

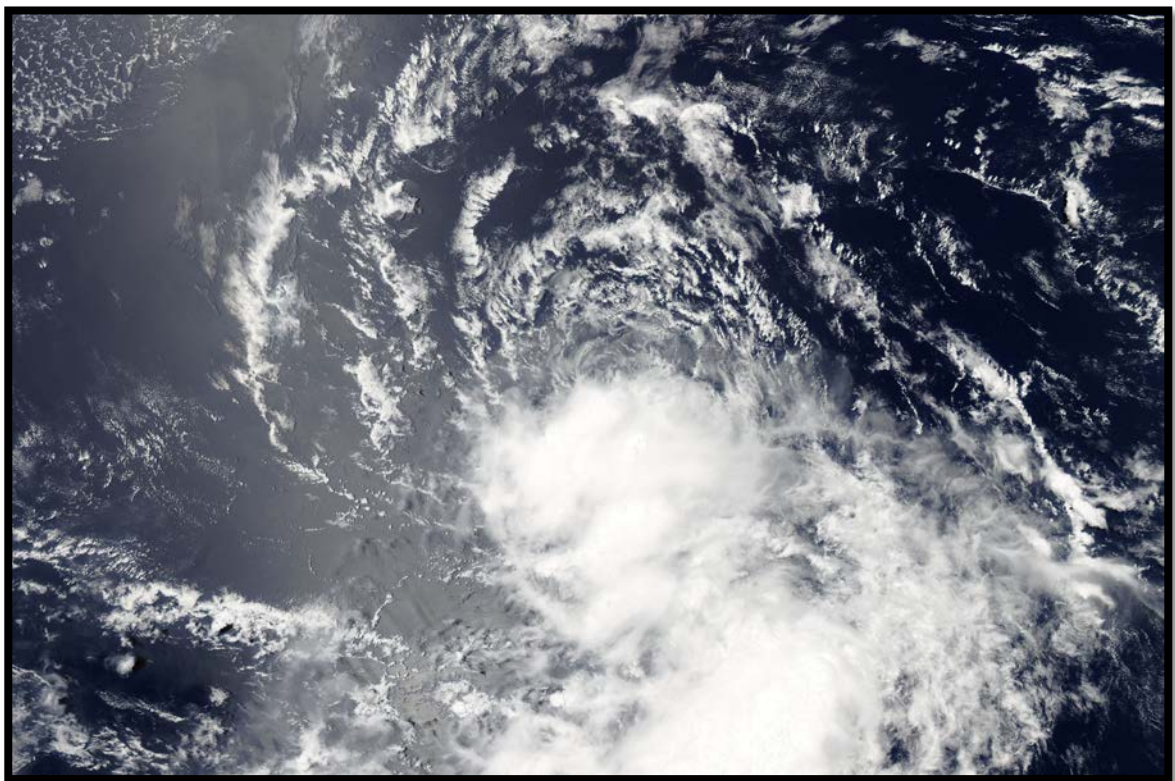


NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

TROPICAL DEPRESSION EIGHT-E (EP082015)

27 – 29 July 2015

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NASA MODIS/AQUA VISIBLE IMAGE OF TROPICAL DEPRESSION EIGHT-E AT 2209 UTC 28 JULY 2015

Tropical Depression Eight-E was a short-lived tropical depression over the western part of the eastern North Pacific basin. It became a remnant low before reaching the central North Pacific basin, and it did not affect land.

Tropical Depression Eight-E

27 – 29 JULY 2015

SYNOPTIC HISTORY

Tropical Depression Eight-E originated from a tropical wave that moved off the west coast of Africa on 10 July. The wave moved westward across the tropical Atlantic Ocean, reaching the Lesser Antilles on 16 July and then crossing Central America between 19-21 July. The wave produced very little deep convection while it crossed the Atlantic Ocean and Caribbean Sea, but a cluster of showers and thunderstorms developed once the wave reached the eastern Pacific Ocean on 19 July. The deep convection persisted while the wave moved westward, and a small low formed about 915 n mi west-southwest of the southern tip of the Baja California peninsula by 1200 UTC 27 July. The associated shower and thunderstorm activity became sufficiently organized near the low 6 h later for the system to be designated as a tropical depression while centered about 970 n mi west-southwest of the southern tip of the Baja California peninsula. The “best track” chart of the tropical 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 1¹.

When it formed, the depression was located to the southwest of a mid-tropospheric high, and it moved west-northwestward for the first 24 h. By 28 July, a ridge developed to the north of the depression and extended to the south of the Hawaiian Islands, forcing the cyclone to turn westward. Strengthening was inhibited due to persistent 15 to 20 kt of north-northwesterly shear, which kept the low-level center partially exposed beneath the northern edge of the deep convection. On 29 July, the shear decreased to 10 to 15 kt, but the depression was moving into an increasingly drier environment. Deep convection dissipated near the center later that day, and the depression degenerated to a remnant low by 0000 UTC 30 July while centered about 1065 n mi east of the Big Island of Hawaii. The remnant low continued westward for another day or so, and RapidScat data indicated that the low opened up into a trough by 1200 UTC 31 July about 650 n mi east-southeast of the Big Island. The trough became a closed low again on 1 August, but environmental conditions were not conducive for regeneration into a tropical cyclone.

METEOROLOGICAL STATISTICS

Observations in Tropical Depression Eight-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). Data and imagery from NOAA polar-orbiting

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*k directory, while previous years’ data are located in the *archive* directory.

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 Eight-E.

Since Dvorak intensity estimates from TAFB and SAB never unanimously reached T2.5 (35 kt), the maximum intensity of the cyclone is estimated to be 30 kt. ASCAT-A and -B sampled the cyclone around 1800 UTC 27 July when it was designated as a 30-kt tropical depression, but neither instrument caught the depression's circulation the remainder of the time that it was a tropical cyclone.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The genesis of Tropical Depression Eight-E was well anticipated, but it occurred sooner than expected. The precursor disturbance was first mentioned in NHC's Tropical Weather Outlook (TWO) and given a low (<40%) chance of tropical cyclone formation during the next five days 102 h before genesis occurred. The five-day genesis probability was raised to a medium (40-60%) chance 66 h before genesis and a high (>60%) chance 48 h before genesis. However, the two-day genesis was only given a low chance 30 h before genesis and a medium chance 24 h before genesis. The two-day genesis probability was not raised to high until the time of genesis. Table 2 provides the number of hours in advance of formation associated with the first NHC TWO forecast in each likelihood category.

A verification of NHC official track forecasts for Tropical Depression Eight-E is given in Table 3a. Official forecast track errors were lower than the mean official errors for the previous 5-yr period at all forecast times. A homogeneous comparison of the official track errors with selected guidance models is given in Table 3b. Of the individual track models, only the Hurricane Weather Research and Forecasting Model (HWFI) had lower errors than the official forecasts at all forecast times. The Global Ensemble Forecast System mean (AEMI), the TCON consensus, and the variable TVCE consensus also had lower track errors than the official forecasts at all forecast times.

A verification of NHC official intensity forecasts for Tropical Depression Eight-E is given in Table 4a. Official forecast intensity errors were lower than the mean official errors for the previous 5-yr period at all forecast times. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 4b. With the exception of the HWFI and the Geophysical Fluid Dynamics Laboratory Model (GHMI), the other intensity models had slightly lower errors than the official intensity forecasts.



Table 1. Best track for Tropical Depression Eight-E, 27-29 July 2015.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
27 / 1200	15.1	123.9	1007	30	low
27 / 1800	15.4	125.2	1006	30	tropical depression
28 / 0000	15.7	126.3	1006	30	"
28 / 0600	16.0	127.4	1006	30	"
28 / 1200	16.3	128.5	1006	30	"
28 / 1800	16.5	129.6	1006	30	"
29 / 0000	16.7	130.7	1006	30	"
29 / 0600	16.8	131.9	1006	30	"
29 / 1200	16.8	133.3	1006	30	"
29 / 1800	16.7	134.8	1006	30	"
30 / 0000	16.6	136.4	1006	30	low
30 / 0600	16.6	137.7	1007	25	"
30 / 1200	16.6	139.0	1007	25	"
30 / 1800	16.6	140.4	1007	25	"
31 / 0000	16.6	141.9	1007	25	"
31 / 0600	16.5	143.5	1007	25	"
31 / 1200					dissipated
27 / 1800	15.4	125.2	1006	30	maximum wind 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%)	30	102
Medium (40%-60%)	24	66
High (>60%)	0	48

Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Depression Eight-E, 27-29 July 2015. Mean errors for the previous 5-yr period are shown for comparison. Official errors that are smaller than the 5-yr means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	21.1	22.3	37.2	37.8			
OCD5	32.3	51.7	90.1	91.6			
Forecasts	7	5	3	1			
OFCL (2009-13)	25.7	41.4	55.0	68.6	97.8	134.2	167.1
OCD5 (2009-13)	37.2	74.8	118.0	162.5	249.4	332.6	413.3



Table 3b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Depression Eight-E, 27-29 July 2015. Errors smaller than the NHC official forecast are shown in boldface type. The number of official forecasts shown here will generally be smaller than that shown in Table 3a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	18.8	14.7	45.7				
OCD5	31.1	51.0	137.2				
GFSI	19.6	14.0	13.0				
GHMI	18.3	27.6	62.4				
HWFI	15.7	13.0	30.5				
EGRI	29.3	53.3	97.0				
EMXI	20.0	27.5	58.1				
CMCI	33.8	65.3	98.8				
TCON	16.8	10.2	23.8				
TVCE	14.8	10.6	25.9				
AEMI	18.0	9.9	25.9				
BAMS	30.9	55.5	111.8				
BAMM	23.8	35.9	83.0				
BAMD	34.1	57.0	86.0				
Forecasts	5	3	1				



Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Depression Eight-E, 27-29 July 2015. Mean errors for the previous 5-yr period are shown for comparison. Official errors that are smaller than the 5-yr means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	1.4	4.0	5.0	5.0			
OCD5	1.4	1.2	1.3	1.0			
Forecasts	7	5	3	1			
OFCL (2009-13)	6.1	10.4	13.4	14.5	15.0	16.4	16.1
OCD5 (2009-13)	7.7	12.7	16.4	18.8	20.5	20.3	20.8

Table 4b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Depression Eight-E, 27-29 July 2015. Errors smaller than the NHC official forecast are shown in boldface type. The number of official forecasts shown here will generally be smaller than that shown in Table 4a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	2.0	3.3	5.0				
OCD5	1.2	0.7	1.0				
HWFI	2.6	3.3	1.0				
GHMI	3.0	3.7	0.0				
DSHP	0.6	1.3	2.0				
LGEM	0.2	0.3	1.0				
ICON	1.2	2.3	1.0				
IVCN	1.2	2.3	1.0				
GFNI	2.4	3.0	6.0				
GFSI	0.6	0.3	0.0				
EMXI	1.2	1.3	1.0				
Forecasts	5	3	1				

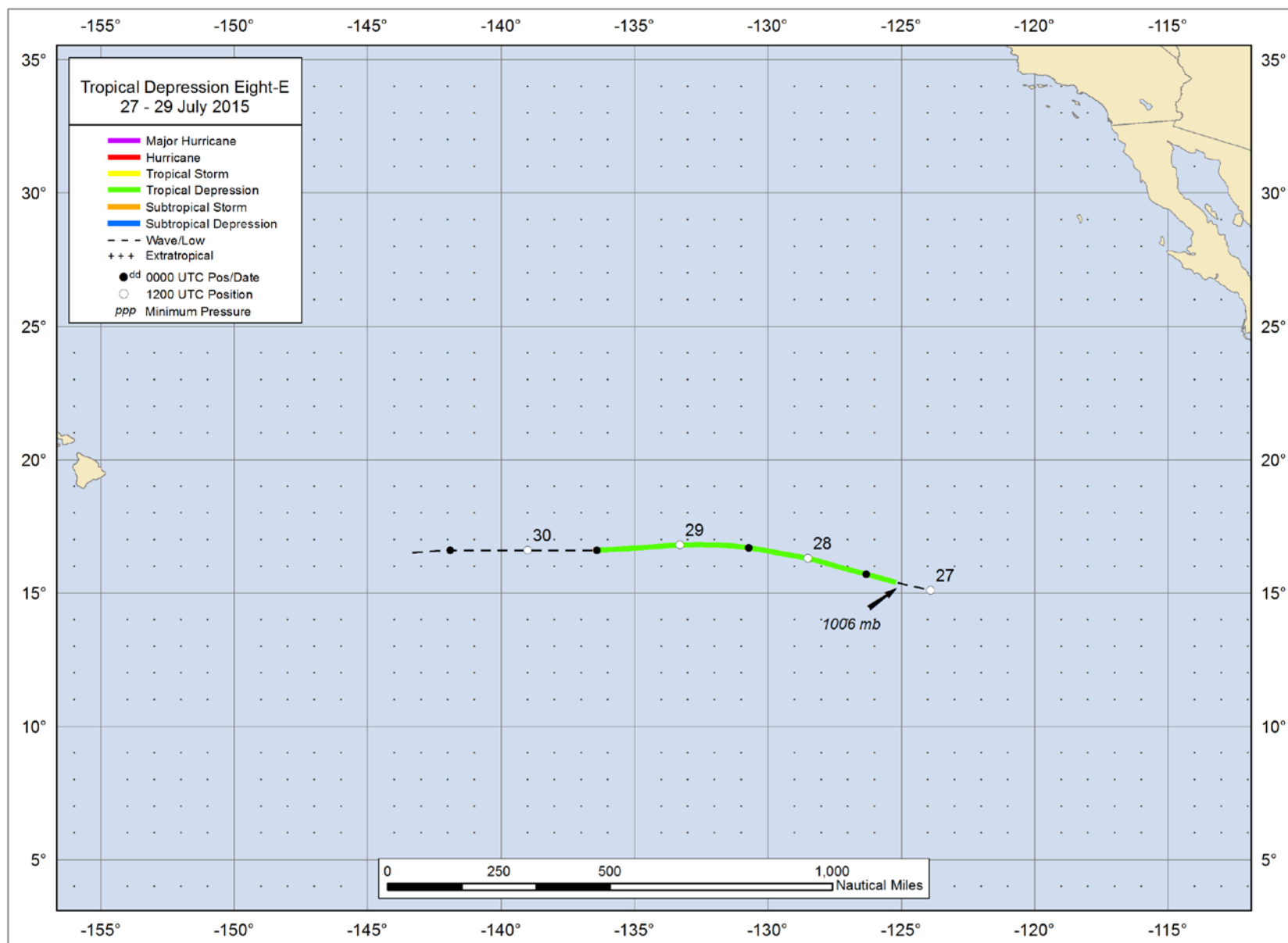


Figure 1. Best track positions for Tropical Depression Eight-E, 27-29 July 2015.

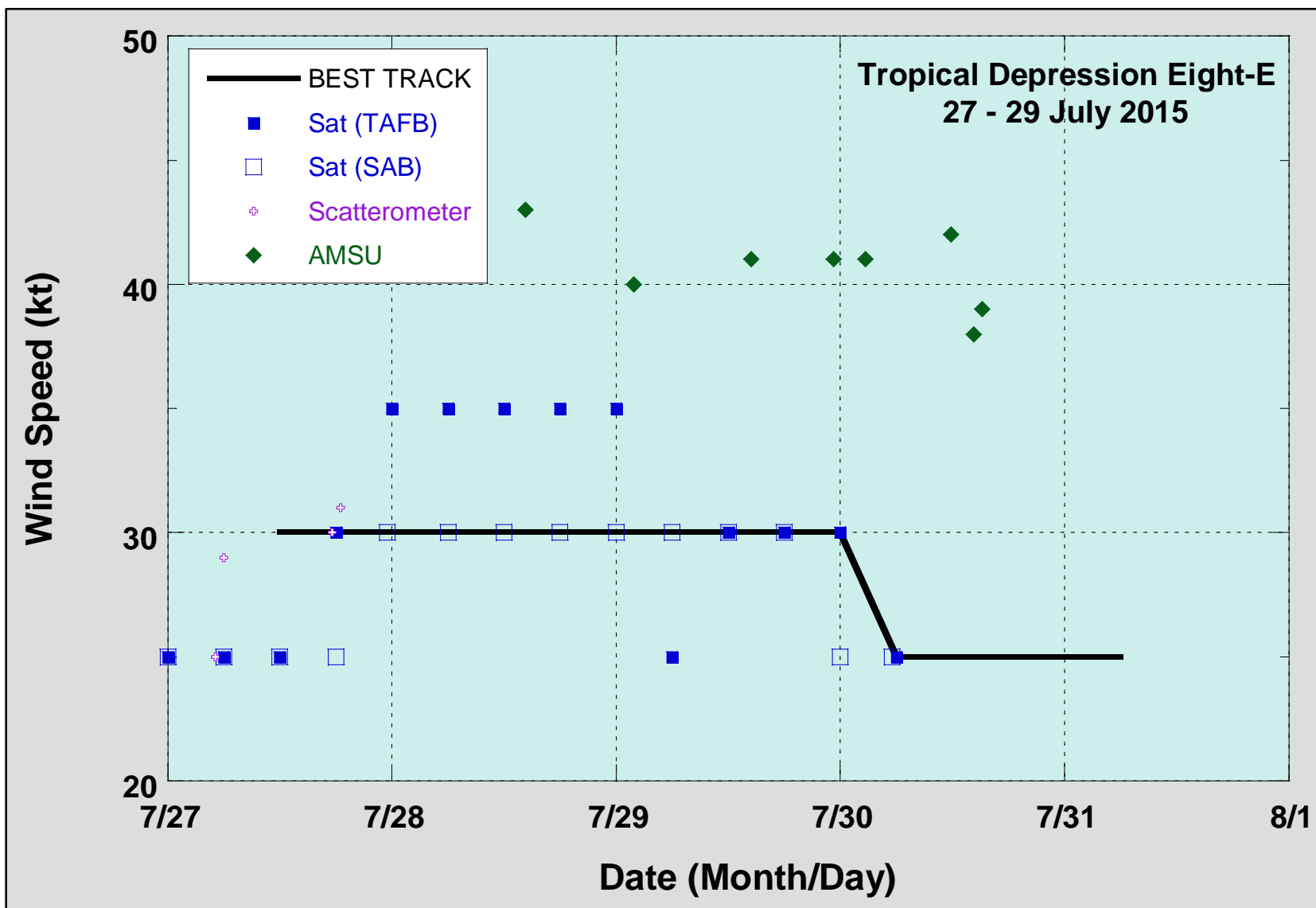


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Depression Eight-E, 27-29 July 2015. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.

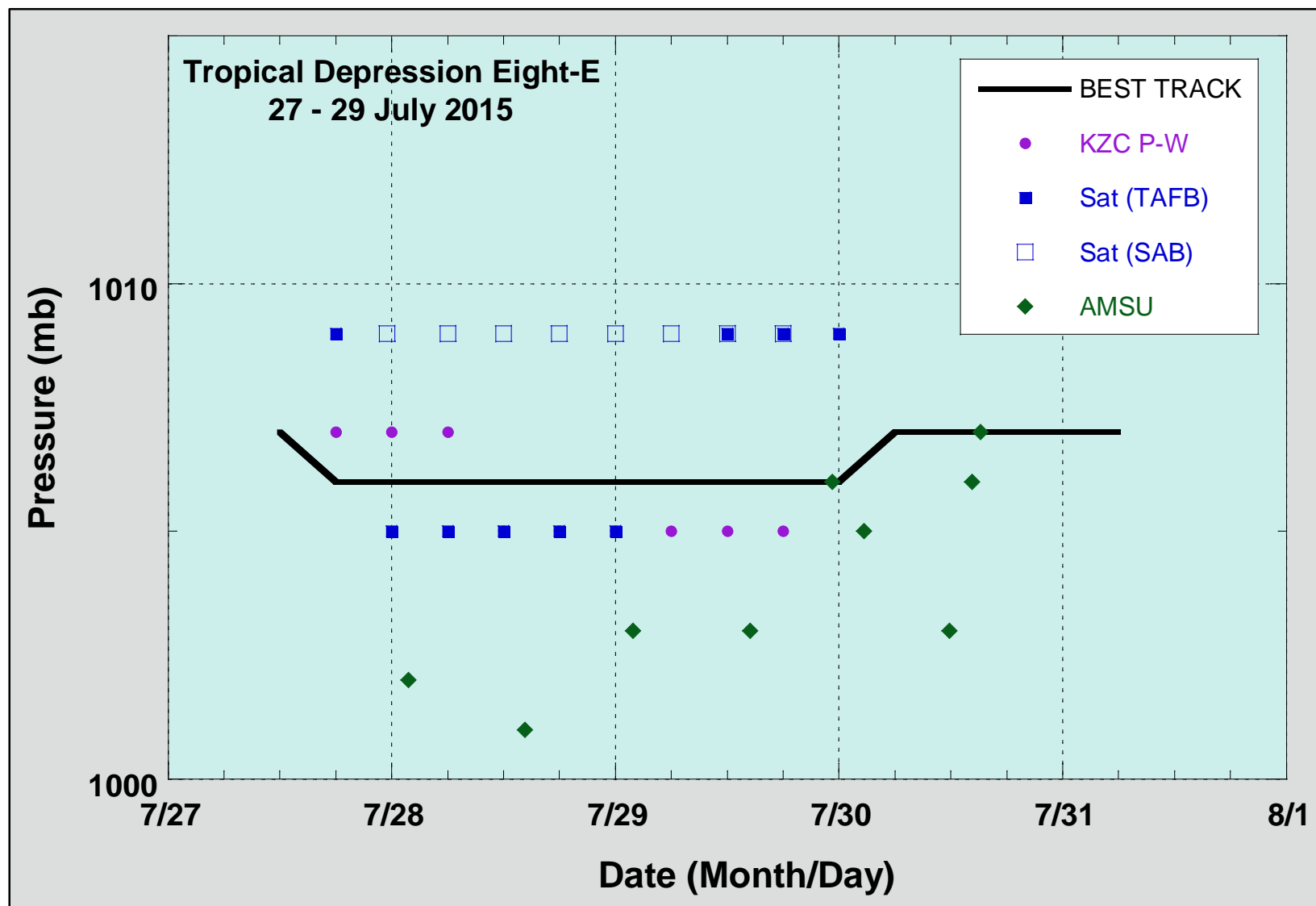


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Depression Eight-E, 27-29 July 2015. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship. Dashed vertical lines correspond to 0000 UTC.