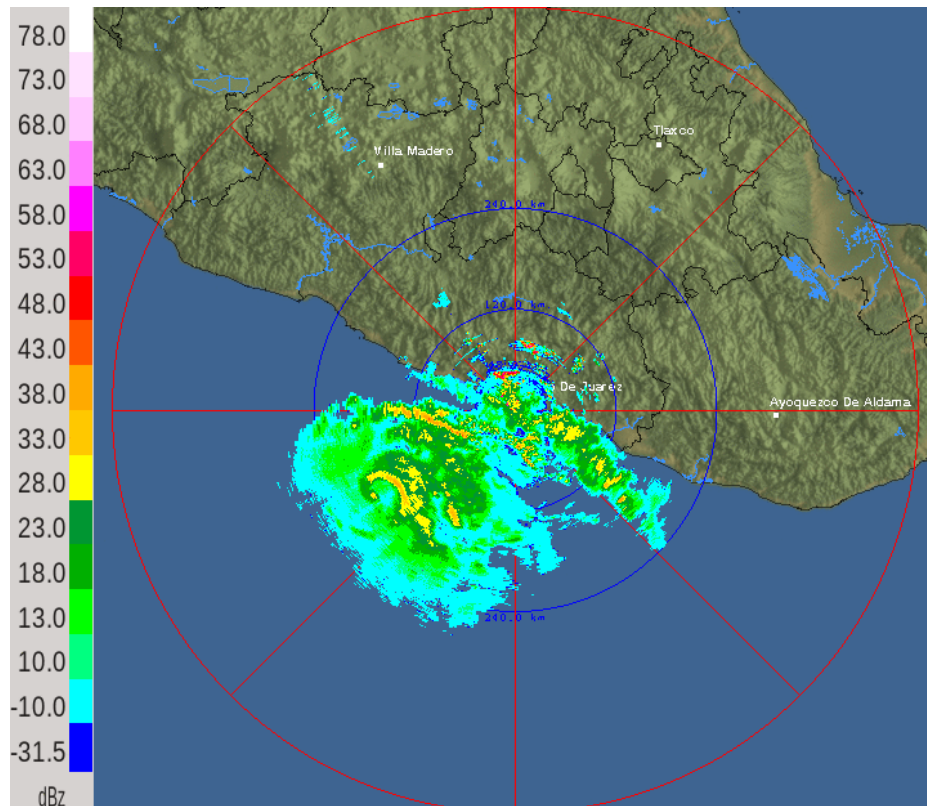# NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

TROPICAL STORM ILEANA
(EP112018)
4–7 August 2018

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National Hurricane Center
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REFLECTIVITY IMAGE FROM THE ACAPULCO RADAR AT 1200 UTC 6 AUGUST 2018. IMAGE PROVIDED BY SERVICIO METEOROLOGICO NACIONAL DE MEXICO (CONAGUA).

Ileana was an unusually small tropical cyclone that rapidly formed near the coast of Mexico and later was absorbed by a convective band associated with larger Hurricane John.

Tropical Storm Ileana

4–7 AUGUST 2018

SYNOPTIC HISTORY

It appears that the development of Ileana was associated with a poorly defined tropical wave that departed Africa on 26 July with little shower activity. Since the wave was convectively inactive, it was difficult to track across the tropical Atlantic and the Caribbean Sea. Once the wave crossed Central America and reached the eastern Pacific early on 4 August, the thunderstorm activity rapidly increased and significantly improved in organization despite the wave being very close to a stronger disturbance to the west that later became Hurricane John. The development occurred so fast that by 1800 UTC that day, the system was designated a tropical depression in the Gulf of Tehuantepec about 200 n mi south-southeast of Puerto Angel, Mexico. 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[1].

The outflow from the stronger disturbance to the west caused northwesterly shear over the depression, and the low-level center became temporarily exposed to the north of the convection, resulting in little change in intensity for the next several hours. However, a central dense overcast developed near the center of the cyclone shortly thereafter, and scatterometer data indicate that the depression became Tropical Storm Ileana at 1200 UTC 5 August. Despite the shear, Ileana continued to strengthen over warm waters while it moved toward the west-northwest very near the southwest coast of Mexico. Ileana reached a peak intensity of 55 kt at 1200 UTC 6 August about 100 n mi southwest of Acapulco, Mexico. After that time, Ileana's cloud pattern gradually became disrupted by the large circulation of Hurricane John located just to its west and by the interaction of Ileana's circulation with the nearby Sierra Madre Mountains. Ileana quickly became absorbed by one of the outer bands of John and by 1200 UTC 7 August it dissipated just west of Cabo Corrientes, Mexico.

METEOROLOGICAL STATISTICS

Observations in Ileana (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). The best track also incorporates objective Advanced Dvorak Technique (ADT) and Satellite Consensus (SATCON) estimates from the Cooperative Institute for Meteorological Satellite Studies/University of Wisconsin-Madison. Data and imagery from NOAA

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[1] 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.

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 Ileana. Radar images from Acapulco, Mexico, were extremely useful in determining the structure of Ileana. These images were provided in real time by the Servicio Meteorologico Nacional de Mexico.

The peak intensity estimate of 55 kt at 1200 UTC 6 August is based on an average of objective and subjective Dvorak estimates. At that time, the cyclone appeared best organized in satellite imagery and in radar images from Acapulco, which showed a partial eyewall structure (cover image).

CASUALTY AND DAMAGE STATISTICS

The Mexican newspaper *El Universal* reported that there were 4 deaths attributed to Ileana in Mexico. Three people drowned in flooded rivers in the town of Chilpacingo, Guerrero, and the fourth one drowned and swept off the beach by high waves. Numerous houses were flooded in the Costa Grande area in the state of Guerrero.

FORECAST AND WARNING CRITIQUE

The genesis of Ileana was not well forecast. The disturbance from which Ileana formed was introduced in the 5-day Tropical Weather Outlook (TWO) with a low chance (<40%) of formation only 30 h prior to genesis, and reached the medium category (40–60%) just 6 h before formation (Table 2). The 48 h chance of formation never reached the medium category. Ileana was a very small cyclone that formed very close to the coast of Mexico, and it was anticipated in the TWOs that the interaction with land would inhibit formation. Therefore, low chances of genesis were assigned in the short range.

A verification of NHC official track forecasts for Ileana is given in Table 3a. Official forecast track errors were greater than the mean official errors for the previous 5-yr period except at 12 h. A homogeneous comparison of the official track errors with selected guidance models is given in Table 3b. The EMXI model performed better than the official forecast at all forecast times, although the sample size is small.

A verification of NHC official intensity forecasts for Ileana is given in Table 4a. Official forecast intensity errors were in general much larger than the long-term mean official errors for the previous 5-yr period, except at 36 h. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 4b. Most of the dynamical hurricane models performed better than the NHC forecast from 12 to 36 h, but again the sample size was small. The NHC intensity forecasts did not capture the timing of Ileana's intensification that began late on 5 August or the timing of Ileana's weakening and dissipation due to absorption by John, which occurred sooner than forecast.

Coastal watches and warnings associated with Ileana are given in Table 5.

Table 1.   Best track for Tropical Storm Ileana, 4–7 August 2018.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
04 / 1800	12.3	94.5	1008	25	tropical depression
05 / 0000	12.8	95.5	1008	25	"
05 / 0600	13.0	96.3	1006	30	"
05 / 1200	13.3	97.1	1006	35	tropical storm
05 / 1800	13.6	97.9	1003	45	"
06 / 0000	14.1	98.8	1001	50	"
06 / 0600	14.9	100.0	999	50	"
06 / 1200	15.8	101.2	998	55	"
06 / 1800	16.7	102.6	999	55	"
07 / 0000	17.7	104.2	999	50	"
07 / 0600	19.0	106.0	1002	45	"
07 / 1200					disturbance absorbed by John
06 / 1200	15.8	101.2	998	55	maximum winds/ minimum pressure

Table 2.   Number of hours in advance of Ileana's 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%)	30	30
Medium (40%-60%)	-	6
High (>60%)	-	-

Table 3a.   NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Ileana. 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	**20.9**	37.5	58.2	87.5			
OCD5	52.8	112.1	150.8	173.8			
Forecasts	9	7	5	3			
OFCL (2013-17)	21.8	33.2	43.0	53.9	80.7	111.1	150.5
OCD5 (2013-17)	34.9	70.7	109.1	146.1	213.8	269.0	339.7

Table 3b.   Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Storm Ileana. 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	72	96	120
OFCL	20.7	35.9	50.9	90.7			
OCD5	52.3	125.1	130.8	257.5			
GFSI	46.4	125.3	199.4	138.3			
HMNI	**18.5**	**32.2**	**18.3**	102.3			
HWFI	**18.5**	45.3	75.0	111.5			
EMXI	**20.4**	**33.5**	**48.3**	**63.9**			
CMCI	56.9	136.4	222.2	325.9			
NVGI	29.1	46.5	88.7	168.9			
AEMI	48.1	120.8	160.3	154.9			
HCCA	28.7	67.5	83.0	96.2			
TVCX	23.6	58.7	76.0	**79.8**			
GFEX	28.2	76.9	106.8	90.7			
TVCE	24.0	60.5	67.7	**66.0**			
TABD	55.2	133.8	191.5	307.1			
TABM	34.2	41.0	**46.0**	**66.3**			
TABS	27.9	**29.1**	**24.7**	**25.7**			
Forecasts	6	2	1	1	0	0	0

Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Ileana. 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	8.3	13.6	12.0	**6.7**			
OCD5	6.0	9.1	12.2	20.0			
Forecasts	9	7	5	3			
OFCL (2013-17)	5.8	9.6	11.8	13.2	15.1	15.1	14.6
OCD5 (2013-17)	7.6	12.4	15.6	17.7	19.8	20.8	19.6

Table 4b.   Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Storm Ileana. 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	72	96	120
OFCL	8.3	10.0	15.0	0.0			
OCD5	**3.8**	10.5	**8.0**	27.0			
HWFI	**5.0**	**5.5**	**1.0**	22.0			
HCCA	**4.5**	10.0	**1.0**	15.0			
DSHP	**7.0**	15.0	17.0	2.0			
LGEM	**6.8**	13.0	21.0	11.0			
GFSI	9.7	**7.5**	**6.0**	42.0			
EMXI	9.0	**6.0**	**8.0**	3.0			
HMNI	**2.5**	**6.5**	**14.0**	35.0			
NVGI	**5.5**	10.5	**13.0**	7.0			
AEMI	11.7	**8.0**	**11.0**	9.0			
Forecasts	6	2	1	1	0	0	0

Table 5.   Watch and warning summary for Tropical Storm Ileana, 4–7 August 2018.

| Date/Time (UTC)	Action	Location
5 / 2100	Tropical Storm Watch issued	Lazaro Cardenas to Cabo Corrientes
6 / 0300	Tropical Storm Watch upgraded to Warning	Lazaro Cardenas to Cabo Corrientes
6 / 0900	Tropical Storm Watch issued	Los Barilles to Todos Santos
6 / 0900	Hurricane Watch issued	Punta San Telmo to Playa Perula
6 / 1200	Tropical Storm Warning modified to	Tecpan de Galeana to Cabo Corrientes
6 / 2100	Tropical Storm Watch discontinued	All
6 / 2100	Hurricane Watch discontinued	All
7 / 0900	Tropical Storm Warning discontinued	All
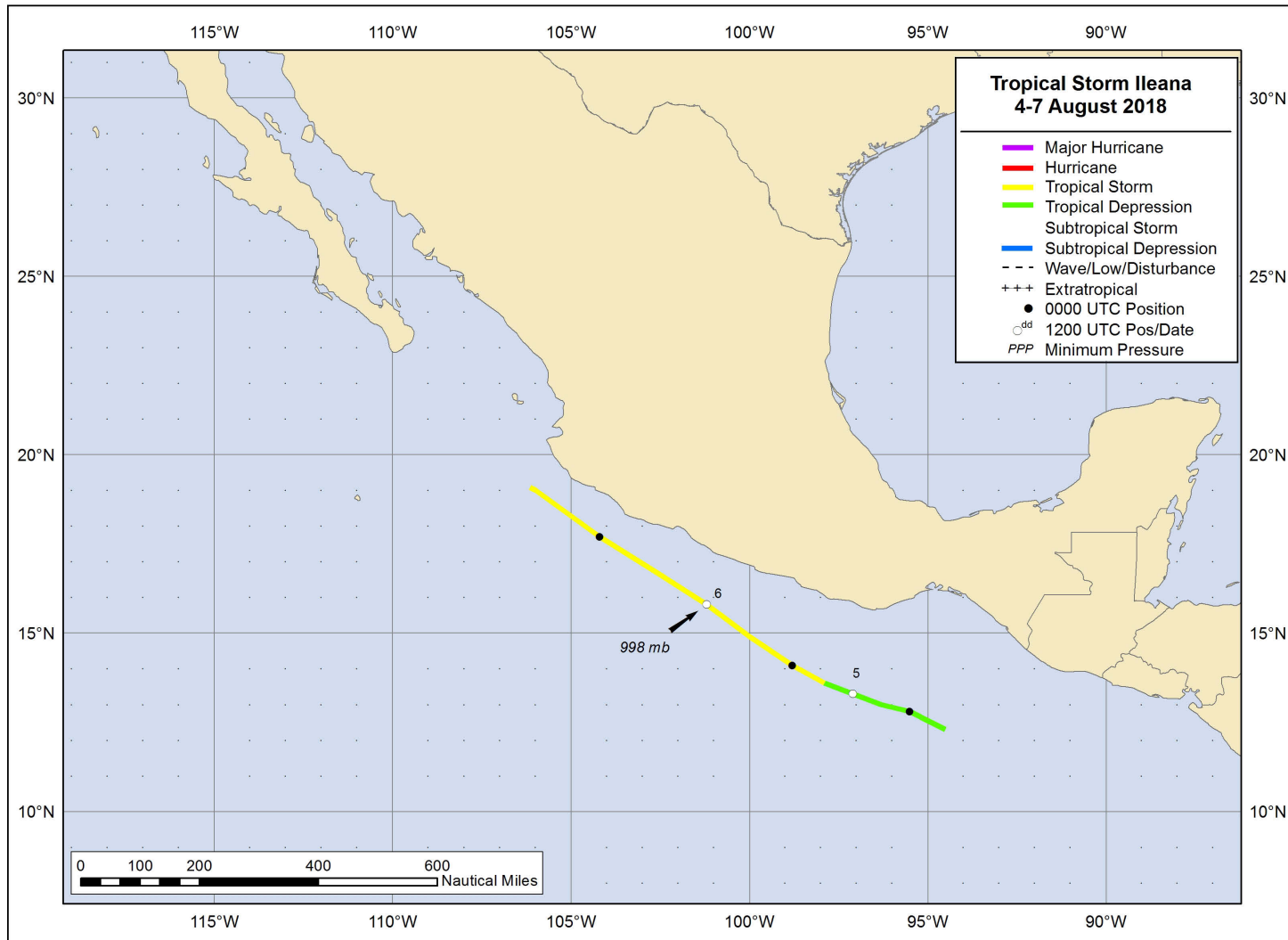
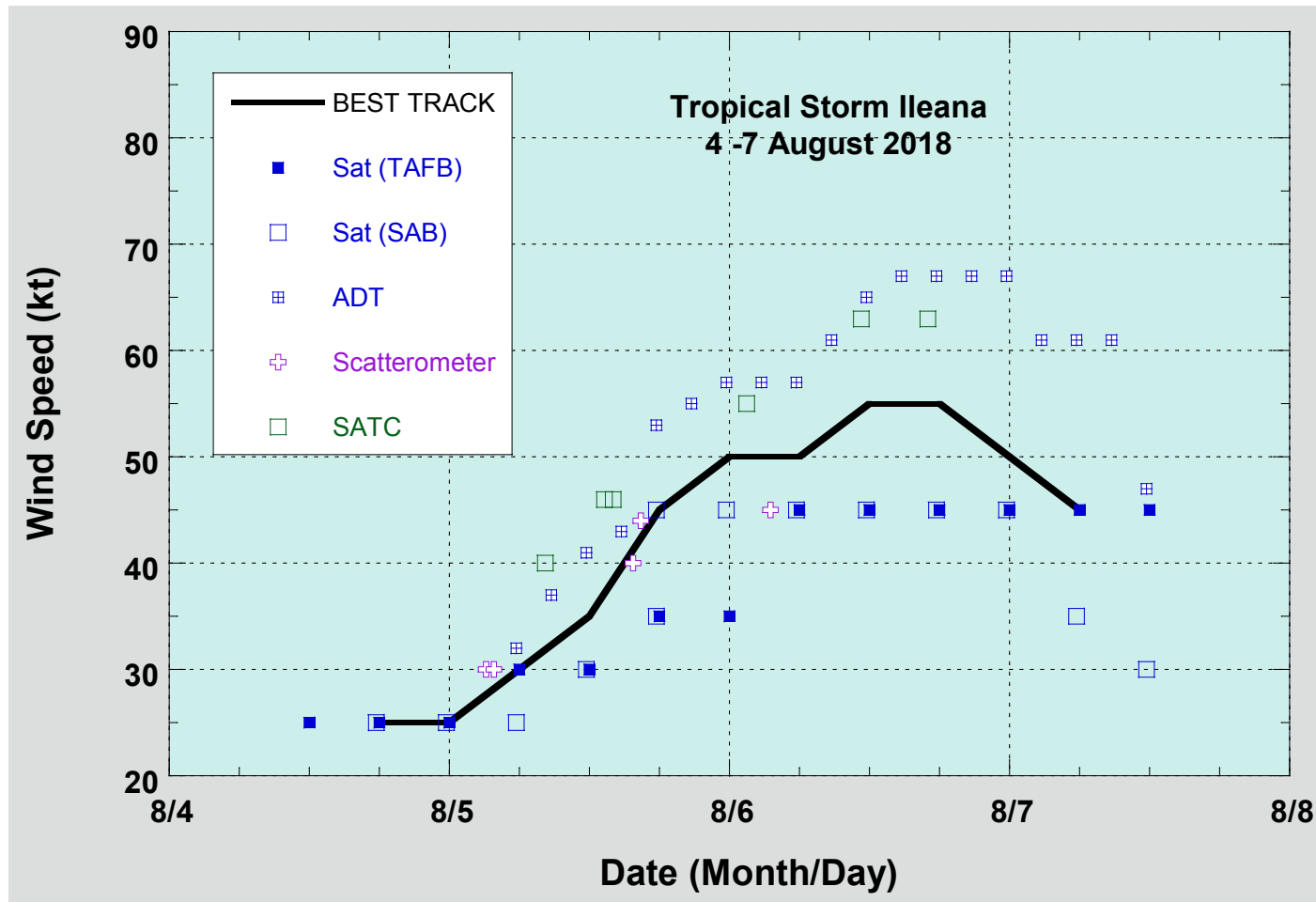Figure 1.   Best track positions for Tropical Storm Ileana, 4–7 August 2018.

Figure 2.   Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Ileana, 4–7 August 2018. 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 technique. Dashed vertical lines correspond to 0000 UTC.
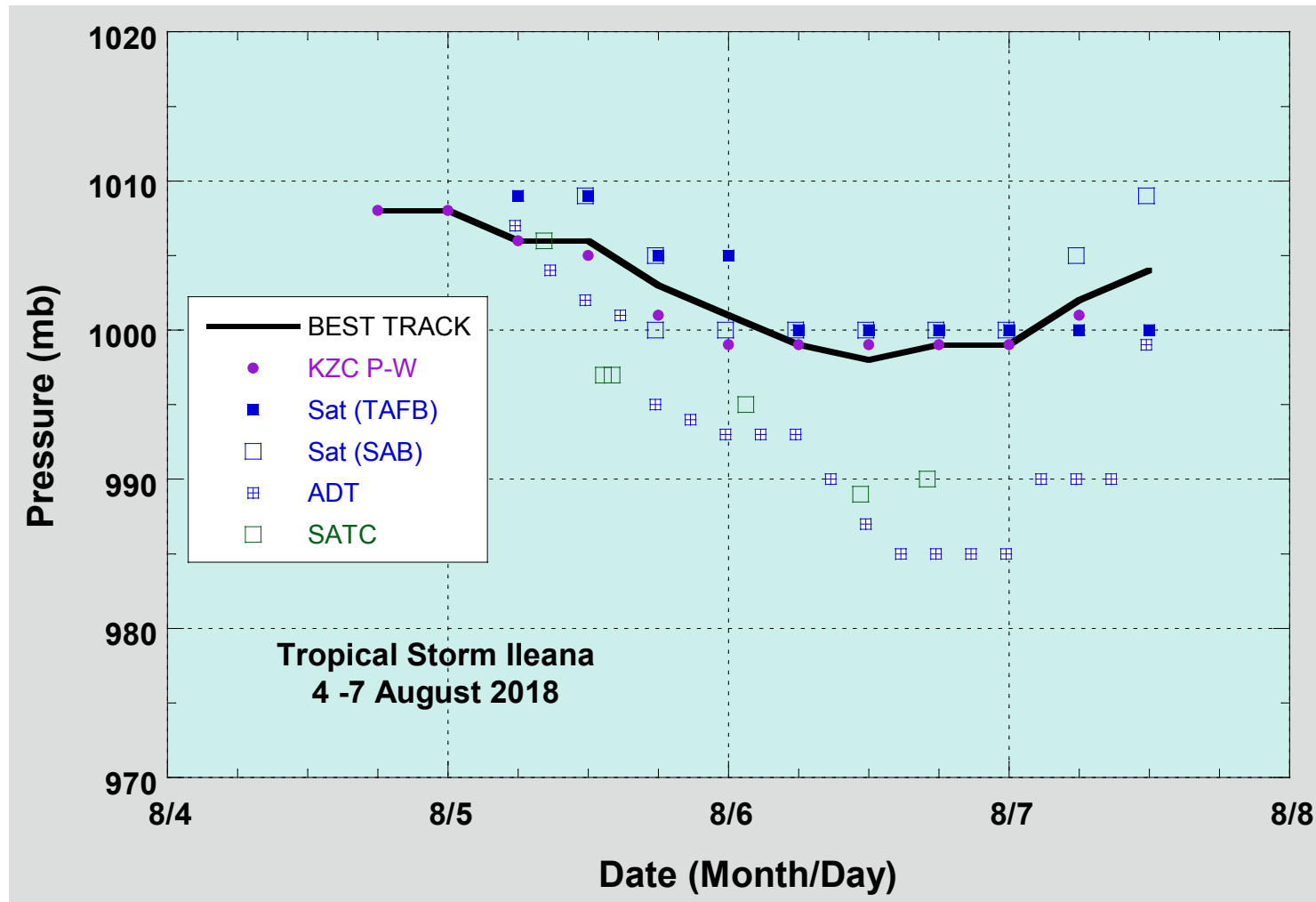
Figure 3.   Selected pressure observations and best track minimum central pressure curve for Tropical Storm Ileana, 4–7 August 2018. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. SATCON intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. KZC P-W refers to pressure estimates derived using the Knaff-Zehr-Courtney pressure-wind relationship. Dashed vertical lines correspond to 0000 UTC.