NOAA Technical Memorandum NWSTM PR-22

1980 TROPICAL CYCLONES - CENTRAL PACIFIC

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noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / National Weather Service

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NATIONAL WEATHER SERVICE

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CENTRAL NORTH PACIFIC TROPICAL CYCLONE DATA, 1980[1]

Name	Dates	Maximum Class	Maximum Sustained Winds (kt)	Lowest Pressure(MB)	Total Hours Observed
CARMEN	April 7 & 8	Tropical Storm	E50 (NESS)	N/A	24(TS), 18(TD)
KAY	Sep 24-30	Hurricane	E75 (NESS)	N/A	66(H), 42(TS) 30(TD)

Key

H Hurricane
TS Tropical Storm
TD Tropical Depression

Total hours observed per class:

H	66
TS	66
TD	48

[1]Data pertains only to period storm was in the central Pacific

Tropical Storm CARMEN began as an active cluster of convective activity centered near 04N 178W on April 3, 1980. The Central Pacific Hurricane Center (CPHC) and its supporting National Environmental Satellite Service (NESS) unit classified the developing activity as a tropical low with winds of 25-30 knots. WSFO Honolulu gave official recognition of the tropical low's existence in their regularly issued FZPN PHNL (High Seas Warnings and Forecasts) from 031700Z to 041700Z. During this period, the low center moved due north at about 12 knots and exhibited intensifying characteristics.

By 041700Z, the storm showed a drift towards the northwest. CPHC in concert with the Joint Typhoon Warning Center (JTWC), deemed it appropriate that JTWC begin issuing tropical cyclone bulletins at 050000Z. This was the beginning of Tropical Depression 02 (TD#2).

TD#2 intensified rapidly to Tropical Storm CARMEN by 051200Z and reached its maximum intensity of 60 knots at 061200Z. (Figure 1 shows the storm a few hours after she was given a number.) JTWC issued bulletins 1 through 10 and relinquished responsibility to the CPHC which issued its first bulletin at 070600Z and continued with six more. The last bulletin was issued at 081800Z.

Upon reaching 20N, CARMEN came to an abrupt halt for nearly 24 hours in which time she weakened and ultimately met her demise. The system remained over water the entire time and had no direct effects on any islands. There were no reports of damages or casualties to ships.

The mean 24-hour error for 12 forecasts was 167.58 nautical miles. CPHC's 24-hour error for 3 forecasts was 214 nautical miles. The large error was due to the storm's nearly stationary position for about 24 hours (Fig. 2) before she continued her northeasterly movement and eventual death. Average best track from actual position error was 36.75 nautical miles.

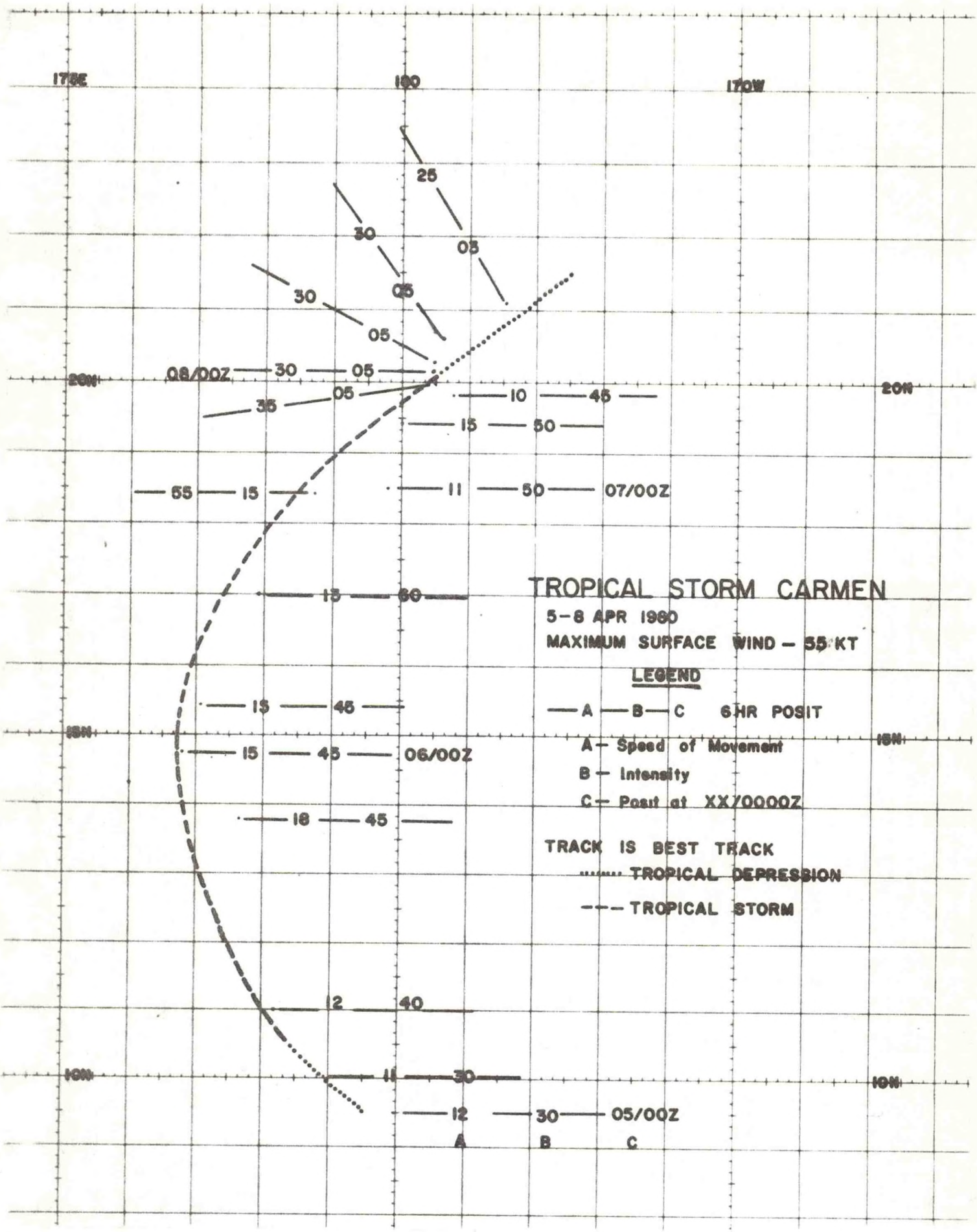
175E
180
170W
25
30
05
30
05
05
08/00Z — 30 — 05
35
05
10 — 45
15 — 50
55 — 15
11 — 50 — 07/00Z
15 — 60
15 — 45
15 — 45 — 06/00Z
18 — 45
12 — 40
11 — 30
12 — 30 — 05/00Z
A B C
20N
20N
15N
15N
10N
10N
TROPICAL STORM CARMEN
5-8 APR 1980
MAXIMUM SURFACE WIND — 55 KT
LEGEND
— A — B — C 6HR POSIT
A — Speed of Movement
B — Intensity
C — Posit at XX/0000Z
TRACK IS BEST TRACK
..... TROPICAL DEPRESSION
--- TROPICAL STORM

Figure 1

DATE/TIME (GMT)	Best Track		Operational Position		ERROR (NM)	24-Hr Fcst Position		24-Hr Fcst Error (NM)
	Lat(N)	Long	Lat(N)	Long		Lat (N)	Long	
0500	9.5	179.5E	9.5	180	30			
0506	10.0	178.8E	10.0	178.9E	6			
0512	11.0	178.0E	11.0	178.2E	12			
0518	13.1	177.1E	13.8	177.7E	56			
0600	14.3	176.7E	14.7	176.8E	29	13.7	177.7E	77
0606	15.4	176.8E	15.4	177.2E	24	13.6	176.2E	118
0612	16.7	177.3E	17.0	177.9E	42	14.7	175.8E	183
0618	17.8	177.9E	18.4	178.7E	60	19.6	179.9E	100
0700	18.7	178.7E	18.5	179.8E	60	18.8	176.6E	182
0706	19.4	179.5E	19.4	180	30	19.3	179.9W	13
0712	19.8	179.8W	19.8	179.2W	36	20.9	177.2W	133
0718	20.1	179.5W	20.0	179.5W	6	22.0	175.6W	253
0800	20.2	179.3W	20.1	179.5W	20	21.0	175.0W	310
0806	20.6	178.8W	20.3	179.5W	48	22.0	174.3W	316
0812	20.9	178.3	20.6	179.4W	69	21.5	175.3W	240
0818	21.5	177.5	21.1	178.5W	60	20.0	179.5	86

Mean vector error = 36.75
No. of cases: 16

CPHC mean vector error = 38.42
No. of cases: 7

Mean 24-hr fcst error = 167.58
No. of cases: 12

CPHC mean 24-hr fcst error = 214.0
No. of cases: 3

Figure 2

Hurricane KAY, nee Tropical Depression 12E, began her life cycle near 13N 103W on September 15, 1980. The first advisory on T.D. 12E was issued by the Eastern Pacific Hurricane Center (EPHC) at 0600 GMT September 16. T.D. 12E intensified rapidly into Tropical Storm KAY and subsequently hurricane KAY.

KAY crossed into the Central Pacific Hurricane Center's (CPHC) area of responsibility (140W) between 241200 GMT and 241800 GMT with maximum sustained winds of 80 knots. KAY continued to move on a northwesterly track after crossing 140W for the next 48 hours at which time she became quasi-stationary. At this time, the eye of KAY was obscured, so her movement for the next 24 hours was uncertain. It appeared that KAY had become stationary but was actually doing a small loop prior to continuing her westward movement. The steering toward the west was influenced by the rapid movement to the east of higher latitude troughs which caused her direction of movement to vary between SW and NW.

KAY was downgraded to a tropical storm at 271200 GMT and to a tropical depression at 290600 GMT. The storm met her demise under the influence of a deep upper level trough as she moved toward the Hawaiian Islands. As a tropical depression the remains of KAY passed within 200 miles to the northeast of Honolulu moving on a northwesterly track and her ultimate death (Fig.3).

The CPHC issued 24 advisories on the storm with the final advisory issued at 300600 GMT. There were no reports of damages or casualties to ships.

The CPHC's mean 24-hour position error for 20 forecasts was 97.55 nautical miles, the mean 48-hour error for 16 forecasts 211.13 nautical miles and the 72-hour error for 12 forecasts 327.33 nautical miles (Fig. 4). Average best track from actual position error was 5.13 nautical miles.

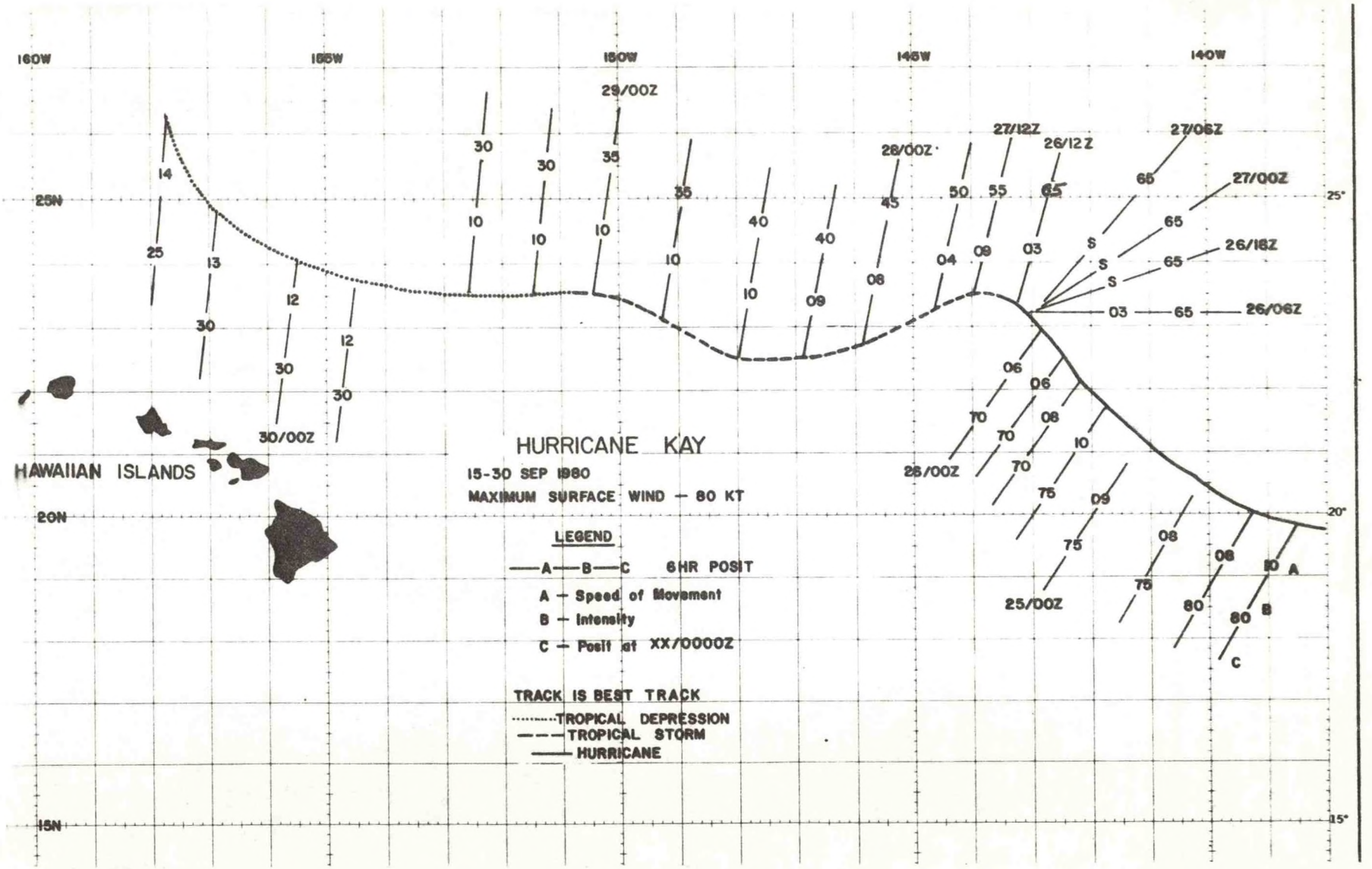
160W
155W
150W
145W
140W
25N
20N
15N
25°
20°
15°
HAWAIIAN ISLANDS
HURRICANE KAY
15-30 SEP 1980
MAXIMUM SURFACE WIND — 80 KT
LEGEND
—A—B—C 6HR POSIT
A — Speed of Movement
B — Intensity
C — Posit at XX/0000Z
TRACK IS BEST TRACK
TROPICAL DEPRESSION
TROPICAL STORM
HURRICANE
29/00Z
30/00Z
28/00Z
27/12Z
27/06Z
26/12Z
27/00Z
26/18Z
26/06Z
28/00Z
25/00Z
A
B
C

Figure 3

DATE/TIME (GMT)	Best Track		Operational Position		ERROR (NM)	24-Hr Fcst Psn		24-Hr Fcst Error	48-Hr Fcst Psn		48-Hr Fcst Error	72-Hr Fcst Psn		72-Hr Fcst Error
	Lat	Long	Lat	Long		Lat	Long		Lat	Long		Lat	Long	
2418	20.5	140.2	20.3	140.3	27									
2500	21.2	141.2	20.8	141.4	25									
2506	21.7	141.8	21.7	141.8	0	20.4	142.1							
2512	22.1	142.2	22.1	142.2	0	20.1	142.8							
2518	22.5	142.5	22.5	142.5	0	21.4	144.0	103						
2600	22.9	142.8	22.9	142.8	0	21.8	144.8	123						
2606	23.1	143.2	23.2	143.0	0	23.5	145.0	107						
2612	23.3	143.3	23.3	143.3	0	23.6	142.8	37						
2618	23.3	143.3	23.2	143.0	16	24.2	143.9	75	22.4	147.7	155			
2700	23.3	143.3	23.2	143.0	16	24.3	144.0	83	22.8	148.2	286			
2706	23.3	143.3	23.2	143.0	16	24.6	144.2	105	24.0	146.0	118			
2712	23.4	144.0	23.4	144.0	0	24.5	144.2	65	24.8	143.0	100			
2718	23.1	144.7	23.1	144.7	0	23.2	143.0	95	25.8	145.4	80	23.5	151.5	103
2800	22.7	145.9	22.7	145.9	0	23.2	143.2	153	25.7	145.4	180	23.8	151.6	78
2806	22.5	146.9	22.5	146.9	0	23.3	144.2	159	26.3	145.5	240	24.8	147.3	140
2812	22.5	148.0	22.4	148.0	10	23.3	148.0	54	25.6	145.0	250	26.3	143.1	355
2818	23.1	149.3	23.1	149.3	0	22.9	146.8	133	23.2	143.5	320	27.5	146.7	300
2900	23.5	150.5	23.5	150.5	0	22.1	149.5	100	23.2	143.7	373	26.8	146.9	283
2906	23.5	151.5	23.5	151.5	0	22.0	150.8	98	23.1	146.4	284	27.8	146.8	373
2912	23.5	152.6	23.5	152.6	0	21.9	152.4	97	23.1	152.1	38	26.8	146.0	413
2918	23.8	154.4	23.6	154.5	13	23.5	153.7	45	22.6	149.5	300	23.2	144.0	578
3000	24.1	155.5	24.1	155.5	0	23.5	154.8	40	21.8	153.8	166	23.2	144.3	625
3006	24.8	156.9	24.8	156.9	0	23.3	156.2	95	21.8	154.8	210	23.1	148.7	460
3012	26.3	157.8	26.3	157.8	0	23.3	156.8	184	21.8	156.6	278	23.0	156.0	220

CPHC mean vector error = 5.13
No. of cases: 24

CPHC mean 24-hr fcst error = 97.55
No. of cases: 20

CPHC mean 48-hr fcst error = 211.13
No. of cases: 16

CPHC mean 72-hr fcst error = 327.33
No. of cases: 12

Figure 4

NOAA Technical Memoranda NWS

No. 9 Tropical Numerical Weather Prediction in Hawaii - 1971. E. M. Carlstead. March 1971. (COM-71-00494)

No. 10 Climatology of Rainfall Probabilities for Oahu, Hawaii. A. N. Hull and Jon Pitko. April 1972. (COM-73-10242)

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No. 17 An Operational Swell and Surf Program Using the N.W.S. Automatic Data Acquisition System (ADAS) Computer System. E. M. Carlstead. May 1977. (PB-269-650)

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