



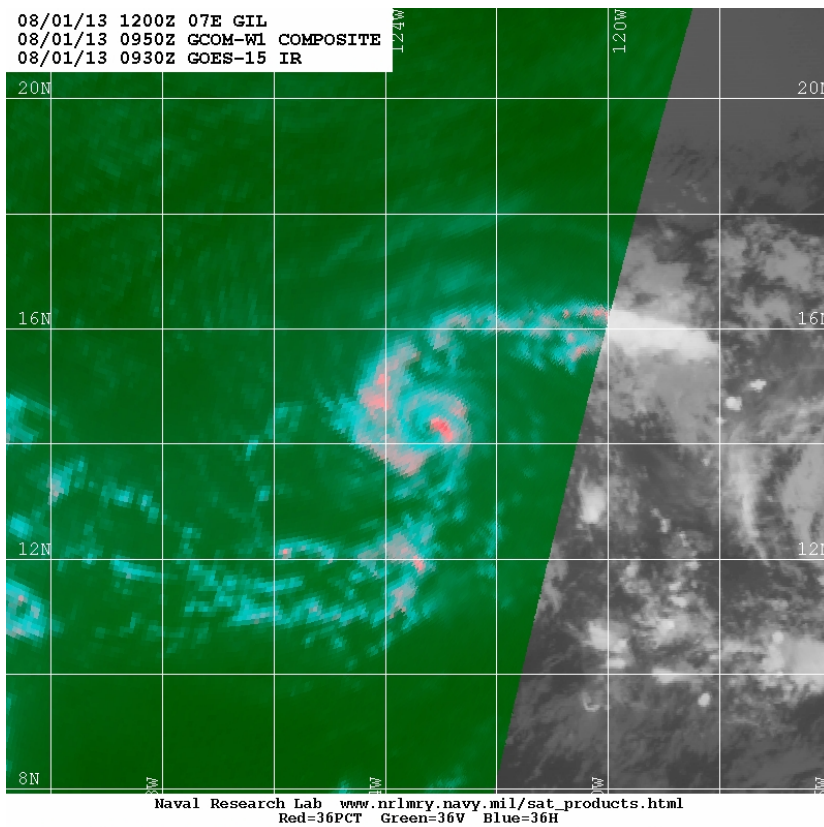
NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

HURRICANE GIL (EP072013)

30 July – 6 August 2013

John L. Beven II
National Hurricane Center

Sam Houston
Central Pacific Hurricane Center
6 February 2014



37 GHZ MICROWAVE IMAGE OF GIL FROM THE AMSR-2 INSTRUMENT ON THE JAPANESE GCOM SATELLITE AT 0950 UTC 1 AUGUST. IMAGE COURTESY NAVAL RESEARCH LABORATORY.

Gil was a category 1 hurricane (on the Saffir-Simpson Hurricane Wind Scale) that formed in the western portion of the eastern North Pacific basin. It crossed into the central Pacific basin before dissipating.

Hurricane Gil

30 JULY – 6 AUGUST 2013

SYNOPTIC HISTORY

Gil developed from a tropical wave that emerged from the coast of Africa on 16 July. The wave moved westward with little distinction, reaching the eastern North Pacific basin on 24 July. The associated convection increased somewhat from 25-28 July, although it was poorly organized. The system spawned a broad low pressure area on 29 July, and the associated convection showed increased organization early on 30 July, resulting in the formation of a tropical depression at 1200 UTC that day about 890 n mi south-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 1¹.

The cyclone initially had a small circulation, and it would retain this characteristic throughout its lifetime. The small size may have contributed to an initial rapid development, as the system intensified into a tropical storm 6 h after genesis and reached hurricane strength 24 h later. Initially, Gil moved west-northwestward to the south of a strong mid-level ridge, but turned toward the west on 1 August. Later that day, Gil reached an estimated peak intensity of 75 kt while centered about 975 n mi west-southwest of the southern tip of the Baja California peninsula. On 2 August, increasing westerly vertical wind shear, possibly accompanied by dry air entrainment, caused Gil to weaken to a tropical storm. On 3 August, the low- to mid-level ridge built southward to the west of Gil, which led to the cyclone turning west-southwestward, and this general motion would continue through 5 August. On 4 August, Gil weakened to a tropical depression, with the associated convection occurring in intermittent bursts. The system turned westward late on 5 August and crossed into the central Pacific hurricane basin early the next day. A strong burst of convection allowed Gil to briefly regain tropical storm strength on 6 August, but this was followed by a quick degeneration to an open trough early on 7 August about 925 n mi east-southeast of the Hawaiian Islands. The remnants of Gil moved west-northwestward before dissipating completely on 8 August.

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), the Satellite Analysis Branch (SAB), the Central Pacific Hurricane Center (CPHC), and the Joint Typhoon

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.

Warning Center. They also include objective Advanced Dvorak Technique (ADT) 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 Tropical Rainfall Measuring Mission (TRMM), 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 or greater winds from Gil.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The genesis of Gil was poorly forecast. Gil's precursor disturbance was first mentioned in the Tropical Weather Outlook only 24 h before the time of genesis in the best track, when it was given a low (less than 30%) chance of development. The development chance was raised to medium (30%-50% chance) 6 h before genesis, and was raised to high (greater than 50%) only at the time of genesis. The poor forecasts might have been due to an expectation that the precursor disturbance would develop slowly due to being embedded in the Intertropical Convergence Zone.

A verification of NHC official track forecasts for Gil is given in Table 2a. Official forecast track errors were lower than the mean official errors for the previous 5-yr period for all forecast times, as were the forecast track errors for climatology and persistence (OCD5). A homogeneous comparison of the official track errors with selected guidance models is given in Table 2b. The official track forecast errors were generally lower than that of the model guidance, although the variable consensus model TVCE had lower errors at 24, 36, 96 and 120 h. In addition, the European Center for Medium Range Weather Forecasting Model (EMXI) had low track forecast errors, especially from 72-120 h.

A verification of NHC official intensity forecasts for Gil is given in Table 3a. Official forecast intensity errors were lower than the mean official errors for the previous 5-yr period at all times except 36 h. However, the official forecast errors were larger than those of OCD5 at 24 and 36 h, indicating that the forecasts at these times lacked skill. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 3b. Generally, the official forecasts had lower errors than the intensity guidance, with the exception of the LGEM at 24 and 36 h and the HWFI at 72-120 h. The official forecast errors had a notable positive bias from 24-120 h. This mainly resulted from forecasts that incorrectly called



for Gil to maintain its intensity for several days after becoming a hurricane, and thus were too strong when the storm actually weakened.

Gil was a tropical cyclone in the central Pacific basin for only 12-18 h, and thus no meaningful forecast verification is available for the forecasts issued by the CPHC.

Coastal watches and warnings were not necessary for Gil.



Table 1. Best track for Hurricane Gil, 30 July – 6 August 2013. Track west of 140°W was produced by the Central Pacific Hurricane Center in Honolulu, Hawaii.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
30 / 0000	11.2	111.6	1009	20	low
30 / 0600	11.7	112.9	1009	20	"
30 / 1200	12.1	114.2	1008	25	tropical depression
30 / 1800	12.5	115.6	1005	35	tropical storm
31 / 0000	12.8	116.9	1002	40	"
31 / 0600	13.1	118.1	1001	45	"
31 / 1200	13.4	119.2	997	55	"
31 / 1800	13.7	120.2	993	65	hurricane
01 / 0000	13.9	121.2	990	70	"
01 / 0600	14.2	122.3	990	70	"
01 / 1200	14.3	123.5	990	70	"
01 / 1800	14.3	124.6	987	75	"
02 / 0000	14.4	125.8	985	75	"
02 / 0600	14.5	126.9	985	75	"
02 / 1200	14.6	128.0	990	65	"
02 / 1800	14.6	129.0	992	60	tropical storm
03 / 0000	14.7	130.0	995	55	"
03 / 0600	14.9	131.0	998	50	"
03 / 1200	15.2	132.1	999	50	"
03 / 1800	15.4	133.1	1001	45	"
04 / 0000	15.1	134.0	1003	40	"
04 / 0600	14.7	134.8	1006	35	"
04 / 1200	14.5	135.5	1007	30	tropical depression
04 / 1800	14.3	136.2	1007	30	"
05 / 0000	14.1	136.8	1007	25	"
05 / 0600	13.8	137.5	1007	25	"
05 / 1200	13.7	138.2	1007	25	"
05 / 1800	13.6	139.0	1006	30	"



06 / 0000	13.5	139.8	1006	30	"
06 / 0600	13.4	140.3	1006	35	tropical storm
06 / 1200	13.3	140.9	1006	35	"
06 / 1800	13.3	141.5	1008	30	tropical depression
07 / 0000	13.4	142.2	1010	25	dissipated
02 / 0000	14.4	125.8	985	75	maximum winds and minimum pressure



Table 2a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Hurricane Gil, 30 July – 6 August 2013. 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	21.0	35.9	45.8	56.2	73.6	96.6	135.6
OCD5	22.7	42.8	69.5	107.4	189.4	250.3	328.9
Forecasts	27	26	24	22	18	14	10
OFCL (2008-12)	27.0	43.1	57.8	71.9	101.7	137.2	165.9
OCD5 (2008-12)	37.4	73.0	114.9	158.3	238.4	313.5	389.1

Table 2b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Hurricane Gil, 30 July – 6 August 2013. 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 2a due to the homogeneity requirement.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	22.3	36.6	47.8	56.6	66.9	88.5	115.5
OCD5	25.2	46.9	77.0	119.2	214.5	285.9	364.9
GFSI	29.8	58.8	86.7	115.3	168.8	208.0	196.5
GHMI	25.5	46.0	68.1	84.8	115.4	137.1	160.0
HWFI	32.0	53.6	74.9	90.8	107.9	95.4	144.9
NGXI	26.4	47.2	66.6	86.0	145.4	205.1	196.2
EMXI	30.5	45.8	60.6	75.2	61.3	33.7	37.2
CMCI	21.6	36.5	49.1	67.7	89.5	157.5	210.0
TVCE	22.5	36.1	47.0	56.6	72.0	78.5	90.7
AEMI	25.3	47.4	75.0	97.5	129.7	164.2	192.0
LBAR	32.8	67.9	105.8	134.2	185.9	193.6	152.6
BAMS	26.5	42.0	56.0	74.6	96.1	143.1	212.2
BAMM	33.4	59.9	88.9	127.4	192.7	256.2	323.9
BAMD	37.3	71.1	110.4	183.6	269.1	343.3	417.2
Forecasts	22	21	19	17	13	9	6

Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Hurricane Gil, 30 July – 6 August 2013. 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	5.2	10.2	13.5	14.1	14.4	13.6	8.0
OCD5	6.4	9.7	13.2	16.6	23.2	26.0	24.7
Forecasts	27	26	24	22	18	14	10
OFCL (2008-12)	6.3	10.5	13.4	14.5	15.3	17.0	17.3
OCD5 (2008-12)	7.6	12.5	16.5	18.8	20.4	20.3	20.6

Table 3b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Hurricane Gil, 30 July – 6 August 2013. 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	5.2	10.2	13.5	14.1	14.4	13.6	8.0
OCD5	6.4	9.7	13.2	16.6	23.2	26.0	24.7
HWFI	6.4	10.9	14.0	15.2	11.3	10.1	6.0
GHMI	9.3	15.1	19.4	20.3	18.3	14.5	9.5
DSHP	6.7	10.7	14.0	17.1	20.9	17.6	9.9
LGEM	6.5	10.1	13.2	15.1	17.3	16.9	11.2
ICON	7.2	11.5	15.1	16.5	15.8	12.9	8.2
IVCN	7.2	11.5	15.1	16.5	15.9	12.9	8.2
Forecasts	27	26	24	22	18	14	10

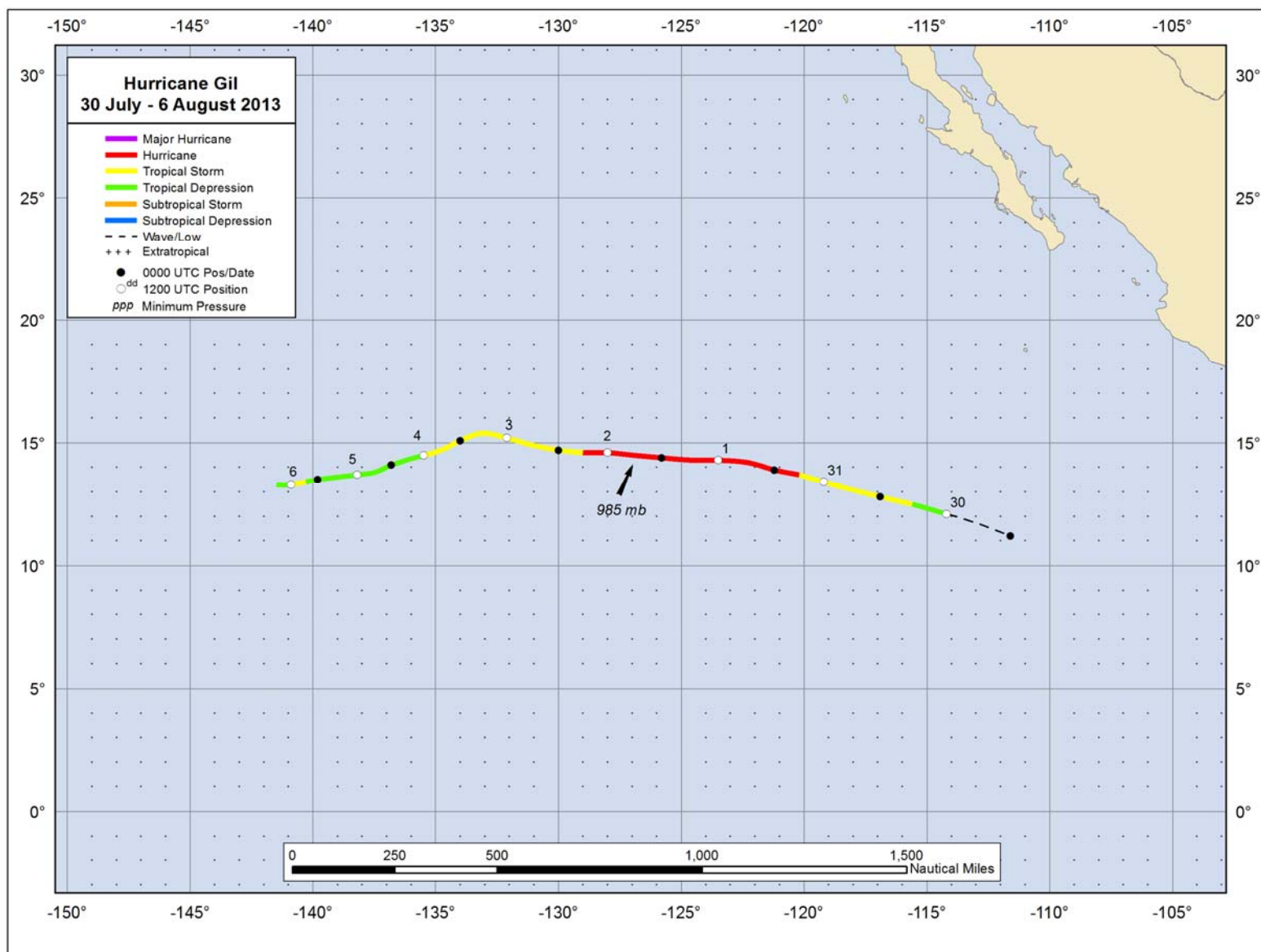


Figure 1. Best track positions for Hurricane Gil, 30 July – 6 August 2013. Track west of 140°W was produced by the Central Pacific Hurricane Center in Honolulu, Hawaii.

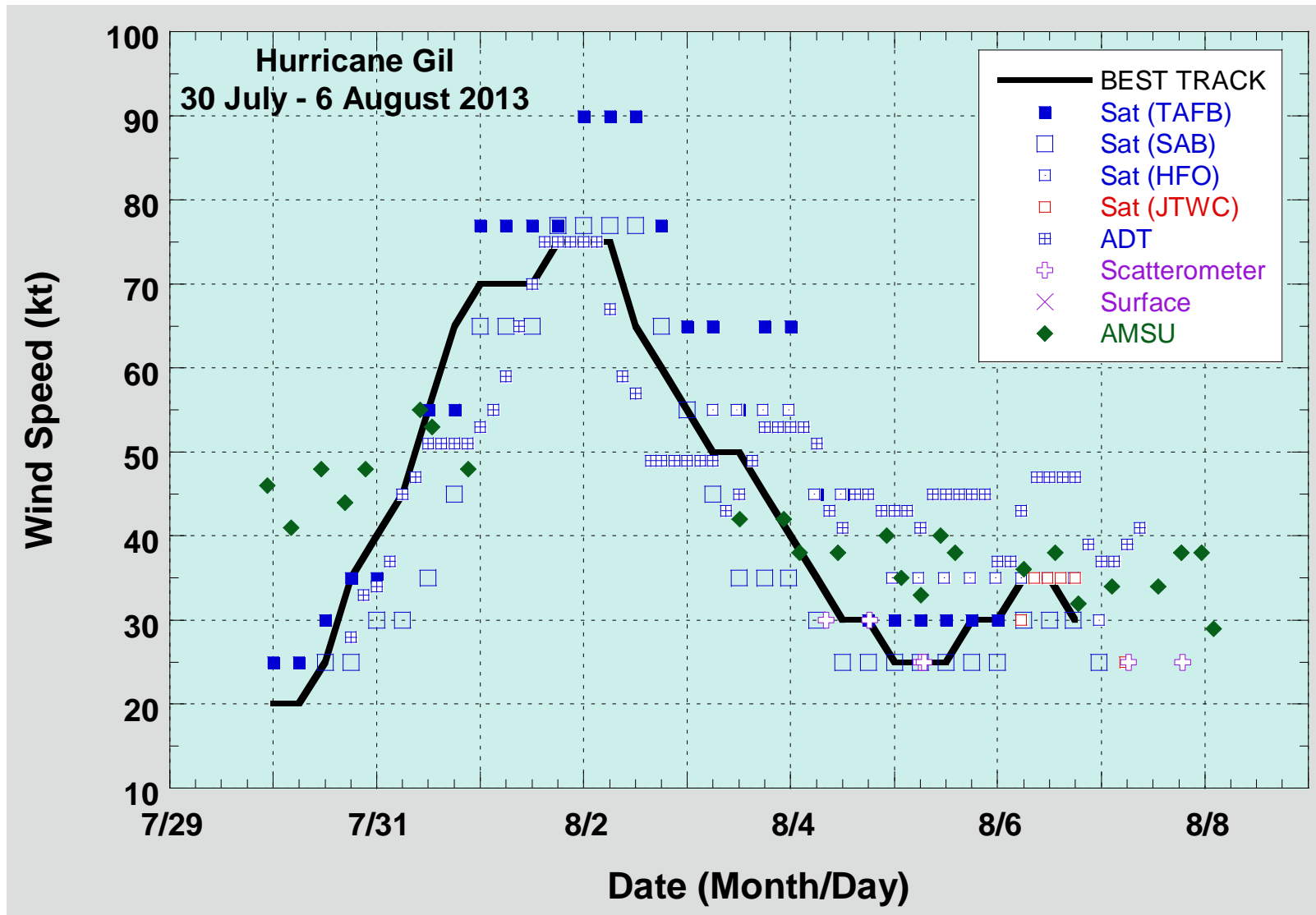


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Gil, 30 July – 6 August 2013. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.

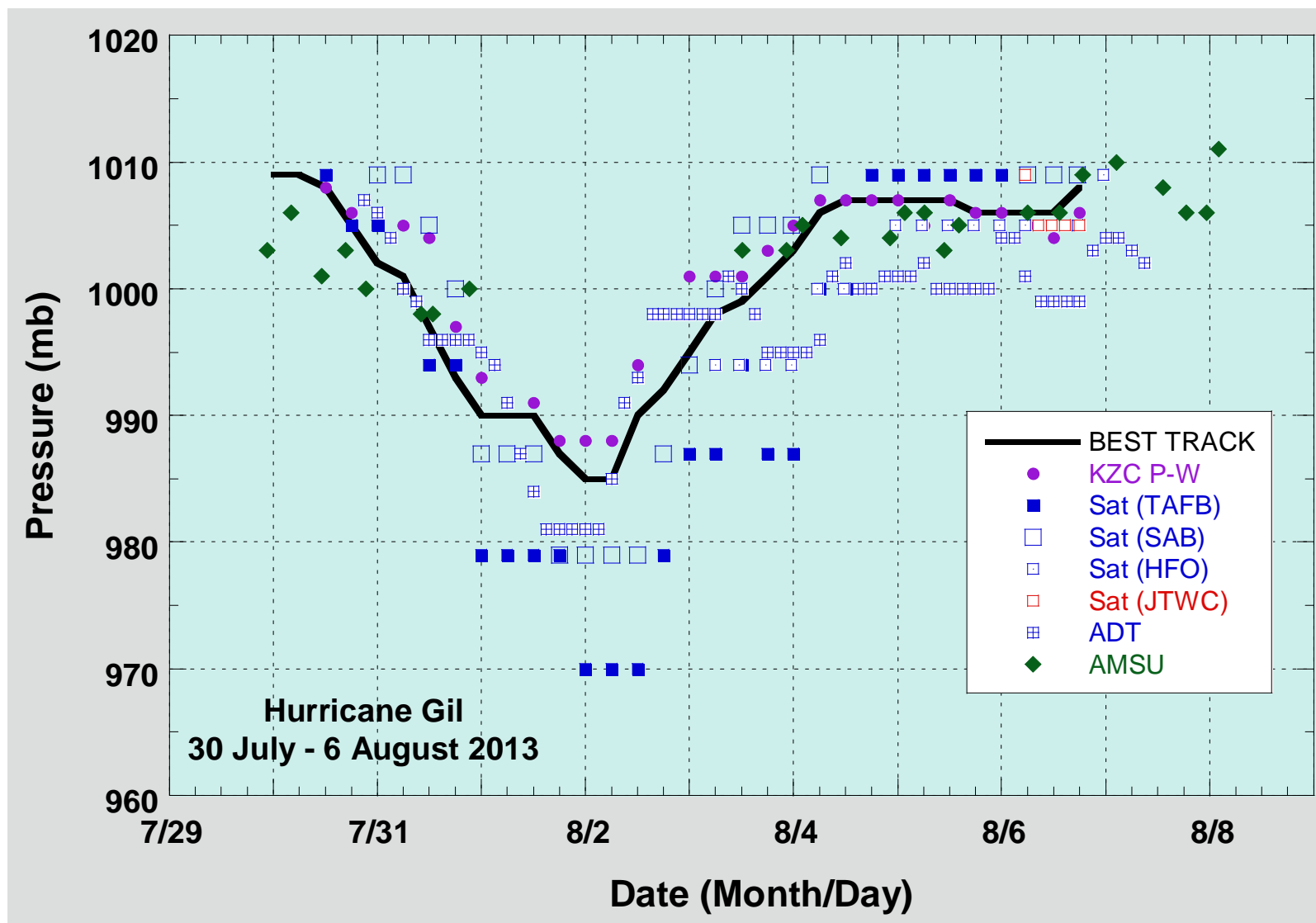


Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Gil, 30 July – 6 August 2013. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological 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.