

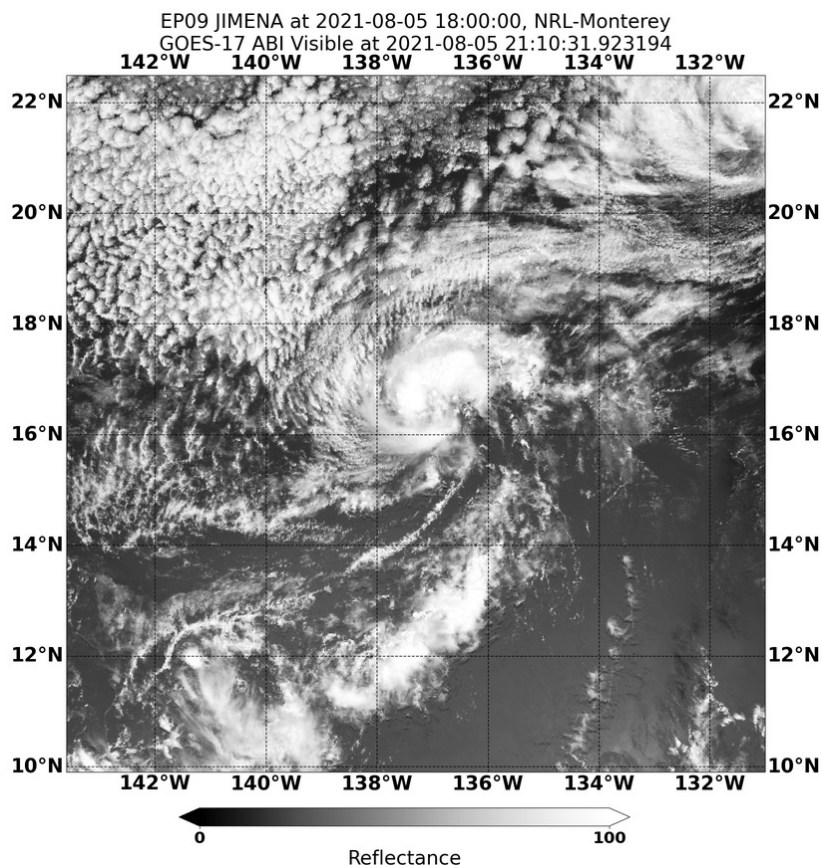


# NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

## TROPICAL STORM JIMENA (EP092021)

30 July–6 August 2021

Richard J. Pasch  
National Hurricane Center  
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GOES-17 VISIBLE SATELLITE IMAGE OF TROPICAL STORM JIMENA AT 2110 UTC 5 AUGUST 2021. IMAGE COURTESY OF NAVAL RESEARCH LABORATORY.

Jimena was a weak tropical cyclone over the western part of the eastern North Pacific basin that first formed into a short-lived tropical depression and later regenerated into a minimal tropical storm that was also short-lived.

# Tropical Storm Jimena

30 JULY–6 AUGUST 2021

## SYNOPTIC HISTORY

Jimena's origins cannot be easily traced back to a tropical wave over the Atlantic basin. Instead, Jimena appears to have originated from a disturbance within a zonally-elongated area of low pressure to the south of eastern Mexico around 22 July. This disturbance, accompanied by a weak area of low pressure, moved mostly westward during the ensuing week. The low pressure system became a little better defined beginning on 26 July, and intermittently showed some signs of convective organization while located several hundred miles south-southwest and southwest of Cabo San Lucas, Mexico, from 26 to 29 July. During this period, the system's motion varied between west-northwest and west-southwest, while it did not have enough convective organization to qualify as a tropical cyclone. On 30 July the low's deep convection became sufficiently well-organized to designate its development into Tropical Depression Nine-E around 1800 UTC that day, centered about 1100 n mi west-southwest of Cabo San Lucas. 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 1<sup>1</sup>.

A weak low- to mid-level ridge to the north of the depression initially induced a slow west-southwestward to westward motion. By later on 31 July, however, the depression's motion was likely influenced by the circulation of strengthening Tropical Storm (and soon to be, Hurricane) Hilda centered about 600 n mi to the east-northeast, and the depression began moving in a small cyclonic loop. Meanwhile, dry mid-tropospheric air limited deep convection and prevented strengthening of the cyclone. The proximity of Hilda also appeared to be an unfavorable influence on the circulation of the depression. In fact, before the system completed its small loop, its convection and circulation had degraded to the point that it degenerated into a disturbance by 0600 UTC 1 August. The disturbance, essentially a lower-tropospheric vorticity maximum, moved mostly westward for the next few days while generating some bursts of deep convection and slowly re-organizing. By 1800 UTC 4 August, the system had again acquired sufficiently organized deep convection and a well-defined low-level circulation to designate its re-formation into a tropical depression, while centered about 1160 n mi east southeast of the island of Hawaii. The cyclone moved northwestward in response to a mid-level ridge to the northeast and gradually strengthened, developing limited banding features. Around 1200 UTC 5 August, the system

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<sup>1</sup> 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.

became Tropical Storm Jimena. Over the next 24 h, Jimena maintained maximum winds near 35 kt through 1200 UTC 6 August. After that time, drier and more stable air induced a weakening trend, and the cyclone reverted back to tropical depression status around 1800 UTC that day. By 0000 UTC 7 August, after moving into the central North Pacific basin, the system lost most of its deep convection and degenerated into a remnant low. The low opened up into a trough later that day.

## METEOROLOGICAL STATISTICS

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

The estimated 35-kt maximum intensity of Jimena from 1200 UTC 5 August through 1200 UTC 6 August is based on subjective Dvorak estimates from TAFB and SAB. The estimated minimum central pressure of 1004 mb at 1800 UTC 5 August is based on a blend of subjective Dvorak and ADT estimates.

No ship reports of winds of tropical storm force associated with Jimena were received.

## CASUALTY AND DAMAGE STATISTICS

There were no casualties or damage known in association with Jimena.

## FORECAST AND WARNING CRITIQUE

Jimena's formation and re-formation were fairly well anticipated. The system that developed into Tropical Depression Nine-E, later Jimena, was first noted in the Tropical Weather Outlook (TWO) 96 h before genesis with a low (<40%) probability for development (Table 2a) within 2 and 5 days. The 5-day and 2-day formation chances were raised to the medium category (40–60%) 66 and 42 h before genesis, respectively. The 5-day and 2-day probabilities were increased to the high category (>60%) 42 h and 12 h before genesis, respectively. Nine-E's remnant disturbance was noted in the TWO 72 h prior to its re-formation, and the system was given a low probability for development within 2 or 5 days (Table 2b). The 2-day and 5-day

probabilities were both increased to medium 66 h before genesis, and boosted to high 42 h before re-formation.

A verification of NHC official track forecasts for Jimena is given in Table 3a. Although the number of cases is small, the official track forecast errors were lower than or comparable to the mean official errors for the previous 5-yr period at 24 through 48 h, and higher than the long-term means at 96 and 120 h. Because Jimena degenerated into a disturbance from 1–4 August, there were no tropical cyclone forecasts to verify for the 60- and 72-h lead times. A homogeneous comparison of the mean official track errors with selected guidance models is given in Table 3b. For a small number of cases, the consensus models TVCE and TVDG were among the best performers, besting the official forecasts at 96 h and 120 h. In general, the official forecasts had a westward bias for Jimena (not shown).

A verification of NHC official intensity forecasts for Jimena is given in Table 4a. For a small number of cases, the mean official intensity forecast errors were lower than the mean official errors for the previous 5-yr period. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 4b. The consensus model IVCN was a good performer, comparable to or better than the official forecasts. Again, however, the number of cases is quite small. The official forecasts generally had a slight high bias and in a number of cases did not anticipate the cyclone's demise soon enough (not shown), especially during the first period of Jimena's existence, as NHC forecasts did not anticipate the system degenerating into a trough from 1–4 August.

Watches or warnings for land areas were not required for Jimena.

## ACKNOWLEDGMENTS

John P. Cangialosi produced the track map.

**Table 1. Best track for Tropical Storm Jimena, 30 July–6 August 2021.**

<b>Date/Time (UTC)</b>	<b>Latitude (°N)</b>	<b>Longitude (°W)</b>	<b>Pressure (mb)</b>	<b>Wind Speed (kt)</b>	<b>Stage</b>
26 / 1800	13.2	114.7	1008	20	low
27 / 0000	13.1	115.5	1008	20	"
27 / 0600	13.0	116.1	1008	20	"
27 / 1200	12.8	116.6	1008	20	"
27 / 1800	12.5	117.0	1008	20	"
28 / 0000	12.6	117.6	1008	25	"
28 / 0600	12.9	118.2	1008	25	"
28 / 1200	13.4	119.0	1008	25	"
28 / 1800	13.7	119.9	1008	25	"
29 / 0000	13.7	121.0	1007	25	"
29 / 0600	13.6	122.0	1007	30	"
29 / 1200	13.4	122.6	1007	30	"
29 / 1800	13.2	123.2	1007	30	"
30 / 0000	13.0	123.8	1007	25	"
30 / 0600	12.7	124.4	1007	25	"
30 / 1200	12.5	125.0	1007	25	"
30 / 1800	12.4	125.6	1007	25	tropical depression
31 / 0000	12.2	126.3	1007	25	"
31 / 0600	12.0	126.9	1008	25	"
31 / 1200	12.0	127.6	1008	25	"
31 / 1800	11.5	128.0	1008	25	"
01 / 0000	11.5	127.5	1008	25	"
01 / 0600	11.8	127.0	1008	25	disturbance
01 / 1200	12.2	127.3	1008	25	"
01 / 1800	12.2	128.0	1008	25	"
02 / 0000	12.2	128.8	1008	25	"



Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
02 / 0600	12.3	129.5	1008	25	"
02 / 1200	12.5	130.2	1008	25	"
02 / 1800	12.7	131.0	1007	30	"
03 / 0000	13.0	131.9	1007	30	"
03 / 0600	13.3	132.6	1007	30	"
03 / 1200	13.5	133.1	1007	30	"
03 / 1800	13.6	133.6	1007	30	"
04 / 0000	13.6	134.3	1007	30	"
04 / 0600	13.7	134.8	1007	30	"
04 / 1200	14.0	135.2	1007	30	"
04 / 1800	14.4	135.6	1007	30	tropical depression
05 / 0000	14.9	136.0	1007	30	"
05 / 0600	15.3	136.4	1006	30	"
05 / 1200	15.7	136.8	1005	35	tropical storm
05 / 1800	16.2	137.2	1004	35	"
06 / 0000	16.6	137.6	1005	35	"
06 / 0600	17.0	138.2	1006	35	"
06 / 1200	17.3	139.0	1006	35	"
06 / 1800	17.6	139.7	1008	30	tropical depression
07 / 0000	17.9	140.5	1008	25	low
07 / 0600					dissipated
05 / 1800	16.2	137.2	1004	35	minimum pressure



Table 2a. Number of hours in advance of the first 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%)	96	96
Medium (40%-60%)	42	66
High (>60%)	12	42

Table 2b. Number of hours in advance of the second 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%)	72	72
Medium (40%-60%)	66	66
High (>60%)	42	42



Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Storm Jimena, 30 July–6 August 2021. 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	27.9	<b>29.6</b>	<b>27.9</b>	<b>51.0</b>			133.0	182.5
OCD5	30.6	39.3	31.5	51.0			196.4	314.7
Forecasts	11	7	3	1	0	0	2	6
OFCL (2016-20)	21.3	33.1	44.0	54.6	65.3	76.0	95.9	116.6
OCD5 (2016-20)	33.1	69.4	107.8	147.0	183.4	219.7	280.2	342.0



Table 3b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Storm Jimena, 30 July–6 August 2021. 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	27.9	29.6	27.9	51.0			133.0	185.0
OCD5	30.6	39.3	31.5	51.0			196.4	318.5
GFSI	33.8	39.8	58.8	111.6			171.6	230.0
HMNI	35.4	30.4	35.2	<b>39.9</b>			187.3	217.8
HWFI	<b>26.8</b>	44.7	66.5	107.5			220.5	251.2
EMXI	<b>27.6</b>	39.3	46.0	68.9			184.0	346.8
CMCI	30.7	48.2	42.7	51.7			430.3	479.3
AEMI	31.6	42.0	34.6	66.2			<b>69.8</b>	<b>156.1</b>
HCCA	28.2	33.2	28.9	<b>48.0</b>			<b>104.9</b>	<b>178.2</b>
TVCX	<b>26.2</b>	<b>28.5</b>	28.5	53.2			<b>63.0</b>	<b>151.1</b>
GFEX	28.3	29.9	<b>20.0</b>	<b>36.4</b>			<b>73.3</b>	<b>153.8</b>
TVCE	<b>27.6</b>	<b>28.8</b>	33.0	69.1			<b>96.3</b>	<b>122.4</b>
TVDG	<b>25.9</b>	<b>29.4</b>	31.4	61.1			<b>60.9</b>	<b>151.8</b>
TABD	28.0	35.5	57.8	86.7			228.0	306.8
TABM	<b>26.4</b>	<b>27.0</b>	34.1	<b>49.8</b>			325.4	345.4
TABS	31.4	52.0	74.6	79.2			343.8	356.6
Forecasts	11	7	3	1	0	0	2	5



Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Jimena, 30 July–6 August 2021. 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	<b>1.8</b>	<b>2.9</b>	<b>1.7</b>	<b>0.0</b>			<b>10.0</b>	<b>13.3</b>
OCD5	3.1	4.0	2.7	4.0			31.0	27.3
Forecasts	11	7	3	1	0	0	2	6
OFCL (2016-20)	5.6	9.0	10.9	12.6	14.0	15.3	16.0	16.7
OCD5 (2016-20)	7.2	12.0	15.3	17.6	19.0	20.4	21.2	20.8

Table 4b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Storm Jimena, 30 July–6 August 2021. 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	1.8	2.9	1.7	0.0			10.0	12.0
OCD5	3.1	4.0	2.7	4.0			31.0	27.4
HWFI	2.1	3.0	1.7	0.0			18.5	13.6
HMNI	2.9	2.9	2.3	2.0			10.5	<b>7.4</b>
DSHP	2.5	3.9	4.7	2.0			28.0	25.6
LGEM	1.8	4.1	8.3	5.0			11.5	<b>9.0</b>
ICON	2.0	<b>2.6</b>	3.3	0.0			16.0	<b>9.2</b>
IVCN	2.3	<b>2.7</b>	2.7	0.0			13.0	<b>6.0</b>
IVDR	2.1	<b>2.7</b>	2.0	1.0			12.5	<b>4.4</b>
GFSI	<b>0.6</b>	<b>2.4</b>	4.3	9.0			23.0	15.0
EMXI	2.1	<b>2.3</b>	5.3	4.0			<b>0.5</b>	<b>8.0</b>
HCCA	2.6	3.7	3.3	8.0			12.0	<b>5.8</b>
Forecasts	11	7	3	1	0	0	2	5

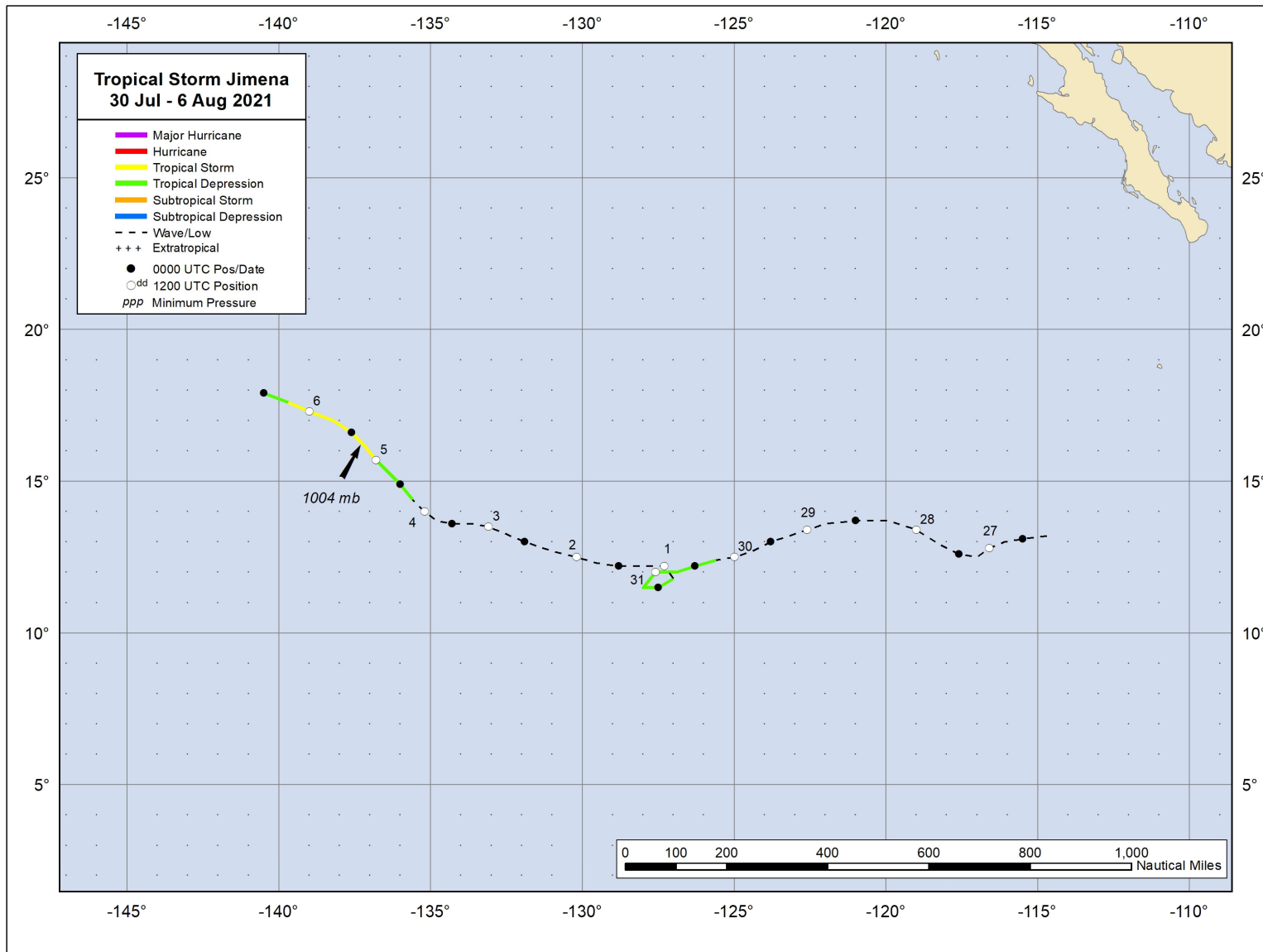


Figure 1. Best track positions for Tropical Storm Jimena, 30 July–6 August 2021.

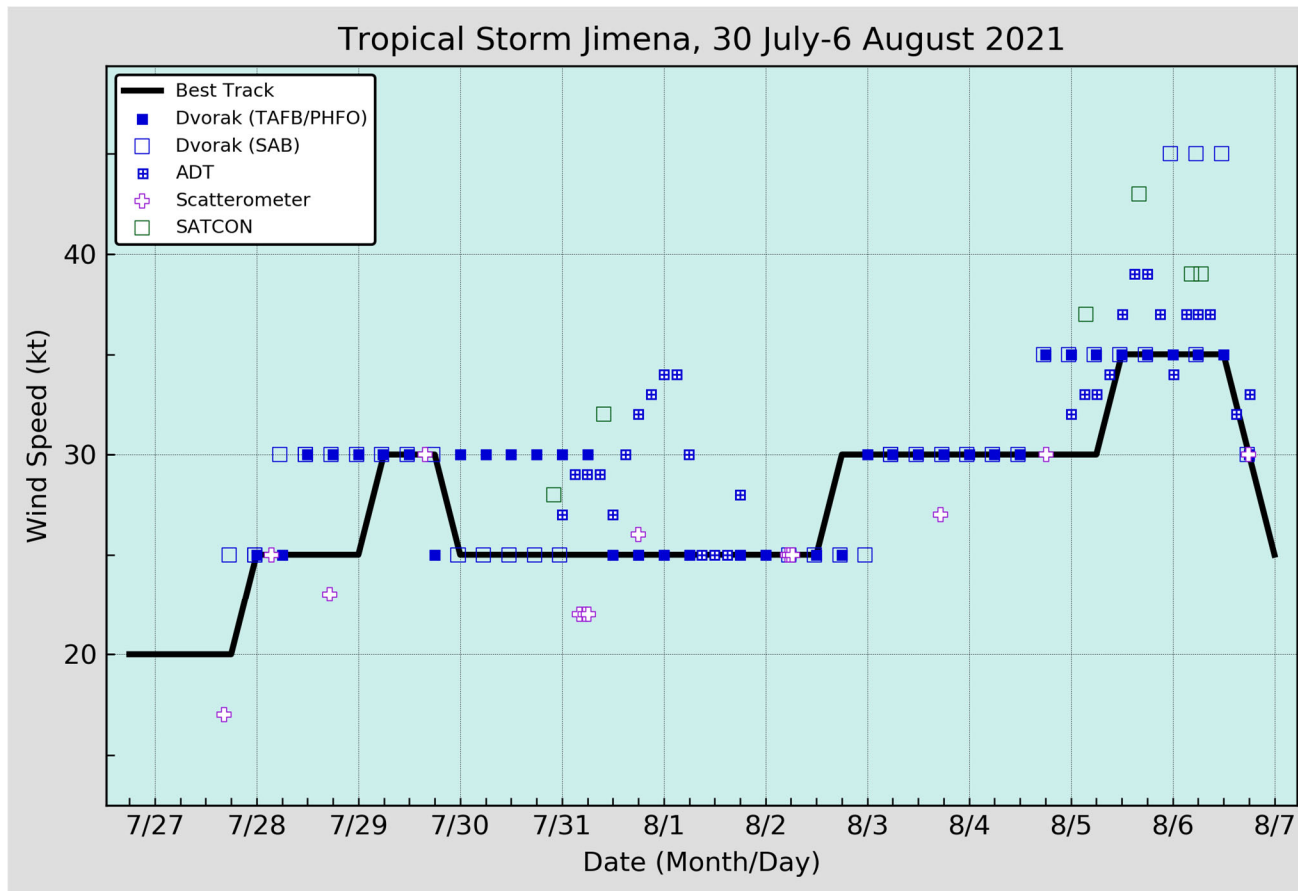


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Jimena, 30 July–6 August 2021. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.

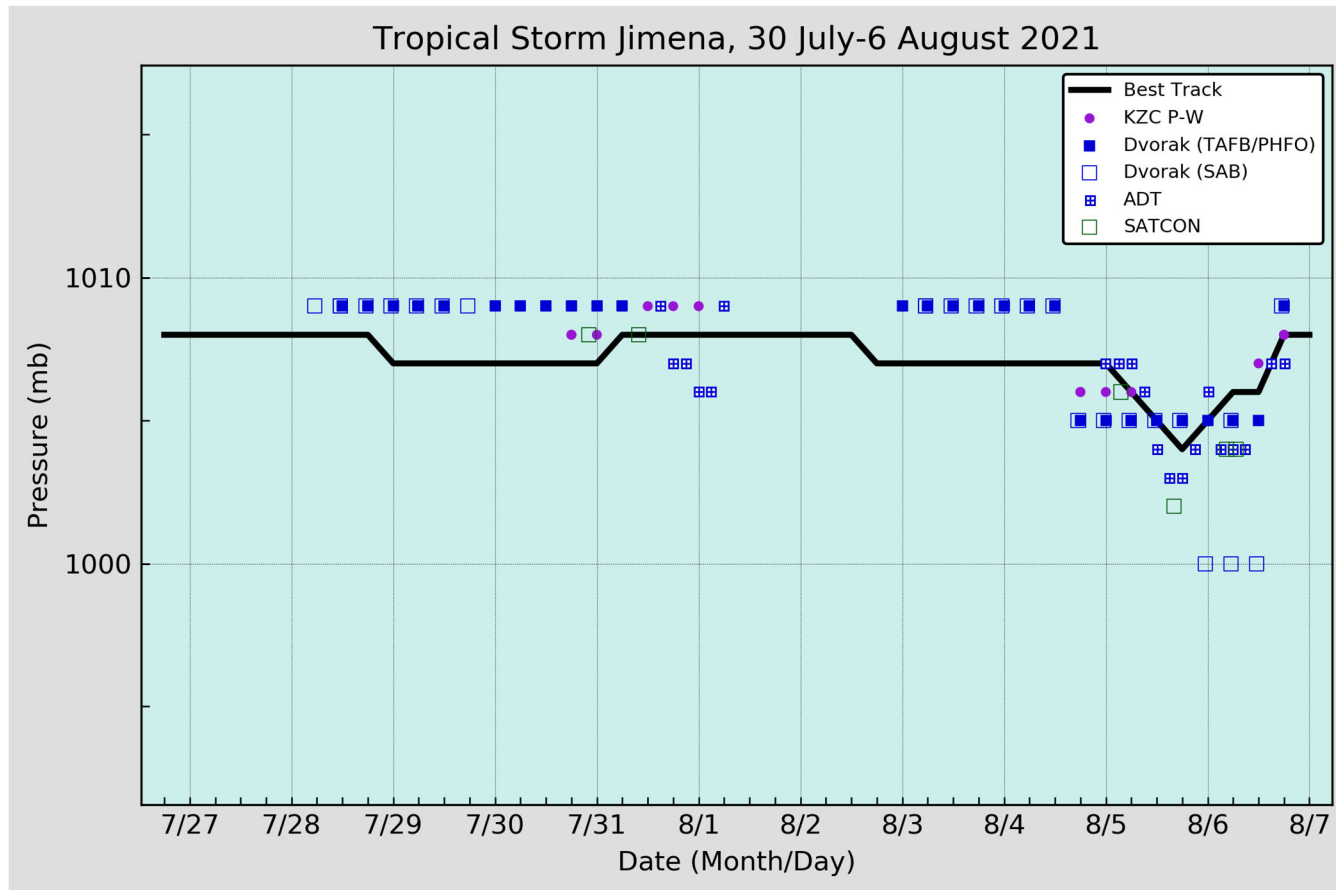


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Jimena, 30 July–6 August 2021. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for 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.