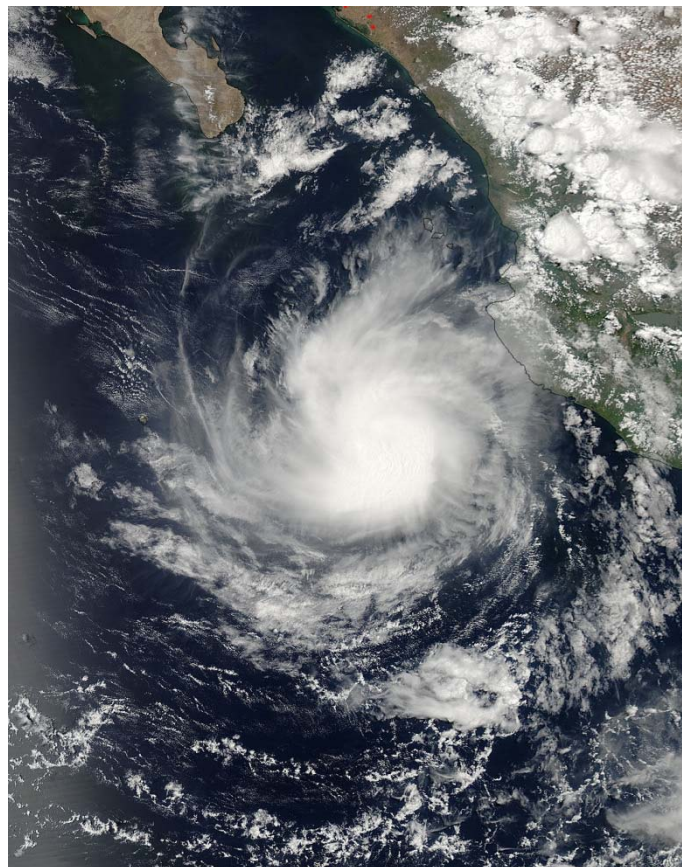# NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

HURRICANE DALILA
(EP042013)
29 June–7 July 2013

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National Hurricane Center
10 December 2013

HURRICANE DALILA AT 2055 UTC 2 JULY 2013. IMAGE COURTESY OF NASA.

Dalila was a category 1 hurricane (on the Saffir-Simpson Hurricane Wind Scale) that remained offshore of the coast of southwestern Mexico.

Hurricane DALILA

29 JUNE–7 JULY 2013

SYNOPTIC HISTORY

The tropical wave from which Dalila formed cannot be clearly traced back to Africa, but was first noted over the central tropical Atlantic around 17 June. The wave moved into the eastern Caribbean Sea on 20 June, and crossed Central America on or around 24 June. The system moved westward over the eastern Pacific for a few days while the associated deep convection gradually increased, and the wave spawned a low pressure system a little over 500 n mi south of Manzanillo, Mexico on 28 June. Although the low initially moved west-northwestward, it soon turned toward the north and then northeast along the eastern side of a mid-level cyclonic gyre. By 1800 UTC 29 June, the cyclone acquired enough organized deep convection to be considered as a tropical depression, while centered about 415 n mi south of Manzanillo. The "best track" chart of the tropical cyclone'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 1[1].

The cyclone turned northward and, by early on 30 June, strengthened into a tropical storm. A mid-tropospheric ridge extending southeastward from the southwestern United States caused the storm to turn northwestward and move parallel to the coast of Mexico. Although situated in an environment of low vertical shear and warm waters that seemed to be favorable for intensification, Dalila was slow to strengthen for a couple of days. By 1200 UTC 2 July, however, microwave and geostationary satellite imagery indicate that the cyclone had become a hurricane while centered about 145 n mi south-southwest of Cabo Corrientes, Mexico. Steering currents weakened that day and Dalila moved slowly on a cusp-like track, turning southwestward on 3 July. The cyclone weakened to a tropical storm late on 3 July under the influence of drier and more stable air, along with increased easterly shear. For the next couple of days, a weak low- to mid-tropospheric ridge to the north caused Dalila to move slowly and slightly south of west, while continuing to weaken due to the shear and dry air. Deep convection associated with the cyclone decreased considerably, and the system weakened to a tropical depression by early on 5 July. Dalila maintained limited deep convection, and tropical cyclone status, until early on 7 July when the cyclone degenerated into a remnant low pressure system about 400 n mi south-southwest of Cabo San Lucas, Mexico. The low turned eastward and east-northeastward as it became drawn into the circulation of Tropical Storm Erick, which was located a few hundred n mi to the east-northeast, and it dissipated after 1800 UTC 8 July.

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[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 *btk* directory, while previous years' data are located in the *archive* directory.

METEOROLOGICAL STATISTICS

Observations in Dalila (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. 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 Dalila. The estimated maximum intensity of 70 kt is based on a blend of subjective Dvorak estimates and ADT estimates. A faint eye was briefly noted on visible satellite pictures, with a well-defined low-level eye evident in microwave imagery.

No ship reports of winds of tropical storm force were received in association with Dalila.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The genesis of Dalila was well anticipated. The area of disturbed weather and/or low pressure from which the tropical cyclone developed was first mentioned in the Tropical Weather Outlook (TWO) 72 h prior to the time of genesis with a low (less than 30%) chance of tropical cyclone formation within 48 h. The formation probability was raised to medium (30-50%) in the TWO issued 36 h before genesis, and was raised to high (greater than 50%) 24 h prior to genesis.

A verification of NHC official track forecasts for Dalila is given in Table 2a, where it can be seen that the mean official track forecasts errors were well below the mean official errors for the previous 5-yr period at all forecast intervals. A homogeneous comparison of the official track errors with selected guidance models is given in Table 2b. The multi-model consensus, TVCE, had lower mean errors than the official forecasts at all forecast intervals. The GFSI and its ensemble mean, AEMI, were better than the official forecasts for the 24- through 96-h forecast periods, respectively. The HWFI track forecasts were better than the official forecasts at 72 and 96 h. Otherwise, the official track forecasts had lower mean errors than the guidance models.

A verification of NHC official intensity forecasts is given in Table 3a. At all forecast intervals, the mean official forecast intensity errors for Dalila were below the mean official errors for the previous 5-yr period. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 3b. At most forecast intervals, the mean official intensity errors were below those of the numerical guidance. Although the official forecasts had correctly called for Dalila to become a minimal hurricane up to 24 h prior to the occurrence of the event, subsequent NHC forecasts backed off somewhat on the intensity. This necessitated the issuance of a special advisory when Dalila did strengthen into a hurricane on 2 July.

There were no coastal watches or warnings associated with Dalila.

Table 1.   Best track for Hurricane Dalila, 29 June-7 July 2013.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
28 / 1800	10.7	104.2	1008	25	low
29 / 0000	10.8	104.6	1008	25	"
29 / 0600	11.2	104.4	1008	25	"
29 / 1200	11.6	103.8	1008	25	"
29 / 1800	12.4	103.2	1007	25	tropical depression
30 / 0000	13.3	103.0	1006	30	"
30 / 0600	14.2	103.0	1005	35	tropical storm
30 / 1200	15.1	103.1	1004	35	"
30 / 1800	15.9	103.5	1004	35	"
01 / 0000	16.5	104.1	1003	40	"
01 / 0600	17.0	104.8	1000	45	"
01 / 1200	17.5	105.5	998	50	"
01 / 1800	17.7	106.2	996	55	"
02 / 0000	17.9	106.5	994	55	"
02 / 0600	18.1	106.7	994	55	"
02 / 1200	18.2	106.8	986	65	hurricane
02 / 1800	18.4	107.0	984	70	"
03 / 0000	18.3	107.2	985	70	"
03 / 0600	18.1	107.4	987	65	"
03 / 1200	17.8	107.6	987	65	"
03 / 1800	17.6	107.9	991	60	tropical storm
04 / 0000	17.5	108.4	995	50	"
04 / 0600	17.5	108.9	995	50	"
04 / 1200	17.4	109.5	1000	40	"
04 / 1800	17.3	110.1	1004	35	"
05 / 0000	17.3	110.7	1005	30	tropical depression

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
05 / 0600	17.2	111.3	1006	30	"
05 / 1200	17.1	111.8	1006	30	"
05 / 1800	17.1	112.2	1006	30	"
06 / 0000	17.0	112.5	1006	25	"
06 / 0600	17.0	112.8	1006	25	"
06 / 1200	17.0	113.1	1007	25	"
06 / 1800	17.0	113.1	1007	25	"
07 / 0000	16.8	113.2	1007	25	"
07 / 0600	16.7	112.9	1007	25	low
07 / 1200	16.6	112.6	1008	25	"
07 / 1800	16.5	112.3	1008	25	"
08 / 0000	16.6	112.1	1008	20	"
08 / 0600	16.7	111.9	1008	20	"
08 / 1200	17.1	111.5	1008	20	"
08 / 1800	17.7	110.8	1008	20	"
09 / 0000					dissipated
02 / 1800	18.4	107.0	984	70	maximum winds and minimum pressure

Table 2a.   NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Hurricane Dalila, 29 June-7 July 2013. Mean errors for the previous 5-yr period 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	**17.1**	**28.3**	**40.3**	**50.0**	**73.2**	**87.7**	**134.9**
OCD5	31.2	64.1	103.9	139.5	208.4	300.9	403.4
Forecasts	27	25	23	21	17	13	9
OFCL (2008-12)	27.0	43.1	57.8	71.9	101.7	137.2	165.9
OCD5 (2008-12)	37.4	73.0	114.9	158.3	238.4	313.5	389.1

Table 2b.   Homogeneous comparison of selected track forecast guidance models (in n mi) for Hurricane Dalila, 29 June-7 July 2013. 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 2a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	16.8	28.1	40.8	51.8	71.5	94.5	127.5
OCD5	31.5	64.8	105.8	142.8	232.1	312.8	374.2
GFSI	19.3	**26.2**	**34.2**	**45.4**	**54.4**	**77.7**	147.3
GHMI	27.4	42.7	60.0	83.2	143.4	221.3	282.4
HWFI	22.4	36.8	48.4	56.5	**67.4**	**85.6**	127.5
EMXI	20.2	35.4	52.5	68.1	121.9	154.3	157.5
AEMI	19.0	**27.0**	**36.1**	**45.2**	**60.4**	**90.8**	178.4
TVCE	**16.3**	**24.0**	**35.3**	**43.4**	**57.9**	**67.9**	**94.4**
LBAR	32.0	72.6	118.1	163.9	249.0	454.1	756.2
BAMD	40.1	71.5	98.5	117.0	122.5	162.6	231.6
BAMM	30.2	48.1	63.5	72.7	88.6	112.2	149.2
BAMS	25.3	42.3	54.5	64.9	78.0	110.9	191.5
Forecasts	26	24	22	20	13	10	7

Table 3a.　NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Hurricane Dalila, 29 June-7 July 2013. Mean errors for the previous 5-yr period 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	**4.4**	**6.6**	**7.2**	**10.7**	**14.1**	**12.3**	**11.1**
OCD5	5.7	8.6	11.7	14.8	19.4	13.0	8.7
Forecasts	27	25	23	21	17	13	9
OFCL (2008-12)	6.3	10.5	13.4	14.5	15.3	17.0	17.3
OCD5 (2008-12)	7.6	12.5	16.5	18.8	20.4	20.3	20.6

Table 3b.　Homogeneous comparison of selected intensity forecast guidance models (in kt) for Hurricane Dalila, 29 June-7 July 2013. 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 3a due to the homogeneity requirement.

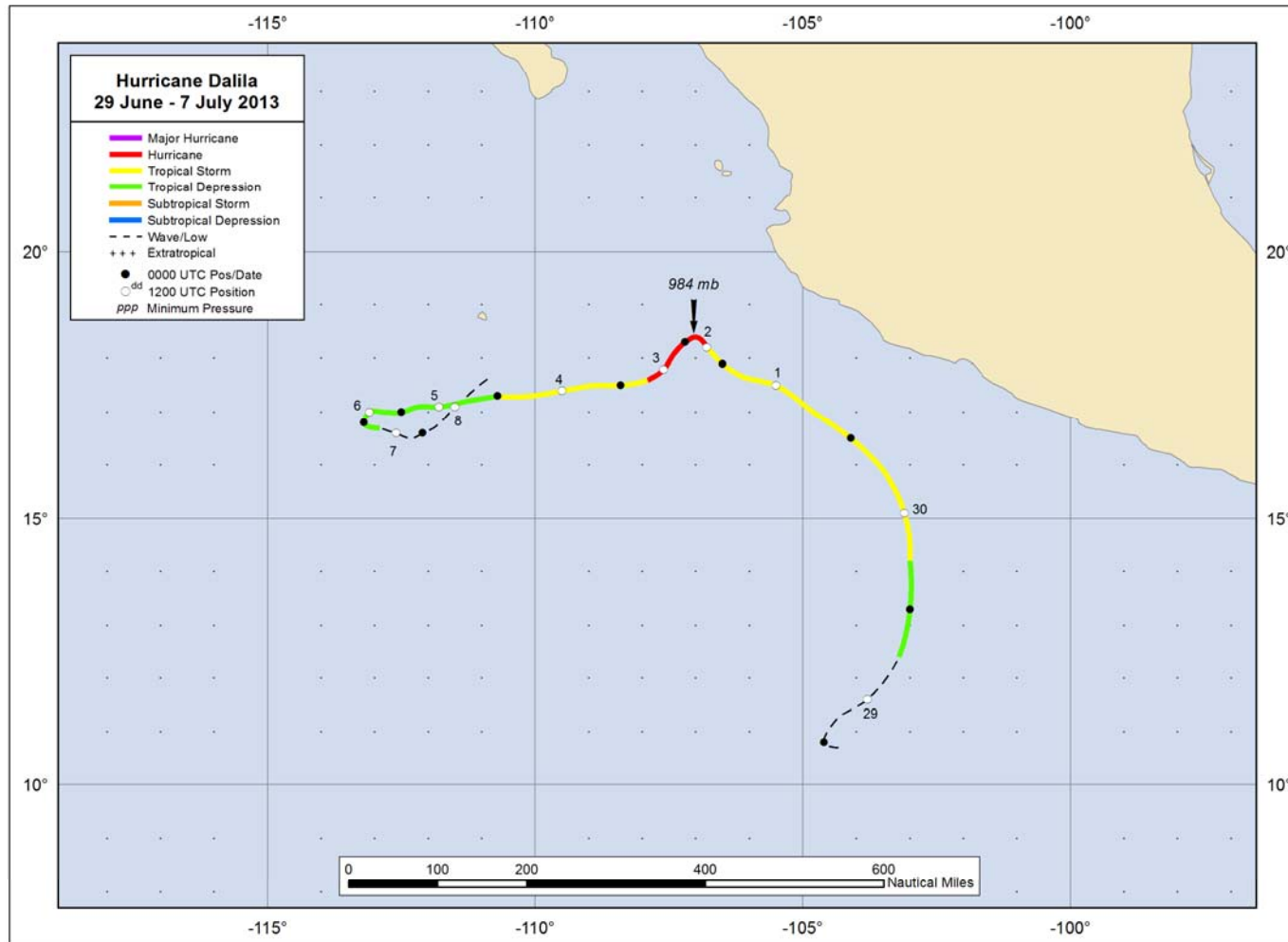| Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	4.4	6.0	6.4	10.6	12.7	12.5	11.4
OCD5	5.7	8.2	11.2	16.2	18.4	**10.2**	**7.7**
GFSI	6.1	8.7	12.9	18.2	18.6	**10.8**	14.0
GHMI	5.7	6.8	9.1	12.3	16.0	**10.0**	11.4
HWFI	5.7	9.3	14.3	19.9	17.8	**9.0**	17.4
IVCN	5.2	7.6	9.7	13.9	15.6	**12.4**	16.4
EMXI	6.2	10.4	14.4	19.5	20.8	13.1	**7.7**
DSHP	5.9	8.2	10.7	14.7	18.6	22.8	26.0
LGEM	5.8	7.3	9.5	14.1	17.8	17.3	15.4
Forecasts	26	24	22	18	13	10	7

Figure 1.   Best track positions for Hurricane Dalila, 29 June-7 July 2013.
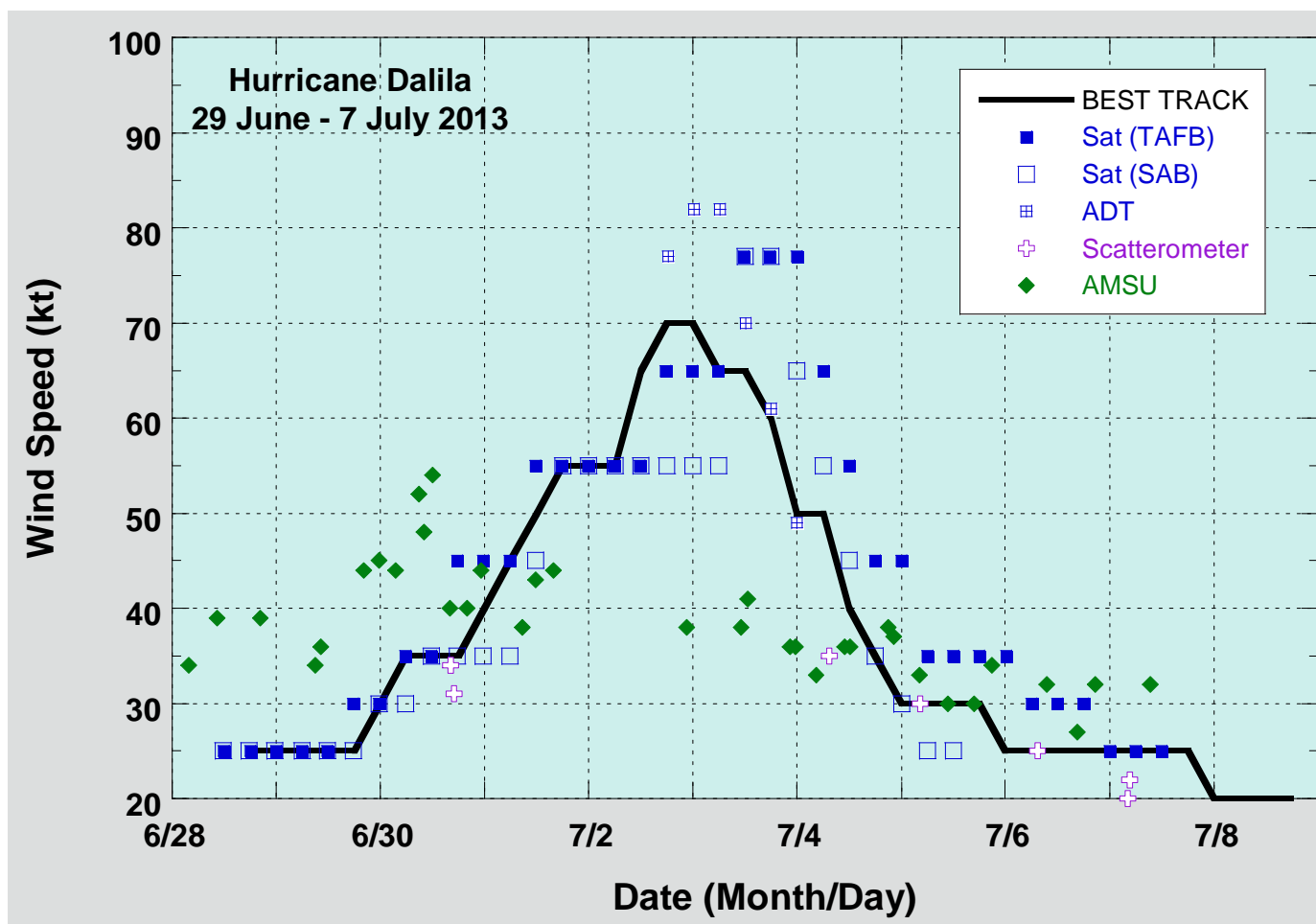
Figure 2.   Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Dalila, 29 June-7 July 2013. Advanced Dvorak Technique (ADT) estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.
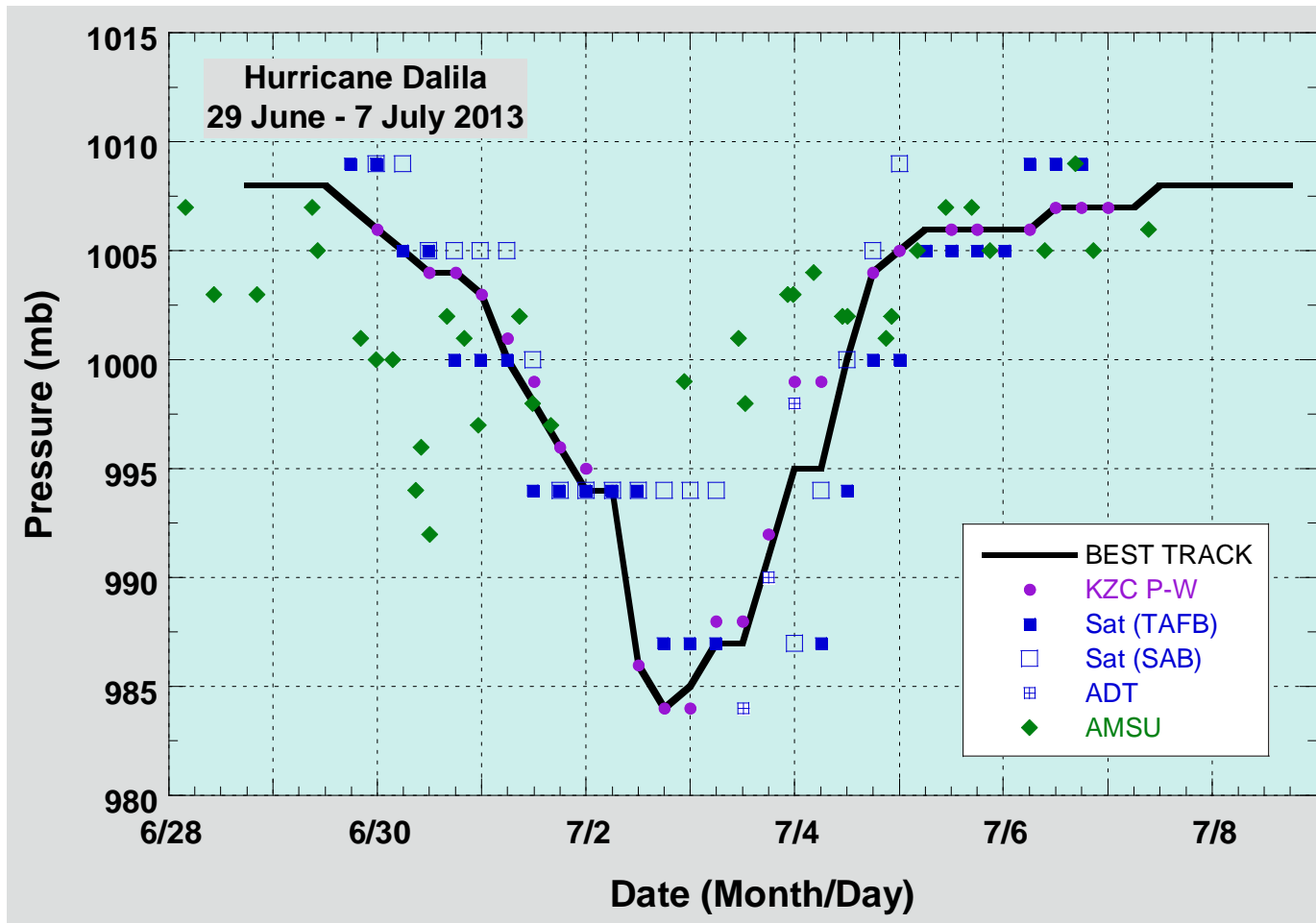
Figure 3.   Selected pressure observations and best track minimum central pressure curve for Hurricane Dalila, 29 June-7 July 2013. Advanced Dvorak Technique (ADT) estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship. Dashed vertical lines correspond to 0000 UTC.