TROPICAL STORM HANNAH (01W)

I. HIGHLIGHTS

The first named tropical cyclone of 1997, Hannah, developed from a tropical disturbance in a near-equatorial trough south of the Marshall Islands. Moving on a long westward track for over two weeks, it reached a peak intensity of 50 kt (26 m/sec), and then dissipated in the Philippine Sea. Many of the tropical cyclones of 1997 (including Hannah) shared the unusual characteristic of forming well to the east of normal; a typical behavior of tropical cyclones during an El Niño year.

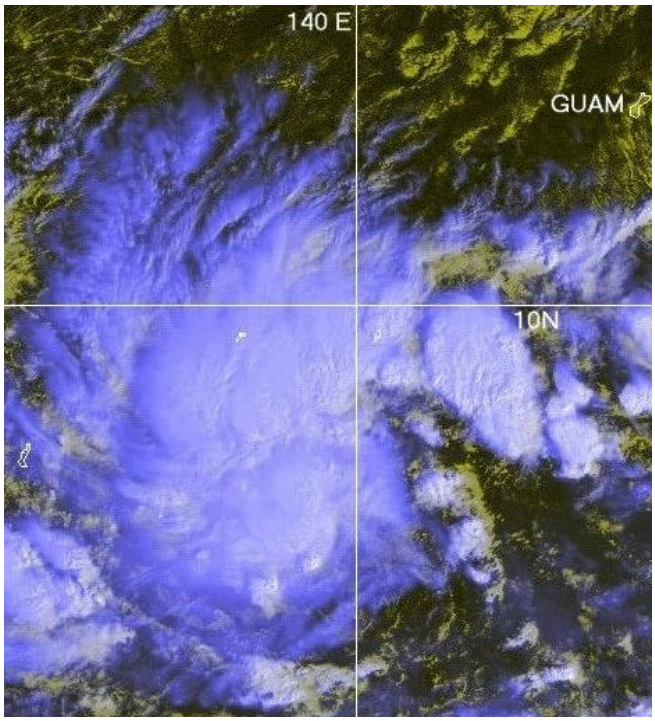


Figure 3-01-1 The deep convection associated with the pre-Hannah tropical disturbance becomes better organized, and JTWC responds by issuing a Tropical Cyclone Formation Alert. Note the large extent of low-level westerly winds along the equator and at low latitudes in both hemispheres implied by the distribution and pattern of the deep convection (182333Z January infrared GMS imagery).

II. TRACK AND INTENSITY

The tropical disturbance which became Hannah was first described on the 11 January significant tropical weather advisory as an area of persistent deep convection located at very low latitude (4ºN) and just to the west of the International Date Line (IDL). The disturbance remained poorly organized for several days as it moved steadily westward along 4ºN. After a westward journey covering over 2000 nm (3700 km) in a period of one week, it began to show signs of development. On 19 January, when the system was south-southwest of Guam, an increase in the amount of deep convection and the presence of a low-level circulation center were detected by multi-spectral satellite imagery (Figure 3-01-1) and synoptic data. This prompted JTWC to issue a Tropical Cyclone Formation Alert valid at 00Z on 19 January. The first warning on Tropical Depression (TD) 01W was issued valid at 0600Z on the nineteenth based on a blend of synoptic data, scatterometer data, and satellite intensity estimates, which indicated that the winds in the system had increased to at least 25 kt (13 m/sec). Twelve hours later, at 191800Z, TD 01W was upgraded to Tropical Storm Hannah. This was based, once again, on a blend of synoptic data, scatterometer data, and satellite intensity estimates which indicated intensification to 35 kt (18 m/sec). Hannah reached peak intensity of 50 kt (26m/sec) at 0600Z on 20 January based on conventional satellite intensity estimates, and special sensor microwave imagery (SSM/I). These sources all indicated

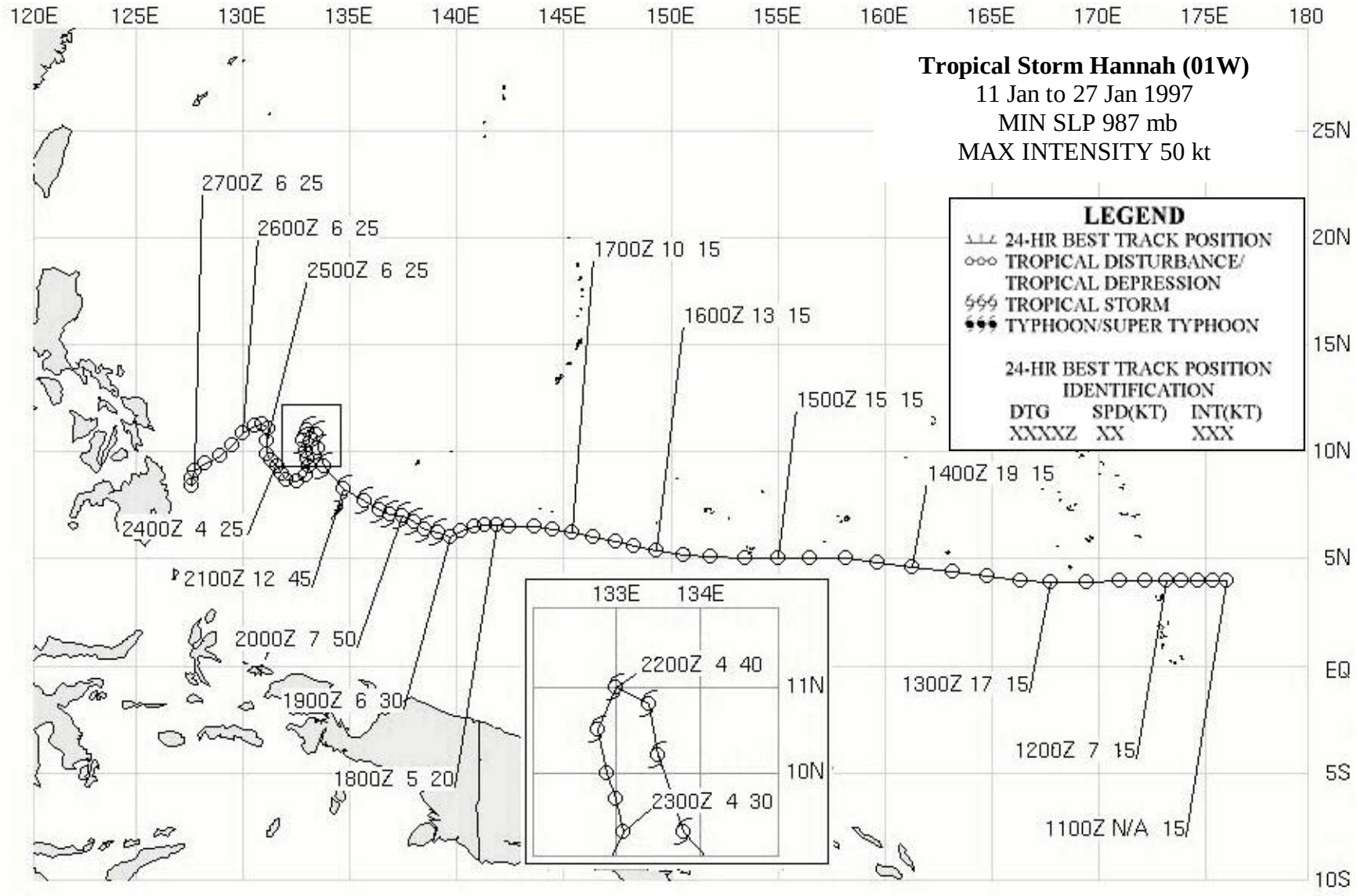
that the deep convection and the low-level cloud lines had become organized into well-defined cyclonic bands. After 0600Z the cyclone approached a region of low-level northeasterly flow overlaid by upper level southeasterly winds. Weakening ensued as vertical wind shear forced the dwindling amounts of deep convection to the northern quadrant. Hannah's motion became erratic on 21 January as the system began to interact with a shear line that trailed into the tropics from a large and vigorous extratropical low moving eastward off the coast of Japan. Trapped at the end of the shear line, the areal extent of Hannah's deep convection began to rapidly diminish, and the final warning was issued valid at 1800Z on the 24th when the intensity had fallen to 25 kt (13 m/sec) and further weakening was expected. Post analysis revealed that the remains of Hannah maintained an intensity of about 25 kt (13m/sec) for the next three days as it moved slowly toward Mindanao.

III. DISCUSSION

Although Tropical Storm Hannah was in most respects unremarkable, in retrospect it's development can be seen as part of the unusual large-scale tropical circulation pattern associated with El Niño, which would cause many of the tropical cyclones of 1997 to form well east of normal. We now know that the weather events over the Pacific warm pool during late 1996 and early 1997 may be looked upon as the antecedent (or onset) conditions leading to the development of strong El Niño conditions by April of 1997. An eastward displacement of the mean genesis location of tropical cyclones in the western North Pacific is a signature of El Niño.

IV. IMPACT

No reports of significant damage or injuries were received at JTWC.


Tropical Storm Hannah (01W)
11 Jan to 27 Jan 1997
MIN SLP 987 mb
MAX INTENSITY 50 kt
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
120E
125E
130E
135E
140E
145E
150E
155E
160E
165E
170E
175E
180
25N
20N
15N
10N
5N
EQ
5S
10S
2700Z 6 25
2600Z 6 25
2500Z 6 25
2400Z 4 25
2100Z 12 45
2000Z 7 50
1900Z 6 30
1800Z 5 20
1700Z 10 15
1600Z 13 15
1500Z 15 15
1400Z 19 15
1300Z 17 15
1200Z 7 15
1100Z N/A 15
133E
134E
11N
10N
2200Z 4 40
2300Z 4 30