

Tropical Cyclone Report  
Tropical Storm Kay  
4-6 October 2004

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Tropical Storm Kay was a short-lived tropical cyclone that briefly maintained tropical storm strength over the open waters of the northeast Pacific Ocean.

a. Synoptic History

The first evidence of Kay's origin was on 3 October, when an area of disturbed weather developed in the intertropical convergence zone at a location several hundred miles southwest of mainland Mexico. There is little evidence that the development was accompanied by a tropical wave. The disturbance formed into Tropical Depression Fourteen-E around 1800 UTC 4 October about 515 n mi southwest of Manzanillo Mexico while the low-level circulation became increasingly better-defined. The depression strengthened to Tropical Storm Kay around 0600 UTC the next day approximately 640 n mi west-southwest of Manzanillo.

The "best track" chart of the tropical cyclone's path is given in Fig. 1. From 4-6 October, Kay moved west-northwest to northwestward on the southwest side of a strong mid-level anticyclone centered over the southwestern United States. Dvorak satellite-based intensity estimates indicated that Kay reached its peak intensity of 40 kt at 1200 UTC 5 October. Weakening quickly ensued as the deep convection decreased under moderate northerly shear. On 6 October, Kay, reduced to a swirl of low clouds, turned southwestward and dissipated on the next day.

b. Meteorological Statistics

The best track positions and intensities for Kay are listed in Table 1, and the wind and pressure histories are shown in Figs. 2 and 3, respectively. Observations in Figs. 2 and 3 include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), the Satellite Analysis Branch (SAB) and the U. S. Air Force Weather Agency (AFWA). A 0127 UTC 5 October QuikSCAT pass showed non-rain-flagged 35 kt winds and rain-flagged 50 kt winds and a 0431 UTC 5 October TRMM pass suggested improved convective banding. This information was useful in determining when Kay became a tropical storm. The 50 kt rain-flagged wind speeds were not heavily weighted, operationally or for the final best track, however the question of the best use of QuikSCAT rain-flagged wind data has not been fully resolved

c. Casualty and Damage Statistics

There were no reports of damages or casualties.

c. Forecast and Warning Critique

The average official track errors for Kay (with the number of cases in parentheses) were of 44(5), 73(3), and 101(1) n mi for the 12, 24, and 36 h forecasts, respectively. These are comparable to the eastern Pacific average official track errors for the 10-yr period 1994-2003 of 38, 70, and 100 n mi, respectively. Kay was a tropical cyclone for only 36 h and there were no forecasts verified at longer time periods than 36 h.

Average official intensity errors were 6, 12, and 20 kt for the 12, 24 and 36 h forecasts, respectively. For comparison, the average official intensity errors over the 10-yr period 1994-2003 are 6, 11, and 15 kt, respectively.

Table 1. Best track for Tropical Storm Kay, 4-6 October 2004.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
04 / 1800	13.8	111.3	1006	30	tropical depression
05 / 0000	13.9	112.7	1006	30	"
05 / 0600	14.1	114.0	1005	35	tropical storm
05 / 1200	14.4	115.1	1004	40	"
05 / 1800	15.0	116.0	1005	30	tropical depression
06 / 0000	15.3	116.5	1006	25	"
06 / 0600	15.8	116.9	1007	25	"
06 / 1200	16.1	117.2	1007	25	remnant low
06 / 1800	16.0	117.9	1007	25	"
07 / 0000	15.5	118.5	1007	20	"
07 / 0600	14.8	119.3	1007	20	"
07 / 1200	14.0	120.0	1007	20	"
07 / 1800	Dissipated				
05 / 1200	14.4	115.1	1004	40	minimum pressure

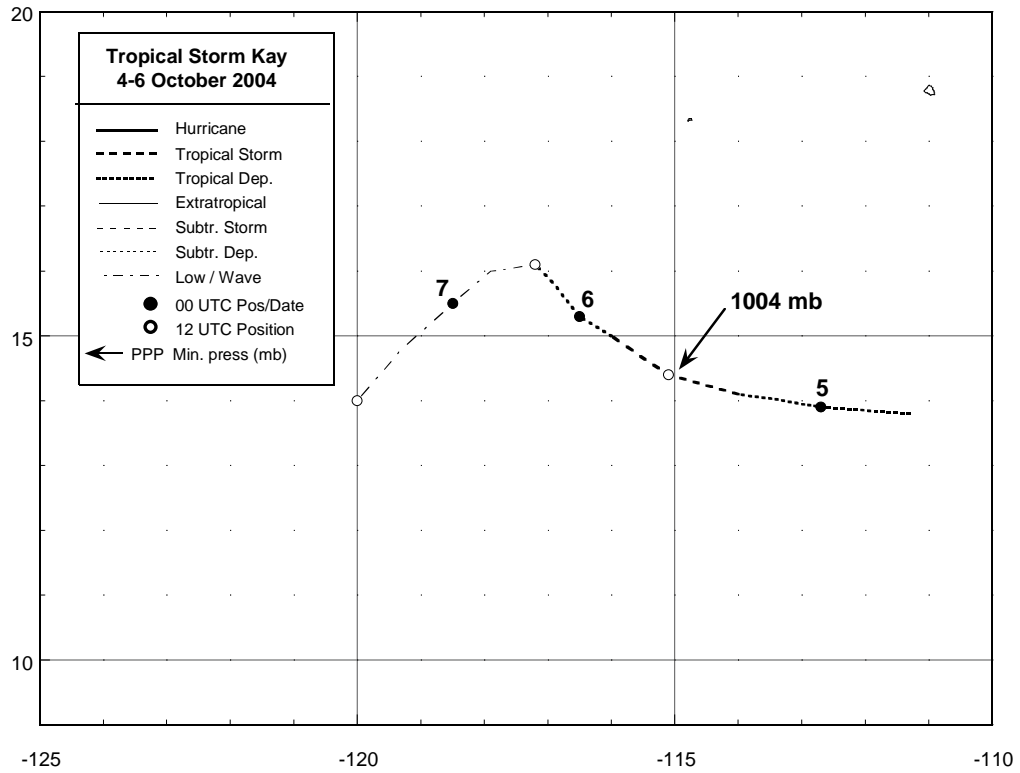


Figure 1. Best track positions for Tropical Storm Kay, 4-6 October 2004.

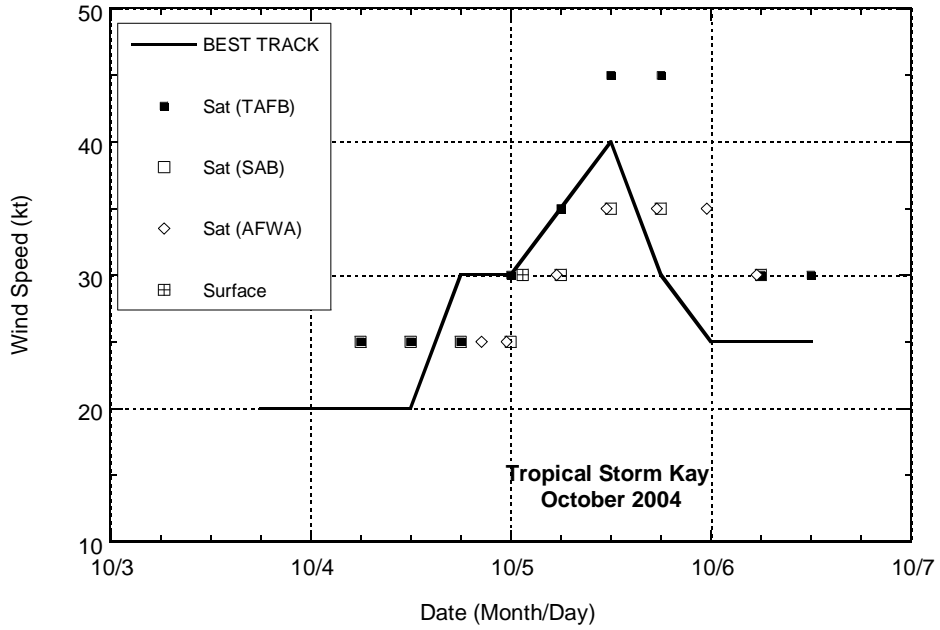


Figure 2. Selected satellite-based wind estimates and best track maximum sustained surface wind speed curve for Tropical Storm Kay, 4-6 October 2004.

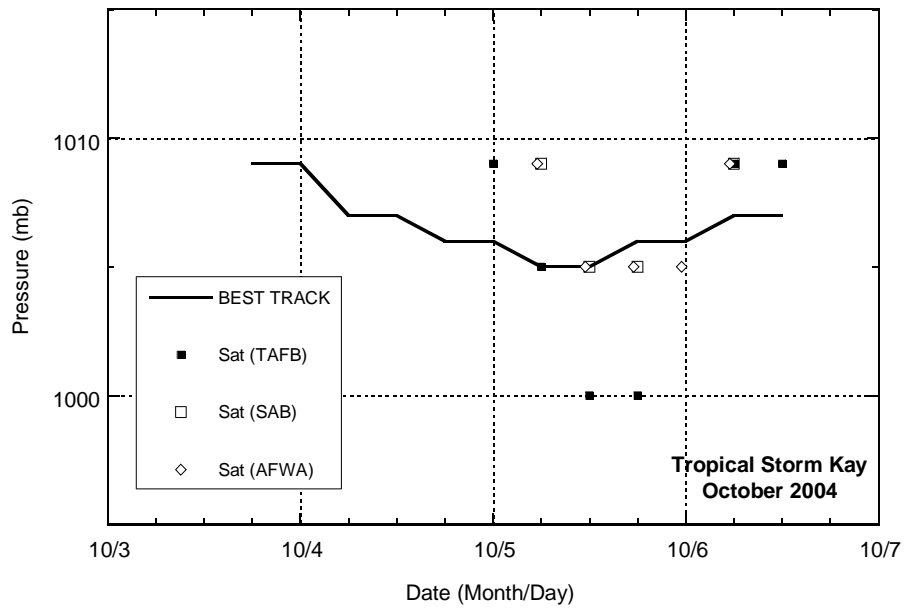


Figure 3. Selected satellite-based pressure estimates and best track minimum central pressure curve for Tropical Storm Kay, 4-6 October 2004.