

北太平洋西部颱風概述

Typhoons in Northwestern Pacific during 1961.

Abstract

In the region of northwestern Pacific, the frequency of occurrence of tropical cyclones during the year of 1961 in comparison with the normal was comparative higher. The average was 27.3 but the actual number of tropical cyclones observed in 1961 was 29. In 1961 typhoons in northwestern Pacific were inactive from the month of June to August and turned to be active from September to November. Among them, six typhoons had invaded the area of Taiwan during the year 1961.

In May, three tropical storms had generated in the Western Pacific but only one had fully developed into the category of a typhoon. This was typhoon Betty. She first appeared around 9°N. and 135°E. on the 21st, later steadily moved northwestward towards southeastern Taiwan on 26th and turned a northwesterly course to hit the island. Its energy became dispersed when storm passed over the mountainous belt of Taiwan on 27th. Typhoon Betty had made a lot of damage during her passage sweeping over the eastern part of Taiwan.

Three tropical storms had been observed at western Pacific during the month of June. They had not reach the category of typhoon intensity.

In July, five tropical cyclones had appeared in the western Pacific, Elsie was one named in the list of typhoons. She first observed in the neighbourhood of Marianas on the 7th. She was stagnant at the vicinity of southern Taiwan on the 13th, and then rushed northwestward on to the continental China.

Typhoon June was the next, had reached the typhoon intensity. She first appeared near 11°N. and 134°E. on the 1st August. This storm moved steadily northwestward since its birth. She deviated her moving direction a little northward and passed by Taiwan on the 7th. The storm dissipated after its landing on the southeastern coast of China on the 8th. The largest and most aggressive storm during August was Typhoon Lorna. She gave her birth near 13°N. and 134°E. on the 19th. Lorna developed rapidly to the typhoon intensity. Her "eye" traversed over southern Taiwan on the 24th, hit the China coast on the next day, and finally dissipated on the 26th.

The number of tropical storms was numerous during the month of September. Four storms had been classified into the category of typhoons. The normal frequency for the visitation of tropical cyclones in September was 4.6 but this year was seven. Typhoon Nancy developed first in Central Pacific on September 8th and she moved west-northwestward with a normal speed. The storm turned suddenly to northward on the 13th, again moved rapidly towards the north-northeast and swept over Central Japan on the 16th. Typhoon Nancy was a very destructive one in the Pacific this year. Maximum winds had reached 200 knots near center of the storm obtained from reports of reconnaissance flights on the 12th and 13th. Lowest

pressure reading obtained from a dropsonde was 846 mb on the 13th.

Typhoon Pamela was first appeared to the west of Saipan on September 6th. The storm was moving northwestward in constancy until 10th. September and shifted its moving direction suddenly to the west on 11th. and made a direct hit to the northern portion of Taiwan on the same day. Typhoon Pamela again moved towards northwest and raged on to Fukien province on next day. Its fast moving speed had exceeded a velocity more than 50 k.p.h. when she passed by Taiwan. Typhoon Pamela had made a great damage to the northern part of Taiwan. After the devoation of Pamela 153 lives had lost and 1,847 men had hurted. 210 fishing boats had sunk. About 12,349 houses had been demollshed.

Typhoon Sally became activated on the 24th at the east of the Philippines. She reached the category of typhoon intensity on the 26th. The storm traversed southern portion of Taiwan on the 28th and encroached on southeastern coast of China on the 29th.

The synoptic situation of general circulation at 700mb level during September was quite favorable for the development of tropical cyclones in wertern Pacific in according to Orgill's investigations.

There had four tropical storms developed in October but just one had been developed into the category of the intensity of typhoon that was Violet. Her track was recorded at the west of Trishima and went by the way towards northeast along the east coasts of Japan.

Total damage due to the invasions of typhoons in 1961 was awful. About 336 lives had been lost. The number of houses demolished by the violent winds during the passage of typhoons in 1961 was 15,531. The necessary precautions for the typhoons should be considered in this district as an utmost importance.

一、緒 論

民國 50 年北太平洋西部計發生颱風 29 次，於臺灣附近通過者及登陸者計有 6 次之多，其中以 9 月 11 日侵襲本省北部之波密拉颱風所造成之災害最為嚴重，人口死亡 153 人，失蹤 146 人，受傷 1,847 人，房屋全毀 12,349 棟，半毀 26,442 棟，漁船被沒 210 艘。其他 5 月 26 日晚登陸臺東、新港間之貝蒂颱風，8 月 7 日晨登陸新港附近之裘恩颱風，8 月 25 日晨橫越本省南端部之勞娜颱風等，均在臺灣地區造成災害。尚有 7 月 13 日及 9 月 28 日橫越本省南端部之艾爾西颱風及沙莉颱風，在臺灣地區引起暴風雨，但幸未釀成災害。此外各颱風離臺灣均甚遠，未有明顯影響。

民國 50 年侵襲臺灣之颱風，先後釀成災害者計 4 次之多，共計人口死亡 175 人，失蹤 161 人，受傷 2,091 人，房屋全毀 15,531 棟，半毀 29,270 棟，農田流失 144 公頃，漁船沈沒 242 艘，此外水利、鐵路、公路、港埠等均有損失。即民國 50 年為颱風災害較重

之一年。

二、各颱風之能量

民國 50 年在北太平洋西部發生之 29 次颱風中，美軍颱風偵察飛機在 9 月 13 日於南施颱風眼中測得之 846mb，係為今年颱風中心之最低氣壓，也是已往世界上最低氣壓之實測值。已往最低氣壓之實測值，係為民國 47 年 9 月 24 日美軍颱風偵察飛機，在艾達颱風眼中測得之 877 毫巴。

又 5 月 26 日 19 時，於蘭嶼測候所測得 10 分間平均風速，竟達每秒 74.7 公尺，這是已往 64 年來於臺灣地區測得之最大風速極值。此紀錄不僅為臺灣地區之平均最大風速，亦為世界十分間平均之最大風速。

此兩種紀錄為歷年颱風中所未見之最大紀錄，茲以臺灣省氣象所出版之民國 47 年颱風調查報告第一章第三節所述之方法，估計各颱風在其最盛期之動能及位能，得如表一。即今年發源於北太平洋西部之颱風中，南施颱風威力最大，其動能為 92.02×10^{24}

爾格，位能為 101.09×10^{25} 爾格。暴風半徑係為 650 公里，估計其最大暴風速曾達每秒 100 公尺左右，為歷年颱風中所罕見。其次為衛萊特颱風。又今年侵襲臺灣之 6 次颱風中，以波密拉颱風威力最大，其動能為 23.00×10^{24} 爾格，位能為 25.27×10^{25} 爾格，而勞娜颱風次之，其動能、位能各為 17.70×10^{25} 爾格及 19.44×10^{25} 爾格。

又今年度發生之 29 次颱風，由強度分類，即最大風速在 100kts 以上之所謂強烈颱風，共計 11 次，

佔總數 38%。最大風速 99 kts 以下，64 kts 以上之所謂中度颱風，共計 9 次佔總數 31%。最大風速在 63 kts 以下，34 kts 以上之所謂輕度颱風，共計 9 次，佔總數 31%。

三、民國 50 年颱風之活動特性

民國 26 年至民國 50 年（西歷 1937~1961 年）在北太平洋西部所發生之每月颱風次數列如表二。近 25 年來之平均，每年在北太平洋西部發生之颱風

表一：1961 年北太平洋西部颱風一覽表

颱風發生 秩 序	颱風名稱	日 期 (月X日)到(月X日)	颱風最低 中心氣壓 (mb)	颱風半徑 (×111km)	颱風深度 (mb)	颱風最盛期之		最大風速 (kts)	暴風半徑 (km)
						動 能 (×10 ²⁴ erg)	位 能 (×10 ²⁵ erg)		
1.	莉 泰(Rita)	1.16— 1.17	998	5.1	06	1.11	1.22	40	50
2.	蒂 絲(Tess)	3.24— 3.31	940	6.3	74	20.85	22.91	130	350
3.	艾 麗 絲(Alice)	5.17— 5.20	985	4.6	20	3.00	3.30	80	200
4.	貝 蒂(Betty)	5.22— 5.28	945	4.0	61	6.93	7.61	150	250
5.	中度颱風(無名稱)	5.29— 5.29	1,000	1.6	06	0.11	0.12	40	50
6.	寇 拉(Cora)	6.23— 6.25	985	4.3	13	1.71	1.87	75	200
7.	中度颱風(無名稱)	6.26— 6.27	995	2.2	7	0.24	0.26	40	50
8.	都 麗 絲(Doris)	6.30— 7.02	990	5.4	10	2.07	2.27	35	150
9.	艾 爾 西(Elsie)	7.12— 7.15	975	4.0	30	3.41	3.74	90	200
10.	芙 勞 西(Flossie)	7.16— 7.19	992	4.3	10	1.31	1.44	45	120
11.	葛 瑞 絲(Grace)	7.21— 7.24	998	3.2	08	0.58	0.64	40	80
12.	海 倫(Helen)	7.27— 8.02	972	6.0	35	8.95	9.83	100	200
13.	艾 達 (Ida)	7.28— 7.31	980	4.0	30	3.41	3.74	90	250
14.	裘 恩(June)	8.01— 8.08	960	3.5	45	3.91	4.30	100	200
15.	凱 西(Kathy)	8.15— 8.17	990	3.0	16	1.02	1.12	80	150
16.	勞 娜(Lorna)	8.21— 8.26	947	6.5	59	17.70	19.44	120	200
17.	梅 瑞(Marie)	9.01— 9.03	998	5.1	08	1.48	1.62	45	120
18.	南 施(Nancy)	9.08— 9.17	846	9.0	160	92.02	101.09	200	650
19.	歐 加(Olga)	9.08— 9.10	985	4.7	19	2.98	3.27	70	150
20.	波 密 拉(Pamela)	9.09— 9.12	915	6.0	90	23.00	25.27	150	250
21.	魯 碧(Ruby)	9.23— 9.24	998	4.2	08	1.00	1.10	55	80
22.	沙 莉(Sally)	9.26— 9.29	980	6.4	26	7.56	8.31	100	300
23.	蒂 達(Tilda)	9.28—10.05	925	8.4	83	58.90	64.74	130	400
24.	衛 萊 特(Violet)	10.05—10.10	895	9.3	110	67.55	74.21	195	400
25.	魏 達(Wilda)	10.11—10.13	990	4.2	16	2.00	2.20	60	200
26.	畢 莉(Billie)	10.24—10.29	970	7.9	32	14.18	15.58	70	400
27.	葛 萊 拉(Clara)	10.28—10.31	990	7.0	20	6.96	7.64	80	150
28.	戴 特 (Dot)	11.08—11.15	930	4.8	80	13.09	14.38	140	200
29.	艾 倫(Ellen)	12.07—12.13	945	4.0	65	7.38	8.11	130	250

約為 27 次，但是民國 50 年發生 29 次，比累年平均僅多 2 次。至每月發生次數之分佈，5 月之 3 次，6 月之 3 次及 9 月之 7 次，均比較累年平均值為多，尤為 5 月之 3 次約為累年平均值多四倍，並且此三次均侵襲本省及中國大陸華南沿海，呈現本年度颱風，較往年提早來臨現象。但 8 月中僅有 3 次颱風發生，比較累年平均值，少一半。此外 7、10 兩個月略與累年平均值相等。總之今年度颱風來臨季節較早，而 5 月、6 月及 9 月之颱風活動比較活潑，而 8 月中之颱風活

動比較少。

關於颱風之源地，5 月中發生之 3 次颱風中在南海發生者有 2 次，此外 6 月及 10 月各有一次颱風發生在南海。即民國 50 年共計有 4 次颱風發生在南海，較往年為多。

關於侵襲臺灣之颱風次數，據民前 15 年至民國 50 年這 65 年之累年平均為 3.7 次，而民國 50 年侵襲臺灣之颱風，先後計有 6 次之多，約為累年平均之一倍。即 5 月、7 月各有一次，8 月、9 月各有兩次颱

表二：北太平洋西部每月颱風發生次數及侵襲臺灣颱風次數

年	月 份												合 計	
	1	2	3	4	5	6	7	8	9	10	11	12		
1937	—	—	—	—	—	—	5	5	3	2	2	1	18	
1938	—	—	—	1	2	—	—	4	5	3	3	1	19	
1939	—	1	—	—	1	1	8	5	3	4	2	2	27	
1940	—	1	—	2	—	3	7	13	12	6	1	4	49	
1941	—	1	—	2	—	4	7	9	4	3	—	2	30	
1942	1	1	—	1	1	—	6	9	7	3	1	1	31	
1943	1	—	—	3	1	3	8	6	5	4	2	2	35	
1944	2	2	—	—	1	1	4	5	3	4	3	—	25	
1945	—	—	—	1	—	3	4	6	4	2	1	—	21	
1946	—	—	1	—	1	3	5	5	4	4	2	—	25	
1947	—	—	—	—	2	1	3	2	4	6	3	1	22	
1948	1	—	—	—	2	3	4	8	6	6	4	2	36	
1949	1	—	—	—	—	1	6	3	5	3	3	2	24	
1950	—	—	—	2	1	2	5	18	6	3	3	4	44	
1951	—	1	1	2	1	1	3	3	2	4	1	2	21	
1952	—	—	—	—	—	3	3	5	3	6	3	4	27	
1953	—	1	—	—	1	2	1	6	4	4	3	1	23	
1954	—	—	1	—	1	—	1	5	5	4	3	1	21	
1955	1	1	1	1	—	2	7	7	3	3	1	1	28	
1956	—	—	1	2	—	1	2	5	6	1	4	1	23	
1957	2	—	—	1	1	1	1	4	5	4	3	—	22	
1958	1	—	—	1	2	3	7	5	5	3	2	2	31	
1959	—	1	1	1	—	—	2	6	4	4	2	2	23	
1960	—	—	—	1	1	3	3	12	3	4	1	1	28	
1961	1	—	1	—	3	3	5	3	7	4	1	1	29	
颱風發生次數 (1937—1961)	合 計	11	10	7	19	19	44	111	159	115	94	55	37	682
	平 均	0.44	0.40	0.28	0.76	0.80	1.76	4.44	6.36	4.60	3.76	2.20	1.48	27.28
侵襲臺灣颱風次數 (1897~1961)	累 年 平 均	—	—	—	0.03	0.17	0.25	0.91	1.18	0.85	0.28	0.09	—	3.74
	1961	0	0	0	0	1	0	1	2	2	0	0	0	6

風侵襲臺灣。

根據氣象所每日分析之天氣圖，繪本年在北太平洋西部發生之颱風行徑，可得如圖 1 中所示。即本年

度颱風，以向西或西北推進，趨向中國大陸或南海者為多，而呈現拋物線型行徑者較小。

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Fig 1A : Tracks of tropical storms in the northwestern Pacific for 1961.

圖 1A : 民國 50 年北太平洋西部颱風行徑圖

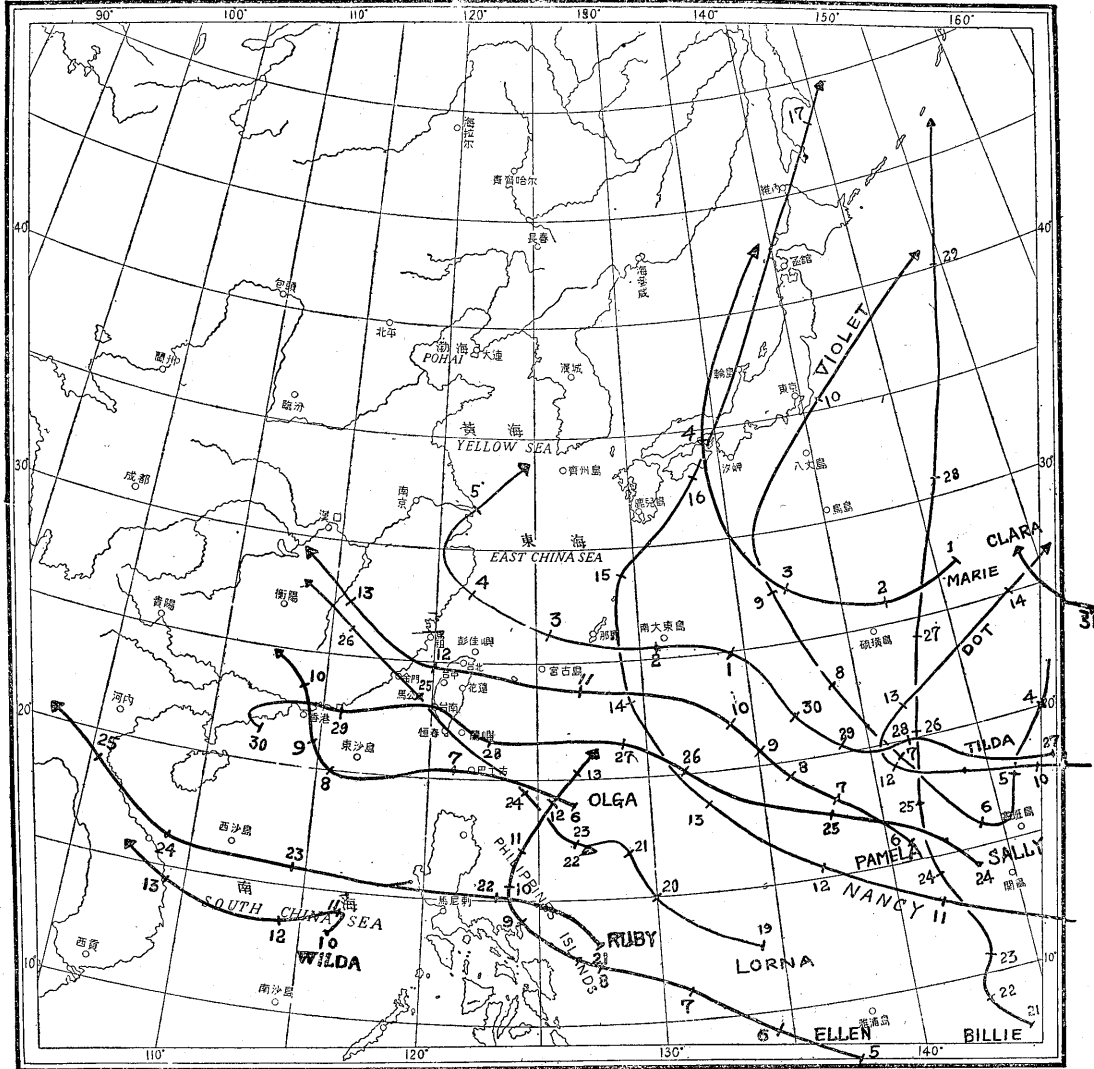


Fig 1B : Tracks of tropical storms in the northwestern Pacific for 1961

圖 1B : 民國 50 年北太平洋西部颱風行徑圖