

Tropical Cyclone Report  
Tropical Storm Eugene  
18-20 July 2005

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Eugene was a short-lived tropical storm that briefly threatened southern Baja California.

a. Synoptic History

A tropical wave that entered the Caribbean Sea on 10 July probably spawned Eugene. This system continued westward, and it entered the eastern North Pacific by 14 July. Deep convection associated with the wave was disorganized as it moved generally westward to the south of Central America and Mexico for the next few days. By 17 July, cloudiness became consolidated a few hundred miles to the south-southeast of Manzanillo, Mexico, and Dvorak classifications were initiated around 0000 UTC 18 July. Over the next several hours, deep convection became more concentrated into a circularly-shaped cloud mass and some banding features formed. It is estimated that the system developed into a tropical depression around 0600 UTC 18 July while centered about 265 n mi south of Manzanillo. Based on increased organization of the cloud pattern, and a ship report (see next section), it is estimated that the system strengthened into a tropical storm by 1200 UTC 18 July. Vertical wind shear was light and sea-surface temperatures were higher than 27°C, and these factors enabled the storm to gradually strengthen over the next day or so.

A mid-level ridge over Mexico contributed to a steering current that directed the tropical on a northwestward heading, roughly parallel to the coast of Mexico, throughout its existence. Eugene reached its estimated peak intensity of 60 kt, at 1800 UTC 19 July while centered about 180 n mi west-southwest of Cabo Corrientes, Mexico. Eugene was already beginning to encounter cooler waters by this time, however, and a weakening trend was underway by 0000 UTC 20 July. As it passed about 100 n mi to the southwest of Cabo San Lucas later that day, the cyclone weakened to a tropical depression. Eugene continued to deteriorate and by 0000 UTC 21 July it had degenerated to a swirl of low clouds with little or no deep convection. The remnant low continued northwestward for another day and lost its identity around 0000 UTC 22 July.

A “best track” map of Eugene’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 Eugene (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). The maximum intensity of Eugene, 60 kt, is based on a blend of Dvorak estimates from the above three agencies. Microwave satellite imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the NASA QuikSCAT, and Defense Meteorological Satellite Program (DMSP) satellites were also valuable for tracking and analyzing the structure of Eugene.

There were no ship reports of winds of tropical storm force associated with Eugene. However, an observation of west-northwesterly winds of 30 kt near the cyclone center from a vessel with call sign MSTM6 at 1200 UTC 18 July was instrumental for designating the system as a tropical storm at that time.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

Tropical Weather Outlooks (TWOs) from the National Hurricane Center began mentioning the area of disturbed weather that became Eugene about 20 h prior to tropical cyclone formation. At first, only slow development was expected. The potential for tropical cyclone formation was acknowledged in the TWO only about 8 h before the occurrence of the event.

Since Eugene was so short-lived, there were too few official forecasts available to produce meaningful track or intensity verification statistics. The mean official track errors were larger than average through 48 h (there were no forecasts verifying beyond 48 h) and there was a south-southwestward bias in the official track forecasts. The official intensity forecasts correctly predicted that Eugene would strengthen only modestly, not become a hurricane, and be a relatively short-lived tropical cyclone.

A tropical storm watch was issued for southern Baja California (Table 2), since Eugene's outer circulation was deemed likely to come rather close to that land area. This watch was discontinued 12 h later since the tropical cyclone was weakening rapidly and no longer posed a significant threat to the Baja peninsula.

Table 1. Best track for Tropical Storm Eugene, 18-20 July 2005.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
18 / 0600	14.8	103.7	1002	30	tropical depression
18 / 1200	15.2	104.3	1000	35	tropical storm
18 / 1800	15.9	105.0	1000	35	"
19 / 0000	16.8	105.8	998	40	"
19 / 0600	17.7	106.8	997	45	"
19 / 1200	18.6	107.7	994	50	"
19 / 1800	19.5	108.7	989	60	"
20 / 0000	20.2	109.6	994	50	"
20 / 0600	20.9	110.3	998	40	"
20 / 1200	21.5	110.9	1002	30	tropical depression
20 / 1800	22.0	111.5	1005	25	"
21 / 0000	22.5	112.1	1005	25	low
21 / 0600	23.0	112.7	1007	25	"
21 / 1200	23.5	113.3	1007	20	"
21 / 1800	23.9	113.8	1007	20	"
22 / 0000					dissipated
19 / 1800	19.5	108.7	989	60	minimum pressure

Table 2. Watch and warning summary for Tropical Storm Eugene, 18-20 July 2005.

Date/Time (UTC)	Action	Location
8 / 1500	Tropical Storm Watch issued	Southern Baja California south of Agua Blanca on the west coast and south of Buenavista on the east coast
9 / 0300	Tropical Storm Watch discontinued	Southern Baja California south of Agua Blanca on the west coast and south of Buenavista on the east coast

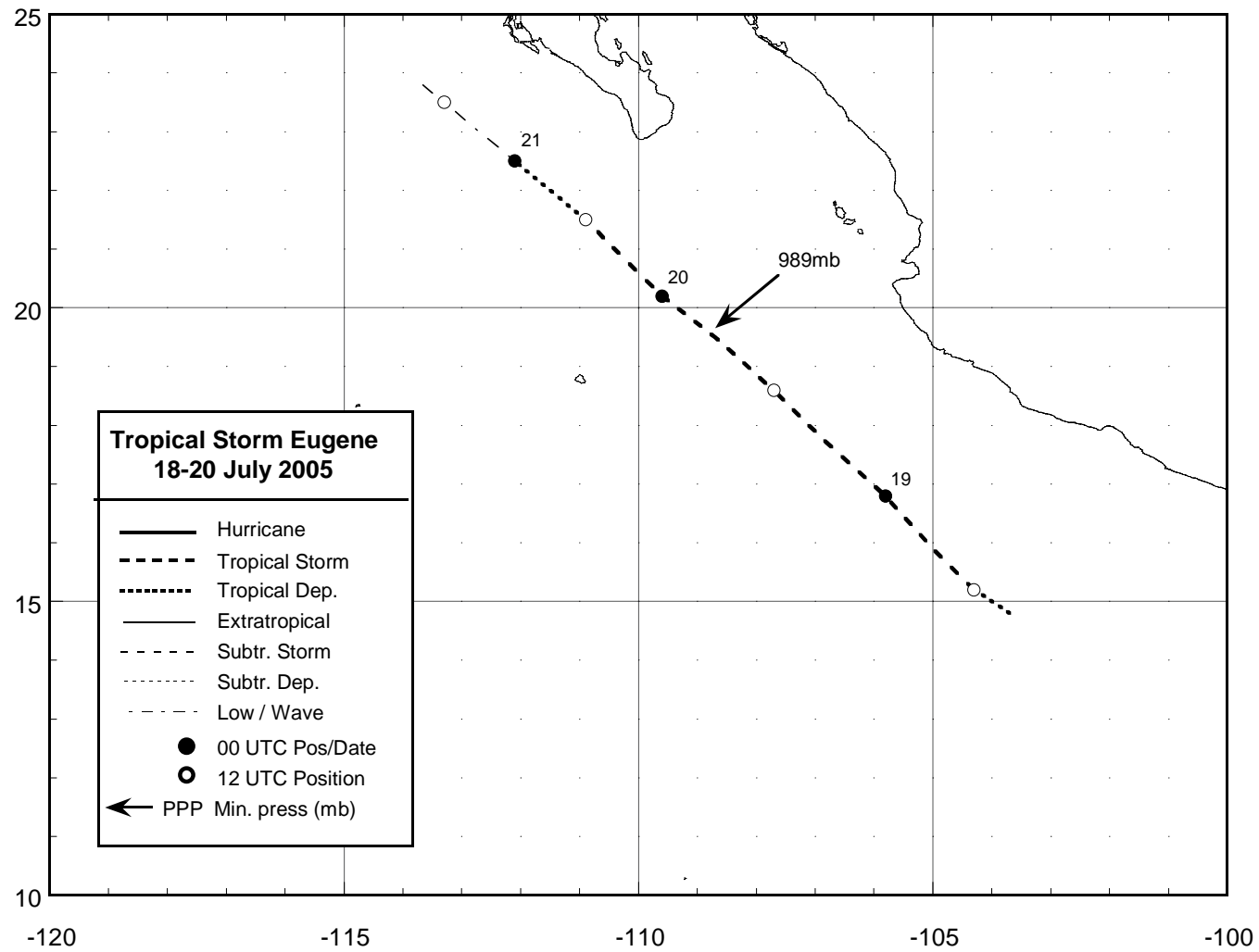


Figure 1. Best track positions for Tropical Storm Eugene, 18-20 July 2005.

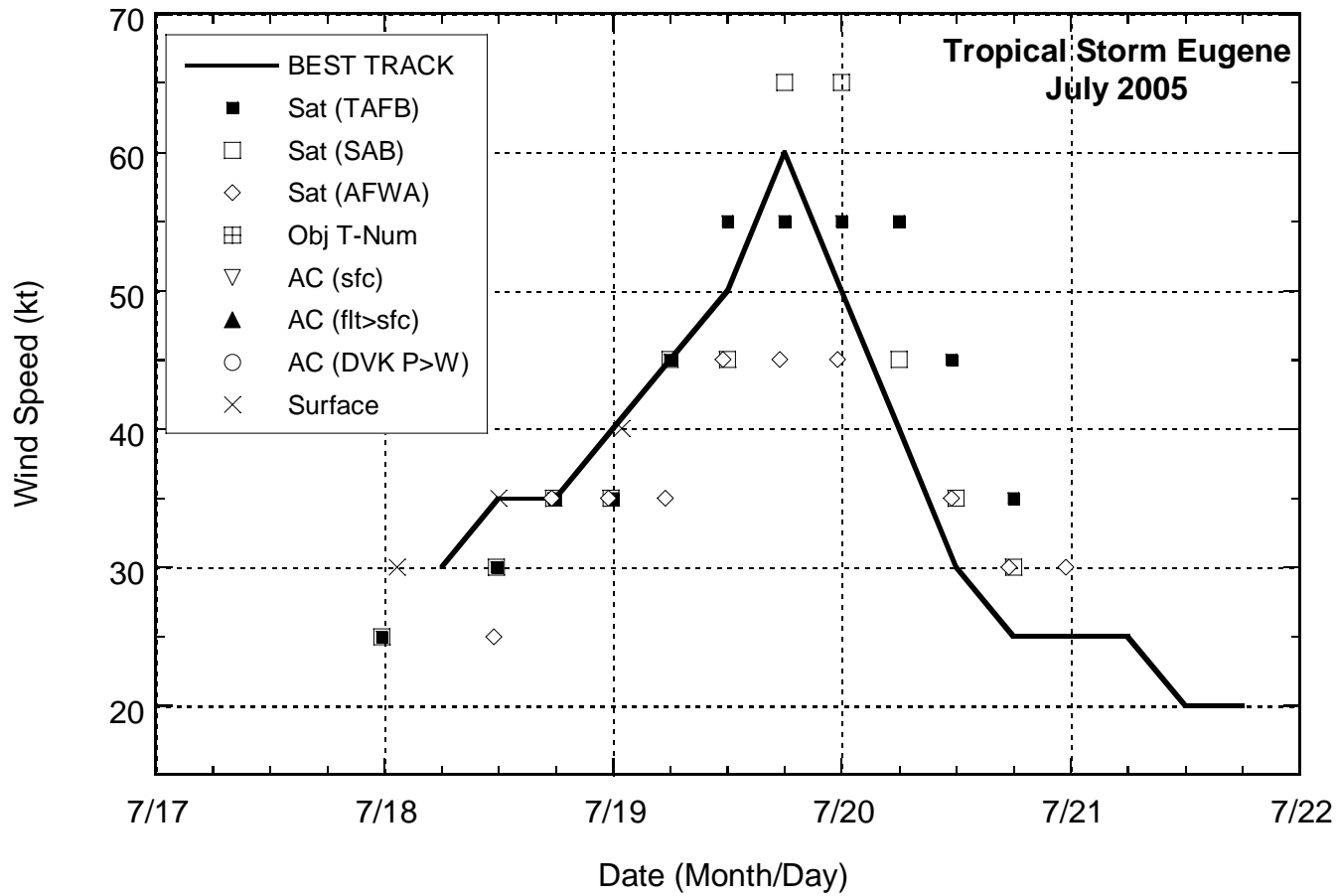


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Eugene, 18-20 July 2005.

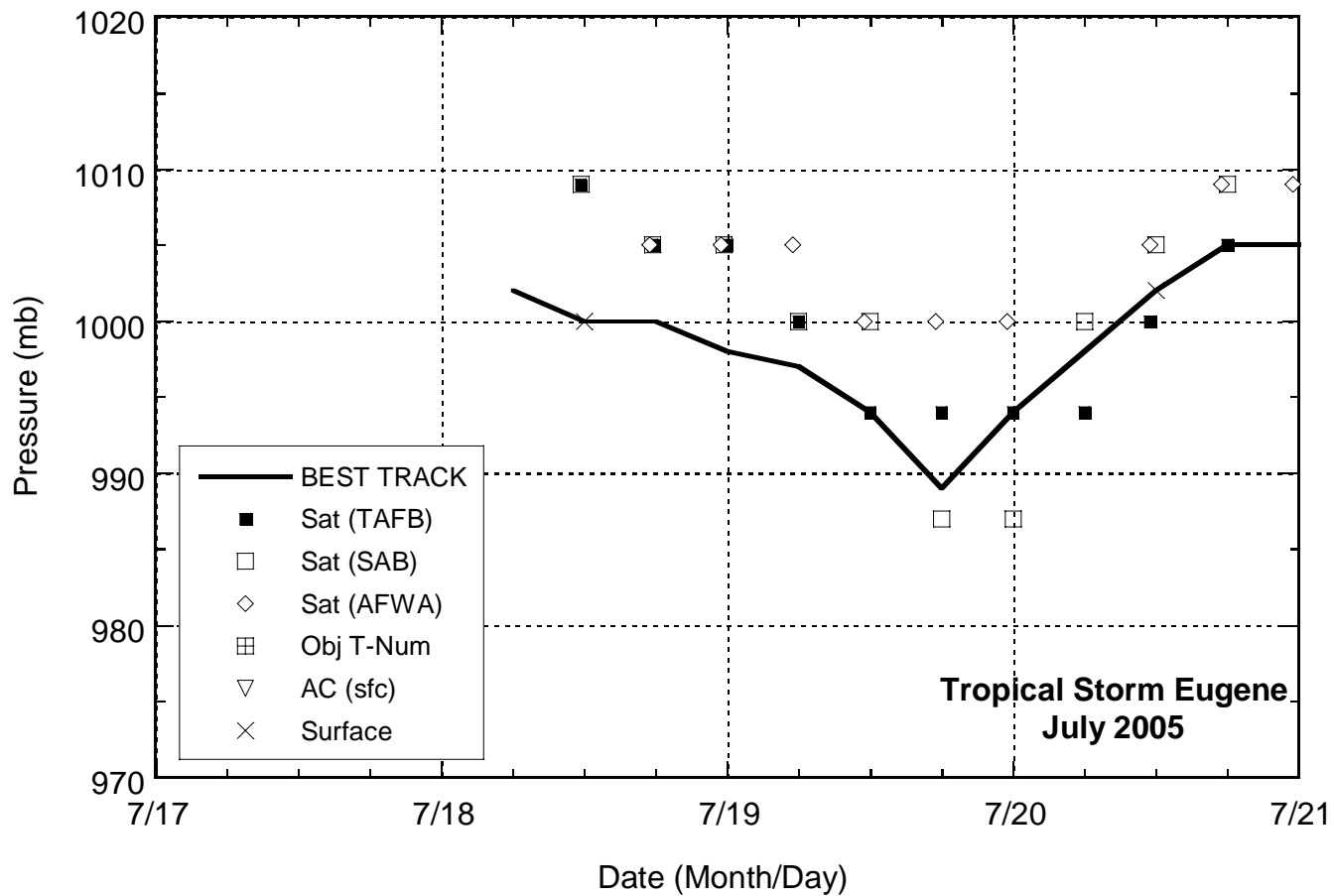


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Eugene, 18-20 July 2005.