PRELIMINARY REPORT
Tropical Storm Olaf
26-September -12 October 1997

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a. Synoptic History

Olaf was a tenacious tropical cyclone which persisted for a couple of weeks despite a prevailing unfavorable upper-level environment.

Olaf appears to have developed from an area of disturbed weather associated with a tropical wave that crossed Central America on 22 September and then slowly moved westward over the eastern Pacific. The disturbance became nearly stationary while the shower activity gradually increased. During that time, there was a strong upper-level low over the Gulf of Mexico that moved southwest into the eastern Pacific, to the west of the disturbance. Initially, the strong upper-level winds associated with the low produced a shearing environment which inhibited significant development of the disturbance. A sequence of satellite images clearly showed how the disturbance was able to gradually develop its own upper-level outflow which eventually forced the upper-low from to retreat its vicinity. This resulted in the formation of tropical depression near 1200 UTC 26 September, about 300 n mi south of the Gulf of Tehuantepec. It became Tropical Storm Olaf a few hours later.

The upper-low which also helped to steer the tropical cyclone slowly northward, toward the southeastern coast of Mexico. During that period, both satellite intensity estimates and ship reports indicated that Olaf was strengthening. Olaf reached estimated maximum winds of 60 knots and a minimum pressure of 987 mb at 1800 UTC 27 September. Thereafter, a portion of the circulation began to interact with rough terrain and Olaf gradually weakened. It was a tropical depression when the center reached the coast in the vicinity of Salina Cruz 0000 UTC 29 September. A few hours later, the circulation was no longer identified and operationally Olaf was declared dissipated. However, the area of disturbed weather, associated with the remnants of Olaf moved westward over water for a few days and operationally was reinstated as a tropical depression status 5 October. Olaf was then located a few hundred miles southwest of the southern tip of Baja California. A post-storm analysis of the satellite imagery suggests that a weak surface circulation with estimated 25-knot winds and some convective activity persisted, and were sufficient to redesignate the system as a tropical depression from 29 September to 5 October.

Olaf began to move toward the southeast on the 8th, embedded within a much larger cyclonic circulation which prevailed over the area south of Mexico. The depression moved toward the north and made its final landfall near Manzanillo Mexico 12 October. It weakened over the high terrain, but cloudiness and showers associated with this system moved back over water. It failed to redevelop.

Olaf's track is shown in Fig. 1. Table 1 is a listing, at six-hourly intervals, of the "best-track" position, estimated minimum central pressure and maximum 1-minute surface wind speed.

b. Meteorological Statistics

The best track pressure and wind curves as a function of time are shown in Figs. 2 and 3 and are based on satellite intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), the Synoptic Analysis Branch (SAB) and the Air Force Global Weather Center (AFGWC).

Ship OUJH2 was near Olaf for several hours and it was able to send a few valuable observations. The vessel reported maximum winds of 55 knots and a minimum pressure of 1003.5 mb at 0300 UTC 27 September when was located just west of the center of Olaf. This observation was used to estimate the maximum intensity of Olaf.

c. Casualty and Damage Statistics

Preliminary reports from Mexico indicate that strong winds and heavy rains associated with Olaf bashed Mexico's Pacific southeast coast. Media reports said that the military and government officials from Mexico were searching for three fishing vessels missing off the coast of Acapulco. Heavy rains also affected Guatemala and El Salvador where floods were reported. There are no reports of damage associated with Olaf's second landfall.

d. Forecast and Warning Critique

Olaf moved northward following its inception. Therefore, a tropical storm warning was issued for the coast of Mexico from Tapachula to Punta Maldonado at 2100 UTC 26 September. Because Olaf was forecast to become a hurricane before landfall, the tropical storm warning was replaced by a hurricane warning for the same region at 0900 UTC 27 September. Olaf unexpectedly weakened and the hurricane warnings were changed back to tropical storm warnings later on that day.

The average official forecast error was 89 n mi at 24 hours (5 forecasts) and 93 n mi at 72 hours (1 forecast). These numbers

are not significant since Olaf was a tropical storm only for a short period.

Advisories on Olaf were discontinued after its first landfall but the possibility of its regeneration was indicated in the NHC Tropical Weather Outlooks. Advisories were reinitiated when it became apparent that Olaf had rejuvenated.

Figure Captions:

Fig. 1. Best track positions for Tropical Storm Olaf, 26 September- 12 October 1997.

Fig. 2. Best track one-minute surface wind speed curve for Tropical Storm Olaf.

Fig. 3. Best track minimum central pressure curve for Tropical Storm Olaf.

Table 1. Best track, Tropical Storm Olaf, 26 September-12 October, 1997

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
26/1200	11.3	94.6	1008	30	tropical depression
1800	12.2	94.4	1005	40	tropical storm
27/0000	13.1	94.5	1000	45	"
0600	13.7	94.7	995	55	"
1200	14.1	94.8	990	55	"
1800	14.5	94.8	989	60	"
28/0000	14.9	94.6	990	60	"
0600	15.3	94.5	994	55	"
1200	15.6	94.6	996	50	"
1800	15.9	94.7	1000	45	"
29/0000	16.2	95.0	1005	30	tropical depression
0600	16.2	95.7	1009	25	"
1200	16.1	95.9	1009	25	"
1800	16.0	96.5	1009	25	"
30/0000	15.9	97.1	1009	25	"
0600	15.8	97.8	1009	25	"
1200	15.7	98.6	1009	25	"
1800	15.6	99.4	1009	25	"
1/0000	15.5	100.3	1009	25	"
0600	15.5	101.3	1009	25	"
1200	15.4	102.3	1009	25	"
1800	15.3	103.5	1009	25	"
2/0000	15.2	104.7	1009	25	"
0600	15.2	106.0	1009	25	"
1200	15.1	107.3	1009	25	"
1800	15.1	108.6	1009	25	"
3/0000	15.1	110.0	1009	25	"
0600	15.1	111.4	1009	25	"
1200	15.2	112.6	1009	25	"
1800	15.4	113.7	1009	25	"
4/0000	15.8	114.3	1009	25	"
0600	16.2	114.8	1009	25	"
1200	16.3	115.4	1009	25	"
1800	16.4	115.9	1009	25	"
5/0000	16.5	116.4	1009	25	"
0600	16.5	116.8	1009	25	"
1200	16.5	116.6	1007	25	"
1800	16.6	115.9	1005	30	"

6/0000	16.5	115.3	1005	30	"
0600	16.4	114.8	1005	30	"
1200	16.2	114.3	1005	30	"
1800	16.0	113.8	1005	30	"
7/0000	15.8	113.3	1005	30	"
0600	15.7	113.0	1005	30	"
1200	15.7	112.5	1005	30	"
1800	15.6	111.9	1005	30	"
8/0000	15.3	111.1	1005	30	"
0600	14.9	110.2	1005	30	"
1200	14.4	109.3	1005	30	"
1800	13.8	108.4	1005	30	"
9/0000	13.2	107.6	1005	30	"
0600	12.6	106.8	1005	30	"
1200	12.1	106.1	1005	30	"
1800	11.9	105.4	1005	30	"
10/0000	12.2	104.9	1005	30	"
0600	12.8	104.5	1005	30	"
1200	13.4	104.1	1005	30	"
1800	14.1	103.9	1005	30	"
11/0000	15.4	103.8	1005	30	"
0600	16.0	104.0	1005	30	"
1200	16.7	104.0	1005	30	"
1800	17.3	104.0	1005	30	"
12/0000	17.8	104.0	1005	30	"
0600	18.2	104.0	1005	30	"
1200	18.7	104.0	1005	30	"
1800	19.0	104.2	1009	25	dissipating
29/0000	16.2	95.0	1005	30	Landfall near Salina Cruz, MX
12/1800	19.0	104.2	1009	25	Landfall near Manzanillo, MX
27/1800	14.5	94.8	989	60	Minimum Pressure

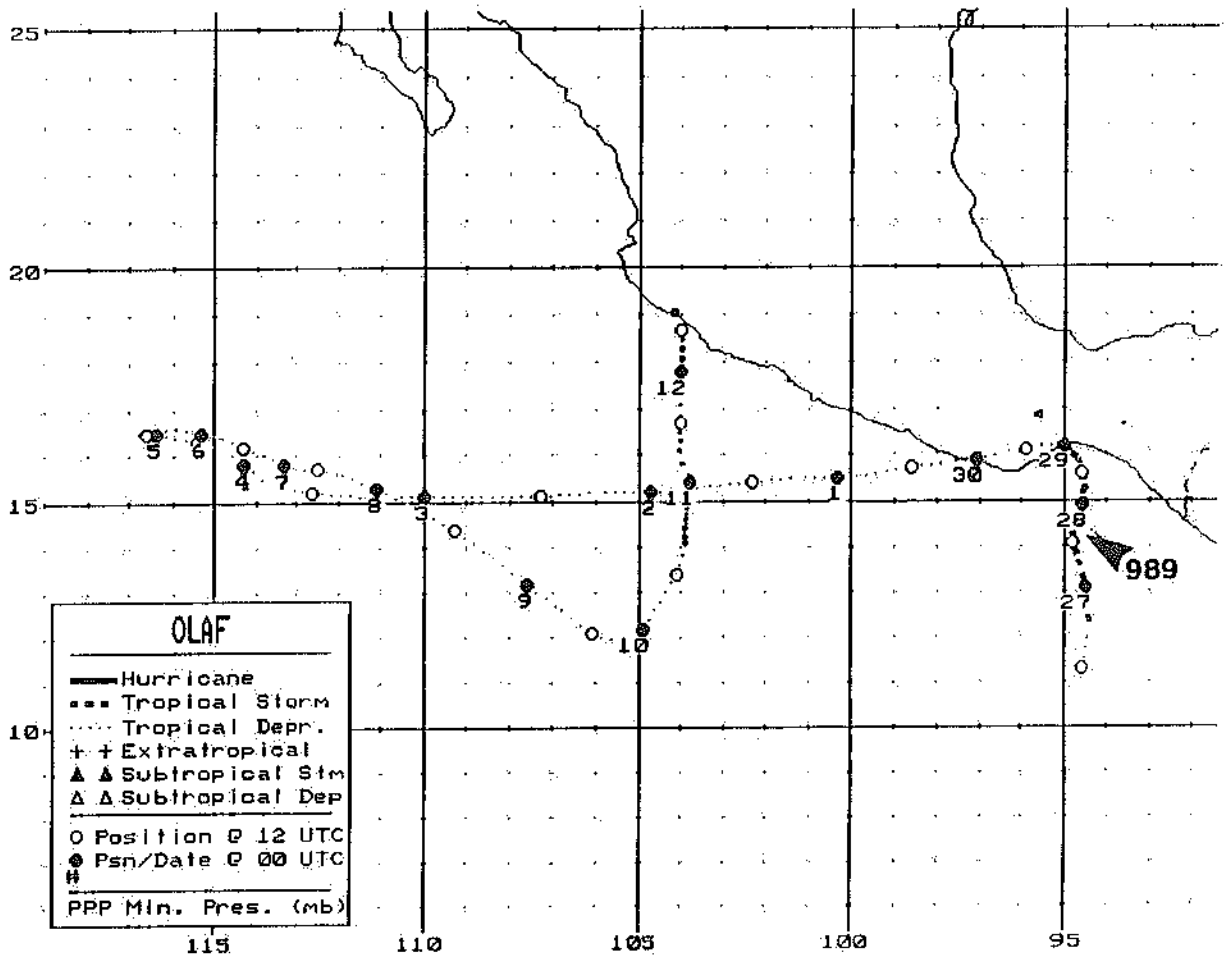

Fig. 1. Best track positions for Tropical Storm Olaf, 26 September- 12 October 1997.

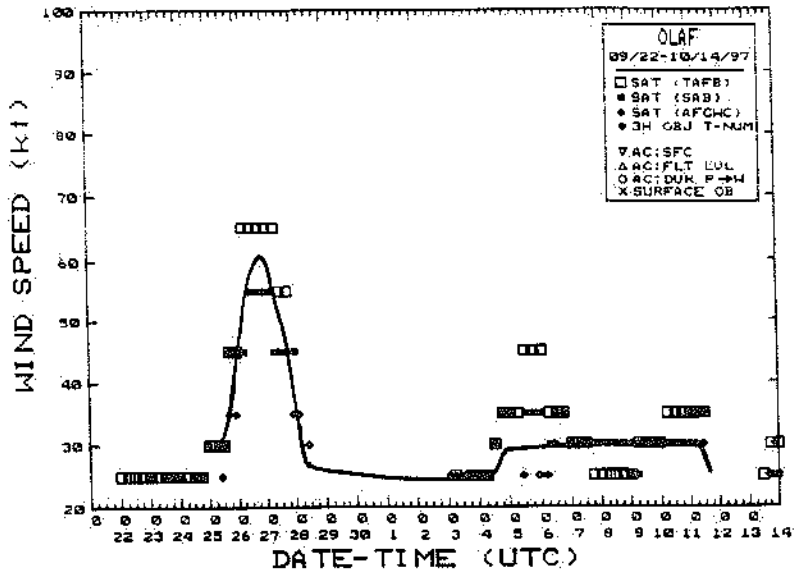

Fig. 2. Best track one-minute surface wind speed curve for Tropical Storm Olaf.

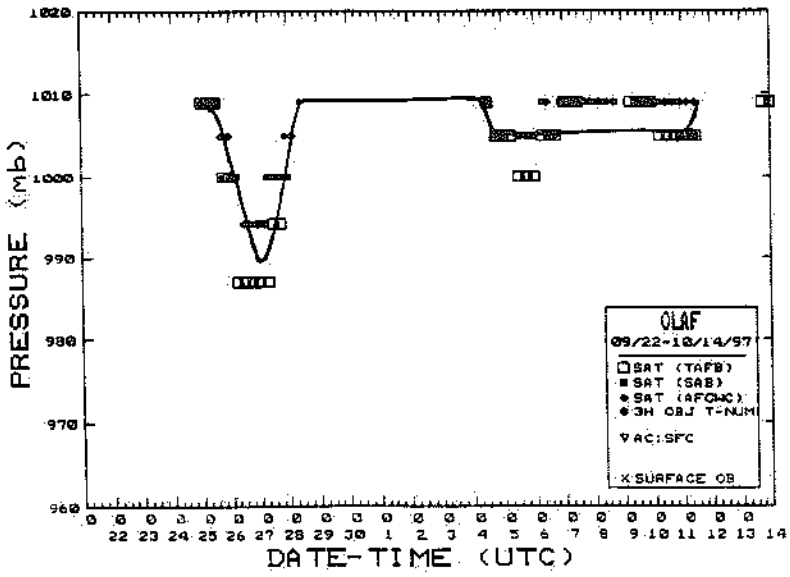

Fig. 3. Best track minimum central pressure curve for Tropical Storm Olaf.