NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT

HURRICANE IGNACIO

(EP122015)

25 August–4 September 2015

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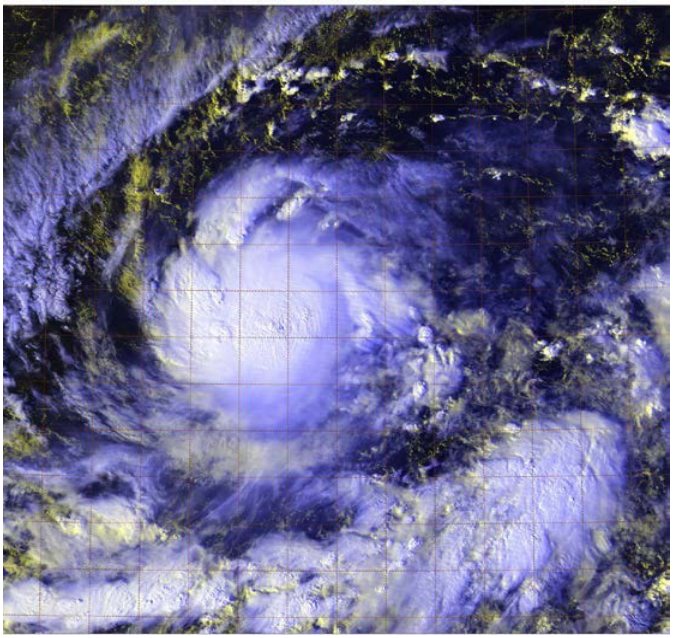
17 August 2018[1]



NPP VIIRS LUNAR REFLECTANCE IMAGE OF IGNACIO AT 1035 UTC 27 AUGUST 2015. IMAGE COURTESY OF NRL MONTEREY.

Ignacio was part of a multiple cyclone outbreak in the central and eastern North Pacific basin in late August and early September. It became a major hurricane in the central Pacific basin.

[1] Original report date 20 January 2016. Updated 17 August 2018 to include final best track and additional analysis from CPHC.

Hurricane Ignacio

25 AUGUST–4 SEPTEMBER 2015

SYNOPTIC HISTORY

The origin of Ignacio is a bit obscure. The cyclone appears to have formed from a cloud cluster first seen near 10°N 110°W on 17 August at the eastern end of a segment of the Intertropical Convergence Zone (ITCZ). At the time, the ITCZ was re-forming in the wake of a disruption caused by Tropical Depression Eleven-E, which dissipated on 18 August west of the Baja California peninsula. Due to the influence of the depression, the cloud cluster from which Ignacio developed cannot be reliably traced to a tropical wave or any other disturbance farther east. After the depression dissipated, the cloud cluster moved slowly westward along the ITCZ with little development for a couple of days. Subsequently, an eastward-moving Kelvin wave created a large-scale environment more favorable for convection and tropical cyclogenesis, and this likely aided the formation of a low pressure area in association with the disturbance on 21 August. The low became better defined late on 23 August, and shortly thereafter the associated convection first showed signs of organization. Continued slow development led to the formation of Tropical Depression Twelve-E near 0000 UTC 25 August about 1285 n mi west-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[2].

The depression moved westward on the south side of the subtropical ridge until it became a tropical storm about 18 h after genesis. A southward reformation of the center occurred between 1800 UTC 25 August and 0000 UTC 26 August, and this started an overall west-southwestward motion. The steadily strengthening cyclone became a hurricane near 0000 UTC 27 August, at which time it turned west-northwestward. After that, Ignacio crossed 140°W into the Central Pacific basin just before 1800 UTC that day with estimated maximum winds of 80 kt.

Once over the central Pacific, Ignacio continued west-northwestward with little change of intensity until 29 August, when it turned northwestward and intensified rapidly, becoming a major hurricane by 1200 UTC 29 August. Ignacio then reached a peak intensity of 125 kt near 0600 UTC 30 August while located about 445 n mi east-southeast of Hilo, Hawaii. Gradual weakening occurred during the next several days due to increasing southwesterly vertical wind shear, as Ignacio continued moving steadily to the northwest, and by 0000 UTC 2 September the system had weakened to a 60 kt tropical storm. After a short period of time as a tropical storm, abating vertical wind shear along with anomalously warm sea surface temperatures to the north of the Hawaiian Islands allowed Ignacio to regain minimal hurricane intensity at 1800

[2] 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.

UTC 2 September. Ignacio weakened to a tropical storm once again around 1800 UTC 3 September, as associated deep convection decreased, likely due to the combination of moderate southwesterly vertical wind shear and increasingly marginal sea surface temperatures as the system approached 30°N. Ignacio turned northward on 4 September, and late that day the deep convection dissipated. This led to Ignacio being declared a storm-force post-tropical low near 0000 UTC 5 September about 875 n mi north-northwest of Honolulu, Hawaii.

The post-tropical low continued moving northward through 6 September, then turned sharply to the east-northeast and accelerated along an approaching cold front, while becoming fully extratropical around 0600 UTC 7 September. The low finally merged with the cold front several hundred miles to the south of southern Alaska and was no longer identifiable by 1800 UTC 8 September.

METEOROLOGICAL STATISTICS

Observations in Ignacio (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), and objective Advanced Dvorak Technique (ADT) estimates from the Cooperative Institute for Meteorological Satellite Studies/University of Wisconsin-Madison (UW-CIMSS). Observations in the central Pacific basin also include satellite intensity estimates from the Central Pacific Hurricane Center (PHFO) and the Joint Typhoon Warning Center (JTWC). Observations over the central Pacific also include flight-level, stepped frequency microwave radiometer (SFMR), and dropwindsonde observations from flights of the 53rd Weather Reconnaissance Squadron (53WRS) of the U. S. Air Force Reserve Command. 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 Ignacio.

Winds and Pressure

The 53WRS conducted six reconnaissance missions into Hurricane Ignacio at the 700-mb level when the cyclone was located to the southeast and east of the Hawaiian Islands on 29–31 August. Those missions resulted in seventeen center fixes. The maximum flight-level wind measured was 133 kt at 1931 UTC 29 August. The strongest SFMR surface wind measured was 126 kt at 0517 UTC 30 August. The strongest surface wind measured by a dropwindsonde in the eyewall was 102 kt at 0551 UTC 31 August.

The lowest pressure measured in the eye of Ignacio by a dropwindsonde was 943 mb at 0346 UTC 30 August. This dropwindsonde also reported a surface wind of 12 kt, so the minimum central pressure at that time is estimated to be 942 mb.

Ignacio's estimated peak intensity of 125 kt and minimum pressure of 942 mb at 0600 UTC 30 August is based primarily on the aircraft data detailed above. This is further supported

by satellite intensity estimates of T6.0/115 kt from PHFO, SAB, and JTWC, as well as an estimate of T6.3/122 kt from UW-CIMSS ADT.

There were no ship or land-based reports of tropical-storm force or greater winds associated with Ignacio. NOAA buoy 51000, located near 23.5°N 153.8°W (or about 245 n mi northeast of Honolulu) reported maximum sustained winds of 53 kt and a peak gust of 69 kt at 1150 UTC 1 September. This buoy also reported a minimum pressure of 976 mb three hours later at 1450 UTC.

Rainfall and Flooding

Ignacio passed 200 to 250 n mi northeast of the main Hawaiian Islands on 31 August through 2 September, bringing a large area of deep tropical moisture over the islands. This moisture lingered over the state for a few more days as Ignacio tracked away to the north, leaving weak southerly flow in its wake. Within this anomalously moist and unstable environment, occasional bands of heavy rainfall developed, and numerous flood advisories along with several flash flood warnings were issued by the Honolulu Weather Forecast Office (WFO) from 31 August through 5 September. One of these heavy rain bands moved over the southern coast of Oahu on 3 September, producing thunderstorms and torrential rainfall over downtown Honolulu with maximum rainfall rates of 3 to 4 inches per hour. Several roads became impassable and businesses and properties in low-lying areas were significantly inundated by flood waters. The largest rainfall totals across the state for the period 31 August through 5 September were observed on Kauai, including 19.70 inches on Mount Waialeale, 13.88 inches at North Wailua Ditch and 8.81 inches at Kilohana. Other notable rainfall totals during this time period included 6.56 inches at Poamoho RG 1 on Oahu, and 4.83 inches at Kaupo Gap on Maui.

Surf and Storm Surge

Large swells generated by Ignacio produced surf heights of up to 20 ft along east-facing shores of the Hawaiian Islands from 29 August through 2 September. High surf advisories and warnings were issued by the Honolulu WFO to warn of the dangerous surf conditions. Lifeguards made numerous water rescues of people in distress during this time. Wave run-up and overwash from the large surf occasionally deposited sand and other debris on roadways along east-facing shores, however there were no reports of serious property damage.

No storm surge was observed in association with Ignacio.

CASUALTY AND DAMAGE STATISTICS

There were no reports of casualties associated with Ignacio. There was inundation damage to some business in urban Honolulu caused by flash flooding on the island of Oahu occurring on 3 September, however no estimated damage totals are available.

FORECAST AND WARNING CRITIQUE

The genesis forecasts for Ignacio were of mixed quality. The system was first mentioned in the Tropical Weather Outlook about 108 h before genesis, at which time it was given a low (less than 40%) chance of development during the 5-day forecast period (Table 2). This probability was raised to a medium (40–60%) chance 6 h later. However, the chance of development in the 5-day period was not raised to the high (greater than 60%) category until 30 hours before genesis. The system was given a low chance of development in the 2-day period 96 h prior to genesis. It was given a medium chance of development in that category 24 h before genesis and a high chance 12 h before genesis. One possible reason for the relatively slow increase in the probabilities was that the shower activity associated with the precursor disturbance was limited and disorganized on 21–22 August.

A verification of NHC official track forecasts for Ignacio is given in Table 3a. Official forecast track errors were greater than the mean official errors for the previous 5-yr period through 48 h, but were lower than the 5-yr mean for 72–120 h. A homogeneous comparison of the official track errors with selected guidance models is given in Table 3b. The consensus model TCON had lower errors than the official forecasts at all forecast times except 120 h, and the variable consensus model TVCE was also better than the official forecasts at all times except 12 h. Examination of individual official forecasts (not shown) indicate that the larger forecast errors at 12–48 h resulted from an incorrectly forecast westward motion on 26 August. The actual motion was west-southwestward.

A verification of NHC official intensity forecasts for Ignacio is given in Table 4a. Official forecast intensity errors were lower than the mean official errors for the previous 5-yr period through 48 h, then greater than the 5-yr mean for 72–120 hr. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 4b. The Florida State Superensemble had the overall best performance of the intensity guidance, and its errors were lower than those of the official forecasts at all times except 48 h. The large errors at the longer forecast time resulted from an underestimation of how much strengthening would occur on 29–30 August.

A verification of CPHC official track forecasts for Ignacio is given in Table 5a. Official forecast track errors were lower than the mean official errors for the previous 5-yr period for all forecast times. A homogeneous comparison of the official track errors with selected guidance models in given in Table 5b. The Florida State Superensemble (FSSE) had the lowest errors of all models through 72 h, with the consensus model TCON having the lowest errors thereafter. Many guidance models including the FSSE, TCON, TVCE, GFS, ECMWF, UKMET and the GFS/ECMWF consensus (GFEX) all performed better than the official track forecasts for all forecast times. Analysis of individual official and guidance forecasts (not shown) indicates that the official forecasts were consistently along the left (southern) edge of the guidance envelope during the time period 28–30 August when Ignacio was moving west-northwest to the east of the Hawaiian Islands. Ignacio's actual track subsequently turned more to the northwest, therefore the official forecasts ended up with larger errors than did many of the reliable track guidance models. Overall, both the official track forecasts and the track guidance models performed well

with Ignacio, as shown by the official errors being lower than the 5-yr mean errors for all forecast periods.

A verification of CPHC official intensity forecasts for Ignacio is given in Table 6a. Official forecast intensity errors were slightly higher (1–2 kt) than the mean official errors for the previous 5-yr period through 24 h, then were lower than the mean errors for the previous 5-yr period, with all mean errors below 10 kt, from 36 h through 120 h. A homogeneous comparison of the official intensity errors with selected guidance models is given in Table 6b. The consensus intensity models FSSE, ICON and IVCN all performed very well with Ignacio, with lower errors than the official intensity forecasts for many time periods, and mean errors below 10 kt for all time periods. The GFS and ECMWF did not perform well on their intensity forecasts, with mean errors significantly greater than the other intensity guidance at 24 h and beyond, and mean errors near or greater than OCD5 at some of the longer time periods.

Coastal watches and warnings associated with Ignacio are given in Table 7. The initial tropical storm watch was issued for the Big Island of Hawaii at 1500 UTC 29 August, with the tropical storm watch expanded to cover the Islands of Maui, Molokai, Lanai and Kahoolawe at 0300 UTC 30 August. Once it became clear that the track of Ignacio would remain sufficiently far north and east of the main Hawaiian Islands to keep associated tropical storm conditions well offshore, all tropical storm watches were discontinued at 0300 UTC 31 August.

Table 1. Best track for Hurricane Ignacio, 25 August–4 September 2015.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
23 / 1800	12.3	129.3	1009	25	low
24 / 0000	12.3	129.5	1008	25	"
24 / 0600	12.5	129.9	1008	25	"
24 / 1200	12.8	130.3	1007	25	"
24 / 1800	13.0	130.6	1007	30	"
25 / 0000	13.1	131.1	1007	30	tropical depression
25 / 0600	13.1	131.6	1006	30	"
25 / 1200	13.0	132.2	1005	30	"
25 / 1800	12.8	132.8	1004	35	tropical storm
26 / 0000	12.4	133.3	1003	40	"
26 / 0600	12.2	134.1	1001	45	"
26 / 1200	12.0	135.0	999	50	"
26 / 1800	11.8	135.9	998	55	"
27 / 0000	12.0	136.9	992	65	hurricane
27 / 0600	12.3	137.9	985	75	"
27 / 1200	12.6	139.0	982	80	"
27 / 1800	12.9	140.2	982	80	"
28 / 0000	13.3	141.4	981	80	"
28 / 0600	13.7	142.6	980	80	"
28 / 1200	14.1	143.5	979	80	"
28 / 1800	14.5	144.2	978	80	"
29 / 0000	14.9	144.9	976	80	"
29 / 0600	15.2	145.5	974	80	"
29 / 1200	15.7	146.1	961	100	"
29 / 1800	16.1	146.6	953	120	"
30 / 0000	16.6	147.2	947	120	
30 / 0600	17.1	147.7	942	125	"
30 / 1200	17.9	148.2	950	115	"
30 / 1800	18.6	148.7	959	105	"

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
31 / 0000	19.3	149.2	961	100	"
31 / 0600	20.0	149.8	963	100	"
31 / 1200	20.6	150.5	965	90	"
31 / 1800	21.3	151.2	968	90	"
01 / 0000	22.0	151.9	971	85	"
01 / 0600	22.6	152.6	973	80	"
01 / 1200	23.1	153.3	975	75	"
01 / 1800	23.6	154.1	981	65	"
02 / 0000	24.2	155.0	984	60	tropical storm
02 / 0600	24.9	155.8	984	60	"
02 / 1200	25.7	156.7	984	60	"
02 / 1800	26.4	157.7	982	65	hurricane
03 / 0000	27.1	158.9	981	65	"
03 / 0600	27.8	160.1	981	65	"
03 / 1200	28.4	161.1	982	65	"
03 / 1800	29.1	162.1	984	60	tropical storm
04 / 0000	29.9	162.9	984	60	"
04 / 0600	30.9	163.5	984	60	"
04 / 1200	31.9	163.9	984	60	"
04 / 1800	33.3	164.1	984	60	"
05 / 0000	34.8	164.4	985	55	low
05 / 0600	36.1	164.8	986	55	"
05 / 1200	37.3	165.0	986	55	"
05 / 1800	38.8	165.0	986	55	"
06 / 0000	40.3	165.0	988	55	"
06 / 0600	41.7	165.0	992	50	"
06 / 1200	43.0	165.0	996	45	"
06 / 1800	44.0	165.0	998	45	"
07 / 0000	45.0	164.0	998	45	"
07 / 0600	46.0	161.5	998	45	extratropical
07 / 1200	47.0	159.0	996	45	"

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
07 / 1800	48.0	156.0	996	45	"
08 / 0000	49.5	152.0	998	45	"
08 / 0600	51.0	147.0	998	40	"
08 / 1200	52.0	143.0	998	40	"
08 / 1800					dissipated
30 / 0600	17.1	147.7	942	125	maximum wind 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%)	96	108
Medium (40%-60%)	24	102
High (>60%)	12	30

Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Hurricane Ignacio, 25 August–4 September 2015. 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	30.1	49.2	66.9	78.3	**81.2**	**74.2**	**117.3**
OCD5	43.0	78.5	115.8	145.9	201.4	236.1	286.0
Forecasts	11	11	11	11	11	11	11
OFCL (2010-14)	23.4	36.4	47.2	59.4	89.0	123.6	159.5
OCD5 (2010-14)	36.6	74.2	116.5	159.7	245.6	331.1	427.4

Table 3b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Hurricane Ignacio, 25 August–4 September 2015. 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	27.0	45.8	58.0	68.6	57.3	57.1	134.2
OCD5	39.4	70.2	101.6	133.5	181.6	236.5	321.4
GFSI	**23.2**	38.8	**42.2**	**46.5**	**43.1**	101.6	177.7
GHMI	29.0	48.9	60.5	72.8	77.1	67.2	**97.7**
HWFI	35.9	57.8	65.5	70.7	102.8	185.4	252.2
EGRI	27.1	**44.0**	65.5	93.6	123.4	103.3	174.0
EMXI	34.4	60.2	82.0	99.4	95.2	92.9	153.8
NVGI	32.4	50.2	65.6	83.0	123.6	155.7	154.4
GFNI	27.9	47.9	73.4	102.7	153.1	187.2	224.2
CMCI	39.9	68.6	99.4	137.5	188.1	163.5	**105.9**
TCON	**25.9**	**42.9**	**51.6**	**57.0**	**46.7**	**56.3**	135.3
TVCE	27.1	**43.3**	**53.1**	**61.9**	**47.4**	**54.2**	**133.6**
FSSE	29.0	49.4	62.9	71.3	**55.4**	57.8	155.1
AEMI	**25.3**	**38.0**	**44.8**	**57.2**	76.4	102.2	172.3
BAMS	49.1	90.9	118.7	132.7	118.5	183.4	326.9
BAMM	**25.3**	**41.7**	59.7	76.7	72.6	77.4	166.3
BAMD	33.6	**45.0**	**54.7**	**65.9**	109.0	175.6	198.6
LBAR	33.3	66.4	105.1	141.0	207.6	263.1	322.2
Forecasts	8	8	8	8	8	8	8

Table 4a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Hurricane Ignacio, 25 August–4 September 2015. 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	**3.6**	**6.8**	**11.4**	**10.9**	15.9	25.9	29.1
OCD5	5.2	9.7	13.4	16.6	26.6	39.0	37.0
Forecasts	11	11	11	11	11	11	11
OFCL (2010-14)	5.9	9.8	12.5	14.0	15.5	16.3	14.9
OCD5 (2010-14)	7.7	12.8	16.4	18.8	21.1	20.9	19.7

Table 4b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Hurricane Ignacio, 25 August–4 September 2015. 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	4.4	8.1	12.5	8.8	16.2	26.9	16.9
OCD5	5.4	10.5	13.2	12.8	27.2	42.9	27.9
HWFI	4.1	**4.5**	**6.0**	9.6	19.9	**23.9**	**15.5**
GHMI	6.4	11.8	14.8	11.1	**15.6**	**21.8**	**9.2**
DSHP	6.1	11.6	14.5	11.5	20.0	27.0	15.9
LGEM	6.0	12.8	16.6	13.8	19.1	29.2	19.6
ICON	4.5	8.9	**12.0**	9.5	17.0	**25.0**	**13.8**
IVCN	4.5	8.9	**12.0**	9.5	17.0	**25.0**	**13.8**
GFNI	7.5	15.6	21.6	20.5	34.8	40.2	26.8
GFSI	7.5	14.2	17.8	15.9	26.2	30.0	21.4
EMXI	10.2	18.5	22.8	25.2	44.1	48.4	26.2
FSSE	**4.0**	**6.8**	**12.0**	13.9	**15.0**	**18.4**	**8.1**
Forecasts	8	8	8	8	8	8	8

Table 5a. CPHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Hurricane Ignacio, 27 August–4 September 2015. Mean OFCL errors for the previous 5-yr period are shown for comparison. Official errors that are smaller than the 5-yr mean are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	**17.1**	**26.7**	**42.6**	**63.9**	**104.3**	**131.8**	**161.2**
OCD5	27.4	61.1	104.0	158.0	256.8	352.3	450.2
Forecasts	31	29	27	25	21	17	13
OFCL (2010-14)	27.9	44.1	56.7	73.9	132.3	183.7	258.9

Table 5b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Hurricane Ignacio, 27 August–4 September 2015. Errors smaller than the CPHC official forecast are shown in boldface type.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	17.1	26.7	42.6	63.9	104.3	131.8	161.2
OCD5	27.4	61.1	104.0	158.0	256.8	352.3	450.2
FSSE	**11.9**	**17.1**	**26.7**	**41.6**	**73.5**	**99.8**	**138.6**
HWFI	**15.8**	27.2	**37.6**	**54.5**	**89.1**	**127.1**	191.6
GFSI	**16.0**	**26.6**	**39.0**	**58.3**	**98.6**	**118.2**	**138.0**
AEMI	18.6	31.8	**42.2**	**61.5**	**100.8**	**128.7**	170.8
EGRI	**16.1**	**25.2**	**34.2**	**49.2**	**65.7**	**94.1**	**147.9**
CMCI	18.0	29.4	46.1	64.9	**100.2**	148.6	202.3
EMXI	**14.6**	**25.0**	**38.9**	**53.2**	**86.2**	**128.6**	**159.5**
TCON	**13.8**	**20.1**	**27.4**	**41.9**	**64.0**	**81.9**	**108.8**
TVCE	**12.8**	**18.9**	**27.3**	**42.8**	**66.1**	**89.6**	**115.6**
GFEX	**12.8**	**20.2**	**33.1**	**51.7**	**88.4**	**118.2**	**144.3**
Forecasts	31	29	27	25	21	17	13

Table 6a. CPHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Hurricane Ignacio, 27 August–4 September 2015. Mean OFCL 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	5.6	10.3	**9.1**	**9.0**	**8.3**	**5.6**	**5.8**
OCD5	9.2	15.3	19.8	18.8	29.7	28.3	14.7
Forecasts	31	29	27	25	21	17	13
OFCL (2010-14)	4.8	8.6	11.6	13.8	18.5	19.3	20.4

Table 6b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Hurricane Ignacio, 27 August–4 September 2015. Errors smaller than the CPHC official forecast are shown in boldface type.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	5.6	10.3	9.1	9.0	8.3	5.6	5.8
OCD5	9.2	15.3	19.8	18.8	29.7	28.3	14.7
FSSE	**5.3**	**8.0**	**8.1**	**7.5**	**5.5**	7.7	6.2
HWFI	5.9	**8.7**	9.8	10.0	**7.7**	7.9	7.8
GFSI	6.6	10.8	15.6	17.9	21.2	31.2	36.3
EMXI	8.0	13.7	18.7	21.4	23.8	29.7	35.7
ICON	**5.0**	**7.9**	9.3	**8.5**	**5.1**	**4.8**	**5.6**
IVCN	**5.0**	**7.9**	9.3	**8.5**	**5.1**	**4.8**	**5.6**
DSHP	5.7	**10.1**	10.7	10.0	**6.8**	6.6	8.1
LGEM	6.0	**9.9**	12.0	12.6	10.7	9.8	9.1
Forecasts	31	29	27	25	21	17	13

Table 7. Watch and warning summary for Hurricane Ignacio, 25 August–4 September 2015.

Date/Time (UTC)	Action	Location
29 / 1500	Tropical Storm Watch issued	Island of Hawaii
30 / 0300	Tropical Storm Watch issued	Islands of Maui, Molokai, Lanai and Kahoolawe
31 / 0300	Tropical Storm Watch discontinued	All

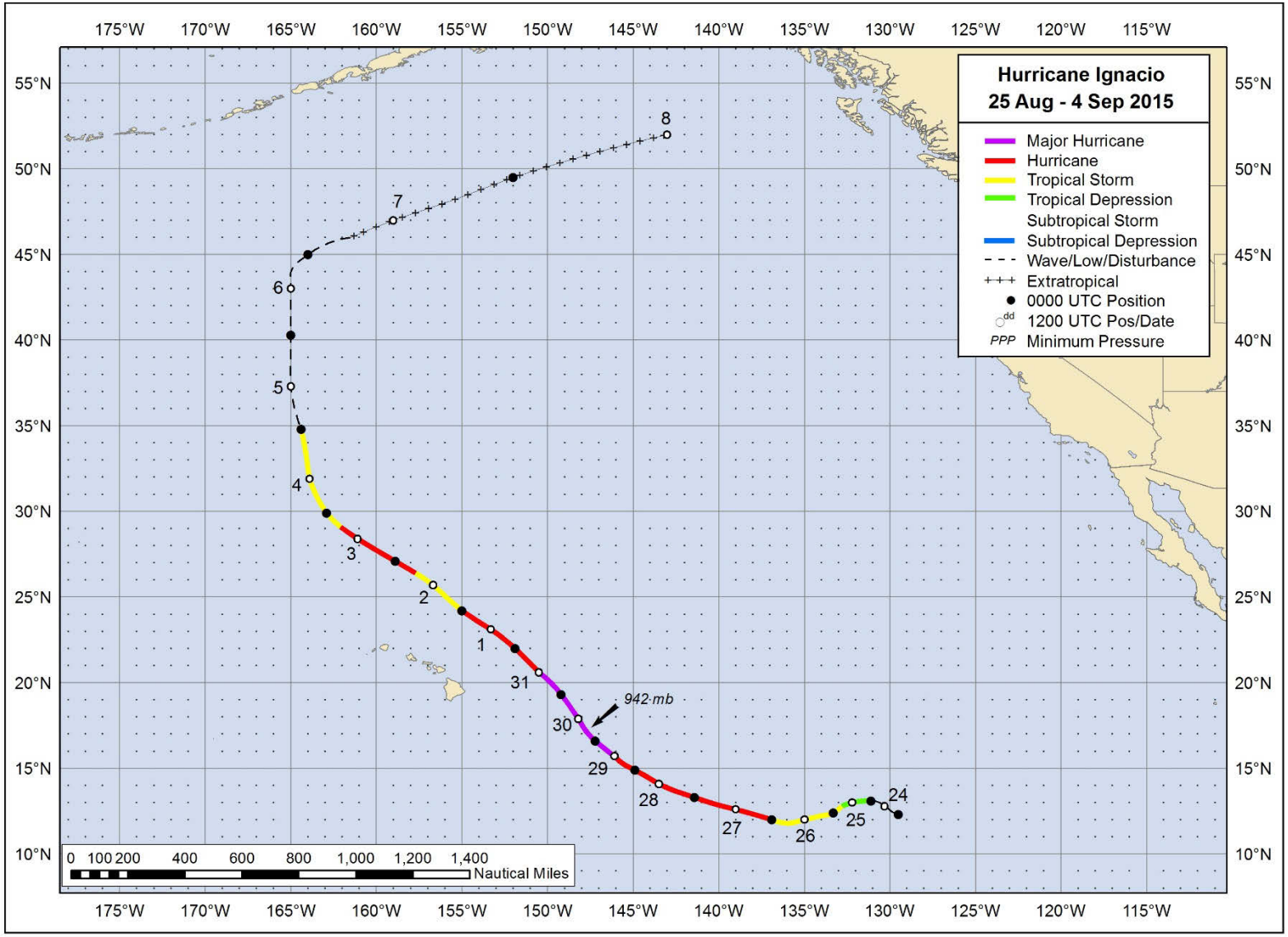


Figure 1. Best track positions for Hurricane Ignacio, 25 August–4 September 2015.

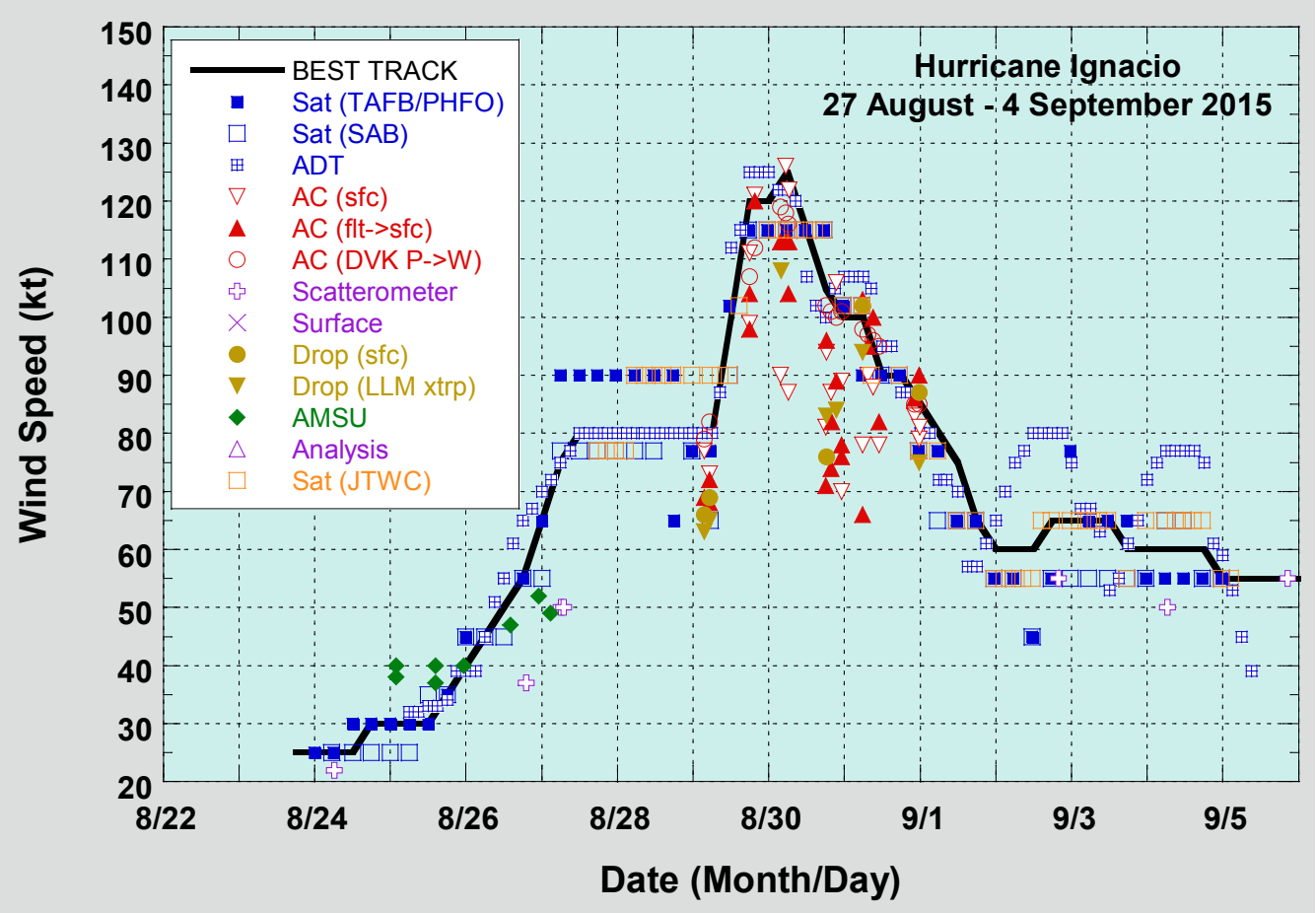


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Ignacio, 25 August–4 September 2015. Aircraft observations have been adjusted for elevation using a 90% adjustment factor for observations from 700 mb. Dropwindsonde observations include actual 10 m winds (sfc), as well as surface estimates derived from the mean wind over the lowest 150 m of the wind sounding (LLM). 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.

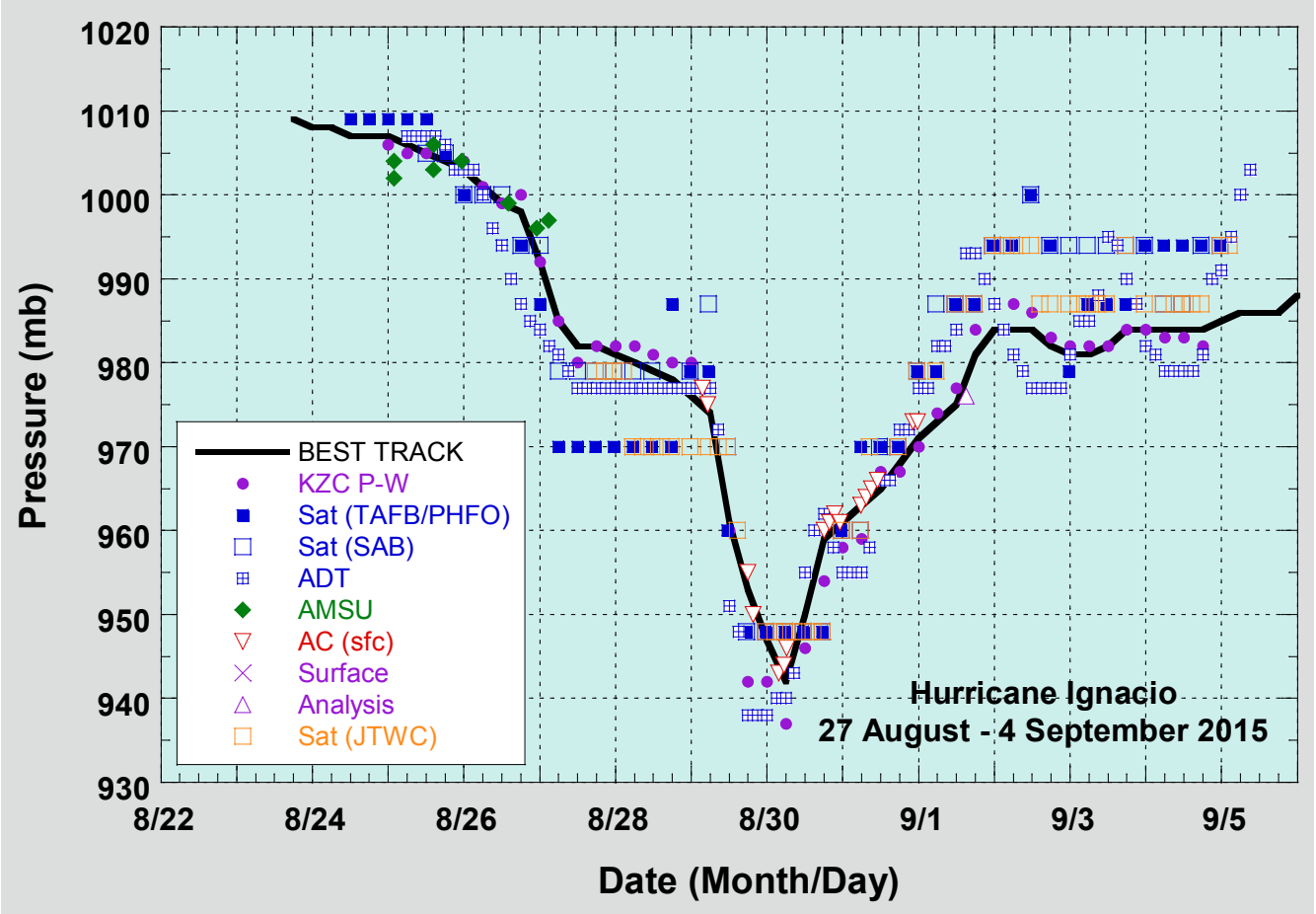


Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Ignacio, 25 August–4 September 2015. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for 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.