

Tropical Cyclone Report
Tropical Storm Douglas (EP042008)
1-4 July 2008
Lixion A. Avila

National Hurricane Center
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Douglas was a short-lived tropical cyclone that brought showers and gusty winds to the southwest coast of Mexico.

a. Synoptic History

Douglas originated from a tropical wave that moved off the west coast of Africa on 19 June accompanied by an organized area of cloudiness and thunderstorms. The wave continued westward across the Atlantic and the southern Caribbean Sea but with limited shower activity. After the wave crossed Central America on 27 June, it began to develop deep convection and a broad low-level circulation. The disturbance continued westward and on 28 June it was located a few hundred miles south of the Gulf of Tehuantepec. A well-defined circulation center finally developed and it is estimated that a tropical depression formed at 1800 UTC 1 July about 245 n mi southwest of Manzanillo, Mexico. Strong northeasterly wind shear kept the center on the northern edge of the convection, preventing significant strengthening. Nevertheless, the depression strengthened a little and became a tropical storm with 35-kt winds and a minimum pressure of 1003 mb at 1200 UTC 2 July.

Douglas moved toward northwest and began to weaken gradually due to both increasing shear and cooler waters. Douglas became a remnant low at 0600 UTC 4 July and was turned westward by the low-level flow. It dissipated a couple of days later. 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.

b. Meteorological Statistics

Observations in Douglas (Figs. 2 and 3) include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB) and the Satellite Analysis Branch (SAB). Microwave data from polar-orbiting satellites were useful in tracking Douglas, in particular to determine that the center was removed from the convection late on 2 July. The pressure in the cyclone was lower than the pressure suggested by the Dvorak curve because environmental pressures were low. In addition, the minimum pressure was based on the fact that the cloud pattern was best organized on satellite imagery at that time. Fig. 4 shows the center of Douglas with the low-level center separated from the thunderstorm activity. This was the case for most of the cyclone’s lifetime. Outer rainbands associated with Douglas produced tropical storm force wind gusts in Manzanillo.

c. Casualty and Damage Statistics

There are no reports of casualties or damage associated with Douglas.

d. Forecast and Warning Critique

A description of the disturbance from which Douglas originated was included in Tropical Weather Outlook (TWO) products beginning at 0300 UTC 28 June. The possibility of tropical cyclone formation was included in the TWO issued at 1500 UTC 29 June, about 45 h prior to genesis. The experimental genesis forecast index was high ($\geq 60\%$) beginning 30 June at 1200 UTC, 30 h prior to genesis.

The average official track errors for Douglas (with number of cases in parenthesis) were 41 (7), 73 (5), 122 (3), and 191 (1) n mi for the 12, 24, 36, and 48 h forecasts, respectively. Due to the small number of forecasts, a meaningful comparison of the official forecast with the various track models is not possible. The mean NHC track errors for Douglas were much higher than the recent 5-year (2003-2007) mean errors.

Average official intensity errors were 3, 10, 15 and 10 kt for the 12, 24, 36, and 48h forecasts, respectively. For comparison, the average long-term official intensity errors are 6, 11, and 14 kt, respectively.

No watches or warnings were required for Douglas. Due to the cyclone's close proximity to Baja California, it was mentioned in the public advisories that interests in Baja California should closely monitored the progress of Douglas.

Table 1. Best track for Tropical Storm Douglas, 1-4 July 2008.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
01 / 1800	15.4	106.2	1007	25	tropical depression
02 / 0000	16.0	106.6	1006	30	"
02 / 0600	16.7	107.1	1005	30	"
02 / 1200	17.4	107.6	1003	35	tropical storm
02 / 1800	18.0	108.2	1004	35	"
03 / 0000	18.7	108.6	1004	35	"
03 / 0600	19.4	109.0	1005	35	"
03 / 1200	19.9	109.3	1005	35	"
03 / 1800	20.5	110.3	1005	30	tropical depression
04 / 0000	20.9	110.9	1005	30	"
04 / 0600	20.4	111.5	1005	25	low
04 / 1200	20.3	112.1	1006	20	"
04 / 1800	20.1	112.8	1007	20	"
05 / 0000	20.1	113.4	1007	20	"
05 / 0006	20.1	113.2	1007	20	"
05 / 1800	20.2	113.8	1007	20	"
06 / 0000	20.2	114.3	1007	20	"
06 / 0600	20.4	115.0	1007	20	"
06 / 1200					dissipated
02 / 1200	17.4	107.6	1003	35	minimum pressure

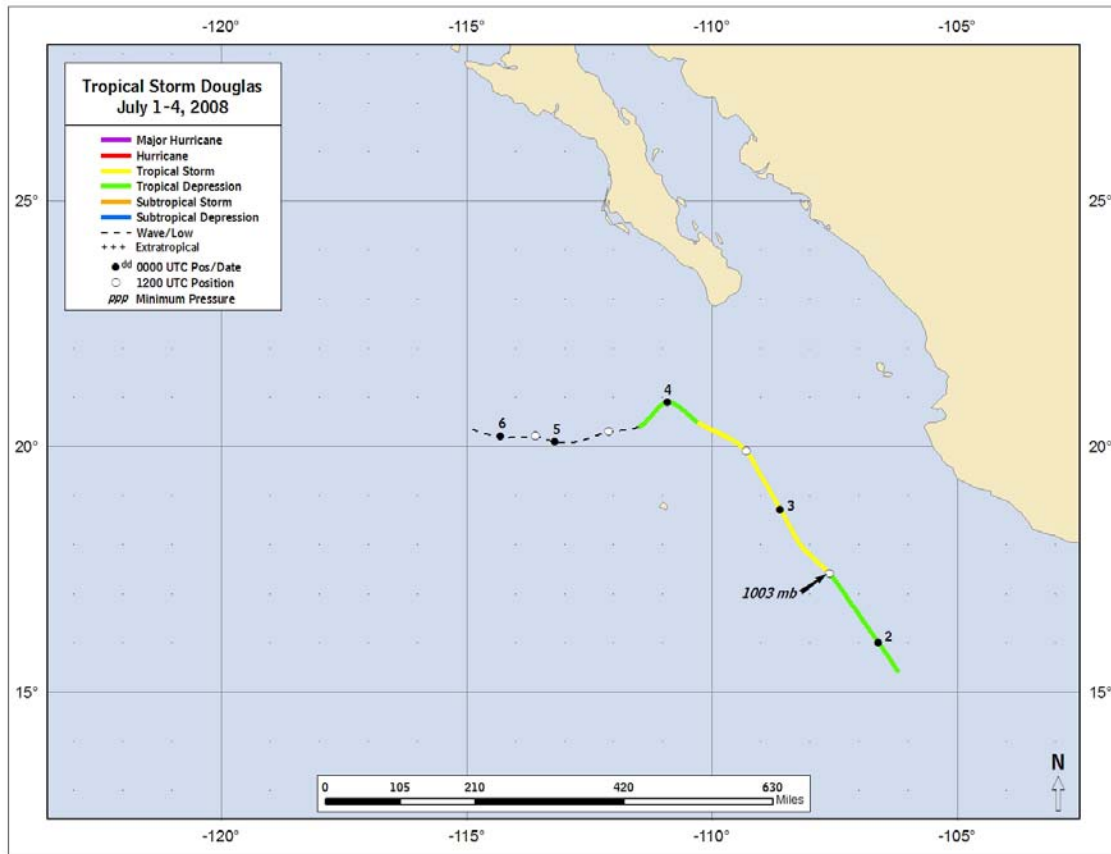


Figure 1. Best track positions for Tropical Storm Douglas, 1- 4 July 2008.

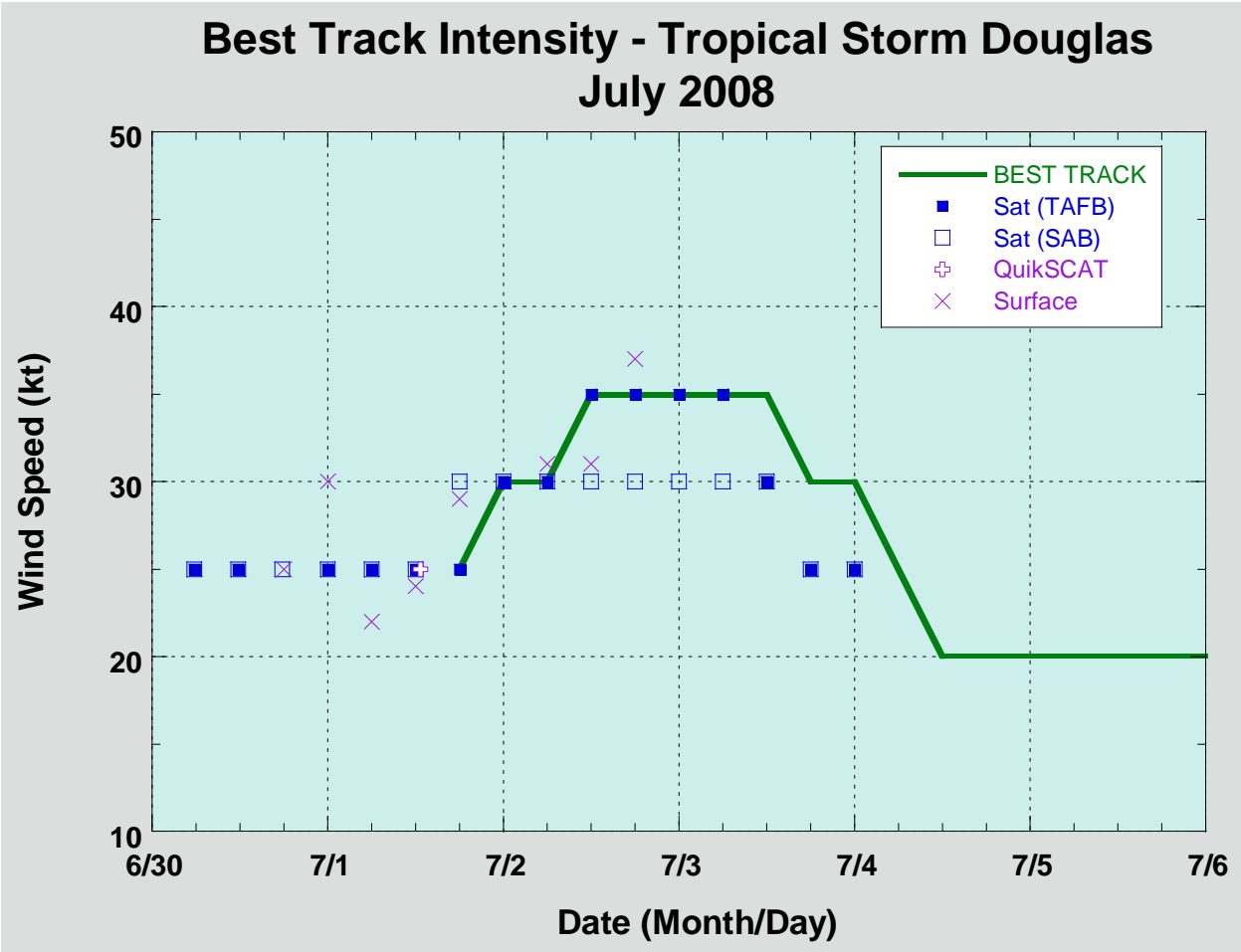


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Douglas, 1-4 July 2008.

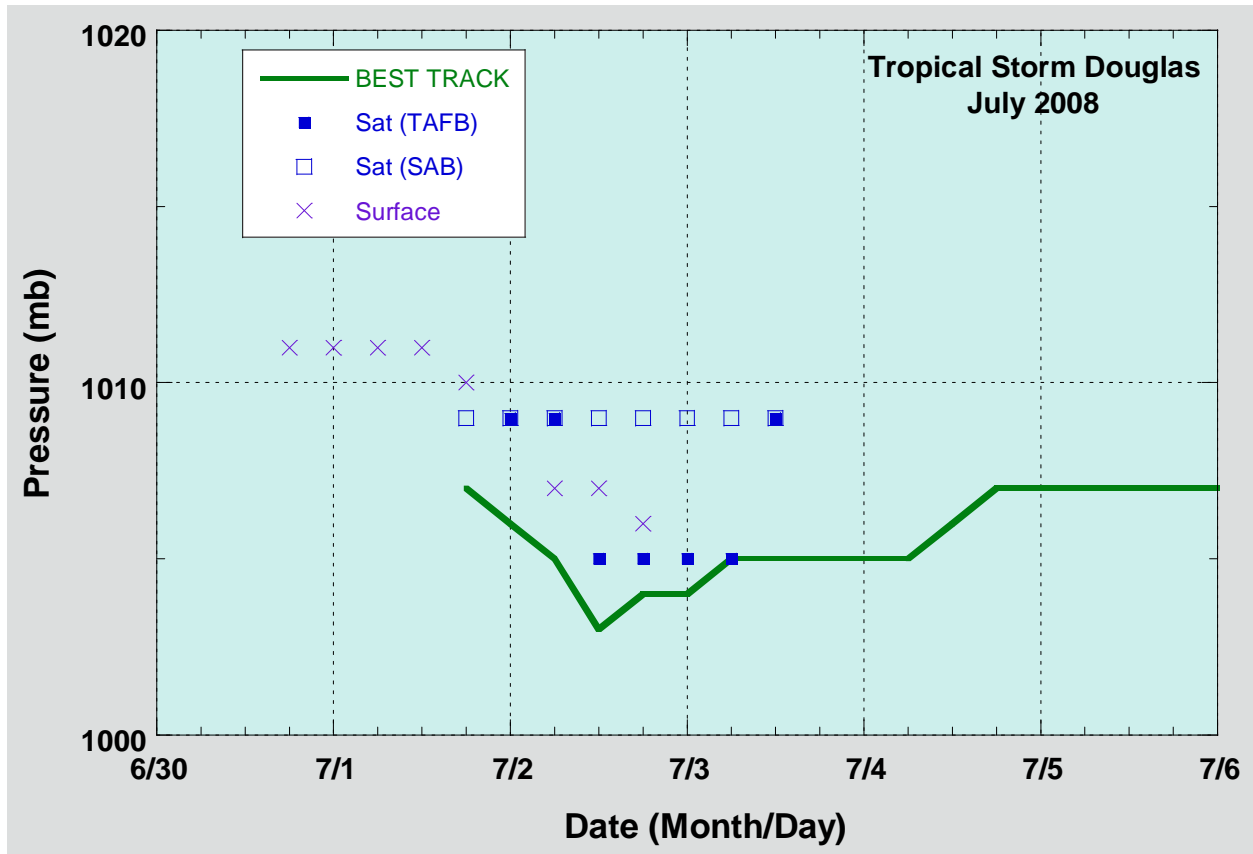


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Douglas, 1-4 July 2008.

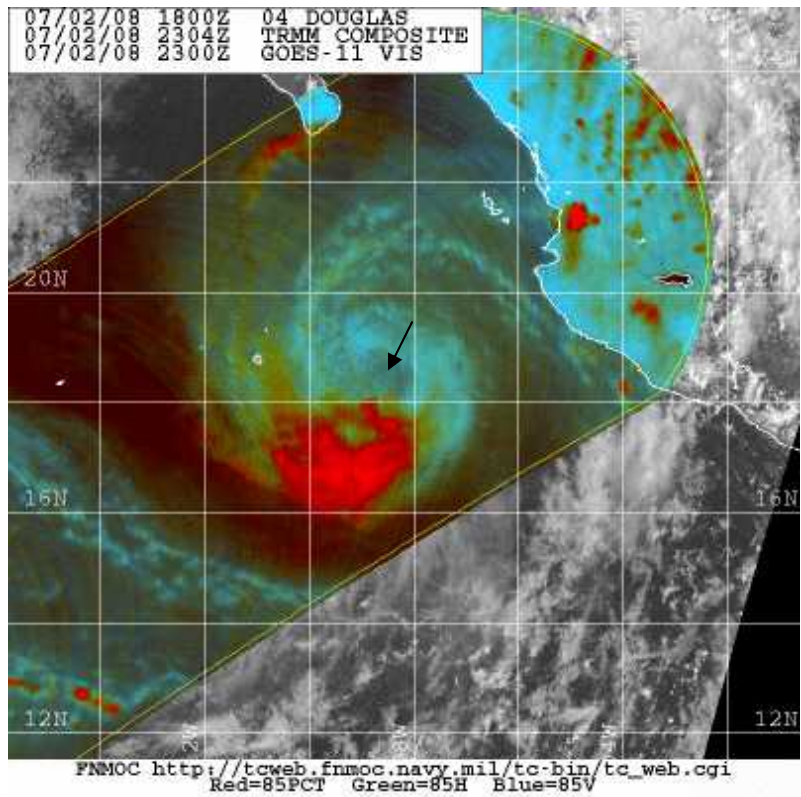


Figure 4. Composite 85-91 GHz passive microwave images of Tropical Storm Douglas at 2304 UTC 2 July 2008. The image shows the low-level circulation center (marked by an arrow) well to the northeast of the thunderstorm activity. Image courtesy of the Navy Research Laboratory (NRL)