

SUPER TYPHOON IRMA (34W)

Irma was the third and final tropical cyclone to form in November. Its development and track were dictated by complex mid-latitude and monsoonal regimes. Initially, Irma was slow to develop, however, rapid intensification followed once it was in the Philippine Sea. Irma lasted 17 days and required a total of 39 warnings -- only Super Typhoon Angela (26W) exceeded this longevity with a total of 46 warnings.

In the middle of November, disturbed weather associated with a TUTT low developed 580 nm (1075 km) northeast of Kwajalein Atoll in the Marshall Islands. The disturbance was first mentioned on the Significant Tropical Weather Advisory at 182300Z. Because of significant vertical wind shear affecting the system, JTWC opted for a 36-hour Tropical

Depression Warning at 210600Z instead of a 72-hour Tropical Cyclone Warning. Increasing upper-level flow around the TUTT low led to increasing shear above the depression, and a final Tropical Depression Warning followed at 220600Z. However, JTWC continued to mention the poorly defined remnants each day on the Significant Tropical Weather Advisory.

From 22 to 27 November, the system moved a record-breaking five days to the southwest, traveling from 20° to 10° north latitude. During this period from 22 to 24 November, the system tracked southwestward along the edge of a shear zone and continued to exhibit partially tropical characteristics. Eventually the southwestward track carried the system into an area of less vertical wind shear, where a flare up in convective activity led to a

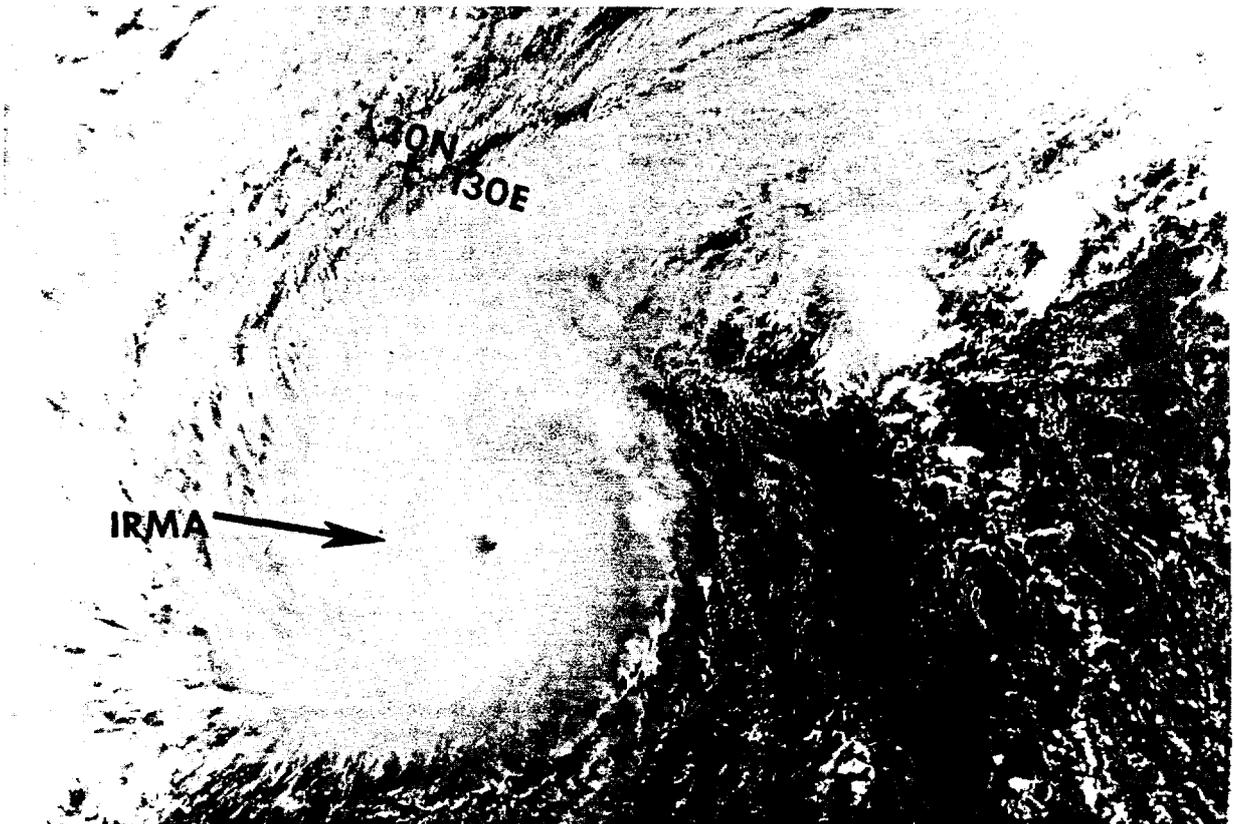


Figure 3-34-1. An extensive field of closed cell stratocumulus appear to the north through west of Super Typhoon Irma (300431Z November NOAA visual imagery).

Tropical Cyclone Formation Alert at 240600Z. This development continued and at 250000Z a Tropical Depression Warning was issued. As the polar air mass along the shear line became well-modified in the tropics and anticyclonic outflow became more symmetric aloft, conditions improved for development. At 261200Z, JTWC issued the first Tropical Cyclone Warning on Tropical Depression 34W.

As the track became more westerly at 261800Z, Tropical Depression 34W was upgraded to Tropical Storm Irma. As a mid-latitude short wave trough approached from the northwest, enhancing Irma's outflow, rapid intensification occurred and JTWC upgraded

the tropical cyclone to a typhoon at 280600Z. As a second short wave approached, Irma (Figure 3-34-1) attained super typhoon intensity at 300000Z. This increase in intensity was short lived, however. With the passage to the east of the shortwave also came stronger westerly winds aloft and an accompanying surge in the low-level northeast monsoon. These factors, plus the entrainment of cold air, weakened Irma (Figure 3-34-2) below super typhoon intensity at 010000Z.

Since 27 November the track to the west-northwest brought Irma closer to the polar westerlies aloft. Irma's forward motion slowed gradually as the cyclone approached the western

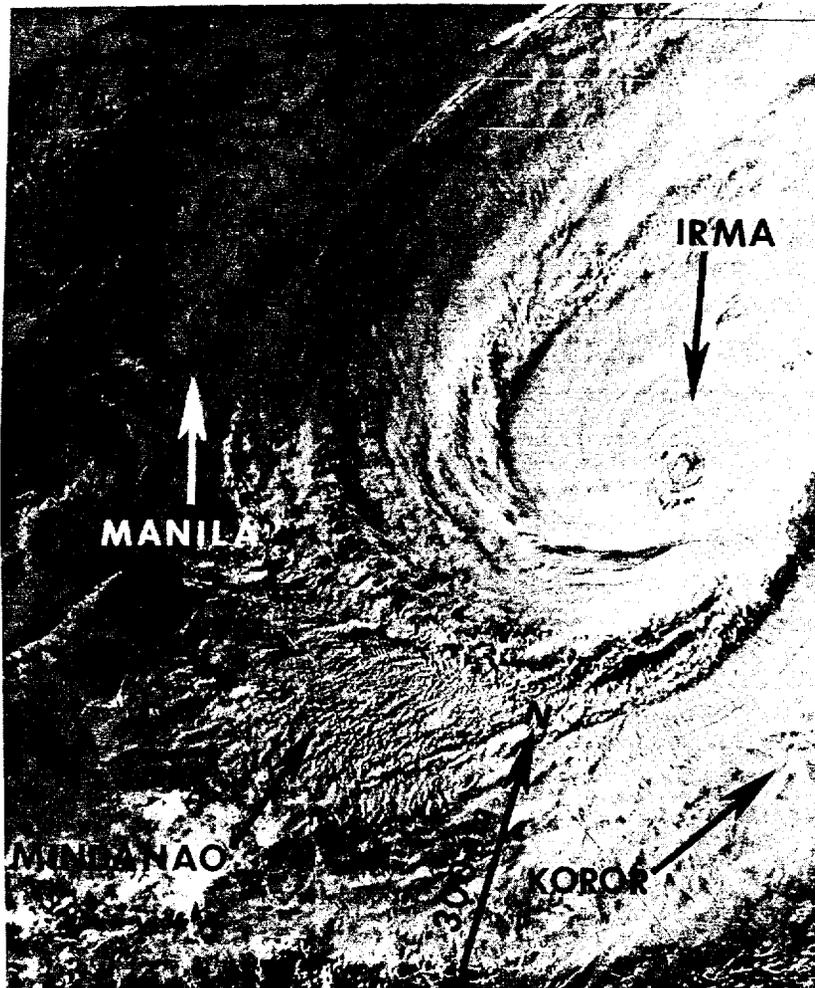


Figure 3-34-2. Irma's central dense overcast is elongated and asymmetrical. The eye is filling with clouds and the super typhoon is weakening (302151Z November DMSP visual imagery).

periphery of the subtropical ridge. The entire fall of 1989 had be characterized by zonal westerly mid-tropospheric flow and a very narrow subtropical ridge in the extreme western Pacific. Because of the 250 nm (465 km) wide ridge, even straight moving cyclones were very close to becoming recurvature ones. JTWC expected the flow to remain zonal, and for Irma to resume westward movement into the Philippine Islands. However, on 2 December, another short wave moved eastward from the

coast of Asia. This trough deepening further equatorward than the previous short waves and Irma recurved 630 nm (1165 km) east of Manila. The typhoon accelerated in response to the stronger westerly flow aloft and weakened in the strong shearing environment. The final warning was issued at 041200Z. The remnants of Irma were no longer visible on the satellite imagery on 5 December. JTWC received no reports of damage caused by Irma.