Preliminary Report
Tropical Storm Celia
17 - 21 July 1998

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Celia was a short-lived tropical storm in the eastern North Pacific that briefly threatened southern Baja California.

a. Synoptic History

The tropical wave from which Celia apparently formed was first identified off the west coast of Africa on 1 July. This wave moved westward at around 15 knots across the tropical Atlantic with no development, entering the eastern Caribbean Sea on the 7th. It continued westward at low latitudes over the Caribbean Sea, its development being precluded by strong vertical shear. On 11 July, the wave crossed Central America and convective clouds began to show definite signs of organization to the south of the Gulf of Tehuantepec on the 13th, prompting an 1800 UTC Dvorak classification of T1.0 by the Tropical Analysis and Forecast Branch (TAFB), with a center fix near 8° N 98° W. Shortly thereafter, the development trend ceased, as the cloud pattern became less-organized, resulting in the system being declared "too weak to classify" by 14 July. There was little change as the cloud cluster moved west-northwestward until the 16th, when the convective bands associated with the disturbance became more curved and some locally heavy rains spread over the southern Mexico coastal area. Development was rather rapid on the following day. Based partially on a ship report (see next section), it is estimated that a 40-knot tropical storm had formed by 1200 UTC 17 July, and based on backward extrapolation and satellite imagery, it is estimated that this system developed into a tropical depression about six hours earlier, around 130 n mi south of Manzanillo, Mexico (Table 1 and Figure 1).

After becoming a tropical storm, Celia moved northwestward in the general direction of the southern tip of Baja California (Cabo San Lucas). However, a mid- to upper-tropospheric anticyclone to the north forced a more west-northwestward motion. Celia's center passed about 130 n mi south-southwest of Cabo San Lucas early on the 18th. Later that day, the tropical cyclone became better-organized, and reached its peak intensity of 50 knots. By 19 July, deep convection associated with Celia diminished. A mid-level ridge along 30°- 35° N latitude induced a mainly westward movement, and Celia gradually spun down over cooler sea surface temperatures, weakening to a tropical depression on the 20th and dissipating early on 21 July.

b. Meteorological Statistics

Figures 2 and 3 depict the curves of minimum central sea-level pressure and maximum one-minute average "surface" (10 meters above ground level) wind speed, respectively, as a function of time. Also plotted are the observations on which the curves are based, consisting of Dvorak-technique estimates (from TAFB, the Synoptic Analysis Branch, SAB, and the U.S. Air Force Global Weather Agency, AFGWC in the figures) using satellite imagery. Celia was upgraded directly to a tropical storm based on a report from ship *KGTI*, of winds of 100/45 knots at 18.5° N 104.6° W at 1200 UTC 17 July. Another ship, *4XGX*, reported winds of 210/40 knots at 18.8° N 104.7° W and 130/50 knots at 19.4° N 105.6° W at 1200 UTC and 1700 UTC 17 July. These velocities appear to have been estimated, and based on the subsequent evolution of the storm, the 45 and 50 knot speeds seem to be slightly high. At 1200 UTC 18 July, another ship, *VRUZ,* reported 130/35 knot winds at 22.9° N 109.0° W. That position is about 60 n mi east of Cabo San Lucas. No reports of tropical storm force winds were received from Baja California.

c. Casualty and Damage Statistics

No casualties or damage are known to have occurred due to this storm.

d. Forecast and Warning Critique

Excluding the depression stage, the average official track forecast errors for Celia were 36 n mi at 12 hours, 67 n mi at 24 hours, 105 n mi at 36 hours, 141 n mi at 48 hours, and 120 n mi at 72 hours. These errors are comparable to the most recent ten-year averages through 48 hours, but substantially lower than the long-term average at 72 hours. There were, however, only four cases to verify at the latter time. Intensity forecast errors were mostly less than 10 knots.

A tropical storm warning was issued for extreme southern Baja California from La Paz southward at 0300 UTC 18 July. This warning was discontinued at 1500 UTC 18 July.

Table 1. Best track, Tropical Storm Celia, 17- 21 July, 1998

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
17/0600	16.9	104.6	1005	30	tropical depression
1200	17.5	105.9	1003	40	tropical storm
1800	18.4	107.1	1002	40	"
18/0000	19.4	108.3	1001	40	"
0600	20.4	109.8	1001	45	"
1200	21.0	111.3	1000	45	"
1800	21.5	112.5	1000	45	"
19/0000	21.8	113.7	997	50	"
0600	22.0	114.6	1000	45	"
1200	22.1	115.4	1002	45	"
1800	22.2	116.3	1003	40	"
20/0000	22.2	117.3	1004	35	"
0600	22.2	118.0	1006	30	tropical depression
1200	22.3	118.8	1006	30	"
1800	22.4	119.8	1007	25	"
21/0000	22.7	120.8	1007	25	"
0600	22.8	121.6	1008	25	"
1200					dissipated

19/0000	21.8	113.7	997	50	minimum pressure

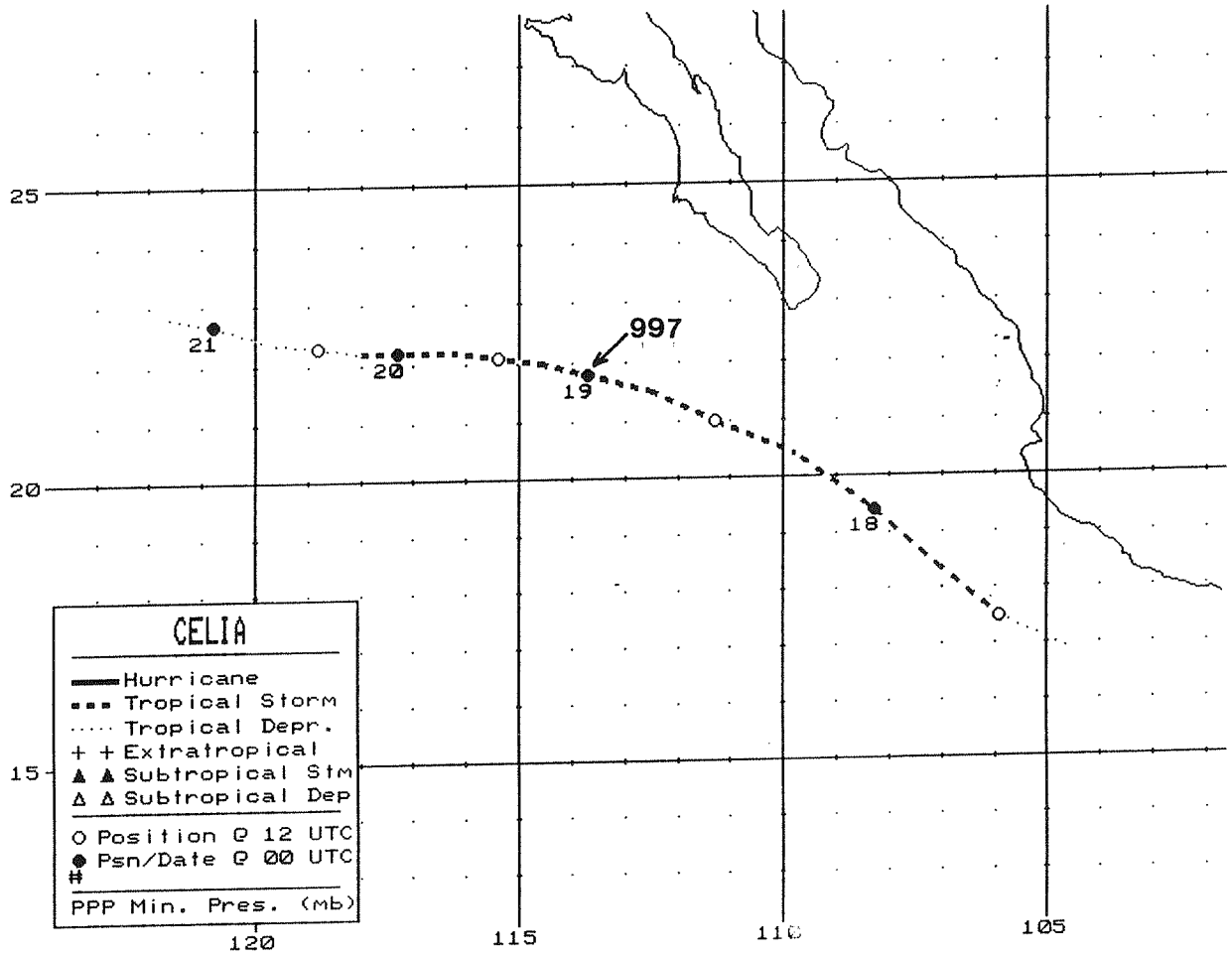

Figure 1. Best track positions for Tropical Storm Celia, 17-21 July, 1998.

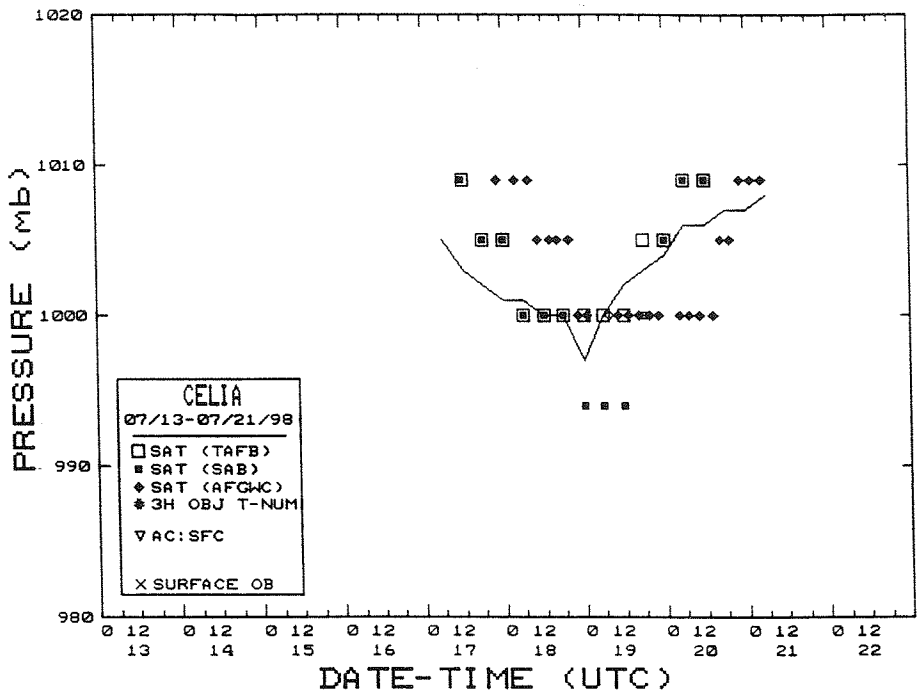

Figure 2. Best track minimum central pressure curve for Tropical Storm Celia.

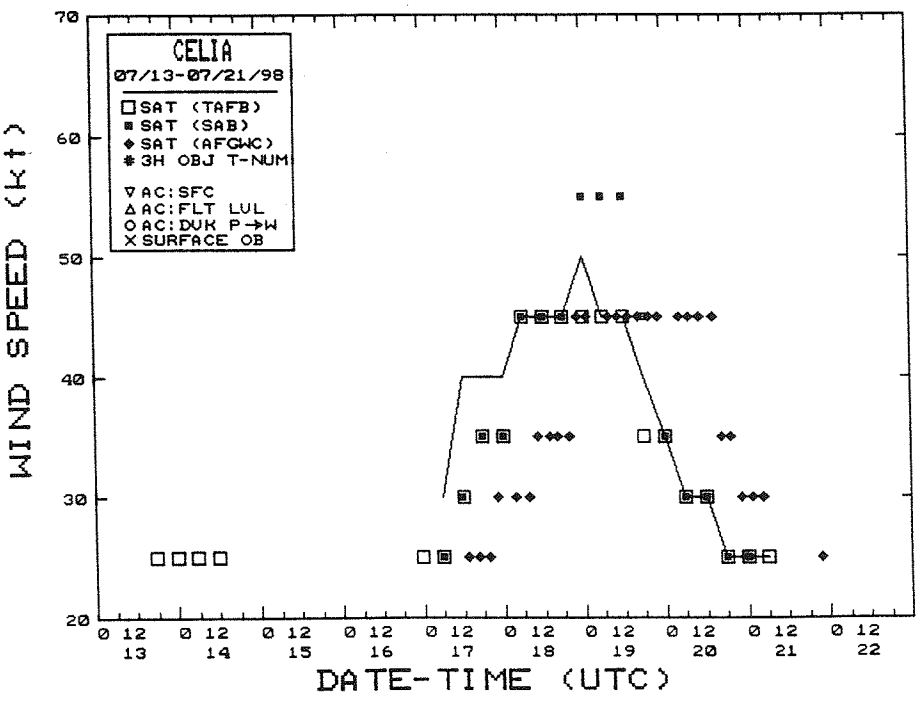

Figure 3. Best track maximum sustained wind speed curve for Tropical Storm Celia.