

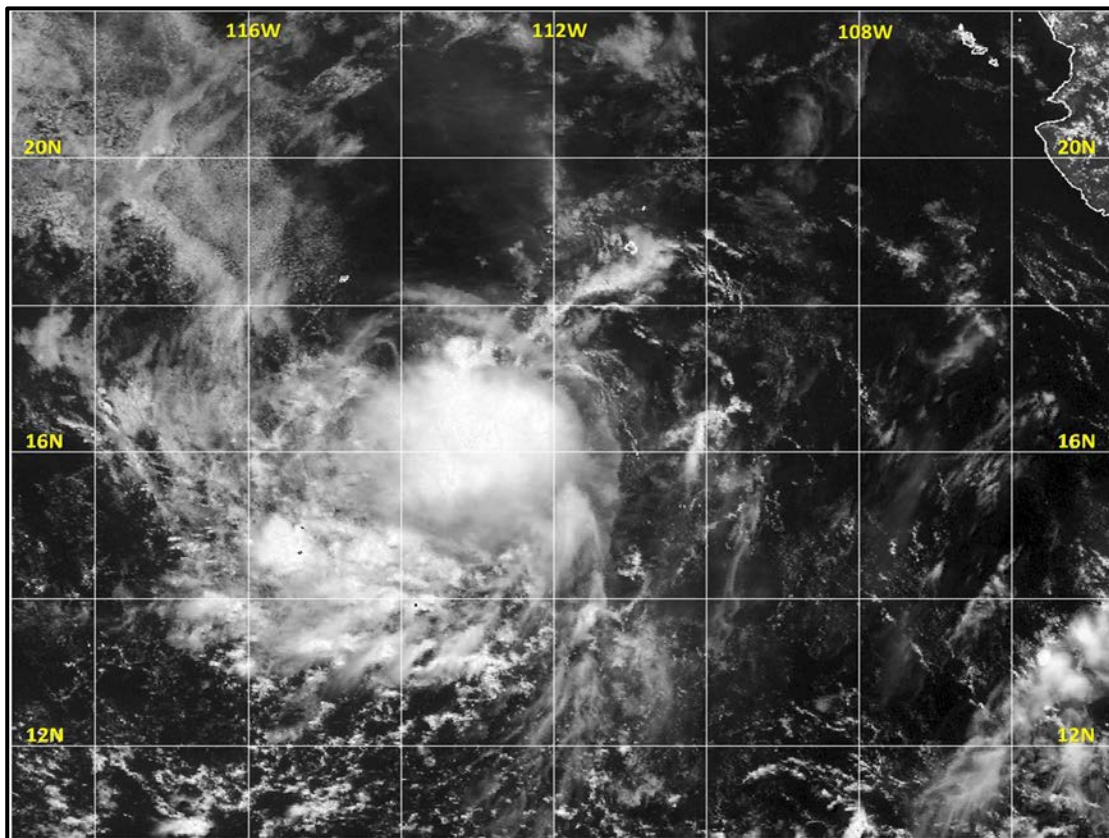


# NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

## TROPICAL DEPRESSION SIX-E (EP062020)

13–14 July 2020

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GOES-16 VISIBLE SATELLITE IMAGE OF TROPICAL DEPRESSION SIX-E AT 1800 UTC 13 JULY 2020, SHORTLY AFTER GENESIS. IMAGE COURTESY OF THE U.S. NAVY FNMOC, MONTEREY, CA.

Tropical Depression Six-E was a short-lived tropical cyclone that formed and dissipated over the eastern North Pacific Ocean several hundred miles west-southwest of the southern tip of Baja California Sur, Mexico.

# Tropical Depression Six-E

13–14 JULY 2020

## SYNOPTIC HISTORY

Tropical Depression Six-E originated from a tropical wave that moved off the west coast of Africa on 2 July. The wave moved briskly westward across the tropical Atlantic at speeds near 20 kt for the next several days, emerging over the eastern Caribbean Sea on 7 July. The disturbance turned west-northwestward late that day, and by early 8 July the system fractured. The northern portion of the wave moved northwestward across Puerto Rico and Hispaniola before dissipating northeast of the Bahamas on 9 June; meanwhile, the southern portion of the wave moved quickly westward across the southern Caribbean Sea, generating significant convection while passing over Central America on 9 July. The disturbance entered the eastern North Pacific basin early on 10 July, where the wave interacted with the monsoon trough, resulting in the formation of a broad surface low pressure system on 11 July about 150 n mi south-southwest of the Gulf of Tehuantepec.

The low moved west-northwestward at 15–20 kt less than 200 n mi offshore of but parallel to the southern coast of Mexico. Strong northeasterly vertical wind shear inhibited the development and organization of deep convection, resulting in the low periodically opening up into a sharp surface trough on 12 July. By early on 13 July, however, an intense burst of deep convection with cloud tops colder than  $-80^{\circ}\text{C}$  developed along the trough axis, and subsequent scatterometer surface wind data indicated that a small closed low pressure system had re-formed as a result. Although the convection was displaced just to the southwest of the well-defined center due to northeasterly wind shear, convection persisted and became a little better organized, and it is estimated that a tropical depression formed around 1200 UTC that day when the cyclone was located about 410 n mi south-southwest of Cabo San Lucas, Mexico, or about 120 n mi south of Socorro Island, Mexico (cover photo). The “best track” chart of the short-lived 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<sup>1</sup>.

The compact depression turned west-northwestward late on 13 July and maintained that motion for the next 24 h. Deep convection pulsed during that time before finally waning around 1800 UTC 14 July. Coincident scatterometer wind data indicated that the small low had opened up into a trough, resulting in the depression dissipating about 530 n mi west-southwest of the southern tip of Baja California Sur, Mexico. The depression’s remnants continued to move westward for the next couple of days over sub- $26^{\circ}\text{C}$  sea-surface temperatures, and those cooler waters, along with moderate northerly wind shear of 15–20 kt, prevented the redevelopment of organized deep convection and subsequent tropical cyclone reformation.

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<sup>1</sup> 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 *bt*k directory, while previous years’ data are located in the *archive* directory.

## METEOROLOGICAL STATISTICS

Observations in Tropical Depression Six-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), 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 Tropical Depression Six-E.

### *Winds and Pressure*

Tropical Depression Six-E's estimated maximum intensity of 30 kt is based on a 1639Z 13 July ASCAT-B scatterometer overpass that indicated surface winds of at least 30 kt existed over much of the northern semicircle of the circulation. Although a few 34-kt wind vectors were present west of the low-level center, it appears that those wind speeds were likely rain-contaminated vectors. The 30-kt scatterometer winds were also consistent with Dvorak satellite intensity estimates of T2.0/30 kt from both TAFB and SAB. The estimated minimum central pressure of 1007 mb is based on KZC pressure estimates.

## CASUALTY AND DAMAGE STATISTICS

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

## FORECAST AND WARNING CRITIQUE

The genesis of Tropical Depression Six-E was reasonably well forecast, especially given the small size and short duration of the cyclone. The wave from which the depression developed was first introduced in the Tropical Weather Outlook 84 h and 162 h prior to genesis with a low probability of formation (<40%) in the 48- and 120-h forecast periods, respectively (Table 2). The genesis probabilities for the disturbance were increased to the medium category (40%–60%) 42 h and 156 h before genesis for the 48- and 120-h forecast periods, respectively, and reached the high category (>60%) 12 h and 84 h, respectively, before genesis occurred.

Due to Tropical Depression Six-E'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 50.3 n mi and a mean intensity error of 10.0 kt. These compare to the mean 12-h official track and intensity errors for the previous 5-yr period (2015–2019) of 21.8 n mi and 6.0 kt, respectively

There were no coastal watches and warnings associated with the depression.



Table 1. Best track for Tropical Depression Six-E, 13–14 July 2020.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
13 / 1200	16.6	110.4	1007	30	tropical depression
13 / 1800	16.6	111.9	1007	30	"
14 / 0000	16.9	113.3	1007	30	"
14 / 0600	17.2	114.5	1008	25	"
14 / 1200	17.8	115.8	1008	25	"
14 / 1800					dissipated
13 / 1200	16.6	110.4	1007	30	minimum pressure & maximum intensity

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%)	84	162
Medium (40%-60%)	42	156
High (>60%)	12	84

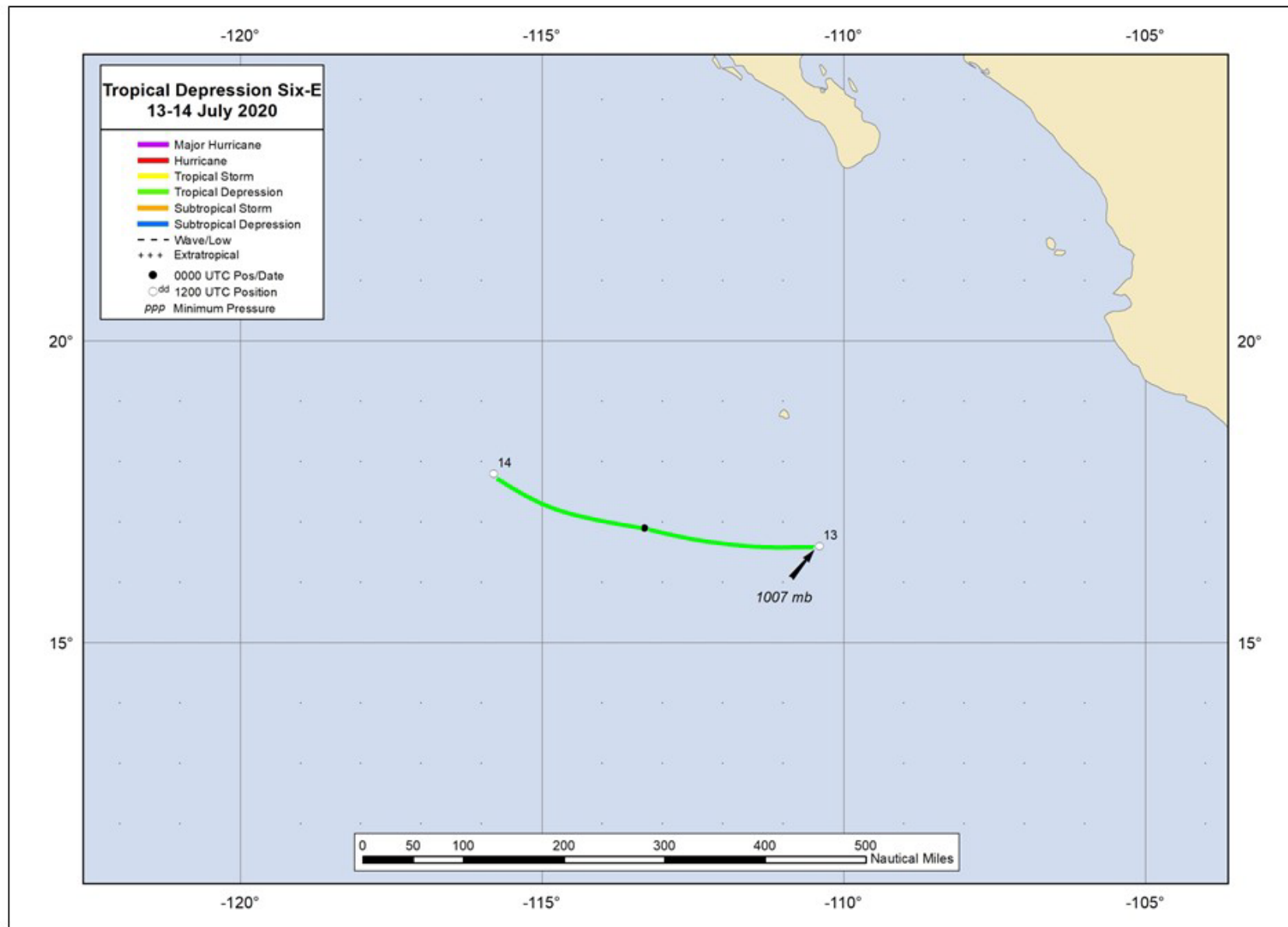


Figure 1. Best track positions for Tropical Depression Six-E, 13–14 July 2020.

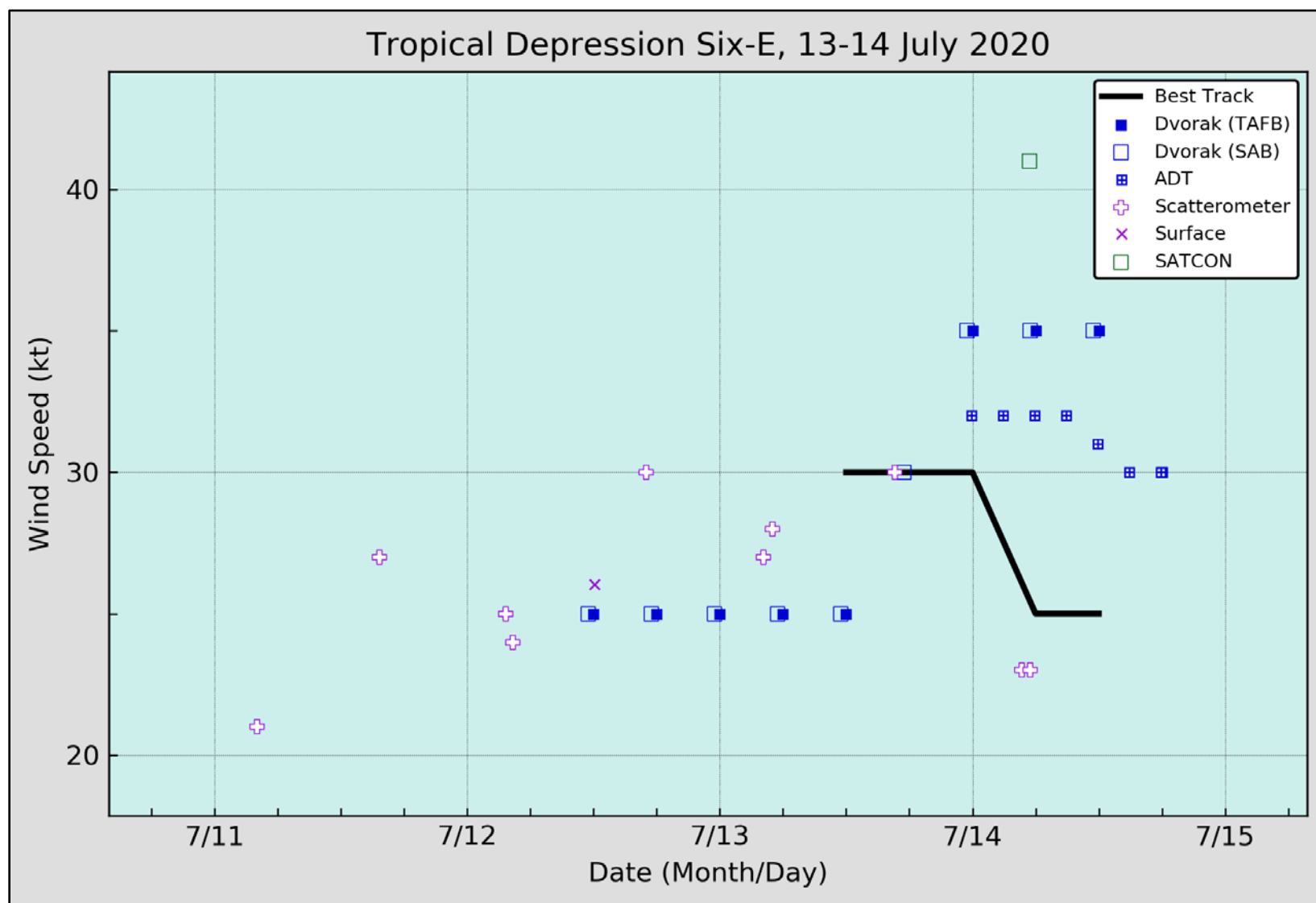


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Six-E, 13–14 July 2020. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

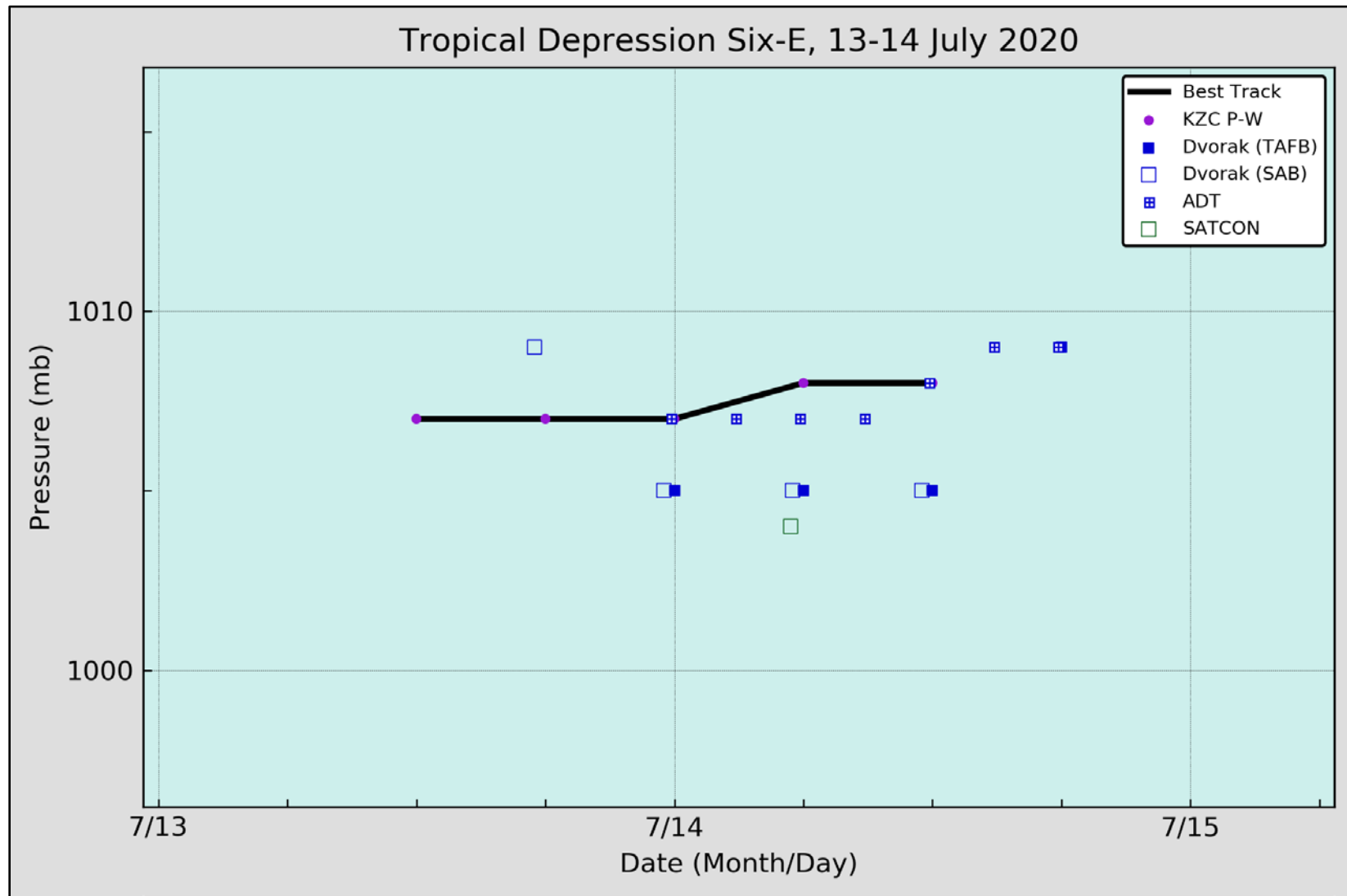


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Depression Six-E, 13–14 July 2020. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for 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.