

FREDA

Changes in the large-scale circulation over the western Pacific during June caused a readjustment of the subtropical ridge resulting in a strong high cell positioned over the Ryukyu Islands. This synoptic situation largely controlled the formation and movement of all storms from mid-June to mid-July.

Freda was the first in a succession of six storms to cross the Philippine archipelago in a period of less than four weeks. The first signs of the pre-storm system appeared west of the Palau Islands on the 12th. Aircraft reconnaissance located the system two days later as a weak tropical storm which had drifted to a position 300 miles east of central Luzon.

Heading on a west-northwest track (Figure 5-13), Freda intensified to 65 kt just before she struck near Palanan Point on northeastern Luzon on the afternoon of the 15th. Gusts of 80 kt were reported at Vigan on the western coast when the center was emerging back out to sea, while 8.15 inches of rain fell at Baguio. Damage was considerable over northern Luzon but no estimates are available.

Moving into the South China Sea (Figure 5-14), the storm remained near minimal typhoon strength and began to bend toward the northwest. Freda's center passed 50 n mi south of Pratas Island and struck the mainland between Macau and Hong Kong with maximum sustained winds of 50-55 kt. Wind gusts of 70 kt were experienced at Tate's Cairn and up to 103 kt at the Royal Observatory which also registered a minimum pressure of 984.3 mb.

A total of seven deaths were attributed to Freda--five of which occurred in Luzon, the other two in Hong Kong.

One of the remarkable features associated with Freda were the comments by reconnaissance crews of the lack of a wall cloud around the eye, while she generated sustained winds of typhoon force. Fett (1968) described similar circumstances for typhoon Billie in 1967.

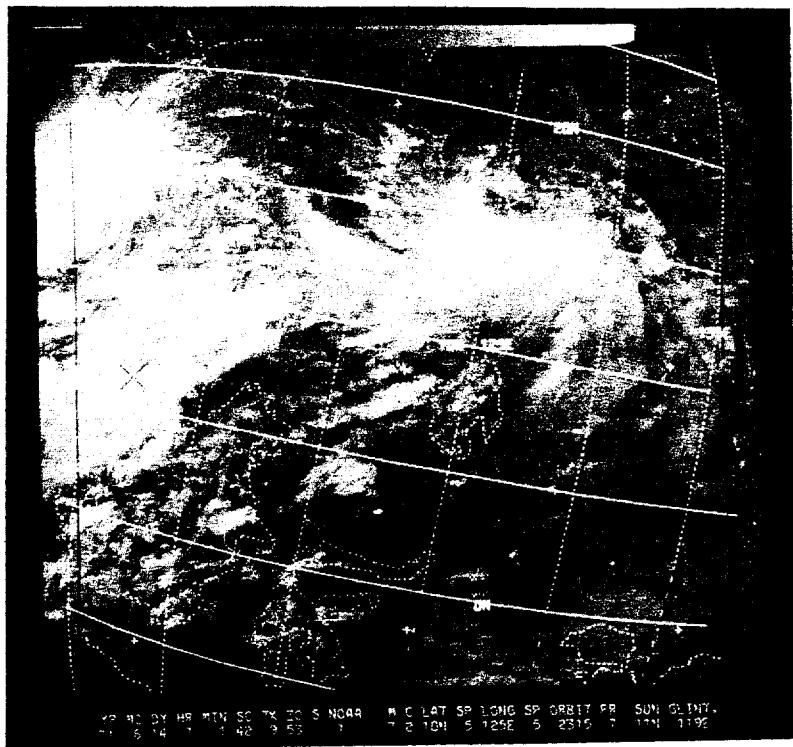


FIGURE 5-13. NOAA-1 CAMERAS PHOTOGRAPH FREDA AS A TROPICAL STORM EAST OF LUZON ON 14 JUNE.

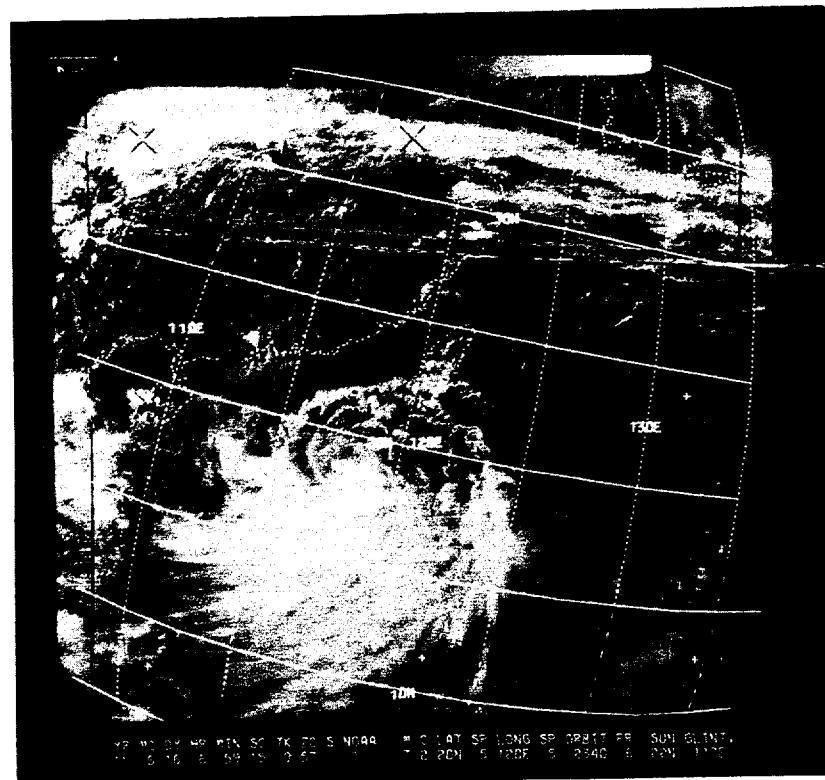


FIGURE 5-14. TYPHOON FREDA IN THE NORTHERN SOUTH CHINA SEA AS VIEWED BY NOAA-1 ON 16 JUNE.

TYphoon Freda
EYE FIXES FOR CYCLONE NO. 10
14 JUN - 18 JUN 71

FIX NO.	TIME	POSIT	UNIT- METHOD	FLT	LVL	SFC	WIND	MIN	700MB	LVL	TI/TO	EYE FORM	ORIEN- TATION	EYE DIA	THKN CLD	REMARKS	POSIT OF RADAR
1	110515Z	8.7N 133.5E	VQ-P- 5---	700MB	27	25	1000	3112	13/12	---	---	ELIP	E-W	50X27	--	RDR PRES POOR	
2	120708Z	8.0N 132.0E	SATELIT---	STG B								ELIP	E-W	55	--	WC OPEN N SEMIC	
3	140701Z	15.5N 126.0E	SATELIT---	STG C								ELIP	E-W	55	--	WC OPEN N SEMIC	
4	140734Z	15.5N 126.4E	VQ-P- 8- 5	400M	---	40	1001	---	26/23	---	---	ELIP	E-W	50X27	--	WC OPEN N SEMIC	
5	141915Z	16.5N 124.7E	VQ-P- 5---	400M	---	60	994	---	26/23	---	---	ELIP	E-W	55	--	WC OPEN N SEMIC	
6	142210Z	16.4N 124.0E	VQ-P-20---	400M	---	50	994	---	26/23	---	---	ELIP	E-W	55	--	WC OPEN NE SEMIC	
7	150110Z	16.7N 123.6E	54-P- 5---	700MB	55	70	987	2987	12/11	---	---	ELIP	E-W	55	--	NEG RDR PRES	
8	150400Z	16.8N 123.0E	54-P- 1---	700MB	50	---	986	2975	14/12	---	---	ELIP	E-W	55	--	POOR RDR PRES	
9	150637Z	17.1N 122.7E	54-P- 1---	700MB	42	60	985	2978	15/12	---	---	ELIP	E-W	55	--	Poorly defined FYE NOT VISIBLE	
10	150800Z	16.5N 122.0E	SATELIT---	STG X	DIA 3	CAT 2.0						ELIP	E-W	50X27	--	POOR RDR PRES	
11	151014Z	17.3N 122.4E	VQ-P- 3---	700MB	75	65	990	2975	16/15	CIRC	10	ELIP	E-W	55	--	NEG RDR PRES	
12	151319Z	17.3N 121.8E	VQ-P-10---	700MB	55	---	---	2975	15/13	---	---	ELIP	E-W	55	--	NEG RDR PRES	
13	151603Z	17.6N 121.3E	VQ-P- 8---	700MB	50	---	974	2978	11/09	---	---	ELIP	E-W	55	--	NEG RDR PRES	
14	152200Z	17.6N 119.9E	54-P-11-10	500MB	40	---	993	2978	00/-3	---	---	ELIP	E-W	55	--	NEG RDR PRES	
15	160300Z	18.7N 118.9E	54-P- 6- 5	700MB	50	65	988	2996	15/10	---	---	ELIP	E-W	55	--	WC FORMING SE	
16	160659Z	18.5N 117.5E	SATELIT---	STG C+								ELIP	E-W	55	--	LESS INTENSE	
17	161010Z	19.3N 117.6E	VQ-P- 3---	400M	65	70	---	2986	26/21	CIRC	25	ELIP	E-W	55	--	WC OPEN N QUAD	
												ELIP	E-W	55	--	STG FBS & SEMIC	
18	161300Z	19.6N 116.9E	VQ-P- 5---	400M	45	50	989	---	27/24	CIRC	35	ELIP	E-W	55	5	WC OPEN NW	
19	161530Z	19.9N 116.4E	VQ-P- 5---	400M	65	65	988	---	27/24	---	---	ELIP	E-W	55	--	WC OPEN N-STG FBS	
20	161800Z	19.8N 116.2E	LND RDR---									ELIP	E-W	55	--	HK RDR-POOR FIX	22.3N 114.2E
21	162100Z	20.2N 116.0E	LND RDR---									ELIP	E-W	55	--	HK RDR-POOR FIX	22.3N 114.2E
22	162200Z	20.1N 115.3E	LND RDR---									ELIP	E-W	55	--	HK RDR-POOR FIX	22.3N 114.2E
23	170030Z	20.4N 115.5E	54-P- 1---	700MB	58	55	978	2920	16/10	CIRC	10	ELIP	E-W	55	--	NO RDR PRES - 700 CNTR 4NM N	
24	170626Z	20.8N 115.0E	VQ-P- 5---	500M	---	60	984	---	27/22	ELIP	E-W	50X26	12	12	--	RDR PRES FAIR	
25	170753Z	20.0N 114.5E	SATELIT---	STG X	DIA 2	CAT 2.0				---	---	ELIP	E-W	55	--	EYE NOT VISIBLE	
26	170930Z	21.3N 114.7E	VQ-R-12---	---	45	---	---	---	27/25	CIRC	32	10	10	--	CLSD WC-STRONGER	21.0N 115.2E	
27	171105Z	21.4N 114.8E	VQ-R-25---	---	52	---	---	---	27/24	CIRC	35	7	7	--	WC OPEN NE QUAD	21.1N 115.6E	

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TYPHOON FREDA

1200Z 14 JUN TO 0000Z 18 JUN

	BEST TRACK			WARNING			24 HOUR FORECAST			48 HOUR FORECAST			72 HOUR FORECAST										
	POSIT	WIND	POSIT	WIND	DST WIND	POSIT	WIND	DST WIND	POSIT	WIND	DST WIND	POSIT	WIND	DST WIND	POSIT	WIND	DST WIND	ERRORS					
141200Z	15.9N	125.6E	45	16.0N	125.8F	40	13	-5	17.7N	123.0F	50	69	-10	19.1N	120.0E	60	166	-5	20.2N	116.8E	70	155	1e
141800Z	16.3N	124.7E	(55)	16.4N	124.9F	50	13	-5	18.3N	121.1E	55	30	-20	19.6N	118.0F	60	109	-5	---	---	--	--	--
150000Z	16.7N	123.8E	60	16.7N	123.8F	50	0	-10	18.3N	119.8E	55	13	-5	19.9N	116.3E	65	49	0	21.6N	113.6E	70	97	3e
150600Z	17.1N	122.8E	65	16.8N	122.7F	70	19	5	18.1N	118.8E	50	61	-15	19.8N	115.5E	65	64	5	---	---	--	--	--
151200Z	17.5N	121.8E	60	17.3N	122.0F	60	17	0	18.4N	118.3F	50	99	-15	20.1N	115.0F	60	90	5	---	---	--	--	--
151800Z	17.8N	121.0E	(75)	17.5N	120.9F	50	19	-25	19.0N	117.1E	55	82	-10	20.9N	113.9E	65	78	15	---	---	--	--	--
160000Z	18.5N	119.7E	60	17.8N	119.5F	45	43	-15	19.6N	115.8E	55	49	-10	21.6N	113.2E	65	96	30	---	---	--	--	--
160600Z	19.0N	118.3E	65	18.8N	118.3F	65	12	0	20.9N	114.0F	85	62	25	---	---	--	--	--	---	---	--	--	--
161200Z	19.6N	117.1E	65	19.4N	117.1F	70	12	5	21.7N	113.1F	80	73	25	---	---	--	--	--	---	---	--	--	--
161800Z	20.0N	116.1E	65	20.1N	115.9F	70	13	5	22.8N	111.9E	40	111	-10	---	---	--	--	--	---	---	--	--	--
170000Z	20.4N	115.6E	65	20.4N	115.5F	75	6	10	22.8N	112.8F	50	36	15	---	---	--	--	--	---	---	--	--	--
170600Z	20.8N	115.1E	60	20.7N	115.1F	70	6	10	---	---	--	--	--	---	---	--	--	--	---	---	--	--	--
171200Z	21.5N	114.4E	65	21.3N	114.5F	65	13	10	---	---	--	--	--	---	---	--	--	--	---	---	--	--	--
171800Z	22.2N	113.8E	50	21.8N	113.9F	65	25	15	---	---	--	--	--	---	---	--	--	--	---	---	--	--	--
180000Z	23.2N	113.3E	35	22.7N	113.2F	35	30	0	---	---	--	--	--	---	---	--	--	--	---	---	--	--	--

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TYPHOONS WHILE WIND OVER 35KTS

	WARNING	24-HR	48-HR	72-HR
AVERAGE FORCAST ERROR		16NM	62NM	93NM
AVERAGE RIGHT ANGLE ERROR		11NM	78NM	32NM
AVERAGE MAGNITUDE OF WIND ERROR		8KTS	15KTS	9KTS
AVERAGE BIAS OF WIND ERROR		0KTS	-3KTS	6KTS
NUMBER OF FORECASTS		15	11	7

ALL FORECASTS

	WARNING	24-HR	48-HR	72-HR
		16NM	62NM	93NM
		11NM	38NM	32NM
		8KTS	15KTS	9KTS
		0KTS	-3KTS	6KTS
		15	11	7
		2	2	2