NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

TROPICAL STORM BORIS

(EP022026)

7–9 June 2026

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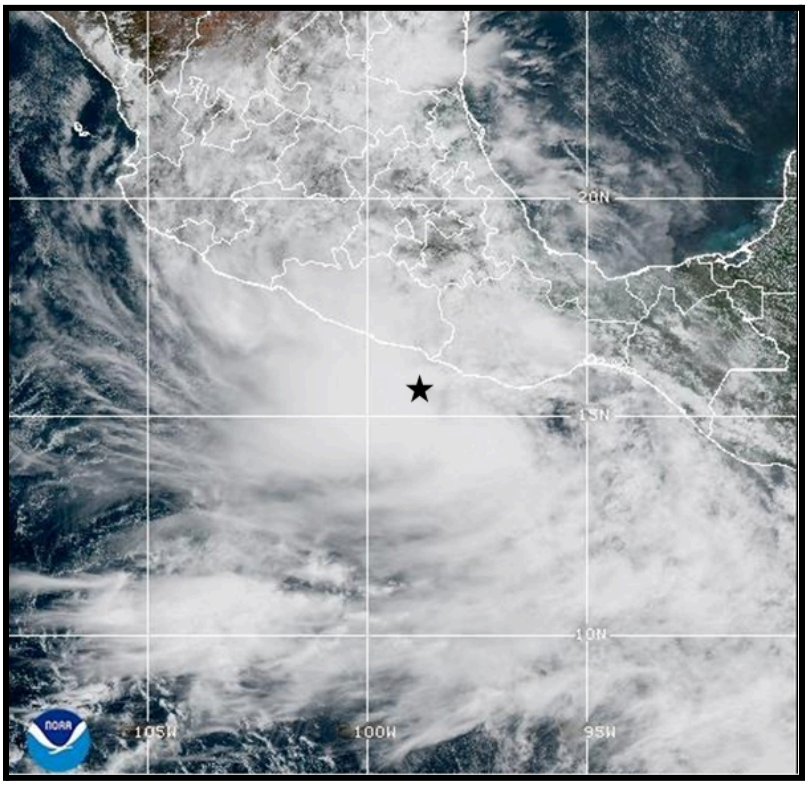
National Hurricane Center
20 August 2026



GOES-19 GEOCOLOR SATELLITE IMAGE OF TROPICAL STORM BORIS AT 1810 UTC 8 JUNE 2026 NEAR THE TIME OF ITS PEAK INTENSITY. THE BLACK STAR DENOTES THE ESTIMATED CENTER POSITION. IMAGE COURTESY OF NOAA/NESDIS/STAR.

Boris was a short-lived tropical storm that made landfall near the Oaxaca-Guerrero border in southern Mexico. Boris, along with antecedent rainfall associated the larger synoptic pattern brought flash flooding and landslides to portions of southern Mexico.

Tropical Storm Boris

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Table of Contents

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SYNOPTIC HISTORY

Boris originated from a disturbance embedded within the monsoon trough over the far eastern North Pacific. The disturbance meandered westward within the monsoon trough for several days before separating and turning northward ahead of a mid-level trough advancing southeastward over the eastern East Pacific. By 4 June, a trough of low pressure had developed off the coast of southwestern Mexico, accompanied by the onset of disorganized deep convection. On 5–6 June, visible satellite imagery and Oceansat-3 scatterometer (OSCAT) data revealed that a broad low-level circulation had formed while convective activity gradually became more persistent. A well-defined, but still somewhat elongated, closed low-level circulation developed on 7 June, and a tropical depression is estimated to have formed by 1200 UTC that day, centered about 95 n mi south of Acapulco, Mexico. The “best track” chart of the tropical cyclone’s path is given in Figure 1, with the wind and pressure histories shown in Figures 2 and 3, respectively. The best track positions and intensities are listed in Table 1[1].

The depression moved slowly and erratically northeastward while embedded within a broad low-level cyclonic gyre. Early on 8 June, deep convection increased markedly along the axis of the elongated circulation, aided by the convective diurnal maximum, and the depression strengthened into Tropical Storm Boris by 0600 UTC that day. Boris reached a peak intensity of 45 kt at 1800 UTC 8 June when it was located 95 n mi south-southeast of Acapulco. Shortly thereafter, significant easterly vertical wind shear disrupted the cyclone’s structure, and Boris began to weaken. Satellite imagery showed warming cloud tops and deterioration of the convective banding pattern through early 9 June. Boris is estimated to have made landfall as a 35-kt tropical storm along the Oaxaca-Guerrero border around 0500 UTC. By the time the center moved inland, all of the deep convection associated with Boris had dissipated. After landfall, Boris quickly weakened as it turned northwestward around the southwestern periphery of a strengthening mid-level ridge over the Gulf of America. The system dissipated by 1800 UTC that day.

METEOROLOGICAL STATISTICS

Observations in Boris (Figures 2 and 3) include subjective satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), objective Advanced Dvorak Technique (ADT) estimates and Satellite Consensus (SATCON) estimates

[1] A digital record of the complete best track, including wind radii, can be found on line at https://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.

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), ASCAT, the Defense Meteorological Satellite Program (DMSP) satellites, among others, were useful in constructing the best track of Boris.

Selected rainfall totals from land stations are given in Table 2.

Winds and Pressure

Boris' estimated maximum intensity of 45 kt at 1800 UTC 8 June is based on a combination of scatterometer data and subjective and objective satellite estimates. The highest scatterometer wind vector was 43 kt, obtained from an ASCAT-B pass at 1513 UTC 8 June, with Ultra-High Resolution (UHR) data from that same pass showing a peak wind value of 45 kt (Figure 4). TAFB provided Dvorak classifications of T3.5/55 kt from 1200 UTC 8 June to 0000 UTC 9 June, while the peak UW-CIMSS SATCON estimates hovered near 45 kt from 2000 UTC 8 June to 0800 UTC 9 June. The estimated minimum central pressure of 1000 mb is based on the Knaff-Zehr-Courtney pressure-wind relationship.

Boris caused tropical storm conditions over portions of southern Mexico. However, the tropical storm made landfall in a data sparse region of the coastline, and there were no available nearby surface observations at the time of landfall. Therefore, Boris' landfall intensity of 35 kt is more uncertain than normal and is based on satellite intensity estimates.

Rainfall and Flooding

Boris produced heavy rains across portions of Oaxaca and Guerrero on 7–9 June, with widespread totals of 2–4 inches (50–100 mm) reported across southern portions of the states (Table 2). The peak storm total rainfall during Boris occurred at the Observatorio de Salina Cruz in Oaxaca, where 12.38 inches (314.4 mm) of rainfall was recorded. Jacatepec, also in Oaxaca, recorded a storm total rainfall amount of 10.83 inches (275.0 mm). A map of the rainfall from 7–9 June, during the time of Boris, is given in Figure 7.

CASUALTY AND DAMAGE STATISTICS

Official reports from the Government of Mexico indicate that there were no direct[2] fatalities attributable to Boris. Two rainfall-related fatalities and three deaths resulting from rough surf were reported by the media; however, these incidents were associated with antecedent

[2] Deaths occurring as a direct result of the forces of the tropical cyclone are referred to as "direct" deaths. These would include those persons who drowned in storm surge, rough seas, rip currents, and freshwater floods. Direct deaths also include casualties resulting from lightning and wind-related events (e.g., collapsing structures). Deaths occurring from such factors as heart attacks, house fires, electrocutions from downed power lines, vehicle accidents on wet roads, etc., are considered "indirect" deaths.

rainfall and rough-surf conditions linked to the broader synoptic pattern. Authorities carried out five water rescues in Acapulco after tourists entered hazardous waters[3].

Preliminary media reports indicate that Boris, as well as the antecedent rainfall that occurred as part of the broader synoptic flow, produced damage in portions of southern Mexico, including landslides, downed trees and powerlines, infrastructure damage, and power outages. In Puebla[4], Oaxaca[5], and Veracruz[6], numerous landslides and sinkholes blocked highways, isolating several communities. Damage to utility infrastructure caused widespread power outages in Puebla, as well as in Oaxaca City and Santa Lucía del Camino. In Oaxaca, heavy rainfall and runoff spread a hydrocarbon leak into a stream that passes through several communities, prompting a response from local authorities, the National Guard, and the Mexican Army[7].

In the Isthmus of Tehuantepec, an open-air theater valued at approximately $3.1 million USD ($54 million pesos) was destroyed[8]. The Natural Catastrophe and Climate Report issued by Arthur J. Gallagher & Co estimates that Boris and the synoptic pattern in which it was embedded are estimated to have caused approximately $100 million ($1.7 billion pesos) in economic losses[9].

FORECAST AND WARNING CRITIQUE

Genesis

The genesis of Boris was anticipated with adequate, but not exceptional, lead time (Table 3). The disturbance that eventually became Boris was first introduced in the Tropical Weather Outlook (TWO) 96 h prior to genesis with a low chance (<40%) of development within 7 days. The 7-day probability of formation was increased to the medium (40–60%) and high

[3] Five Tourists Were Rescued After Ignoring a Rough Sea Warning. *El Sol de Acapulco.* 10 June 2026. https://oem.com.mx/elsoldeacapulco/local/cinco-turistas-fueron-rescatados-tras-ignorar-alerta-de-mar-de-fondo-30469439

[4] Boris Brings Rain and Damage to Homes. *La Hora Portal De Noticias.* 9 June 2026. https://lahora.mx/index.php/2026/06/09/boris-provoca-lluvias-y-afectaciones-en-viviendas/

[5] Rains from Tropical Storm Boris Leave 40 Communities in the Sierra Negra Region of Puebla Without Power. *Almanaque.* 9 June 2026. https://almanaquerevista.com/puebla/tormenta-boris-lluvias-puebla-sierra-negra/

[6] Towns in Central and Southern Veracruz are Cut Off due to Landslides and Damage from 'Boris'. *La Jornada.* 9 June 2026. https://www.jornada.com.mx/noticia/2026/06/09/estados/poblaciones-en-el-centro-y-sur-de-veracruz-incomunicadas-por-deslaves-y-afectaciones-de-boris

[7] Hydrocarbon Leak Affects Several Neighborhoods in Salina Cruz. *Quadratin Oaxaca.* 9 June 2026. https://oaxaca.quadratin.com.mx/fuga-de-hidrocarburo-afecta-varias-colonias-de-salina-cruz/

[8] Devastation from 'Boris' in Oaxaca: One Death Reported and Historic Material Damages of 54 Million Pesos. Poder *& Crítica.* 13 June 2026. https://www.poderycritica.com/estragos-de-boris-en-oaxaca-reportan-una-victima-mortal-e-historicos-danos-materiales-por-54-millones-de-pesos/

[9] Natural Catastrophe and Climate Report, Preliminary Overview. Arthur J. Gallagher & Co. July 2026. https://www.ajg.com/gallagherre/-/media/files/gallagher/gallagherre/news-and-insights/2026/july/global-h1-nat-cat-and-climate-report-2026.pdf

(>60%) categories with lead times of 84 h and 72 h, respectively. The 2-day formation lead times were sufficient, with the low, medium, and high categories introduced 72 h, 48 h, and 30 h before genesis, respectively. Figure 5 shows the composite 7-day TWO genesis areas for each probability category leading up to the development of Boris. All of the TWO ellipses correctly encompassed the location where genesis occurred.

Track

A verification of NHC official track forecasts for Boris is given in Table 4a. Official track forecast errors were considerably larger than the mean official errors for the previous 5-yr period at all forecast hours, with some track errors more than double the 5-yr means. One reason for these large track errors was that the official forecasts predicted Boris would turn northward then northwestward before moving inland into southern Mexico. Instead, Boris maintained its northeastward motion longer than anticipated prior to landfall (Figure 6). It is worth noting that the sample size is quite small, and there were no verifying forecasts beyond 36 h. A homogeneous comparison of the official track errors with selected guidance models is given in Table 4b. Of the deterministic model guidance, the GFS (GFSI) and the HMON (HMNI) outperformed the NHC track forecast at 12 h, and the Canadian (CMCI) outperformed the NHC track forecast at all verifying forecast times. Various ensemble guidance such as the Google DeepMind (GDMI), GFS Ensemble Mean (AEMI) and the FSU Super-ensemble (FSSE), as well as consensus aids, such as HCCA and TVCE, also outperformed the NHC track forecast at 12 h. Large track forecast errors were also due in part to high uncertainty in the initial location of Boris' center during several forecast cycles, as possible center re-formations and relocations increased the difficulty of the track forecast.

Intensity

A verification of NHC official intensity forecasts for Boris is given in Table 5a. In contrast to the NHC track forecasts, official intensity forecast errors were lower than the mean official errors for the previous 5-yr period at all verifying lead times. NHC correctly anticipated that Boris would only undergo slight strengthening because of its broad, elongated structure and persistent easterly vertical wind shear. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 5b. HMNI was the only model that outperformed the official NHC forecast at 12 h, while the official NHC forecast had lower intensity errors than all of the models at 24 h.

Wind Watches and Warnings

Coastal wind watches and warnings associated with Boris are given in Table 6. Advisories were initiated at 1500 UTC 7 June, at which time a Tropical Storm Warning was issued for portions of the southern coast of Mexico.

ACKNOWLEDGEMENTS

Rainfall data (Table 2 and Figure 7) were provided by Conagua, the National Meteorological Service of Mexico. Zorana Jelenak, Suebson Soisuvarn, and Paul Chang from the NOAA/NESDIS Center for Satellite Applications and Research (STAR) are thanked for their

analysis of the Ultra High-Resolution (UHR) ASCAT data (Figure 4). Dr. Philippe Papin created the Graphical TWO verification figure (Figure 5). Brad Reinhart generated the Selected Official Track Forecasts figure (Figure 6).

Table 1. Best track for Tropical Storm Boris, 7–9 June 2026.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
07 / 1200	15.0	100.3	1005	30	tropical depression
07 / 1800	15.0	100.0	1005	30	"
08 / 0000	15.1	99.7	1003	30	"
08 / 0600	15.2	99.5	1003	35	tropical storm
08 / 1200	15.3	99.3	1001	40	"
08 / 1800	15.5	98.9	1000	45	"
09 / 0000	15.8	98.4	1001	40	"
09 / 0500	16.2	98.3	1002	35	"
09 / 0600	16.3	98.3	1004	30	tropical depression
09 / 1200	16.7	98.6	1006	25	low
09 / 1800					dissipated
08 / 1800	15.5	98.9	1000	45	maximum wind and minimum pressure
09 / 0500	16.2	98.3	1002	35	landfall near the Oaxaca-Guerrero border, Mexico

Table 2. Selected rainfall totals for Tropical Storm Boris, 7–9 June 2026. Provided by CONAGUA, the National Meteorological Service of Mexico.

Location	Total rain (in)
Mexico	
Observatorio de Salina Cruz	12.38
Jacatepec	10.83
Las Pilas	9.94
Salina Cruz	9.04
Volcán Tacana	8.18
Arriaga	5.73
Puerto Ángel	5.63
Tapachula	5.23
Puerto Ángel	4.87
Acapulco	4.69
Chilpancingo	4.03
Guadalajara	3.89

Table 3. 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%)	72	96
Medium (40%-60%)	48	84
High (>60%)	30	72

Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Storm Boris, 7–9 June 2026. 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	56.0	96.1	139.2					
OCD5	45.8	67.0	125.0					
Forecasts	6	4	2					
OFCL (2021-25)	21.0	31.9	41.7	50.4	60.8	73.3	99.6	124.1
OCD5 (2021-25)	35.9	72.5	113.0	154.2	196.4	239.0	325.0	405.8

Table 4b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Storm Boris, 7–9 June 2026. 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	55.1	84.7	139.2					
OCD5	**50.2**	92.2	**125.0**					
GFSI	**43.9**	99.9	211.3					
HWFI	62.8	102.8	168.0					
HMNI	**48.3**	99.5	241.2					
HFAI	56.1	88.3	210.8					
HFBI	62.5	105.2	244.5					
LGEM	56.9	99.9	159.8					
EMXI	55.8	89.5	**110.1**					
NVGI	74.6	120.7	**132.4**					
CMCI	**53.7**	**73.2**	**87.9**					
CTCI	**52.3**	99.6	217.6					
GDMI	**52.9**	85.3	155.9					
DSHP	56.9	99.9	159.8					
GFEX	**46.6**	88.6	149.3					
HCCA	**48.2**	93.5	183.2					
FSSE	**49.6**	94.7	188.3					
TVCE	**53.6**	93.9	194.9					
AEMI	**38.7**	**75.1**	153.2					
TABS	**50.8**	**78.1**	**59.6**					
TABM	**53.1**	119.3	184.7					
TABD	67.0	157.8	261.5					
Forecasts	5	2	2					

Table 5a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Boris, 7–9 June 2026. 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	**5.0**	**3.8**	**7.5**					
OCD5	8.2	6.2	6.0					
Forecasts	6	4	2					
OFCL (2021-25)	5.6	8.8	10.9	12.7	13.7	14.0	15.5	16.7
OCD5 (2021-25)	7.6	12.6	16.4	19.4	21.1	21.2	21.0	21.9

Table 5b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Storm Boris, 7–9 June 2026. 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 5a due to the homogeneity requirement.

Model ID	Forecast Period (h)							
	12	24	36	48	60	72	96	120
OFCL	6.0	2.5	7.5					
OCD5	8.6	9.0	**6.0**					
HWFI	8.4	14.5	9.5					
HMNI	**4.2**	12.0	13.0					
HFAI	6.2	6.5	**4.0**					
HFBI	7.6	10.5	**4.0**					
DSHP	8.6	17.0	9.0					
LGEM	9.2	14.5	7.5					
IVCN	6.6	9.5	8.5					
CTCI	7.2	9.0	13.0					
GFSI	6.4	10.5	12.5					
EMXI	7.0	13.0	9.0					
HCCA	6.4	8.5	**6.5**					
FSSE	6.2	8.0	8.5					
GDMI	6.2	6.0	**1.5**					
Forecasts	5	2	2					

Table 6. Watch and warning summary for Tropical Storm Boris, 7–9 June 2026.

Date/Time (UTC)	Action	Location
07 / 1500	Tropical Storm Warning Issued	Southern coast of Mexico from Laguna de Chacahua to Tecpan de Galeana
09 / 1200	Tropical Storm Warning Discontinued	All of Mexico

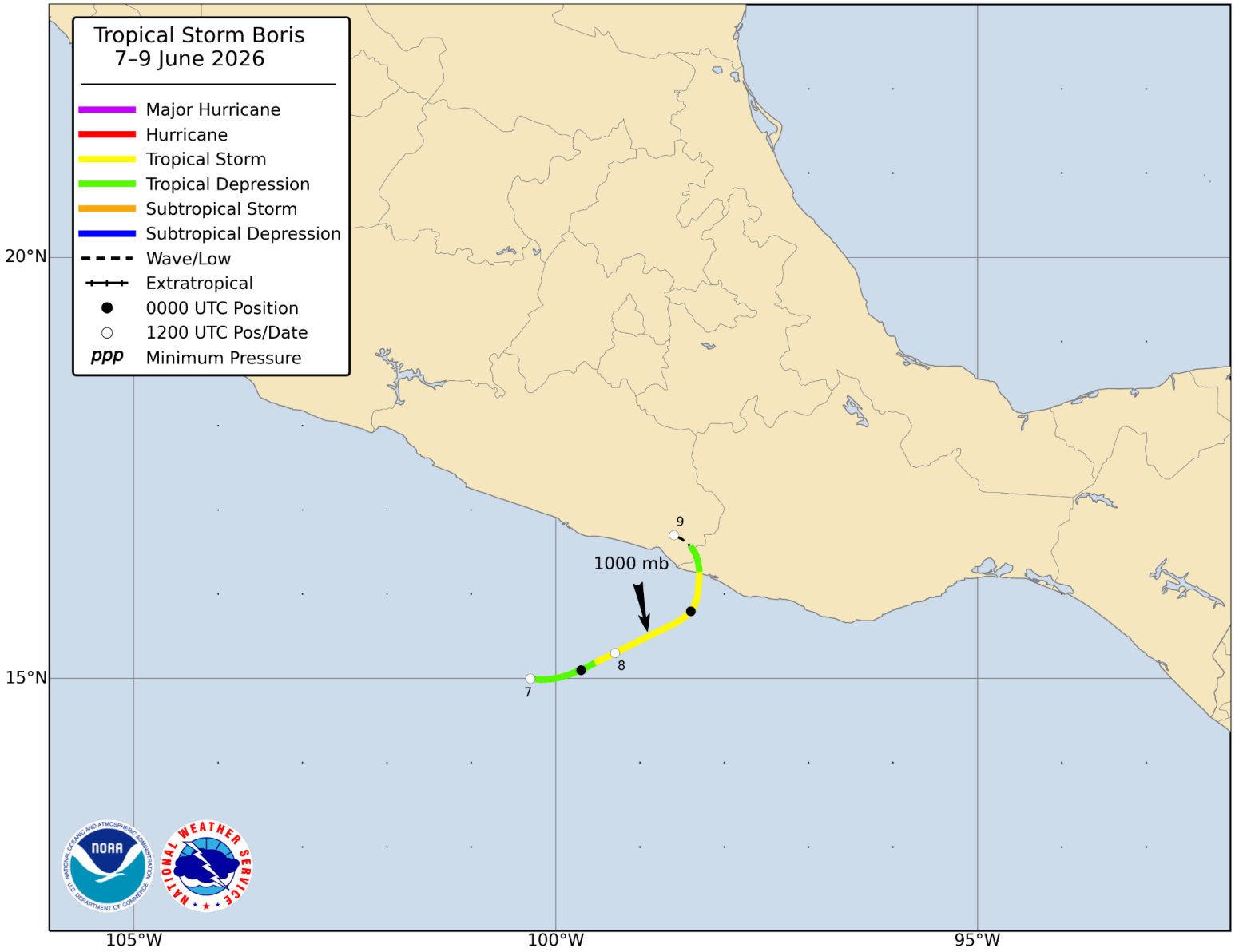

Figure 1. Best track positions for Tropical Storm Boris, 7–9 June 2026.

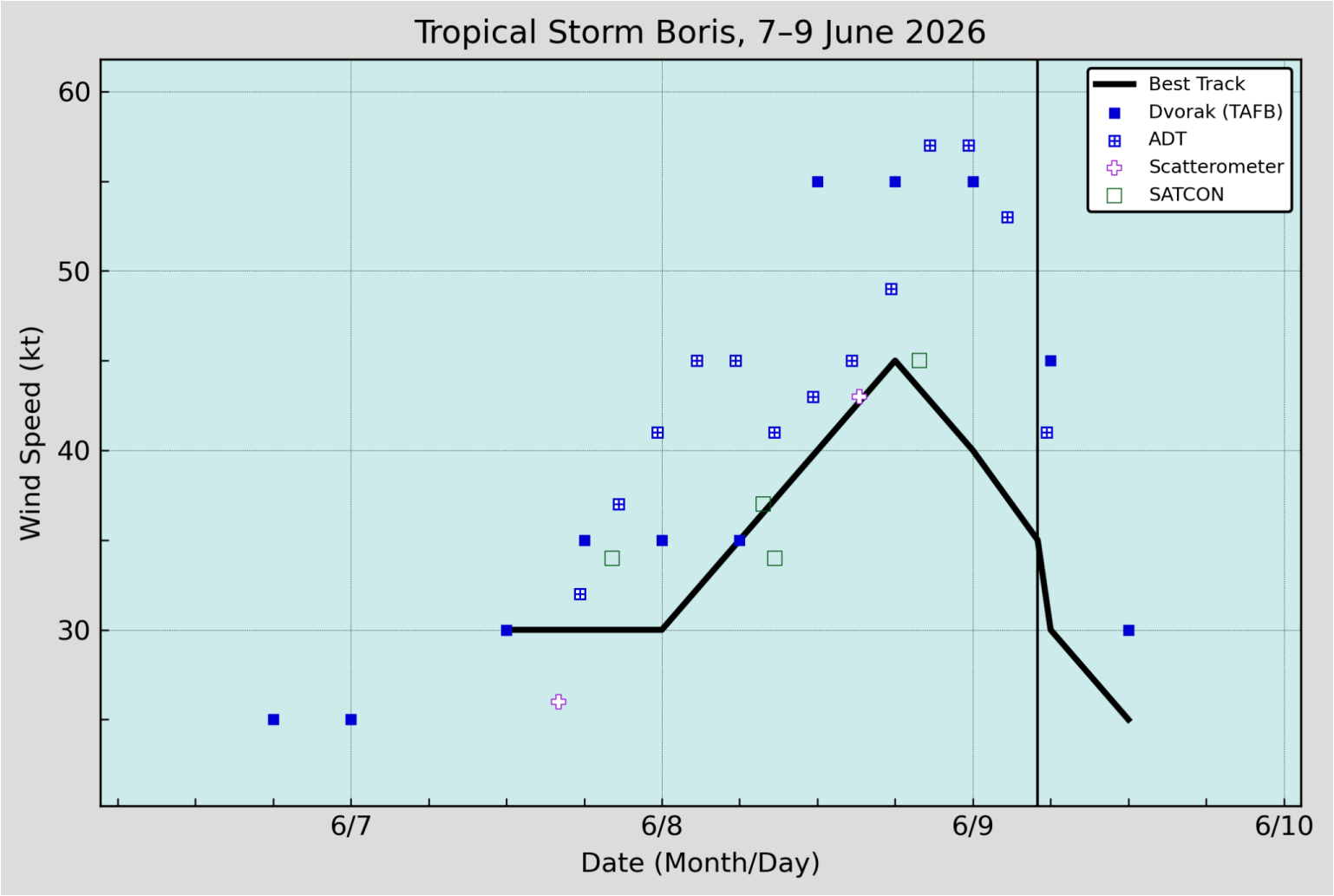

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Boris, 7–9 June 2026. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC, and the solid vertical line corresponds to landfall.

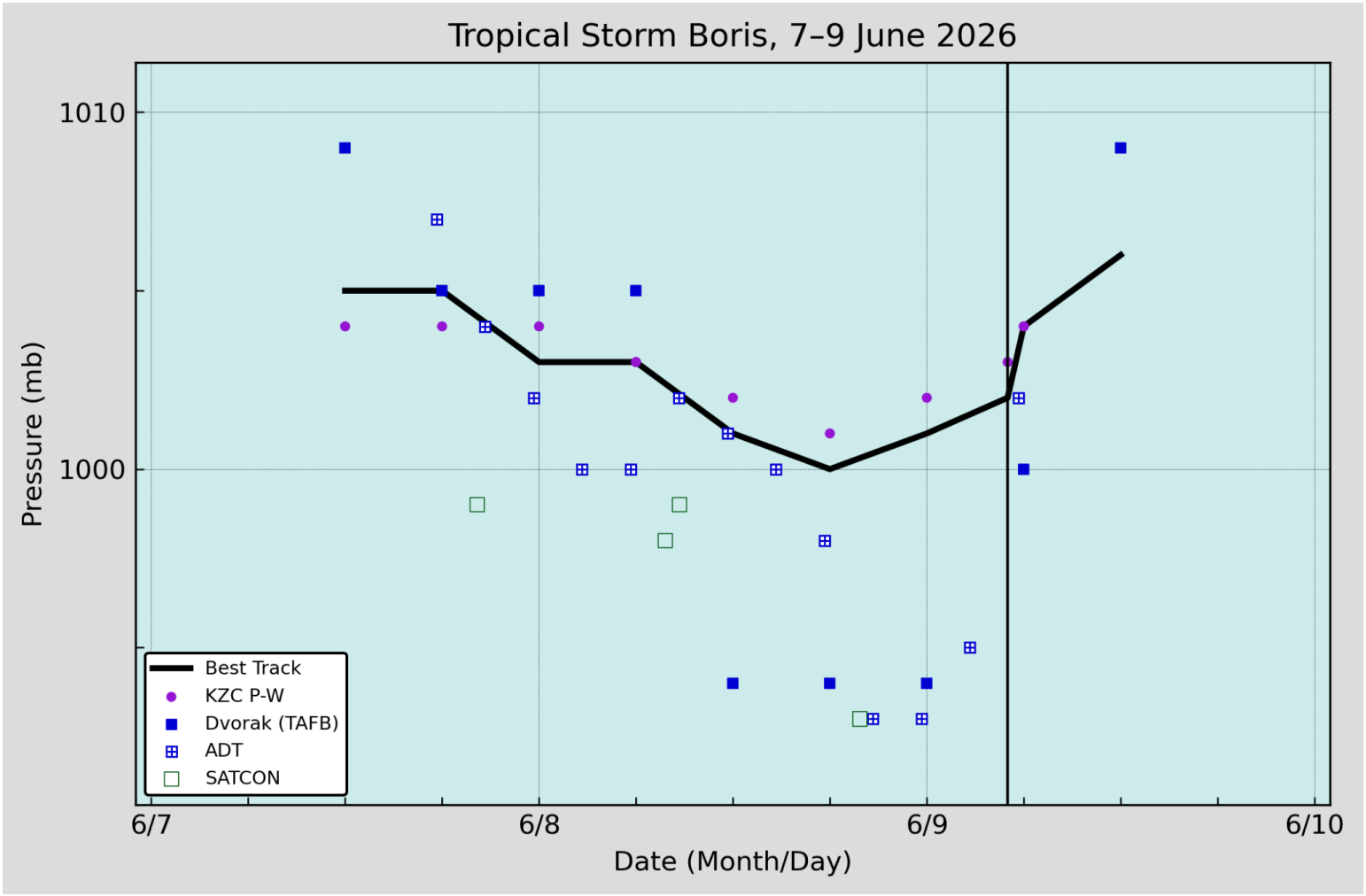

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Boris, 7–9 June 2026. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological 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, and solid vertical lines correspond to landfall.

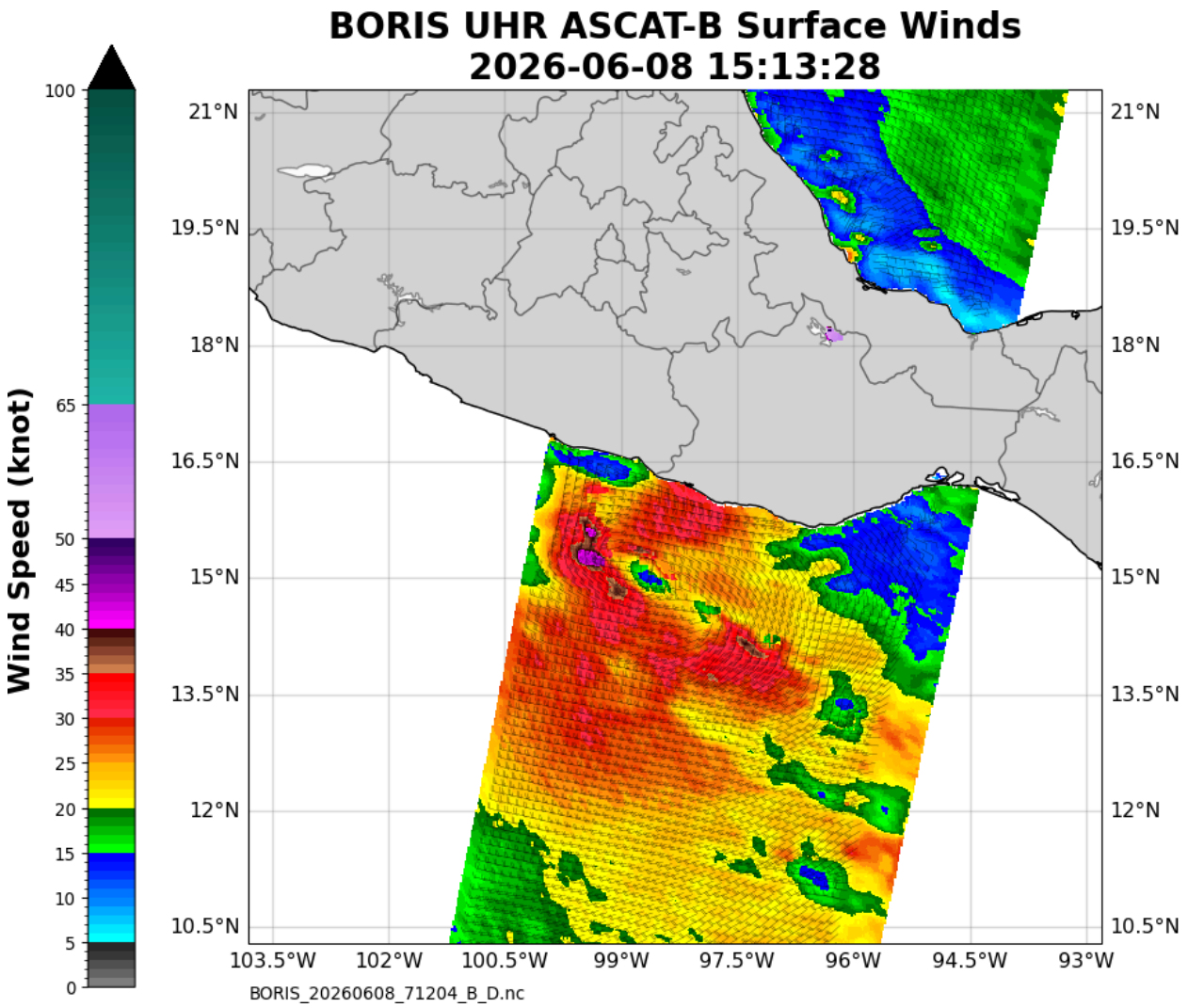

Figure 4. Surface winds from an Ultra-High Resolution (UHR) ASCAT-B pass from 1513 UTC 8 June. ASCAT indicated peak winds of 45 kt in the western semicircle and the elongated circulation. Data courtesy of NOAA/NESDIS/STAR Ocean Surface Winds Team.

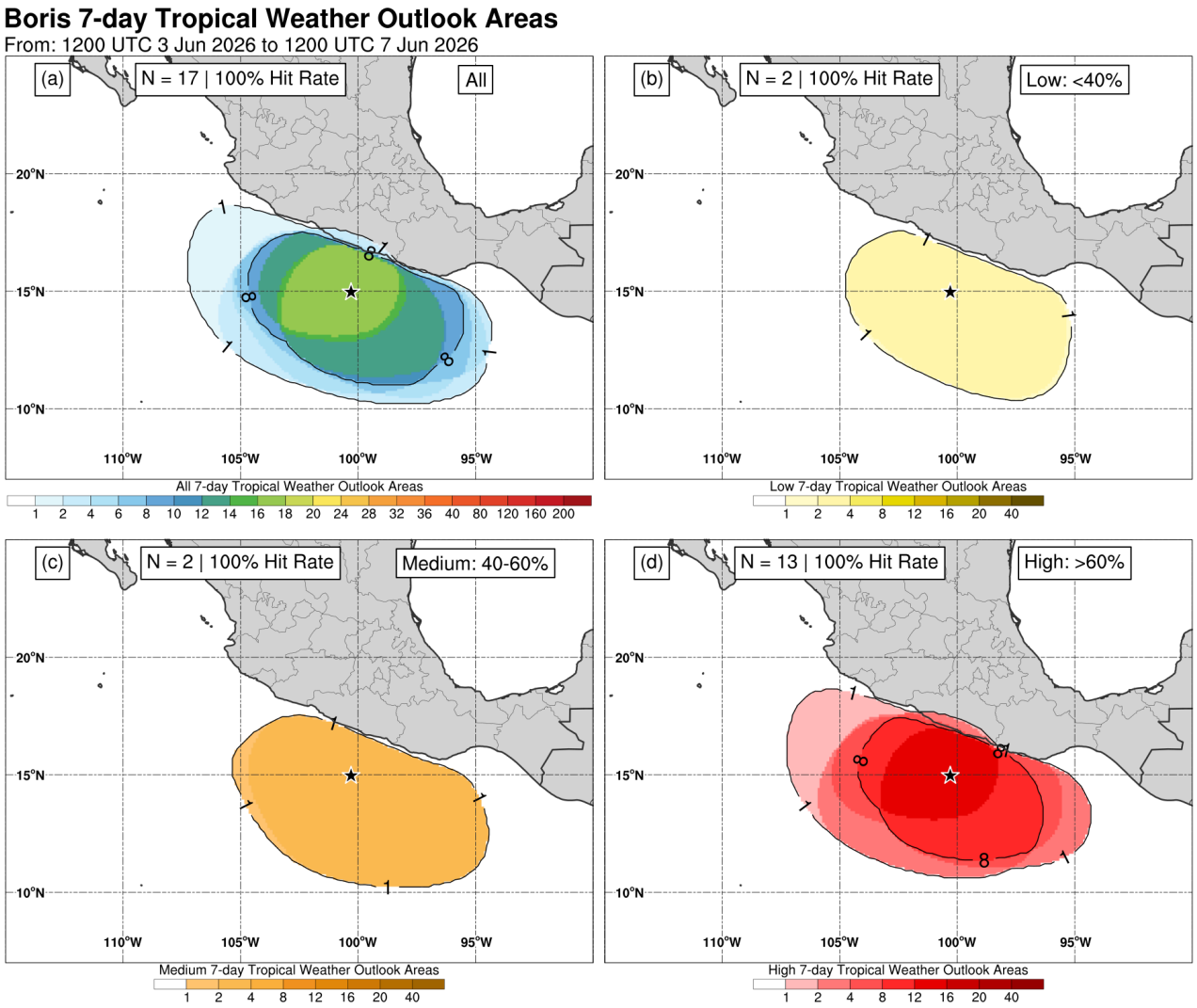

Figure 5. Composites of 7-day tropical cyclone genesis areas depicted in NHC's Tropical Weather Outlooks prior to the formation of Tropical Storm Boris for (a) all probabilistic genesis categories, (b) the low (<40%) category, (c) medium (40–60%) category, and (d) high (>60%) category. The location of genesis is indicated by the black star.

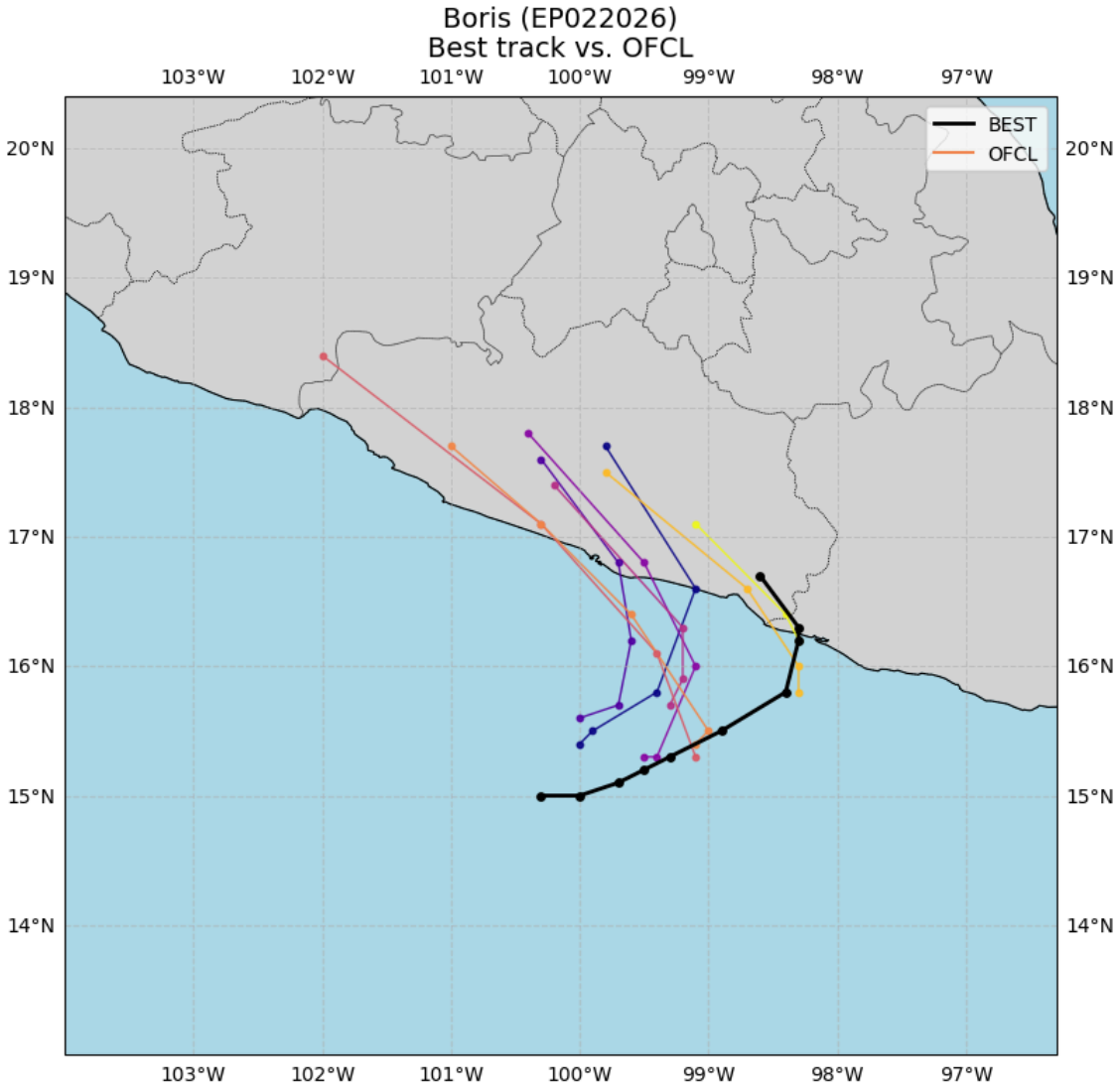

Figure 6. Selected official track forecasts (colored lines) for Tropical Storm Boris, 7–9 June 2026. The best track is given by the black line with positions given at 6-h intervals. The purple (yellow) lines represent earlier (later) OFCL forecasts from 6/7 12z to 6/9 06z.

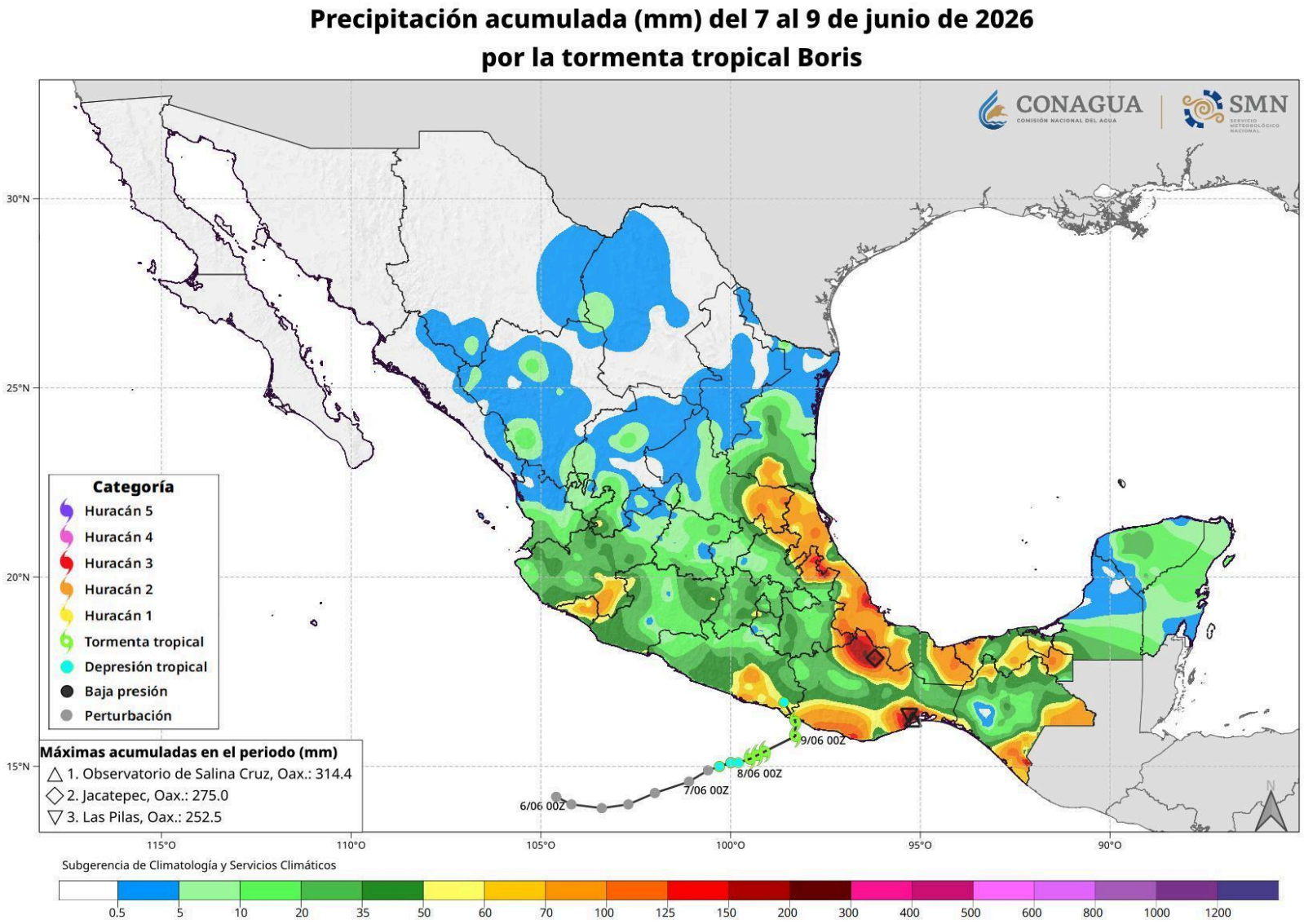

Figure 7. Rainfall accumulations (mm) in Mexico from Tropical Storm Boris, 7–9 June 2026. Track and intensity are based on the operational NHC assessment. Not all of the rainfall depicted here is related to Boris. Image courtesy of CONAGUA, the National Meteorological Service of Mexico.