

TROPICAL DEPRESSION 04W

I. HIGHLIGHTS

Tropical Depression 04W, the first significant tropical cyclone to form in the South China Sea this year, proved to be very difficult to locate and forecast. Satellite and synoptic fix positions disagreed throughout the depression's life. As the convection flared near the center of the system, the mid-level and upper-level prevailing east-northeasterly flow moved the convection toward the coast of Vietnam. The satellite analysts tracked the convection onto the coast of Vietnam. However, as the area of convection over Vietnam dissipated a new area of convection developed near the circulation center indicated in the synoptic data. As Tropical Storm Nathan (05W) continued to develop, Tropical Depression 04W was drawn into the larger circulation and absorbed.

II. CHRONOLOGY OF EVENTS

- 130600Z - First mentioned on Significant Tropical Weather Advisory due to weak low-level circulation center in the synoptic data and 1004 mb pressure.
- 140600Z - First Warning based on the low-level circulation center exposed to the east of the poorly organized central cloud mass. Synoptic data indicated the presence of 20-30 kt (10-15 m/sec) winds.
- 140600Z - Peak Intensity of 30 kt (15 m/sec) established in synoptic data.
- 151200Z - Final warning followed the loss of convective signature as the low level circulation was absorbed by Nathan (05W).

III. MOTION

Tropical Depression 04W proved to be a significant motion forecast problem. From the beginning, the 850 mb wind patterns in the area indicated that the vortex was located along the western side of the low-level mean wind flow of approximately 30 kt (15 m/sec) from the west-southwest associated with the summer monsoon. The depression remained quasi-stationary for the first two days. As Tropical Storm Nathan (05W) moved into the South China Sea, strong southwesterly monsoon flow began to feed into it. Tropical Depression 04W (Figure 3-04-1) became involved in the associated broad scale flow and was absorbed by the larger cyclone.

IV. INTENSITY

The strong vertical wind shear always restricted Tropical Depression 04W development. The 200-mb winds over the area were 30 to 35 kt (15 to 18 m/sec) and the low-level monsoonal flow was of equal intensity and opposing direction. As a result of the strong shear, JTWC did not expect intensification above 30 kt (15 m/sec) and issued only 36-hour tropical depression warnings.

V. FORECASTING PERFORMANCE

Superimposed on the final best track are the JTWC forecasts (Figure 3-04-2). Due to the lack of synoptic data in the early portions of the forecast scenario, JTWC depended primarily on satellite fixes to determine Tropical Depression 04W's location. In this high vertical wind shear environment the satellite fixes indicated an apparent westward motion of the system. Thus, JTWC forecast aids and the official forecast track indicated westward motion for most of the life of the depression.

VI. IMPACT

No impact was reported in association with Tropical Depression 04W.

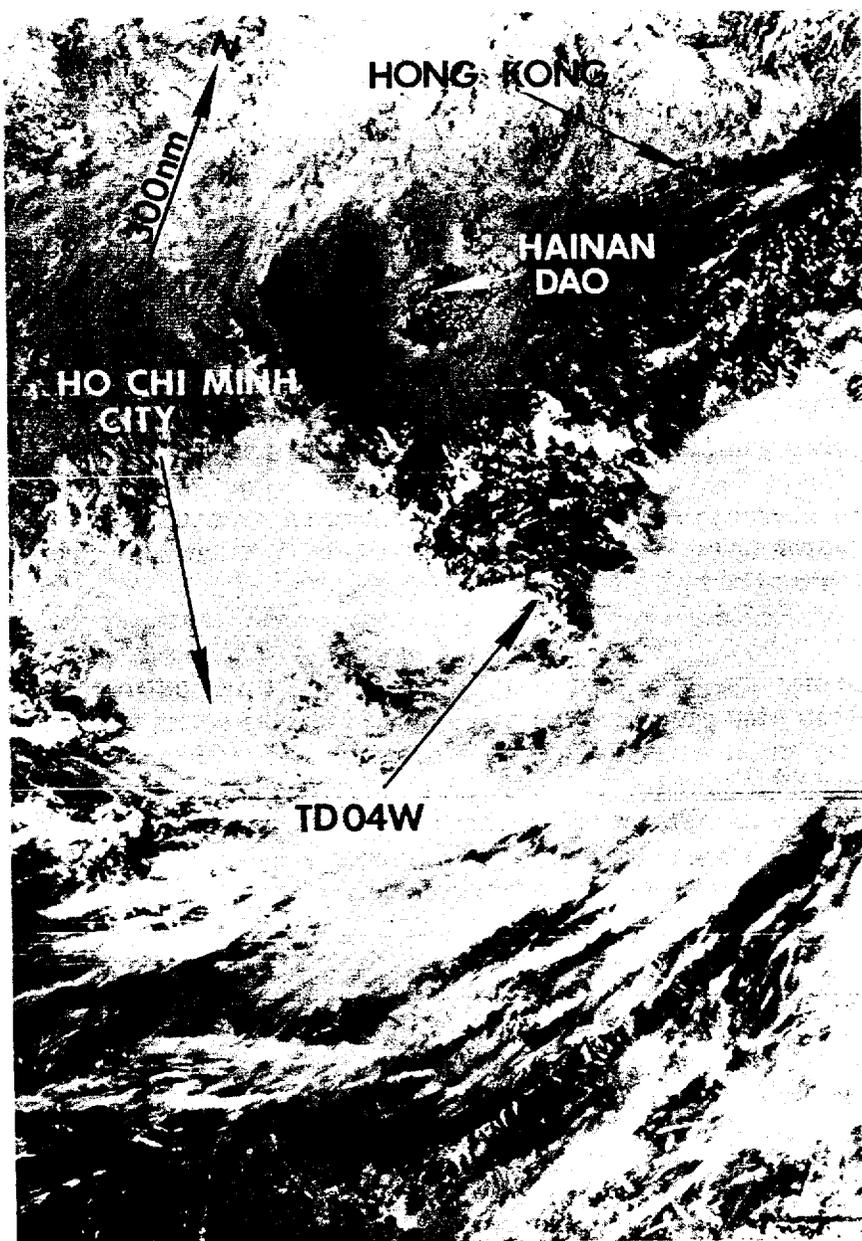


Figure 3-04-1. Tropical Depression 04W, which is south-southeast of Hainan Dao, becomes involved with Tropical Storm Nathan (05W) (150210Z June DMSP visual imagery).

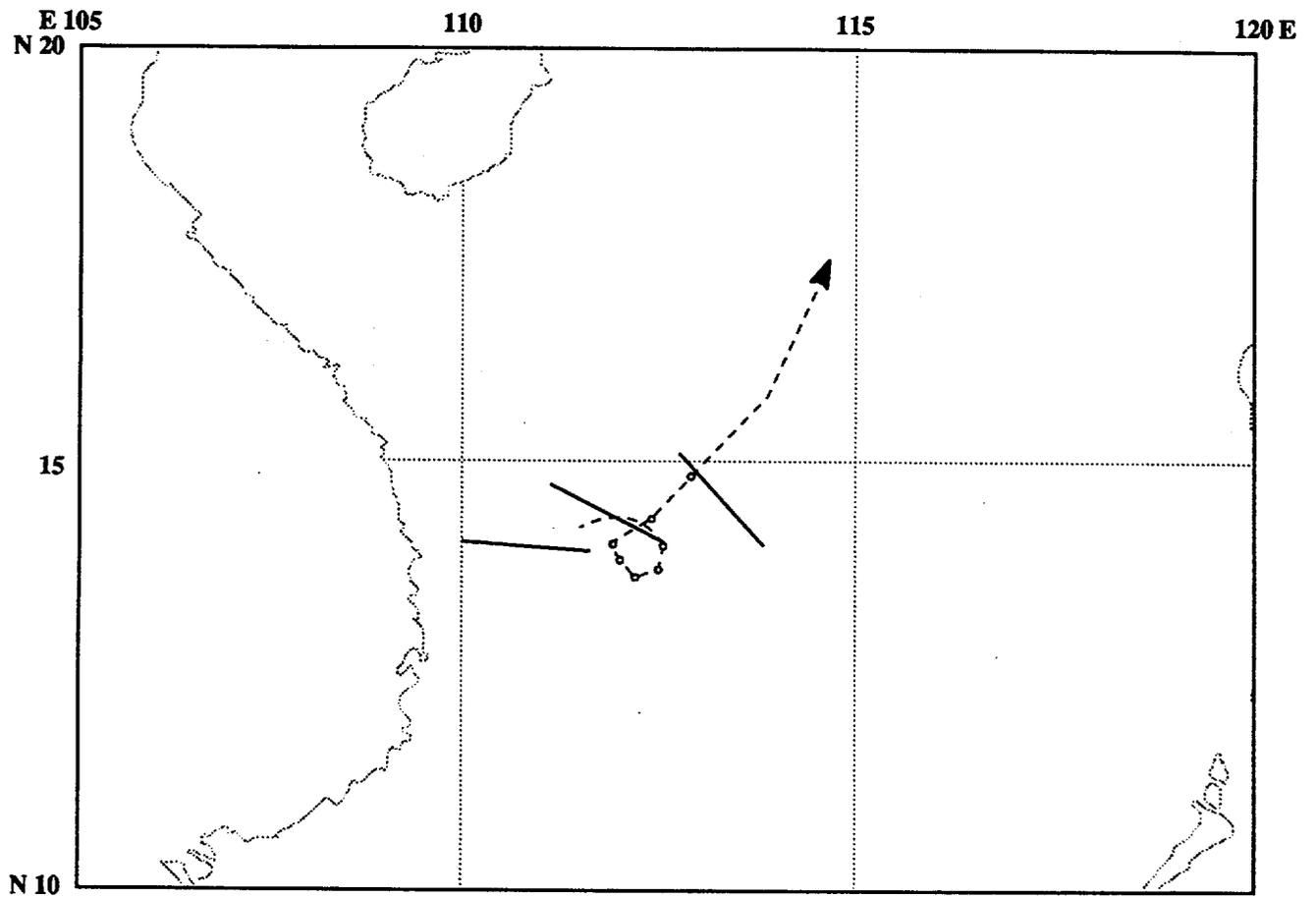


Figure 3-04-2. Summary of JTWC forecasts (solid lines) superimposed on the final best track (dashed line).