

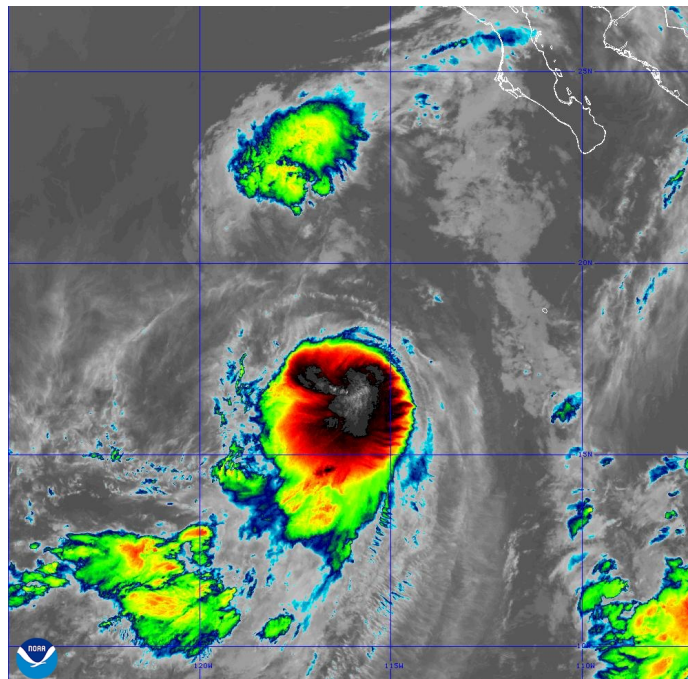


NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT¹

TROPICAL STORM EMILIA (EP052024)

4–8 August 2024

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National Hurricane Center
7 November 2024



07 Aug 2024 12:10Z - NOAA/NESDIS/STAR - GOES-West - Band 13 - EP052024

GOES-WEST INFRARED SATELLITE IMAGE OF TROPICAL STORM EMILIA AROUND THE TIME OF ITS PEAK INTENSITY AT 1210 UTC 7 AUGUST 2024.

Emilia was a tropical storm that formed over the central part of the eastern Pacific basin and did not affect land.

¹ This is an abbreviated Tropical Cyclone Report since there were no coastal watches or warnings issued and no direct fatalities reported in association with Emilia.

Tropical Storm Emilia

4–8 AUGUST 2024

BEST TRACK

The “best track²” positions and intensities for Tropical Storm Emilia are listed in Table 1. The best track chart of Emilia’s path is given in Fig. 1, with the wind and pressure histories along with available observations³ shown in Figs. 2 and 3, respectively.

There were no ship or land-based reports of winds of tropical storm force associated with Emilia.

Origin

Emilia developed from a tropical wave that moved off the west coast of Africa on 20 July and traversed the Atlantic during the next 10 days or so. The wave crossed Central America on 31 July and then started to interact with the monsoon trough over the far eastern Pacific. The combined feature gradually lifted northward over the next few days, and showers and thunderstorms began to organize on 3 August. Satellite data indicate that a well-defined low-pressure system formed with sufficiently organized deep convection by 1200 UTC 4 August, marking the formation of a tropical depression about 550 n mi west of Manzanillo, Mexico.

Peak Intensity and Minimum Pressure

Emilia’s estimated peak intensity of 60 kt from 0600 to 1200 UTC 7 August is based on a blend of subjective Dvorak intensity estimates of T4.0/65 kt from TAFB and T3.5/55 kt from SAB.

The estimated minimum central pressure of 988 mb is primarily based on the Knaff-Zehr-Courtney pressure-wind relationship. Pressure estimates based on subjective and objective satellite intensity estimates were a couple of millibars lower.

² 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.

³ Observations 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 Emilia.

CASUALTY AND DAMAGE STATISTICS

There were no reports of damage or casualties associated with Emilia.

FORECAST AND WARNING VERIFICATION

Table 2 provides the number of hours in advance of formation with the first NHC Tropical Weather Outlook (TWO) forecast in each likelihood category. Figure 4 shows composites of 7-day TWO genesis areas for each category prior to the formation of Emilia. The genesis of Emilia was not very well predicted with the disturbance responsible for Emilia's formation being introduced only 12 hours before the tropical cyclone formed. The poor genesis forecast was due to models depicting that the cluster of thunderstorms and low pressure area that developed would be absorbed by Tropical Storm Fabio, which formed to the east of the pre-Emilia disturbance. However, the systems were far enough apart to allow both disturbances to become tropical cyclones, and ultimately Emilia would absorb Fabio several days later.

A verification of NHC official track forecasts for Emilia is given in Table 3a. Official track forecast errors were greater than the mean official errors for the previous 5-yr period, through the 48-hr forecast period. This was likely due to the complex interaction between Tropical Storm Fabio and Emilia. A homogeneous comparison of the official track errors with selected guidance models is given in Table 3b. A verification of NHC official intensity forecasts for Emilia is given in Table 4a. Official intensity forecast errors were lower than the mean official errors for the previous 5-yr period at all verified forecast times. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 4b.

There were no coastal watches or warnings issued for Emilia.

Table 1. Best track for Tropical Storm Emilia, 4–8 August 2024.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
04 / 1200	15.9	112.9	1007	30	tropical depression
04 / 1800	15.6	113.1	1005	30	"
05 / 0000	15.2	113.5	1003	35	tropical storm
05 / 0600	14.8	113.9	1003	35	"
05 / 1200	14.2	114.0	1001	40	"
05 / 1800	13.6	114.0	1001	45	"
06 / 0000	13.4	114.4	997	45	"
06 / 0600	13.6	114.8	993	55	"
06 / 1200	13.8	115.0	993	55	"
06 / 1800	14.2	115.1	992	55	"
07 / 0000	15.1	115.2	990	55	"
07 / 0600	16.2	115.7	988	60	"
07 / 1200	17.3	116.4	988	60	"
07 / 1800	18.9	117.4	993	55	"
08 / 0000	20.0	119.2	996	50	"
08 / 0600	20.8	121.0	1001	40	"
08 / 1200	21.3	122.6	1003	35	"
08 / 1800	21.7	123.9	1004	30	low
09 / 0000	22.1	125.0	1005	30	"
09 / 0600	22.5	126.1	1005	30	"
09 / 1200	22.8	127.1	1005	25	"
09 / 1800	23.2	128.0	1005	25	"



Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
10 / 0000	23.7	128.9	1006	25	"
10 / 0600	24.2	129.9	1006	25	"
10 / 1200	24.6	130.9	1008	25	"
10 / 1800	24.9	131.7	1010	25	"
11 / 0000					dissipated
07 / 0600	16.2	115.7	988	60	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	168-Hour Outlook
Low (<40%)	12	12
Medium (40%-60%)	6	6
High (>60%)	0	0

Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Emilia. 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	60	72	96	120
OFCL	34.0	44.3	65.6	65.5	62.9	60.1		
OCD5	72.5	145.6	211.4	250.6	363.7	356.8		
Forecasts	15	13	11	9	4	2		
OFCL (2019-23)	22.6	34.4	46.0	57.6	69.6	83.5	112.4	137.2
OCD5 (2019-23)	38.2	75.5	117.0	160.0	203.5	247.6	329.5	404.4



Table 3b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Emilia. 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	60	72	96	120
OFCL	34.1	46.5	64.0	53.2	62.9	30.0		
OCD5	74.0	146.5	217.8	273.2	363.7	368.3		
GFSI	30.4	42.9	68.0	80.0	51.8	49.4		
HWFI	42.0	67.6	118.3	175.2	220.4	177.3		
HMNI	37.3	60.8	100.8	142.7	170.4	73.9		
HFAI	38.8	72.5	118.5	125.3	66.8	24.0		
HFBI	40.2	70.3	115.7	131.9	61.0	41.3		
EMXI	31.7	52.1	80.0	99.5	106.9	70.2		
NVGI	66.8	75.1	72.3	91.6	157.7	132.2		
CMCI	61.1	93.1	96.2	82.1	64.8	21.2		
TVCE	32.6	48.1	76.3	95.9	98.4	55.2		
TVCX	30.7	43.8	73.2	93.0	98.1	55.2		
GFEX	26.1	28.4	53.6	64.2	66.3	42.0		
TVDG	31.4	42.8	70.8	90.6	97.0	56.6		
HCCA	33.6	47.8	78.1	95.9	99.1	34.1		
FSSE	28.9	33.1	52.4	67.4	69.5	54.3		
AEMI	33.3	51.1	71.7	72.9	68.7	70.0		
TABS	57.6	88.3	125.7	140.0	143.7	161.7		
TABM	54.9	86.3	131.5	174.1	225.3	275.8		
TABD	58.9	107.6	184.7	272.0	364.6	429.4		
TABD	58.9	107.6	184.7	272.0	364.6	429.4		
Forecasts	13	11	9	7	4	1		



Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Emilia. 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	60	72	96	120
OFCL	4.0	6.2	5.9	5.0	6.2	7.5		
OCD5	5.2	7.4	10.5	13.6	14.5	20.5		
Forecasts	15	13	11	9	4	2		
OFCL (2019-23)	5.5	8.7	10.8	12.7	14.5	15.6	17.1	18.0
OCD5 (2019-23)	7.2	12.2	15.9	18.6	19.9	20.0	19.6	18.7



Table 4b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Emilia. 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	60	72	96	120
OFCL	4.6	6.8	6.1	3.6	8.3	10.0		
OCD5	5.8	8.3	11.6	14.7	19.3	25.0		
HWFI	4.2	7.1	9.0	6.6	10.0	6.0		
HMNI	4.3	6.2	8.6	8.7	6.7	6.0		
HFAI	4.9	5.5	6.8	11.3	2.0	15.0		
HFBI	5.6	6.2	7.6	8.6	5.3	1.0		
DSHP	6.0	7.7	8.9	11.6	16.3	25.0		
LGEM	5.7	6.4	7.1	6.6	6.3	12.0		
ICON	4.5	6.4	7.3	6.1	6.7	13.0		
IVCN	4.6	5.6	6.7	6.7	3.0	10.0		
IVDR	4.4	5.5	6.7	7.3	2.7	8.0		
GFSI	6.2	5.9	7.1	11.3	7.7	3.0		
EMXI	5.2	8.5	11.3	11.1	5.7	5.0		
HCCA	4.3	5.8	6.9	5.1	2.7	9.0		
FSSE	4.2	5.3	6.7	8.4	4.3	4.0		
Forecasts	13	11	9	7	3	1		

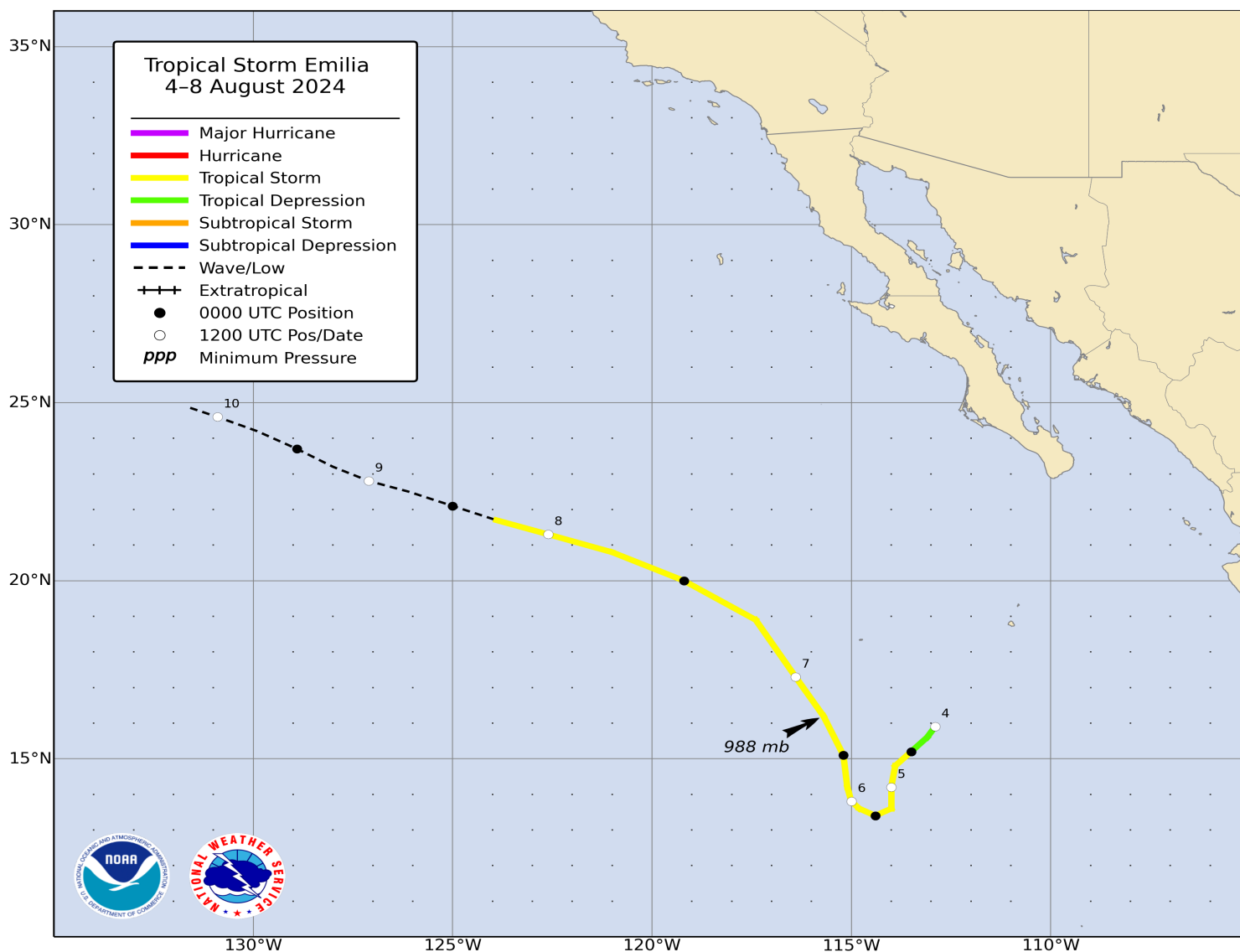


Figure 1. Best track positions for Tropical Storm Emilia, 4–8 August 2024.

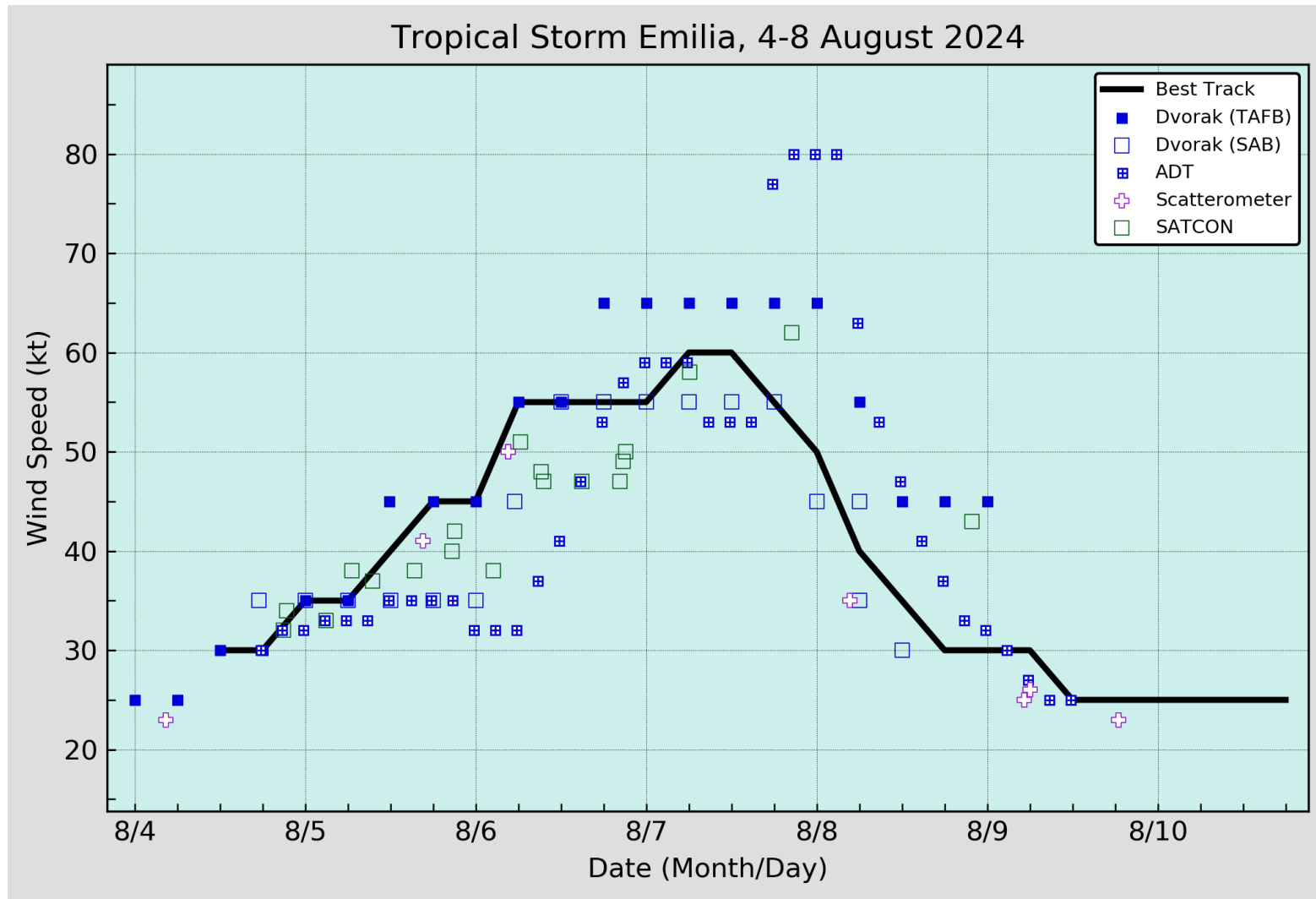


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Emilia, 4–8 August 2024. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

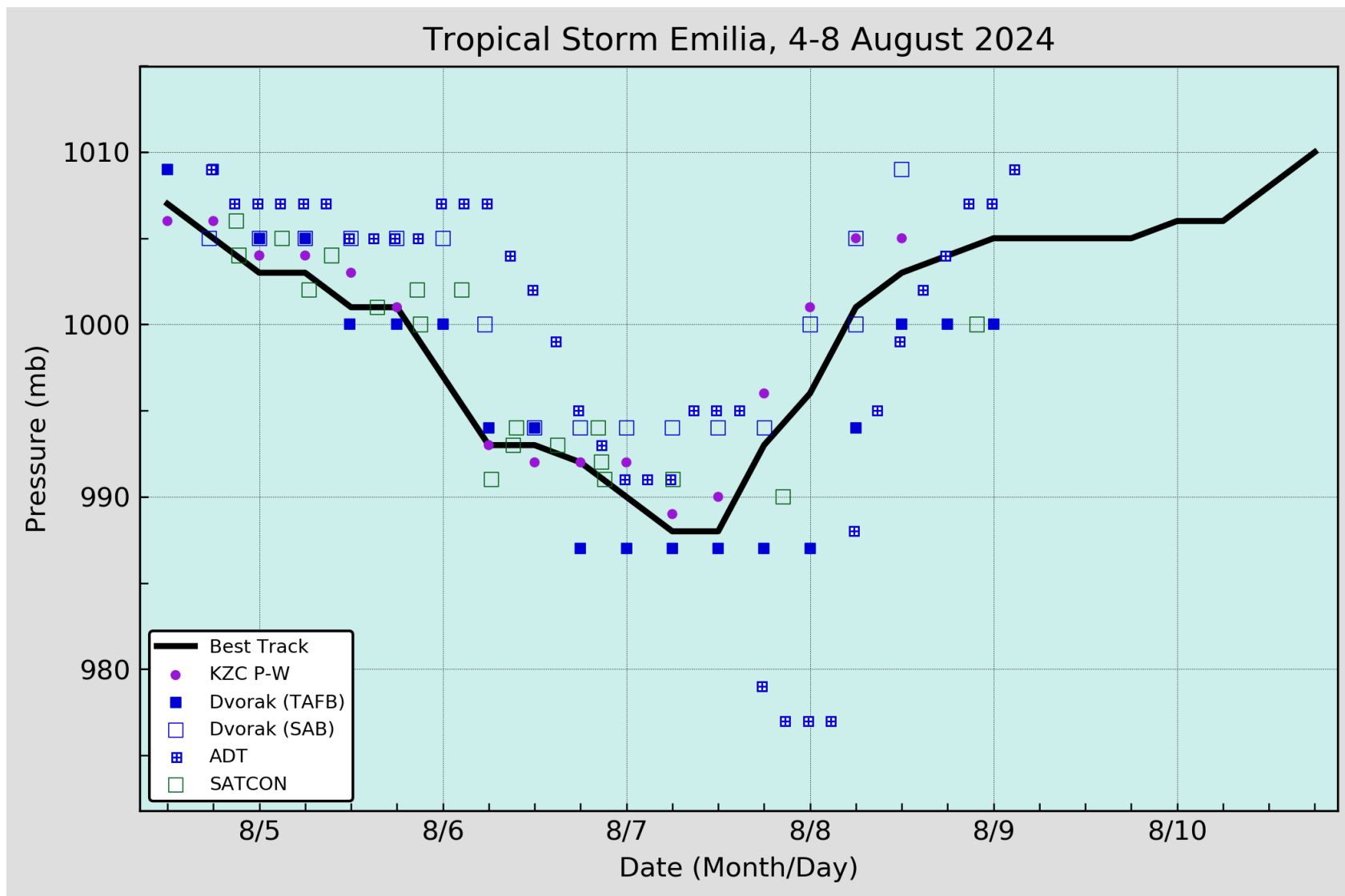


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Emilia, 4–8 August 2024. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological 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.

Emilia 7-day Tropical Weather Outlook Areas

From: 0000 UTC 4 Aug 2024 to 1200 UTC 4 Aug 2024

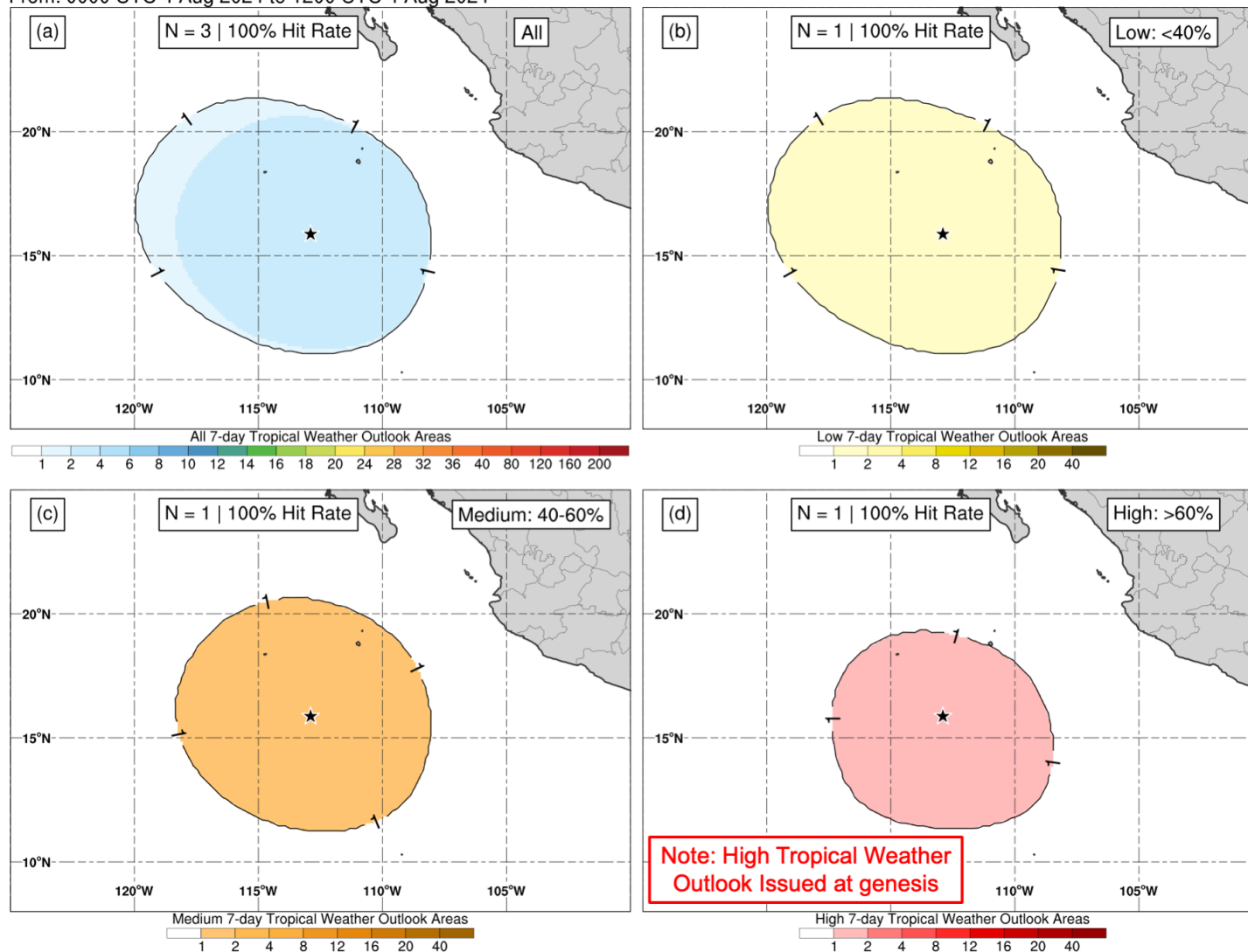


Figure 4. Composites of 7-day tropical cyclone genesis areas depicted in NHC’s Tropical Weather Outlooks prior to the formation of Emilia for (a) all probabilistic genesis categories, (b) the low (<40%) category, (c) medium (40–60%) category, and (d) high (>60%) category. The location of genesis is indicated by the black star.