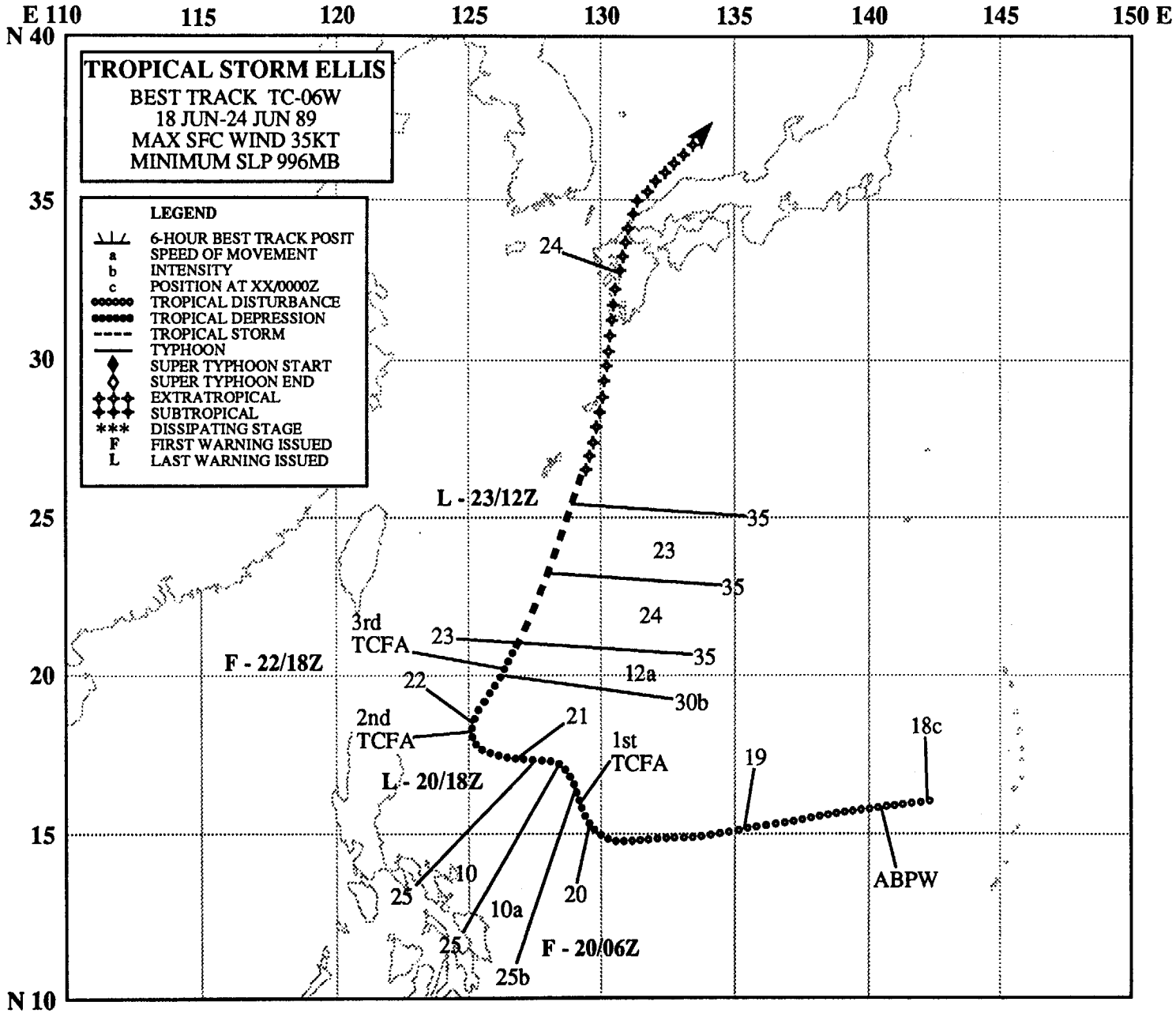
E 110
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TROPICAL STORM ELLIS
BEST TRACK TC-06W
18 JUN-24 JUN 89
MAX SFC WIND 35KT
MINIMUM SLP 996MB
LEGEND
6-HOUR BEST TRACK POSIT
a SPEED OF MOVEMENT
b INTENSITY
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED
24
L - 23/12Z
35
23
35
24
3rd
TCFA
23
35
F - 22/18Z
12a
30b
22
2nd
TCFA
21
1st
TCFA
18c
19
L - 20/18Z
ABPW
10
25
10a
20
25
F - 20/06Z
25b

TROPICAL STORM ELLIS (06W)

The second of two tropical cyclones to form in June, Ellis interrupted the series of "straight runners" that occurred from Typhoon Brenda (03W) through Typhoon Dot (05W). After five days as a poorly defined system, Ellis briefly peaked at tropical storm intensity before becoming extratropical and making landfall in Japan. (This tropical cyclone provided the first opportunity for JTWC to use the newly instituted Tropical Depression Warning format as stated in a change to USCINCPACINST 3140.1T. This change addressed warnings when the depression was not expected to reach tropical storm intensity. These warnings were to be issued every twelve hours instead of every six hours as is the case for Tropical Cyclone Warnings.)

On 18 June, a disturbance formed in the Philippine Sea 210 nm (390 km) northwest of Guam and was mentioned on the Significant Tropical Weather Advisory. The disturbance was classified as having poor potential for further development, due to the lack of favorable upper-level support. It appeared that the proximity of the TUTT to the north through northeast restricted the outflow from the convection. However, the next Advisory was reissued at 192100Z to upgrade the potential for further development to fair after the central convection flared at the morning convective maximum and synoptic data revealed the development of the low level cyclonic circulation. A Tropical Cyclone Formation Alert followed at 200430Z when the deep convection had persisted. Within ninety minutes, the first Tropical Depression Warning was issued. The application of the Tropical Depression Warning was appropriate since this depression (Figure 3-06-1) appeared deeply embedded in the monsoon trough and further development was unlikely. At 201800Z, the second, and final, Tropical Depression Warning followed as the poorly defined cloud system weakened 450 nm (835 km) east of Luzon.

As the disturbance moved westward toward Luzon, the 200 mb pattern underwent a substantial change. On 18 June, a narrow ridge aloft with an east to west orientation extended through the Bonin Islands (south of Japan). Simultaneously, a weak trough existed across Korea and western Honshu. Short waves exiting China deepened this trough until it extended southward from the Yellow Sea to Taiwan. The rawinsonde data from Okinawa (WMO 47936) showed 60-meter height falls at 200 mb from 19 to 20 June. This adjustment of the upper-level pattern favorably positioned divergence over the remnants of the tropical depression.

With synoptic data indicating minimum sea-level pressures near 1001 mb, the next convective flare up prompted a second Alert at 211900Z. Then, with the synoptic situation unchanged, a third Alert followed 24 hours later. This Alert addressed the fact that the maximum winds were displaced 180 nm (335 km) east of the system's center. This asymmetric displacement of a broad area of gales away and to the east of the low-level circulation center was unusual and accompanied Ellis for the remainder of its lifetime. At 222100Z, JTWC issued the first Tropical Cyclone Warning on Tropical Depression 06W (Figure 3-06-2). The system was forecast to move slowly toward the northeast, steered by the southwesterly flow ahead of the trough. Further, it would only reach minimal tropical storm intensity before encountering increased vertical wind shear and cooler air behind a stationary front. The front had pushed south of Okinawa during the preceding three days.

While the intensity was correctly forecast, Tropical Storm Ellis led JTWC on a high speed chase, doubling its forward speed from 12 to 24 kt (6 to 12 m/sec) as it sped toward Okinawa. By the fourth warning at 231200Z, Ellis was becoming extratropical, having linked with the previously mentioned stationary front; but it was not weakening. The

system passed 90 nm (165 km) east of Kadena AB. Kadena (WMO 97931) provided two radar fixes on Ellis, as it passed by, and reported peak gusts to 22 kt (11 m/sec). The system passed over Kyushu and extreme western Honshu before dissipating over the Sea of Japan on 24 June. Although gales persisted as Ellis continued northward, no reports of major damage or fatalities were received.

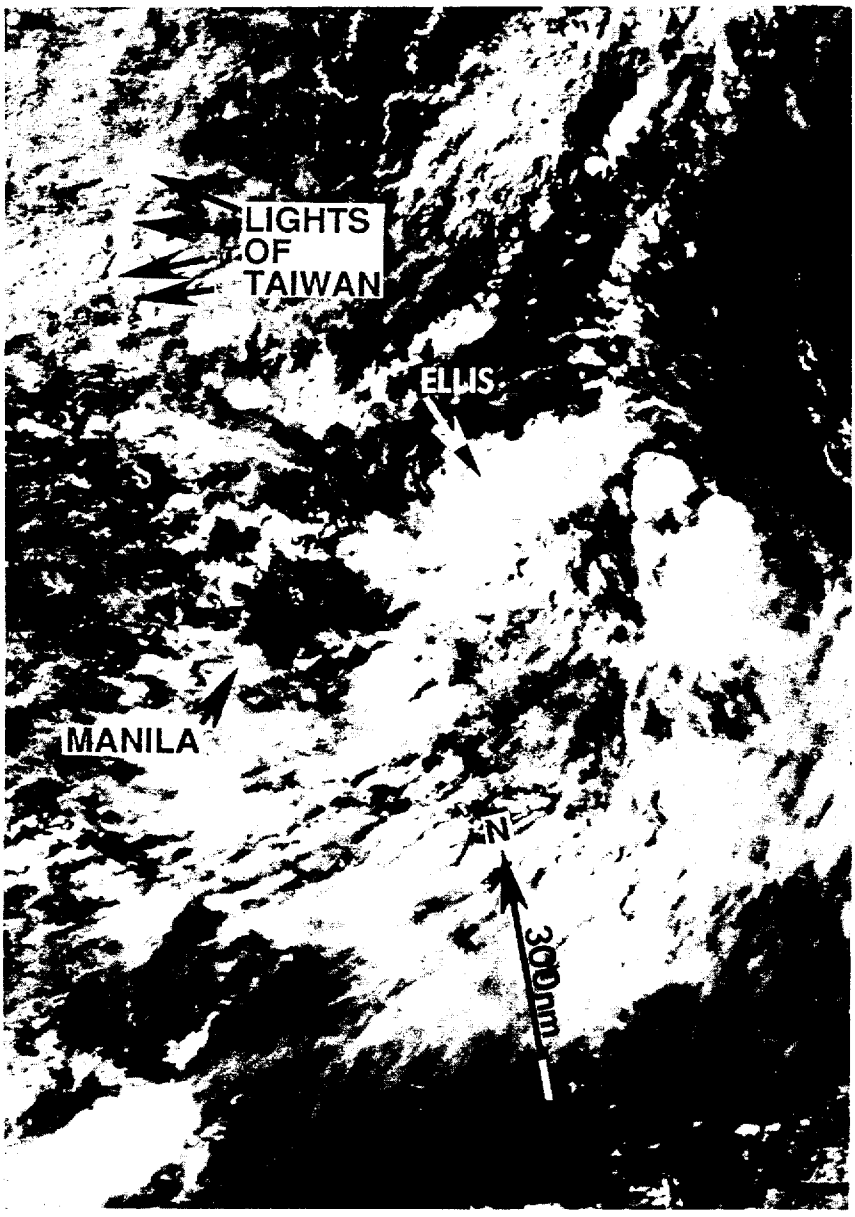

Figure 3-06-1. Nighttime visual picture of the disorganized cloud signature of the tropical depression after the first warning. Bright moonlight makes the image look like daytime. Note the city lights of Taiwan (201327Z June DMSP visual imagery).

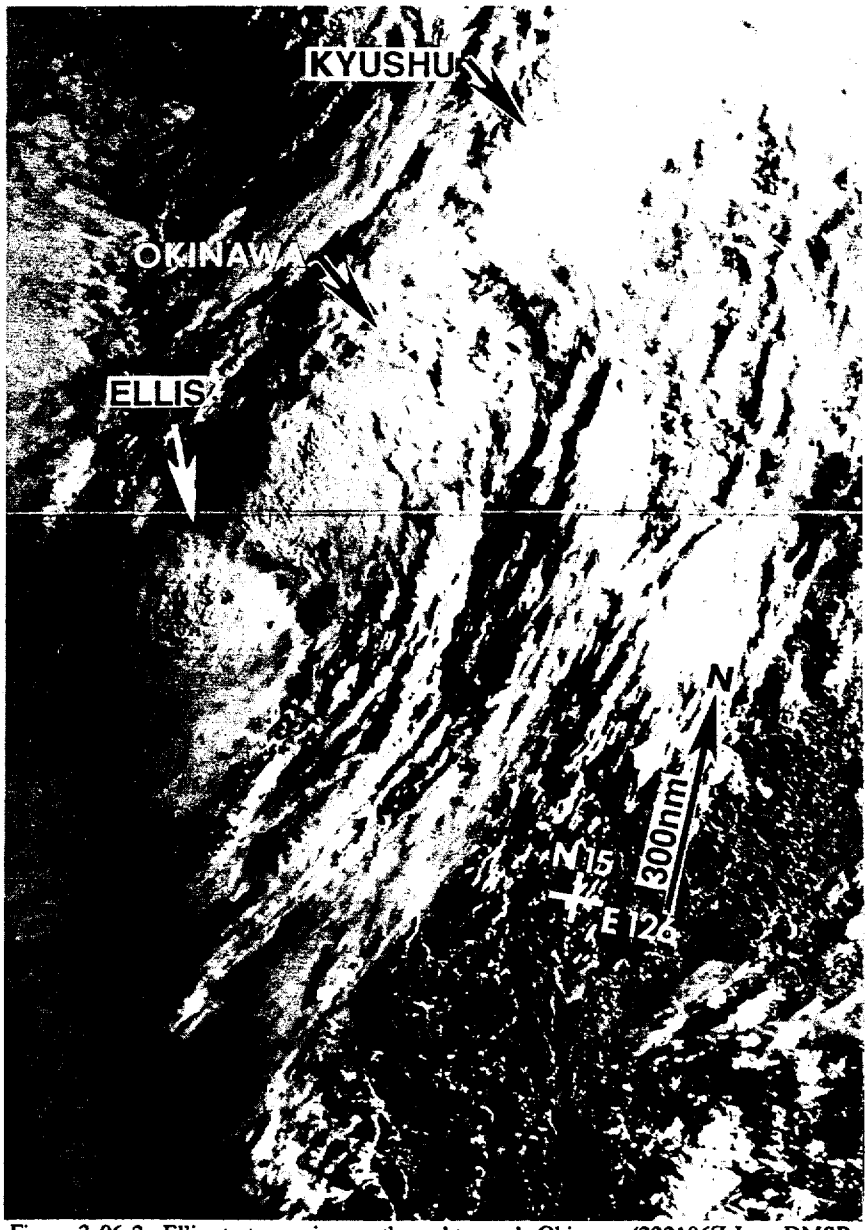

Figure 3-06-2. Ellis starts moving northward towards Okinawa (222106Z June DMSP visual imagery).