NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

TROPICAL DEPRESSION NINE-E

(EP092018)

26–27 July 2018

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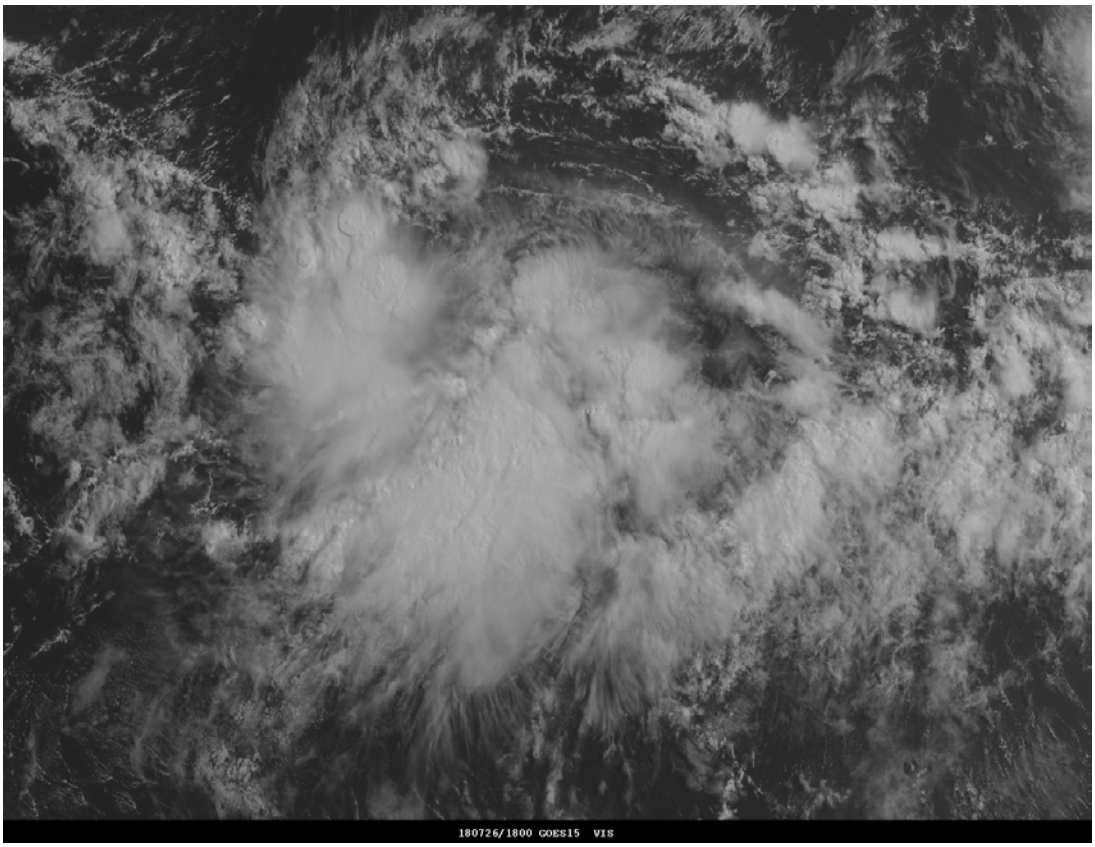

1800 UTC 26 JULY 2018 GOES-15 VISIBLE IMAGE OF TROPICAL DEPRESSION NINE-E AT ITS TIME OF GENESIS.

Tropical Depression Nine-E was a short-lived tropical cyclone that formed over the far western portion of the eastern North Pacific basin.

Tropical Depression Nine-E

26–27 JULY 2018

SYNOPTIC HISTORY

The origins of Tropical Depression Nine-E are somewhat unclear. A trough of low pressure developed within the eastern Pacific monsoon trough on 21 July, about 550 n mi south-southwest of Manzanillo, Mexico, following an increase of convective activity associated with the passage of a convectively coupled Kelvin wave. A passing tropical wave likely also contributed to the increase of convection that resulted in the formation of the weak surface trough. The disturbance moved steadily westward around 15 kt for several days while strong northeasterly wind shear associated with an upper-level trough and a moderately dry surrounding environment prevented it from becoming better organized. Beginning on 23 July, the surface trough gradually became more pronounced due to an increase of convection near the trough axis, however 15–20 kt of shear continued to inhibit significant development for several more days. On 26 July, the disturbance reached a col point between an upper-level ridge to the west and the aforementioned trough to the east. The subsequent upper-level diffluent environment contributed to a large increase in convection on the morning of 26 July, resulting in the formation of a closed circulation and well-defined center around 1800 UTC that day, marking the development of a tropical depression about 1250 n mi east-southeast of Hilo, Hawaii. 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].

Following formation, the depression continued moving westward into a higher-shear environment on the eastern side of the upper-level ridge to the west. As a result, all deep convection quickly became displaced to the south and west of the tropical cyclone's low-level center. Weakening ensued, and by 0000 UTC 28 July, only 30 h after formation, the system degenerated into a trough of low pressure about 1050 n mi southeast of Hilo, Hawaii. Although the remnant trough continued to produce intermittent convection for a few more days as it continued westward over the central Pacific, high shear and dry air prevented it from becoming organized or re-forming a well-defined center.

METEOROLOGICAL STATISTICS

Observations in Tropical Depression Nine-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

[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 and Satellite Consensus (SATCON) estimates from the Cooperative Institute for Meteorological Satellite Studies/University of Wisconsin-Madison (UW-CIMSS). 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 Tropical Depression Nine-E.

The maximum intensity of the cyclone is estimated to be 30 kt based on a blend of intensity estimates from TAFB, SAB, and the UW-CIMSS SATCON. Prior to genesis, a pair of scatterometer passes around 0600 UTC 26 July also supported winds near that magnitude.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The genesis of Tropical Depression Nine-E was not well anticipated. Table 2 provides the number of hours in advance of formation associated with the first NHC Tropical Weather Outlook (TWO) forecast in each likelihood category. The disturbance from which the depression developed was introduced in the Tropical Weather Outlook with a low (<40%) chance of development 42 h prior to genesis. The 2-day and 5-day genesis probabilities were raised to the medium (40–60%) category 6 h prior to genesis, and the system was only assessed to have a high (>60%) probability of formation at the time genesis was determined to have occurred in post-analysis.

Due to the depression's short existence, there were only three verifying 12-h forecasts and one verifying 24-h forecast. Therefore, a comprehensive verification of official and guidance track and intensity forecast errors is not provided. Generally speaking, the few NHC track and intensity forecasts were quite good, correctly anticipating that the depression would not strengthen and would continue moving steadily westward, although the system ultimately dissipated sooner than forecast. The three verifying 12-h NHC forecasts had an average track error of 10.0 n mi and an average intensity error of 1.7 kt. These compare favorably to the mean 12-h official track and intensity errors for the previous 5-yr period (2013–2017) of 21.8 n mi and 5.8 kt, respectively.

There were no coastal watches or warnings associated with Tropical Depression Nine-E.

Table 1. Best track for Tropical Depression Nine-E, 26–27 July 2018.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
26 / 1800	10.9	135.0	1007	30	tropical depression
27 / 0000	10.8	136.1	1007	30	"
27 / 0600	10.7	137.2	1007	30	"
27 / 1200	10.6	138.2	1007	30	"
27 / 1800	10.6	139.1	1008	25	"
28 / 0000					dissipated
26 / 1800	10.9	135.0	1007	30	maximum winds and 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%)	42	42
Medium (40%-60%)	6	6
High (>60%)	-	-

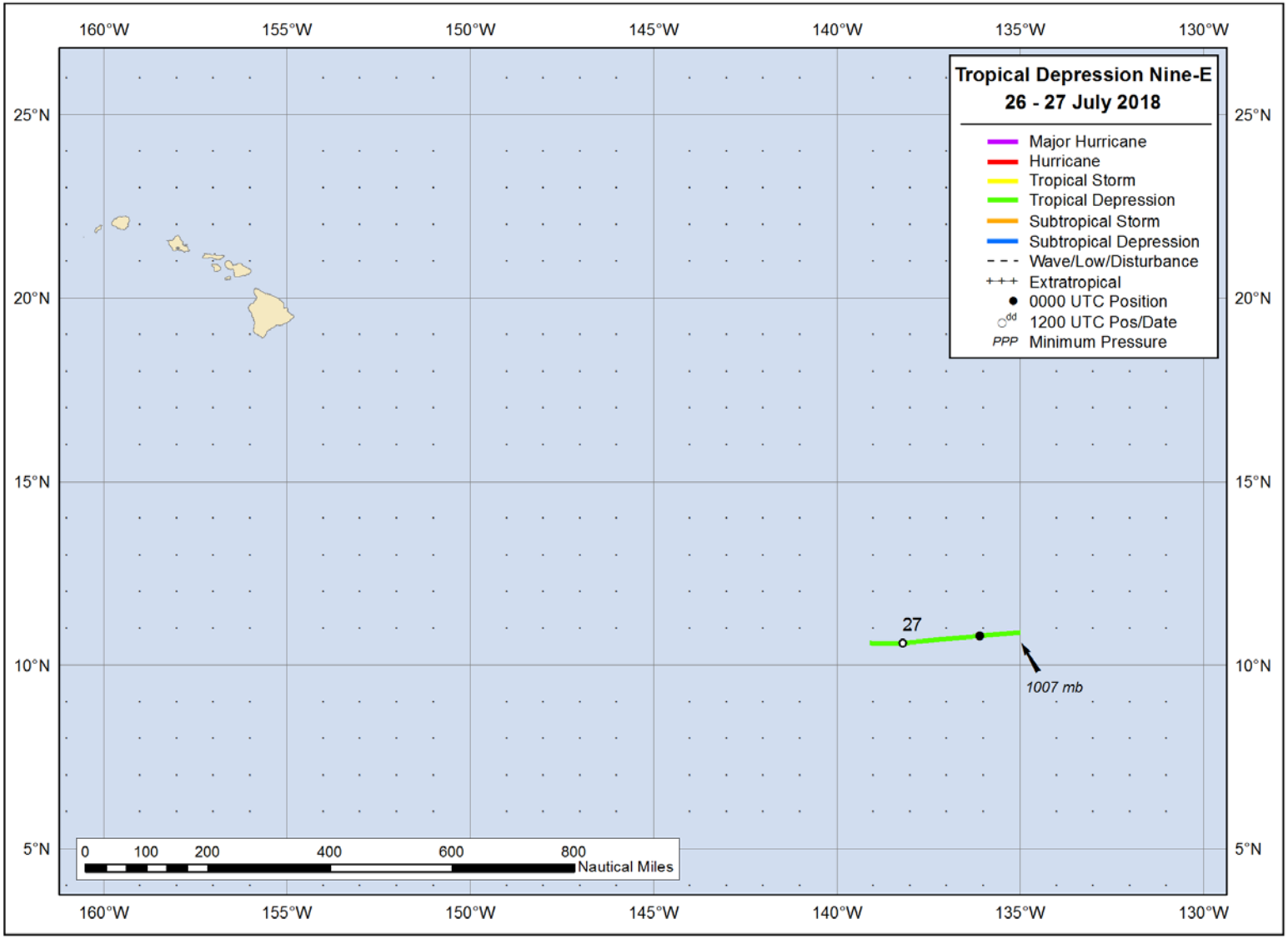

Figure 1. Best track positions for Tropical Depression Nine-E, 26–27 July 2018.

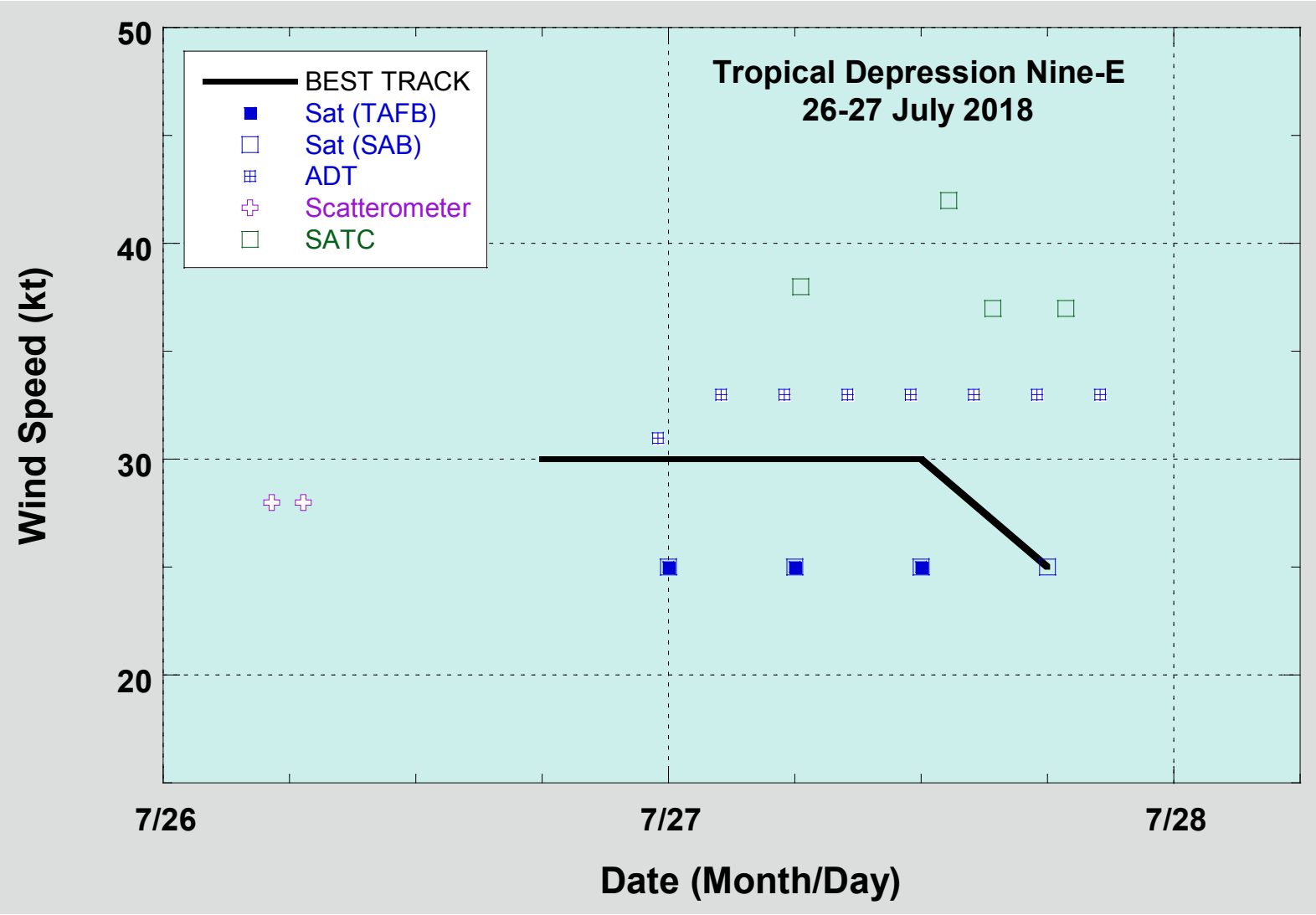

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Nine-E, 26–27 July 2018. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies.

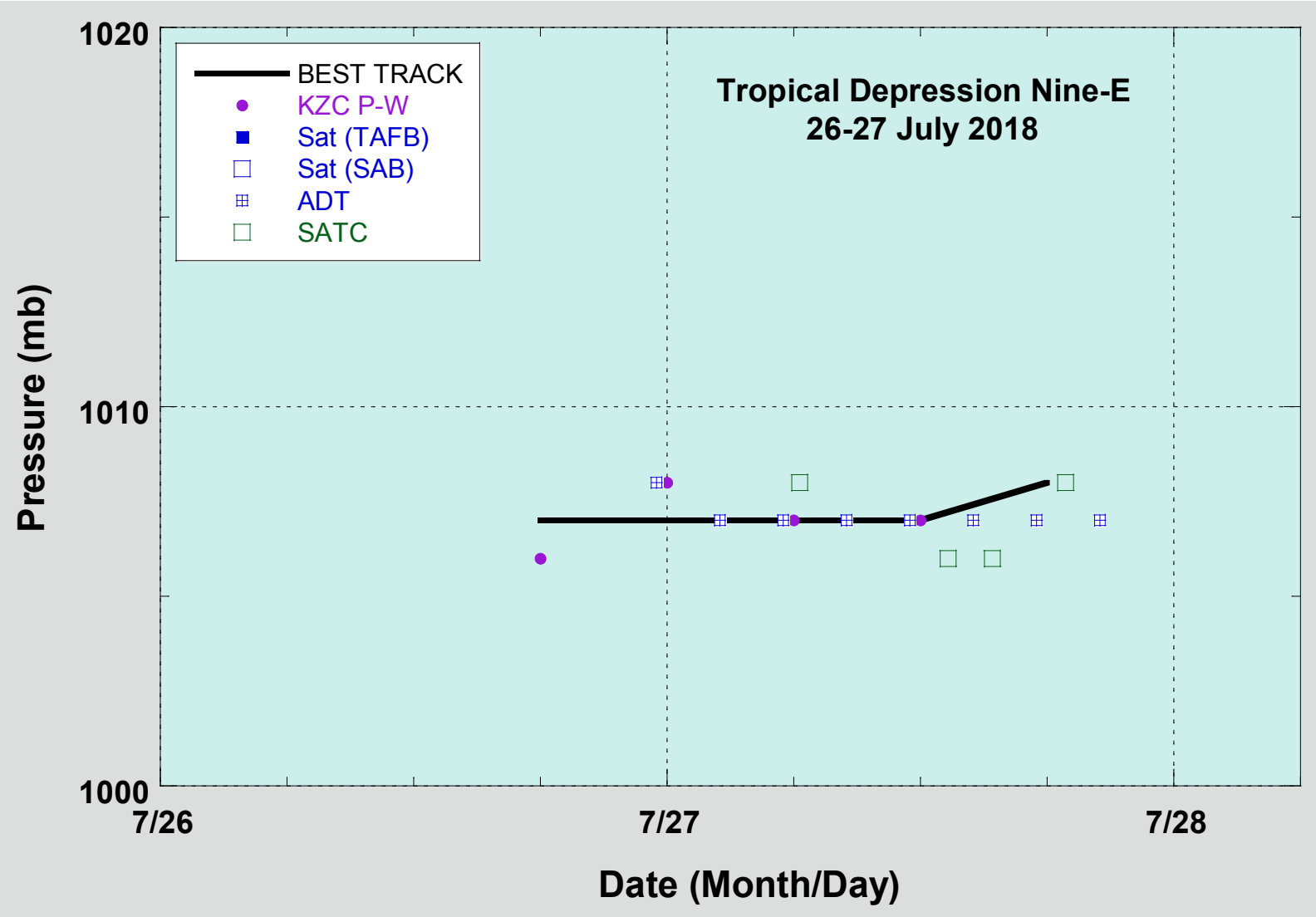

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Depression Nine-E, 26–27 July 2018. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship.