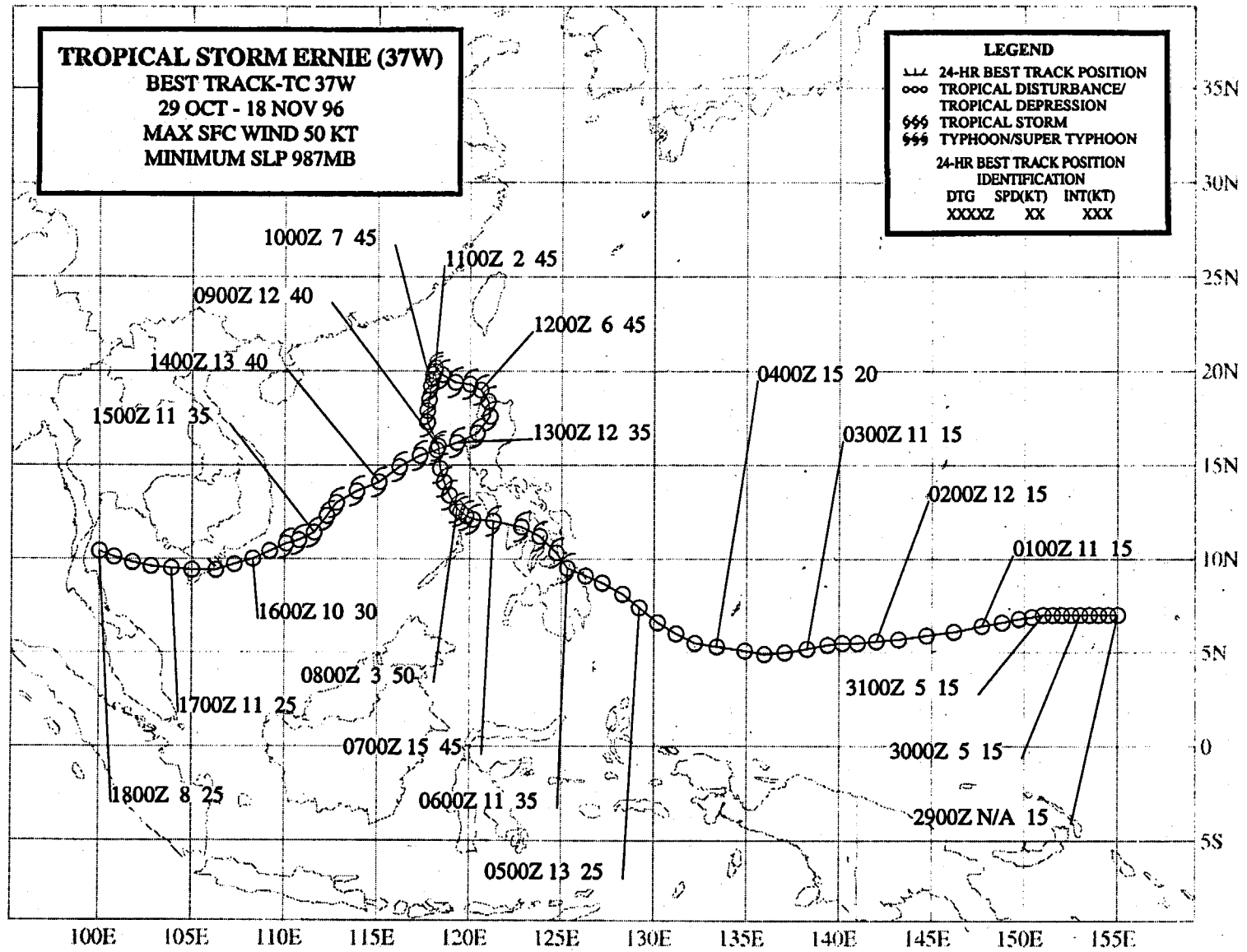
TROPICAL STORM ERNIE (37W)
BEST TRACK-TC 37W
29 OCT - 18 NOV 96
MAX SFC WIND 50 KT
MINIMUM SLP 987MB
LEGEND
24-HR BEST TRACK POSITION
TROPICAL DISTURBANCE/ TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON/SUPER TYPHOON
24-HR BEST TRACK POSITION IDENTIFICATION
DTG SPD(KT) INT(KT)
XXXXZ XX XXX
1000Z 7 45
1100Z 2 45
0900Z 12 40
1200Z 6 45
1400Z 13 40
0400Z 15 20
1500Z 11 35
1300Z 12 35
0300Z 11 15
0200Z 12 15
0100Z 11 15
1600Z 10 30
0800Z 3 50
3100Z 5 15
1700Z 11 25
0700Z 15 45
3000Z 5 15
1800Z 8 25
0600Z 11 35
2900Z N/A 15
0500Z 13 25
35N
30N
25N
20N
15N
10N
5N
0
5S
100E
105E
110E
115E
120E
125E
130E
135E
140E
145E
150E
155E

TROPICAL STORM ERNIE (37W)

I. HIGHLIGHTS

At the start of the second week of November, four TCs existed simultaneously in the WNP — Ernie, Dale (36W), Tropical Storm (TS) 38W, and Tropical Depression (TD) 39W. Ernie, Dale (36W) and TD 39W formed in the monsoon trough, while TS 38W developed in association with a TUTT cell. After entering the South China Sea, Ernie executed a clockwise loop as it merged with TD 39W. Earlier, while crossing the Philippines, Ernie was responsible for loss of life and extensive property damage.

II. TRACK AND INTENSITY

During the first week of November, a near-equatorial trough formed along approximately 5°N latitude in the WNP. Deep convection associated with this trough consolidated into two distinct systems: the easternmost became Dale (36W) and the westernmost became Ernie. The pre-Ernie tropical disturbance was first mentioned on the 290600Z October Significant Tropical Weather Advisory when satellite imagery and synoptic data indicated that a weak LLCC was associated with an area of persistent deep convection. Development of this disturbance was slow, perhaps hindered by persistent vertical wind shear from the east-northeast, and its transformation into a monsoon depression. Late on 03 November, a small area of deep convection near the core of the monsoon depression persisted; leading to the issuance, valid at 031800Z November, of a TCFA. The first warning on TD 37W followed, valid at 041200Z. Based on satellite intensity estimates, TD 37W was upgraded to Tropical Storm Ernie at 060600Z as the system moved into the central islands of the Philippine archipelago.

On 07 November, Ernie moved into the South China Sea, slowed, and intensified. Satellite imagery indicates that Ernie reached peak intensity of 50 kt (26 m/sec) at 070600Z. As the system reached peak intensity, it made an abrupt turn to the north, perhaps in response to strengthening southwesterly monsoonal flow into Dale (36W) (located to Ernie's east), and also the effects of a binary interaction with TD 39W (which had formed to Ernie's northeast). On 10 November, Ernie subsumed the weakening circulation of TD 39W (Figure 3-37-1) in a merger representing the final stage of a binary interaction (see the Discussion section). After the merger, Ernie executed a clockwise loop which saw the system make landfall in northwestern Luzon before moving back into the South China Sea. As Dale (36W) recurved, Ernie began to move toward the southwest in response to steering influences of a well-entrenched northeast monsoon over the northwestern portion of the South China Sea. In the time span of three and one-half days, Ernie traversed the South China Sea, slowly weakened, and made landfall on the southern tip of Vietnam. The final warning was issued, valid at 170000Z, as the weakened TC moved westward into the Gulf of Thailand and dissipated.

III. DISCUSSION

Merger of Ernie with TD 39W

Ernie and TD 39W underwent a binary interaction that ended in the merger of the two systems. The separation distance between the two systems was always within the 400 nm (740 km) separation threshold noted by Lander and Holland (1993) for TC merger. Though the centroid-relative motion of the two systems shows a clear cyclonic orbit (Figure 3-37-2), only the actual track of TD 39W shows clear signs of orbit. The merger of Ernie with TD 39W was asymmetric in that the smaller TD 39W was sheared and subsumed into the larger circulation of Ernie. Note that even in such cases, the centroid-relative motion of each TC will always be a mirror image of the other's.

IV. IMPACT

In the central Philippines, Ernie was reported to have killed 16 people and caused $US 4.1 million damage to property.

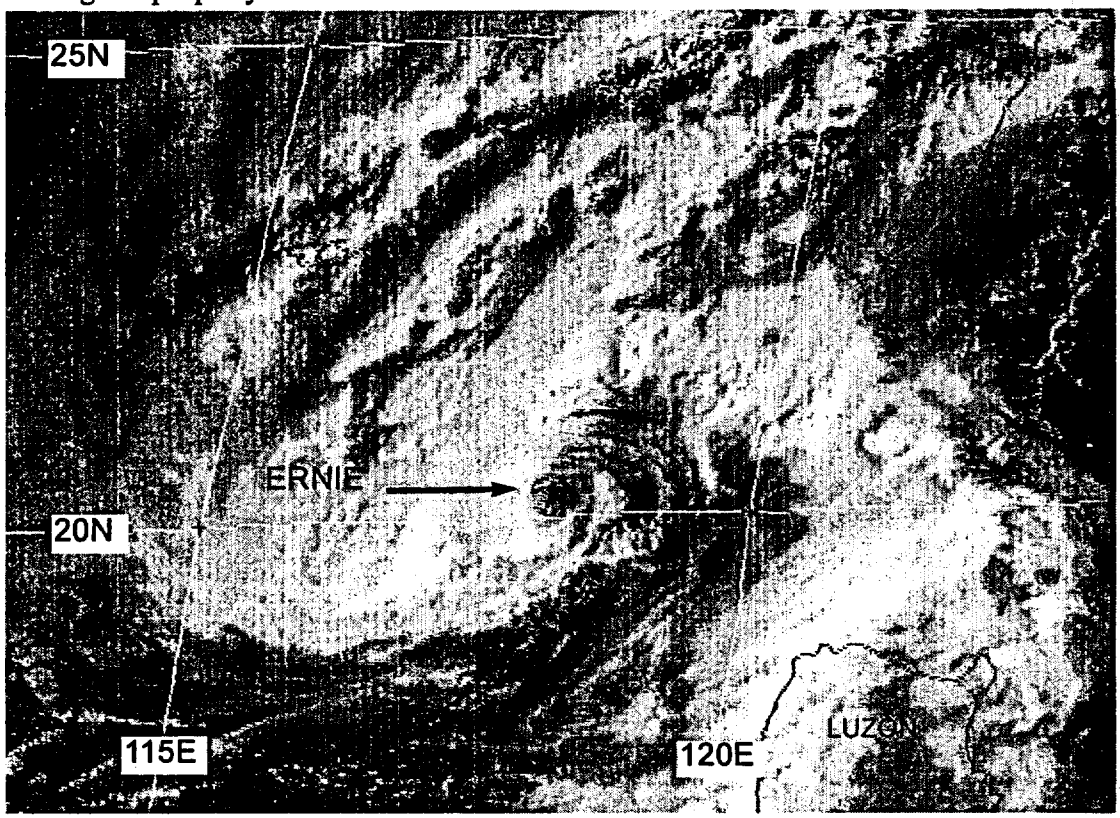

Figure 3-37-1 Tropical Storm Ernie (37W) shortly after its merger with TD 39W. An exposed low-level circulation center is visible (102331Z November visible GMS imagery).

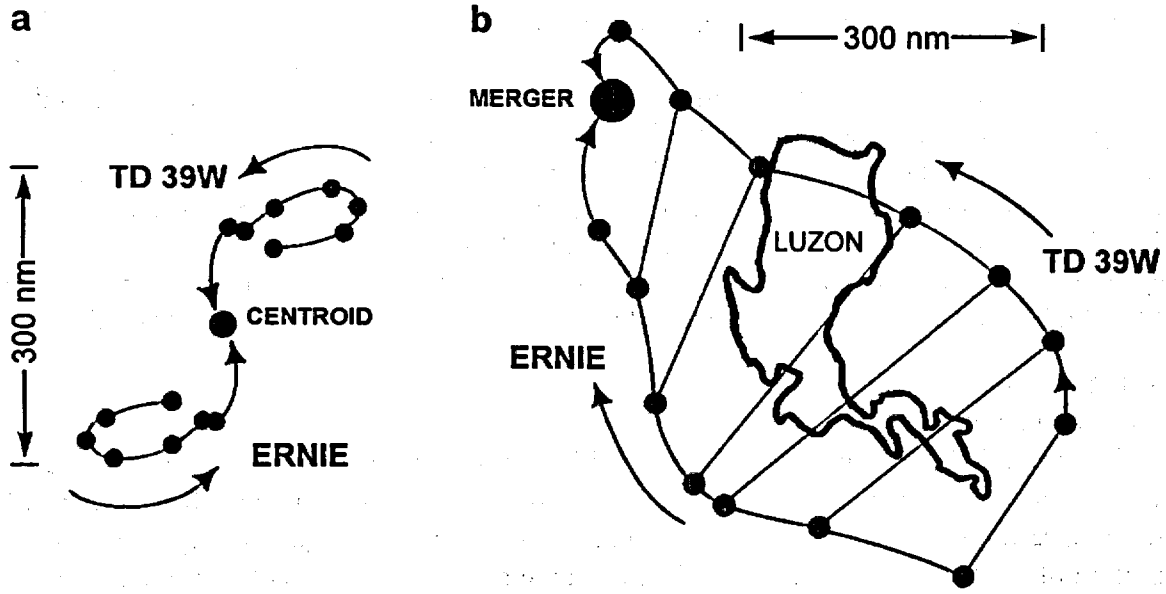

Figure 3-37-2 (a) The complex binary interaction of Ernie with TD 39W is revealed by a diagram of its centroid-relative motion which features a period of anticyclonic relative orbit prior to the period of cyclonic orbit leading to merger. (b) The tracks of these TCs do not as clearly exhibit the properties of the mutual interaction. Dots are at 12-hour intervals beginning at 061200Z November. Merger occurs at 100000Z.