# NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

TROPICAL DEPRESSION ELEVEN-E
(EP112017)

4-5 August 2017

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21 November 2017
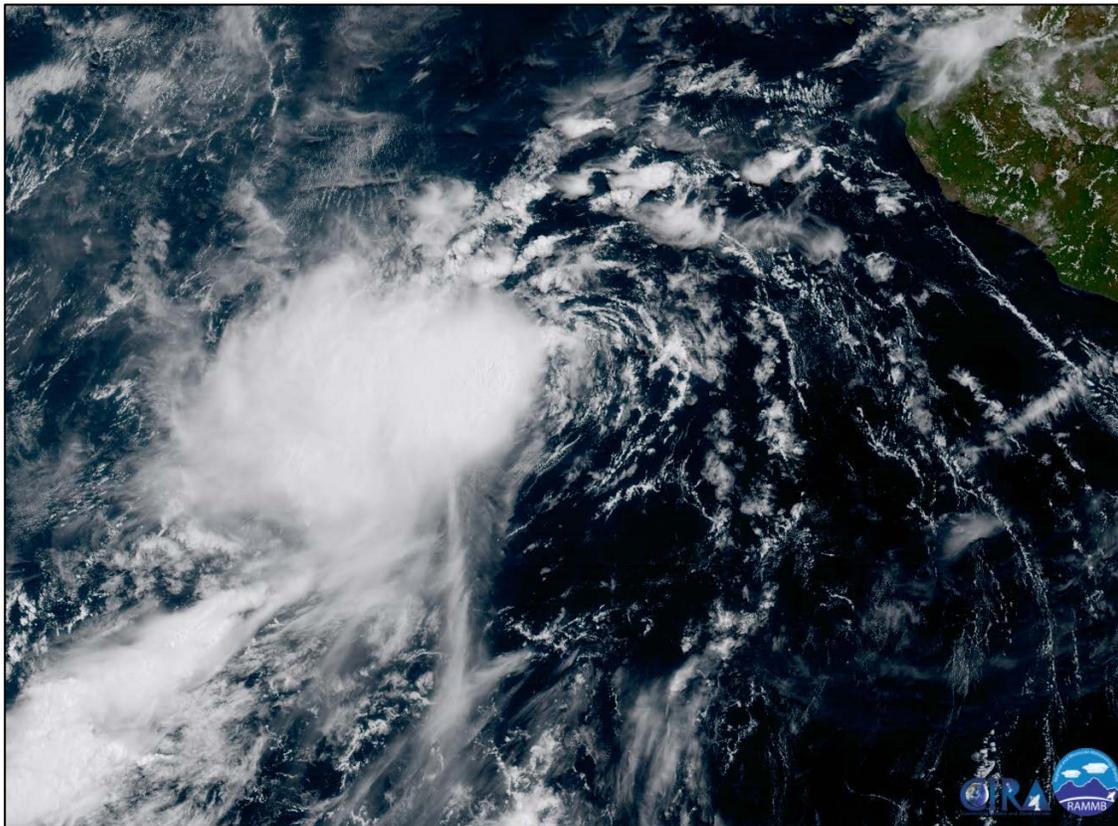
GOES-16 VISIBLE SATELLITE IMAGE OF TROPICAL DEPRESSION ELEVEN-E AT 1715 UTC 4 AUGUST 2017. IMAGE COURTESY OF THE COOPERATIVE INSTITUTE FOR RESEARCH IN ATMOSPHERE AND THE REGIONAL AND MESOSCALE METEOROLOGY BRANCH OF NOAA/NESDIS.

Tropical Depression Eleven-E was a short-lived tropical cyclone that formed off of the southwest coast of Mexico and passed near Socorro Island.

Tropical Depression Eleven-E

4-5 AUGUST 2017

SYNOPTIC HISTORY

The development of Tropical Depression Eleven-E was associated with a tropical wave that moved off the west coast of Africa on 22 July. The wave continued westward over the next week or so across the tropical Atlantic Ocean and southern Caribbean Sea with minimal shower and thunderstorm activity. On 31 July, the disturbance crossed Central America and moved over the far eastern portion of the eastern North Pacific the next day. A broad area of low pressure formed in association with the wave by 3 August a couple of hundred n mi to the south-southwest of Zihuatanejo, Mexico. The system's circulation became better defined late that day, and the associated thunderstorm activity increased and became better organized early on 4 August. This resulted in the formation of a tropical depression around 0600 UTC 4 August about 225 n mi south-southwest of Manzanillo, Mexico. The "best track" chart of the depression'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 west-northwestward to the south of a mid-level ridge that extended from northern Mexico westward over the eastern Pacific Ocean. The cyclone was located within an area of strong easterly vertical wind shear produced by a large mid- to upper-level high pressure system centered over northern Mexico, which prevented strengthening.   The thunderstorm activity was confined to the western portion of the circulation after development (cover photo), and by late on 4 August, the deep convection became separated from the center. As the depression passed over Socorro Island around 0400 UTC 5 August, a small area of deep convection redeveloped over the western portion of the circulation. Later that day, the system moved over cooler waters and into a more stable air mass which caused the depression to degenerate into a post-tropical remnant low by 1800 UTC. After becoming a vertically shallow system, the cyclone slowed down and completed a small cyclonic loop before dissipating about 180 n mi southwest of the southern tip of the Baja California peninsula early on 8 August.

METEOROLOGICAL STATISTICS

Observations in Tropical Depression Eleven-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

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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.

(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 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 30-kt estimated peak intensity of the depression is based on subjective Dvorak T-numbers of 2.0 from TAFB and SAB. An automated weather observing site on Socorro Island reported a peak wind gust of 30 kt during the passage of the depression. The site also reported a minimum pressure of 999.7 mb around 0400 UTC 5 August; however a history of this site's observations indicate that the pressure is several millibars too low, and it was not relied upon in the construction of the minimum pressure value in the best track.

CASUALTY AND DAMAGE STATISTICS

There were no damages or casualties associated with the depression.

FORECAST AND WARNING CRITIQUE

The chance of tropical cyclone development was indicated in the Tropical Weather Outlook more than 5 days before formation occurred, however, due to the expected strong shear the system was never shown to have a high chance of formation (Table 2). The system was introduced into the 5-day TWO with a low chance (< 40%) of development 150 h before formation, and it was raised to the medium category (40-60%) 114 h before the tropical cyclone formed. The 48 h probability reached the medium category only 12 h before formation.

Given the short duration of Tropical Depression Eleven-E, there are only three verifying forecasts at 12 h, and one at 24 h. The average NHC forecast track errors were 27.4 n mi and 41.4 n mi at 12 and 24 h, respectively. The mean official intensity errors were 1.7 kt and 5 kt at 12 and 24 h, respectively. Due to the small number of forecasts, a meaningful comparison of the official forecasts with the various track and intensity models is not possible.

There were no watches or warnings issued in association with the depression.

Table 1.   Best track for Tropical Depression Eleven-E, 4–5 August 2017.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
04 / 0000	15.9	106.0	1009	25	low
04 / 0600	16.5	107.3	1007	30	tropical depression
04 / 1200	17.1	108.6	1007	30	"
04 / 1800	17.7	109.8	1006	30	"
05 / 0000	18.3	110.6	1006	30	"
05 / 0600	18.9	111.1	1006	30	"
05 / 1200	19.4	111.4	1006	30	"
05 / 1800	20.0	111.6	1008	25	low
06 / 0000	20.4	112.0	1009	25	"
06 / 0600	20.6	112.1	1010	20	"
06 / 1200	20.7	112.2	1010	20	"
06 / 1800	20.6	112.3	1010	20	"
07 / 0000	20.5	112.4	1010	15	"
07 / 0600	20.4	112.3	1010	15	"
07 / 1200	20.4	112.1	1010	15	"
07 / 1800	20.6	112.0	1010	15	"
08 / 0000	20.6	112.0	1010	15	"
08 / 0600					dissipated
04 / 1800	17.7	109.8	1006	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%)	102	150
Medium (40%-60%)	12	114
High (>60%)	-	-
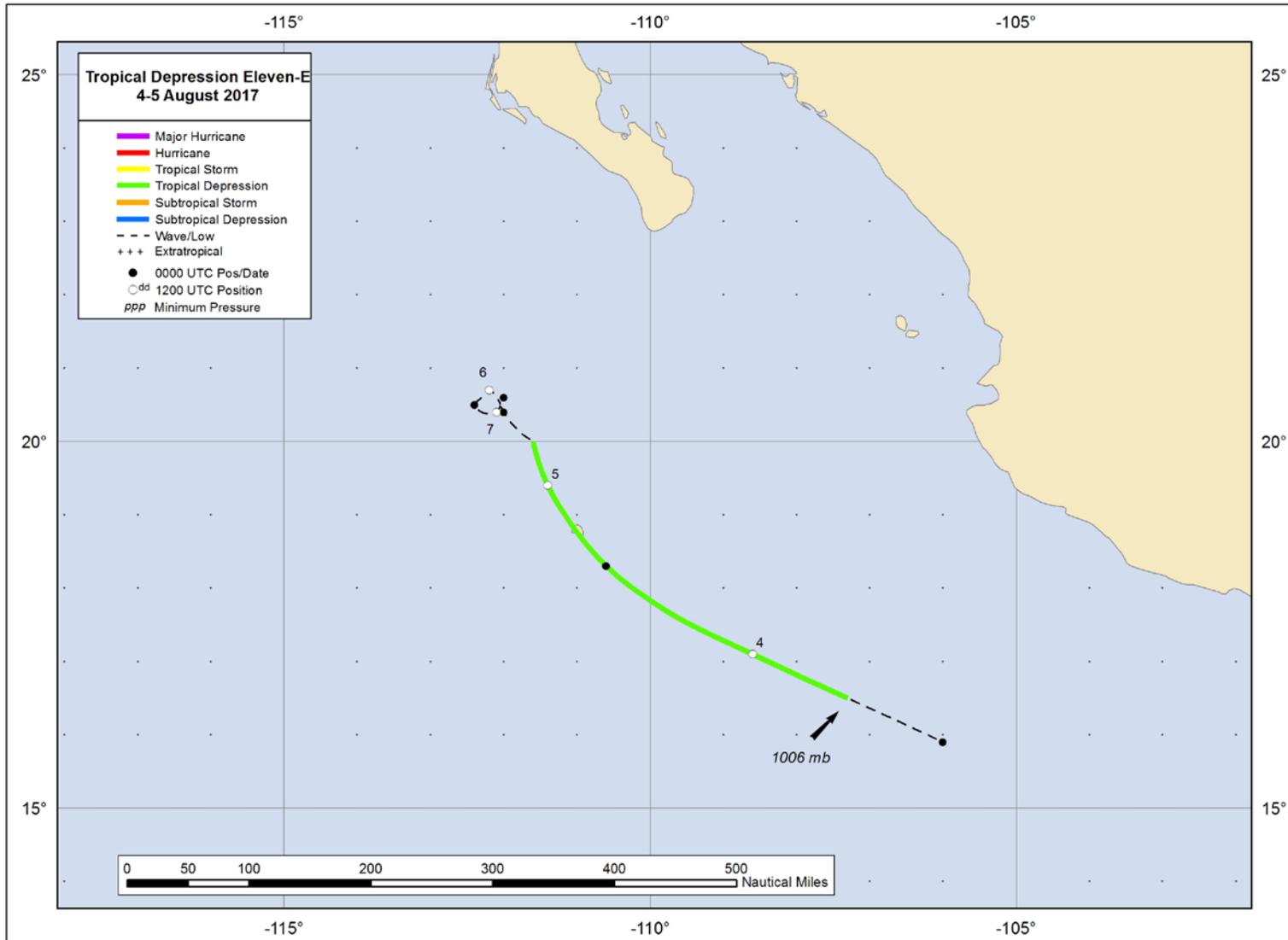
Figure 1.   Best track positions for Tropical Depression Eleven-E, 4–5 August 2017.
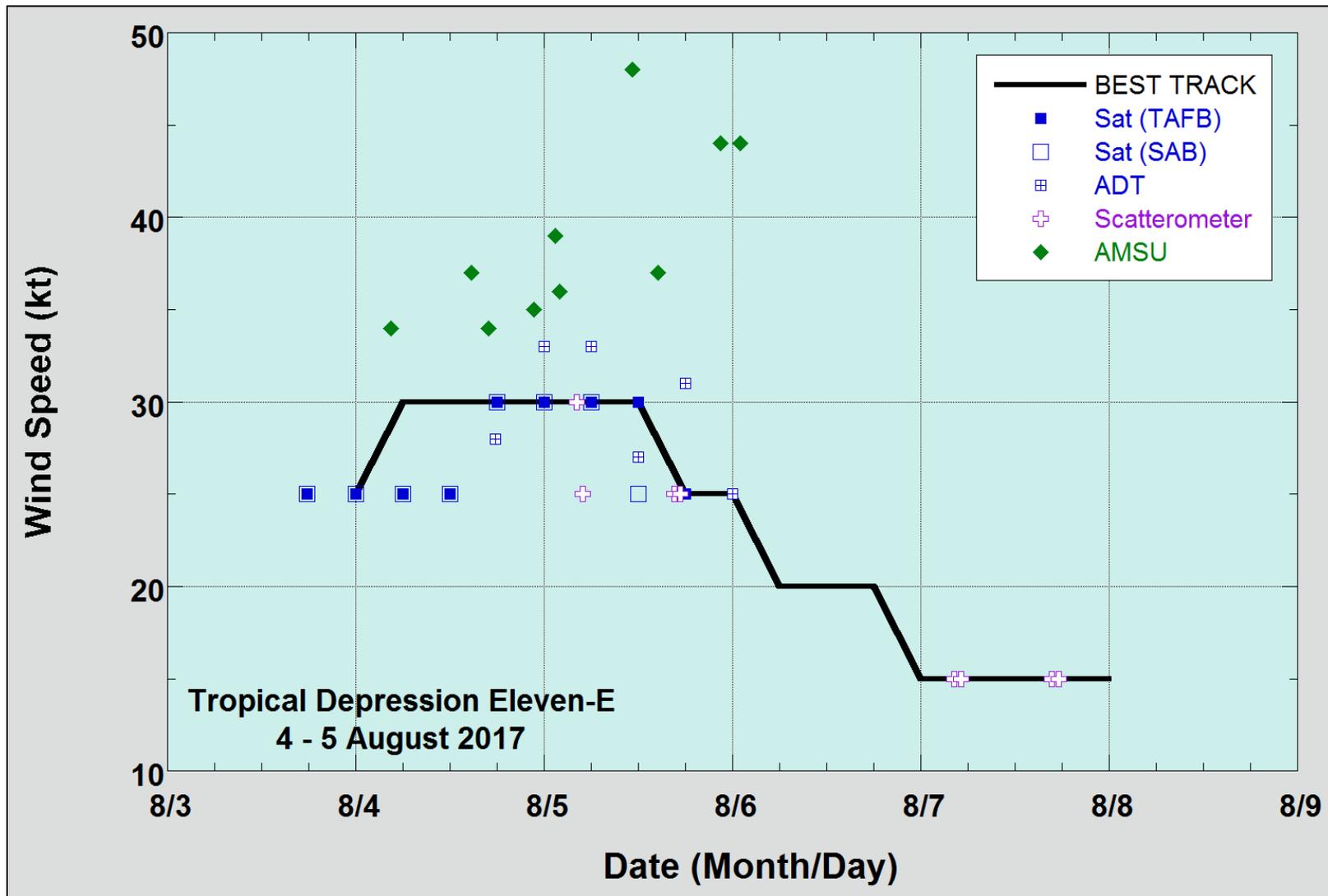
Figure 2.   Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Eleven-E, 4–5 August 2017. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.
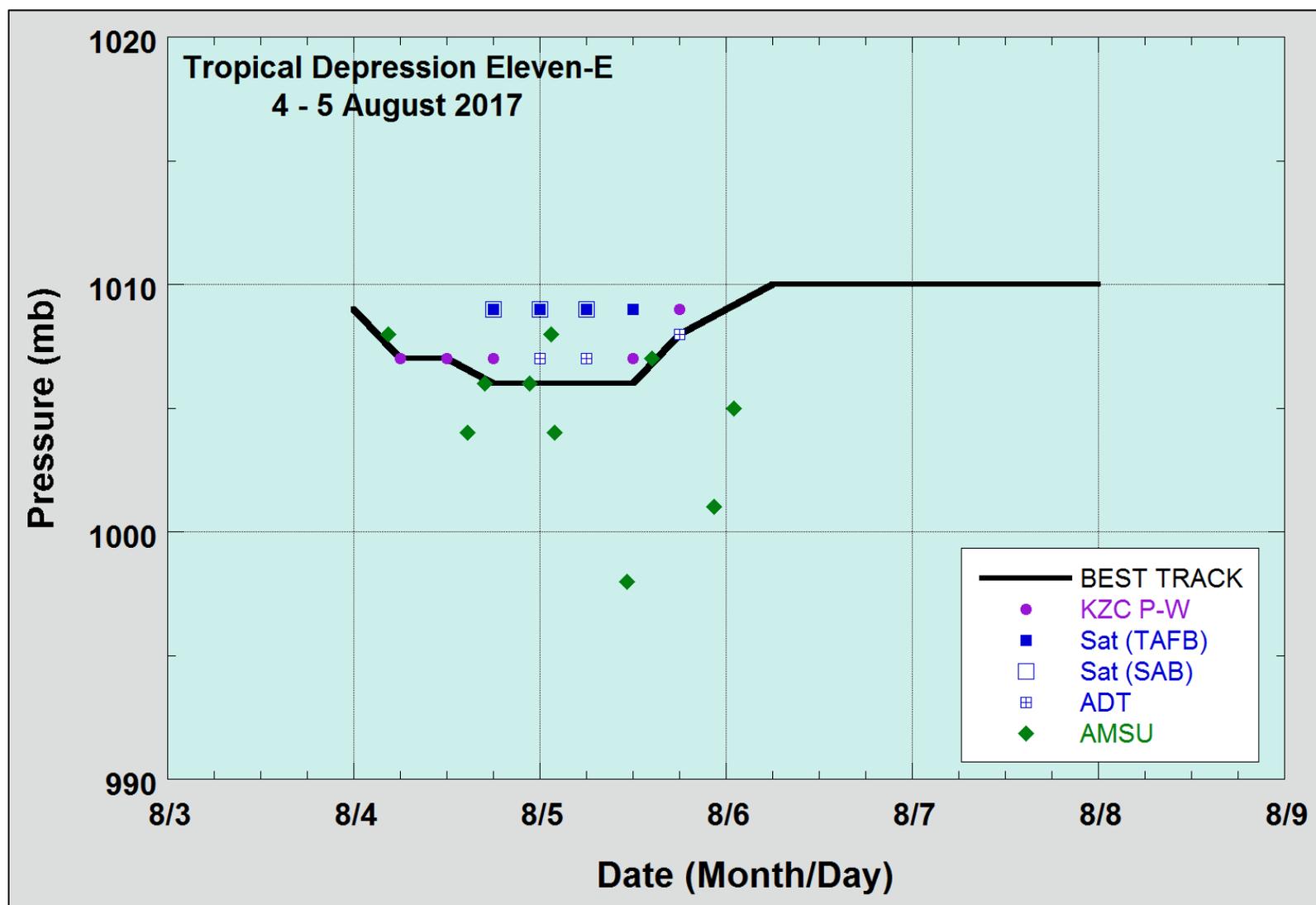
Figure 3.   Selected pressure observations and best track minimum central pressure curve for Tropical Depression Eleven-E, 4–5 August 2017. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute 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.