

Preliminary Report  
Tropical Storm Irwin  
8 - 11 October, 1999

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a. Synoptic History

A slow-moving tropical wave led to the formation of Irwin. This wave crossed over Central America and eastern Mexico on 1-3 October, and spawned Tropical Depression Eleven over the southwest Gulf of Mexico on 4 October. The southern portion of the wave produced an area of disturbed weather that became prominent over the Pacific waters in the vicinity of Acapulco, Mexico early on 5 October. This weather area was first classified using the Dvorak satellite technique at 2345 UTC that day. However, for the next couple of days, the system was strongly sheared from the east and therefore lacked enough organized deep convection to be classified as a tropical depression. Early on 8 October, however, deep convection became better organized around a low-level center, and it is estimated that Tropical Depression Fourteen-E developed at 1200 UTC on the 8th, about 125 n mi south-southwest of Manzanillo, Mexico. Images from the Mexican Meteorological Service radar at Cuyutlan also confirmed the formation of the tropical cyclone.

Initially the cyclone moved slowly north-northwestward, and it strengthened into a tropical storm, Irwin, while centered about 100 miles south-southwest of Manzanillo later on the 8<sup>th</sup>. A strong mid-tropospheric ridge developed over northern Mexico and this feature caused Irwin's track to gradually bend toward the northwest, away from the coast of mainland Mexico. However, the center of the storm came within about 75 n mi of the coastline between Manzanillo and Cabo Corrientes early on the 9<sup>th</sup>. Later that day, Irwin turned toward the west-northwest and, in the presence of moderate east-northeasterly shear, the storm intensified to its peak strength of 50 knots by 1800 UTC 9 October.

Early on 10 October, the ridge to Irwin's north forced it on a westward course, and northeasterly shear combined with more stable air began to take its toll on the tropical cyclone. Later that day, Irwin turned toward the west-southwest and the center of the weakening cyclone passed over Socorro Island around 2000 UTC. By this time, essentially all deep convection associated with Irwin was gone, and it is estimated that the system's winds diminished below storm strength. The cyclone dissipated early on 11 October about 350 n mi southwest of Cabo San Lucas.

## b. Meteorological Statistics

Table 1 lists the best track positions and intensities of Irwin at six-hourly intervals. Figure 1 is a display of this track. Figures 2 and 3 depict the curves of maximum one-minute average “surface” (10 meters above ground level) wind speed and minimum central sea-level pressure, respectively, as a function of time. Also plotted are the observations on which the curves are based; these consist of Dvorak-technique estimates from the Tropical Analysis and Forecast Branch, TAFB, the Satellite Analysis Branch, SAB, and the U.S. Air Force Weather Agency, AFWA, using satellite imagery.

The maximum intensity estimate for Irwin, 50 knots, is based on a compromise of Dvorak technique estimates from AFWA, SAB, and TAFB.

There was one ship report of tropical storm force winds associated with Irwin. At 1800 UTC 9 October, a vessel, with call sign *4QVV*, reported winds 120°/45 knots at 18.9° N 105.8° W. This was about 80 n mi east of the center of Irwin at the time.

No strong winds were reported from Socorro Island. Even though the center of Irwin passed over that location, the cyclone had weakened to a depression, and apparently strong winds were occurring over a very small portion of the circulation by that time.

## c. Casualty and Damage Statistics

To the author’s knowledge, Irwin caused no casualties or damage.

## d. Forecast and Warning Critique

Irwin was a tropical storm for only 48 hours, so there are no meaningful forecast verification statistics. However, it is worth noting that the official forecasts correctly anticipated that Irwin would not strengthen into a hurricane.

Since Irwin was initially a threat to the coast, the government of Mexico issued a tropical storm watch from Punta San Telmo to Cabo Corrientes at 2100 UTC 8 October. This was upgraded to a tropical storm warning for that same area at 0300 UTC 9 October. The warning was discontinued at 1800 UTC on the 9<sup>th</sup>, by which time it was clear that Irwin was heading away from the mainland.

Table 1. Best track, Tropical Storm Irwin, 8-11 October 1999.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
08 / 1200	17.3	105.0	1005	30	tropical depression
08 / 1800	17.7	105.1	1004	35	tropical storm
09 / 0000	18.1	105.3	1000	40	"
09 / 0600	18.4	105.7	998	45	"
09 / 1200	18.8	106.4	998	45	"
09 / 1800	19.0	107.1	996	50	"
10 / 0000	19.1	108.0	997	50	"
10 / 0600	19.2	109.0	998	45	"
10 / 1200	19.1	110.0	1000	40	"
10 / 1800	18.9	110.8	1003	35	"
11 / 0000	18.4	111.3	1004	30	tropical depression
11 / 0600	18.0	112.0	1007	25	"
11 / 1200					dissipated
09 / 1800	19.0	107.1	996	50	minimum pressure

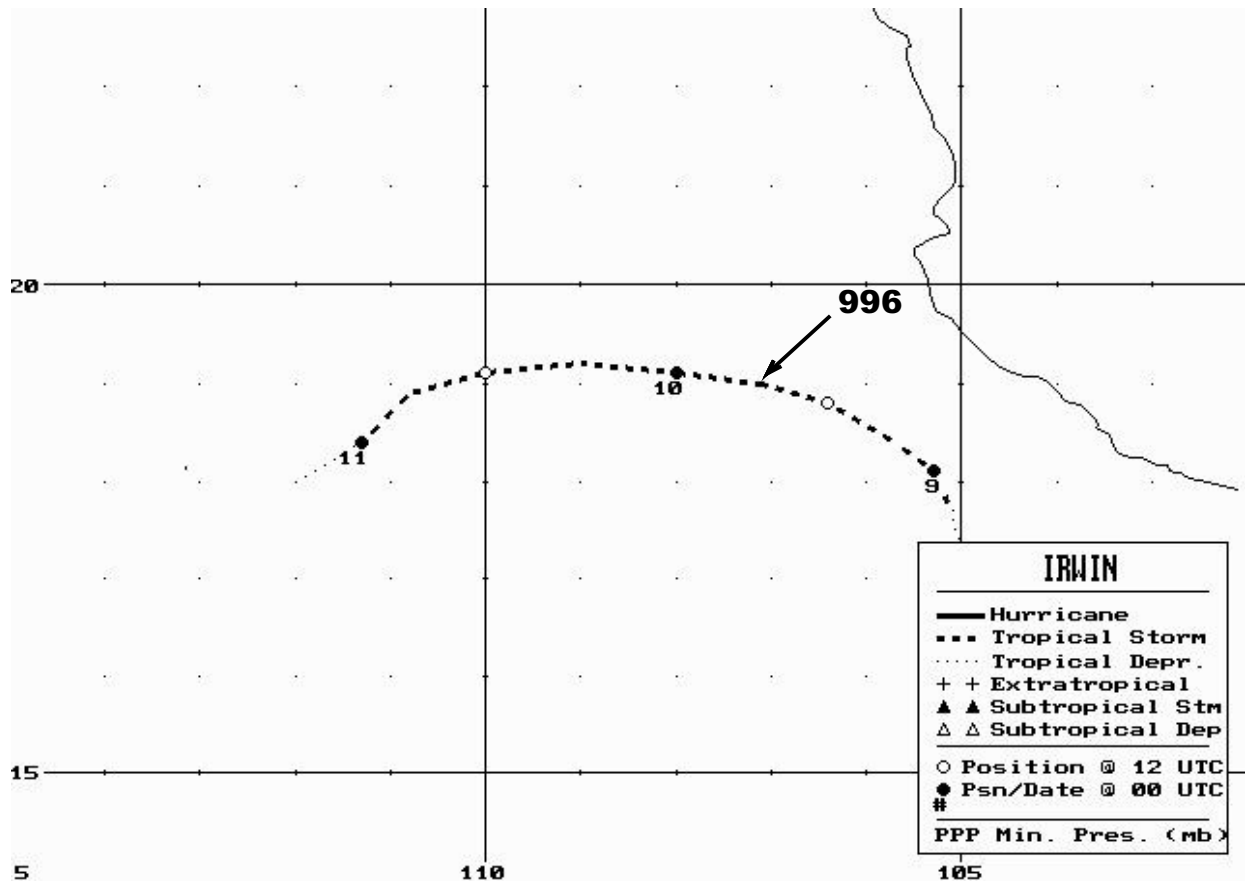


Fig. 1. Best track positions for Tropical Storm Irwin, 8-11 October, 1999.

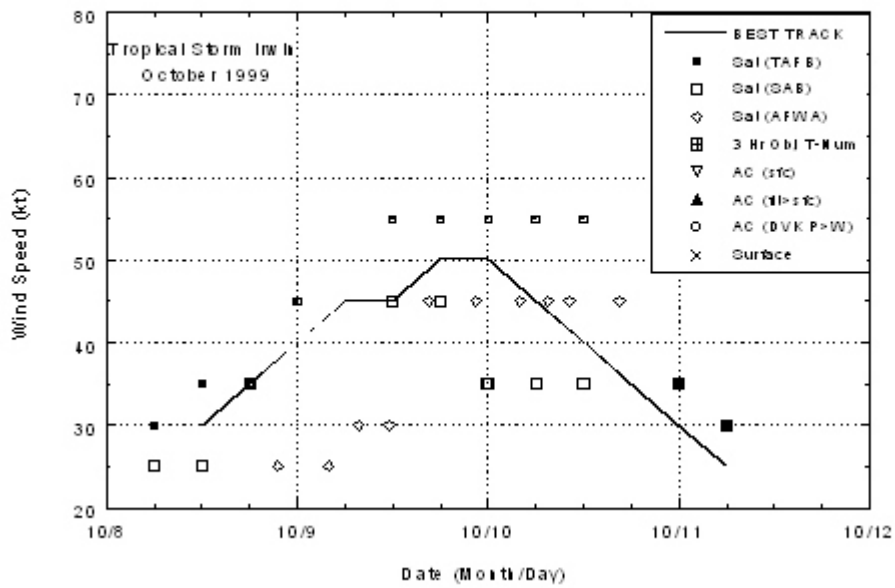


Figure 2. Best track maximum sustained (one-minute average) wind speed curve for Tropical Storm Irwin.

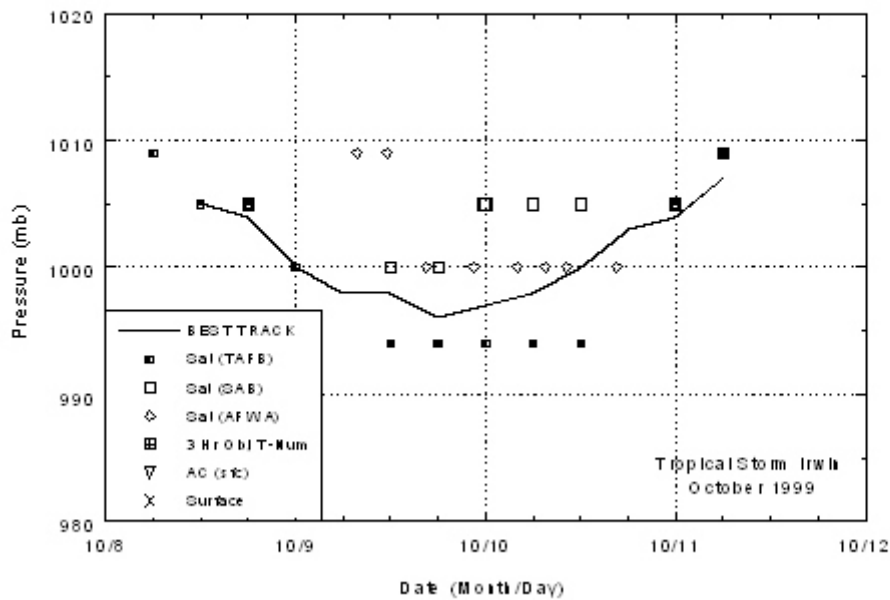


Figure 3. Best track minimum central pressure curve for Tropical Storm Irwin.