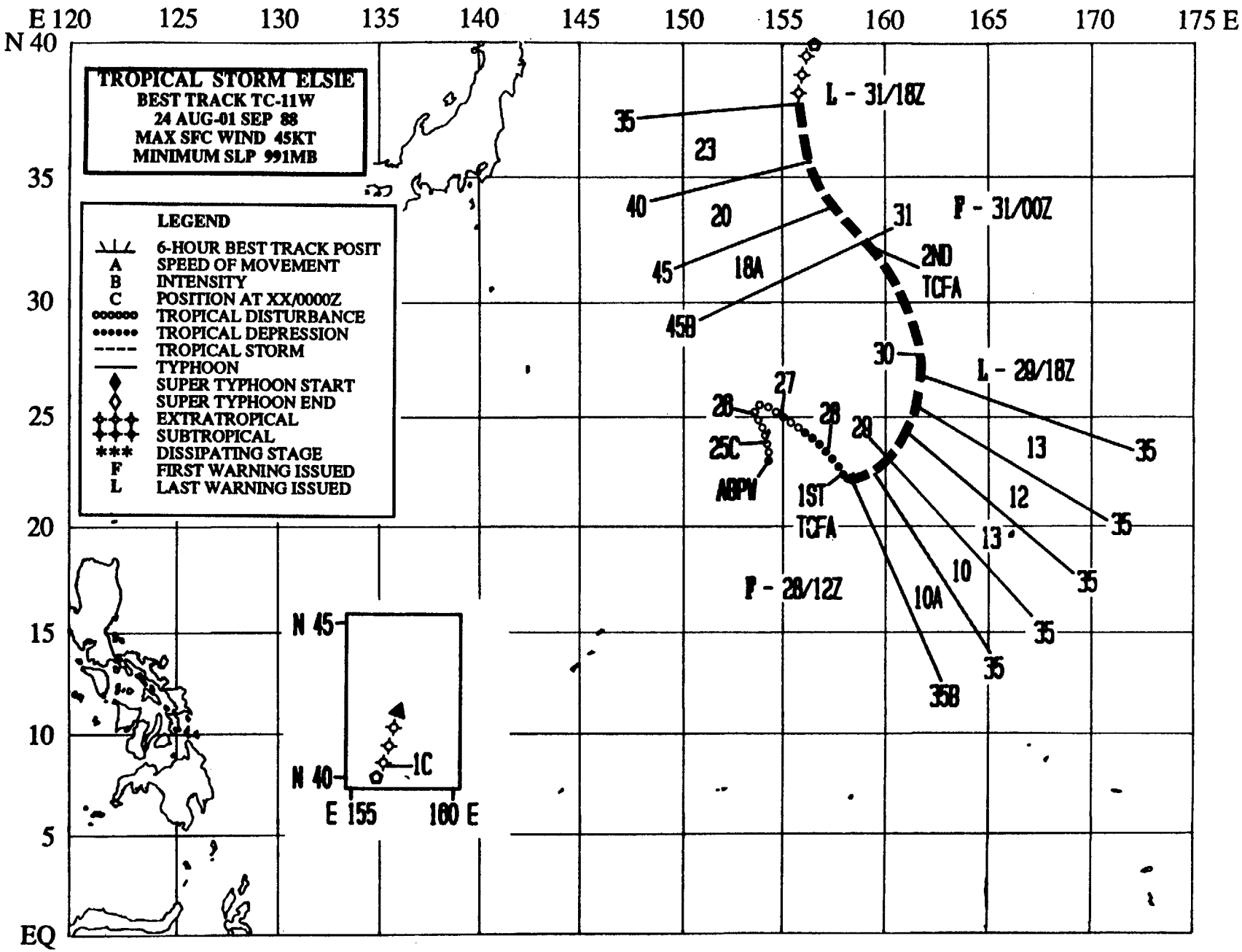
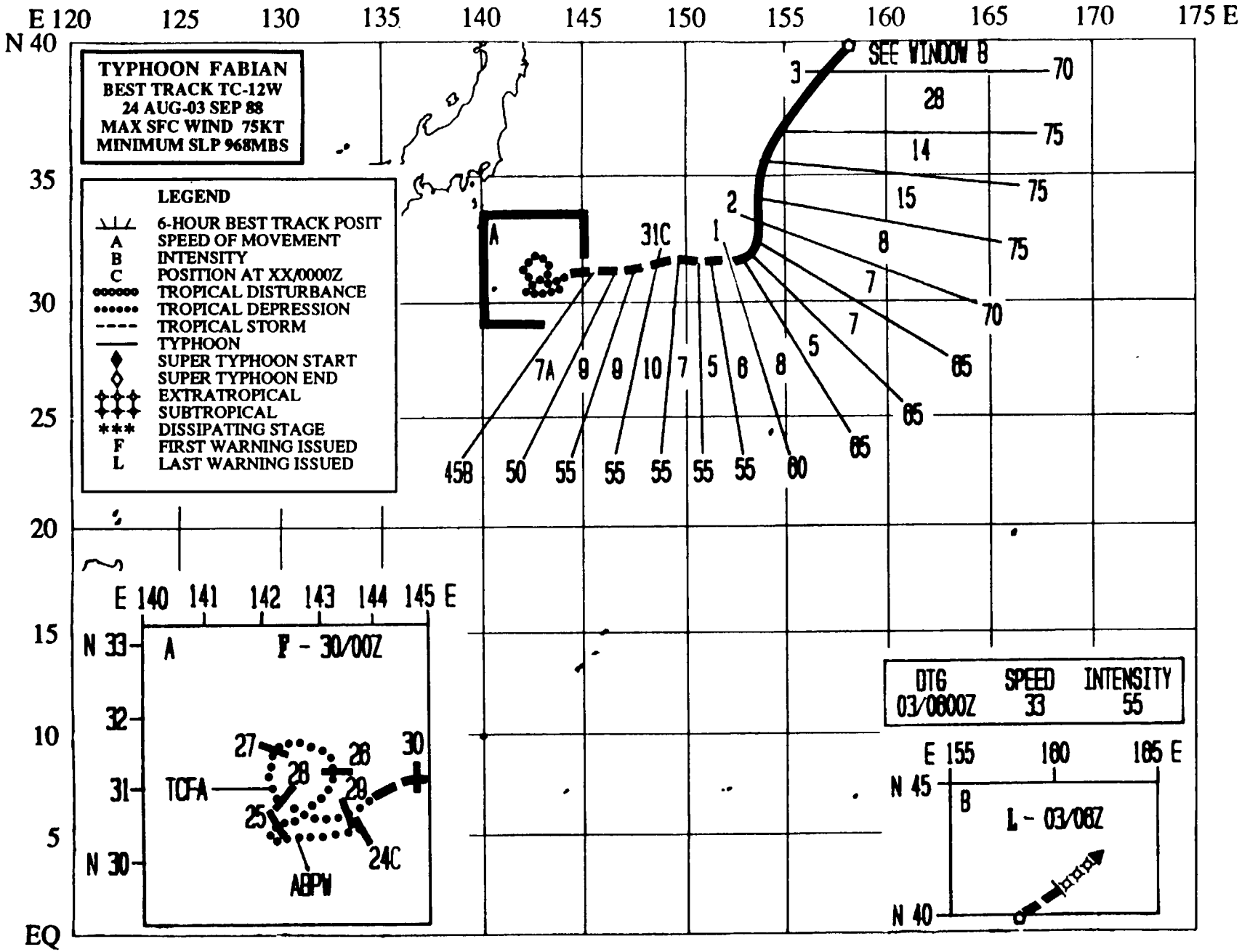

TROPICAL STORM ELSIE
BEST TRACK TC-11W
24 AUG-01 SEP 88
MAX SFC WIND 45KT
MINIMUM SLP 991MB
LEGEND
6-HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED
E 120
125
130
135
140
145
150
155
160
165
170
175 E
N 40
35
30
25
20
15
10
5
EQ
L - 31/18Z
F - 31/00Z
2ND TCFA
L - 29/18Z
1ST TCFA
F - 28/12Z
ABPW
N 45
N 40
E 155
160 E
1C


TYPHOON FABIAN
BEST TRACK TC-12W
24 AUG-03 SEP 88
MAX SFC WIND 75KT
MINIMUM SLP 968MBS
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
SEE WINDOW B
DTG 03/0800Z
SPEED 33
INTENSITY 55
F - 30/00Z
L - 03/08Z
TCFA
ABPW

TROPICAL STORM ELSIE (11W) AND TYPHOON FABIAN (12W)

Elsie and Fabian were the last of five significant tropical cyclones to develop in August. They both initially displayed erratic movement as immature systems within the larger monsoon trough, interacted as a binary pair (Brand, 1968) and, later, became extratropical.

Both systems were first detected on 24 August and mentioned on the Significant Tropical Weather Advisory as areas of persistent convection in the monsoon trough, that was anomalously far north and extended southeastward from Japan. Typical of formative vortices in the larger monsoon trough, their tracks were less than straight forward. Fabian's track wobbled around until 28 August, when it sped off towards the east on a possible collision course with Elsie. In the interim, Fabian required three Tropical Cyclone Formation Alerts: the first at 271430Z based on a 30 kt (15 m/sec) satellite estimate of surface winds, a second at 281430Z and the third at 291230Z when the tropical disturbance retained its potential for development and failed to weaken. Finally, Fabian's convection consolidated (Figure 3-11/12-1), resulting in a satellite intensity estimate of 45 kt (23 m/sec) and the first warning at 300000Z.

In the meantime, Elsie, which was located at the southeastern end of the monsoon trough, was in an area of stronger low-level convergence and associated cloudiness, but

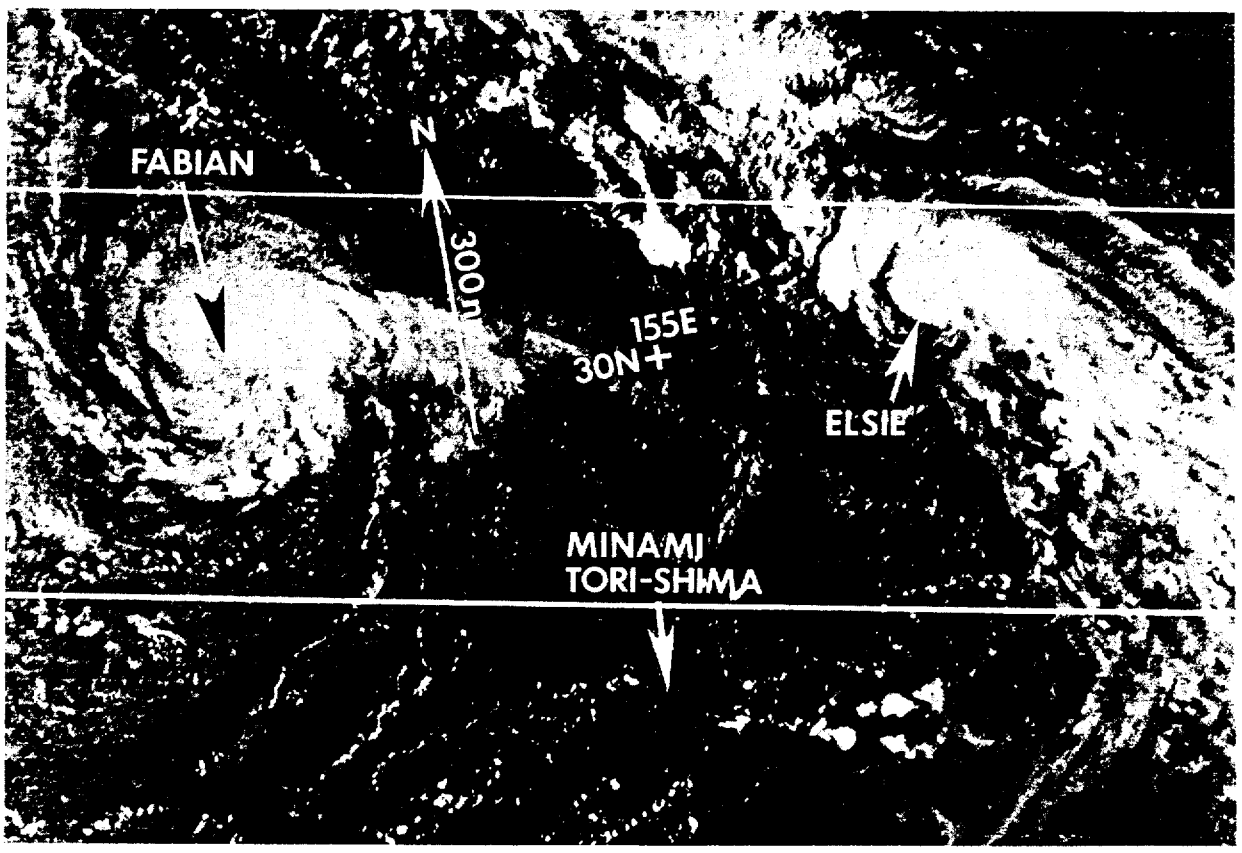


Figure 3-11/12-1. Fabian at tropical storm intensity is on the left. Tropical Storm Elsie is on the right (301140Z August DMSP visual imagery).

suffered from lack of central convection. Better organization at 280600Z with estimated surface winds of 30 kt (15 m/sec) from the satellite analysis led to a Tropical Cyclone Formation Alert at 280900Z. The first warning followed at 281200Z based on satellite intensity estimates of 35 kt (18 m/sec). At this point Elsie's course, which had been southeastward, abruptly changed to northeastward. As a consequence, the monsoon trough also began to shift northward. This reorientation of the trough axis is the most probable explanation for Fabian's unusual track to the east.

At 281200Z, Elsie and Fabian were separated by 1070 nm (1982 km). The two systems closed on each other until only a 400 nm (741 km) separation remained three days later. Figure 3-11/12-2 shows the two best tracks with the locus of midpoints (point A to point B) between each system at six hourly intervals. Plotting the locus of midpoints at one point (C) in Figure 3-11/12-3 and replotting the relative locations of Elsie and Fabian, the cyclonic motion of the binaries (Dong and Neumann, 1983) is captured.

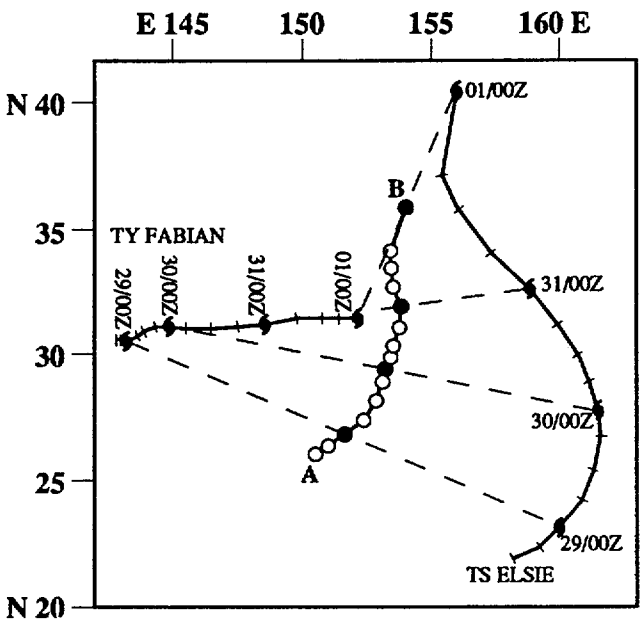


Figure 3-11/12-2. Tracks for Elsie and Fabian for the period 281200Z August to 010000Z September. For each respective six hourly position for the two systems a midpoint is plotted. The locus of these midpoints stretches from point A to point B.

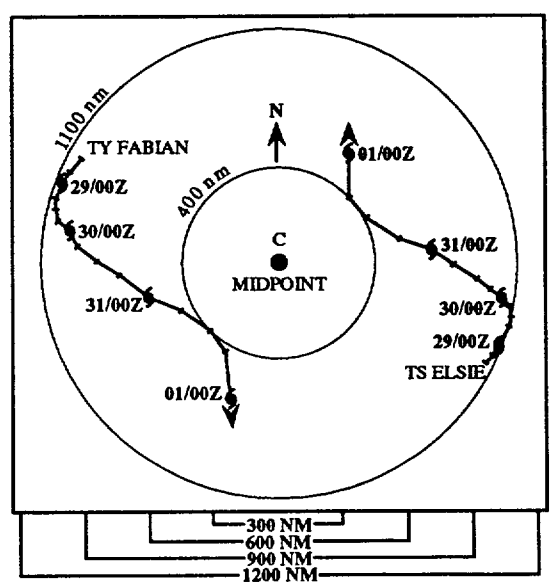


Figure 3-11/12-3. For the period 281200Z August to 010000Z September the plotted positions of Elsie and Fabian relative to the midpoint (reference Figure 3-11/12-2) at point C describe the motion of this binary system.

While this interaction was taking place, Elsie's convection weakened and the forecast intensity estimate dropped below 35 kt (18 m/sec). This prompted an amendment of the 291800Z warning, which had called for dissipation in 48-hours over water with remarks that "signs for regeneration would be monitored." It appears that Elsie stabilized as a weak tropical storm and assumed a track to the northwest. The remnants of Elsie were not expected to flare up again due to the binary interaction with Fabian, which reduced the separation between the two and increased the vertical wind shear across Elsie from Fabian's outflow. However, the central convection returned (Figure 3-11/12-4) and a Tropical Cyclone Formation Alert - the second for Elsie - was issued at 302300Z. Elsie's compact reorganization resisted the unfavorable conditions aloft and the Alert was almost immediately upgraded to a regenerated tropical storm at 310000Z.

Once Elsie was past the closest point of approach to Fabian, it changed course to the northeast, accelerated and rapidly became extratropical. The final warning - the second for Elsie - was issued at 311800Z. In contrast,

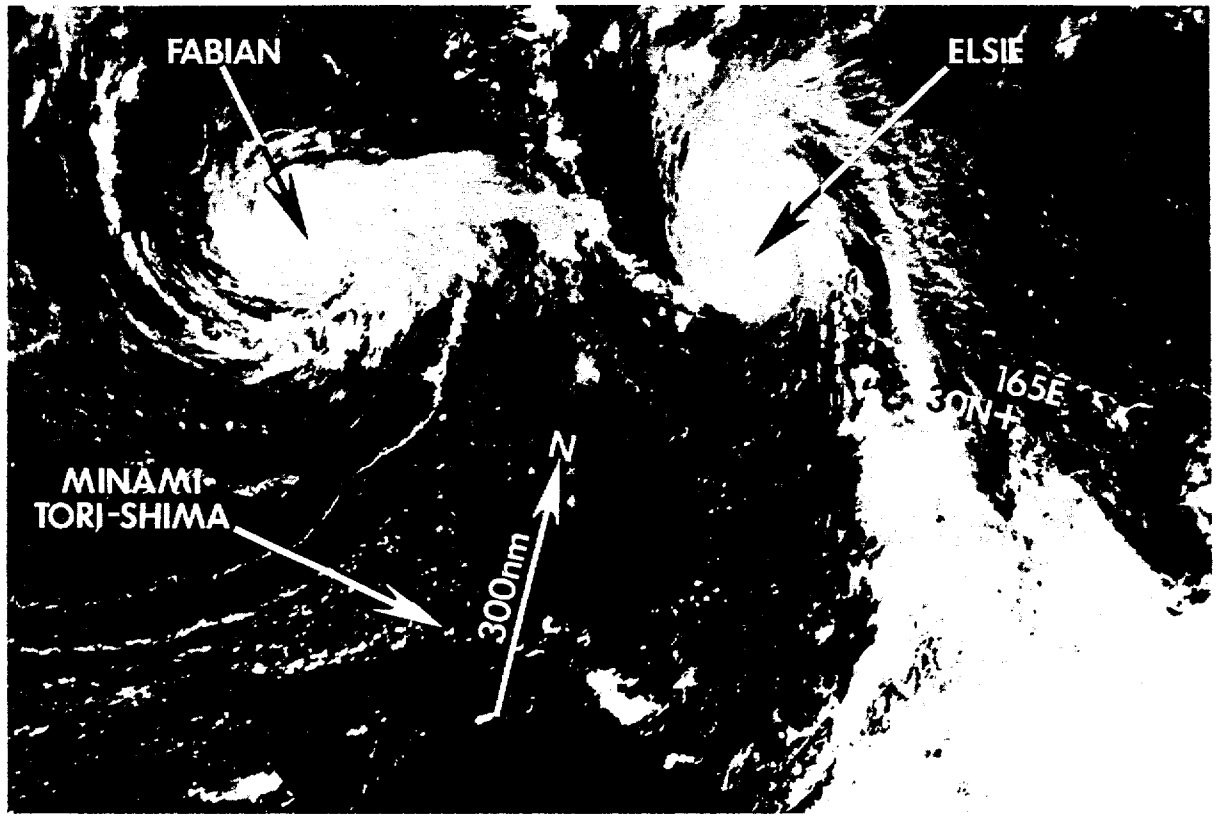


Figure 3-11/12-4. The remnants of Elsie, on the right, undergo a rapid reorganization. The second Tropical Cyclone Formation Alert was issued upon receipt of this picture. Fabian is to the left of Elsie (302240Z August DMSP visual imagery).

Fabian intensified during this encounter and reached typhoon intensity (Figure 3-11/12-5) at 010600Z just prior to making an abrupt track change to the north six hours later. Typhoon Fabian reached a peak intensity of 75 kt (39 m/sec) at 020600Z. By 030000Z, the onset of rapid acceleration and stronger upper-level westerlies led to a loss of convective organization. Fabian was downgraded to tropical storm intensity and finalled at 030600Z. No reports of damage or loss of life were received for these two tropical cyclones.

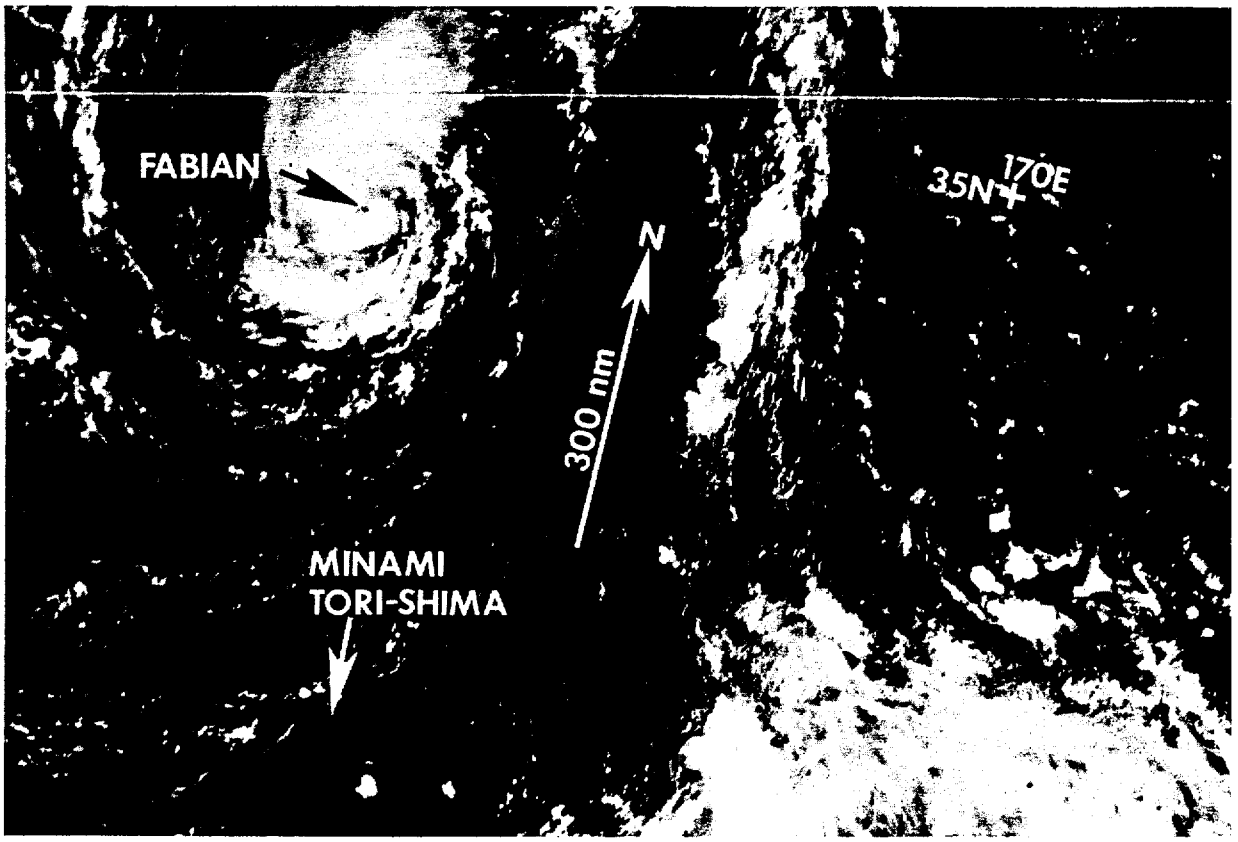


Figure 3-11/12-5. Fabian nearing peak intensity. Elsie has moved off the picture to the northeast of Fabian (312220Z August DMSP visual imagery).