

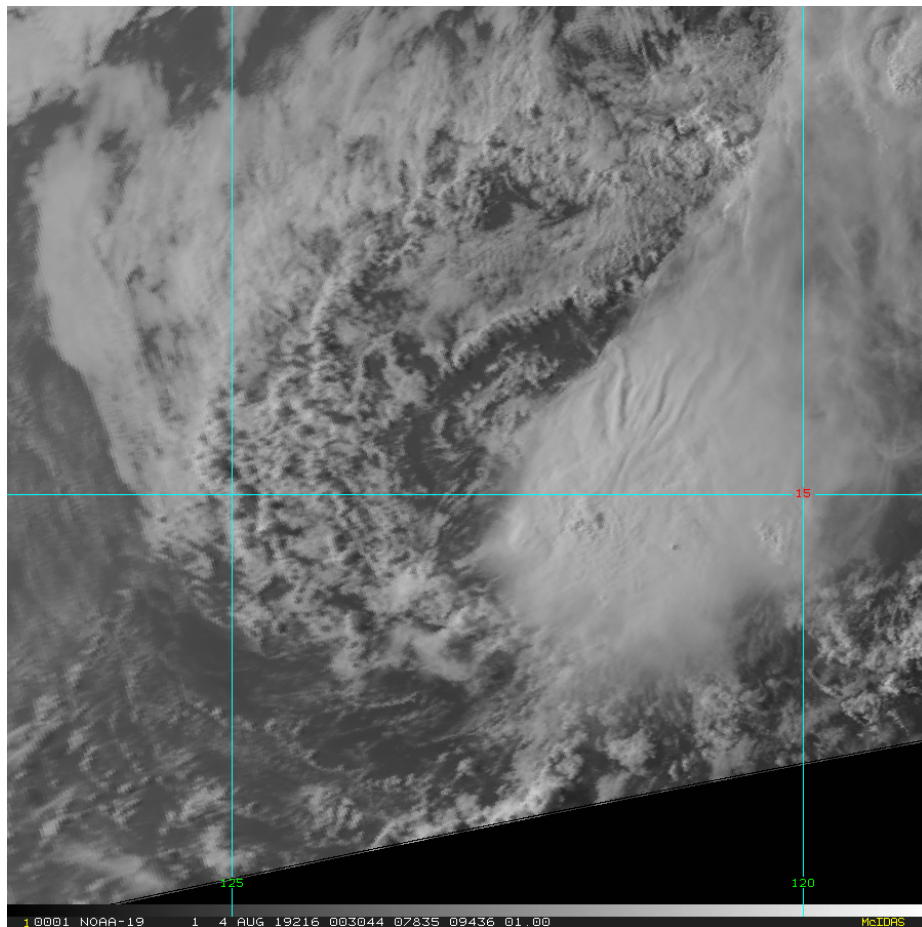


# NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

## TROPICAL STORM GIL (EP082019)

3–4 August 2019

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National Hurricane Center  
10 January 2020



NOAA19 AVHRR VISIBLE IMAGE OF GIL AT 0031 UTC 4 AUGUST 2019. IMAGE COURTESY OF THE COOPERATIVE INSTITUTE FOR RESEARCH IN THE ATMOSPHERE, FT. COLLINS, CO.

Gil was a highly-sheared and short-lived tropical storm over the open eastern Pacific.

# Tropical Storm Gil

3–4 AUGUST 2019

## SYNOPTIC HISTORY

Gil originated from a disturbance that was first noted near Central America on 28 July. It is possible that this disturbance was related to an Atlantic tropical wave (as it was referred to in the Tropical Weather Outlook [TWO]), but it cannot be reliably tracked over the Atlantic or Caribbean Sea. A broad low pressure area formed in association with the system on 31 July several hundred miles southwest of the southern coast of Mexico. Convection associated with the system gradually increased through 1 August as the low moved west-northwestward. On 2 August, the disturbance approached an upper-level trough to its west, and this caused upper-level southwesterly winds and increasing vertical wind shear over the system. Despite the shear, the disturbance's low-level center became better defined late that day about 700 n mi southwest of the southern tip of the Baja California peninsula. Early on 3 August, a strong burst of convection developed just east of the center, and a tropical depression is estimated to have formed around 0600 UTC that day about 780 n mi southwest of the southern tip of the Baja California peninsula. 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>.

The depression initially moved northwestward as it was steered by a low- to mid-level ridge to the north. A turn toward the west occurred later on 3 August, and this general motion would continue for the rest of the cyclone's life. Although the environment was not favorable for significant strengthening, convective bursts continued near the center, and the depression became a tropical storm with estimated maximum winds of 35 kt near 1800 UTC 3 August. Gil's motion carried the center under and to the west of the axis of the upper-level trough early on 4 August, and upper-level confluence and dry air led to the end of the convective bursts. The cyclone weakened to a depression around 0600 UTC that day, and it degenerated to a remnant low around 0000 UTC 5 August about 1060 n mi west-southwest of the southern tip of the Baja California peninsula. The remnant low continued westward for another 24 h before it degenerated to a trough.

## METEOROLOGICAL STATISTICS

Observations in Gil (Figs. 2 and 3) include subjective satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB) and the Satellite

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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.

Analysis Branch (SAB), and 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 Gil.

There were no surface observations of tropical-storm-force winds from Gil. The estimated peak intensity of 35 kt is based on 33-kt winds reported by the ASCAT-B instrument north of the center at 1716 UTC 3 August.

## CASUALTY AND DAMAGE STATISTICS

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

## FORECAST AND WARNING CRITIQUE

The genesis of Gil was forecast somewhere between poorly and very poorly, which is not unusual for systems that only go on to become marginal tropical cyclones. The disturbance that spawned Gil was initially indicated in the TWO as having a low chance (<30%) of genesis during the medium range (5 day) period 102 h before genesis occurred (Table 2), and the probability was raised to a medium chance (40–60%) 78 h before genesis. Subsequently, the genesis chance was decreased to the low category 30 h before genesis occurred, and it was not raised to the medium category again until after the time of genesis determined in post-analysis. For the 2 day period, a low chance of genesis was first indicated in the TWO 78 h before genesis, but it was not increased to the medium category until after genesis had occurred. The system was never given a high chance (>60%) of development in any time range. The dynamical models correctly indicated that the disturbance would struggle to develop due to the interaction with the upper-level trough, and none of them developed the system past the point where it was a marginal tropical cyclone. However, the forecaster interpretation of the marginal model forecasts was that genesis would probably not occur due to the generally unfavorable upper-level winds, and this led to the poor genesis forecasts.

A verification of NHC official track forecasts for Gil is given in Table 3. Official forecast track errors were slightly greater than the mean official errors for the previous 5-yr period, although the number of forecasts is very small because Gil was a tropical cyclone for only 36 h.

A verification of NHC official intensity forecasts for Gil is given in Table 4. Official forecast intensity errors were lower than the mean official errors for the previous 5-yr period, although the number of forecasts is again very small.



It should be noted that the small number of forecasts does not allow a meaningful verification of the model guidance for either the track or the intensity.

No coastal watches or warnings were issued for Gil.

Table 1. Best track for Tropical Storm Gil, 3–4 August 2019.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
02 / 1800	12.9	118.4	1010	25	low
03 / 0000	13.5	119.2	1009	25	"
03 / 0600	14.0	120.0	1009	25	tropical depression
03 / 1200	14.5	120.9	1008	30	"
03 / 1800	14.7	121.9	1006	35	tropical storm
04 / 0000	14.8	123.0	1006	35	"
04 / 0600	14.8	124.0	1007	30	tropical depression
04 / 1200	14.9	124.9	1009	25	"
04 / 1800	15.0	125.8	1009	25	"
05 / 0000	15.2	126.8	1009	25	remnant low
05 / 0600	15.4	127.8	1009	25	"
05 / 1200	15.5	128.8	1009	25	"
05 / 1800	15.5	129.8	1009	25	"
06 / 0000	15.5	130.8	1010	25	"
06 / 0600					dissipated
03 / 1800	14.7	121.9	1006	35	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	120-Hour Outlook
Low (<40%)	78	102
Medium (40%-60%)	n/a	78
High (>60%)	n/a	n/a

Table 3. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Storm Gil, 3–4 August 2019. 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	22.2	41.6					
OCD5	38.8	97.4					
Forecasts	4	2					
OFCL (2014-18)	21.1	32.2	41.8	51.8	75.7	101.1	133.7
OCD5 (2014-18)	34.0	69.7	109.0	148.4	223.5	285.5	356.7

Table 4. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Gil, 3–4 August 2019. 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	<b>5.0</b>	<b>5.0</b>					
OCD5	9.8	13.5					
Forecasts	4	2					
OFCL (2014-18)	6.1	10.0	12.2	13.7	15.5	15.4	15.7
OCD5 (2014-18)	7.9	13.1	16.7	19.2	21.8	22.9	22.1

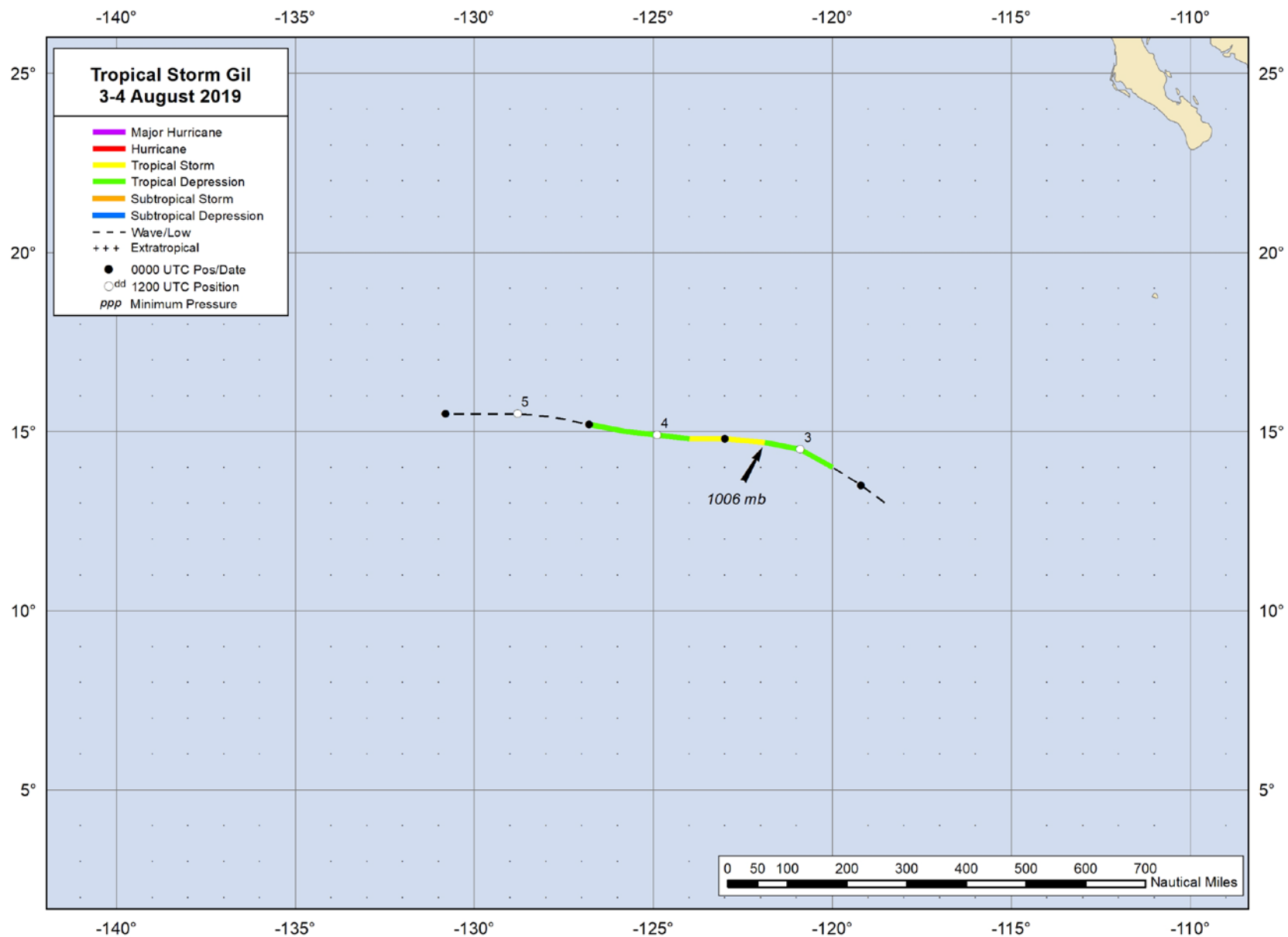


Figure 1. Best track positions for Tropical Storm Gil, 3–4 August 2019.

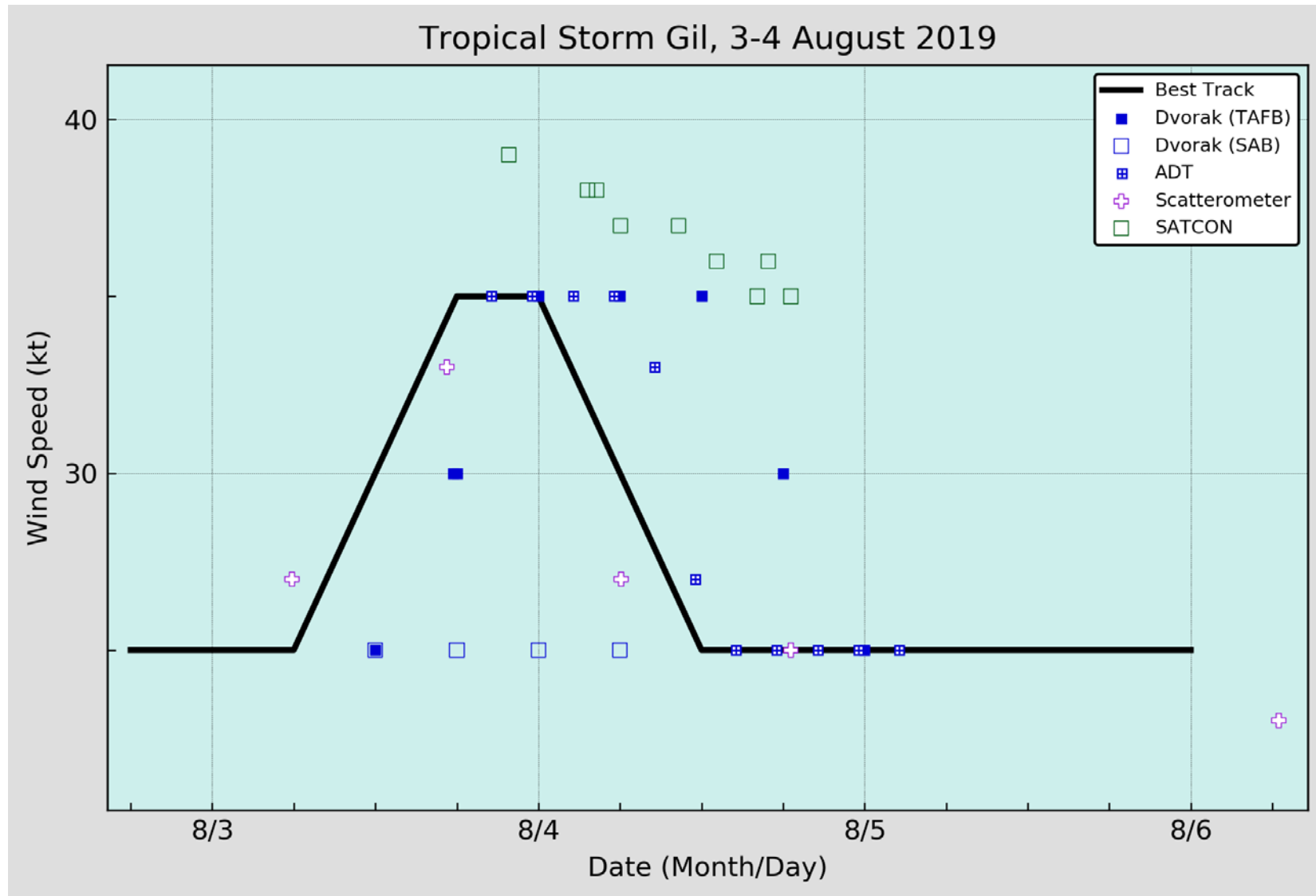


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Gil, 3–4 August 2019. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies. Dashed vertical lines correspond to 0000 UTC.



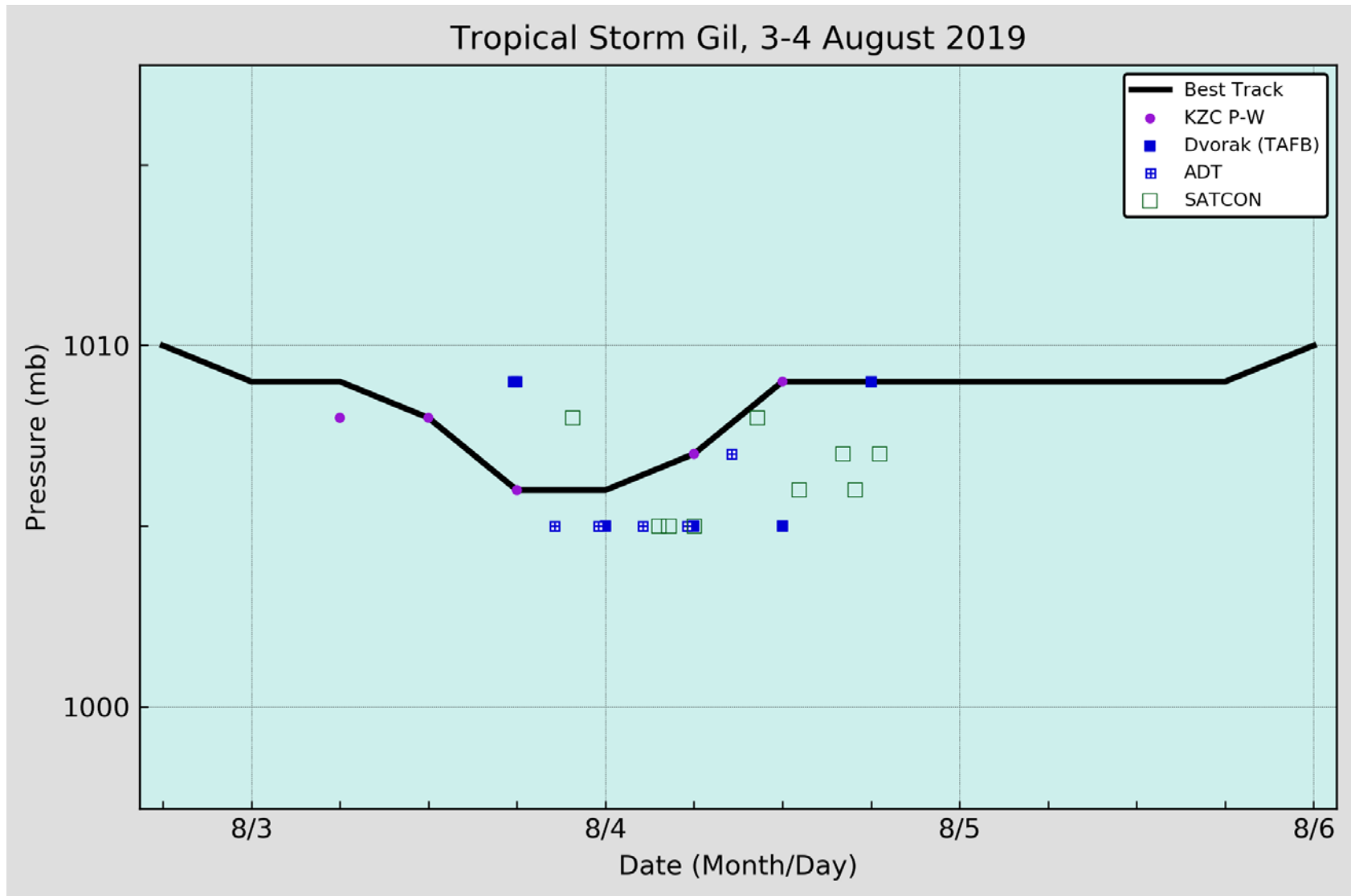


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Gil, 3–4 August 2019. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological 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.