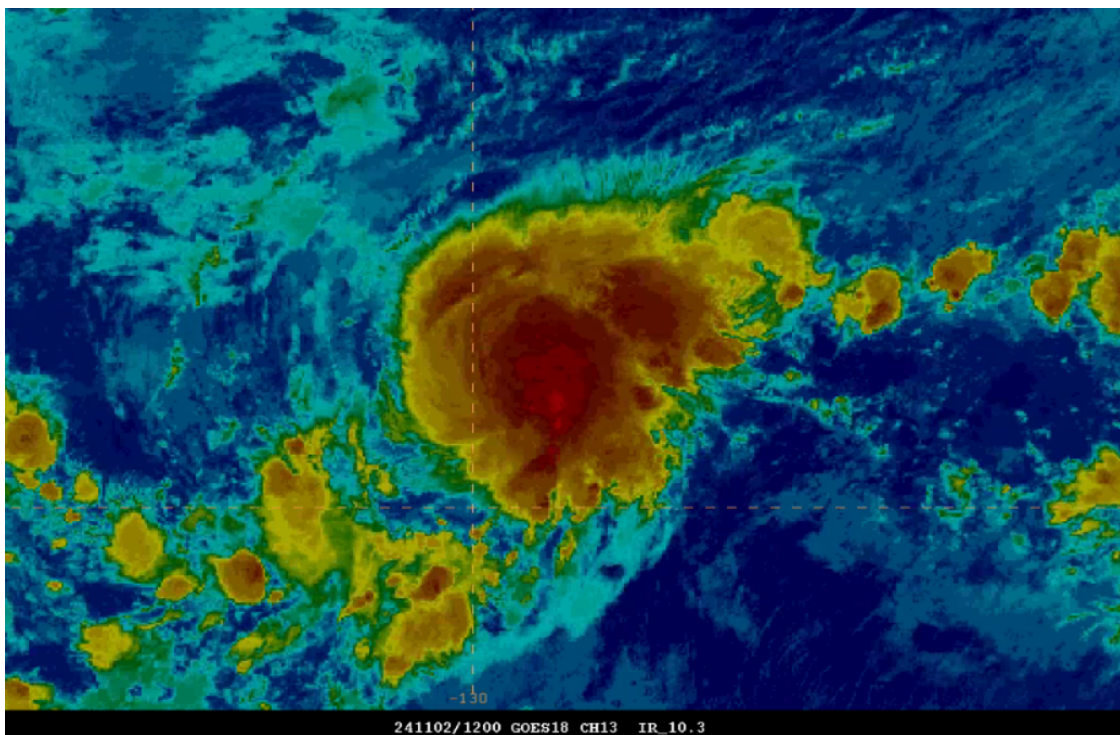# NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT[1]

TROPICAL STORM LANE
(EP132024)
1–3 November 2024

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14 January 2025

GOES-WEST INFRARED SATELLITE IMAGE OF TROPICAL STORM LANE NEAR THE TIME OF ITS PEAK INTENSITY AT 1200 UTC 2 NOVEMBER 2024.

Lane was a short-lived tropical storm that formed over the central portion of the eastern Pacific far from land.

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[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 Lane.

Tropical Storm Lane

1–3 NOVEMBER 2024

BEST TRACK

The "best track[2]" positions and intensities for Tropical Storm Lane are listed in Table 1. The best track chart of Lane's path is given in Fig. 1, with the wind and pressure histories along with available observations[3] shown in Figs. 2 and 3, respectively.

There were no reports of winds of tropical storm force associated with Lane.

Origin

The tropical wave Lane eventually formed from was first distinguishable over the eastern portion of the eastern Pacific on 24 October. The system produced little convection other than typical diurnal activity until 28 October, when a weak low formed several hundred miles southwest of the southwestern coast of Mexico. Scatterometer data indicated that the broad low was becoming better organized on 31 October, and satellite imagery showed the formation of a tropical depression near 1200 UTC 1 November, about 1240 n mi southwest of the southern tip of the Baja California peninsula. It is interesting to note this was the middle system during an Intertropical Convergence Zone (ITCZ) breakdown in the region, with Invest 91E to the west (eventually falling short of a TC) and Tropical Depression Fourteen-E forming to the east.

Peak Intensity and Minimum Pressure

Lane's estimated peak intensity of 40 kt from 1200 to 1800 UTC 2 November is mostly based on scatterometer data, which also matches a blend of subjective Dvorak intensity estimates of T3.0/45-kt and T2.5/35-kt from TAFB and SAB, respectively.

The estimated minimum central pressure of 1004 mb is primarily based on the Knaff-Zehr-Courtney pressure-wind relationship, with a slight influence of lower Dvorak-based pressures.

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[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 Lane.

CASUALTY AND DAMAGE STATISTICS

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

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. The long-term genesis forecasts were acceptable considering that some chance of development was noted about 5 days ahead of formation, however the short-term forecasts were quite poor, with chances only entering the medium (40-60%) category 12 h before genesis. Figure 4 shows composites of 7-day TWO genesis areas for each category prior to the formation of Lane. The system formed farther west than initially expected, perhaps partially due to the initial weak character of the wave leading to uncertainty in exactly where genesis would occur within the larger ITCZ breakdown.

A verification of NHC official track forecasts for Lane is given in Table 3. Official track forecast errors were a little higher than the mean official errors for the previous 5-yr period. A verification of NHC official intensity forecasts for Lane is given in Table 4. Official intensity forecast errors were near the mean official errors for the previous 5-yr period. A homogeneous comparison of the official track and intensity errors with selected guidance models is not presented because of sample size limitations.

There were no coastal watches or warnings issued for Lane.

Table 1.   Best track for Tropical Storm Lane, 1–3 November 2024.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
1 / 1200	11.1	127.6	1007	25	tropical depression
1 / 1800	11.1	128.1	1006	30	"
2 / 0000	11.1	128.7	1006	30	"
2 / 0600	11.1	129.2	1005	35	tropical storm
2 / 1200	11.2	129.7	1004	40	"
2 / 1800	11.3	130.0	1004	40	"
3 / 0000	11.3	130.3	1006	35	"
3 / 0600	11.2	130.9	1007	30	tropical depression
3 / 1200	11.1	131.6	1008	25	low
3 / 1800					dissipated
2 / 1200	11.2	129.7	1004	40	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%)	96	114
Medium (40%-60%)	12	12
High (>60%)	-	-

Table 3.   NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Lane. Mean errors for the previous 5-yr period are shown for comparison.

	Forecast Period (h)							
	12	24	36	48	60	72	96	120
OFCL	25.5	42.4	59.2					
OCD5	29.3	58.2	97.6					
Forecasts	5	3	1					
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 4.   NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Lane. 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.

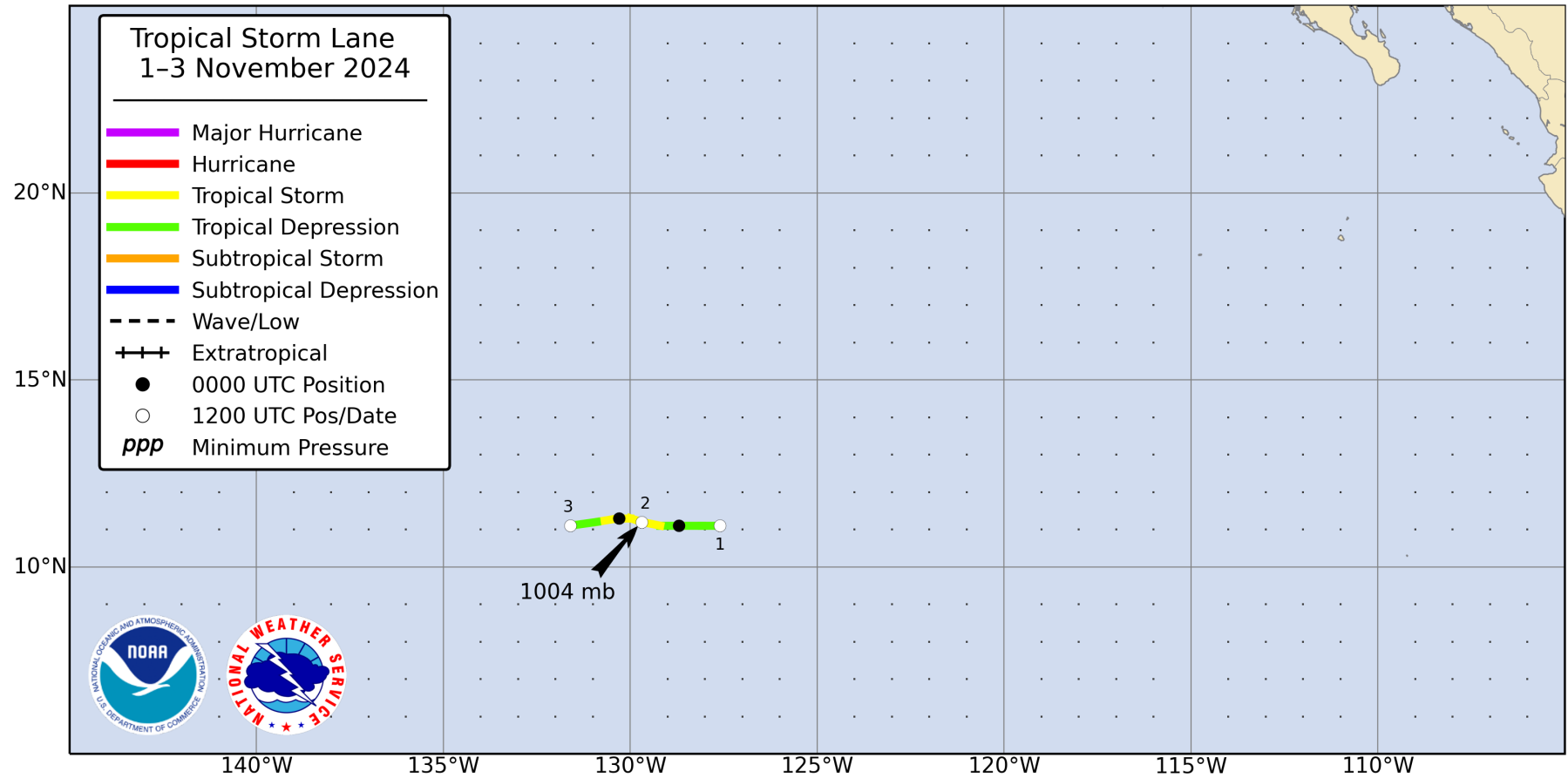|	Forecast Period (h)							
	12	24	36	48	60	72	96	120
OFCL	7.0	**6.7**	**0.0**					
OCD5	6.8	6.3	13.0					
Forecasts	5	3	1					
OFCL (2019-23)	5.5	8.7	10.8	12.7	14.5	15.6	17.1	18.0
OCD5 (2019-23)	7.2	12.2	15.9	18.6	19.9	20.0	19.6	18.7

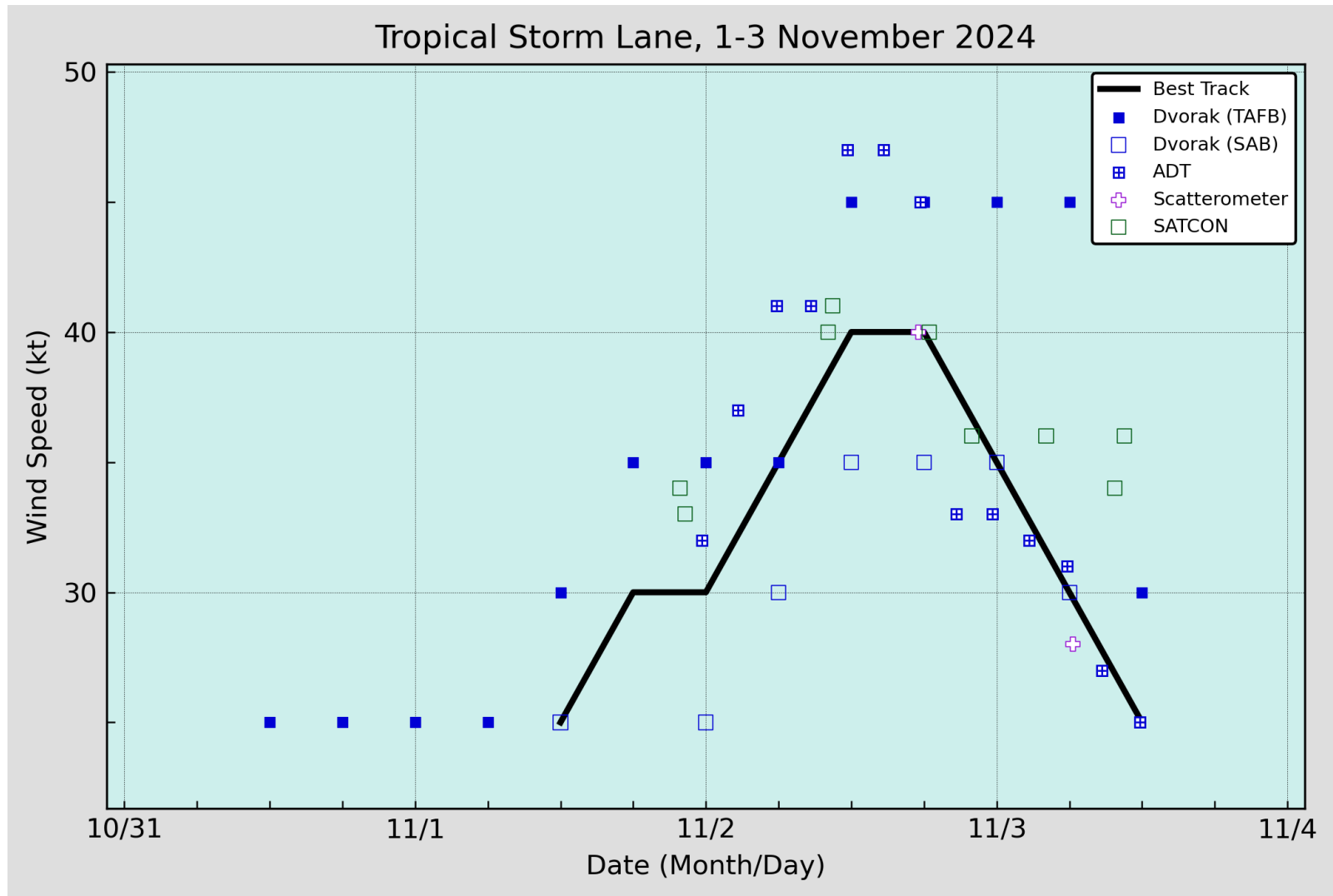Figure 1.   Best track positions for Tropical Storm Lane, 1-3 November 2024.

Figure 2.   Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Lane, 1–3 November 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.
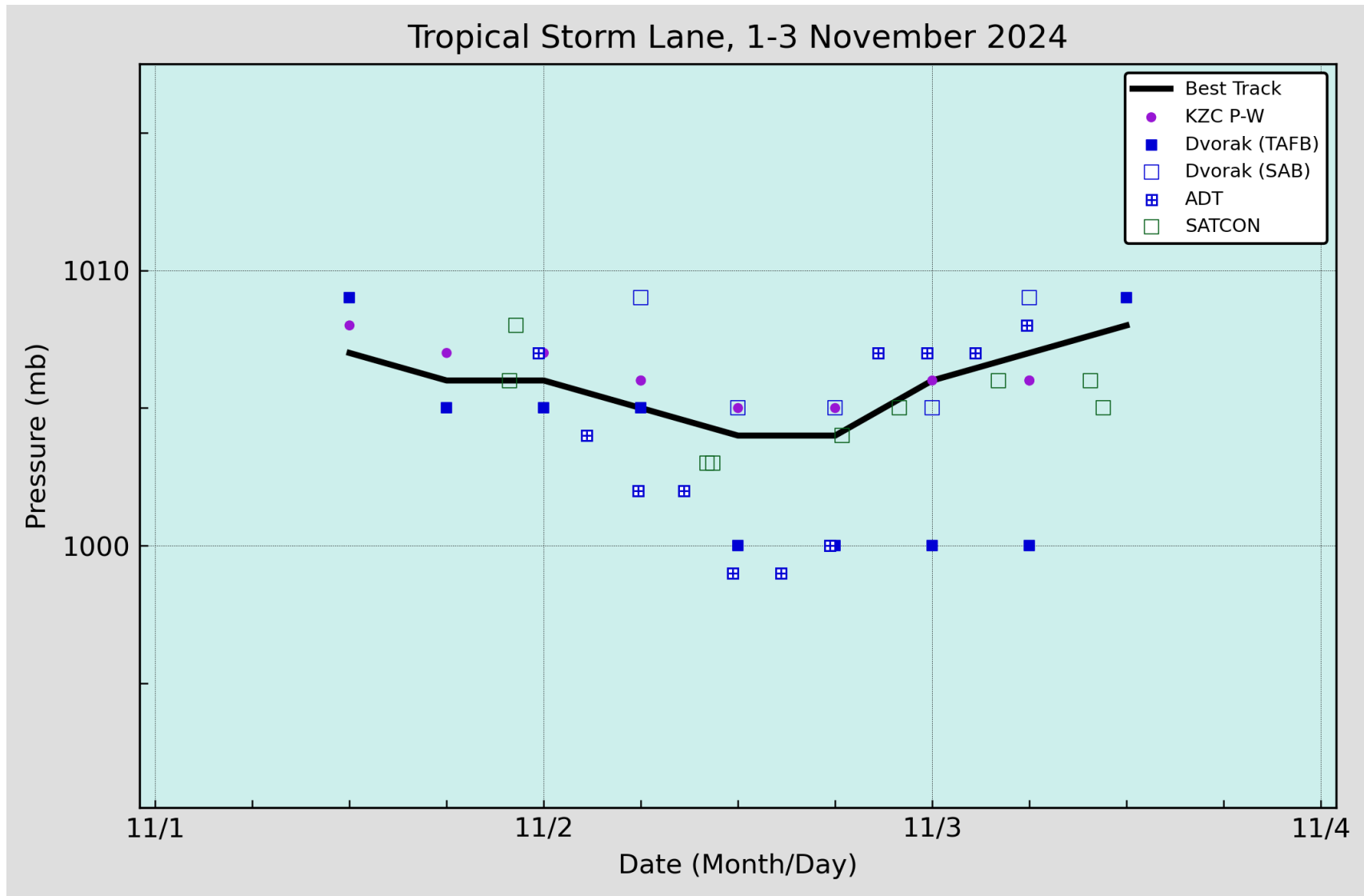
Figure 3.   Selected pressure observations and best track minimum central pressure curve for Tropical Storm Lane, 1–3 November 2024. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological 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.
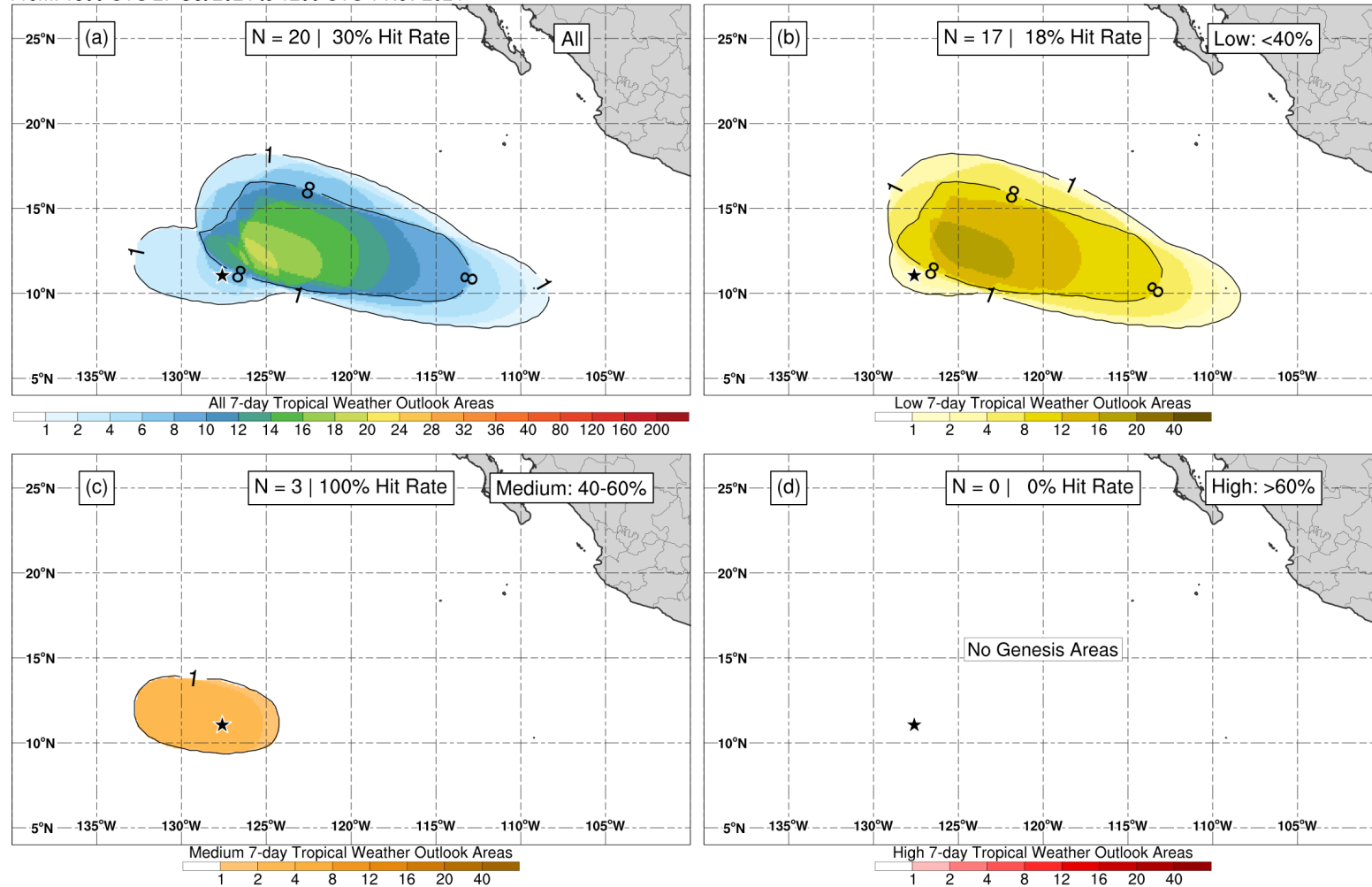
Figure 4.   Composites of 7-day tropical cyclone genesis areas depicted in NHC's Tropical Weather Outlooks prior to the formation of Lane for (a) all probabilistic genesis categories, (b) the low (<40%) category, (c) medium (40–60%) category, and (d) high (>60%) category. The location of genesis is indicated by the black star.