

Tropical Cyclone Report
Hurricane Aletta
22-28 May, 2000

Richard J. Pasch
National Hurricane Center
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Aletta was the second-strongest May hurricane on record in the eastern north Pacific Ocean.

a. Synoptic History

A Hovmöller (longitude vs. time) diagram of satellite images suggests that Aletta's precursor was a tropical wave that crossed southern Central America on 18-19 May and produced enhanced cloudiness a few hundred miles to the south of the Gulf of Tehuantepec on the 20th. There was sufficient organization of the convective cloud pattern to warrant a Dvorak classification by 1745 UTC 20 May. Not much further increase in organization occurred, however, until about 1200 UTC on the 22nd when deep convection became concentrated near the center of low-cloud rotation. It is estimated that the season's first tropical depression formed by this time, centered about 210 n mi south of Acapulco, Mexico. For the next day or so, additional development was quite slow; by 0600 UTC on the 23rd, enough of a curved band of cold-topped clouds had formed to classify the system as Tropical Storm Aletta, centered about 190 n mi south of Zihuatanejo, Mexico. While strengthening into a tropical storm, Aletta's direction of motion changed from west-northwestward to westward and its forward speed decreased from 10-11 kt to 6-7 kt.

High cloud motions and water vapor animations showed a modest amount of easterly shear over Aletta while it was developing. Slow strengthening continued on 23 May, but beginning early on the 24th, the shearing seemed to relax somewhat, and the rate of intensification increased greatly. Aletta was a hurricane by 1200 UTC on the 24th, and its maximum winds are estimated to have reached 90 kt by 1800 UTC that day. This was the peak intensity of the hurricane. By 1200 UTC the following day, easterly shear became more prominent again, and Aletta began to weaken.

A broad mid-tropospheric trough approaching the Baja California peninsula eroded the ridge to the north of Aletta, creating a very weak steering current for the hurricane. For more than two days starting from 0600 UTC on the 25th, Aletta's center meandered within a 20 n mi radius of 15°N 107.5°W. During this time, the combination of easterly, then northeasterly shear, and the likely upwelling of cooler ocean waters under the quasi-stationary cyclone promoted continued weakening. Interestingly, by around 0000 UTC on 28 May, the influence of cooled ocean waters

may have been the dominant process. By that time, vertical shear appeared to have become fairly weak over the area, yet Aletta was dissipating while drifting slowly northward, a little over 400 n mi south-southeast of Cabo San Lucas. A remnant swirl of clouds and intermittent showers lingered in that area for several days.

b. Meteorological Statistics

Table 1 lists the best track positions and intensities of Aletta 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 using satellite imagery from the Tropical Analysis and Forecast Branch (TAFB), the Satellite Analysis Branch (SAB), and the U.S. Air Force Weather Agency (AFWA).

Determining the peak intensity of Aletta was complicated by the satellite microwave imagery. Special Sensor Microwave Imager (SSM/I) and Tropical Rainfall Measuring Mission satellite pictures revealed a well-defined, closed eyewall just before 1800 UTC 24 May, yet Dvorak T-numbers peaked six to 12 hours after that time, when SSM/I images definitely showed a less-organized appearance. As a compromise, it is assumed that the hurricane reached its maximum strength of 90 kt by 1800 UTC on the 24th, somewhat above the Dvorak estimates at that time.

Sea-surface temperature analyses from the U.S. Navy showed a cooling of 1 to 2 degrees C in the area over which Aletta meandered.

c. Casualty and Damage Statistics

Aletta is not known to have caused casualties or damages.

d. Forecast and Warning Critique

It was (correctly) recognized that steering currents were weakening, and thus the official forecasts never showed Aletta moving very far to the west. Excluding the tropical depression stage, the mean official forecast errors for Aletta were 30, 59, 85, 93, and 71 n mi for 12, 24, 36, 48, and 72 hours, respectively. These are lower than the most recent ten-year average errors. In general, the official forecasts were much better than the track guidance models except the U.K. Met. Office global model, whose average track errors were comparable to the official forecasts. Aletta’s strengthening was under-predicted, and it was not forecast to weaken fast enough by either the official forecast or the Statistical Hurricane Intensity Prediction Scheme.

Table 1. Best track, Hurricane Aletta, 22-28 May, 2000.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
22 / 1200	13.3	99.2	1005	25	tropical depression
22 / 1800	13.9	100.2	1004	30	"
23 / 0000	14.3	101.1	1003	30	"
23 / 0600	14.5	101.8	1002	35	tropical storm
23 / 1200	14.5	102.5	1001	40	"
23 / 1800	14.5	103.1	1000	45	"
24 / 0000	14.6	103.7	997	50	"
24 / 0600	14.6	104.3	990	60	"
24 / 1200	14.7	105.1	983	70	hurricane
24 / 1800	14.8	105.9	975	90	"
25 / 0000	14.9	106.6	970	90	"
25 / 0600	15.0	107.3	972	90	"
25 / 1200	15.1	107.7	974	85	"
25 / 1800	15.0	107.7	975	85	"
26 / 0000	14.8	107.7	977	80	"
26 / 0600	14.8	107.6	979	75	"
26 / 1200	14.8	107.5	980	70	"
26 / 1800	15.0	107.8	985	65	"
27 / 0000	14.8	107.8	990	60	tropical storm
27 / 0600	15.1	107.5	995	55	"
27 / 1200	15.4	107.4	1000	45	"
27 / 1800	15.6	107.5	1004	30	tropical depression
28 / 0000	16.1	107.5	1005	25	"
28 / 0600					dissipated
25 / 0000	14.9	106.6	970	90	minimum pressure

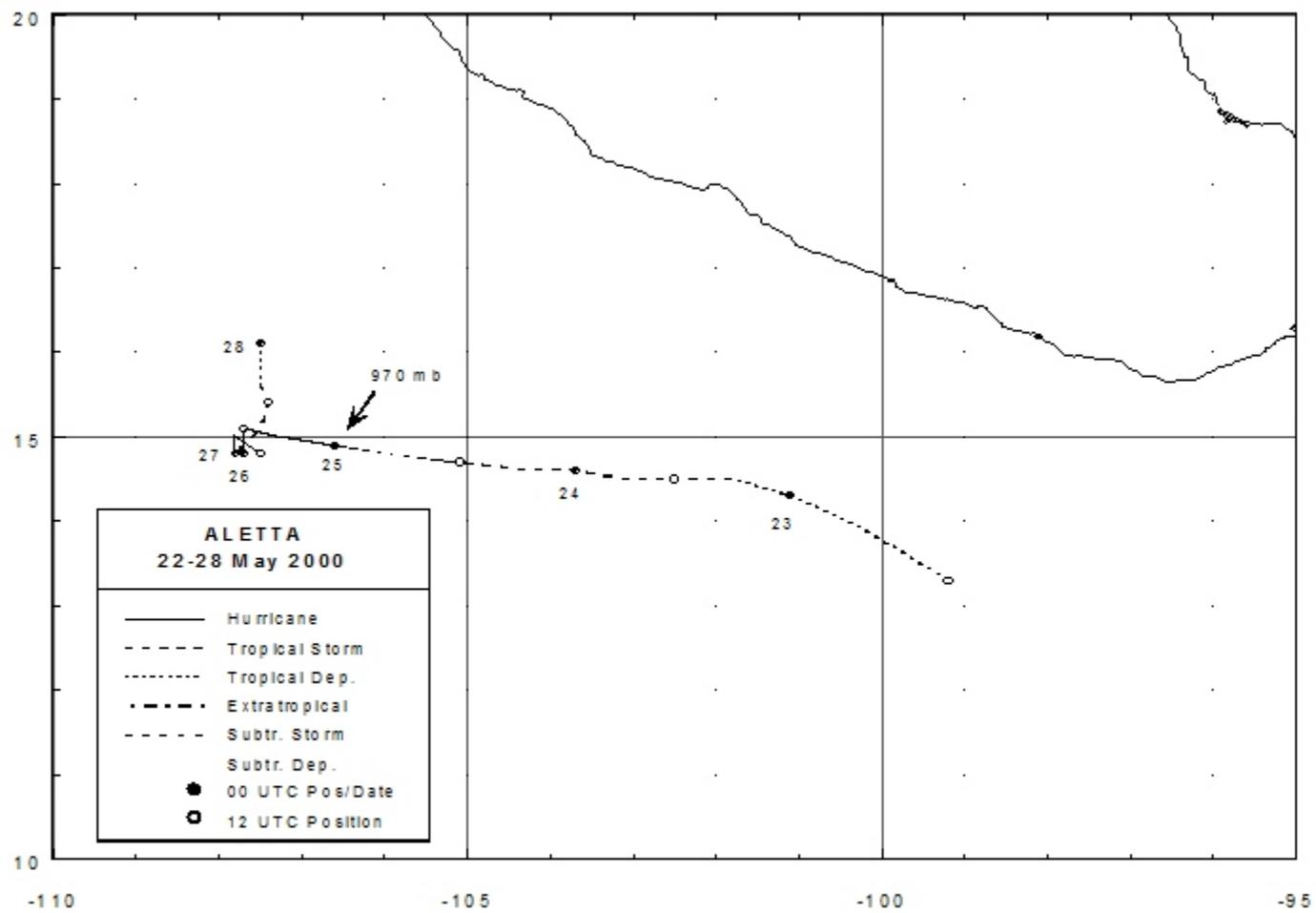


Figure 1. Best track positions for Hurricane Aletta, 22-28 May, 2000.

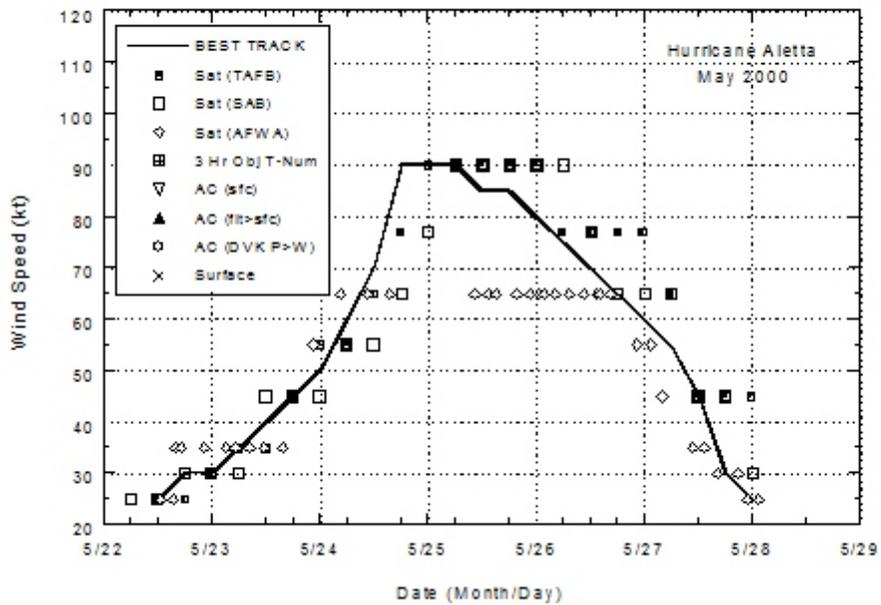


Figure 2. Best track maximum sustained (one-minute average) wind speed curve for Hurricane Aletta, May, 2000.

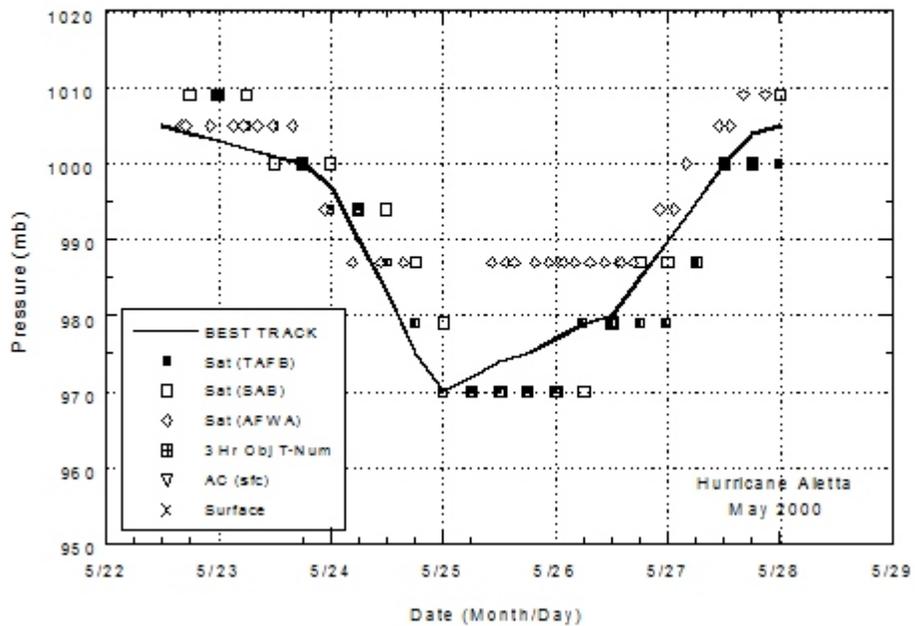


Figure 3. Best track minimum central pressure curve for Hurricane Aletta, May, 2000.