

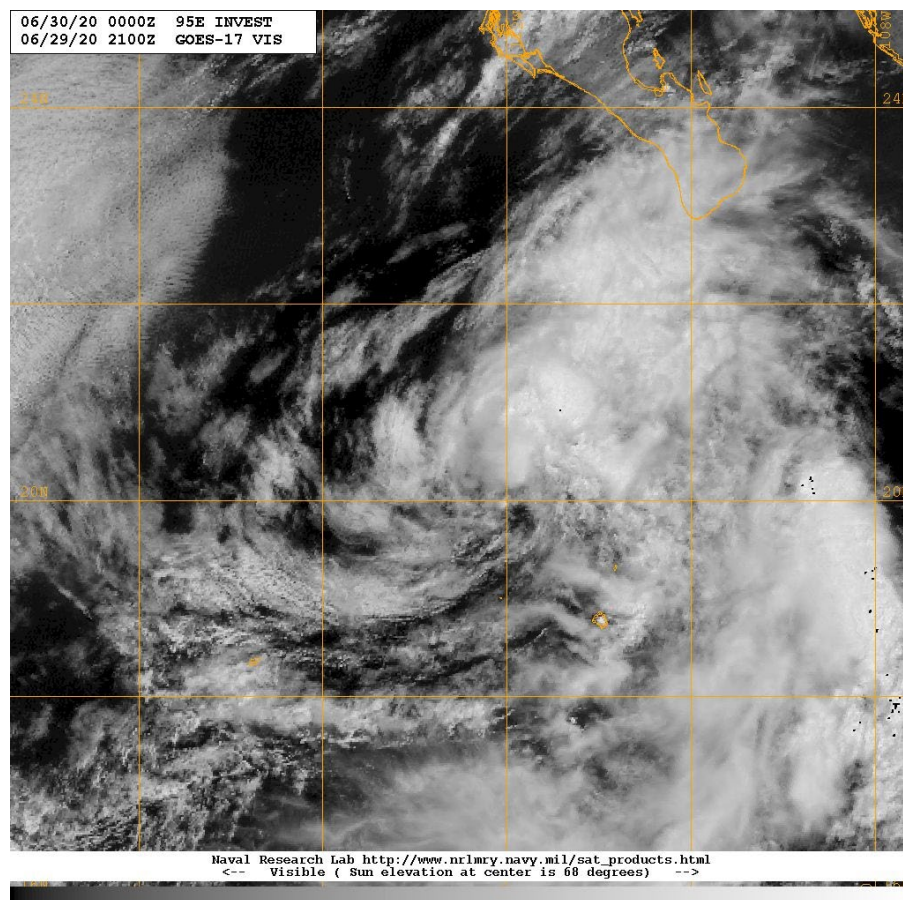


NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

TROPICAL DEPRESSION FOUR-E (EP042020)

29–30 June 2020

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National Hurricane Center
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GOES-17 VISIBLE SATELLITE IMAGE OF TROPICAL DEPRESSION FOUR-E AT 2100 UTC 29 JUNE 2020. IMAGE COURTESY OF THE NAVAL RESEARCH LABORATORY.

Four-E was a short-lived tropical depression in the eastern North Pacific that did not significantly affect any land areas.

Tropical Depression Four-E

29–30 JUNE 2020

SYNOPTIC HISTORY

It is not clear whether this system originated from a tropical wave that moved off the coast of Africa. However, it appears to have developed from a broad area of disturbed weather that was triggered, or at least enhanced by, a tropical wave that crossed Central America around 23 June. This area of disturbed weather formed in the vicinity of the Gulf of Tehuantepec on 25 June and moved west-northwestward parallel to the coast of Mexico for a couple of days, with little change in organization. On 28 June, the system's cloud pattern became better organized while a broad area of low pressure formed several hundred n mi south of the southern tip of Baja California. By 1800 UTC 29 June, the low-level circulation was sufficiently well-defined with enough deep convection near its center to designate the formation of a tropical depression centered about 220 n mi southwest of the southern tip of Baja California. Located to the west of a weak low- to mid-level ridge, the cyclone moved slowly northwestward. Southwesterly shear and cool waters prevented the system from strengthening beyond its initial 25-kt intensity, and on 30 June the depression turned northward while its associated deep convection diminished. By 1800 UTC that day, there was no significant deep convection remaining within 120 n mi of the system's center, and consequently the cyclone became a remnant low pressure area. The remnant low moved slowly northward and dissipated on 1 July well offshore of the southern 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 1¹.

METEOROLOGICAL STATISTICS

Observations in Tropical Depression Four-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

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 *bt* directory, while previous years' data are located in the *archive* directory.

(ASCAT), and Defense Meteorological Satellite Program (DMSP) satellites, among others, were also useful in constructing the best track of Tropical Depression Four-E.

The estimated peak intensity of the depression, 25 kt, is based on ASCAT measurements, which were mostly a little lower than the Dvorak estimates.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The genesis of this system was not particularly well anticipated in the shorter term. Although the formation of a disturbance that would eventually develop into Tropical Depression Four-E was anticipated 7 days prior to genesis, its 2- and 5-day formation probabilities never reached the high (>60%) category (Table 2). In fact, the 5-day formation probability for this system was lowered from the medium (40–60%) to the low (<40%) category 54 h before genesis, and raised back to medium 18 h before genesis. Another disturbance just to the west, which did not develop, was shown as having a high chance for development. That system was absorbed by the pre-Four-E disturbance about 48 h before the depression formed.

There was only one 12-h NHC forecast to verify for Tropical Depression Four-E, and it had a track error of 29.3 n mi, which was only little higher than the long-term mean official error. Several of the guidance models had track errors that were lower than the official forecast, but not much can be read into a sample of one.

The single 12-h intensity forecast for the depression had an official error of 5.0 kt, which was slightly below the long-term mean. A few of the guidance models had lower errors than the official forecast, but with only one case not much more can be said about this comparison.

No watches or warnings were issued in association with Tropical Depression Four-E.



Table 1. Best track for Tropical Depression Four-E, 29–30 June 2020.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
29 / 1800	19.9	112.1	1006	25	tropical depression
30 / 0000	20.3	112.5	1006	25	"
30 / 0600	20.5	112.8	1006	25	"
30 / 1200	20.7	112.9	1006	25	"
30 / 1800	20.9	112.9	1006	25	low
01 / 0000	21.1	112.9	1007	20	"
01 / 0600	21.3	112.9	1007	20	"
01 / 1200					dissipated
29 / 1800	19.9	112.1	1006	25	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%)	84	174
Medium (40%-60%)	18	90
High (>60%)	–	–

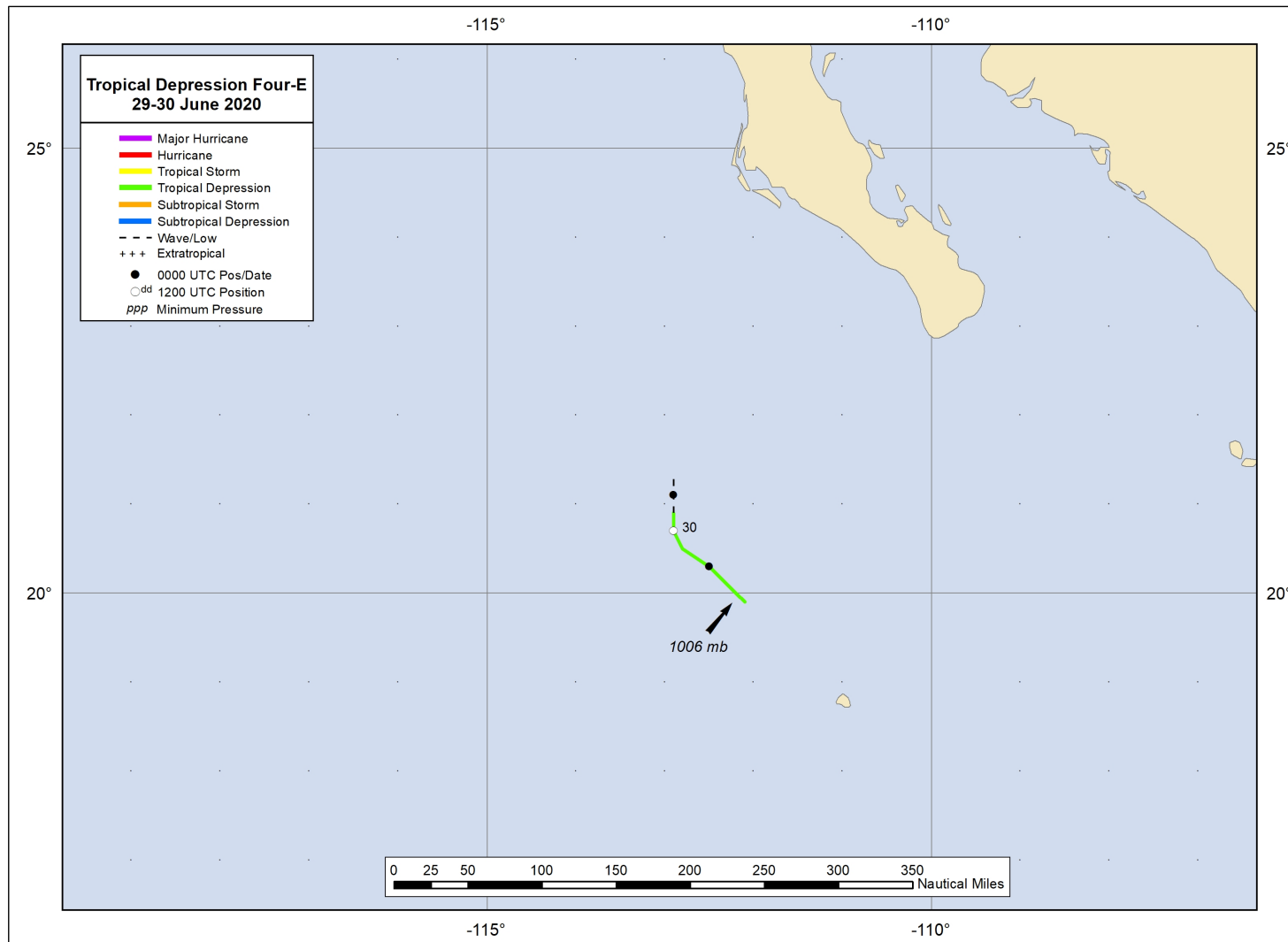


Figure 1. Best track positions for Tropical Depression Four-E, 29–30 June 2020.

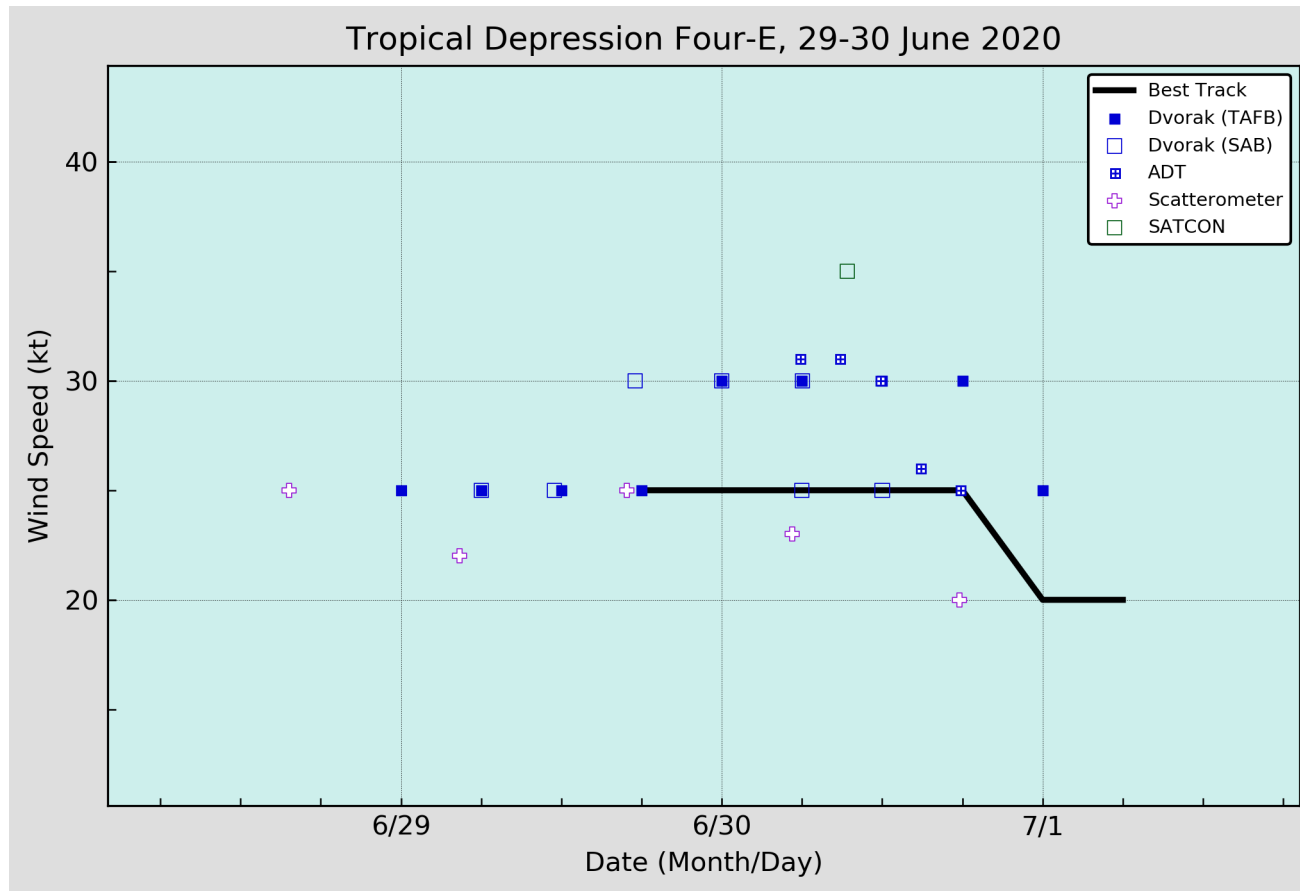


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Four-E, 29–30 June 2020. Advanced Dvorak Technique (ADT) estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

