

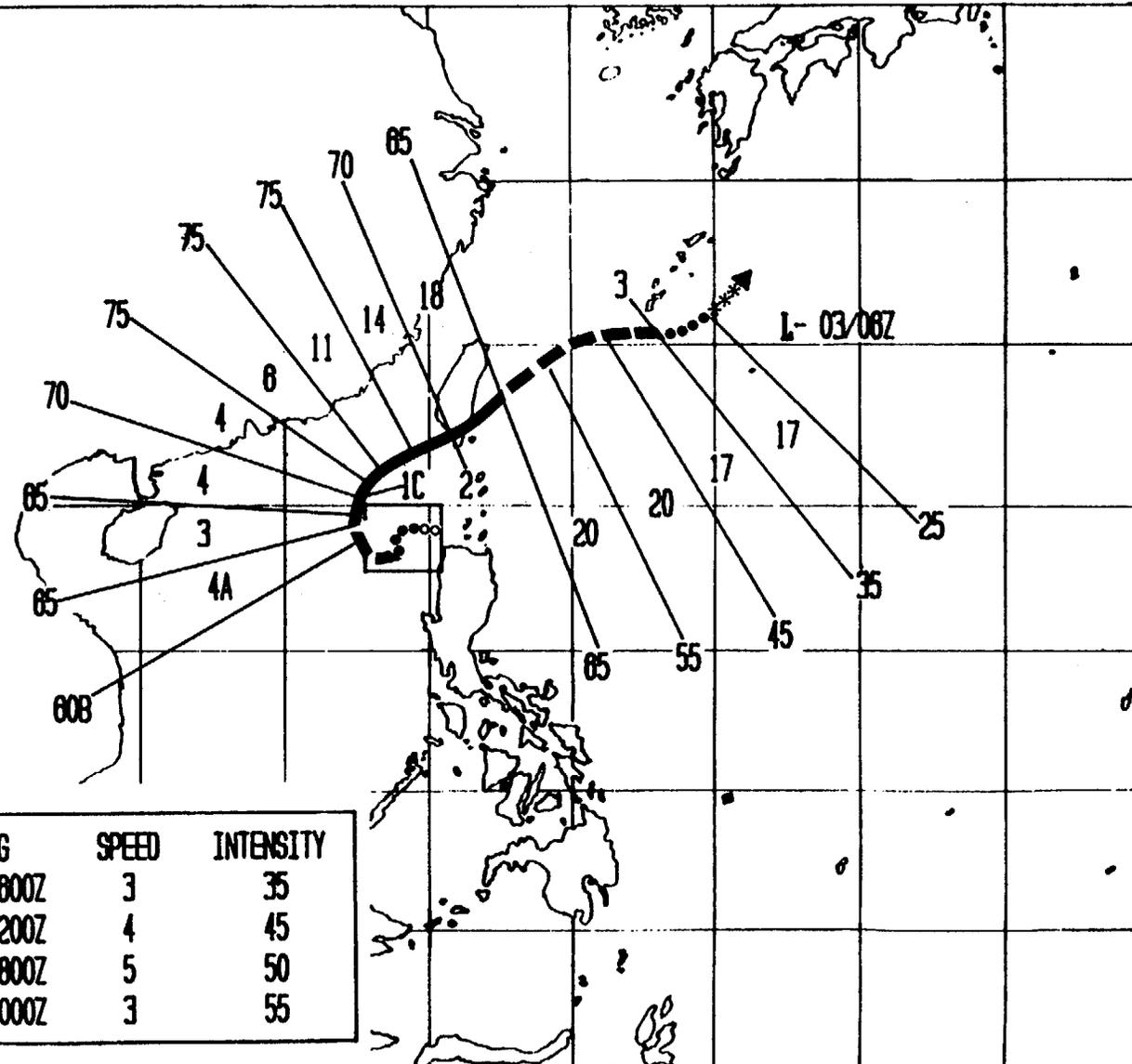
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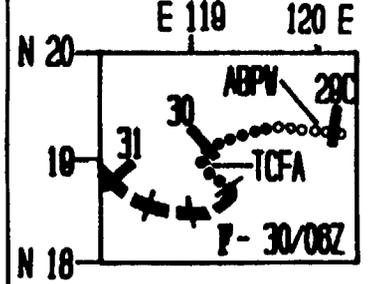
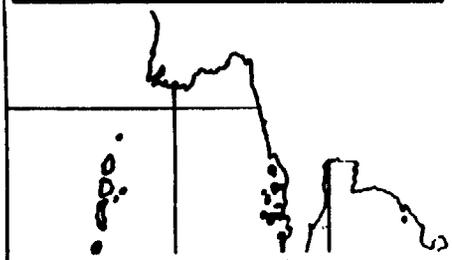
TYPHOON SUSAN
BEST TRACK TC-02W
29 MAY-03 JUN 88
MAX SFC WIND 75KT
MINIMUM SLP 968MBS

LEGEND

- ||| 6-HOUR BEST TRACK POSIT
- A SPEED OF MOVEMENT
- B INTENSITY
- C POSITION AT XX/000Z
- TROPICAL DISTURBANCE
- TROPICAL DEPRESSION
- TROPICAL STORM
- TYPHOON
- ◆ SUPER TYPHOON START
- ◇ SUPER TYPHOON END
- ◆◆◆ EXTRATROPICAL
- ◆◆◆ SUBTROPICAL
- *** DISSIPATING STAGE
- F FIRST WARNING ISSUED
- L LAST WARNING ISSUED



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DTG	SPEED	INTENSITY
30/0600Z	3	35
30/1200Z	4	45
30/1800Z	5	50
31/0000Z	3	55

EQ

TYPHOON SUSAN (02W)

Susan was a short-lived typhoon with maximum sustained winds of 75 kt (39 m/sec). Slow to exit the the South China Sea, it threatened the southeast of coast of China, then churned across the southern tip of Taiwan and rapidly weakened.

The synoptic pattern during the fourth week of May was anomalous with low-level southwesterlies extending across the northern Philippine Sea into the northern Marianas and southern Bonin Islands (Figure 3-02-1). Surface pressures in the monsoonal trough, that was north of this southwesterly flow, were 4 to 5 mb below normal. Cyclonic vortices that formed in the trough were transitory until 28 May when a persistent circulation formed off

the northwest coast of Luzon (see Figure 3-02-2). Initially the convection was displaced equatorward of the the low-level circulation center by vertical wind shear, but within a day the cloudiness became more centralized. The cloud system as a whole then appeared to isolate itself from the surrounding zone of maximum cloudiness. The Significant Tropical Weather Advisory was reissued at 290200Z May to include this suspect monsoon depression. Although the upper-level outflow was restricted in the north and west, the amount of central convection and organization continued to increase, prompting JTWC to issue a Tropical Cyclone Formation Alert at 300200Z May. The first warning on Tropical Storm Susan at 300600Z followed from a satellite

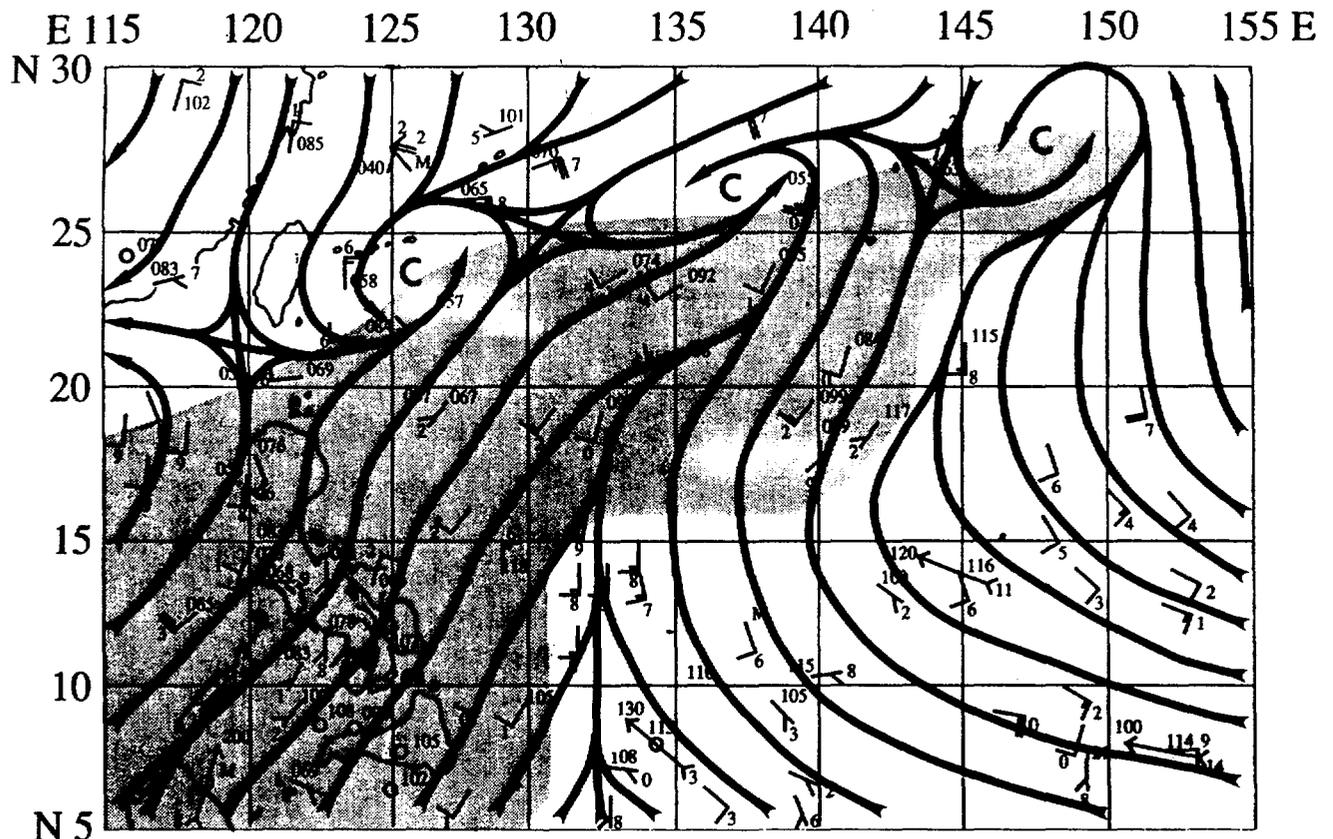


Figure 3-02-1. Surface/gradient analysis (260000Z May) shows the anomalous southwesterly flow extending eastward from the South China Sea.



Figure 3-02-2. Susan as a tropical disturbance (280055Z May DMSP visual imagery).

analysis wind estimate of 45 kt (23 m/sec).

At warning time Susan's initial position was 65 nm (120 km) west of northern Luzon. Past movement had been erratic because the low-level circulation was located within the larger monsoonal trough. For forecast movement the tropical cyclone was near the axis of the subtropical ridge and recurvature was favored by the Typhoon Acceleration Prediction Technique (TAPT) (Weir, 1982). However, TAPT guidance identified the 200 mb northwesterly flow as unfavorable for rapid acceleration. The initial track forecasts were correct based on this guidance and Susan recurved and moved slowly to the northeast.

Susan intensified rapidly after recurvature. At 310600Z Susan was upgraded to a typhoon based upon satellite intensity estimates. The sustained winds increased to 75 kt (39 m/sec) at 010600Z June (see Figure 3-02-3). Now packing its most dangerous winds,



Figure 3-02-3. Typhoon Susan at maximum intensity in the Luzon Strait (011109Z June DMSP infrared imagery).

Susan accelerated towards the northeast and the southern tip of Taiwan. Aloft, a mid-level trough in the polar westerlies was advancing across eastern China. The trough became more meridional as it approached Susan. A combination of acceleration along-track, terrain effects (induced by the rugged mountains of Taiwan) and increasing vertical shear stripped away Susan's deep central convection, leaving behind an exposed low-level circulation center (Figure 3-02-4). The typhoon was downgraded to tropical storm intensity at 021200Z and further to a tropical depression at 030000Z. The final warning was issued at 030600Z. Twelve hours later the residual low-level vortex was no longer discernible on satellite imagery or in the synoptic data.

In retrospect, the majority of the damage

to the island of Luzon, Republic of the Philippines resulted from heavy rains, not winds. A landslide triggered by these rains in Olongapo City, 50 nm (93 km) northwest of Manila, led to one death. In Manila another landslide killed five people. Flooding closed the main roads in Manila, disrupted travel and caused the loss of millions of prawns and lobsters from fishponds. Also, a tornado destroyed 18 homes outside of Manila.

Although Susan passed about 10 nm (18 km) south of the island of Okinawa, Japan at 022200Z, the system had rapidly weakened and the peak wind recorded at Kadena Air Base was 41 kt (21 m/sec) with 47 kt (24 m/sec) at Naha. No deaths or injuries were reported by authorities on Okinawa. No reports of damage were received from Taiwan.

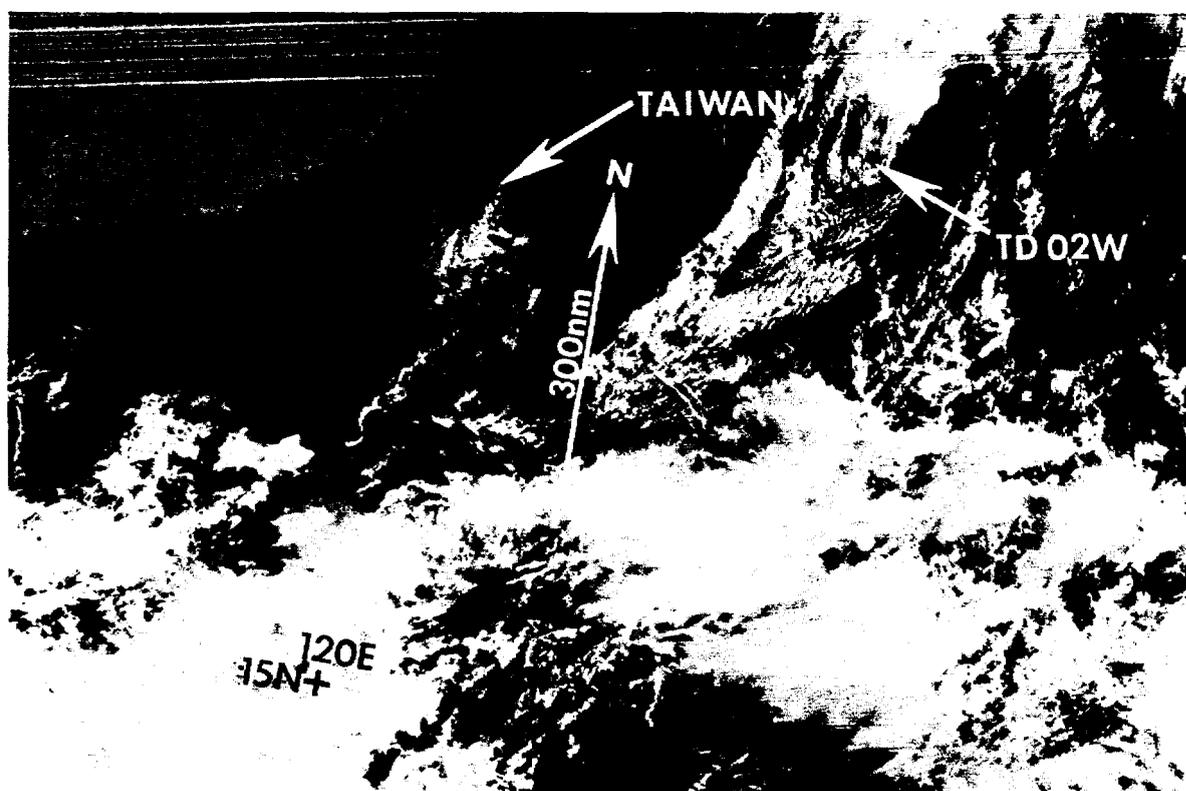


Figure 3-02-4. The residual exposed low-level circulation of Tropical Depression 02W (Susan) (030057Z June DMSP visual imagery).