NATIONAL HURRICANE CENTER
TROPICAL CYCLONE REPORT

TROPICAL STORM JERRY

(AL112013)

29 SEPTEMBER - 3 OCTOBER 2013

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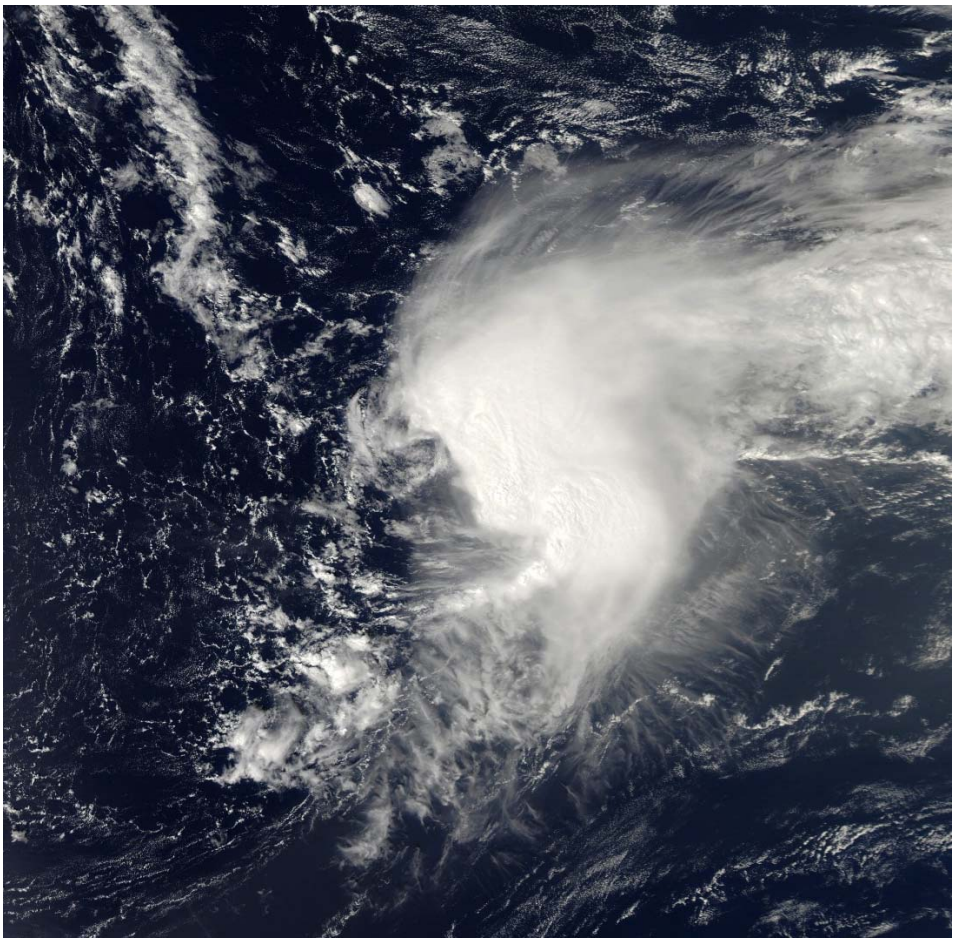

1635 UTC 30 SEPTEMBER 2013 GOES-13 VISIBLE IMAGE OF JERRY NEAR ITS PEAK INTENSITY OF 45 KT. IMAGE COURTESY NASA-MODIS.

Jerry was a small tropical storm that spent its short lifetime over the central Atlantic Ocean.

Tropical Storm Jerry

29 SEPTEMBER - 3 OCTOBER 2013

SYNOPTIC HISTORY

Jerry developed from a tropical wave that moved off of the west coast of Africa on 24 September. The vigorous wave moved westward for the next two days and began to interact with a mid- to upper-level low that was a few hundred n mi east of the Leeward Islands on 26 September. The upper-low caused the wave to fracture, with the northern portion of the wave turning northwestward as a sharp surface trough while the southern portion continued westward into the eastern North Pacific Ocean, spawning Tropical Storm Octave more than two weeks later on 12 October. Early on 26 September, a pronounced mid-level circulation center developed within the disorganized convective cloud mass, and it became juxtaposed along the surface trough axis later that day. On 27 September, convection increased as the system turned toward the north-northwest, and scatterometer wind data indicated that a well-defined surface low had formed by 0000 UTC 28 September about 700 n mi east-northeast of the Leeward Islands. Convection gradually became better organized during the day, and a tropical depression formed by 0000 UTC 29 September when the cyclone was located about 790 n mi east-northeast of the Leeward Islands. 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.

The depression turned northward and then north-northeastward later that day as it moved around the western periphery of the deep-layer Bermuda-Azores ridge. Although the vertical wind shear was low and sea-surface temperatures (SSTs) were near 28^{o} C, the presence of dry mid-level air prevented the formation of inner-core convection. The cyclone did not attain tropical storm status until 0600 UTC 30 September when it was located about 1000 n mi west-southwest of the Azores Islands. Vigorous convection began to develop early on 30 September near the center of Jerry, and 18 h later it is estimated that the tropical storm reached its peak intensity of 45 kt (Fig. 4). However, the intensification trend was short-lived as strong northwesterly upper-level winds began to adversely affect the cyclone, and Jerry started a slow weakening trend. A large blocking high pressure ridge to the north and east of Jerry impeded the cyclone’s northeastward motion, causing the cyclone to slow down to less than 5 kt on 1-2 October. The slow forward speed over marginal SSTs of near 27^{O} C, combined with persistent strong vertical shear, led to further degradation in Jerry’s convective organization. The tropical storm became completely devoid of deep convection by 1800 UTC 3 October when it was about 670 n mi southwest of the central Azores, marking Jerry’s transition to a post-tropical cyclone. The system moved quickly to the northeast over the next two days, and was finally absorbed by a larger extratropical low pressure system as it was passing through the central Azores early on 6 October.

METEOROLOGICAL STATISTICS

Observations in Jerry (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. 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 Jerry.

Jerry's estimated peak intensity of 45 kt at 0000 UTC 1 October is based on consensus satellite intensity estimates of T3.0/45 kt from TAFB and SAB. This estimate is also supported by a surface wind value of 42 kt in an ASCAT-A scatterometer pass at 0043 UTC 1 October.

There were no ship reports of tropical-storm-force winds associated with Jerry.

CASUALTY AND DAMAGE STATISTICS

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

FORECAST AND WARNING CRITIQUE

The formation of Jerry was only somewhat well predicted. The tropical wave that spawned Jerry was introduced to the Tropical Weather Outlook (TWO) at 1800 UTC 26 September, more than 72 h before tropical cyclone formation occurred, with a low (<30%) chance of development. The 5-day formation potential was increased to the medium (30%-50%) category at 1800 UTC 27 September; however, the 48-h genesis potential wasn't increased to the medium category until 0250 UTC 28 September, or about 21 h prior to genesis, when a Special TWO was issued after the wave had evolved into a well-defined low pressure system that had briefly contained gale-force winds. At 1800 UTC 28 September, only 6 h before formation occurred, the chances for development were increased to the high (>50%) category for both the 48-h and 5- day genesis probabilities.

A verification of NHC official track forecasts for Jerry is given in Table 2a and a homogeneous comparison of the official track errors with selected guidance models is given in Table 2b. Official forecast track errors were considerably greater than the mean official errors for the previous 5-yr period. The GFSI and the AEMI (GFS Ensemble Mean) models outperformed the NHC official track forecasts at almost every forecast period, and even the 'zero-skill' Climatology and Persistence model OCD5 bested the official forecasts at 36 h and beyond. The primary reason for the unusually large OFCL errors was that the official forecasts did not anticipate the significant decrease in Jerry's forward speed on 1-2 October.

A verification of NHC official intensity forecasts for Jerry is given in Table 3a and a homogeneous comparison of the official intensity errors with selected guidance models is given in Table 3b. In contrast to the large track errors, the official forecast intensity errors were about 50% lower than the mean official errors for the previous 5-yr period, displaying substantial skill over OCD5. The HWFI and the IVCN intensity consensus models had low errors, which were comparable to the NHC official intensity forecasts.

Tropical cyclone watches and warnings were not required with Jerry.

Acknowledgements

Special thanks are offered to John Cangialosi from the National Hurricane Center (NHC) for his preparation of the track map, and to Dr. Michael Brennan, also from the NHC, for his generation of the scatterometer image contained in figure 4.

Table 1. Best track for Tropical Storm Jerry, 29 September - 3 October 2013.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
28 / 0000	21.1	50.0	1012	30	low
28 / 0600	22.2	50.3	1012	30	"
28 / 1200	23.3	50.6	1011	30	"
28 / 1800	24.2	50.6	1011	30	"
29 / 0000	24.9	50.4	1010	30	tropical depression
29 / 0600	25.6	49.7	1010	30	"
29 / 1200	26.2	49.0	1010	30	"
29 / 1800	26.7	48.2	1010	30	"
30 / 0000	27.1	47.5	1009	30	"
30 / 0600	27.2	46.8	1008	35	tropical storm
30 / 1200	27.3	46.0	1008	35	"
30 / 1800	27.3	45.0	1006	40	"
01 / 0000	27.5	43.9	1005	45	"
01 / 0600	27.7	43.6	1006	40	"
01 / 1200	28.1	43.5	1007	40	"
01 / 1800	28.1	43.5	1007	40	"
02 / 0000	28.1	43.7	1007	35	"
02 / 0600	28.1	43.9	1007	35	"
02 / 1200	28.6	43.4	1007	35	"
02 / 1800	29.0	42.9	1007	35	"
03 / 0000	29.4	42.4	1007	35	"
03 / 0600	30.1	41.7	1007	35	"
03 / 1200	30.8	40.6	1007	35	"
03 / 1800	31.5	39.3	1008	35	low
04 / 0000	32.5	38.0	1008	35	"
04 / 0600	33.1	36.6	1008	35	"
04 / 1200	33.7	35.0	1008	35	"
04 / 1800	34.2	33.7	1008	35	"
05 / 0000	34.5	32.7	1008	35	"
05 / 0600	35.0	31.7	1008	35	"
05 / 1200	35.9	30.7	1008	40	"
05 / 1800	36.7	29.8	1008	40	"
06 / 0000	38.0	28.9	1008	40	"
06 / 0600					dissipated
01 / 0000	27.5	43.9	1005	45	minimum pressure and maximum intensity

Table 2a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Tropical Storm Jerry, 29 September - 3 October 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	36.0	73.4	126.2	204.8	333.6	391.7	
OCD5	46.1	91.8	125.1	163.2	262.1	351.0	
Forecasts	17	15	13	11	7	3	
OFCL (2008-12)	28.6	45.8	62.2	78.6	116.6	160.0	206.4
OCD5 (2008-12)	47.5	99.7	161.4	224.0	329.7	417.5	493.1

Table 2b. Homogeneous comparison of selected track forecast guidance models (in n mi) for Tropical Storm Jerry, 29 September - 3 October 2013. Errors smaller than the NHC official forecast are shown in boldface type.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	36.0	73.4	126.2	204.8	333.6	391.7	
OCD5	46.1	91.8	**125.1**	**163.2**	**262.1**	**351.0**	
GFSI	**30.2**	**56.0**	**108.8**	**191.6**	338.3	**352.9**	
AEMI	**33.9**	**65.8**	**115.7**	**178.9**	**288.8**	**199.4**	
EMXI	40.1	**70.3**	**116.7**	**192.1**	**318.1**	461.7	
CMCI	58.8	136.2	251.2	401.3	746.4	983.7	
HWFI	46.2	89.9	156.7	262.2	493.9	634.4	
GHMI	46.2	85.6	137.0	217.2	357.5	**386.8**	
TVCA	39.1	74.8	130.2	215.5	373.9	450.3	
BAMD	65.4	132.2	203.5	299.5	512.5	587.1	
BAMM	62.3	128.8	206.3	314.6	554.5	661.6	
BAMS	58.9	116.2	191.3	287.1	562.8	737.7	
LBAR	50.4	84.9	**118.8**	**153.0**	**209.5**	490.3	
Forecasts	17	15	13	11	7	3	

Table 3a. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Tropical Storm Jerry, 29 September - 3 October 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	**3.2**	**4.3**	**4.2**	**5.0**	**3.6**	**1.7**	
OCD5	4.2	6.8	8.4	9.9	13.9	19.3	
Forecasts	17	15	13	11	7	3	
OFCL (2008-12)	6.6	10.1	12.2	14.1	15.4	15.1	16.1
OCD5 (2008-12)	7.8	11.6	14.0	15.6	17.9	18.0	17.9

Table 3b. Homogeneous comparison of selected intensity forecast guidance models (in kt) for Tropical Storm Jerry, 29 September - 3 October 2013. Errors smaller than the NHC official forecast are shown in boldface type.

Model ID	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL	3.2	4.3	4.2	5.0	3.6	1.7	
OCD5	4.2	6.8	8.4	9.9	13.9	19.3	
DSHP	3.8	5.5	7.2	10.1	14.3	17.0	
LGEM	3.8	5.9	7.8	7.5	9.9	15.0	
HWFI	4.3	5.2	5.4	**4.3**	5.6	7.3	
GHMI	4.1	6.9	10.5	12.9	13.7	13.3	
IVCN	3.6	4.9	5.2	**4.9**	**2.6**	3.0	
ICON	3.6	4.9	5.2	**4.9**	**2.6**	3.0	
NF	17	15	13	11	7	3	

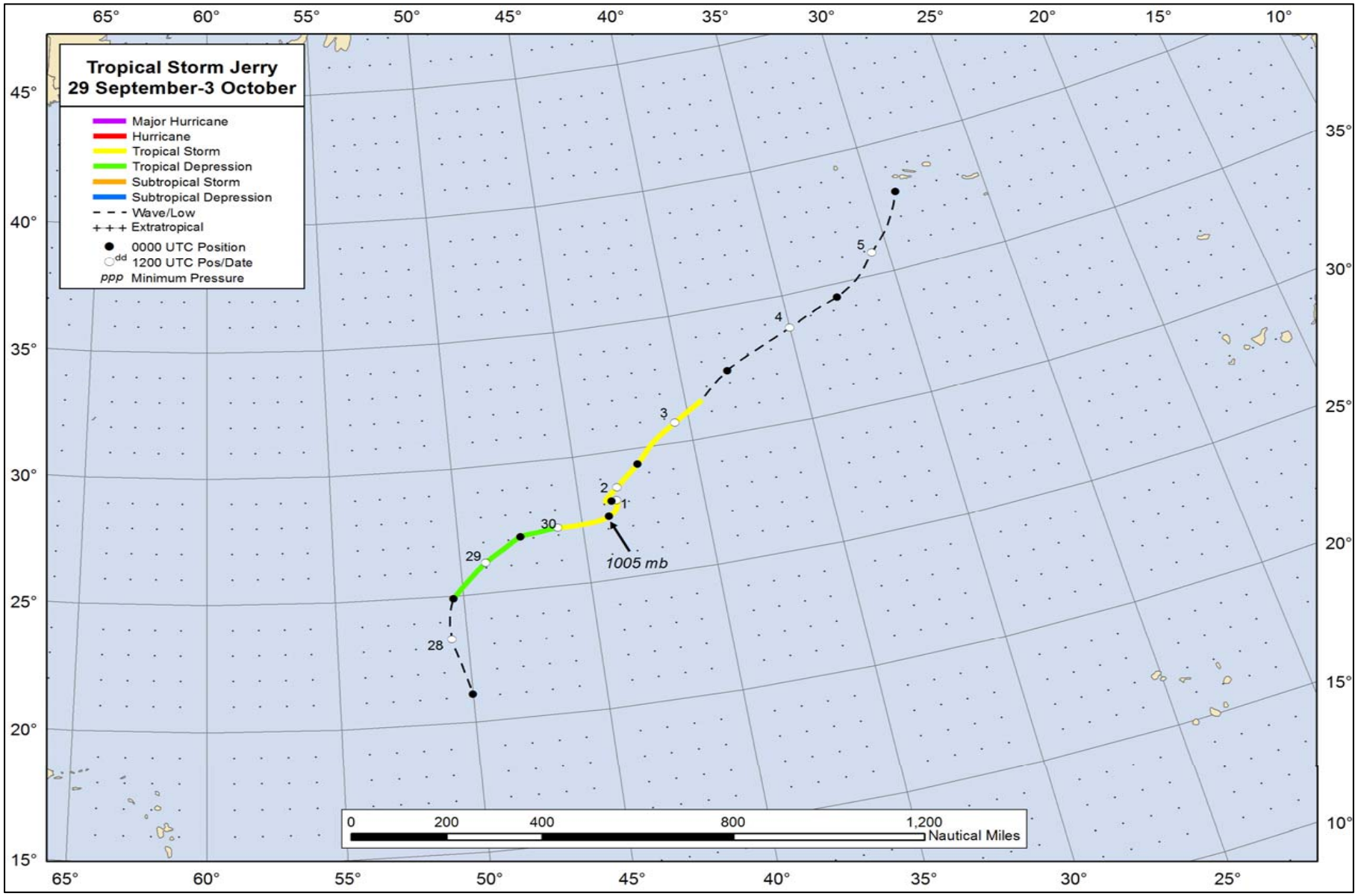

Figure 1. Best track positions for Tropical Storm Jerry, 29 September - 3 October 2013. The track during the post-tropical low stage is partially based on analyses from the NOAA Ocean Prediction Center.

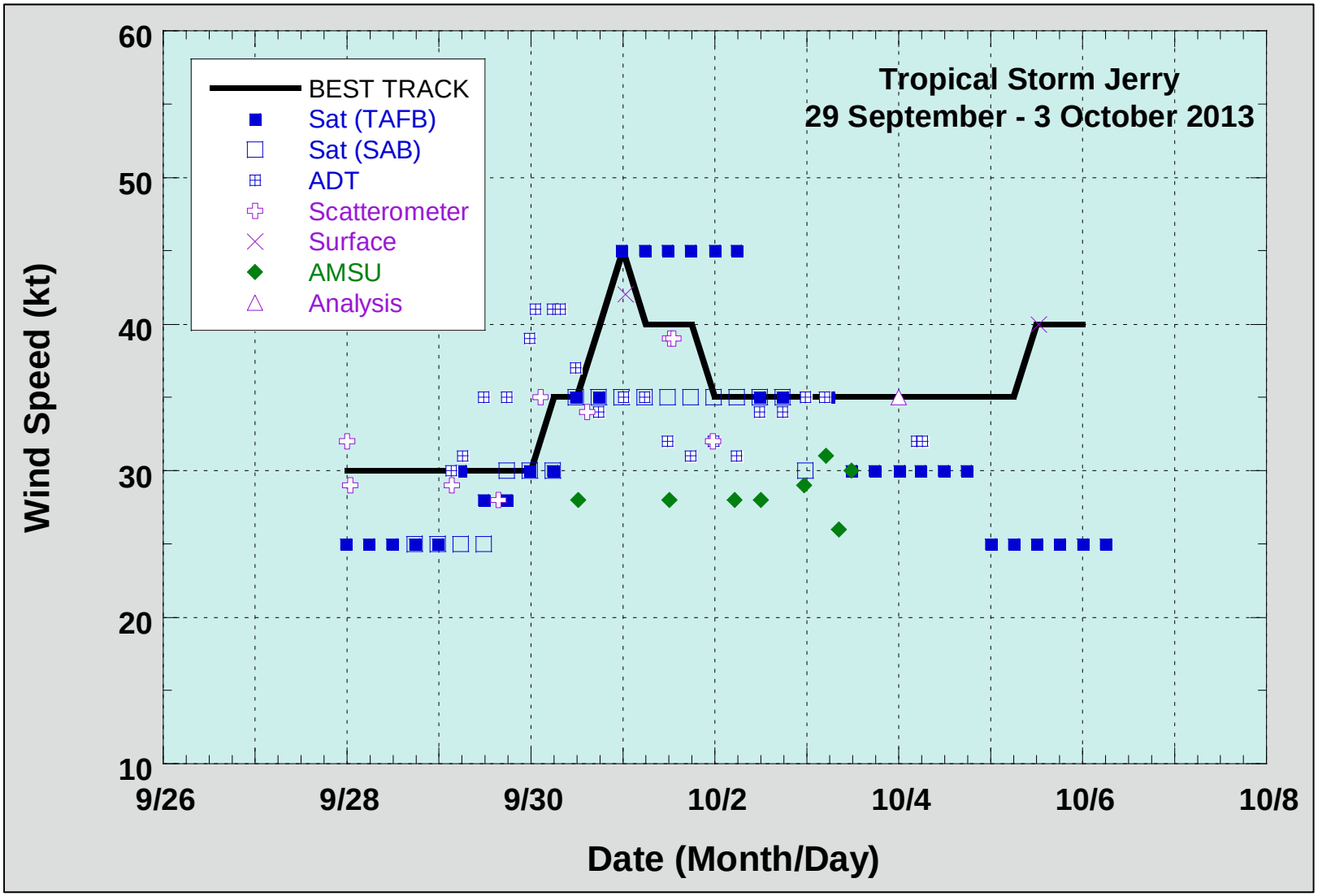

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Jerry, 29 September - 3 October 2013. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute for Meteorological Satellite Studies technique. Dashed vertical lines correspond to 0000 UTC.

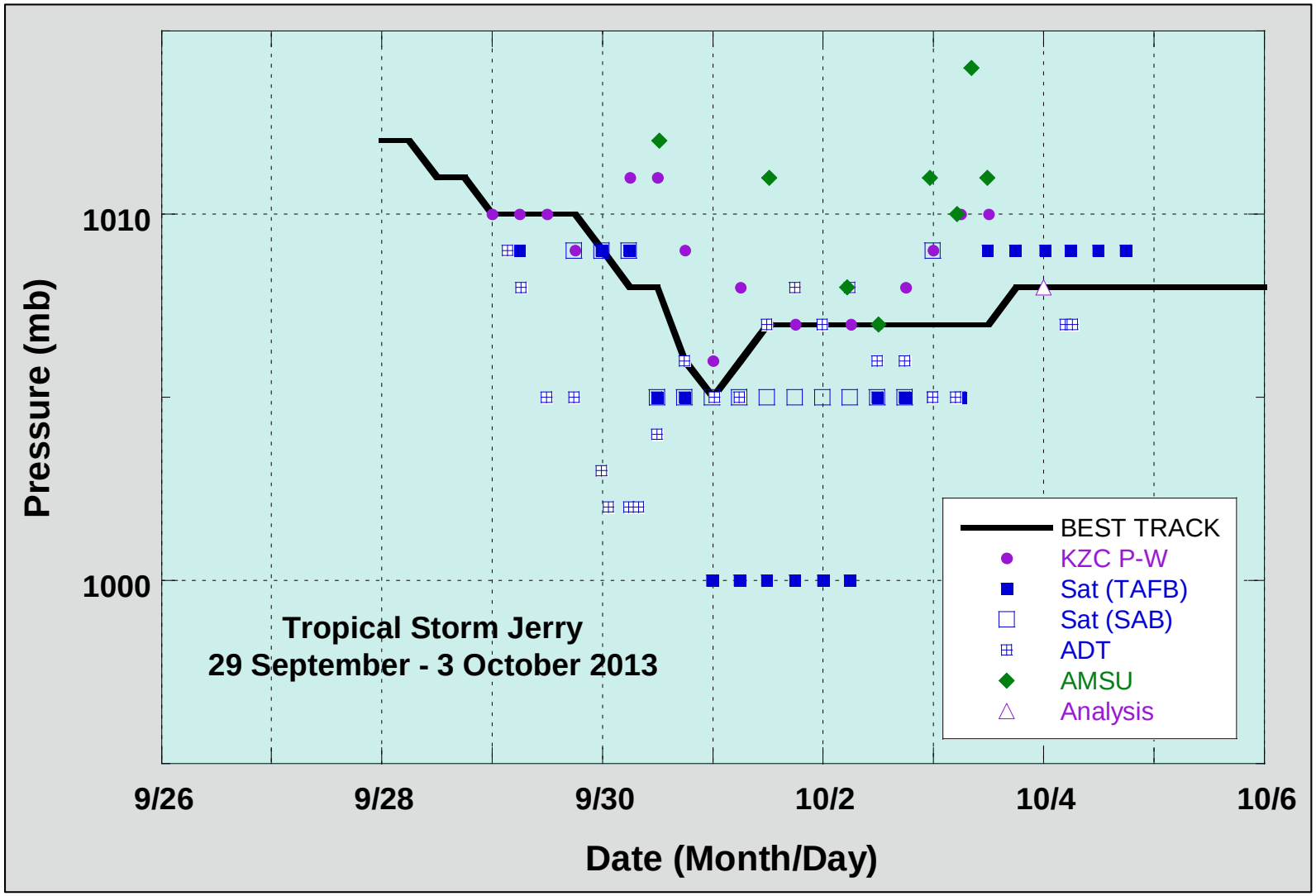

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Jerry, 29 September - 3 October 2013. Advanced Dvorak Technique estimates represent the Current Intensity at the nominal observation time. AMSU intensity estimates are from the Cooperative Institute 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.

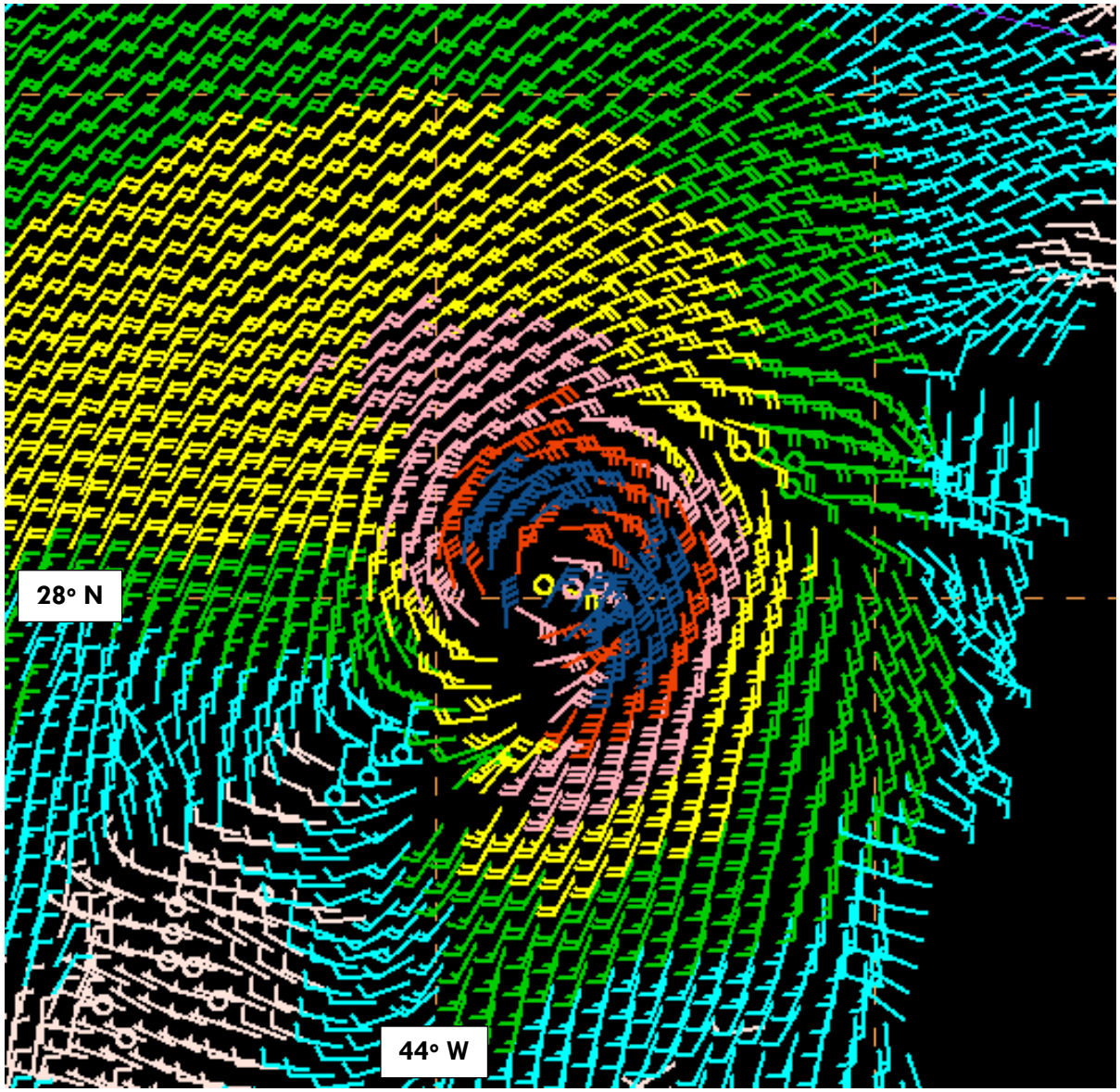

Figure 4. 1221 UTC 01 October 2013 ASCAT-B scatterometer wind data 12 h after Jerry reached its peak intensity of 45 kt.