

TYPHOON ELLEN (17W)

Typhoon Ellen was the third cyclone of five that developed in the month of October. It followed close on the heels of Typhoon Carmen (15W) and Tropical Storm Dom (16W). Ellen proved to be a difficult system to forecast, particularly when it encountered weak steering in the South China Sea. The system traveled over 4000 nm (7408 km) from its inception on the 3rd of October 250 nm (463 km) east of the Majuro Atoll in the Marshall Islands to dissipation sixteen days later along the border of southern China and Vietnam.

As Ellen moved westward through the Marshalls, the Significant Tropical Weather Advisory (ABPW PGTW) was reissued late on the 3rd of October, at 1800Z. The disturbance in the monsoon trough had shown signs of improved convective organization on the satellite imagery.

Ellen finally developed into a tropical depression as it passed 120 nm (222 km) south of the island of Ulithi in the Caroline Islands on 9 October. Twenty-four hours later, JTWC issued a Tropical Cyclone Formation Alert when the disturbance

again showed an increase in organization. The initial aircraft reconnaissance investigative mission found only a weak circulation in a broad low-pressure trough and estimated surface winds of 10 to 20 kt (5 to 10 m/sec).

By the following morning, Ellen had changed significantly. The second aircraft reconnaissance mission at 110122Z reported a minimum sea-level pressure of 992 mb with estimated surface winds of 45 kt (23 m/sec). JTWC immediately issued its first warning on Tropical Storm Ellen, valid at 110000Z (see Figure 3-17-1).

Shortly after its development into a tropical storm, Ellen moved through the central Philippine Islands. Only a modest weakening to 40 kt (21 m/sec) resulted during the 24-hours it took to make the passage.

Upon entering the South China Sea on the morning of the 12th, Ellen turned northward into a region of weak steering current and slowed in forward speed. At that point, most of the statistical and dynamic forecast guidance predicted the tropical cyclone

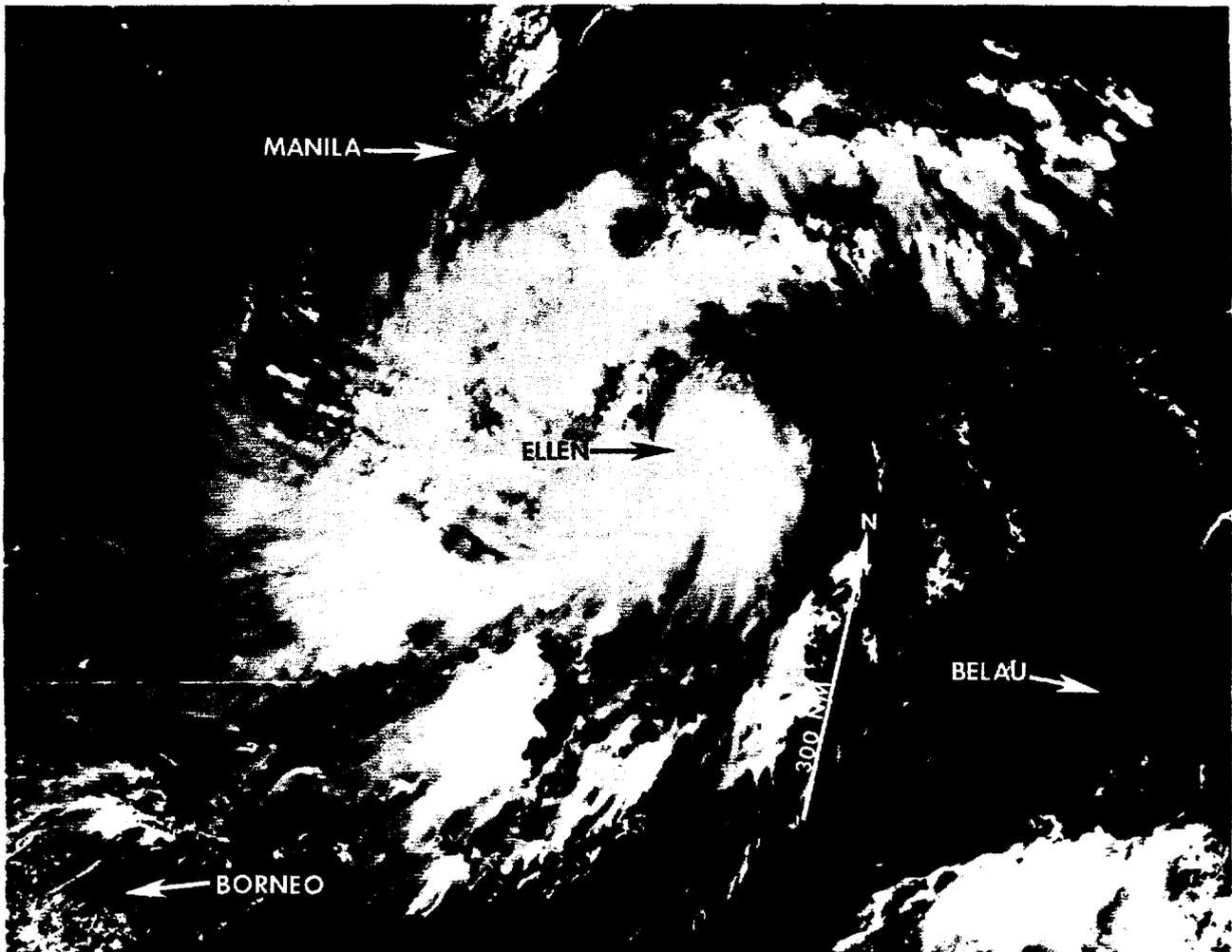
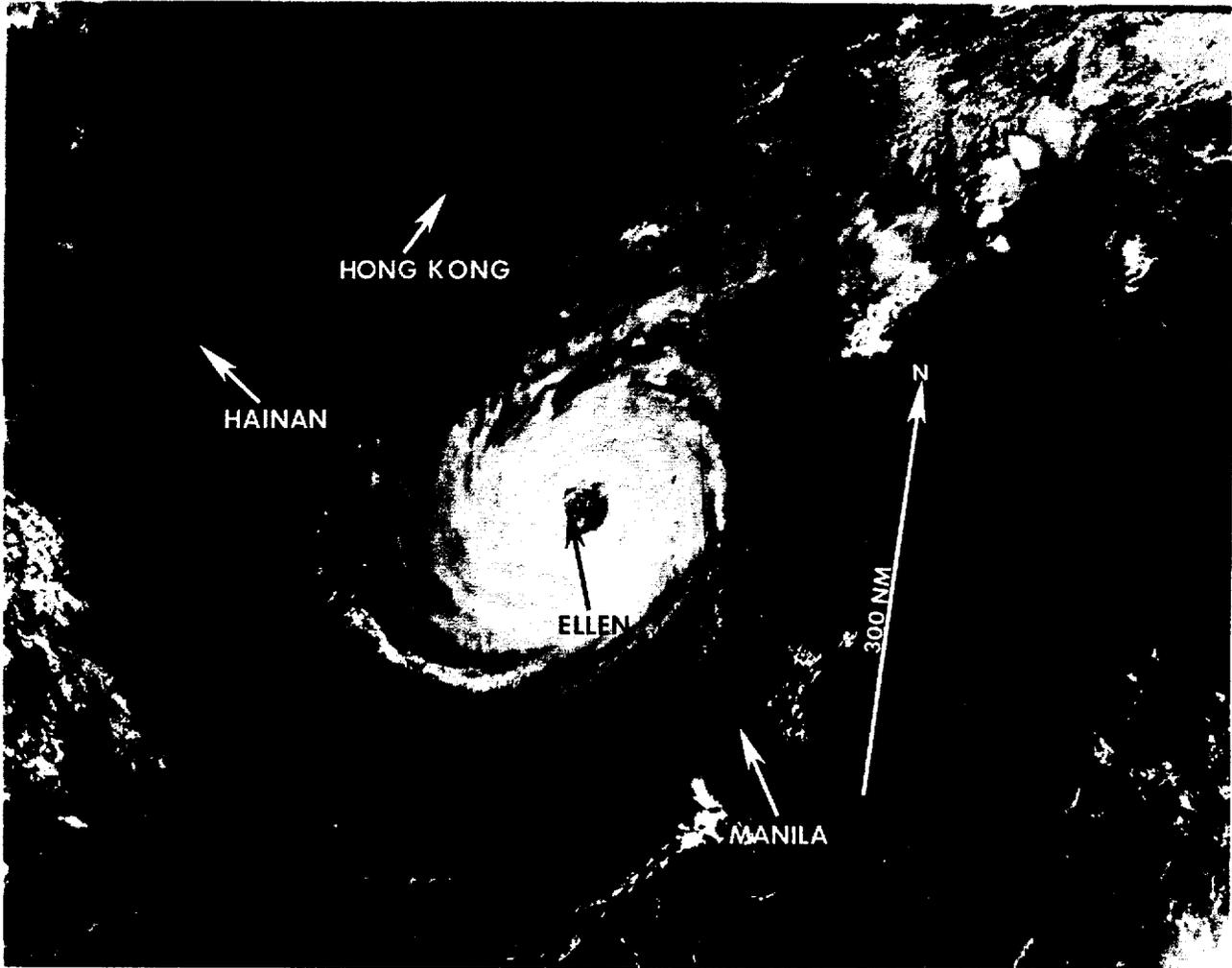


Figure 3-17-1. Tropical Storm Ellen at the time of the second aircraft reconnaissance mission that found 45 kt (23 m/sec) surface winds and a minimum sea-level pressure of 992 mb (110134Z October DMSP visual imagery).

would recurve. This was the forecast philosophy that was followed. Later the One-way Interactive Tropical Cyclone Model (OTCM) changed to a more northwesterly, and eventually, westerly track. JTWC stayed with the recurvature forecast until the 16th when the Typhoon made a definite turn toward the west. Aircraft reconnaissance data provided this critical information. The three hourly movement between the intermediate and on-time vortex fix positions confirmed that Ellen was headed northwest and not northeast. In retrospect, the low-level surge from the northeast across the Yellow Sea, Taiwan, and

later, the south coast of China pressured Ellen northwestward.

After reaching a peak intensity of 80 kt (41 m/sec) on the 14th (Figure 3-17-2), the vertical shear from the westerlies remained too weak to shear away the central convection and Ellen maintained tropical storm intensity almost until landfall northeast of the island of Hainan. Figure 3-11-3 provides a radar view of the rainbands as the system passed south of Hong Kong on the 18th. There were no reports received of heavy damage or loss of life attributed to Ellen.



*Figure 3-17-2. Weak vertical wind shear over the South China Sea enabled Ellen to intensify into a typhoon. Its large eye is visible to the west of the island of Luzon (150153Z October DMSP visual imagery).*



Figure 3-17-3. A digital radar picture of Tropical Storm Ellen as it passed south of Hong Kong on the 18th of October at 0640Z (Picture provided courtesy of the Hong Kong Royal Observatory).