NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

UNNAMED TROPICAL STORM (FORMERLY TROPICAL DEPRESSION SEVEN-E) (EP072020)

20–21 July 2020

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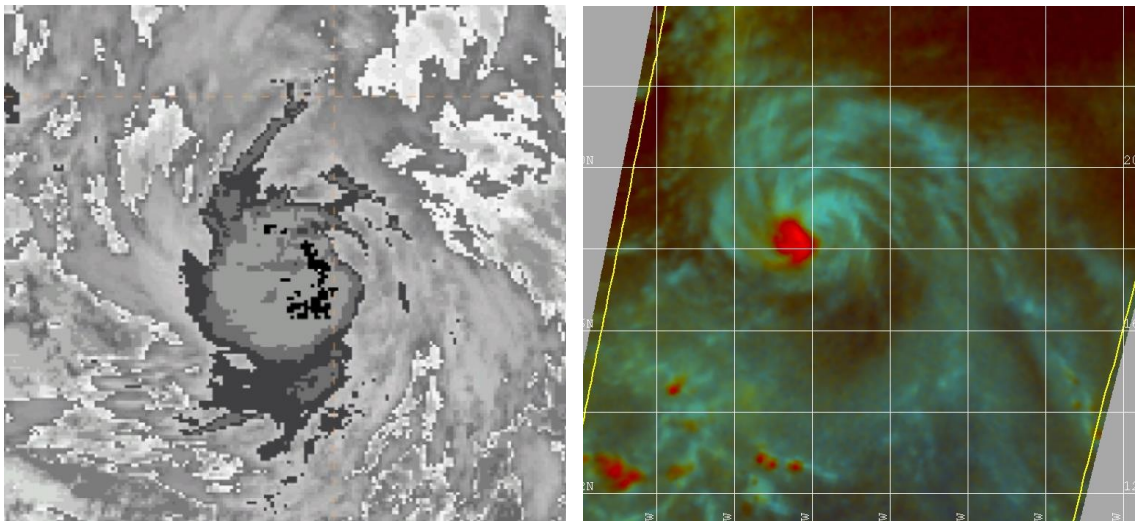

GOES-17 INFRARED SATELLITE IMAGE (LEFT) AT 1200 UTC 20 JULY AND A 1225 UTC 20 JULY 85-GHZ COLOR COMPOSITE MICROWAVE IMAGE (RIGHT) OF THE UNNAMED TROPICAL STORM NEAR THE TIME OF ITS PEAK INTENSITY.

The unnamed tropical storm (formerly Tropical Depression Seven-E) was a short-lived tropical storm that remained over the open waters of the eastern North Pacific basin well southwest of the southern tip of the Baja California peninsula.

Unnamed Tropical Storm (Formerly Tropical Depression Seven-E)

20–21 JULY 2020

SYNOPTIC HISTORY

The tropical storm formed from a tropical wave that appears to have exited the west coast of Africa around 6 July. The wave moved quickly westward across the tropical Atlantic and Caribbean Sea over the next week with little convective activity. The wave crossed Central America and entered the far eastern portion of the eastern Pacific basin on 13 July. Deep convection associated with the wave gradually increased while it passed well south of the southwestern coast of Mexico a few days later. On 17 July, the wave became better defined as deep convection continued to increase when the system was located about 750 n mi south-southwest of the southern tip of the Baja California peninsula. The next day, the deep convection became more concentrated along the wave axis, which led to the development of a low pressure area by 1200 UTC 19 July. The deep convection became better organized late that day, and a tropical depression is estimated to have formed by 0000 UTC 20 July about 1075 n mi west-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].

Although the system had already moved over relatively cool sea surface temperatures of around 26°C when it formed, the deep convection became slightly better organized in a band around the western and southwestern portions of the circulation, and the depression strengthened into a tropical storm 12 h after formation (cover photos). A mid-level high pressure ridge to the northeast of the tropical cyclone steered the tropical storm northwestward during its existence. Shortly after becoming a tropical storm, the deep convection began to wane as the system moved over even cooler waters. During the afternoon hours of 20 July, deep convection redeveloped over the western portion of the circulation but by early the next day the convection dissipated, resulting in the system becoming a post-tropical cyclone by 0600 UTC 21 July when it was located about 1275 n mi west-southwest of the southern tip of the Baja California peninsula. The post-tropical cyclone turned westward within the low-level trade wind flow and continued to quickly weaken while moving into an area with less favorable thermodynamic conditions. Satellite wind data indicate that the remnant low degenerated into a trough of low pressure by 0000 UTC 22 July, when it was located about 1425 miles west-southwest of the southern tip of the Baja California peninsula.

[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 the tropical storm (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 and Satellite Consensus (SATCON) 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 tropical storm.

In real time, the system was not assessed to have attained tropical storm status, primarily due to the timing and data latency of a couple of ASCAT overpasses and the overall organization of the cyclone shortly after those data were available. The first ASCAT overpass in question occurred at 1758 UTC 20 July and revealed peak winds of 32 kt. Since the convective organization had waned around the time of that overpass, operationally the system was maintained as a 30-kt tropical depression. This intensity was also supported in real-time by subjective Dvorak classifications of T2.0 or 30 kt from both TAFB and SAB. However, after another burst of convection occurred over the western portion of the circulation late that day, a subsequent ASCAT pass at 0624 UTC 21 July, after the deep convection had dissipated, revealed peak winds of 33 kt. The system was not upgraded to a tropical storm in real time after the second ASCAT pass was received since the convection had dissipated and the system was assumed to have weakened by the time the 0900 UTC advisory was issued.

Given the typical undersampling of the ASCAT instrument, especially in small tropical cyclones like this system, it is highly likely that tropical-storm-force winds existed within the circulation when the convective organization was at its peak. Therefore, in post-analysis the system has been assessed to have been a tropical storm beginning at 1200 UTC 20 July (cover photos) through 0000 UTC 21 July. Since the deep convection had dissipated by the time of the ASCAT pass at 0624 UTC 21 July, the system is designated as a post-tropical cyclone with 35-kt winds at 0600 UTC. The 35-kt peak intensity is also supported by several UW/CIMSS SATCON estimates of 37–40 kt from 1509 UTC 20 July through 0622 UTC 21 July.

There were no ship reports of winds of tropical storm force in association with this system.

CASUALTY AND DAMAGE STATISTICS

There were no reports of damage or casualties associated with the tropical storm.

FORECAST AND WARNING CRITIQUE

The genesis of the tropical storm (formerly Tropical Depression Seven-E) was somewhat anticipated, but as is typical of systems that only develop into short-lived marginal tropical cyclones, confidence in its formation was never high. The disturbance from which the tropical storm formed was first introduced into the Tropical Weather Outlook at 0600 UTC 15 July with a low chance (<40%) of development within the next 5 days, exactly 5 days before formation occurred (Table 2). The 5-day chance of formation was raised to the medium category (40–60%) 2 days before development. The system was first assigned a 48-h probability of development 66 h before formation occurred, and the 2-day chance was raised to the medium category 30 h before the system became a tropical depression. However, neither the 2- or 5-day probabilities of genesis ever reached the high category (>60%) due to the fact that the system was moving toward cooler waters and less favorable thermodynamic conditions, which led to lower confidence in the system developing into a tropical cyclone.

Due to the system's short existence, there were only two verifying 12-h forecasts. Thus, a comprehensive verification of official and guidance track and intensity forecast errors is not provided. The two official 12-h forecasts had a mean track error of 18.8 n mi and a mean intensity error of 5.0 kt. The mean 12-h official errors for the previous 5-yr period (2015-19) are 21.8 n mi and 6.0 kt, respectively. Since the depression was already over sea surface temperatures of around 26°C at the time of genesis and heading toward even cooler waters, strengthening was not anticipated.

There were no coastal watches or warnings issued in association with the tropical storm.

Table 1. Best track for unnamed tropical storm, 20–21 July 2020.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
19 / 1200	15.2	126.4	1008	25	low
19 / 1800	16.1	127.1	1008	25	"
20 / 0000	17.0	128.0	1007	30	tropical depression
20 / 0600	17.7	128.9	1007	30	"
20 / 1200	18.3	129.7	1006	35	tropical storm
20 / 1800	18.8	130.5	1006	35	"
21 / 0000	19.1	131.4	1006	35	"
21 / 0600	19.3	132.4	1007	35	low
21 / 1200	19.3	133.5	1008	30	"
21 / 1800	19.1	134.6	1009	25	"
22 / 0000					dissipated
20 / 1200	18.3	129.7	1006	35	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%)	66	120
Medium (40%-60%)	30	48
High (>60%)	-	-

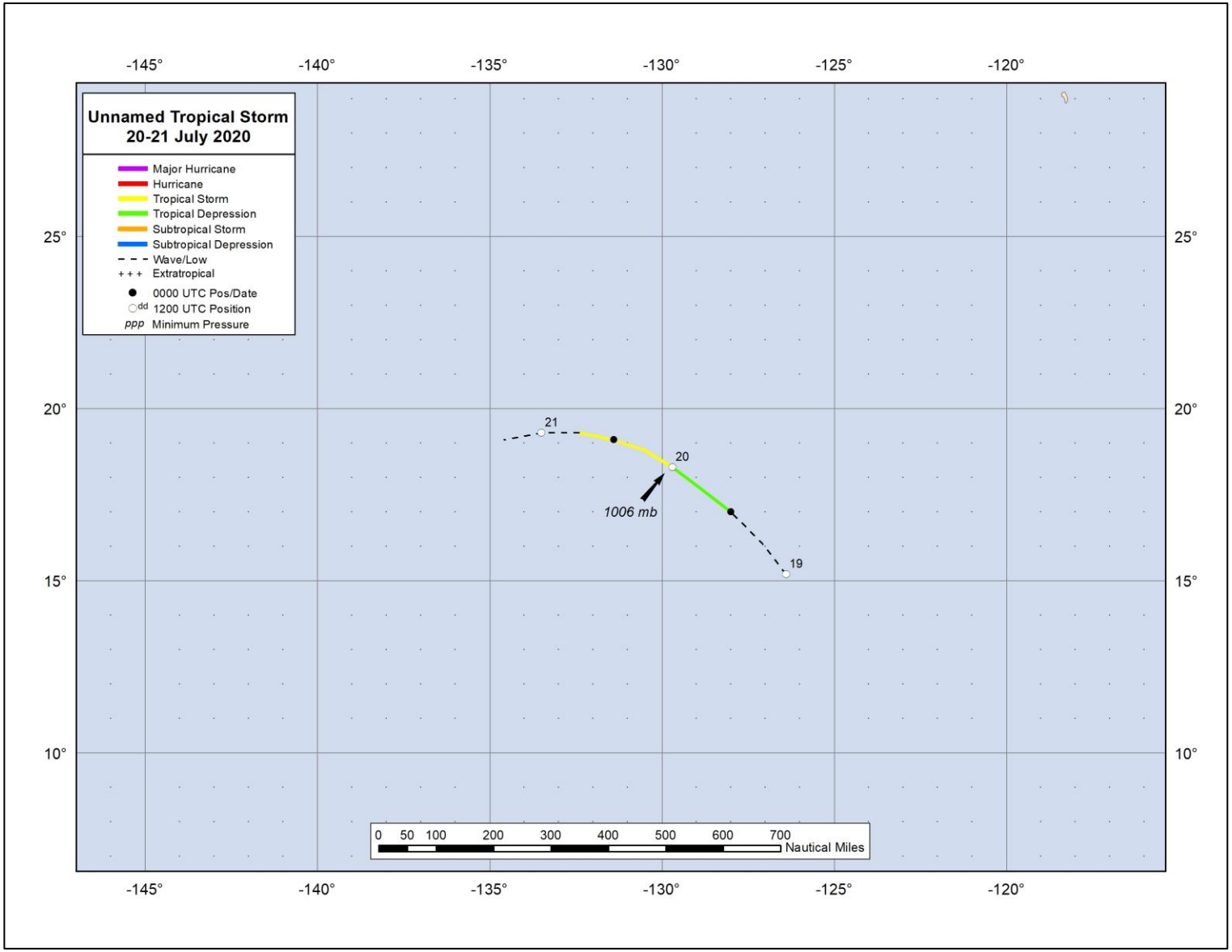

Figure 1. Best track positions for unnamed tropical storm, 20–21 July 2020.

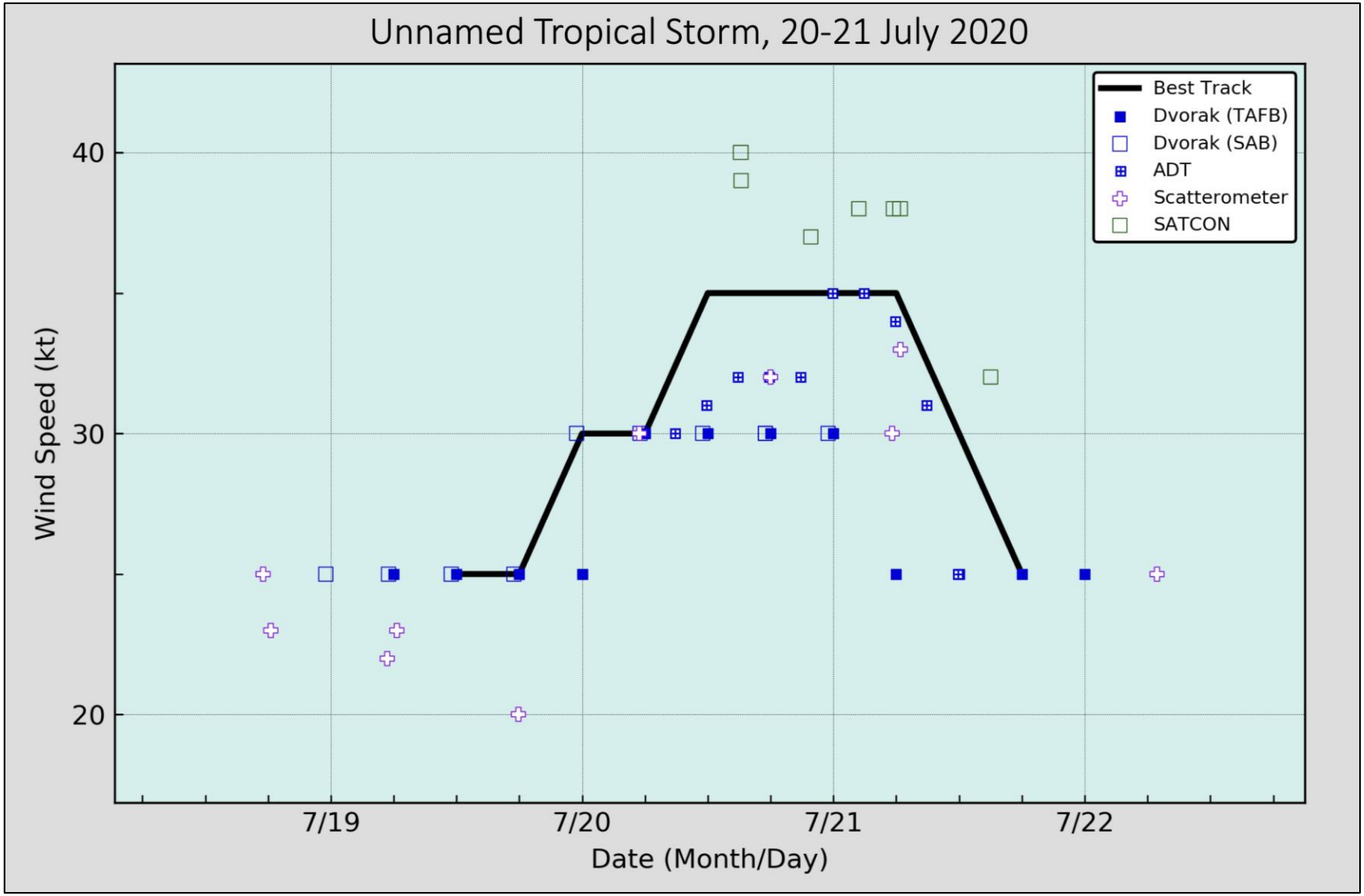

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for unnamed tropical storm, 20–21 July 2020. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

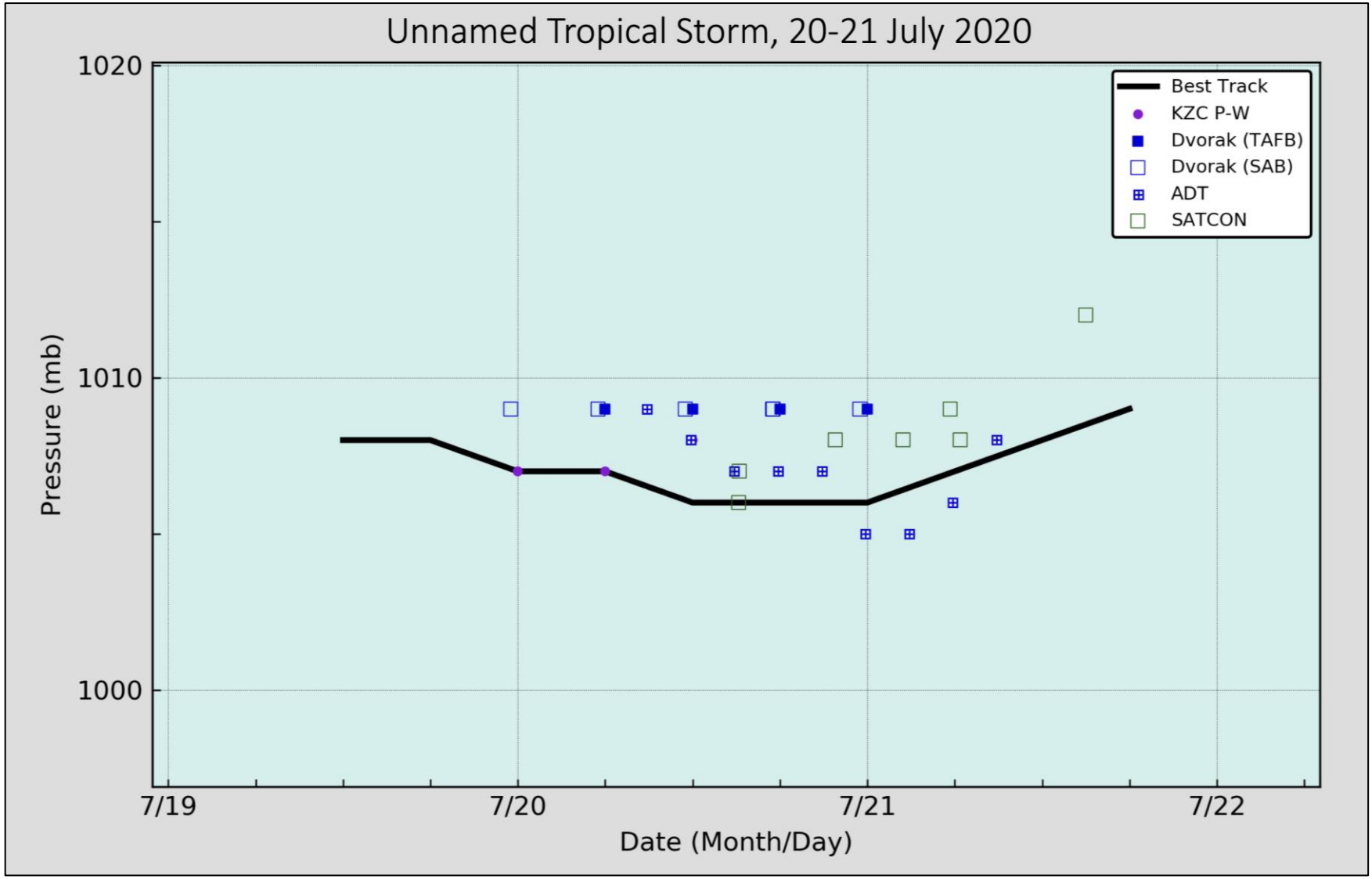

Figure 3. Selected pressure observations and best track minimum central pressure curve for unnamed tropical storm 20–21 July 2020. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship. Dashed vertical lines correspond to 0000 UTC.