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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

U.S. DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Weather Service

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Emil B. Gunther and Staff

Eastern Pacific Hurricane Center
National Weather Service Forecast Office
San Francisco, California
May 1981

UNITED STATES DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

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

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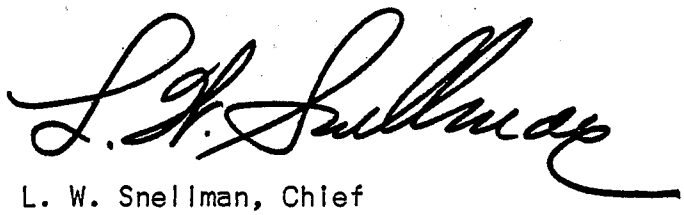
This Technical Memorandum has been reviewed and is approved for publication by Scientific Services Division, Western Region.



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TABLES AND FIGURES

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

Emil B. Gunther and Staff
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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 PARENTHESES 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 LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24HR FCST LAT.	24HR FCST LONG.	POSITION ERROR (N.MI.)	48HR FCST LAT.	48HR FCST LONG.	POSITION ERROR (N.MI.)	72HR FCST LAT.	72HR FCST LONG.	POSITION ERROR (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 LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24HR FCST LAT.	24HR FCST LONG.	POSITION ERROR (N.MI.)	48HR FCST LAT.	48HR FCST LONG.	POSITION ERROR (N.MI.)	72HR FCST LAT.	72HR FCST LONG.	POSITION 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 LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24HR FCST LAT.	24HR FCST LONG.	POSITION ERROR (N.MI.)	48HR FCST LAT.	48HR FCST LONG.	POSITION ERROR (N.MI.)	72HR FCST LAT.	72HR FCST LONG.	POSITION ERRCR (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									

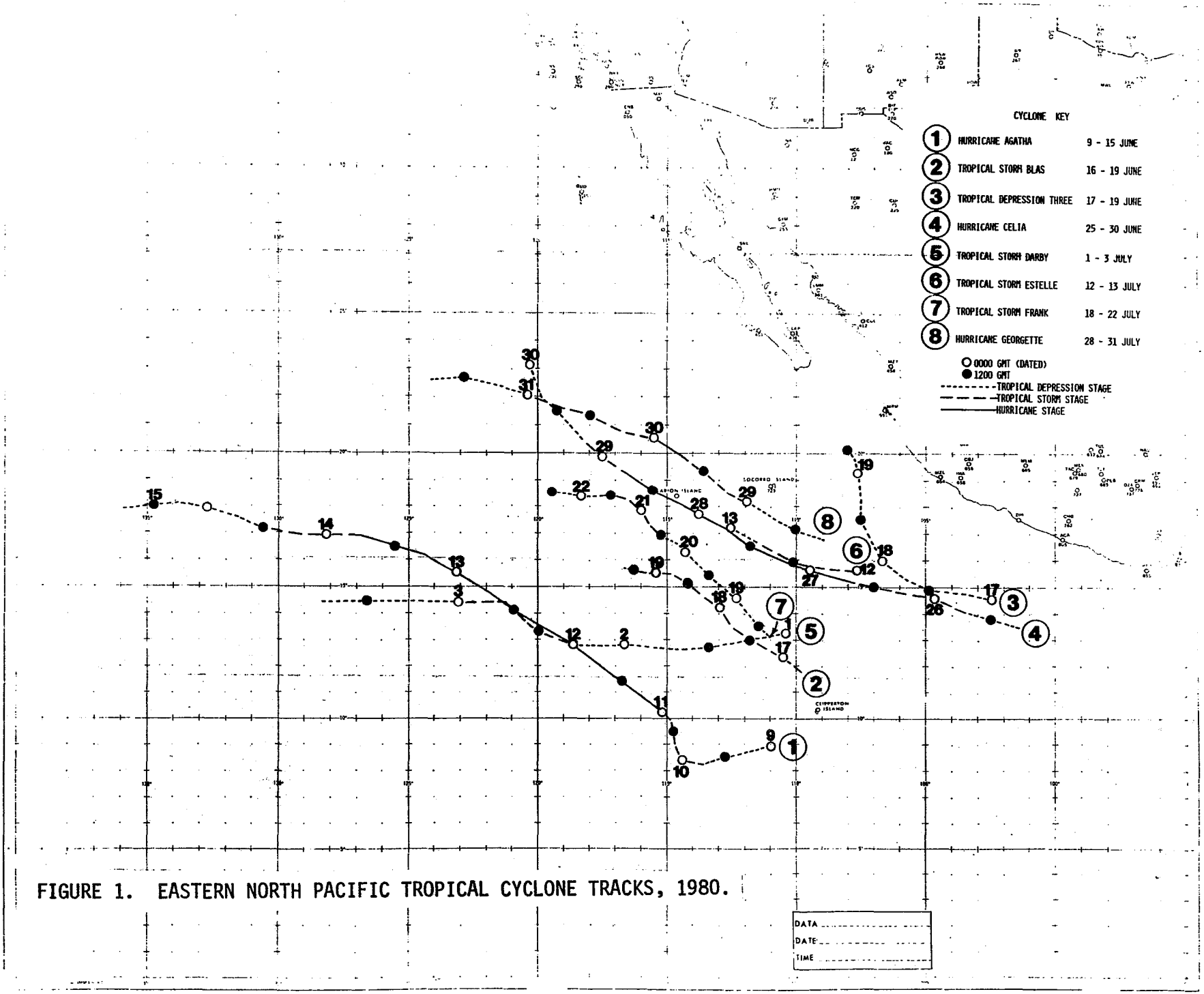

FIGURE 1. EASTERN NORTH PACIFIC TROPICAL CYCLONE TRACKS, 1980.

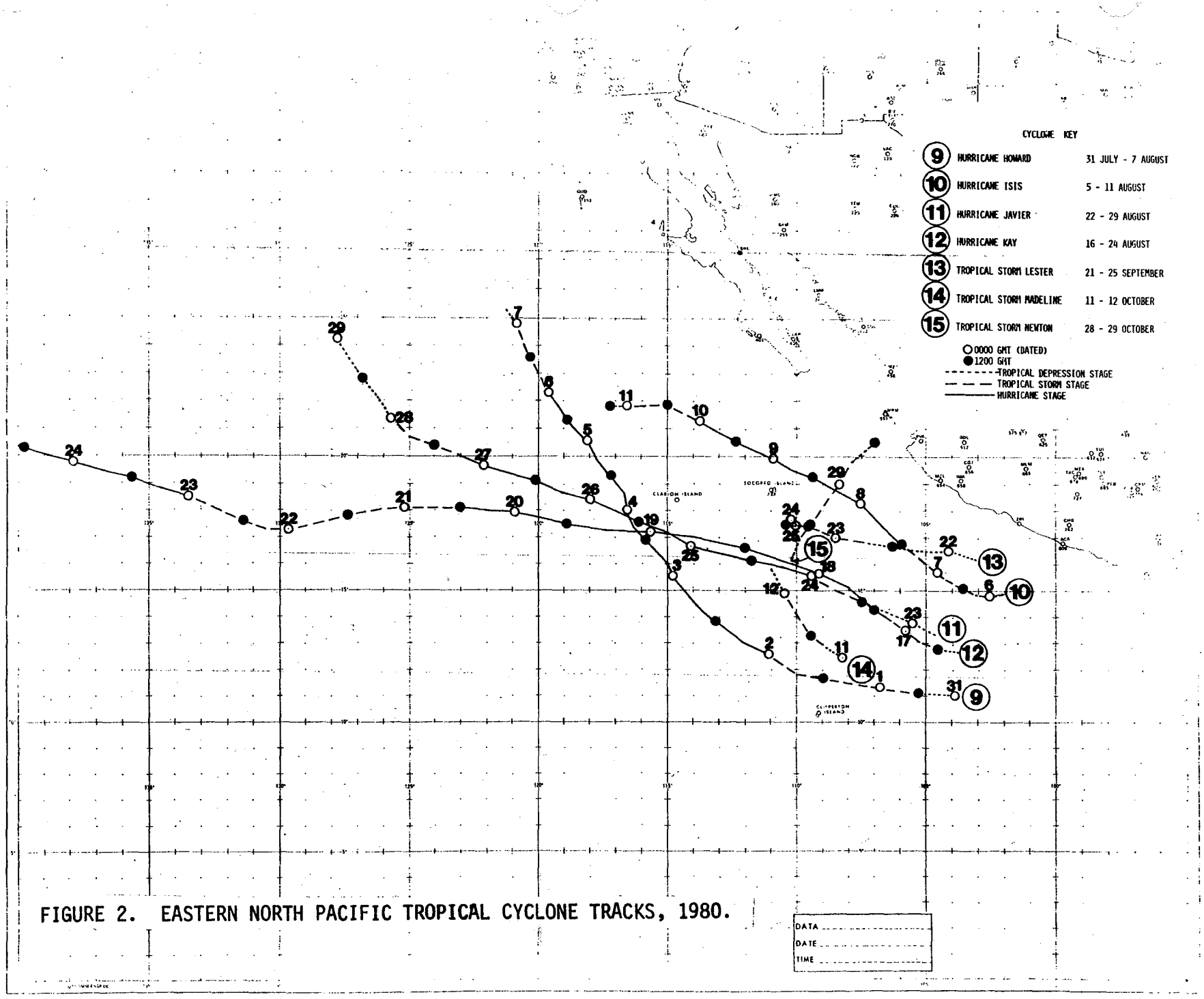

FIGURE 2. EASTERN NORTH PACIFIC TROPICAL CYCLONE TRACKS, 1980.

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