NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

TROPICAL DEPRESSION EIGHT-E

(EP082017)

17–20 July 2017

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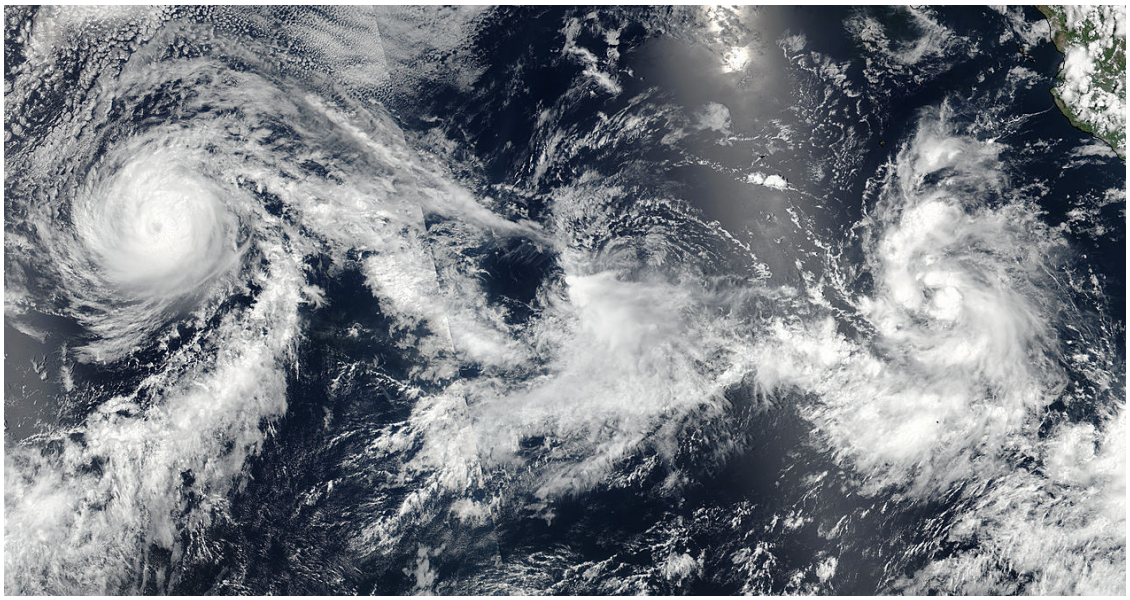
National Hurricane Center
21 March 2018



VIIRS COMPOSITE VISIBLE IMAGE OF HURRICANE FERNANDA (LEFT), TROPICAL DEPRESSSION EIGHT-E (CENTER), AND TROPICAL STORM GREG (RIGHT) ON 18 JULY 2017. IMAGE FROM THE SNPP SATELLITE COURTESY OF NASA.

Tropical Depression Eight-E occurred as part of a multiple cyclone outbreak that included Hurricane Fernanda and Tropical Storm Greg.

Tropical Depression Eight-E

17–20 JULY 2017

SYNOPTIC HISTORY

The formation of Tropical Depression Eight-E appears to have resulted from a tropical wave that moved westward from the coast of Africa on 28–29 June. Aside from spawning a short-lived and weak low pressure area over the eastern Atlantic, the wave showed little in the way of organized convection as it moved through the Atlantic and across northern South America. The system moved into the eastern Pacific on 9–10 July, and the associated convection increased at this time, likely in response to the passage of a favorable phase of the Madden-Julian Oscillation. Little subsequent development occurred until 16 July, when a low pressure area formed in association with the wave. Despite ongoing northwesterly vertical wind shear, the convection with the low became well enough organized to designate the system a tropical depression around 0600 UTC 17 July when it was centered about 680 n mi south-southwest of the southern tip of the Baja California Peninsula. 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 depression moved slowly toward the west-northwest after genesis, with a turn toward the west occurring early on 18 July. This was followed by a turn toward the west-southwest later that day, a motion that would continue until the system dissipated. An unfavorable shear environment allowed only modest strengthening, with the depression reaching an estimated peak intensity of 30 kt from 17–19 July. Ultimately, continuing shear, and the proximity of the cyclone to the larger and better developed Hurricane Fernanda and Tropical Storm Greg, which disrupted the low-level inflow into the depression, caused the system to decay to a remnant low early on 20 July. The remnant low dissipated early on 21 July about 1025 n mi southwest of the southern tip of the Baja California Peninsula.

METEOROLOGICAL STATISTICS

Observations in Tropical Depression Eight-E (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 Global Precipitation Mission (GPM), the

[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.

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 the depression.

The depression's estimated peak intensity of 30 kt is based on a combination of subjective satellite intensity estimates and scatterometer data. It should be noted that Figures 2 and 3 show satellite intensity estimates from the Advanced Microwave Sounding Unit (AMSU) and the Advanced Dvorak technique (ADT) suggesting the depression could have been a tropical storm on 19–20 July. However, these intensity estimation techniques are less reliable for weaker systems, and for this cyclone they are likely to have been too high.

CASUALTY AND DAMAGE STATISTICS

There were no reports of damage or casualties associated with Tropical Depression Eight-E.

FORECAST AND WARNING CRITIQUE

The genesis of Tropical Depression Eight-E was poorly forecast. The disturbance was initially introduced into the Tropical Weather Outlook 54 h prior to formation with a low (<40%) probability for both the 48-h and 5-day time ranges (Table 2). However, the probabilities were not raised to the medium (40-60%) category at either the 2- or 5-day forecast time until 6 h before genesis, and the probabilities were not raised to the high category (>60%) until after genesis had occurred. While the forecasts correctly anticipated that vertical shear would inhibit the overall development of the system, the shear's impact on whether genesis would occur was overestimated.

Operationally, advisories on this cyclone were initiated 30–33 h later than the best track genesis time. Post-analysis of satellite imagery and scatterometer data indicate that the system became well enough organized convectively and in terms of circulation to be considered as a tropical depression around 0600 UTC 17 July. A similar post-analysis indicates the cyclone degenerated to a remnant low 12–15 h earlier than was stated operationally.

A verification of NHC official track forecasts for Tropical Depression Eight-E is given in Table 3. Official forecast track errors were comparable to the mean official errors for the previous 5-yr period. However, the number of forecasts is small, making evaluations of them not very meaningful, and a comparison of the official track forecasts to model guidance is not shown.

A verification of NHC official intensity forecasts for Tropical Depression Eight-E is given in Table 4. Official forecast intensity errors were lower than the mean official errors for the previous 5-yr period. However, the number of forecasts is again small, and a comparison of the official intensity forecasts to model guidance is not provided.

No coastal watches or warnings were issued for Tropical Depression Eight-E.

Table 1. Best track for Tropical Depression Eight-E, 17–20 July 2017.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage*
16 / 1800	12.5	114.9	1010	25	low
17 / 0000	12.8	115.4	1010	25	"
17 / 0600	13.1	115.9	1009	25	tropical depression
17 / 1200	13.4	116.3	1008	25	"
17 / 1800	13.7	116.8	1007	30	"
18 / 0000	14.1	117.4	1007	30	"
18 / 0600	14.5	118.0	1007	30	"
18 / 1200	14.8	118.6	1007	30	"
18 / 1800	14.9	119.2	1007	30	"
19 / 0000	14.9	119.9	1007	30	"
19 / 0600	14.7	120.5	1007	30	"
19 / 1200	14.5	121.0	1008	25	"
19 / 1800	14.3	121.5	1009	25	"
20 / 0000	14.1	122.0	1009	25	"
20 / 0600	13.9	122.5	1009	25	remnant low
20 / 1200	13.7	123.0	1009	25	"
20 / 1800	13.4	123.7	1009	25	"
21 / 0000	12.9	124.5	1009	25	"
21 / 0600					dissipated
17 / 1800	13.7	116.8	1007	30	minimum pressure

Table 2. Number of hours in advance of formation associated with the first NHC Tropical Weather Outlook forecast in the indicated likelihood category. Note that the timings for the “Low” category do not include forecasts of a 0% chance of genesis.

	Hours Before Genesis	
	48-Hour Outlook	**120-Hour Outlook**
Low (<40%)	54	54
Medium (40%-60%)	6	6
High (>60%)	N/A	N/A

Table 3. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Depression Eight-E, 17–20 July 2017. 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	**20.2**	41.6	49.9				
OCD5	32.2	84.9	139.9				
Forecasts	5	3	1				
OFCL (2012-16)	22.2	33.9	43.8	54.8	80.0	108.9	145.1
OCD5 (2012-16)	35.7	72.0	112.2	150.2	217.0	271.0	340.2

Table 4. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Depression Eight-E 17–20 July 2017. 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	**4.0**	**5.0**	**10.0**				
OCD5	6.4	10.0	16.0				
Forecasts	5	3	1				
OFCL (2012-16)	5.8	9.4	11.8	13.2	15.0	15.7	14.9
OCD5 (2012-16)	7.6	12.2	15.7	18.1	20.6	21.8	20.0

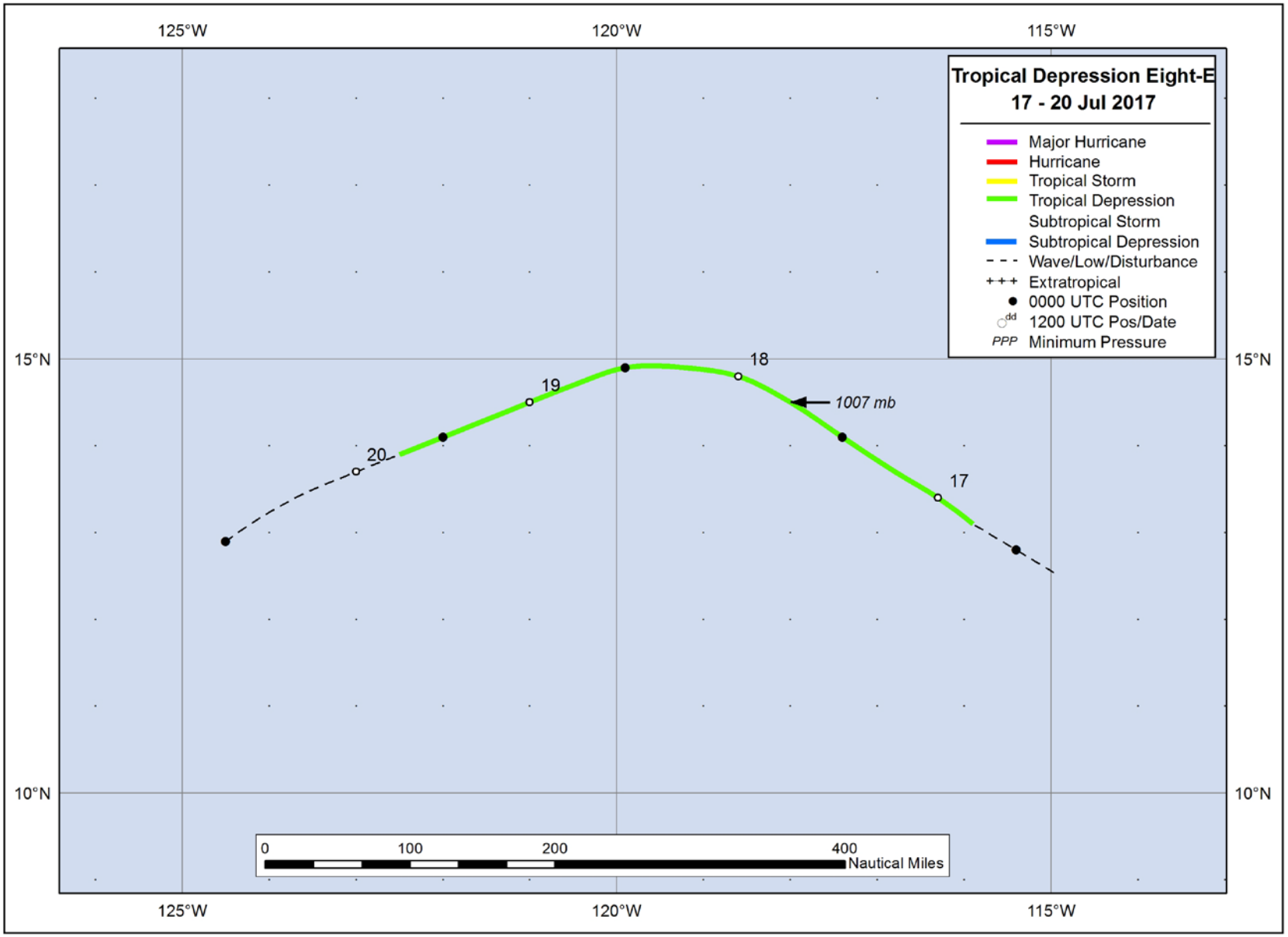


Figure 1. Best track positions for Tropical Depression Eight-E, 17–20 July 2017.

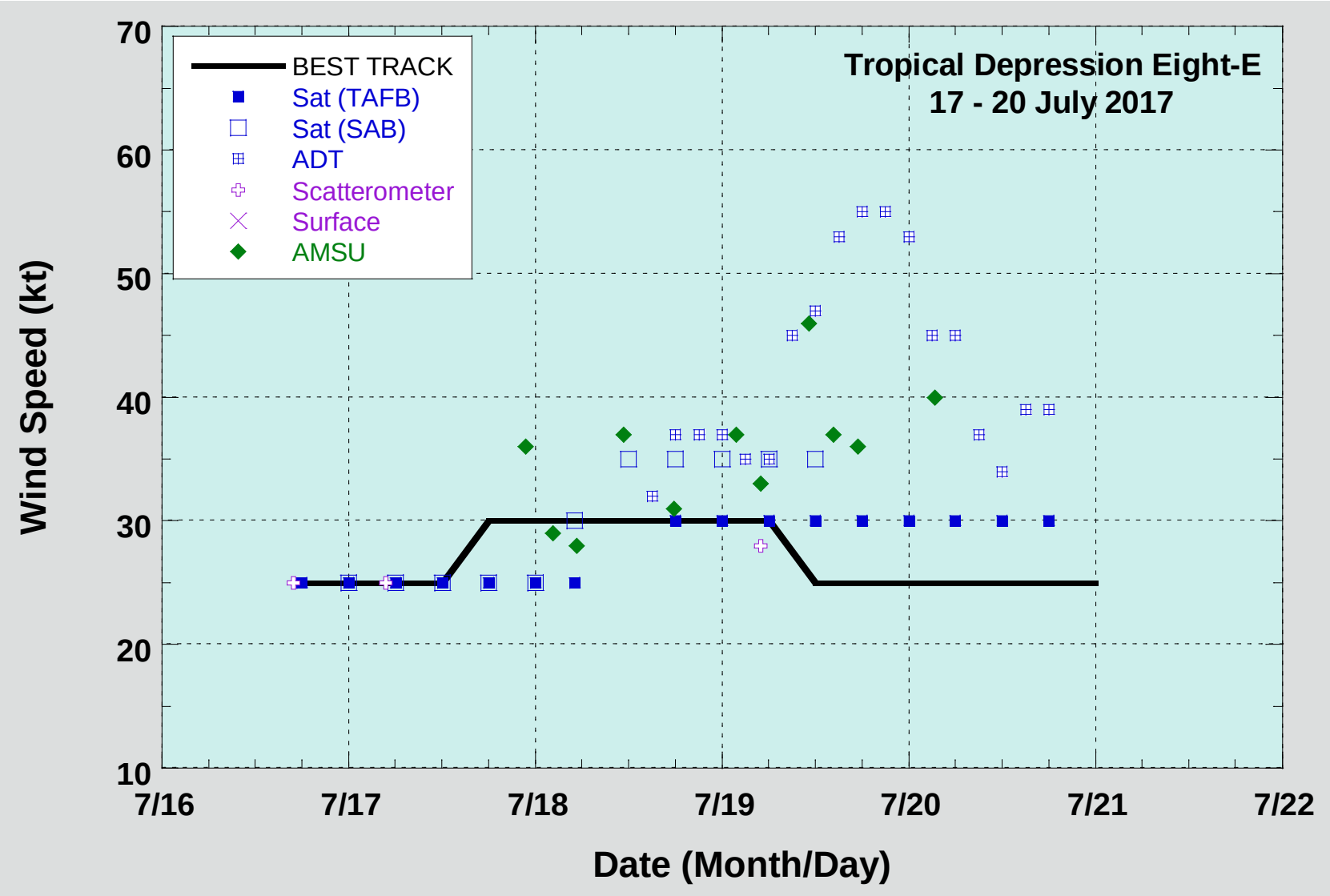


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Eight-E, 17–20 July 2017. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.

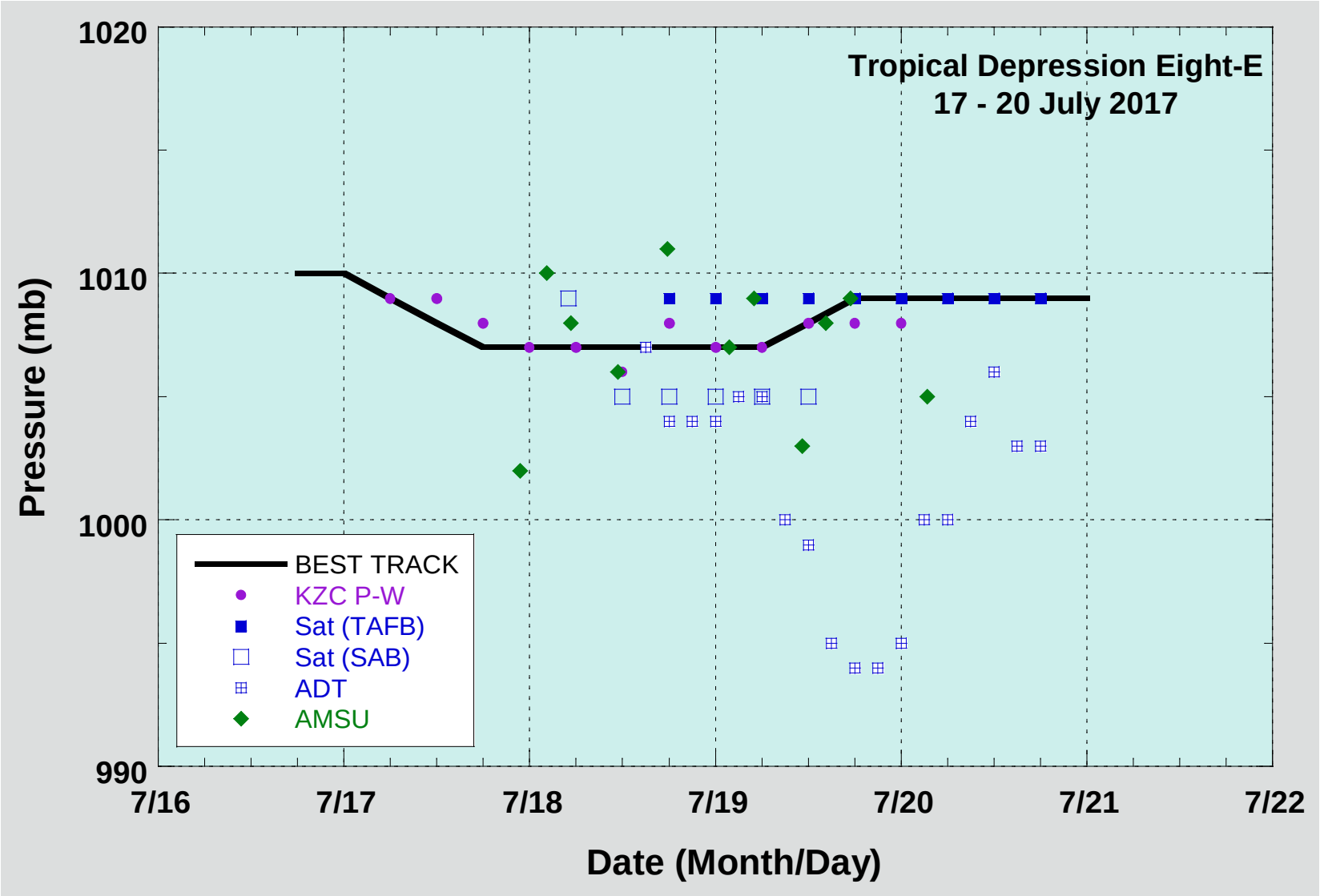


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Depression Eight-E, 17–20 July 2017. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for 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.