

Preliminary Report  
Hurricane Rick  
7 - 10 November 1997

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Hurricane Rick made landfall in the state of Oaxaca, Mexico, as a category one hurricane on the Saffir/Simpson Hurricane Scale. This area had been devastated by Hurricane Pauline about one month earlier.

a. Synoptic History

Satellite imagery showed an increase in cloudiness several hundred miles south of the Gulf of Tehuantepec on 5 November. This disturbance may have originated from a tropical wave that moved from Africa to the eastern Atlantic on 15 October. However, the wave was poorly defined on satellite imagery while it passed over much of the Atlantic and Caribbean, and mainly continuity was used to track the wave into the eastern Pacific.

The disturbance soon developed a distinct banding type cloud pattern. Satellite classifications began at 0000 UTC 6 November, although the circulation center was poorly defined. The center became better organized, and the "best track" indicates that a tropical depression formed from the disturbance near 0000 UTC 7 November, while centered about 500 n mi south-southwest of Acapulco, Mexico (Fig. 1 and Table 1). The developing cyclone initially moved slowly toward the northwest.

The tropical depression gradually turned toward the north in response to a deep-layer-mean trough to the northwest. Deep convection increased near the center and it is estimated that the depression strengthened into Tropical Storm Rick by 1200 UTC 8 November, while centered about 325 n mi southwest of Acapulco. A very cold central dense overcast developed as Rick became a hurricane at 0600 UTC 9 November while centered about 130 n mi south-southwest of Acapulco. The hurricane was moving northeastward near 12 knots by this time, embedded within southwesterly flow. An eye appeared in satellite imagery, and it is estimated that Rick reached its peak intensity with 85 knot winds and 973 mb minimum central pressure near 1200 UTC on the 9th, while centered about 100 n mi south of

Acapulco. The radar from Acapulco showed the well-defined center of the hurricane moving east-northeastward until landfall in the vicinity of Puerto Escondido near 0100 UTC 10 November. The maximum sustained winds at landfall are estimated near 75 knots.

The center of the weakening tropical cyclone moved nearly parallel to the coastline of Mexico along the northern Gulf of Tehuantepec for another 12 hours or so, eventually dissipating over the central portion of the state of Chiapas. The remnant of the cyclone was visible in satellite imagery as a weak low-level cloud swirl over the southeastern Bay of Campeche on 11 November, void of all deep convection.

#### b. Meteorological Statistics

Figures 2 and 3 show the curves of minimum central pressure and maximum one-minute wind speed, respectively, versus time along with the observations on which they are based. As usual for an eastern Pacific tropical cyclone, satellites provided the primary source of observational data. Dvorak technique location and intensity estimates from the satellite data were produced by the Air Force Global Weather Center (AFGWC), the NOAA Synoptic Analysis Branch (SAB) and the NOAA Tropical Analysis and Forecast Branch (TAFB).

The maximum sustained surface wind reported by the Meteorological Service of Mexico from the point of landfall at Puerto Escondido, Mexico, was 65 knots. The time of this observation was reportedly 0200 UTC 10 November. Radar images indicate that the center crossed the coast near 0100 UTC. This suggests that the strongest winds were on the “back side” of the eye, or perhaps more likely, even stronger winds occurred earlier that were not reported.

No eye was visible in geostationary satellite imagery for nearly 12 hours before landfall, during which time radar data from Acapulco were invaluable in tracking the center.

Ten inches of rain was reported at Puerto Escondido. Locally heavy rains likely occurred elsewhere over the states of Oaxaca and Chiapas.

#### c. Casualty and Damage Statistics

There have been no reports of injuries or deaths related to Rick received at the NHC. The Associated Press reported downed trees and washed out roads in Oaxaca. Some of these roads had been recently repaired after Hurricane Pauline. The hurricane also knocked out communications in some small coastal villages.

#### d. Forecast and Warning Critique

Official track forecasts correctly indicated the general recurvature toward the northeast. The first forecast package issued at 2100 UTC 7 November even mentioned the potential threat to the southwest coast of Mexico within about two days. NHC average official track forecast errors (excluding the tropical depression stage) were 54 (7 cases), 115 (5 cases), 183 (3 cases) and 275 n. mi. (1 case), respectively, for the 12-, 24-, 36- and 48-hour forecast periods. These errors are larger than the previous ten-year averages, but are not uncommon for a recurving system in the eastern North Pacific. At 24 hours, the NHC average official track forecast error was lower than the average track forecast errors from all operationally available models. Beyond 24 hours, comparisons likely have little meaning given the small sample size.

The NHC official intensity forecasts showed a distinct negative bias (i.e., intensity was underestimated).

Table 2 lists the watches and warnings issued in association with Rick.

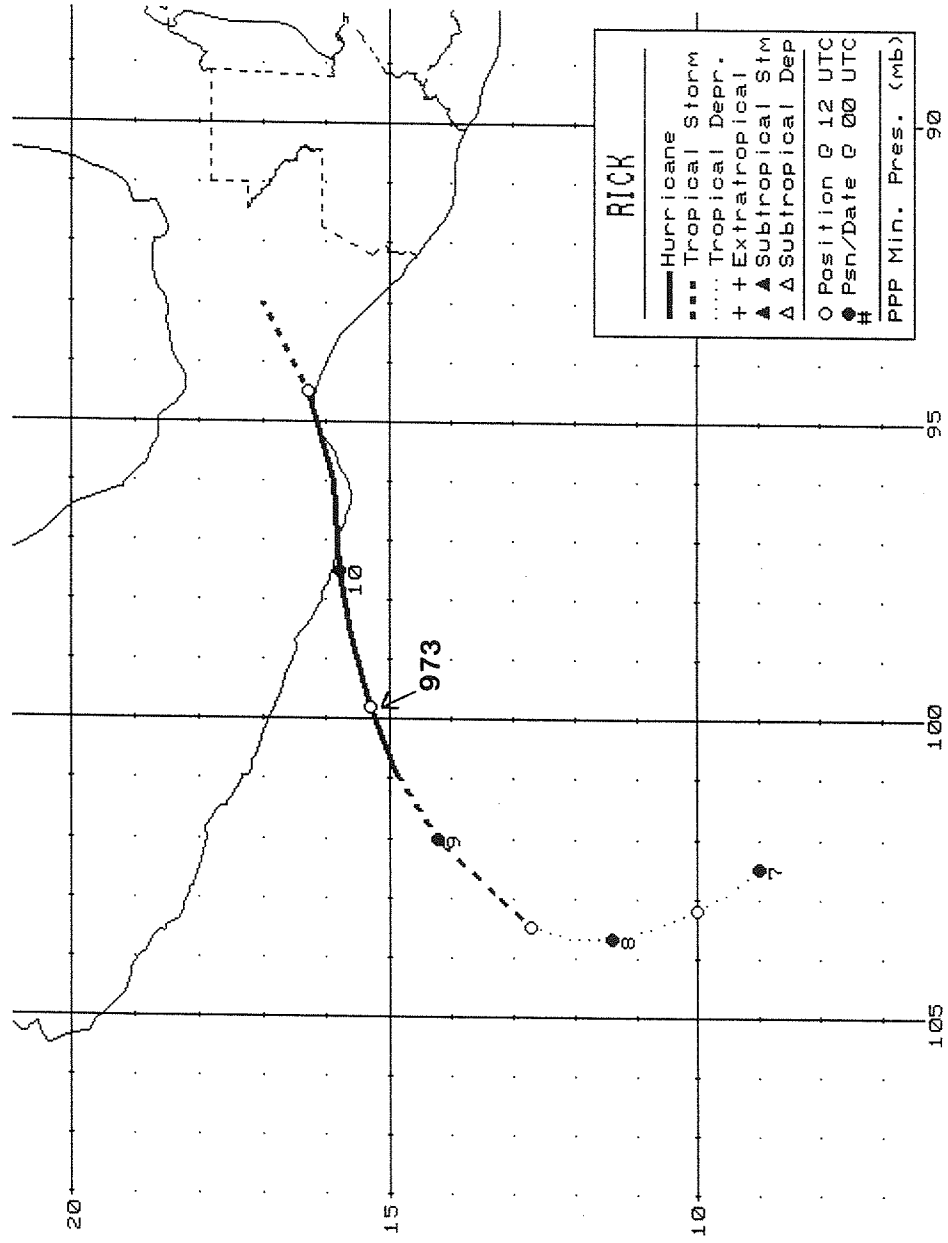


Figure 1. Best track positions for Hurricane Rick, 7 - 10 November 1997.

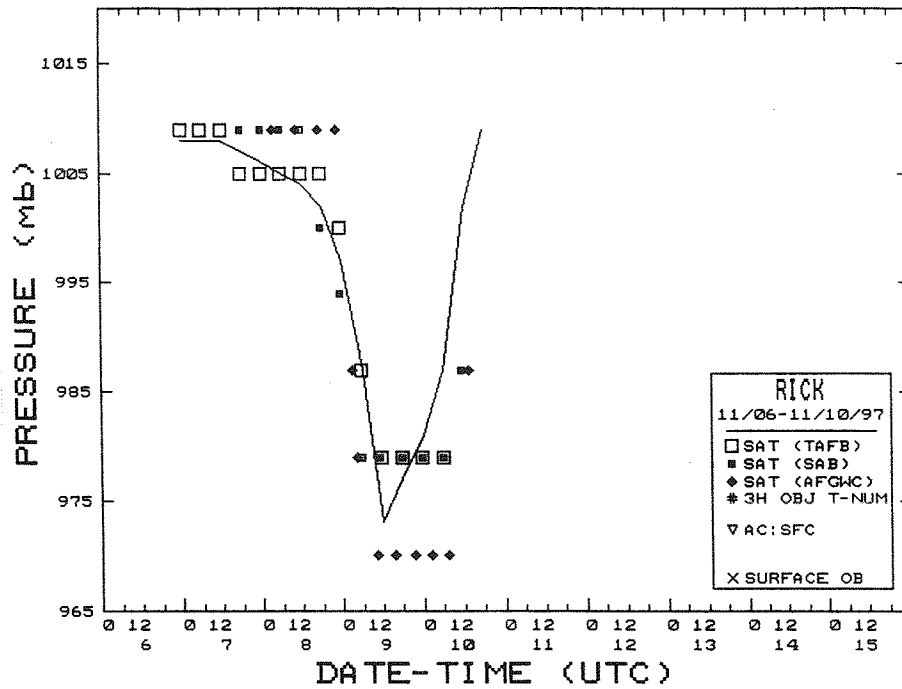


Figure 2. Best track minimum central pressure curve for Hurricane Rick.

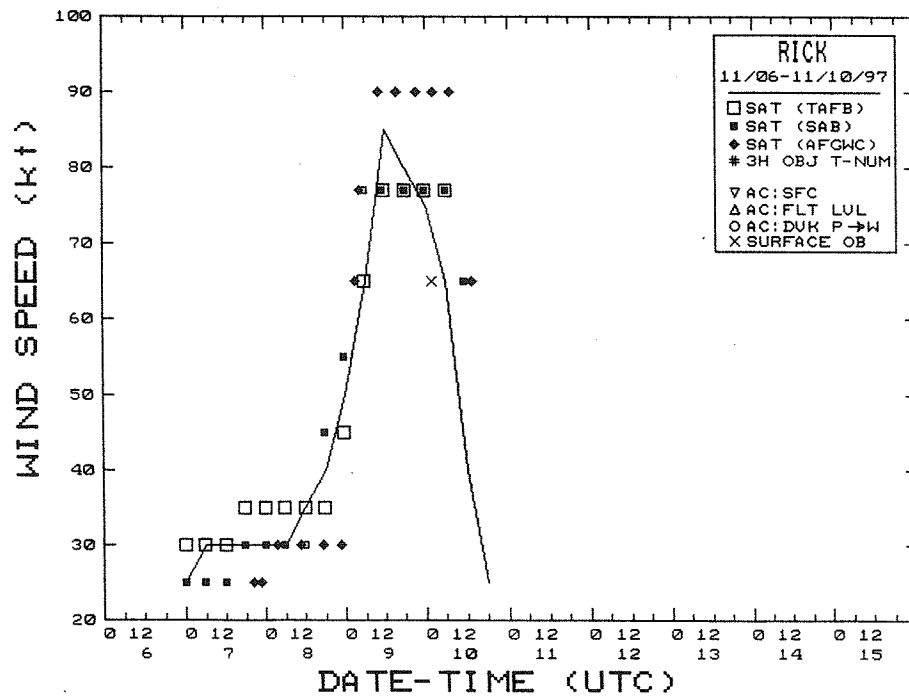


Figure 3. Best track maximum sustained wind speed curve for Hurricane Rick.

**Table 1. Best track, Hurricane Rick, 7 - 10 November 1997.**

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
07/0000	9.0	102.5	1008	25	tropical depression
0600	9.5	102.9	1008	30	“
1200	10.0	103.2	1008	30	“
1800	10.7	103.5	1007	30	“
08/0000	11.4	103.7	1006	30	“
0600	12.1	103.7	1005	30	“
1200	12.7	103.5	1004	35	tropical storm
1800	13.3	102.9	1002	40	“
09/0000	14.2	102.0	997	50	“
0600	14.9	100.9	987	65	hurricane
1200	15.3	99.8	973	85	“
1800	15.6	98.6	977	80	“
10/0000	15.8	97.5	981	75	“
0600	15.9	96.0	987	65	“
1200	16.3	94.5	1002	40	tropical storm
1800	17.0	93.0	1009	25	tropical depression
11/0000					dissipated
09/1200	15.3	99.8	973	85	minimum pressure
10/0100	15.9	97.1	981	75	landfall near Puerto Escondido, Mexico

**Table 2. Tropical Cyclone watch and warning summary for Hurricane Rick, issued by the Meteorological Service of Mexico.**

Date/Time (UTC)	Action	Location
08/0900	Tropical Storm Watch issued	Lazaro Cardenas to Puerto Escondido, including Acapulco
09/0300	Tropical Storm Warning and a Hurricane Watch issued	Lazaro Cardenas to Puerto Escondido, including Acapulco
09/0600	Hurricane Warning issued	Lazaro Cardenas to Puerto Escondido, including Acapulco
09/1500	Hurricane Warning extended eastward	Zihuatanejo to Huatulco
09/1500	Hurricane Warning discontinued	Lazaro Cardenas to just west of Zihuatanejo
09/1800	Hurricane Warning discontinued	Acapulco westward
10/0300	Hurricane Warning extended eastward	Punta Maldonado to Tapachula
10/0300	Hurricane Warning discontinued	west of Punta Maldonado
10/0900	Hurricane Warning downgraded to Tropical Storm Warning	Punta Maldonado to Tapachula
10/1500	Tropical Storm Warning discontinued	Punta Maldonado to Tapachula