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NOAA Technical Memorandum NWS WR-165



ANNUAL DATA AND VERIFICATION TABULATION, EASTERN NORTH
PACIFIC TROPICAL STORMS AND HURRICANES 1980

Salt Lake City, Utah
May 1981



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National Weather Service, Western Region Subseries

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- 105 Forecasting the Mono Wind. Charles P. Ruscha, Jr., February 1976. (PB-254-650)
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PACIFIC TROPICAL STORMS AND HURRICANES 1980

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National Weather Service Forecast Office
San Francisco, California
May 1981

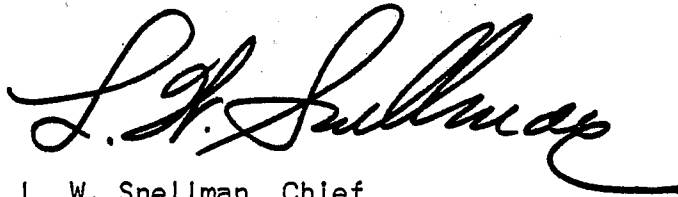
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NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
James P. Walsh, Acting Administrator

National Weather
Service
Richard E. Hallgren, Director



This Technical Memorandum has been reviewed and is approved for publication by Scientific Services Division, Western Region.

A handwritten signature in black ink, appearing to read "L. W. Snellman". The signature is written in a cursive style with a long, sweeping tail that extends to the right.

L. W. Snellman, Chief
Scientific Services Division
Western Region Headquarters
Salt Lake City, Utah

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ANNUAL DATA AND VERIFICATION TABULATION
EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1980

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San Francisco, California

I. INTRODUCTION

This is the second part of an annual series covering eastern North Pacific tropical cyclone activity. The first report also included tropical cyclone activity in the central North Pacific. That area will be covered in a separate report published by the Central Pacific Hurricane Center (CPHC) in Honolulu, Hawaii.

Data for this publication were provided by the National Weather Service; the National Earth Satellite Service Field Station, San Francisco, California, and the Chief, Aerial Reconnaissance Coordination, all Hurricanes (CARCAH), Miami, Florida.

II. OBJECTIVE FORECAST TECHNIQUES

Tropical cyclone prediction models used by Eastern Pacific Hurricane Center (EPHC) forecasters include:

1. EPHC-77 (Leftwich and Neumann, 1977): A Statistical-Synoptic Model.
2. EPCLIPER (Neumann, 1972): A Simulated Analog Model Based on Persistence and Climatology.
3. SANBAR (Sanders and Burpee, 1968): A Filtered Barotropic Model. (SANBAR, undergoing modification, was not available during the 1980 season.)
4. EPANALOG (Jarrell, Mauck, and Renard, 1975): An Analog Model.
5. NMC MFM (Hovermale, 1975): A Ten-Level Baroclinic Model. (Used primarily for cyclones threatening U. S. territory, the NMC MFM was not used during the 1980 season.)

In addition to the above models, forecasters also make use of NMC analyses and prognoses.

III. VERIFICATION

Verification statistics for the 1980 season are shown in Table 1. The forecast displacement error is the vector difference between the forecast displacement and the actual displacement computed from best-track positions. The initial position error is not subtracted from the forecast error and depressions are not verified. Table 2 gives a breakdown of the verification statistics of the official forecasts for each of the named cyclones.

IV. DATA SUMMARIES

A summary of 1980 eastern North Pacific tropical cyclone statistics is given in Table 3. Best track, operational positions, and position errors are given in Table 4. Eastern North Pacific tropical cyclone tracks are shown in Figures 1 and 2.

Although no reconnaissance flights were made into eastern North Pacific cyclones during 1980, U. S. Air Force aircraft were placed on standby during Hurricane Howard when it appeared the cyclone might threaten U. S. territory.

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TABLE 1
 VERIFICATION OF 1980 TROPICAL STORM AND HURRICANE FORECASTS
 (FIGURES IN PARENTHESE ARE NUMBER OF CASES)

METHOD	FORECAST DISPLACEMENT ERRORS (N.MI.)		
	24HR	48HR	72HR
OFFICIAL	82 (147)	164 (82)	263 (54)
EPANALOG	80 (135)	147 (93)	237 (58)
EPHC-77	89 (125)	167 (84)	279 (53)
EPCLIPER	112 (140)	168 (99)	273 (63)

TABLE 2
 VERIFICATION OF OFFICIAL FORECASTS FOR EACH NAMED STORM OF 1980
 (FIGURES IN PARENTHESSES ARE NUMBER OF CASES)

STORM	FORECAST DISPLACEMENT ERRORS (N.MI.)		
	24HR	48HR	72HR
AGATHA	109 (17)	269 (11)	405 (7)
BLAS	66 (7)	147 (3)	---
CELIA	82 (12)	147 (6)	148 (2)
DARBY	103 (3)	---	---
ESTELLE	---	---	---
FRANK	67 (2)	---	---
GEORGETTE	118 (7)	---	---
HOWARD	80 (25)	150 (19)	283 (15)
ISIS	57 (18)	108 (12)	161 (8)
JAVIER	59 (17)	92 (10)	145 (6)
KAY	101 (30)	193 (21)	291 (16)
LESTER	88 (7)	---	---
MADELINE	---	---	---
NEWTON	---	---	---

TABLE 3

SUMMARY OF EASTERN NORTH PACIFIC TROPICAL CYCLONES 1980

NO.	NAME	CLASS	DATES	MAXIMUM SUSTAINED WINDS (KTS)	U.S. DAMAGE (\$ MILLION)	DEATHS
1	AGATHA	HU	9 - 15 June	100	*	*
2	BLAS	TS	16 - 19 June	50		
3	THREE	TD	17 - 19 June	30		
4	CELIA	HU	25 - 30 June	65		
5	DARBY	TS	1 - 3 July	45		
6	ESTELLE	TS	12 - 13 July	40		
7	FRANK	TS	18 - 22 July	45		
8	GEORGETTE	HU	28 - 31 July	65		
9	HOWARD	HU	31 - 7 August	90		
10	ISIS	HU	5 - 11 August	85		
11	JAVIER	HU	22 - 29 August	100		
12	KAY	HU	16 - 24 September	120		
13	LESTER	TS	21 - 25 September	35		
14	MADELINE	TS	11 - 12 October	45		
15	NEWTON	TS	28 - 29 October	35		

*There were no reports of damage or deaths during the 1980 eastern North Pacific tropical cyclone season.

TABLE 4

EASTERN NORTH PACIFIC TROPICAL CYCLONE BEST TRACK, OPERATIONAL POSITIONS, AND POSITION ERRORS AT 0000 GMT FOR 1980

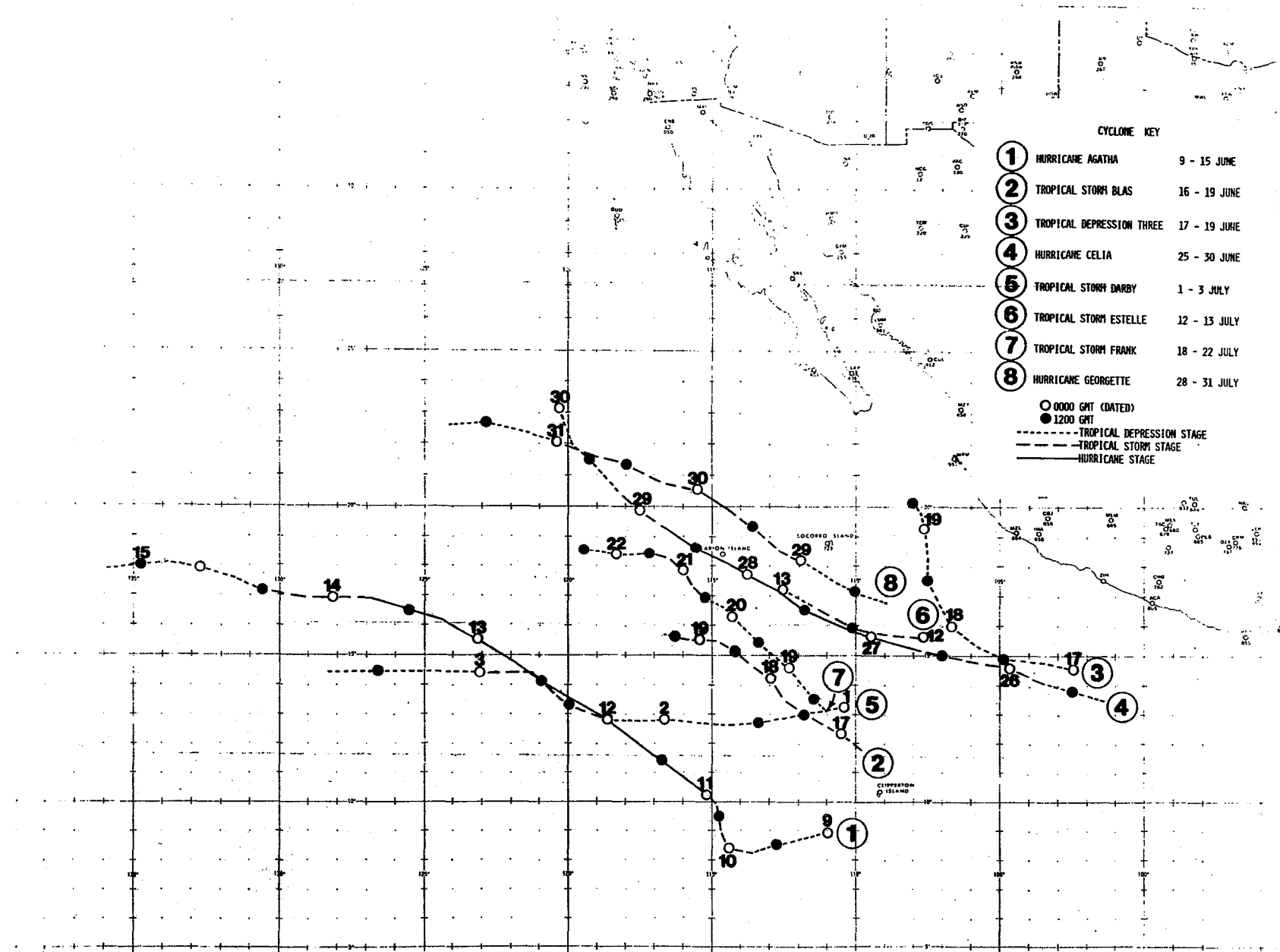
DATE(GMT)	BEST TRACK		OPERATIONAL POSITION			POSITION ERROR			24HR FCST		POSITION ERROR			48HR FCST		POSITION ERROR			72HR FCST		POSITION ERROR				
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)		
HURRICANE AGATHA 9 - 15 JUNE																									
09	08.9	111.0	08.9	111.2	11.9																				
10	08.4	114.5	08.4	114.5	0.0	08.5	118.4	215	09.1	122.2	303	09.8	126.1	379											
11	10.2	115.2	10.2	115.2	0.0	12.0	118.7	38	13.4	121.8	153	15.3	124.5	244											
12	12.8	118.7	12.6	118.5	16.8	14.0	121.6	134	14.5	124.7	258	14.6	128.0	335											
13	15.5	123.2	15.5	123.3	5.8	17.9	128.3	60	19.3	133.9	108														
14	16.9	128.2	16.9	128.4	11.5	17.8	133.8	63																	
15	17.9	132.8	17.9	132.7	5.7	19.0	136.5																		
TROPICAL STORM BLAS 16 - 19 JUNE																									
17	12.3	110.5	12.3	110.5	0.0	13.8	113.9	58	14.7	117.2	121	15.0	121.0												
18	14.2	113.0	14.2	113.0	0.0	16.0	115.5	45	17.1	118.0															
19	15.5	115.4	15.3	115.2	16.7	15.3	116.1																		
TROPICAL DEPRESSION THREE 17 - 19 JUNE																									
17	14.6	102.5	14.8	102.5	12.0	16.1	105.5	52																	
18	16.0	106.7	16.2	106.4	21.0	18.0	109.0	116																	
19	19.3	107.6	19.4	107.6	6.0	22.3	107.3																		
HURRICANE CELIA 25 - 30 JUNE																									
26	14.6	104.7	14.6	104.7	0.0	16.2	109.1	42	17.8	112.0	115	19.2	115.0	135											
27	15.6	109.5	15.5	109.2	18.3	16.9	113.2	80	18.4	116.9	87	20.0	119.8	188											
28	17.7	113.8	18.0	114.0	21.3	20.4	118.9	97	21.7	122.1	130	22.9	125.2												
29	19.8	117.5	19.8	117.3	11.3	21.6	121.8	123	22.9	123.9															
30	23.1	120.3	23.1	120.3																					
TROPICAL STORM DARBY 1 - 3 JULY																									
01	13.2	110.4	13.2	110.4	0.0	16.8	114.1	248																	
02	12.8	116.7	13.6	116.8	48.4	14.8	121.7	72																	
03	14.4	123.1	14.5	122.9	13.1	15.7	128.1																		
TROPICAL STORM ESTELLE 12 - 13 JULY																									
12	15.6	107.7	15.6	108.1	23.1	16.5	112.5	35	17.8	116.8		19.0	120.0												
13	17.2	112.5	16.6	113.1	49.8																				

Table 4 continued.

DATE(GMT)	BEST TRACK		OPERATIONAL POSITION			POSITION			48HR FCST			POSITION			72HR FCST			POSITION		
	LAT.	LONG.	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)
TROPICAL STORM FRANK 18 - 22 JULY																				
19	14.6	112.3	14.7	112.2	8.3	16.4	115.3	64												
20	16.3	114.3	16.2	114.2	8.3	18.3	116.4	73												
21	17.8	116.0	17.1	116.2	43.5	17.8	118.6													
HURRICANE GEORGETTE 28 - 31 JULY																				
29	18.1	111.9	17.8	111.0	54.4	19.9	113.8	102	21.3	115.2	282	22.5	116.4							
30	20.5	115.5	20.5	115.5	0.0	23.0	119.5	71	24.5	122.9										
31	22.0	120.4	22.0	120.2	11.1	23.0	123.2													
TROPICAL STORM HOWARD 31 JULY - 7 AUGUST																				
31	11.0	103.9	10.5	104.0	30.6	11.5	107.7	86												
01	11.3	106.0	11.9	106.3	40.1	13.1	109.0	125	14.6	112.0	166	15.9	115.8	138						
02	12.6	111.1	12.7	111.1	6.0	14.0	115.2	95	15.0	119.0	220	16.0	122.0	353						
03	15.5	114.8	15.5	114.7	5.8	17.5	117.9	70	18.9	121.4	215	20.0	125.0	325						
04	18.0	116.6	18.0	116.8	11.4	20.0	118.7	50	21.5	121.5	109	22.5	124.0	207						
05	20.5	118.1	20.5	118.0	5.6	22.8	119.4	40	24.8	120.8	35	26.5	122.5							
06	22.3	119.7	22.2	119.7	6.0	24.0	121.5	60	25.4	123.2		26.0	125.0							
07	24.8	120.9	25.0	121.4	29.7	27.8	122.8													
HURRICANE ISIS 5 - 11 AUGUST																				
06	14.8	102.6	14.8	102.4	17.5	14.0	103.2	109												
07	15.7	104.6	15.3	104.5	24.7	16.9	107.5	79	18.4	110.4	94	20.2	113.2	82						
08	18.3	107.5	18.2	107.3	12.9	21.2	109.9	96	23.9	112.3	174	26.1	114.1	301						
09	19.9	110.9	19.9	110.9	0.0	21.5	113.7	13	22.6	116.8	45	23.4	119.6							
10	21.3	113.8	21.4	113.9	8.2	22.8	116.7	58	24.1	119.5										
11	21.8	116.6	21.9	117.1	28.5	22.4	120.3													
HURRICANE JAVIER 22 - 29 AUGUST																				
23	13.8	105.5	13.7	106.3	47.0	15.3	110.0	47												
24	15.2	109.4	15.2	109.2	11.6	16.2	112.3	146	17.1	115.6	152	17.9	119.2	205						
25	16.7	114.1	16.6	114.8	40.7	17.9	118.2	21	19.1	121.9	45	22.0	123.8	110						
26	18.4	118.0	18.2	118.0	12.0	20.1	121.1	65	21.6	124.0	95	22.6	127.1	102						
27	19.7	122.1	19.8	122.2	8.2	21.0	126.1	37	22.0	129.6	169	23.0	132.6							
28	21.4	125.7	21.5	125.7	6.0															
29	24.3	127.8	24.2	127.7	8.1															

Table 4 continued.

DATE(GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24HR FCST		POSITION ERROR	48HR FCST		POSITION ERROR	72HR FCST		POSITION ERROR
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)
HURRICANE KAY 16 - 23 SEPTEMBER														
17	13.5	105.8	13.2	105.9	18.9	14.3	109.2	84	15.6	112.6	198	16.8	115.6	298
18	15.6	109.1	15.7	109.1	6.0	18.2	113.0	160	18.2	113.0	440	20.0	118.0	422
19	17.2	115.7	17.2	115.6	5.7	18.3	120.8	31	19.2	124.8	64	20.3	127.5	212
20	17.9	120.9	17.8	120.7	12.9	18.9	124.1	75	20.0	127.0	213	21.5	130.0	263
21	18.1	125.2	18.2	125.2	6.0	18.5	128.7	85						
22	17.3	129.7	17.2	129.3	23.7	17.0	132.7	91	17.2	136.1	170			
23	18.5	133.5	18.4	133.3	12.9	19.6	137.4	8	20.0	140.5				
24	19.8	137.9	19.7	137.5	23.4	20.8	141.2		21.3	144.0		21.7	147.7	
TROPICAL STORM LESTER 21 - 25 SEPTEMBER														
22	16.5	104.1	16.2	104.5	29.2	17.5	108.0							
23	17.0	108.5	17.5	108.0	41.5	18.2	110.9	59	19.5	113.6	217	20.5	116.2	
24	17.6	110.2	17.4	110.3	13.3	17.7	113.0	144	18.6	115.6				
25	17.5	110.0	17.4	110.5	29.2	18.6	111.2							
TROPICAL STORM MADELINE 11 - 12 OCTOBER														
11	12.5	108.2	12.5	108.2	0.0	14.4	110.5	30						
12	14.9	110.5	14.9	110.5										
TROPICAL STORM NEWTON 28 - 29 OCTOBER														
29	19.0	108.4	19.0	108.4	0.0									



- CYCLONE KEY**
- ① HURRICANE AGATHA 9 - 15 JUNE
 - ② TROPICAL STORM BLAS 16 - 19 JUNE
 - ③ TROPICAL DEPRESSION THREE 17 - 19 JUNE
 - ④ HURRICANE CELIA 25 - 30 JUNE
 - ⑤ TROPICAL STORM DARBY 1 - 3 JULY
 - ⑥ TROPICAL STORM ESTELLE 12 - 13 JULY
 - ⑦ TROPICAL STORM FRANK 18 - 22 JULY
 - ⑧ HURRICANE GEORGETTE 28 - 31 JULY
- 0000 GHT (DATED)
● 1200 GHT
- TROPICAL DEPRESSION STAGE
-.- TROPICAL STORM STAGE
— HURRICANE STAGE

FIGURE 1. EASTERN NORTH PACIFIC TROPICAL CYCLONE TRACKS, 1980.

DATA	-----
DATE	-----
TIME	-----

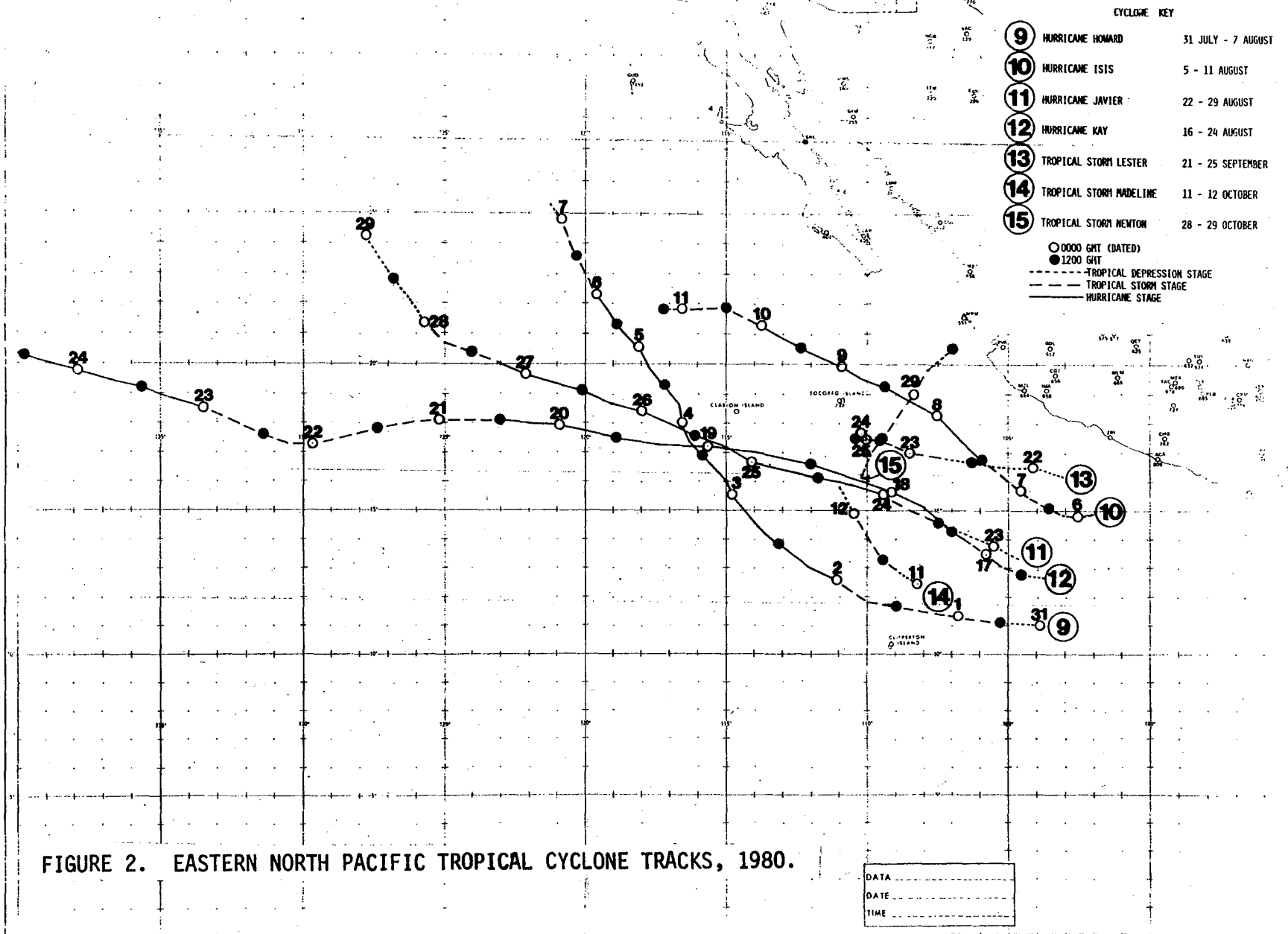


FIGURE 2. EASTERN NORTH PACIFIC TROPICAL CYCLONE TRACKS, 1980.

- 121 Climatological Prediction of Cumulonimbus Clouds in the Vicinity of the Yucca Flat Weather Station. R. F. Quiring, June 1977. (PB-271-704/AS)
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- 134 Solar Radiation. John A. Jannuzzi, November 1978. (PB291195/AS)
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