

Tropical Cyclone Report
Tropical Storm Alberto
(AL012012)
19-22 May 2012

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7 December 2012

Alberto was a short-lived pre-season tropical storm near the southeastern U.S. coast.

a. Synoptic History

Alberto was of non-tropical origin. A weak low pressure area that was initiated along a quasi-stationary front near the U.S. mid-Atlantic coast moved eastward from the coast of the Carolinas on 18 May. Early the next day, a cluster of thunderstorms formed near and over the center of cyclonic circulation, while it was located about 140 n mi east of Charleston. The deep convection soon became better organized, with some banding features to the north and northeast of the center, and it is estimated that the cyclone became a tropical depression by 0600 UTC 19 May. Within a few hours, the system intensified into a tropical storm. The “best track” chart of Alberto’s path is given in Fig. 1, with the wind and pressure histories shown in Figs. 2 and 3, respectively. The best track positions and intensities are listed in Table 1¹. By 0000 UTC 20 May, Alberto strengthened to its peak intensity of 50 kt. The storm was in a marginal environment for additional intensification, however, with a dry continental air mass to its north and west over the eastern Carolinas. As the cyclone began ingesting this dry air, a weakening trend soon commenced.

A blocking mid-level high over the northeastern U.S. drove Alberto southwestward to west-southwestward not far offshore of the South Carolina and Georgia coasts. When the first of two aircraft missions was conducted into Alberto, around 1800 UTC 20 May, the storm had weakened to an intensity of 40 kt. It is likely that the movement of the system over relatively cool continental shelf waters, in addition to dry air, contributed to the weakening. By 21 May, Alberto turned southeastward and eastward around the south side of a mid- to upper-level low while maintaining minimal tropical storm strength. On 22 May a deepening mid- to upper-tropospheric trough near the eastern U.S. coast caused Alberto to turn toward the northeast with an increase in forward speed. Southwesterly shear associated with the trough removed most of the deep convection from the circulation, and by 1200 UTC the system lacked sufficient organized deep convection to be classified as a tropical cyclone. The post-tropical low pressure system accelerated northeastward to east-northeastward, and dissipated just after 1800 UTC 23 May a couple of hundred miles north of Bermuda.

¹ A digital record of the complete best track, including wind radii, can be found on line at <ftp://ftp.nhc.noaa.gov/atcf>. Data for the current year’s storms are located in the *bt* directory, while previous years’ data are located in the *archive* directory.

b. Meteorological Statistics

Observations in Alberto (Figs. 2 and 3) include subjective satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB) and the Satellite Analysis Branch (SAB), and objective Advanced Dvorak Technique (ADT) estimates from the Cooperative Institute for Meteorological Satellite Studies/University of Wisconsin-Madison. Observations also include flight-level, stepped frequency microwave radiometer (SFMR), and dropwindsonde observations from 2 flights of the 53rd Weather Reconnaissance Squadron of the U. S. Air Force Reserve Command. Data and imagery from NOAA polar-orbiting satellites including the Advanced Microwave Sounding Unit (AMSU), the NASA Tropical Rainfall Measuring Mission (TRMM), the European Space Agency's Advanced Scatterometer (ASCAT), and Defense Meteorological Satellite Program (DMSP) satellites, among others, were also useful in constructing the best track of Alberto.

Ship reports of winds of tropical storm force associated with Alberto are given in Table 2. A 65-kt wind was reported from the vessel *Sea-Land Champion* (call sign WKAU) at 2000 UTC 19 May. Alberto was nearing its peak intensity at this time, but based on satellite classifications and ASCAT data, this ship report is deemed to be on the high side and the maximum intensity of the storm is set at 50 kt. Several yachts participating in the Volvo Ocean Race, sailing from Miami to Lisbon, Portugal, passed near or through the center of Alberto on 21 May and encountered winds of tropical storm force.

Buoy observations associated with Alberto are listed in Table 3.

c. Casualty and Damage Statistics

There were no reports of damage or casualties associated with Alberto.

d. Forecast and Warning Critique

The genesis of Alberto was not anticipated. A Special Tropical Weather Outlook was issued at 1200 UTC 19 May, 6 h after the time of formation of the tropical cyclone in the post-storm best track.

A verification of NHC official track forecasts for Alberto is given in Table 4a, where it can be seen that the mean official track forecast errors were a little larger than the mean official errors for the previous 5-yr period. The number of cases was quite small, and there were no forecasts to verify beyond 48 h. A homogeneous comparison of the official track errors with selected guidance models is given in Table 4b. The EMXI had somewhat lower errors than the official forecasts at 12 through 48 h.

A verification of NHC official intensity forecasts for Alberto is given in Table 5a. The mean official intensity forecast errors were lower than the 5-yr means for this small sample. A

homogeneous comparison of the official intensity errors with selected guidance models is given in Table 5b. None of the models had much lower mean errors than the official forecasts.

A tropical storm watch was issued for a portion of the South Carolina coast on May 20 (Table 6). No tropical-storm-force winds associated with Alberto occurred in the U.S., however.

Table 1. Best track for Tropical Storm Alberto, 19-22 May 2012.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
19 / 0000	33.1	77.0	1010	25	low
19 / 0600	32.8	77.1	1008	30	tropical depression
19 / 1200	32.5	77.3	1005	40	tropical storm
19 / 1800	32.3	77.6	997	45	"
20 / 0000	32.1	78.1	995	50	"
20 / 0600	31.9	78.7	998	45	"
20 / 1200	31.5	79.5	1000	40	"
20 / 1800	31.1	79.9	1005	40	"
21 / 0000	30.7	80.1	1007	35	"
21 / 0600	30.4	79.8	1007	35	"
21 / 1200	30.4	79.1	1007	35	"
21 / 1800	30.5	78.3	1006	35	"
22 / 0000	30.7	77.1	1007	35	"
22 / 0600	31.5	76.1	1007	35	"
22 / 1200	32.5	74.7	1008	30	low
22 / 1800	33.4	73.4	1008	30	"
23 / 0000	34.1	71.9	1010	25	"
23 / 0600	34.9	70.1	1011	25	"
23 / 1200	35.5	67.9	1012	25	"
23 / 1800	35.9	66.0	1012	25	"
24 / 0000					dissipated
20 / 0000	32.1	78.1	995	50	minimum pressure and maximum wind

Table 2. Selected ship observations with winds of at least 34 kt for Tropical Storm Alberto, 19-22 May 2012.

Date/Time (UTC)	Ship call sign	Latitude (°N)	Longitude (°W)	Wind dir/speed (kt)	Pressure (mb)
19 /0600	C6QK	38.4	73.7	050 / 35	1018.0
19 /1500	H3VU	33.2	76.7	090/ 35	1008.0
19 /1700	H3VU	33.9	76.2	050 / 36	1016.0
19 / 2000	WKAU	32.2	78.0	350 / 65	1000.0
20 /0600	DHZR	33.1	77.8	040 / 40	1016.0

Table 3. Selected surface observations for Tropical Storm Alberto, 19-22 May 2012. Anemometer heights and wind averaging periods are 5 m and 10 min, respectively, except for an averaging period of 1 min for buoy 41002.

Location	Minimum Sea Level Pressure		Maximum Surface Wind Speed		
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt)	Gust (kt)
Buoys					
41013 (33.4 N 77.7 W)	19 / 2250	1013.5	19 / 2240	29	37
41004 (32.5 N 79.1 W)	20 / 0850	1011.0	20 / 0150	34	43
41008 (31.4 N 80.9 W)	20 / 2350	1013.6	21 / 0010	28	35
41012 (30.0 N 80.5 W)	21 / 0650	1011.1	20 / 2140	25	33
41002 (31.9 N 74.8 W)	22 / 0950	1008.2	22 / 0710	32	39

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

Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Storm Alberto, 19-22 May 2012. Mean errors for the 5-yr period 2007-11 are shown for comparison. Official errors that are smaller than the 5-yr means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL (Alberto)	26.8	55.4	84.4	119.3			
OCD5 (Alberto)	55.4	151.2	217.2	213.3			
Forecasts	9	7	5	3			
OFCL (2007-11)	30.4	48.4	65.9	83.1			
OCD5 (2007-11)	46.9	95.2	151.7	211.6			

Table 4b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Storm Alberto, 19-22 May 2012. Errors smaller than the NHC official forecast are shown in boldface type. The number of official forecasts shown here will generally be smaller than that shown in Table 4a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	26.3	51.2	80.2	93.1			
CD5	58.5	160.2	235.7	277.1			
GFSI	32.1	52.8	85.1	106.9			
GHMI	38.5	78.5	124.3	138.1			
HWFI	31.5	61.9	90.5	65.2			
NGPI	44.0	89.4	141.2	220.7			
EMXI	21.4	36.2	51.9	63.4			
CMCI	46.5	88.8	138.0	139.9			
AEMI	30.8	53.9	96.1	95.0			
FSSE	19.8	35.6	56.7	35.0			
TVCA	27.1	55.0	81.7	85.4			
BAMS	43.0	91.0	145.1	180.2			
BAMM	51.4	93.9	126.5	156.0			
BAMD	121.4	200.3	248.4	297.5			
LBAR	72.1	146.8	218.9	270.0			
NAMI	43.3	72.9	108.8	163.7			
Forecasts	8	6	4	1			

Table 5a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Alberto, 19-22 May 2012. Mean errors for the 5-yr period 2007-11 are shown for comparison. Official errors that are smaller than the 5-yr means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL (Alberto)	1.7	4.3	7.0	10.0			
OCD5 (Alberto)	3.0	8.1	9.0	7.7			
Forecasts	9	7	5	3			
OFCL (2007-11)	7.1	10.8	13.0	15.0			
OCD5 (2007-11)	8.4	12.4	15.4	17.7			

Table 5b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Storm Alberto, 19-22 May 2012. Errors smaller than the NHC official forecast are shown in boldface type. The number of official forecasts shown here will generally be smaller than that shown in Table 5a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	1.7	4.3	7.0	10.0			
OCD5	3.0	8.1	9.0	7.7			
GHMI	2.8	5.3	13.6	16.7			
HWFI	4.6	7.0	6.2	9.7			
DSHP	3.4	7.0	11.2	17.0			
LGEM	3.4	7.4	11.6	17.7			
ICON	2.6	4.7	8.4	11.3			
IVCN	2.7	4.9	8.2	12.0			
Forecasts	9	7	5	3			

Table 6. Watch and warning summary for Tropical Storm Alberto, 19-22 May 2012.

Date/Time (UTC)	Action	Location
20/0300	Tropical Storm Watch issued	Savannah River to South Santee River, SC
20/2100	Tropical Storm Watch discontinued	All

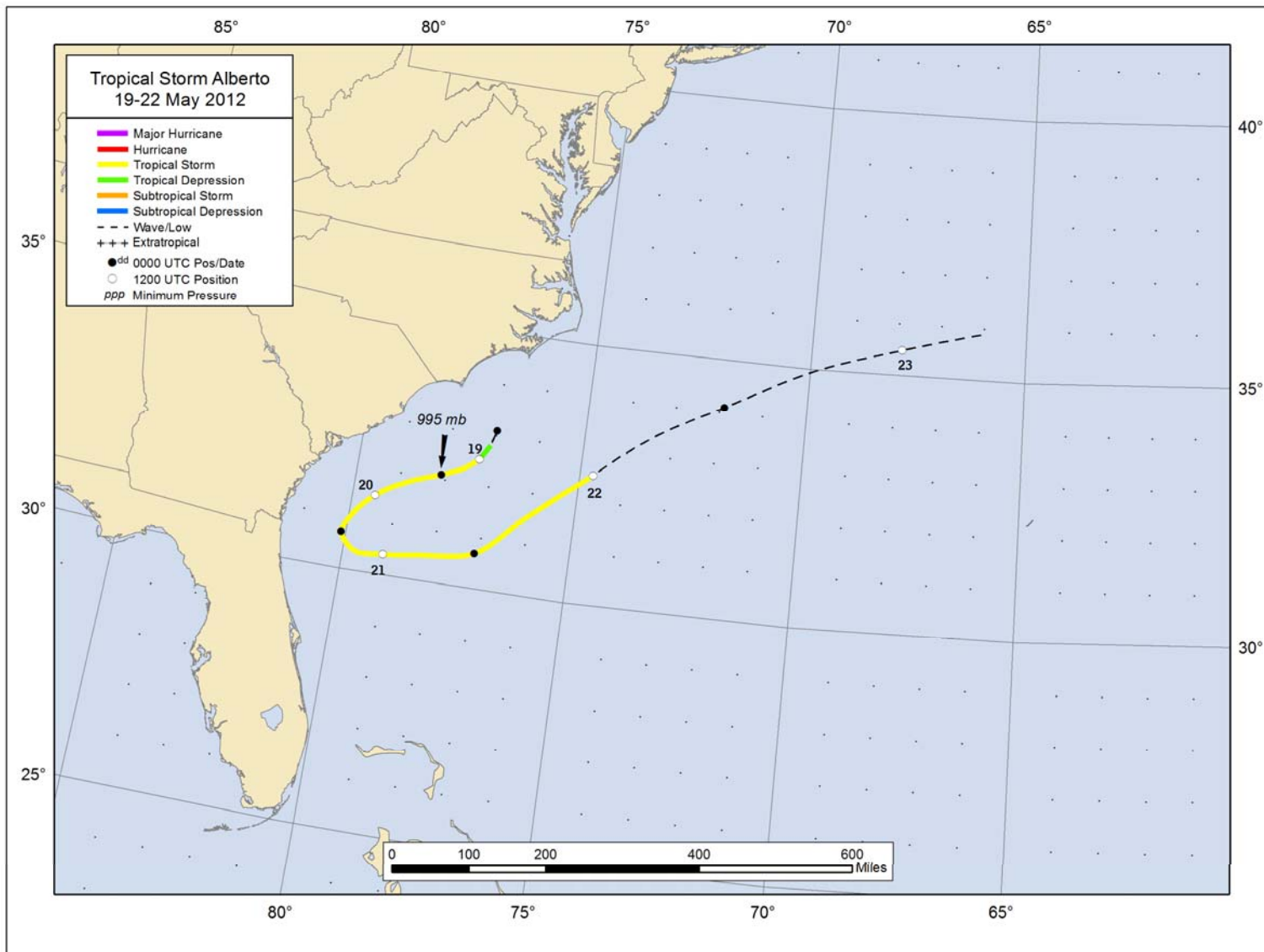


Figure 1. Best track positions for Tropical Storm Alberto, 19-22 May 2012.

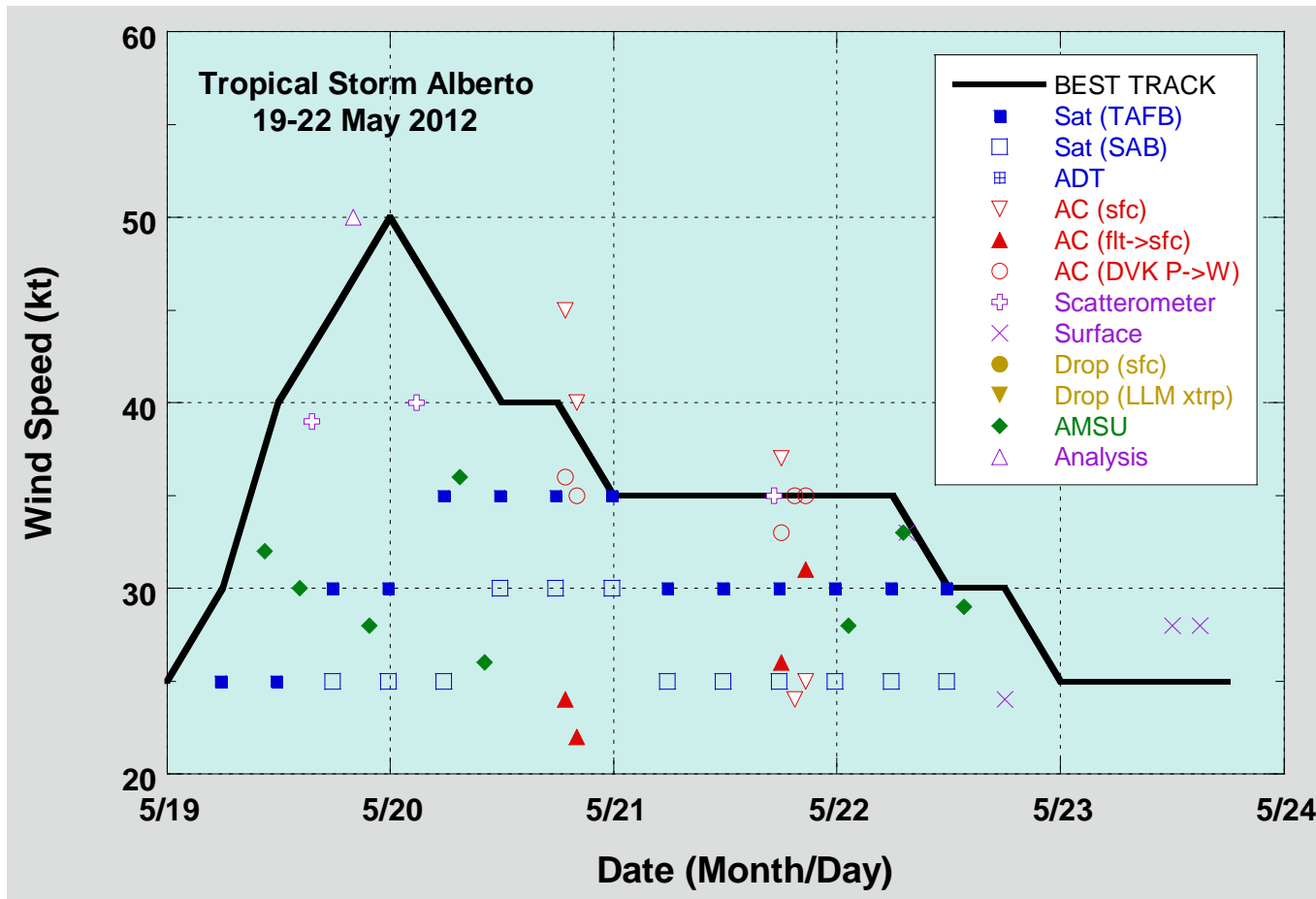


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Alberto, 19-22 May 2012. Aircraft observations have been adjusted for elevation using 90%, 80%, and 80% adjustment factors for observations from 700 mb, 850 mb, and 1500 ft, respectively. Dropwindsonde observations include actual 10 m winds (sfc), as well as surface estimates derived from the mean wind over the lowest 150 m of the wind sounding (LLM). AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC. Some of the SFMR surface wind measurements (downward-pointing triangles) are believed to be too high due to rainfall contamination and instrument bias at low wind speeds.

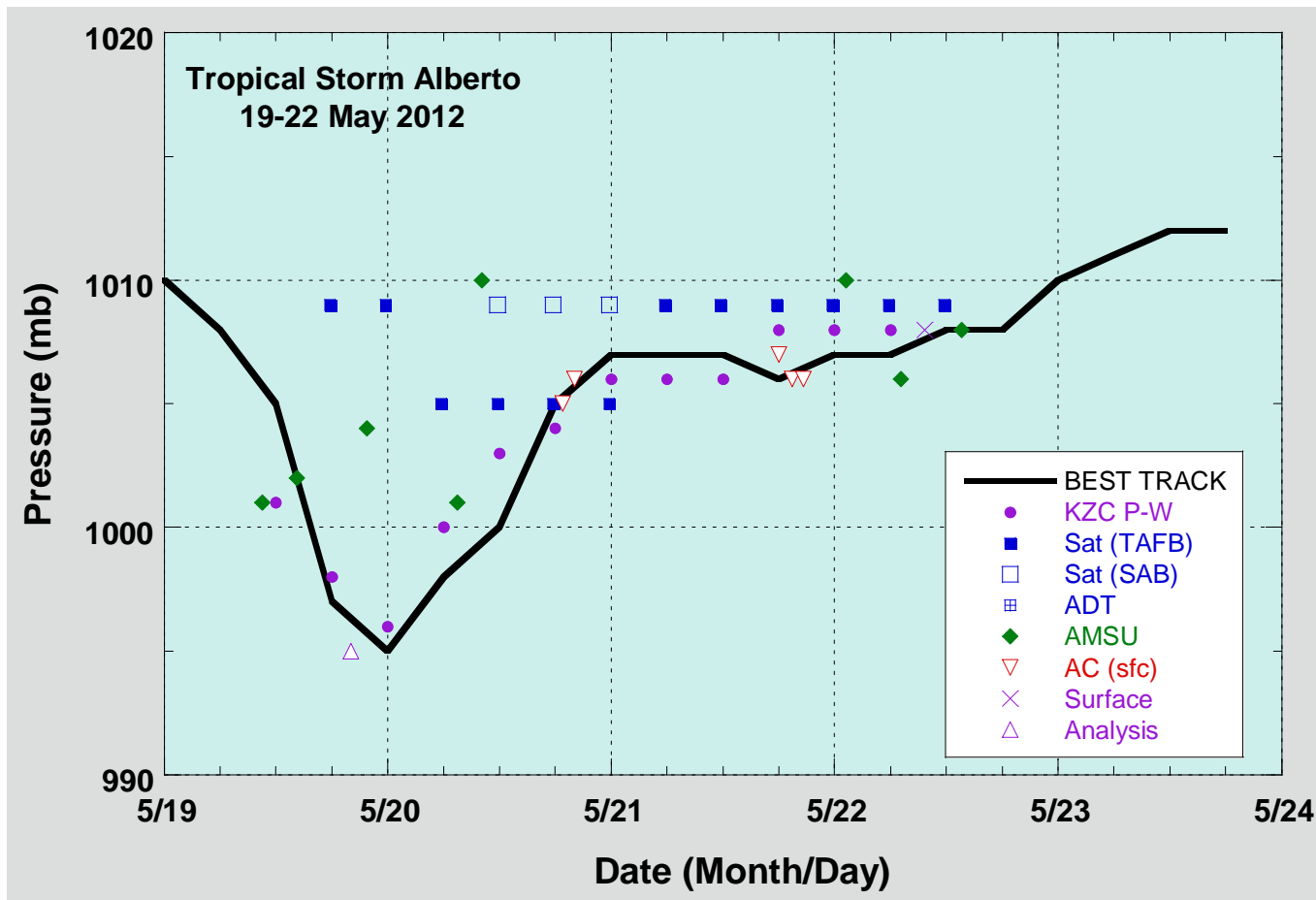


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Alberto, 19-22 May 2012. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. The KZC P-W values are obtained by applying the Knaff-Zehr-Courtney pressure-wind relationship to the best track wind data. Dashed vertical lines correspond to 0000 UTC.