of October, an unusually large, monsoon-like lower-tropospheric circulation and a broad area of disturbed weather developed over much of the Caribbean Sea. This system appeared to have been enhanced by an extensive area of diffluent flow to the south and southwest of an upper-level cyclone over the southwestern Atlantic. The easternmost portion of this low pressure area moved northeastward and merged with an extratropical cyclone. However, a more concentrated area of disturbed weather and surface low pressure formed near Jamaica by 14 October, possibly aided by a couple of tropical waves traversing the Caribbean during this time. Dvorak satellite classifications were initiated on this system at 1200 UTC 15 October. By 1800 UTC that day the surface circulation became well-enough defined, with sufficiently organized deep convection, to designate that a tropical depression had formed, centered about 190 n mi east-southeast of Grand Cayman. Figure 1 is a “best track” chart of the tropical cyclone’s path, and time series of the wind and pressure are shown in Figs. 2 and 3, respectively. The best track positions and intensities are listed in Table 1.

A weak and ill-defined steering flow prevailed for the first couple of days of Wilma’s existence, with a 500 mb high covering the Gulf of Mexico and another mid-tropospheric anticyclone located well to the east-northeast of the tropical cyclone. The depression moved slowly and erratically westward to west-southwestward for a day or so and then drifted south-southwestward to southward for a day or two. There was only slow strengthening during this period, and the system is estimated to have become a tropical storm at 0600 UTC 17 October. On 18 October Wilma turned toward the west-northwest and, while doing so, strengthened into a hurricane. Later that day, a remarkable, explosive strengthening episode began and continued through early on 19 October. By 0600 UTC 19 October, Wilma’s winds had increased to near

150 kt (category 5 on the Saffir-Simpson Hurricane Scale). In the span of just 24 hours, Wilma had intensified from a 60-kt tropical storm to a 150-kt category 5 hurricane, an unprecedented event for an Atlantic tropical cyclone. It is fortunate that this ultra-rapid strengthening took place over open waters, apparently void of ships, and not just prior to a landfall. Wilma reached its peak sustained wind speed of 160 kt at around 1200 UTC 19 October. During the strengthening episode, Air Force reconnaissance observations indicated that the eye of the hurricane contracted to a diameter of 2 n mi; this is the smallest eye known to National Hurricane Center (NHC) staff. The estimated minimum central pressure at the time of peak intensity is 882 mb, which is a new record low value for a hurricane in the Atlantic basin. Indeed, the actual minimum pressure may well have been lower than this value, as noted in the following section.

Wilma maintained category 5 status until 20 October, when its winds decreased to 130 kt, and the tiny eye was replaced by one about 40 n mi across. Interestingly, the hurricane would retain this large, or an even larger, eye ranging from about 40 to 60 n mi in diameter, for most of the remainder of its lifetime. By 21 October, as mid-level ridging to the northeast of Wilma increased somewhat and a series of shortwave troughs in the westerlies began to erode the high over the Gulf of Mexico, the hurricane turned toward the northwest and north-northwest, taking aim at the Yucatan Peninsula of Mexico. Wilma's maximum winds were still near 130 kt (category 4 intensity) when its center made landfall on the island of Cozumel around 2145 UTC 21 October, and it was probably only slightly weaker (but still category 4 intensity) when it crossed the coast of the Yucatan peninsula about 6 hours later. On 22 October, the mid-tropospheric high pressure area to the north of Wilma essentially dissipated, and the hurricane moved slowly northward, crossing and severely battering the extreme northeastern Yucatan peninsula. Wilma emerged into the southern Gulf of Mexico around 0000 UTC 23 October, with maximum winds of near 85 kt. Although Wilma's intensity had been reduced due to its passage over land, it was still a large and powerful hurricane.

A vigorous mid-tropospheric trough, moving eastward from the central United States, provided an increasingly strong southwesterly steering current that accelerated Wilma northeastward toward southern Florida. As the upper-level flow over the hurricane increased, so too did the vertical shear, and by early on 24 October the environmental 850-200 mb shear (averaged over an annulus about 100 to 400 n mi from the center) was roughly 25 kt. Despite the strong shear in its surroundings, Wilma strengthened over the southeastern Gulf of Mexico and its winds reached about 110 kt as it approached Florida. Maximum sustained winds were estimated to be near 105 kt (category 3 intensity) when landfall of the center occurred in southwestern Florida near Cape Romano around 1030 UTC 24 October. Continuing to accelerate and now moving at a forward speed of 20 to 25 kt, the hurricane crossed the southern Florida peninsula in 4.5 hours, with the center emerging into the Atlantic just southeast of Jupiter around 1500 UTC. Maximum winds had decreased to near 95 kt (category 2) during the crossing of Florida. A vigorous cold front associated with the mid-tropospheric trough swept across the area to the west of Wilma, yet the cooler and drier air behind the front could not fully penetrate the inner core of the hurricane to weaken it. Very shortly after departing Florida, the hurricane re-intensified one last time, and its winds again reached 110 kt around 0000 UTC 25 October. Thereafter, Wilma finally succumbed to an unfavorable atmospheric environment and lost strength while racing northeastward at 40-50 kt over the western Atlantic. It became an

extratropical cyclone around 0000 UTC 26 October while centered about 200 n mi southeast of Halifax, Nova Scotia. This extratropical low was absorbed by another extratropical cyclone located over eastern Nova Scotia around 0000 UTC 27 October.

b. Meteorological Statistics

Observations in Wilma (Figs. 2 and 3) include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), the Satellite Analysis Branch (SAB) and the U. S. Air Force Weather Agency (AFWA), as well as flight-level and dropwindsonde observations from flights of the 53rd Weather Reconnaissance Squadron of the U. S. Air Force Reserve Command (AFRES) and NOAA Aircraft Operations Center WP-3D aircraft. Microwave satellite imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the NASA QuikSCAT, NASA Aqua, and Defense Meteorological Satellite Program (DMSP) satellites were also useful in tracking Wilma.

Highest winds measured by the AFRES were 168 kt at a flight level of 700 mb in the southeastern eyewall at 0610 UTC 19 October, when Wilma was over the northwestern Caribbean Sea. Using a standard eyewall reduction factor (ratio of surface to flight level winds of 0.9) yields a surface wind of 151 kt. Since the central pressure was still falling at the time of the last pass of the aircraft through the eye at around 0800 UTC, it is likely that the winds also increased some more from 0800 to 1200 UTC. Therefore the peak intensity of Wilma is estimated to be 160 kt at 1200 UTC 19 October. When Wilma was over the southeastern Gulf of Mexico, and approaching south Florida, the AFRES measured a 700 mb wind of 135 kt at 0646 UTC 24 October, apparently associated with a short-lived mesocyclone in the southeastern eyewall. Because of the strong southwesterly shear, the ratio of surface to flight level winds was probably smaller than that typical for the hurricane eyewall. Therefore the surface to 700 mb wind speed ratio is reduced from the normal 0.9 to 0.8, resulting in an estimated intensity of 110 kt at 0600 UTC 24 October. Subsequent sampling of the southeastern eyewall by the aircraft and Doppler radar observations showed that the winds had diminished somewhat, so the intensity of Wilma at landfall in southwestern Florida has been set at 105 kt.

Wilma's deepening rate over the northwestern Caribbean Sea, from late on 18 October to early on 19 October, was incredible. Over the period from 2310 UTC to 0433 UTC, the central pressure fell from 954 mb to 901 mb, which is a deepening rate of 9.9 mb per hour. The minimum central pressure measured by dropsonde was 884 mb at 0801 UTC 19 October. Surface winds from this dropsonde were measured to be 23 kt, so the dropsonde probably did not capture the lowest pressure in Wilma's eye. Therefore the pressure around 0800 UTC was probably a couple of mb lower than 884, estimated at 882 mb. This is the lowest central pressure in the NHC records for the Atlantic basin. Given that the pressure was still falling at this time, it is possible that the pressure then dropped a little below 882 mb. It should be added that the largest 6-, 12-, and 24-h drops in best track central pressure for Wilma, 54 mb from 0000 to 0600 UTC 19 October, 83 mb from 1800 UTC 18 October to 0600 UTC 19 October, and 97 mb from 1200 UTC 18 October to 1200 UTC 19 October, respectively, are by far the largest in the available records for these periods going back to 1851. The previous record 6-h deepening was 38 mb in Hurricane Beulah, September 1967, the previous record 12-h deepening was 48 mb in

Hurricane Allen, August 1980, and the previous record 24-h deepening was 72 mb in Hurricane Gilbert, September 1988.

Ship reports of winds of tropical storm-force associated with Wilma are given in Table 2, and selected surface observations from land stations and data buoys are given in Table 3. A 10-min average wind of 87 kt with a gust to 113 kt was observed in Cancun, Mexico, but it is not certain if these were the maximum values at that station. Islas Mujeres, very near Cancun, experienced hurricane-force winds in gusts for nearly a 24-h period from 21-22 October.

The highest sustained wind measured at an official surface observing site in Florida was a 15-min average speed of 80 kt from a South Florida Water Management District (SFWMD) observation site, L006, in Lake Okeechobee. It should be noted that another SFWMD platform, LZ40, located only about 5 n mi north of L006 recorded a 15-min wind speed of 79 kt at the same time. It is reasonable to assume that these measurements correspond to a 1-min average wind speed of at least 90 kt. A number of official surface wind observation (ASOS) sites in Miami-Dade and Broward Counties stopped reporting data at their highest noted sustained wind speeds, such as Opa-Locka Airport at 74 kt and Pompano Beach Airport at 72 kt. It is likely that higher sustained wind speeds occurred at these sites. Data from the Miami WSR-88D Doppler radar indicated a peak velocity of 138 kt at an elevation of about 5000 ft over western Broward County. A comparison of Doppler velocities with co-located, official 2-min and 1-min surface wind measurements in Miami-Dade in Broward Counties suggests that the ratios of surface to 5000 ft sustained wind velocities over southeastern Florida in Wilma were likely in the range of 0.65 to 0.70. This would result in a maximum surface wind speed estimate of 90-95 kt.

Based on the surface observations and the Doppler data it can be concluded that most of the southeastern Florida peninsula experienced at least category 1 hurricane conditions, and that some parts of northern Miami-Dade County, Broward, and Palm Beach Counties likely had category 2 hurricane conditions, including wind gusts to near 100 kt, at the standard 10 m height above ground. It is expected that the upper floors of the many high rise buildings in South Florida experienced wind speeds greater than occurred there at 10 m.

Although no measurements of storm surge heights in the area of the northeastern Yucatan Peninsula have been received, it is likely that parts of that area experienced a surge of at least 12 to 15 ft. Significant storm surges likely occurred over portions of extreme western Cuba, but no measurements are available. A storm surge of 4 to 8 ft was reported from coastal Collier County. It is likely, however, that higher storm surges occurred over uninhabited areas of southwestern Florida to the south of where Wilma made landfall. Storm surges of 4 to 5 ft were observed over much of the lower and middle Florida Keys, locally to near 7 ft. However, a storm surge of near 9 ft was estimated visually in the Marathon area. Storm surges were generally in the 4 to 5 ft range over the upper Keys. This resulted in considerable flooding over substantial portions of the Keys. Relatively minor storm surge flooding occurred on the Biscayne Bay shoreline of Dade County. Storm surges of 12 ft or more were measured along the southwestern coastal area of Grand Bahama Island.

Wilma produced torrential rainfall as it moved slowly over portions of the eastern Yucatan Peninsula. According to the Meteorological Service of Mexico, a 24-h rainfall total of

62.05 inches was measured at Islas Mujeres. Because the hurricane moved quickly across the southern Florida peninsula, however, the rain amounts were not very large in Florida and storm totals ranged generally from 3 to 7 inches. Some locations in southeast Florida had totals of only 1 to 2 inches -- or less.

Wilma produced 10 tornadoes over the Florida peninsula on 23-24 October: one each in Collier, Hardee, Highlands, Indian River, Okeechobee, and Polk Counties, and four in Brevard County.

Figure 4 is an image of Wilma while it was located over South Florida from the Miami WSR-88D radar. Note the large area that was impacted by the eyewall.

c. Casualty and Damage Statistics

Twenty-three deaths have been directly attributed to Wilma: 12 in Haiti, 1 in Jamaica, 4 in Mexico, 5 in Florida, and 1 in the Bahamas (Grand Bahama Island).

Damage was reported to have been very severe in portions of the northeastern Yucatan Peninsula, but detailed information from Mexico is not available. This dealt a major blow to the tourist industry in that area. There was major flooding from storm surge and/or wave action in portions of western Cuba. In southern Florida, the swath of damage was unusually widespread due to the large size of Wilma's core. The damage included numerous downed trees, substantial crop losses, downed power lines and poles, broken windows, extensive roof damage, and destruction of mobile homes. Wilma caused the largest disruption to electrical service ever experienced in Florida. Media reports indicate up to 98 per cent of South Florida lost electrical service, and Florida Power and Light reported outages in 42 Florida counties. The amount of total insured damage compiled by the Property Claim Services of the Insurance Services Office, Inc., is \$10.3 billion. Using a doubling of insured losses to obtain the total damage gives a current estimate of Wilma's U.S. damage of \$20.6 billion, making Wilma the third costliest hurricane in U.S. history, behind only Katrina and Andrew. There was also significant damage in the southwestern coastal area of Grand Bahama Island, with widespread destruction of roofs and vehicles along with uprooting of poles and trees. *Note: In 2011 the U.S. damage was re-estimated to be \$21.007 billion. As of 2011, Wilma ranks fourth for U.S. damage, behind Katrina, Ike, and Andrew.*

d. Forecast and Warning Critique

Average official track errors (with the number of cases in parentheses) for Wilma were 29 (39), 42 (37), 61 (35), 84 (33), 136 (29), 264 (25), and 382 (21) n mi for the 12, 24, 36, 48, 72, 96, and 120 h forecasts, respectively. For 12 through 72 h, these errors are less than the average official track errors for the 10-yr period 1995-2004¹, but they exceed the 2001-2004 average errors at 96 and 120 h. There were some large along-track errors in the official forecasts for these longer time ranges; and the along-track biases indicate that the 4- and 5-day NHC forecasts for Wilma were, in general, too fast. Although the track guidance models were in

¹ Errors given for the 96 and 120 h periods are averages over the four-year period 2001-4.

general agreement that Wilma would cross the Florida peninsula, there was considerable spread in predicted forward speed. This was associated with large uncertainty in the timing of the hurricane strike on Florida. Table 4 shows the mean track errors for the various models and model combinations, and for the official forecasts. On average, the most accurate numerical guidance through 48 h was provided by the Florida State University Superensemble, and for 72 through 120 h by the NCEP Global Ensemble and the United Kingdom Meteorological Office global model. Interestingly, the NCEP Global Ensemble had a mean 5-day track error that was about 100 n mi less than the NCEP Global Forecast System (the parent model of the ensemble).

Average official intensity errors were 11, 18, 22, 22, 30, 27, and 25 kt for the 12, 24, 36, 48, 72, 96, and 120 h forecasts, respectively. These errors are quite a bit larger than the average official intensity errors over the 10-yr period 1995-2004. There was a negative bias (i.e. underforecast of intensity) at all forecast times. As might be expected for such a rapidly strengthening hurricane, there were some very large individual underforecasts of intensity when Wilma was over the northwestern Caribbean Sea – by as much as 80 kt at 48 h. The official forecasts did not explicitly predict Wilma to regain category 3 intensity before hitting Florida, but the NHC Tropical Cyclone Discussions on 22-23 October did note the possibility that the system could again be a major hurricane as it approached the coast of Florida.

Within a day of Wilma's genesis over the western Caribbean Sea, the Tropical Weather Outlooks issued by the National Hurricane Center anticipated the formation of a tropical depression, including (just prior to genesis) the possibility of development into a hurricane.

Table 5 lists the watches and warnings issued for Wilma. There was considerable lead time in the issuance of the hurricane warnings for the northeastern Yucatan Peninsula, as these warnings were posted well over 48 h prior to landfall in that area. Likewise the hurricane warning for Florida was issued well in advance, 31.5 h before Wilma's center made landfall there.

e. Acknowledgements

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Table 1. Best track for Hurricane Wilma, 15-25 October 2005.

| Date/Time (UTC) | Latitude (°N) | Longitude (°W) | Pressure (mb) | Wind Speed (kt) | Stage |
|--------------------|------------------|-------------------|------------------|--------------------|---------------------|
| 15 / 1800 | 17.6 | 78.5 | 1004 | 25 | tropical depression |
| 16 / 0000 | 17.6 | 78.8 | 1004 | 25 | " |
| 16 / 0600 | 17.5 | 79.0 | 1003 | 30 | " |
| 16 / 1200 | 17.5 | 79.2 | 1003 | 30 | " |
| 16 / 1800 | 17.5 | 79.4 | 1002 | 30 | " |
| 17 / 0000 | 17.4 | 79.6 | 1001 | 30 | " |
| 17 / 0600 | 16.9 | 79.6 | 1000 | 35 | tropical storm |
| 17 / 1200 | 16.3 | 79.7 | 999 | 40 | " |
| 17 / 1800 | 16.0 | 79.8 | 997 | 45 | " |
| 18 / 0000 | 15.8 | 79.9 | 988 | 55 | " |
| 18 / 0600 | 15.7 | 79.9 | 982 | 60 | " |
| 18 / 1200 | 16.2 | 80.3 | 979 | 65 | hurricane |
| 18 / 1800 | 16.6 | 81.1 | 975 | 75 | " |
| 19 / 0000 | 16.6 | 81.8 | 946 | 130 | " |
| 19 / 0600 | 17.0 | 82.2 | 892 | 150 | " |
| 19 / 1200 | 17.3 | 82.8 | 882 | 160 | " |
| 19 / 1800 | 17.4 | 83.4 | 892 | 140 | " |
| 20 / 0000 | 17.9 | 84.0 | 892 | 135 | " |
| 20 / 0600 | 18.1 | 84.7 | 901 | 130 | " |
| 20 / 1200 | 18.3 | 85.2 | 910 | 130 | " |
| 20 / 1800 | 18.6 | 85.5 | 917 | 130 | " |
| 21 / 0000 | 19.1 | 85.8 | 924 | 130 | " |
| 21 / 0600 | 19.5 | 86.1 | 930 | 130 | " |
| 21 / 1200 | 20.1 | 86.4 | 929 | 125 | " |
| 21 / 1800 | 20.3 | 86.7 | 926 | 120 | " |
| 22 / 0000 | 20.6 | 86.8 | 930 | 120 | " |
| 22 / 0600 | 20.8 | 87.0 | 935 | 110 | " |
| 22 / 1200 | 21.0 | 87.1 | 947 | 100 | " |
| 22 / 1800 | 21.3 | 87.1 | 958 | 85 | " |
| 23 / 0000 | 21.6 | 87.0 | 960 | 85 | " |
| 23 / 0600 | 21.8 | 86.8 | 962 | 85 | " |
| 23 / 1200 | 22.4 | 86.1 | 961 | 85 | " |
| 23 / 1800 | 23.1 | 85.4 | 963 | 90 | " |
| 24 / 0000 | 24.0 | 84.3 | 958 | 95 | " |
| 24 / 0600 | 25.0 | 83.1 | 953 | 110 | " |
| 24 / 1200 | 26.2 | 81.0 | 950 | 95 | " |
| 24 / 1800 | 28.0 | 78.8 | 955 | 105 | " |
| 25 / 0000 | 30.1 | 76.0 | 955 | 110 | " |
| 25 / 0600 | 33.3 | 72.0 | 963 | 100 | " |
| 25 / 1200 | 36.8 | 67.9 | 970 | 90 | " |
| 25 / 1800 | 40.5 | 63.5 | 976 | 75 | hurricane |

| Date/Time (UTC) | Latitude (°N) | Longitude (°W) | Pressure (mb) | Wind Speed (kt) | Stage |
|-----------------|---------------|----------------|---------------|-----------------|--------------------------------------|
| 26 / 0000 | 42.5 | 60.0 | 978 | 60 | extratropical |
| 26 / 0600 | 44.0 | 57.5 | 982 | 55 | " |
| 26 / 1200 | 45.0 | 55.0 | 986 | 50 | " |
| 26 / 1800 | 45.5 | 52.0 | 990 | 40 | " |
| 27 / 0000 | | | | | merged with low |
| 21 / 2145 | 20.6 | 86.8 | 927 | 130 | landfall on Cozumel, Mexico |
| 22 / 0330 | 20.8 | 86.9 | 933 | 115 | landfall near Puerto Morelos, Mexico |
| 24 / 1030 | 25.9 | 81.7 | 950 | 105 | landfall near Cape Romano, Florida |
| 19 / 1200 | 17.3 | 82.8 | 882 | 160 | minimum pressure |

Table 2. Selected ship and drifting buoy reports with winds of at least 34 kt for Hurricane Wilma, 15-25 October 2005.

| Date/Time (UTC) | Ship call sign | Latitude (°N) | Longitude (°W) | Wind dir/speed (kt) | Pressure (mb) |
|-----------------|----------------|---------------|----------------|---------------------|---------------|
| 20 / 1200 | WCY845 | 18.8 | 80.2 | 130 / 36 | 1007.0 |
| 20 / 2100 | DDPH | 18.9 | 82.3 | 140 / 35 | 1004.0 |
| 23 / 2100 | A8FN3 | 20.3 | 84.2 | 240 / 43 | 1001.6 |
| 23 / 2100 | P3GY9 | 21.8 | 85.3 | 260 / 46 | 993.0 |
| 24 / 0000 | ZCAM4 | 23.4 | 88.1 | 340 / 37 | 1002.2 |
| 24 / 0000 | V7HD2 | 28.3 | 88.0 | 010 / 37 | 1009.0 |
| 24 / 0600 | WCY845 | 20.0 | 82.6 | 230 / 35 | 1004.0 |
| 24 / 0600 | KS049 | 26.4 | 85.2 | 010 / 39 | 993.8 |
| 24 / 0900 | KS049 | 25.7 | 86.0 | 350 / 41 | 997.6 |
| 24 / 1054 | ANCF1 | 28.2 | 82.8 | 010 / 37 | 999.0 |
| 24 / 1154 | FHPF1 | 28.1 | 82.8 | 020 / 39 | 999.6 |
| 24 / 1200 | H3VT | 25.6 | 77.1 | 160 / 44 | 1002.0 |
| 24 / 1200 | WAAH | 26.8 | 76.9 | 160 / 37 | 1000.0 |
| 24 / 1300 | PMYF1 | 26.9 | 80.6 | 110 / 43 | -99.0 |
| 24 / 1500 | WAAH | 26.2 | 76.2 | 170 / 39 | 999.5 |
| 24 / 1800 | MYSU5 | 24.1 | 74.8 | 190 / 49 | 1005.6 |
| 24 / 1800 | V7HD2 | 28.3 | 87.7 | 340 / 36 | 1015.0 |
| 24 / 1800 | 41625 | 27.6 | 70.5 | 210 / 43 | 1002.7 |
| 24 / 1900 | 41646 | 25.3 | 75.5 | 200 / 41 | 1001.2 |
| 24 / 2000 | 41646 | 25.3 | 75.5 | 200 / 39 | 1000.3 |
| 24 / 2100 | WAAH | 25.7 | 75.8 | 230 / 44 | 997.8 |
| 24 / 2128 | TYBG1 | 31.6 | 79.9 | 330 / 35 | 996.0 |
| 24 / 2200 | 3FMX7 | 36.4 | 74.6 | 020 / 47 | 996.4 |
| 24 / 2200 | 41630 | 26.7 | 74.0 | 220 / 41 | 999.5 |
| 24 / 2233 | SKMG1 | 31.5 | 80.2 | 310 / 37 | 998.0 |
| 24 / 2333 | SKMG1 | 31.5 | 80.2 | 310 / 39 | 999.4 |
| 25 / 0000 | ZCDF4 | 23.2 | 79.0 | 270 / 38 | 1007.9 |
| 25 / 0000 | PDBO | 28.6 | 67.2 | 210 / 35 | 1008.8 |
| 25 / 0000 | KRHX | 35.5 | 75.2 | 020 / 41 | 992.0 |
| 25 / 0000 | 41625 | 27.7 | 70.5 | 200 / 39 | 1005.7 |
| 25 / 0050 | 41934 | 28.6 | 72.5 | *** / 41 | 997.4 |
| 25 / 0059 | BRBN4 | 39.6 | 74.2 | 070 / 35 | 1002.4 |
| 25 / 0128 | TYBG1 | 31.6 | 79.9 | 310 / 39 | 1000.5 |
| 25 / 0200 | 41625 | 27.8 | 70.4 | 210 / 41 | 1006.2 |
| 25 / 0300 | KRHX | 36.2 | 75.3 | 050 / 40 | 990.8 |
| 25 / 0459 | AVAN4 | 39.1 | 74.7 | 070 / 35 | 995.0 |
| 25 / 0500 | 3FMX7 | 37.4 | 74.4 | 020 / 48 | 989.2 |
| 25 / 0600 | A8ER9 | 34.9 | 75.2 | 350 / 37 | 989.0 |
| 25 / 0600 | ZCDC2 | 37.0 | 75.1 | 030 / 38 | 991.0 |
| 25 / 0600 | A8CJ2 | 37.4 | 74.2 | 050 / 37 | 987.0 |

| | | | | | |
|-----------|-------|------|------|----------|--------|
| 25 / 0600 | KAQP | 40.2 | 66.3 | 090 / 36 | 997.5 |
| 25 / 0659 | BRBN4 | 39.6 | 74.2 | 050 / 35 | 994.1 |
| 25 / 0900 | KRPB | 35.5 | 75.2 | 300 / 37 | 990.1 |
| 25 / 0900 | WMVF | 41.5 | 70.7 | 070 / 35 | 1001.0 |
| 25 / 1100 | 3FMX7 | 38.0 | 74.2 | 010 / 37 | 986.6 |
| 25 / 1200 | V2AW5 | 27.3 | 69.0 | 190 / 37 | 1015.0 |
| 25 / 1200 | ZCDC2 | 37.7 | 74.7 | 350 / 35 | 990.3 |
| 25 / 1200 | SHJC | 40.1 | 70.1 | 070 / 58 | 990.4 |
| 25 / 1200 | VRWG6 | 43.8 | 62.9 | 070 / 40 | 1013.0 |
| 25 / 1500 | VOTV | 43.5 | 70.0 | 040 / 43 | 1002.0 |

Table 3. Selected surface observations for Hurricane Wilma, 15-25 October 2005.

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|------------------------|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Mexico | | | | | | | | |
| Cancun | | | 22/0000 | 87 | 113 | | | |
| Cozumel | | 928.0 | | | | | | |
| Isla Mujeres | 22/1930 | 968.6 | 22/0200 | 71 | 94 | | | 62.05 |
| Siankaan | | | | | | | | 29.25 |
| | | | | | | | | |
| Cuba | | | | | | | | |
| Bahia Honda | | | 23/2225 | 49 | 60 | | | |
| Caibarien | | | 24/1459 | 27 | 34 | | | |
| Casa Blanca | | | 24/0040 | 62 | 73 | | | |
| Colon | | | 24/0503 | 27 | 43 | | | |
| Cuba Francia | | | 23/1650 | 38 | 48 | | | |
| Indio Hatuey | | | 24/0500 | 27 | 37 | | | |
| Isabel Rubio | | | 23/0220 | 38 | 51 | | | |
| Jovellanos | | | 24/0755 | 29 | 39 | | | |
| La Fe | | | 20/1256 | 41 | 51 | | | |
| La Palma | | | 23/2240 | 48 | 60 | | | |
| Paso Real de San Diego | | | 23/1705 | 24 | 42 | | | |
| Pinar del Rio | | | 23/2150 | 38 | 50 | | | |
| Playa Giron | | | 23/1959 | 32 | 46 | | | |
| Punta del Este | | | 20/1635 | 40 | 50 | | | |
| San Juan y Martinez | | | 23/1625 | 47 | 53 | | | |
| Santa Lucia | | | 23/2315 | 52 | 65 | | | |
| Santiago de la Vegas | | | 23/2025 | 43 | 57 | | | |
| Santo Domingo | | | 24/0550 | 28 | 38 | | | |
| Union de Reyes | | | 24/0615 | 26 | 35 | | | |
| Varadero | | | 24/0602 | 43 | 53 | | | |
| Yabu | | | 24/0552 | 29 | 39 | | | |
| | | | | | | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|---|----------------------------|-------------|------------------------------|-----------------------------|-----------------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Florida | | | | | | | | |
| 2 W TNT (FCMP) | | | 24/1311 | 77 | 101 | | | |
| 20 Mile Bend (S-5AE) | | | | | | | | 4.33 |
| 7W Weston FCMP Tower T1 (26.1°N 80.5°W) | 24/1254 | 952.2 | 24/1429 | 77 | 92 | | | |
| Alligator Alley West (S-140) | | | | | | | | 4.61 |
| Andytown (ANDF1) | | | | | | | | 4.47 |
| Belle Glade (BELLW) SFWMD | 24/1215 | 953.6 | 24/1515 | 68 | 102 | | | |
| Big Cypress (BCSI) | 24/1130 | 951.4 | 24/1345 | 35 | 70 | | | 5.19 |
| Bings Landing (NOS) | | | 24/2100 | 18 | 37 | 0.86 | | |
| Brighton (S-129) | | | | | | | | 5.65 |
| Brooksville (KBKV) | 24/1206 | 1000.3 | 24/1829 | 25 | 34 | | | 1.08 |
| Cache (LPIF1) | | | 24/1115 | 57 | 97 | | | |
| Chekika (CHKF1) | | | 24/1235 | 67 | 98 | | | |
| Chokoloskee (USGS) | | | | | | 7.0 | | |
| Clermont COOP | | | | | | | | 3.82 |
| Clewiston (CFSW) | | | 24/1415 | 53 | 73 | | | |
| Clewiston Field Station (COE) | | | | | | | | 7.31 |
| Coral Springs (CSPF1) | | | | | | | | 2.67 |
| Crescent City CREF1 | | | | | | | | 3.02 |
| Daytona Beach (KDAB) | 24/1857 | 997.3 | 24/1857 | 25 | 38 | | | 4.82 |
| Daytona Beach COOP | | | | | | | | 4.25 |
| Deland COOP | | | | | | | | 3.18 |
| Everglades City (EGC) | | | 24/0955 | 49 | | | | |
| FCMP Tower T0 (25.9°N 81.3°W) | 24/1050 | 952.2 | 24/1227 | 63 | 82 | | | |
| FCMP Tower T2 (25.9°N 80.9°W) | 24/1149 | 955.2 | 24/1057 | 71 | 95 | | | |
| Fernandina Beach (NOS) | 24/2100 | 1001.2 | | | | 1.13 | | |
| FIU Main (FCMP) | | | 24/1411 | 60 ^e | 83 ^e | | | |
| Forever FL COOP | | | | | | | | 8.00 |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|---|----------------------------|-------------|------------------------------|-----------------------------|-----------------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Fort Lauderdale (KFLI) | 24/1336 | 961.4 | 24/1211 | 61 | 86 | | | 3.04 |
| Fort Lauderdale Executive (KFYE) | 24/1133 | 977.3 | | | | | | |
| Fort Myers (KFMY) | 24/1102 | 976.0 | 24/1216 | 54 | 66 | | | |
| Fort Myers (KRSW) | 24/1153 | 972.6 | 24/1229 | 51 | 69 | | | 5.44 |
| Fort Pierce (KFPR) | 24/1448 | 968.5 | 24/1606 | 45 ^e | 68 ^e | | | 5.47 |
| Fort Pierce WP COOP | | | | | | | | 6.02 |
| Hastings ARC HTGF1 | | | | | | | | 3.65 |
| Hialeah (HIAF1) | | | | | | | | 1.23 |
| Hillsboro Canal (S-2) | | | | | | | | 5.25 |
| Islamorada | | | 24/0926 | | 94 | | | |
| Jacksonville Int'l Airport (KJAX) | 24/2058 | 1001.0 | | | | | | |
| Kennedy Space Center Shuttle Landing Facility | | | | | | | | 10.78 |
| Key West (KEYW) | | | 24/0616 | 62 | 72 | | | 2.02 |
| Key West Harbor (NOS) | 24/0818 | 977.2 | 24/0836 | 51 | 74 | 2.76 | | |
| Kissimmee COOP | | | | | | | | 4.73 |
| Lake Okeechobee (L001) SFWMD | | | 24/1515 | 74 | 93 | | | |
| Lake Okeechobee (L006) SFWMD | | | 24/1500 | 80 | 97 | | | 7.00 |
| Lake Okeechobee SW (LOKEEM) SFWMD | | | | | | | | 7.14 |
| Lake Okeechobee (LZ40) SFWMD | | | 24/1500 | 79 | 95 | | | |
| Lakeland (KLAL) | | | | | | | | 7.34 |
| Lakeport (S-131) | | | | | | | | 6.00 |
| Leesburg (KLEE) | 24/1846 | 999.0 | 24/1806 | 28 | 35 | | | 4.88 |
| Lisbon COOP | | | | | | | | 5.03 |
| Loxahatchee (LXWS) | 24/1300 | 954.3 | 24/1545 | 62 | 98 | | | 3.12 |
| Loxahatchee West | | | | | | | | 3.82 |
| MacDill AFB (KMCF) | | | 24/1055 | 21 | 37 | | | 2.53 |
| Mayport (NOS) | 24/2030 | 1000.6 | 24/2030 | 25 | 33 | 0.82 | | |
| Melbourne (KMLB) | 24/1520 | 987.1 | 24/1600 | 42 | 52 | | | 4.25 |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|---------------------------------|----------------------------|--------------------|------------------------------|-----------------------------|-----------------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Melbourne (NWS) | | | 24/1607 | | 67 | | | 4.96 |
| Miami (KMIA) | 24/1225 | 967.5 | 24/1230 | 58 | 80 | | | 0.76 |
| Miccosukee School | | | 24/1100 | | 93 | | | |
| Miles City (RKIF1) | | | 24/1235 | 34 | 76 | | | 4.69 |
| NAS Jacksonville (KNIP) | 24/1959 | 1000.3 | | | | | | |
| NASA LC39B (28.6°N 80.6°W) | | | 24/1640 | 56 | 82 | | | 2.79 |
| Naples (KAPF) | 24/0942 | 965.8 | 24/1207 | 53 ^e | 71 ^e | | | 6.63 |
| Naples Pier (NPSF1,NOS) | 24/1024 | 960.9 | 24/1200 | 73 | 89 | 2.64 | | |
| Oasis (OASF1) | | | 24/1330 | 46 | 86 | | | 2.33 |
| Ocala (KOCF) | 24/1735 | 1001.0 | 24/1735 | 23 | 34 | | | |
| Ochoppi FCMP Tower T2 | | | 24/1227 | 64 | 84 | | | |
| Ochopee (OCOF1) | | | 24/1335 | 47 | | | | 3.74 |
| Opa Locka (KOPF) | 24/1316 | 964.8 | 24/1216 | 74 ^e | 91 ^e | | | |
| Orlando (KMCO) | 24/1437 | 994.6 | 24/1212 | 35 | 42 | | | 5.17 |
| Orlando (KORL) | 24/1434 | 997.0 | 24/1723 | 30 | 43 | | | 3.88 |
| Orlando East COOP | | | | | | | | 4.61 |
| Ortona (ORTF1) | | | | | | | | 4.52 |
| Palm Bay COOP | | | | | | | | 5.47 |
| Palmdale | | | | | | | | 4.56 |
| Patrick AFB | | | 24/1521 | | 64 | | | 6.95 |
| Pinecastle Bombing Range (KNAE) | 24/1851 | 998.6 | | | | | | |
| Plymouth COOP | | | | | | | | 3.81 |
| Pompano Beach (KPMP) | 24/1240 | 961.1 ^e | 24/1240 | 72 ^e | 85 ^e | | | |
| Ponce Inlet COOP | | | | | | | | 3.07 |
| Port Canaveral USCG | 24/1600 | 992.0 | 24/1500 | 45 | 69 | | | |
| Punta Gorda (KPGD) | 24/1153 | 985.8 | 24/1252 | 45 | 61 | | | 3.93 |
| ROTNWX (SFWMD) | 24/1145 | 951.0 | 24/1200 | 56 ^e | 87 ^e | | | |
| S7WX (SFWMD) | 24/1215 | 952.3 | 24/1530 | 56 | 90 | | | |
| S-140 (SFWMD) | | | 24/1345 | 58 | 94 | | | |
| STA5WX (SFWMD) | 24/1145 | 950.5 | | | | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|---------------------------------|----------------------------|-------------|------------------------------|-----------------------------|-----------------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| St. Augustine (KSGJ) | 24/1945 | 999.7 | | | | | | |
| St. Petersburg (KPIE) | 24/1145 | 997.6 | 24/1707 | 33 | 43 | | | 1.64 |
| St. Petersburg (KSPG) | 24/1153 | 995.9 | 24/1144 | 32 | 41 | | | |
| Sanford (KSFB) | 24/1820 | 995.9 | 24/1859 | 28 | 37 | | | 3.59 |
| Sanford COOP | | | | | | | | 3.22 |
| Sarasota (KSRQ) | 24/1042 | 991.9 | 24/1350 | 31 | 42 | | | 3.81 |
| Stuart (COOP) | | | | | | | | 4.55 |
| Sweetwater (Miami WFO) | 24/1210 | 966.5 | 24/1147 | 57 | 90 | | | 4.42 |
| Tampa (KTPA) | 24/1130 | 997.3 | 24/1629 | 30 | 38 | | | 1.44 |
| Tenraw (ENPF1) | | | 24/1120 | 66 | 92 | | | 2.64 |
| Titusville COOP | | | | | | | | 6.90 |
| Vaca Key (NOS) | 24/0924 | 983.0 | 24/1412 | | 52 | 6.43 | | |
| Vandenburg (KVDF) | | | 24/1654 | 23 | 36 | | | |
| Venice | | | | | | | | 7.45 |
| Vero Beach (KVRB) | 24/1531 | 975.3 | 24/1353 | 35 ^e | 48 ^e | | | 5.53 |
| Vero Beach (COOP) | | | | | | | | 5.50 |
| Vilano Beach (NOS) | | | 24/1800 | 27 | 37 | 1.77 | | |
| Virginia Key (VAKF1) | 24/1300 | 972.4 | 24/1318 | 65 | 87 | 3.61 | | |
| West Palm Beach (KPBI) | 24/1225 | 975.0 | 24/1310 | 71 | 88 | | | 1.07 |
| West Kendall (KTMB) | 24/1152 | 970.5 | 24/1133 | 50 ^e | 72 ^e | | | 1.18 |
| Winter Haven (KGIF) | 24/1236 | 995.3 | 24/1630 | 31 | 40 | | | 4.77 |
| | | | | | | | | |
| Georgia | | | | | | | | |
| Glynco Airport (KBQK) | 24/2019 | 1001.4 | 24/2059 | 15 | 22 | | | |
| New Brunswick (KNRB) | 24/2053 | 1000.7 | 24/0536 | 21 | 27 | | | |
| Saint Simons Island (KSSI) | 24/2120 | 1001.0 | 24/1949 | 18 | 27 | 0.52 | | 1.69 |
| Waycross (KAYS) | 24/2058 | 1003.0 | 24/2058 | 21 | 29 | | | |
| | | | | | | | | |
| Buoy/CMAN | | | | | | | | |
| NOAA Buoy 41009 (28.5°N 80.2°W) | 24/1720 | 985.2 | 24/1720 | 52 | 68 | | | |
| NOAA Buoy 41010 (29.0°N 78.5°W) | 24/1950 | 969.5 | 24/2050 | 62 | 82 | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|--|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| NOAA Buoy 41012 (30.0°N 80.6°W) | 24/1950 | 995.3 | 24/1950 | 37 | 45 | | | |
| NOAA Buoy 42003 (26.1°N 85.9°W) | 23/2050 | 997.8 | 24/1020 | 36 (10 min) | 47 | | | |
| Buoy 42013 (27.2°N 83.0°W) | 24/1010 | 993.1 | 24/1110 | 41 | 49 | | | |
| Buoy 42023 (26.1°N 83.1°W) | 24/0759 | 982.5 | 24/0959 | 49 | | | | |
| NOAA Buoy 42036 (28.5°N 84.5°W) | 24/1150 | 1002.3 | 24/0850 | 37 | 43 | | | |
| NOAA Buoy 42056 (19.9°N 85.1°W) | 21/0800 | 986.6 | 21/0416 | 67 | 81 | | | |
| NOAA Buoy 42057 (17.6°N 80.7°W) | 18/2200 | 998.1 | 19/0600 | 50 | 59 | | | |
| NOAA Buoy 44004 (38.5°N 70.5°W) | 25/0050 | 1002.1 | 25/0050 | 37 | | | | |
| NOAA Buoy 44005 (43.2°N 69.2°W) | 25/1750 | 992.4 | 25/1650 | 39 | | | | |
| | | | | | | | | |
| NOAA Buoy 44007 (43.5°N 70.1°W) | 25/1650 | 997.6 | 25/1650 | 35 | | | | |
| NOAA Buoy 44008 (40.5°N 69.4°W) | 25/1350 | 984.9 | 25/1350 | 39 | | | | |
| NOAA Buoy 44009 (38.5°N 74.7°W) | 25/0650 | 989.1 | 25/0750 | 37 | | | | |
| NOAA Buoy 44013 (42.4°N 70.7°W) | 25/1650 | 993.8 | 25/1550 | 37 | | | | |
| NOAA Buoy 44017 (40.7°N 72.0°W) | 25/1550 | 988.1 | 25/1250 | 41 | | | | |
| NOAA Buoy 44018 (41.3°N 69.3°W) | 25/1350 | 987.4 | 25/1450 | 37 | | | | |
| NOAA Buoy 44025 (40.3°N 73.2°W) | 25/1450 | 988.7 | 25/0950 | 39 | | | | |
| NOAA Buoy 44027 (44.3°N 67.3°W) | 25/1750 | 997.5 | 25/1750 | 39 | | | | |
| NOAA Buoy 44034 (44.1°N 68.1°W) | 25/1704 | 999.9 | 25/1704 | 35 | | | | |
| NOAA Buoy 44142 (42.5°N 64.0°W) | 25/1700 | 992.4 | 25/1700 | 37 | | | | |
| Anclote Key (ANCF1) (28.2°N 82.8°W) | | | 24/1054 | 37 | 47 | | | |
| Big Carlos Pass (BGCF1) (26.4°N 81.9°W) | 24/1054 | 969.2 | 24/1054 | 56 | 76 | | | |
| Clearwater Beach | | | 24/1400 | 41 | 48 | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|--|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| (CWBF1) (28.0°N 82.8°W) | | | | | | | | |
| Cedar Key (CDRF1) (29.1°N 83.0°W) | 24/1100 | 1003.2 | 24/1650 | 20 | 33 | | | |
| Duck Pier (DUCN7) (36.2°N 75.7°W) | 24/2200 | 998.4 | 24/2130 | 37 | | | | |
| Fowey Rocks (FWYF1) (25.6°N 80.1°W) | 24/1243 | 975.3 | 24/1159 | 88 | 107 | | | |
| Fort Myers (FMRF1) (26.7°N 81.9°W) | | | 24/1242 | 46 | 62 | | | |
| Fred Howard (COMPS FHP) | | | 24/1154 | 39 | 49 | | | |
| Homosassa (COMPS HOM) | 24/1754 | 1001.0 | 24/1654 | 31 | | | | |
| Isle of Shoals (IOSN3) (43.0°N 70.6°W) | 25/1600 | 995.4 | 25/1600 | 46 | | | | |
| Long Key (LONF1) (24.8°N 80.9°W) | 24/1100 | 982.2 | 24/0930 | 57 | 76 | 4.0 | | |
| Mt Desert Rock (MDRM1) (44.0° N 68.1°W) | 25/1700 | 997.1 | 25/1700 | 49 | | | | |
| Matinicus Rock (MISM1) (43.8°N 68.9°W) | 25/1700 | 997.1 | 25/1400 | 45 | | | | |
| Molasses Reef (MLRF1) (25.0°N 80.4°W) | 24/1200 | 982.3 | 24/1220 | 66 | 81 | | | |
| Port Richey (PTRF1) (28.3°N 82.7°W) | | | 24/1654 | 25 | 37 | | | |
| St. Augustine (SAUF1) (29.9°N 81.3°W) | 24/2005 | 999.9 | 24/1440 | 35 | 44 | | | |
| Settlement Point (SPGF1) (26.7°N 79.0°W) | 24/1600 | 969.9 | 24/1600 | 83 | 103 | | | |
| Sombrero Key (SMKF1) (24.6°N 81.1°W) | 24/1000 | 983.4 | 24/0920 | 76 | 91 | 2.1 | | |
| Tyndall Tower (SGOF1) (29.4°N 84.9°W) | 24/1100 | 1007.3 | 24/1400 | 40 | | | | |
| U.S. Navy Tower No. R8 (31.6°N 79.9°W, TYBG1) | 24/2128 | 996.0 | 24/2128 | 35 | | | | |
| Venice (VENF1) (27.1°N 82.4°W) | 24/1100 | 990.0 | 24/1500 | 44 | 55 | | | |
| Woods Hole (BUZM3) (41.4°N 71.0°W) | 25/1700 | 989.0 | 25/1300 | 48 | | | | |
| | | | | | | | | |
| Unofficial Observations | | | | | | | | |
| Florida | | | | | | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|--|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Apopka | | | | | | | | 9.35 |
| Arcadia (FAWN) | | | 24/1245 | 34 | 56 | | | |
| Archbold | | | 24/1322 | | 64 | | | 6.07 |
| Avalon COOP | | | | | | | | 3.25 |
| Balm (FAWN) | | | 24/1045 | 28 | 44 | | | |
| Boynton Beach (26.6°N 80.1°W) | 24/1400 | 954.5 | | | | | | |
| W Boynton Beach (KFLBOYNT4) | 24/1358 | 953.2 | 24/1554 | 78 | 103 | | | |
| Collier County EOC | | | 24/1316 | | 109 | | | |
| Cudjoe Key | | | 24/0913 | | 107 | | | |
| Deerfield Beach (26.3°N 80.1°W) | 24/1400 | 956.2 | | | | | | |
| Doral CBS-4 TV | | | 24/1149 | | 99 | | | |
| Dry Tortugas Nat'l Park | | | 24/0515 | | 116 | | | |
| Duck Key | | | | | 75 | | | 2.39 |
| Everglades City Mark Suddath HLP Tower | 24/0955 | 953.9 | | | 117 | | | |
| Fort Pierce (FAWN) | | | | | | | | 6.09 |
| Grant | | | | | | | | 5.99 |
| Interstate 75 and Florida Highway 80 | 24/1130 | 978.7 | | 56 | 74 | | | |
| John Pennekamp State Park | | | | | | | | 1.50 |
| Kenansville COOP | | | | | | | | 5.64 |
| Lake Alfred (FAWN) | | | 24/1215 | 16 | 38 | | | |
| Lake Wales RAWS (LWEF1) | | | 24/1345 | 24 | 43 | | | |
| Lantana (26.6°N 80.1°W) | 24/1415 | 953.2 | | | | | | |
| Marco Island | 24/1015 | 954.0 | | | 117 | | | |
| Martin County F&R Hobe Sound MCFR1 (AWS) | 24/1514 | 954.6 | | | | | | |
| Martin County EOC Stuart MCEOP (AWS) | 24/1444 | 957.0 | | | | | | |
| Melbourne Beach | | | | | | | | 5.14 |
| Melbourne F.I.T | | | 24/1651 | | 64 | | | |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|--|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Miramar TV 6 | | | 24/1222 | | 91 | | | |
| Mountain Lake | | | | | | | | 6.00 |
| Mulberry | | | | | | | | 6.93 |
| Nettles Island COOP | | | | | | | | 0.08 |
| North Port | | | | | | | | 5.67 |
| North Port 2N | | | | | | | | 6.42 |
| Okahumpka COOP | | | | | | | | 5.33 |
| Ona (FAWN) | | | 24/1800 | 20 | 46 | | | |
| Orange Springs OSPF1 | | | | | | | | 1.59 |
| Palm Bay COOP | | | 24/1602 | | 60 | | | |
| Palm Beach Gardens (26.8°N 80.3°W) | 24/1415 | 951.8 | | | | | | |
| Palm Beach Gardens (26.9°N 80.2°W) | 24/1445 | 953.5 | | | | | | |
| Palm Beach Jonathan Dickinson Missile Tracking Annex | | | 24/1310 | 71 | 99 | | | |
| Palm Coast WOGF1 | | | | | | | | 3.95 |
| Pembroke Pines | 24/1300 | 960.0 | | | | | | |
| Pierson COOP | | | | | | | | 2.80 |
| Pompano Beach | | | 24/1248 | | 104 | | | |
| Ponce Inlet COOP | | | | | | | | 2.65 |
| Port Salerno COOP | | | | | | | | 0.14 |
| Punta Gorda 8 NE | | | | | | | | 7.57 |
| Scottsmoor COOP | | | | | | | | 2.95 |
| Sebring (FAWN) | | | 24/1245 | 21 | 52 | | | |
| South Fork St. Lucie River | | | UNK | | 116 | | | |
| South Miami | 24/1230 | 969.0 | | | | | | |
| Starke SRKF1 | | | | | | | | 1.16 |
| Stuart Skywarn Spotter (27.1°N 80.2°W) | | | 24/1419 | | 94 | | | |
| Tamarac BSO BSO01 (AWC) | 24/1314 | 955.6 | | | | | | |
| Titusville COOP | | | | | | | | 2.87 |
| Umatilla COOP | | | | | | | | 4.29 |

| Location | Minimum Sea Level Pressure | | Maximum Surface Wind Speed | | | Storm surge (ft) ^c | Storm tide (ft) ^d | Total rain (in) |
|---------------------------|----------------------------|-------------|------------------------------|-----------------------------|-----------|-------------------------------|------------------------------|-----------------|
| | Date/time (UTC) | Press. (mb) | Date/time (UTC) ^a | Sustained (kt) ^b | Gust (kt) | | | |
| Weston BSO DNBS2 (AWC) | 24/1314 | 957.3 | | | | | | |
| | | | | | | | | |

^a Date/time is for sustained wind when both sustained and gust are listed.

^b Except as noted, sustained wind averaging periods for C-MAN and land-based ASOS reports are 2 min; buoy averaging periods are 8 min, and SFWMD observations are 15 min.

^c Storm surge is water height above normal astronomical tide level.

^d Storm tide is water height above National Geodetic Vertical Datum (1929 mean sea level).

^e Instrumentation failed

^f Incomplete or missing data

Table 4. Preliminary forecast evaluation (heterogeneous sample) for Hurricane Wilma, 15-25 October 2005. Forecast errors (n mi) are followed by the number of forecasts in parentheses. Errors smaller than the NHC official forecast are shown in bold-face type. Verification includes the depression stage, but does not include the extratropical stage.

| Forecast Technique | Forecast Period (h) | | | | | | |
|-------------------------------|---------------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
| | 12 | 24 | 36 | 48 | 72 | 96 | 120 |
| CLP5 | 47 (38) | 115 (36) | 185 (34) | 249 (32) | 319 (28) | 381 (24) | 396 (20) |
| GFNI | 40 (37) | 79 (34) | 122 (33) | 172 (31) | 258 (27) | 366 (23) | 463 (19) |
| GFDI | 33 (39) | 55 (37) | 76 (35) | 98 (33) | 164 (29) | 361 (25) | 563 (21) |
| GFSI | 32 (39) | 52 (37) | 65 (35) | 84 (33) | 132 (29) | 265 (25) | 429 (21) |
| AEMI | 31 (39) | 49 (37) | 63 (35) | 81 (33) | 126 (29) | 240 (25) | 328 (21) |
| NGPI | 35 (38) | 69 (35) | 104 (33) | 139 (31) | 218 (27) | 339 (23) | 441 (19) |
| UKMI | 30 (37) | 43 (35) | 57 (33) | 77 (31) | 113 (27) | 240 (23) | 340 (19) |
| A98E | 39 (38) | 79 (36) | 109 (34) | 140 (32) | 184 (28) | 243 (24) | 380 (20) |
| A9UK | 39 (19) | 77 (18) | 107 (17) | 140 (16) | 199 (14) | | |
| BAMD | 49 (38) | 88 (36) | 115 (34) | 132 (32) | 197 (28) | 379 (24) | 533 (20) |
| BAMM | 52 (38) | 82 (36) | 108 (34) | 128 (32) | 196 (28) | 340 (24) | 453 (20) |
| BAMS | 73 (37) | 124 (35) | 165 (33) | 192 (31) | 231 (28) | 332 (24) | 414 (20) |
| CONU | 29 (39) | 48 (37) | 71 (35) | 96 (33) | 150 (29) | 271 (25) | 373 (21) |
| GUNA | 26 (37) | 43 (35) | 64 (33) | 85 (31) | 140 (27) | 279 (23) | 401 (19) |
| FSSE | 21 (33) | 31 (31) | 40 (29) | 63 (27) | 142 (23) | 308 (19) | 480 (15) |
| OFCL | 29 (39) | 42 (37) | 61 (35) | 84 (33) | 136 (29) | 264 (25) | 382 (21) |
| NHC Official (1995-2004 mean) | 42 (3400) | 75 (3116) | 107 (2848) | 138 (2575) | 202 (2117) | 236 (649) | 310 (535) |

Table 5. Watch and warning summary for Hurricane Wilma, 15-25 October 2005.

| Date/Time (UTC) | Action | Location |
|-----------------|---|---|
| 16/0900 | Hurricane Watch and Tropical Storm Warning Issued | Cayman Islands |
| 17/1500 | Tropical Storm Warning Issued | Honduras from the Honduras/ Nicaragua Border to Cabo Camaron |
| 18/2100 | Hurricane Watch Issued | Cuba from the Provinces of Matanzas westward through Pinar Del Rio and the Isle of Youth |
| 18/2100 | Hurricane Watch Issued | Mexico from Punta Allen to Cabo Catoche |
| 19/0300 | Hurricane Watch Issued | Mexico S of Punta Allen to Punta Gruesa |
| 19/1500 | Hurricane Watch changed to Hurricane Warning | Mexico from San Felipe to Tulum including Cozumel and nearby islands |
| 19/1500 | Tropical Storm Warning Issued | Mexico from S of Tulum to Chetumal |
| 19/1500 | Tropical Storm Warning Issued | Belize from the Border with Mexico to Belize City |
| 19/1800 | Hurricane Watch and Tropical Storm Warning Discontinued | Cayman Islands |
| 20/0300 | Hurricane Watch/Tropical Storm Warning changed to Hurricane Warning | Mexico from S of Tulum to Punta Allen |
| 20/0300 | Hurricane Watch Issued | Mexico from W of San Felipe to Celestun |
| 20/0300 | Tropical Storm Warning Issued | Cuba for the provinces of La Habana, Ciudad de la Habana, Pinar del Rio, and the Isle of Youth |
| 20/0900 | Tropical Storm Warning Issued | Mexico from W of San Felipe to Celestun |
| 20/1500 | Tropical Storm Warning changed to Hurricane Warning | Mexico from S of Punta Allen to Chetumal |
| 21/0300 | Tropical Storm Warning Discontinued | Honduras from the Honduras/ Nicaragua Border to Cabo Camaron |
| 21/1500 | Tropical Storm Warning Discontinued | Belize from the Border with Mexico to Belize City |
| 22/1500 | Hurricane Watch Issued | All of the Florida Keys including the Dry Tortugas and Florida Bay |
| 22/2100 | Hurricane Watch Issued | West coast of Florida from Longboat Key southward and the east coast of Florida from Titusville southward including Lake Okeechobee |
| 22/2100 | Hurricane Watch changed to Hurricane Warning | Cuban provinces of Ciudad de la Habana, La Habana, and Pinar del Rio |

| | | |
|---------|--|--|
| 22/2100 | Tropical Storm Watch Issued | Florida from N of Longboat Key to the Steinhatchee River and from north of Titusville to Fernandina Beach |
| 23/0300 | Hurricane Watch changed to Hurricane Warning | The Florida Keys including the Dry Tortugas and Florida Bay, the W coast of Florida from Longboat Key southward, the E coast of Florida from Jupiter Inlet southward including Lake Okeechobee |
| 23/0300 | Hurricane Watch Issued | NW Bahamas including the Abacos, Andros Island, Berry Islands, Bimini, Eleuthera, Grand Bahama Island, and New Providence |
| 23/0600 | Hurricane Warning Discontinued | Mexico from S of Punta Gresa to Punta Allen |
| 23/0600 | Hurricane Watch Discontinued | Mexico from W of San Felipe to Celestun |
| 23/0600 | Tropical Storm Warning Discontinued | Mexico from W of Progreso to Celestun |
| 23/0900 | Hurricane Watch changed to Hurricane Warning | Florida from N of Jupiter Inlet to Titusville |
| 23/0900 | Tropical Storm Watch changed to Tropical Storm Warning | Florida from N of Titusville to Flagler Beach |
| 23/1200 | Hurricane Warning Issued | NW Bahamas including the Abacos, Andros Island, Berry Islands, Bimini, Eleuthera, Grand Bahama Island, and New Providence |
| 23/1500 | Hurricane Warning changed to Tropical Storm Warning | Mexico from San Felipe to Punta Gresa |
| 23/1500 | Tropical Storm Warning Discontinued | Mexico from W of San Felipe to Progreso |
| 23/2100 | All Warnings Discontinued | Mexico |
| 24/0300 | Tropical Storm Watch changed to Tropical Storm Warning | Florida from N of Titusville to St. Augustine |
| 24/1500 | Tropical Storm Watch Discontinued | Florida from N of St. Augustine to Fernandina Beach |
| 24/1700 | Tropical Storm Warning Discontinued | Florida from N of Longboat Key to the Steinhatchee River |
| 24/1830 | Hurricane Warning changed to Tropical Storm Warning | The Florida Keys including the Dry Tortugas and Florida Bay, Florida W Coast from Longboat Key southward and Florida E Coast from S of Florida City including Lake Okeechobee |
| 24/1830 | Watches/Warnings Discontinued | Cuba |
| 24/2100 | Watches/Warnings Discontinued | Florida |
| 24/2100 | Warnings Discontinued | Bahamas |

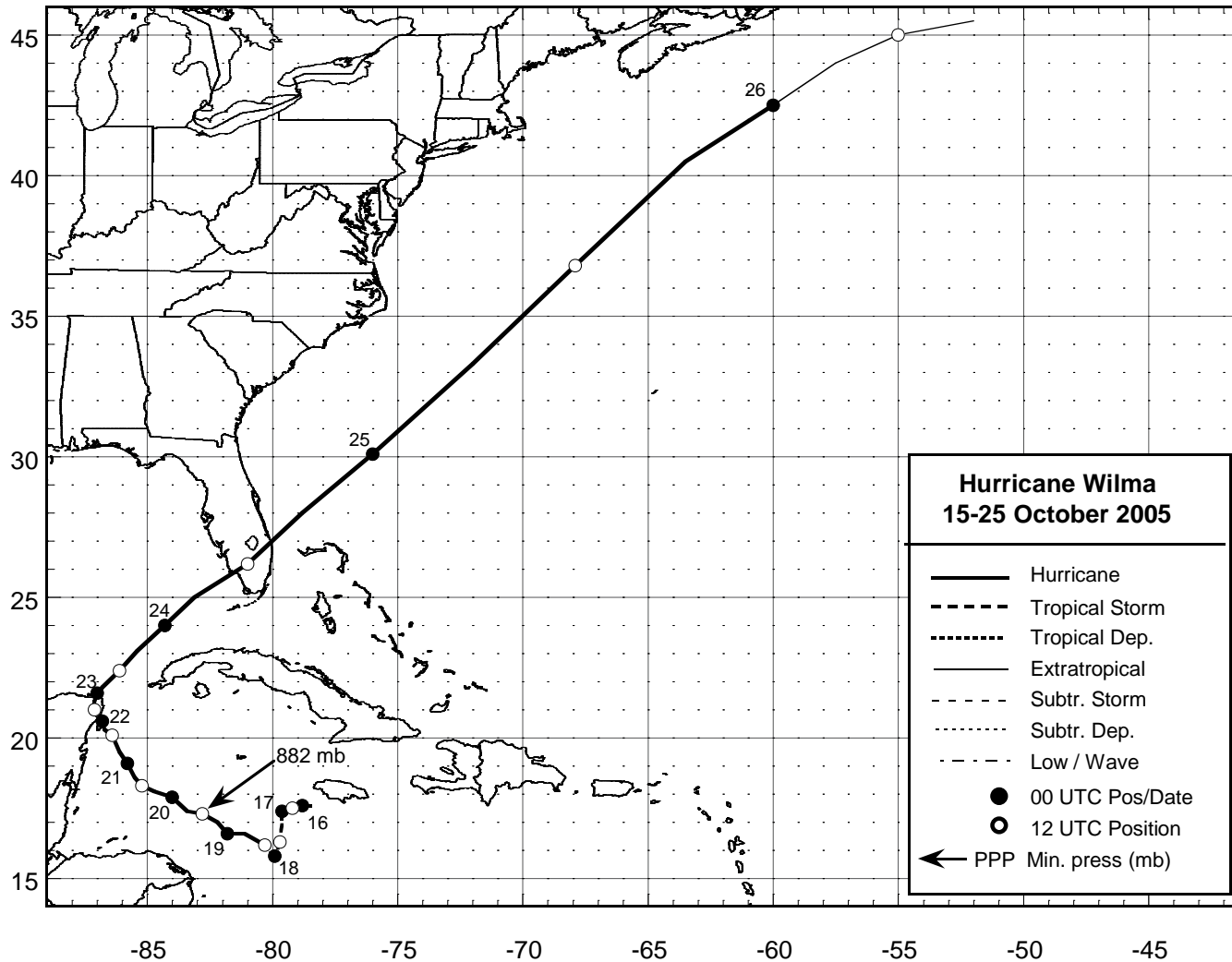


Figure 1. Best track positions for Hurricane Wilma, October 2005. Track during the extratropical stage is partially based on analyses from the NOAA Ocean Prediction Center.

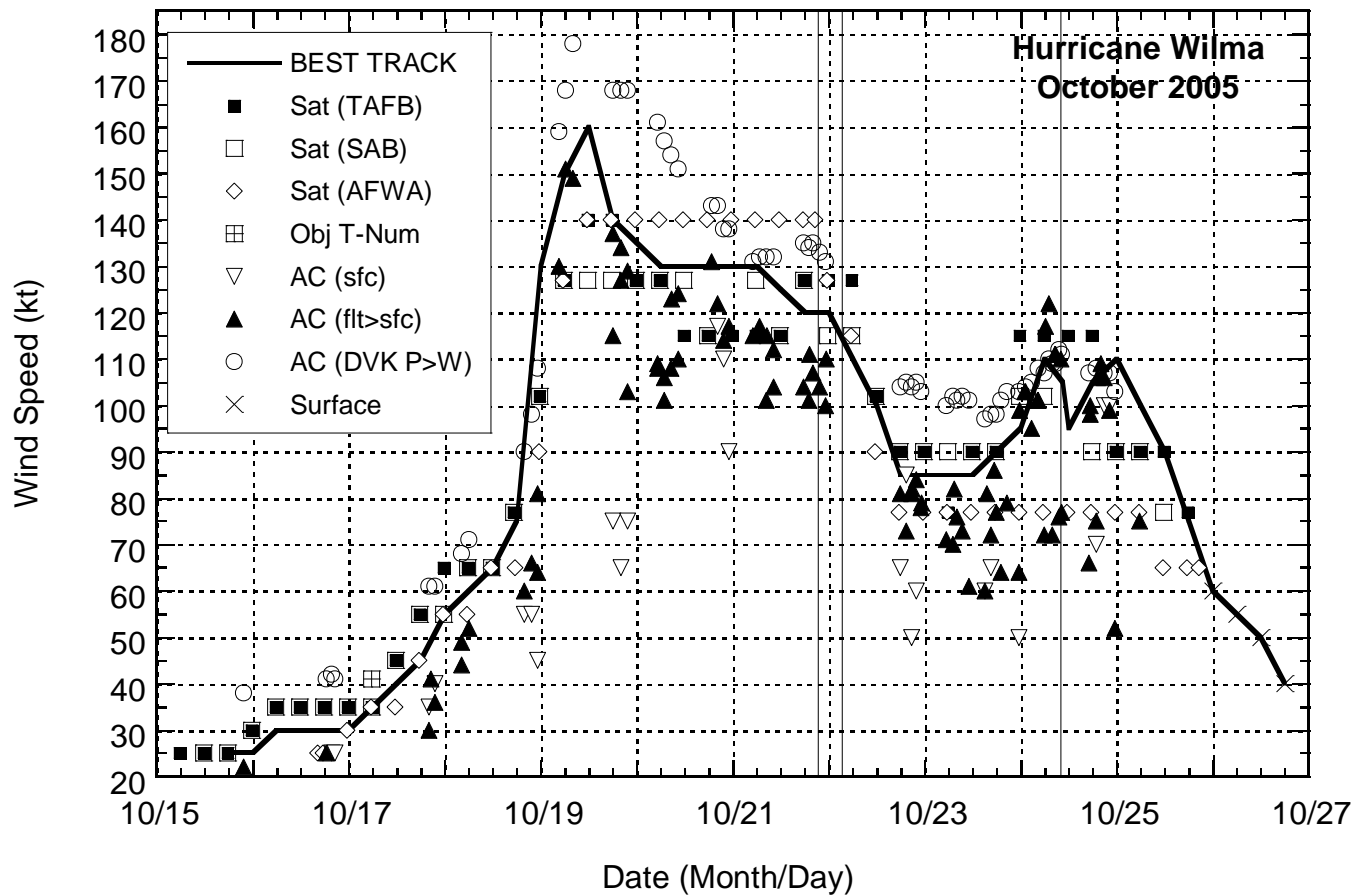


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Wilma, 15-25 October 2005. In most cases, aircraft observations have been adjusted for elevation using 90%, 80%, and 80% reduction factors for observations from 700 mb, 850 mb, and 1500 ft, respectively. Estimates during the extratropical stage are based partially on analyses from the NOAA Ocean Prediction Center. Vertical lines denote landfalls.

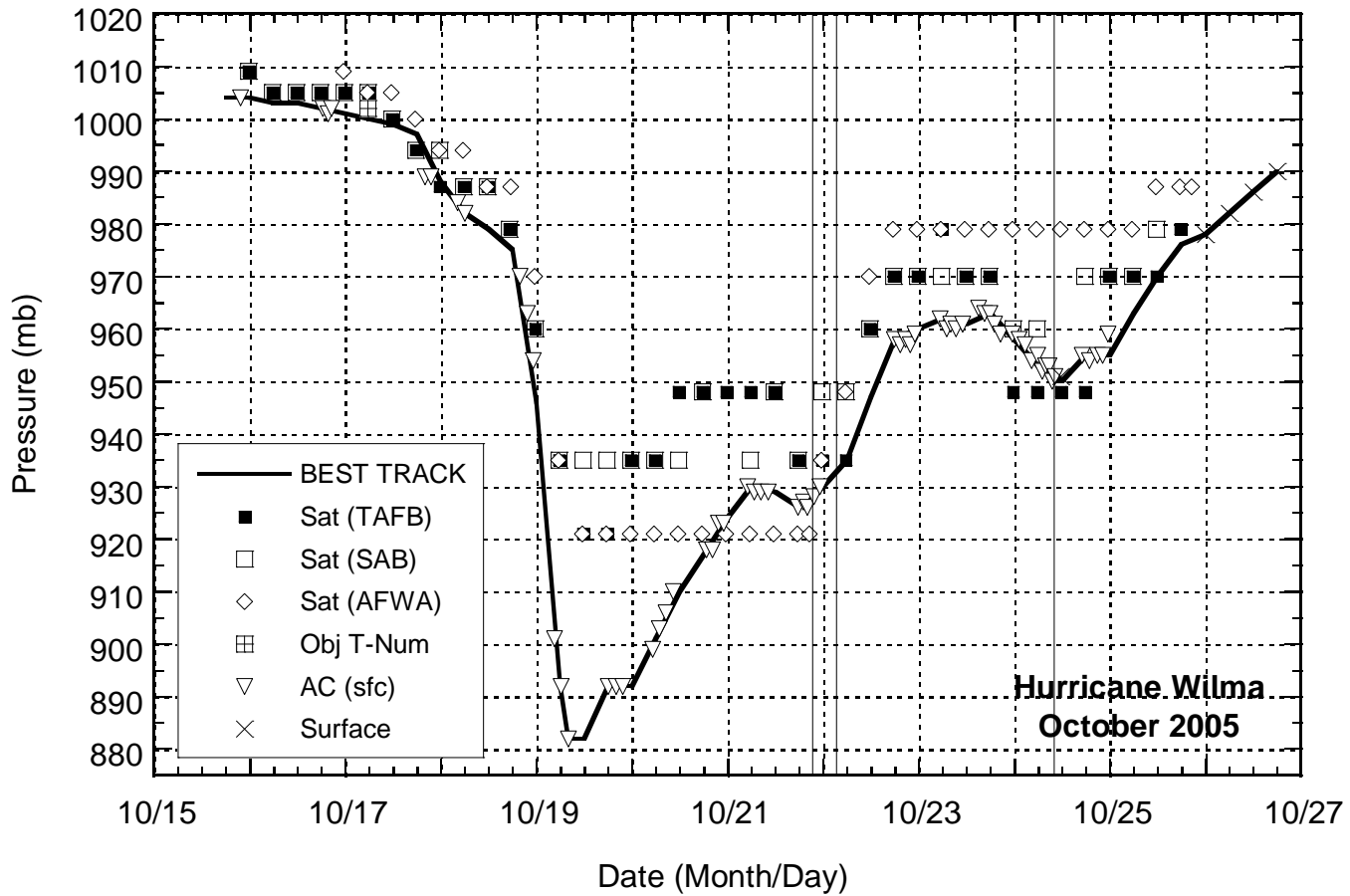


Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Wilma, 15-25 October 2005. Estimates during the extratropical stage are based partially on analyses from the NOAA Ocean Prediction Center. Vertical lines denote landfalls.

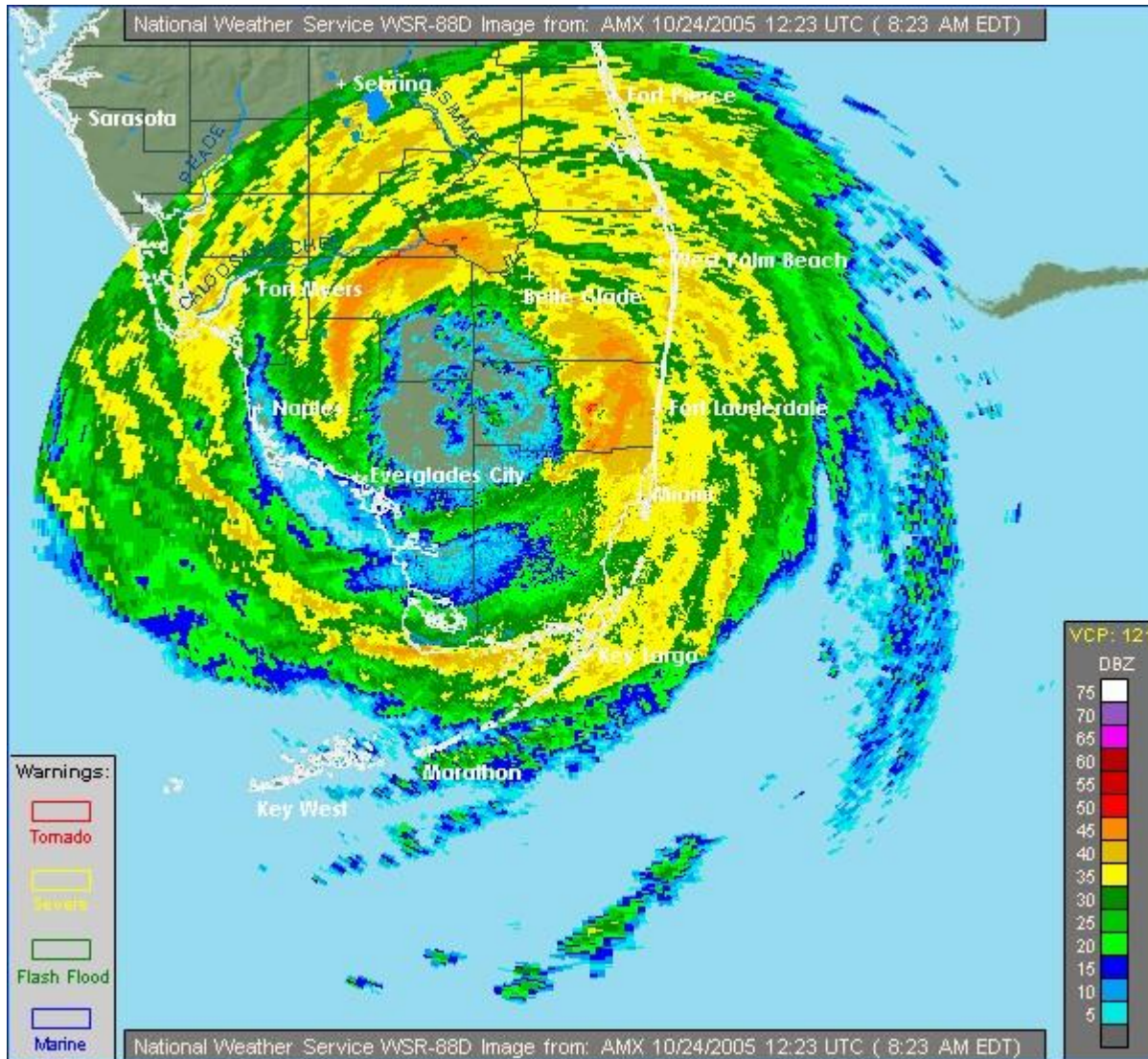


Figure 4. Image of Wilma over South Florida at 1223 UTC from the Miami National Weather Service WSR-88D radar.