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NOAA TECHNICAL MEMORANDUM NWS NHC 43

ANNUAL DATA AND VERIFICATION TABULATION EASTERN PACIFIC TROPICAL CYCLONES 1988

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Coral Gables, Florida
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2883

UNITED STATES
DEPARTMENT OF COMMERCE
Robert A. Mosbacher, Secretary

National Oceanic and Atmospheric Administration
William E. Evans
Under Secretary and Administrator

National Weather Service
Elbert W. Friday
Assistant Administrator

INTRODUCTION

This is the First report by the National Hurricane Center (NHC) of a continuing annual series to provide a source of summarized data on Eastern Pacific tropical cyclones. It will not duplicate the narrative overview of the hurricane season or the description of individual storms, which will continue to be published in the Monthly Weather Review. In addition to data supplied by the National Weather Service, materials have been furnished by the NOAA Tropical Satellite and Analysis Center of NHC, and the CARCAH (Chief Aerial Reconnaissance Coordination, all Hurricanes).

OBJECTIVE FORECAST TECHNIQUES

The following tropical cyclone prediction models were used at the National Hurricane Center for forecasting motion on an operational basis:

1. EPSANBAR (Sanders and Burpee, 1968). A filtered barotropic model using input data derived from the 1000 to 100 mb pressure weighted winds.

2. EPHC81 A statistical-dynamical model.

3. EPCL84 A simulated-analog model based on persistence and climatology.

4. EPANALOG85 (Jarrell, Mauck, and Renard, 1975). An analog model.

5. EPSS87 A statistical-synoptical model

In addition, operational forecasts of tropical cyclone intensity changes in knots at 12-hourly intervals out to 72 hours are generated by a program named SHIFOR (Statistical Hurricane Intensity Forecasts). Generation of the forecast equations was done by multiple screening regression technique using historical tropical cyclone data as input. Results over the past several years have shown that SHIFOR and official intensity forecasts have comparable skill scores.

The National Hurricane Center uses the above models as guidance in the formulation of its forecasts. The hurricane forecaster also makes extensive use of analysis and prognoses produced by NMC and TSAC (Tropical Satellite and Analysis Center) in Miami.

VERIFICATION

Verification statistics for the 1988 season are shown in Table 1. The initial position error in Table 1 is the difference between the operational initial position and that determined during post analysis (best track position). The forecast displacement error is the vector difference between the forecast displacement and the actual displacement computed from the best-track positions.

DATA SUMMARIES

A summary of the 1988 Eastern Pacific tropical cyclone statistics is given in Table 2. Tracks of the 1988 storms and hurricanes are shown in figure 1.

The best track, initial, and forecast positions for the 1988 systems are in Table 3, along with initial position and forecast errors, and average errors.

Table 4 lists all center fix positions and intensity evaluations used operationally at the National Hurricane Center during the 1988 season. Fixes are in chronological order, and include those obtained by aerial reconnaissance penetrations, satellite (Miami TSAC), and land-based radar. The legend precedes the initial table.

Graphs of the lowest central pressure versus time for the 1988 named tropical cyclones are shown in Figure 2.

ACKNOWLEDGEMENTS

Main contributors were Miles Lawrence, who computed the verification statistics and Joan David, who drafted the track chart and pressure/time graphs.

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Sanders, F., and R. W. Burpee, 1968: "Experiments in Barotropic Hurricane Track Forecasting," Journal of Applied Meteorology, Vol. 7, No. 3, pp. 313-323.

LIST OF FIGURES, TABLES, AND APPENDICES

Figure 1. Tracks of 1988 tropical cyclones

Figure 2. Lowest pressure vs. time, 1988 tropical cyclones.

Figure 3. Daily satellite photographs of 1988 tropical cyclones.

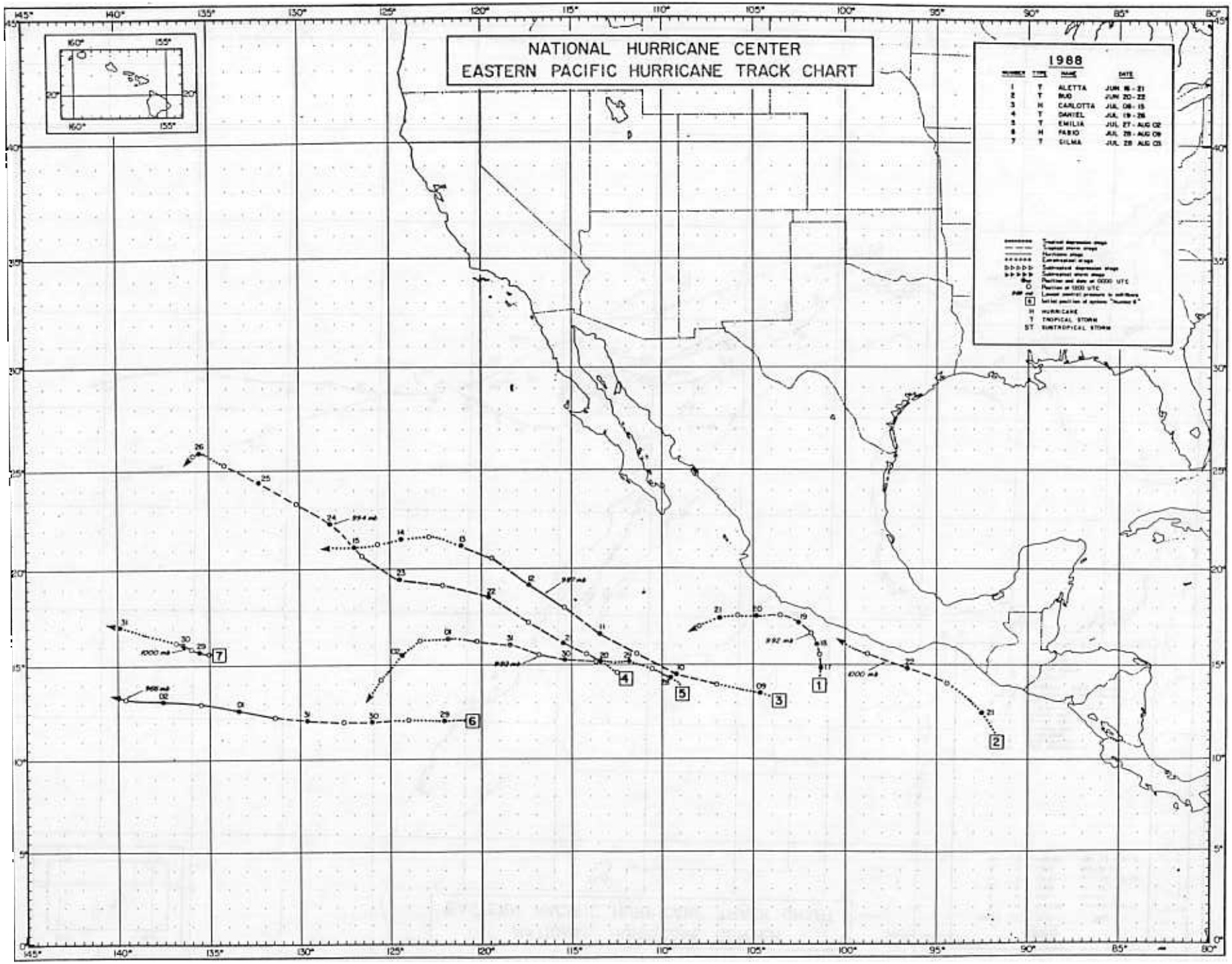
Table 1. Verification of 1988 tropical storm and hurricane forecasts. Figures in parentheses are the number of cases.

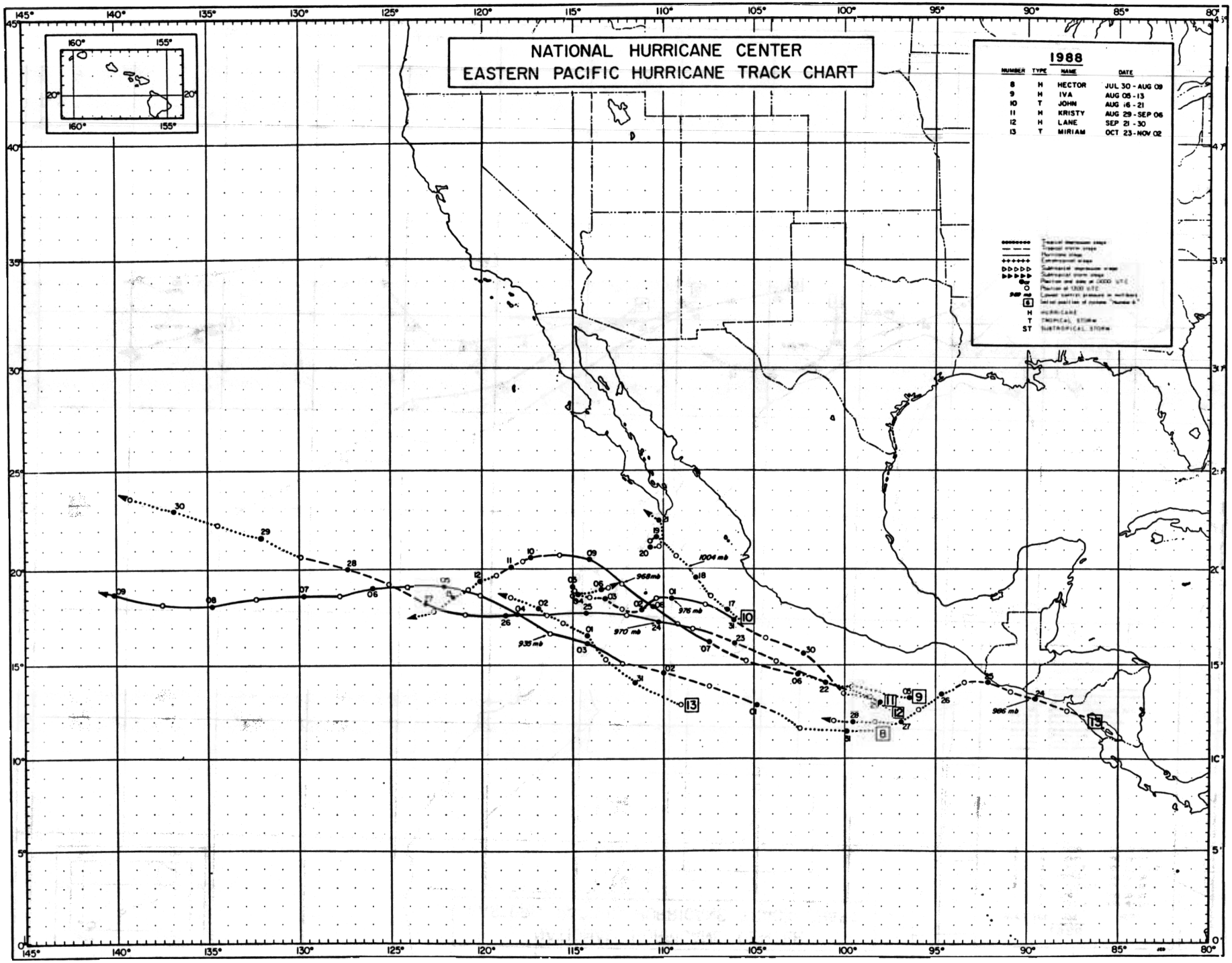
Table 2. Summary of 1988 tropical cyclone statistics

Table 3a. Best track, initial and forecast positions, initial position error and forecast errors for 1988 tropical cyclones.

Table 3b. Best track forecast windspeed verification for 1988 tropical cyclones.

Table 4. Center fix positions and intensity evaluations for 1988 cyclones.


NATIONAL HURRICANE CENTER
EASTERN PACIFIC HURRICANE TRACK CHART
1988
NUMBER TYPE NAME DATE
1 T ALETTA JUN 16 - 21
2 T BUD JUN 20 - 22
3 H CARLOTTA JUL 08 - 15
4 T DANIEL JUL 19 - 26
5 T EMILIA JUL 27 - AUG 02
6 H FABIO JUL 28 - AUG 09
7 T GILMA JUL 28 AUG 03
H HURRICANE
T TROPICAL STORM
ST SUBTROPICAL STORM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EASTERN PACIFIC HURRICANE TRACK CHART
1988
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9 H IVA AUG 05 - 13
10 T JOHN AUG 16 - 21
11 H KRISTY AUG 29 - SEP 06
12 H LANE SEP 21 - 30
13 T MIRIAM OCT 23 - NOV 02
H HURRICANE
T TROPICAL STORM
ST SUBTROPICAL STORM
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968mb
976 mb
970 mb
935 mb
986 mb

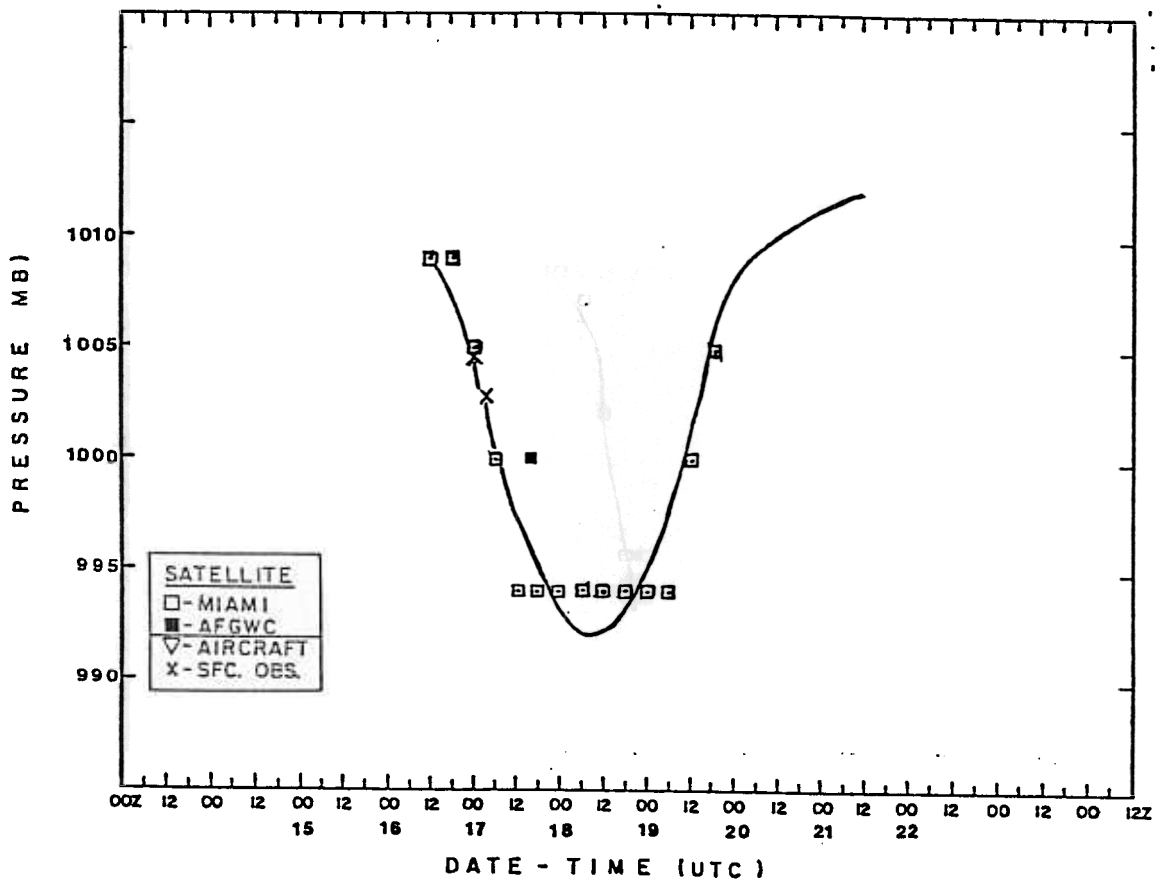


Fig. 2. "Best track" minimum pressure curve for Tropical Storm Aletta, 16-21 June 1988.

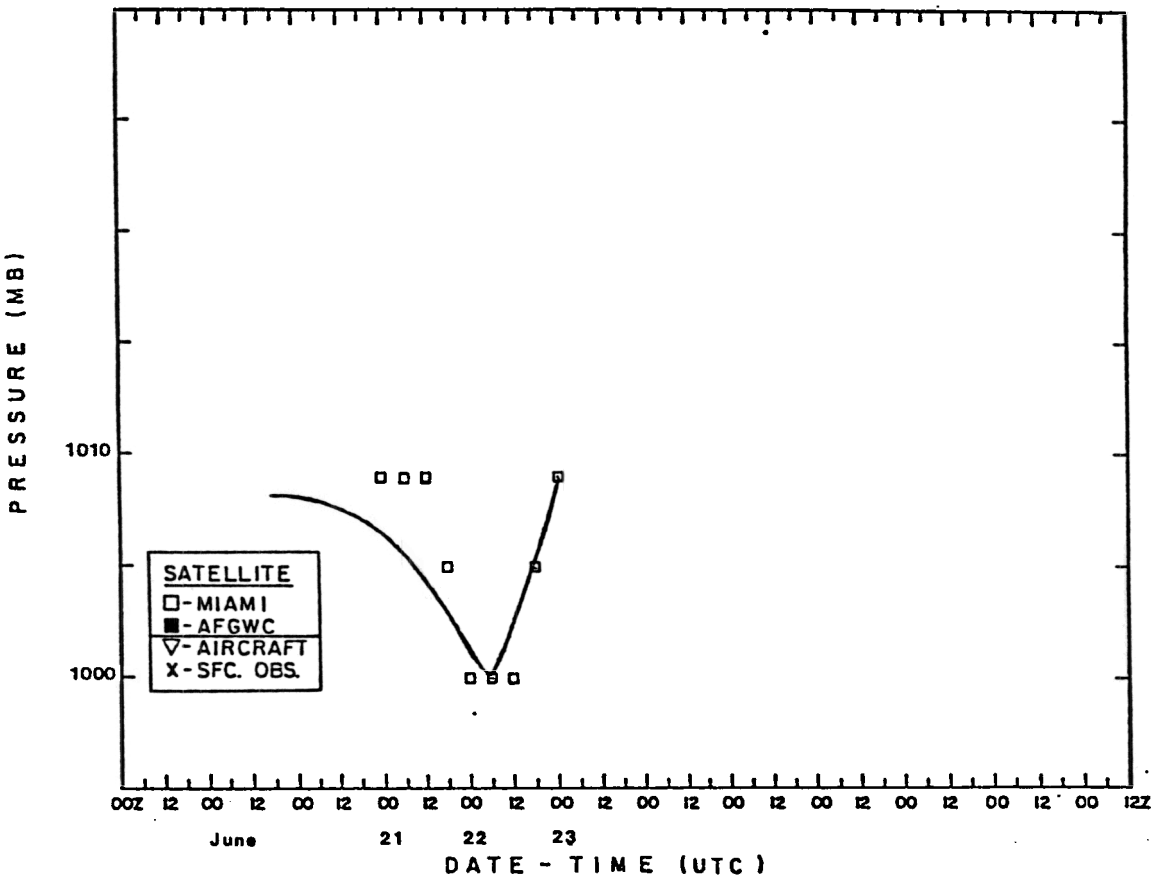


Fig. 2. Minimum central pressure for Tropical Storm Bud, 20-22 June 1988.

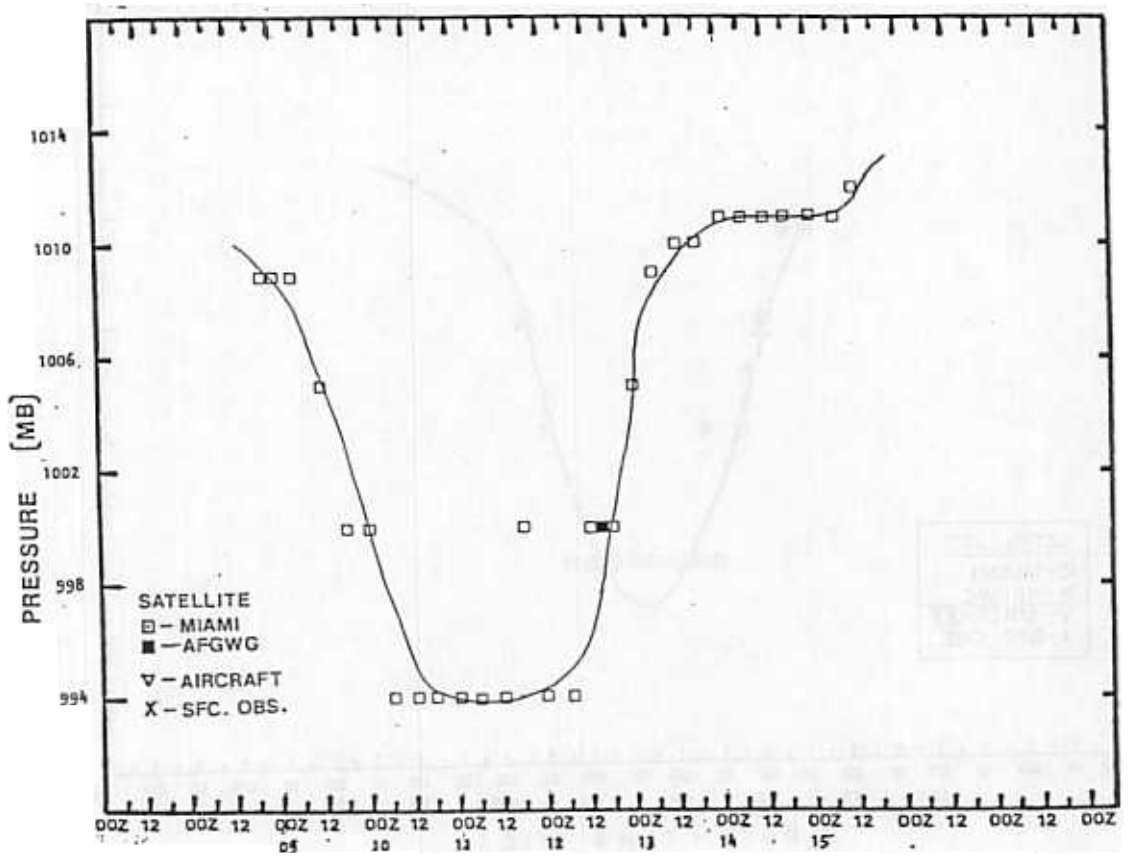


Fig. 2. Minimum central pressure for Tropical Storm Carlotta, 8-15 July 1988.

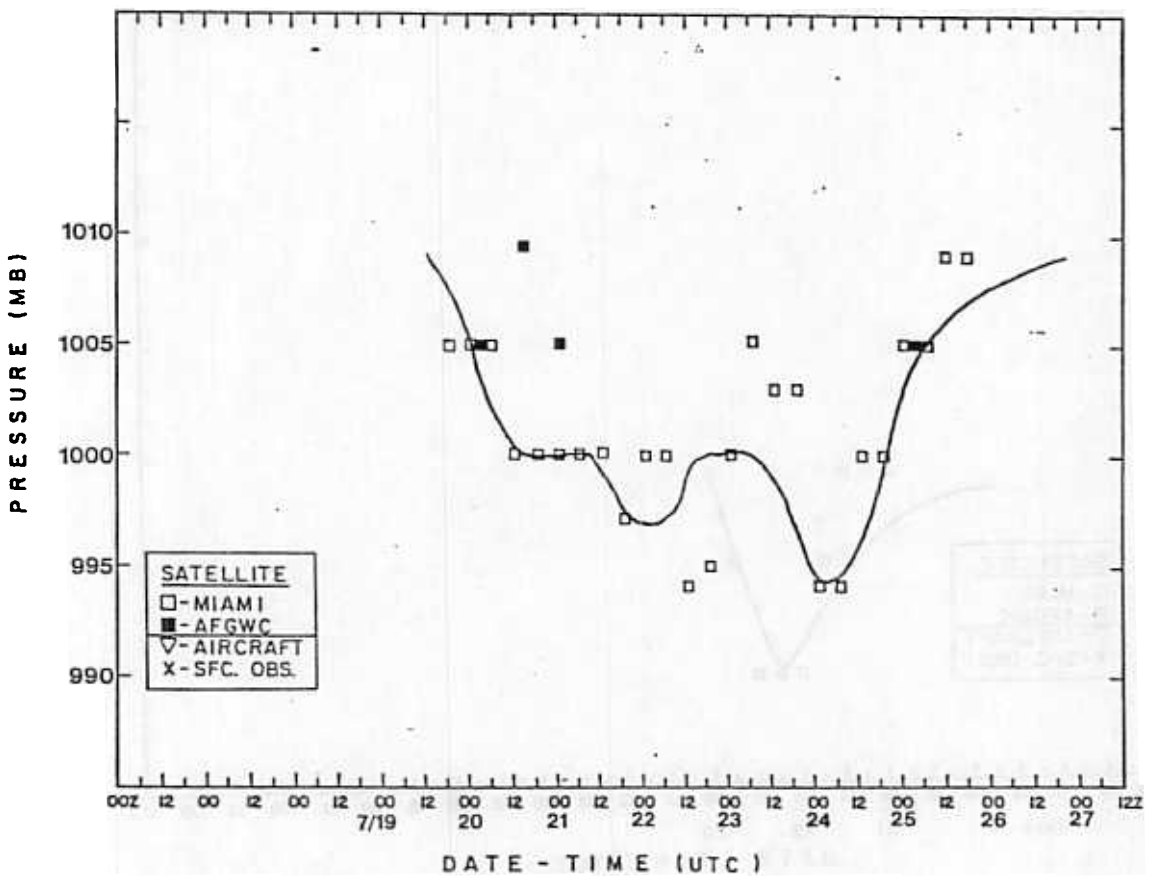


Fig. 2. Minimum central pressure for Tropical Storm Daniel, 19-26 July 1988.

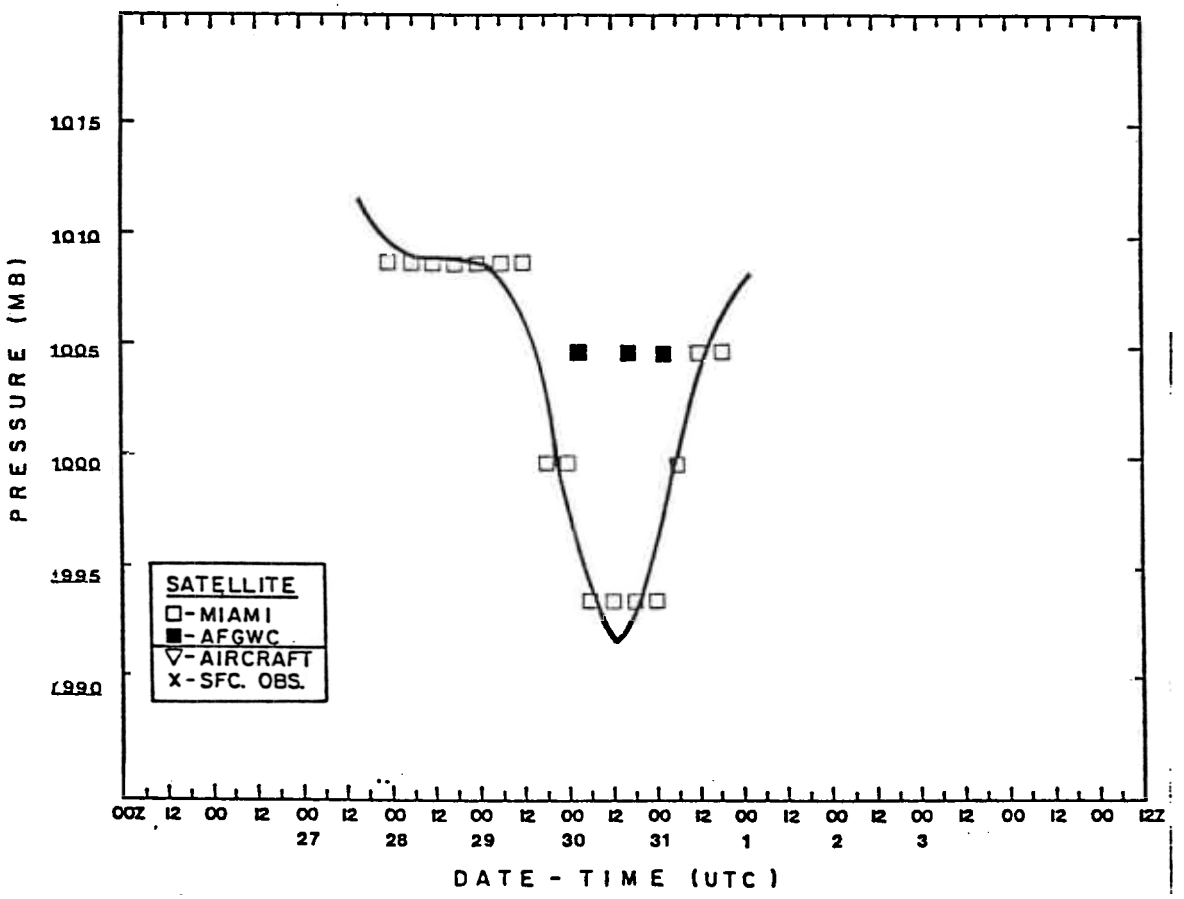


Fig. 2. Best track minimum central pressure curve for Tropical Storm Emilia, 27 July-2 August, 1988.

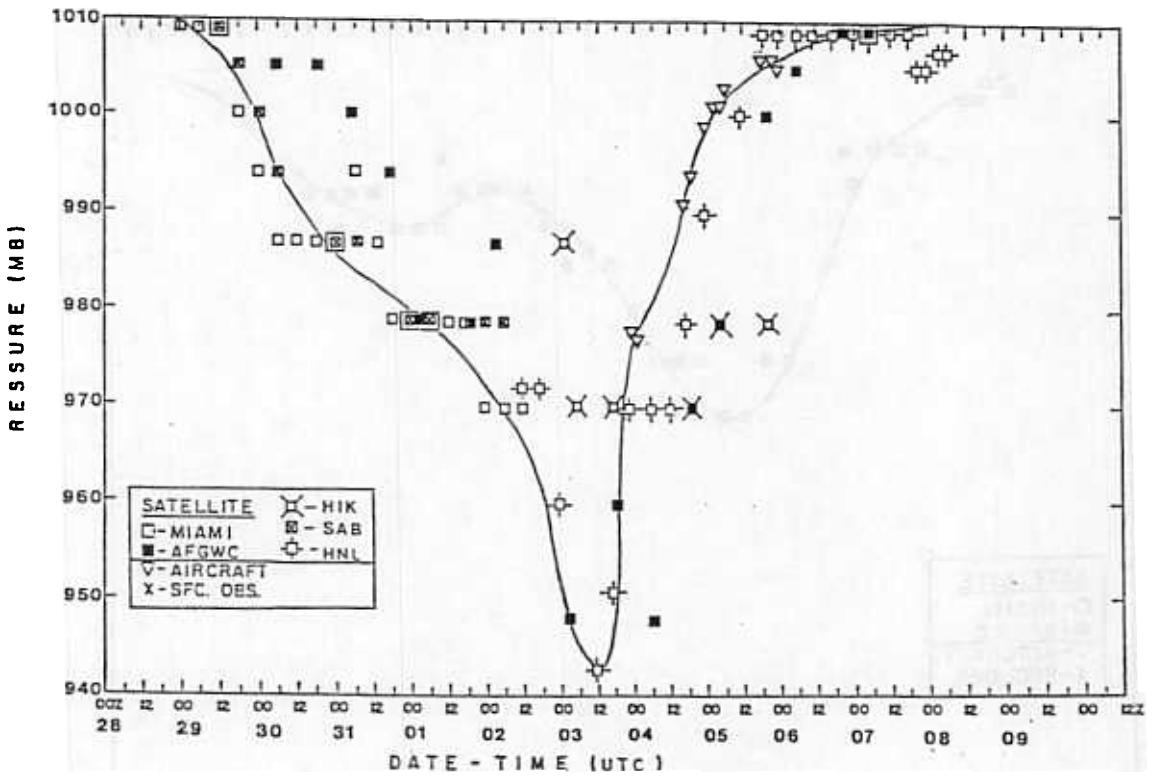


Fig. 2. Best track minimum central pressure curve for Hurricane Fabio, 28 July-9 August, 1988.

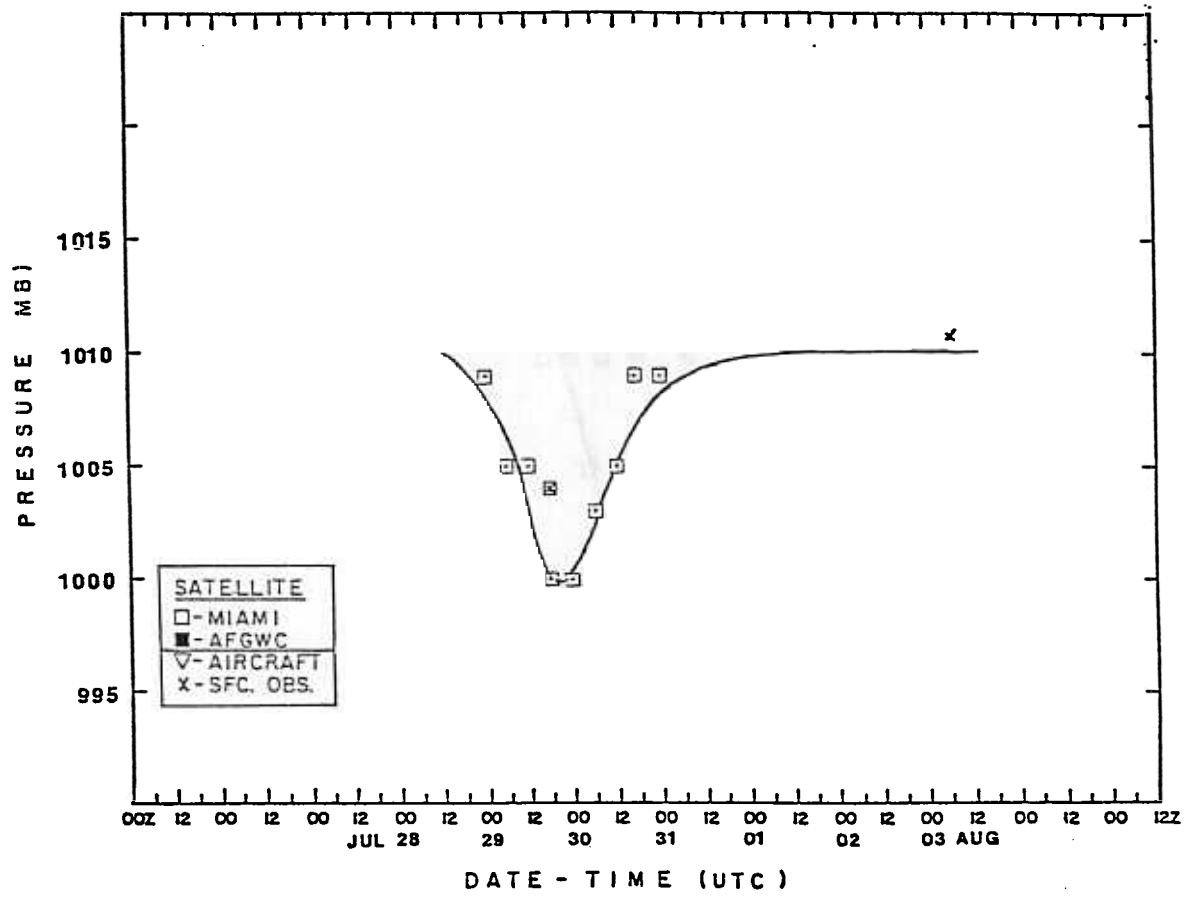


Fig. 1. Best track minimum central pressure curve for Tropical Storm Gilma, 28 July-3 August, 1988.

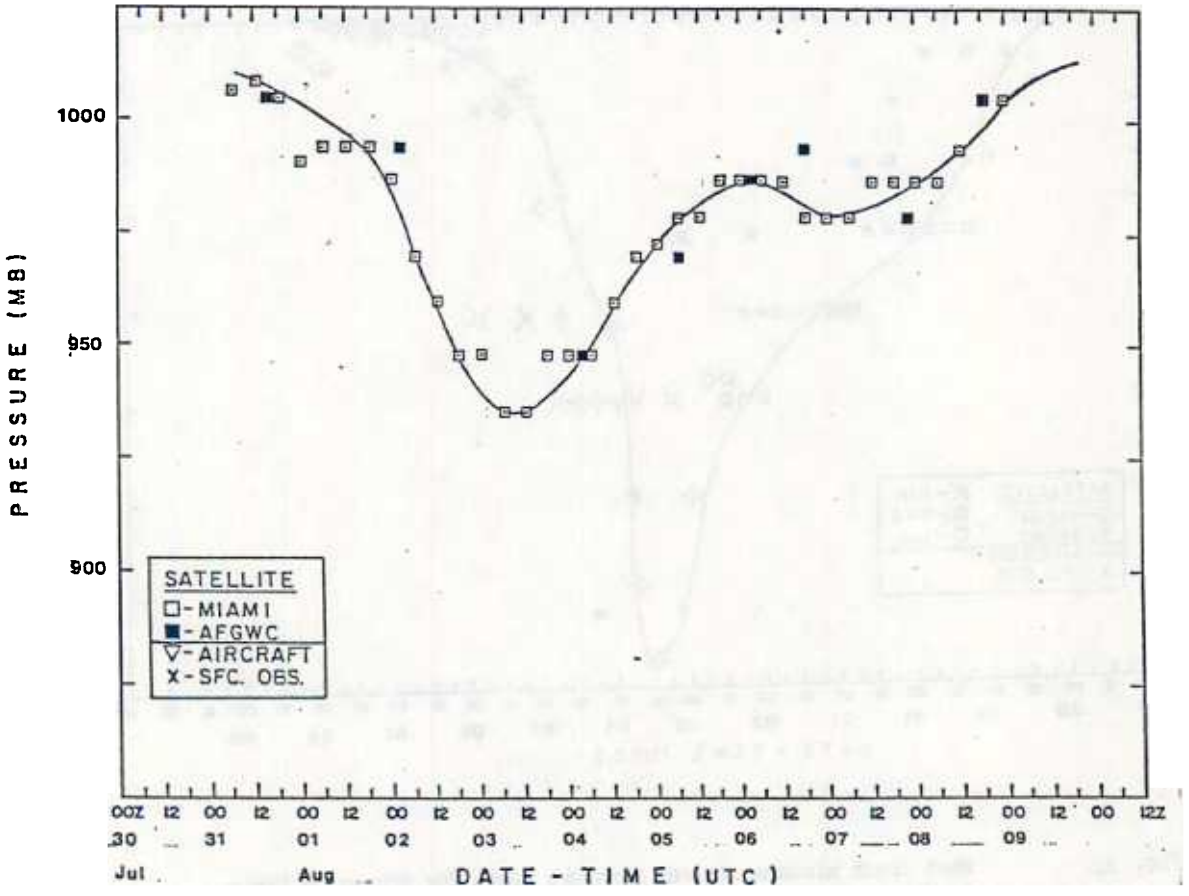


Fig. 2. Best track minimum central pressure curve for Hurricane Hector, 31 July-9 August, 1988.

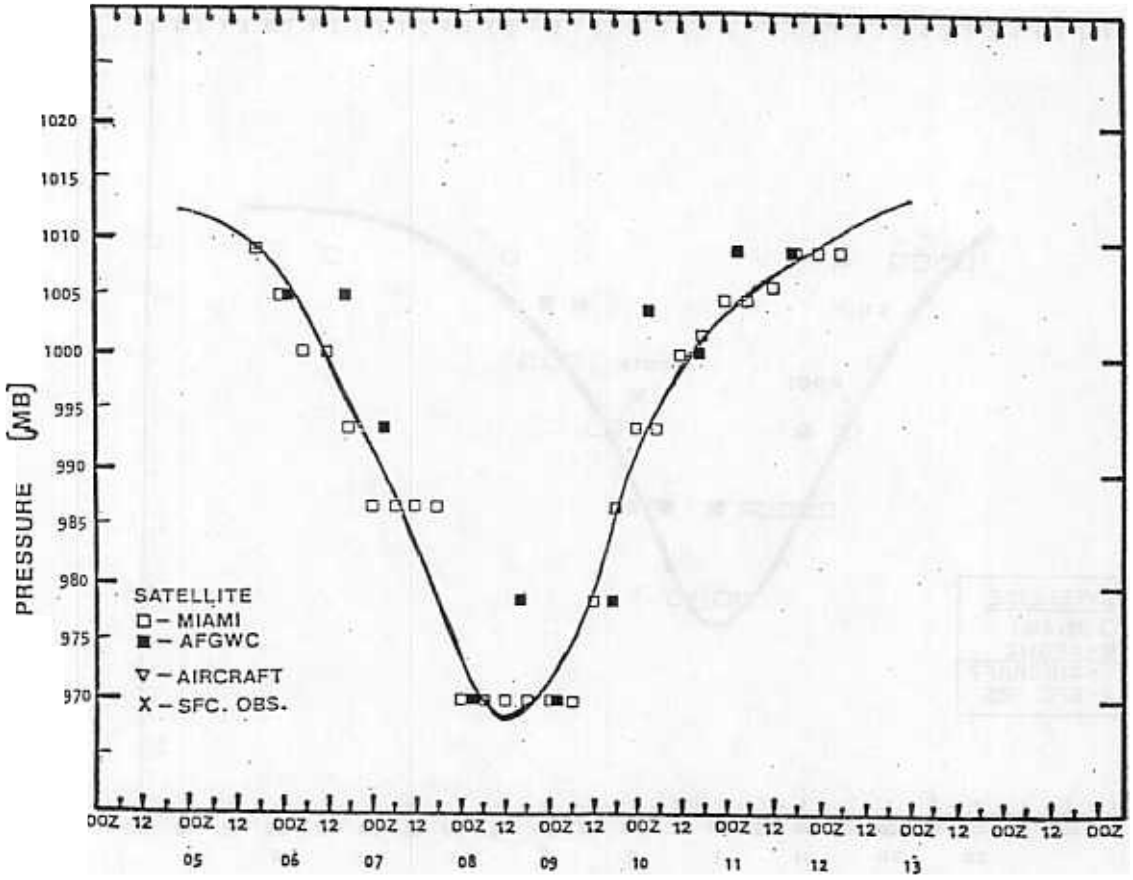


Fig. 2. Best track minimum central pressure curve for Hurricane Iva, 5-13 August, 1988.

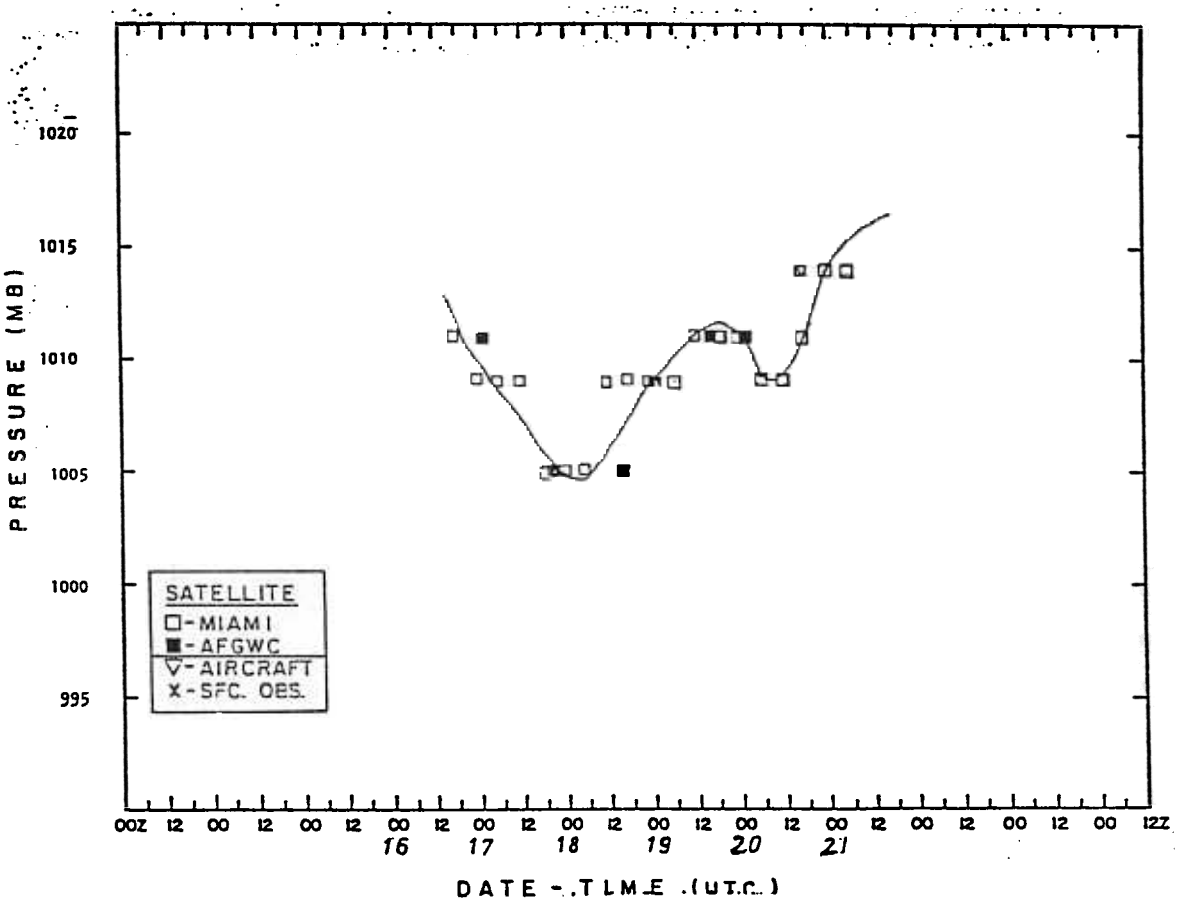


Fig. 2. Best track minimum central pressure curve for Tropical Storm John, 16-21 August, 1988.

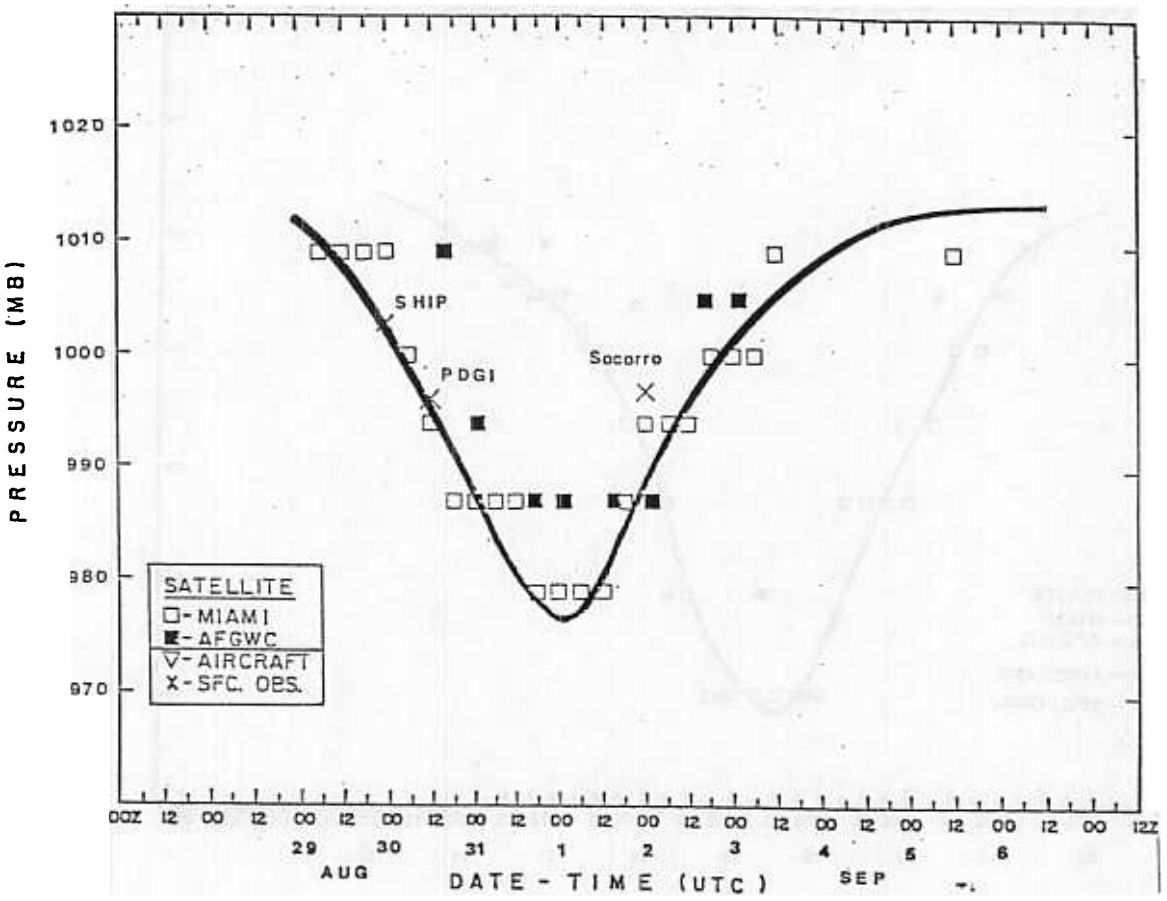


Fig. 2. Best track minimum central pressure curve for Tropical Storm Kristy, 29 August-6 September, 1988.

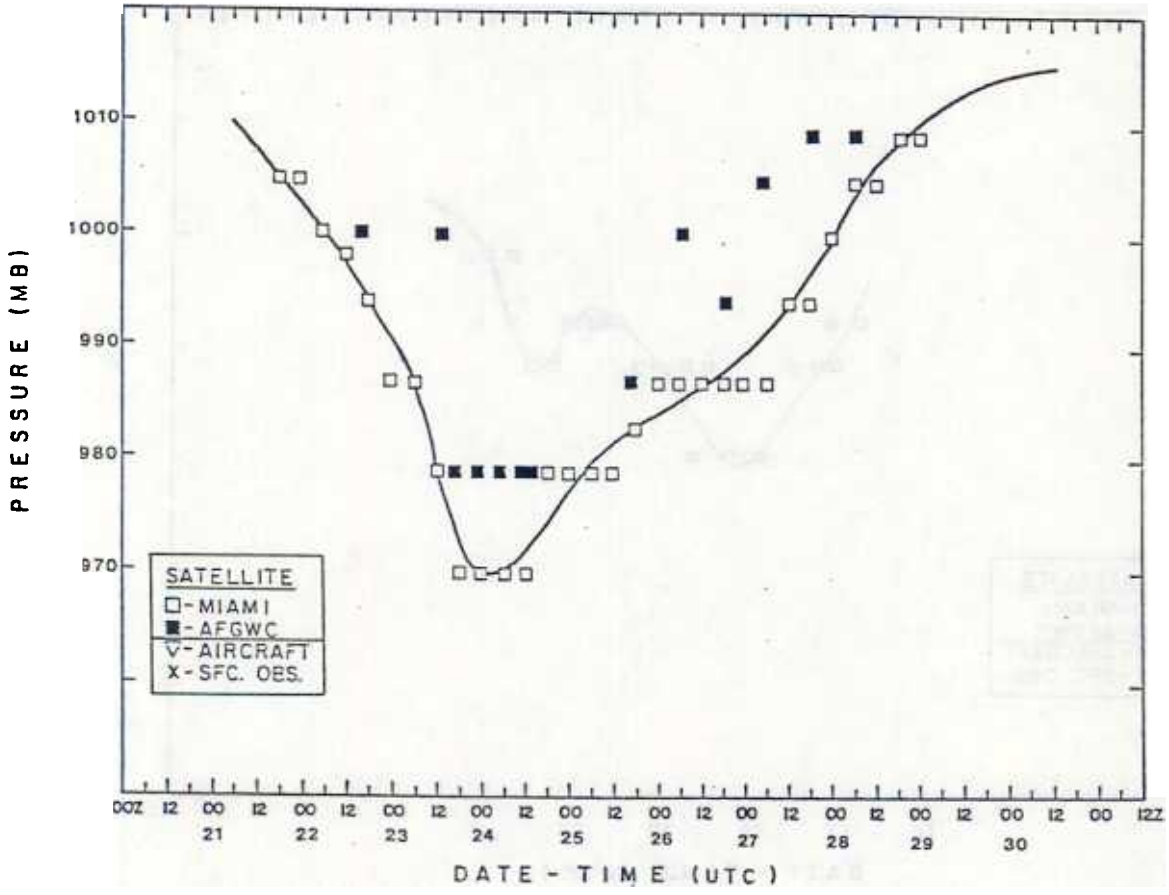


Fig. 2. Best track minimum central pressure curve for Hurricane Lane, 21-30 September, 1988.

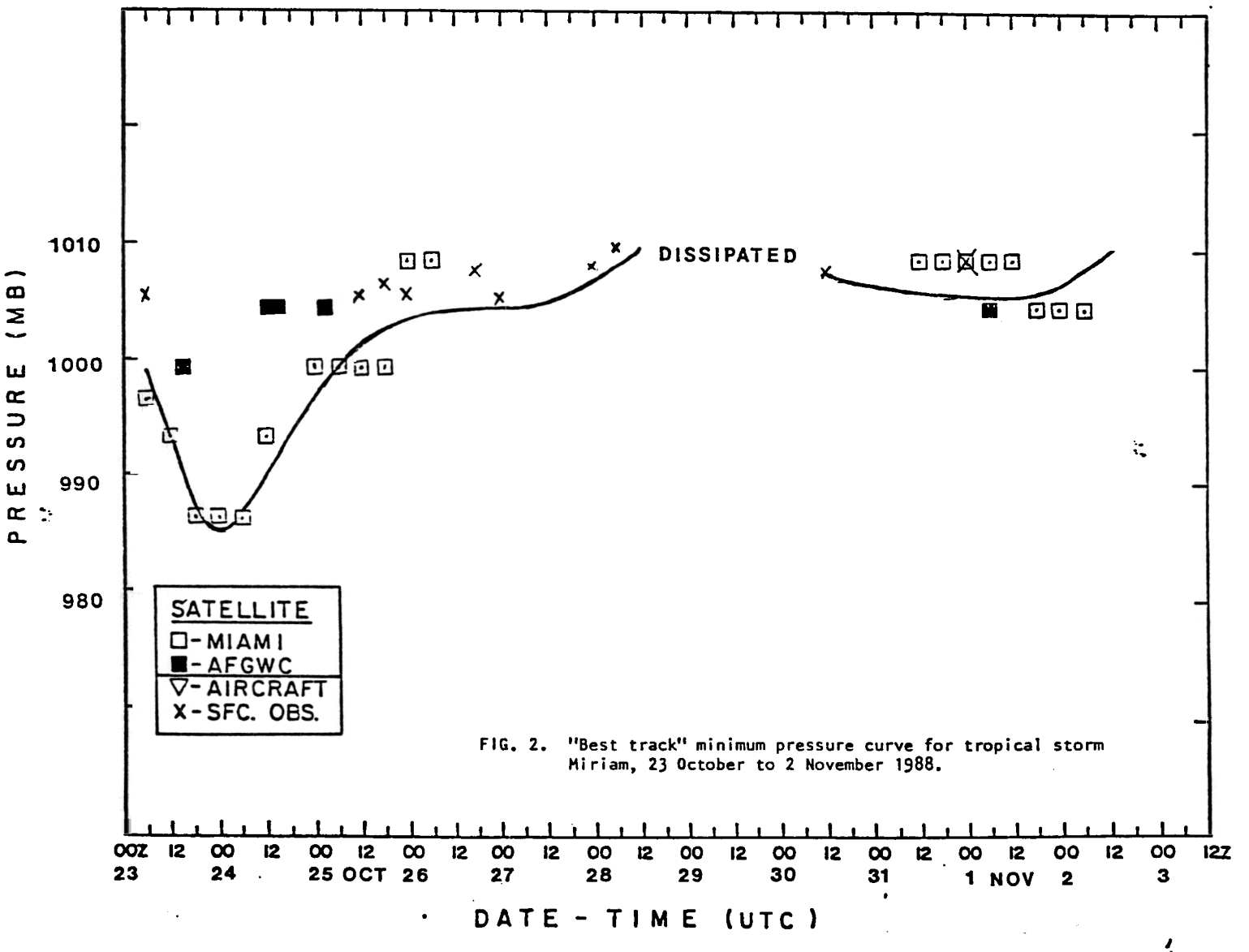
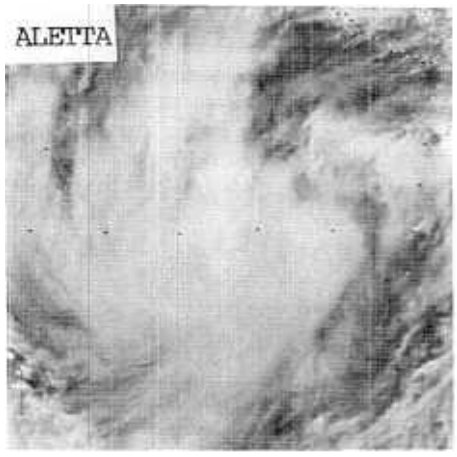


FIG. 2. "Best track" minimum pressure curve for tropical storm Miriam, 23 October to 2 November 1988.

Figure 3. Daily satellite photographs of 1988 Eastern Pacific cyclones.



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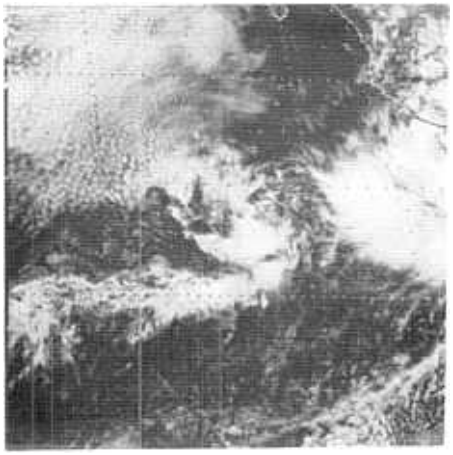

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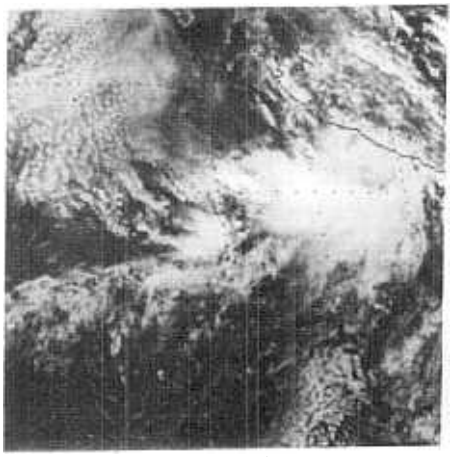

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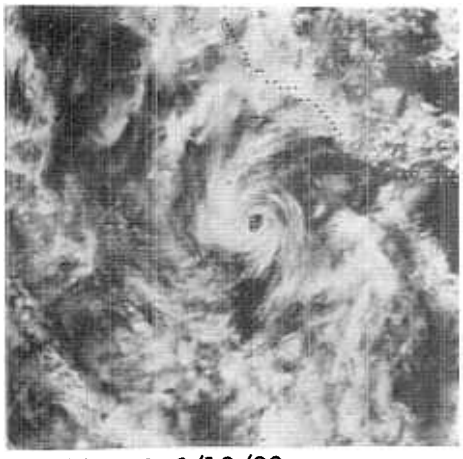

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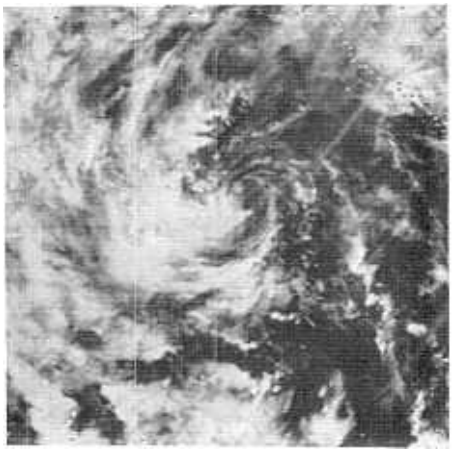

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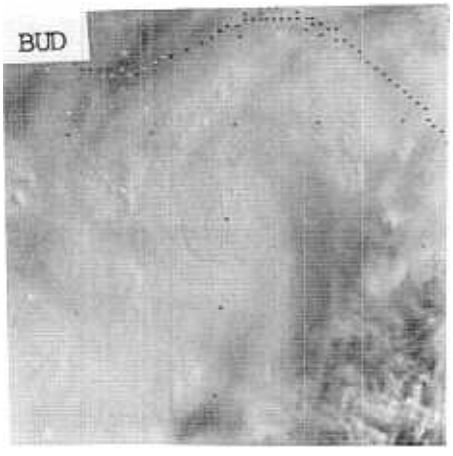

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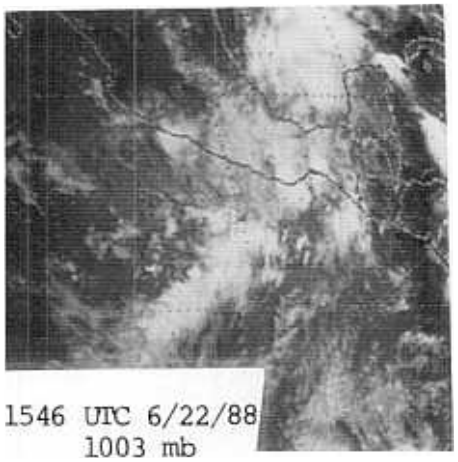

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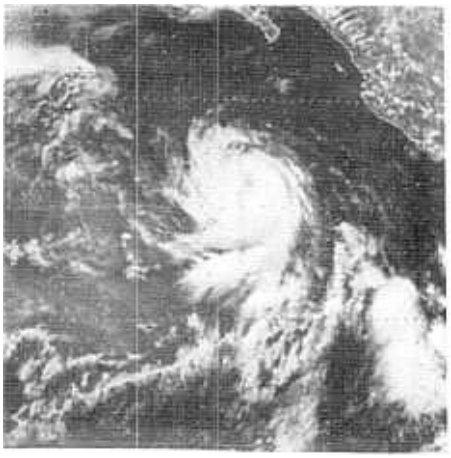

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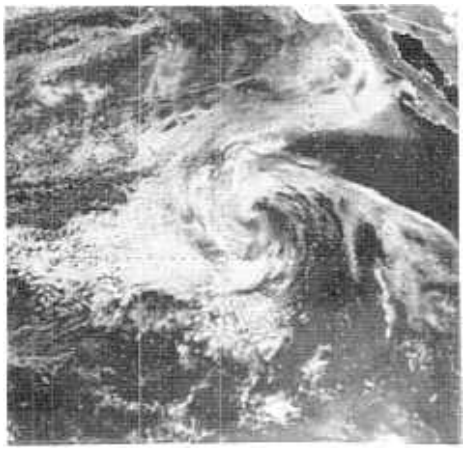

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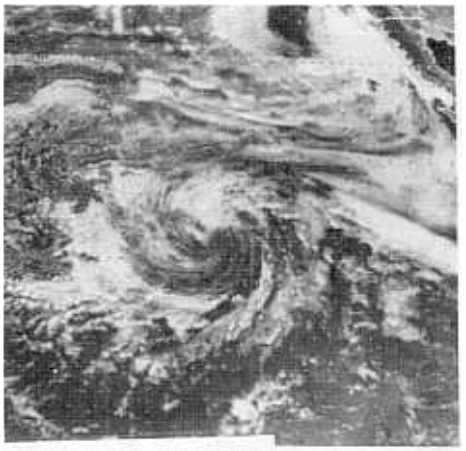

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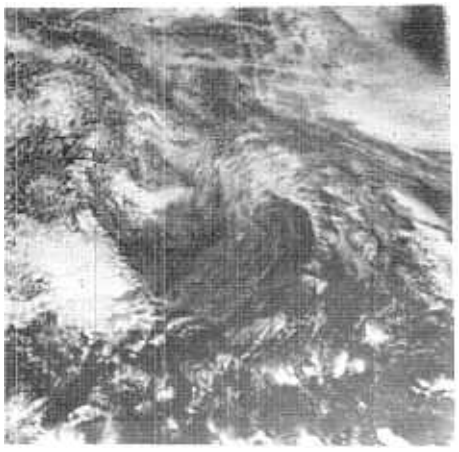

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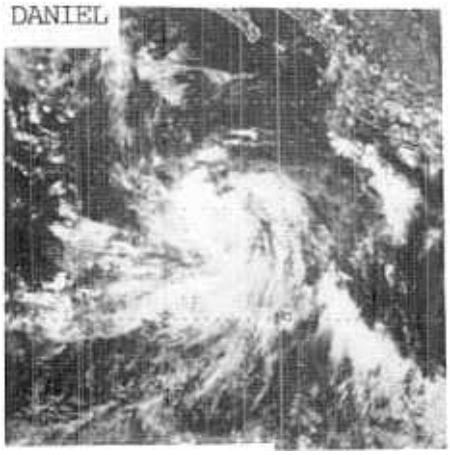

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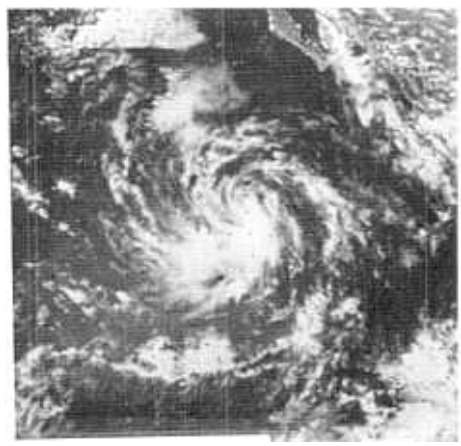

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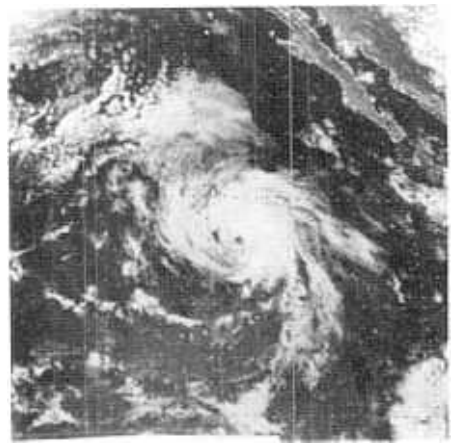

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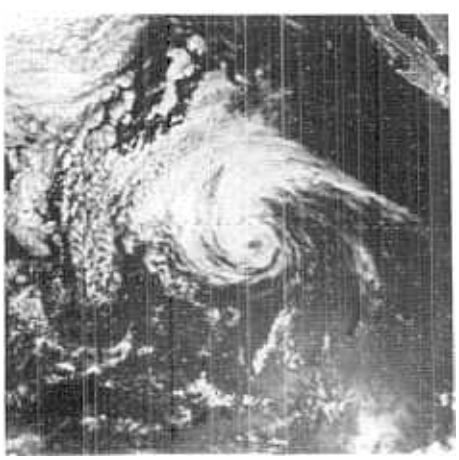

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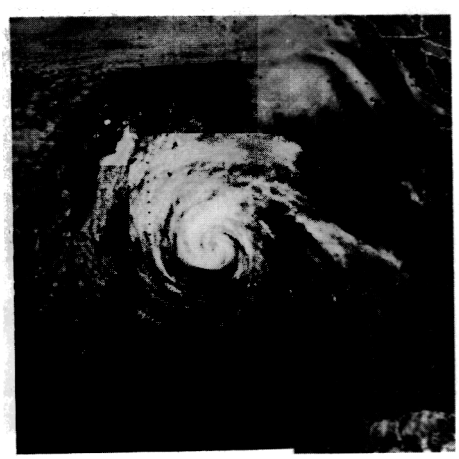

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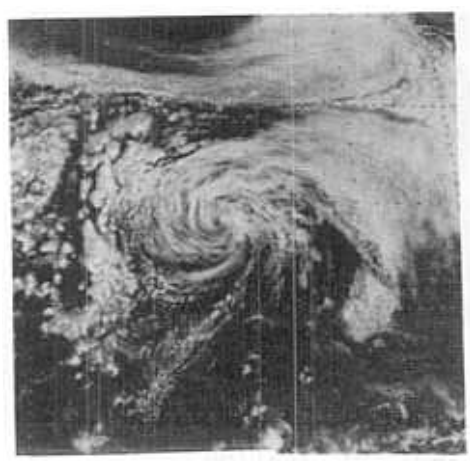

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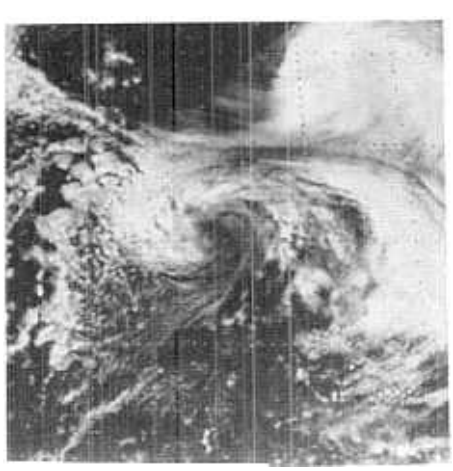

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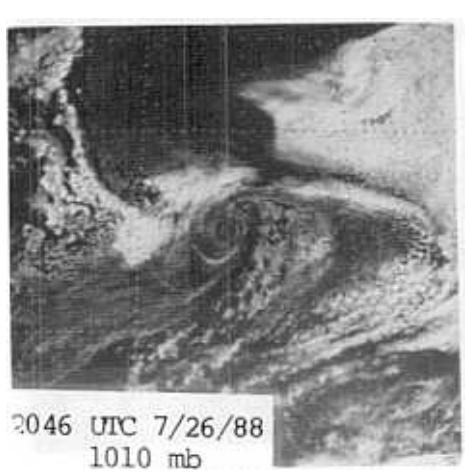

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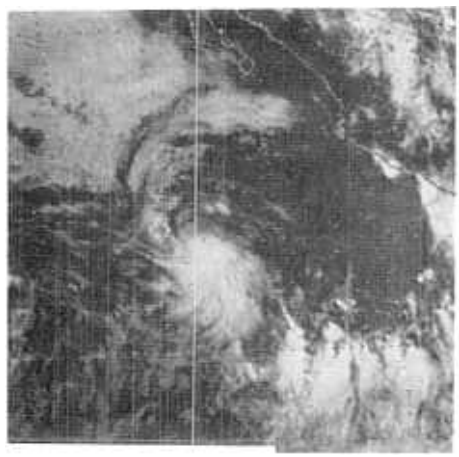

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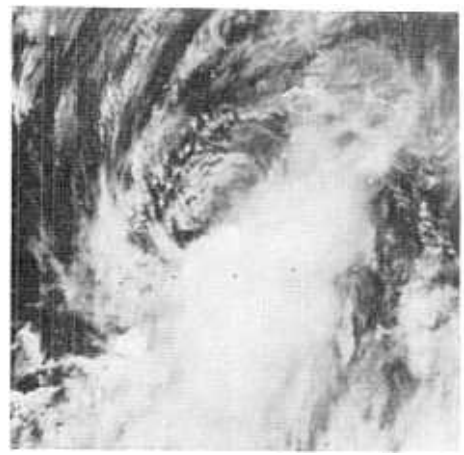

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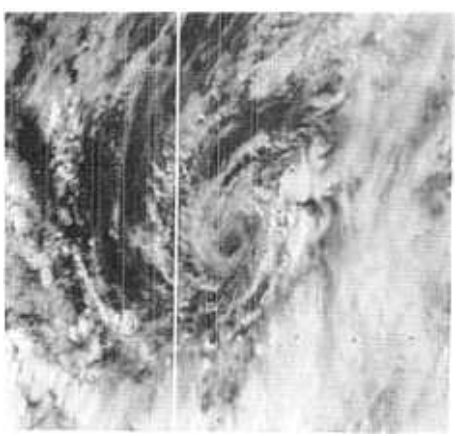

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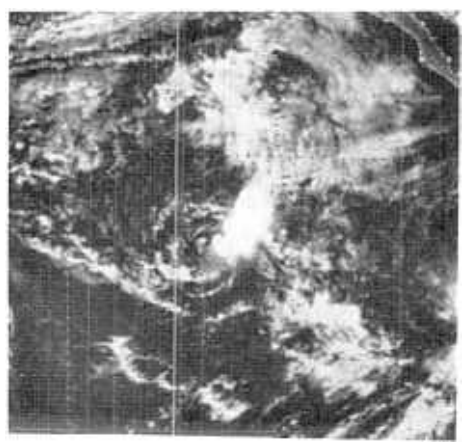

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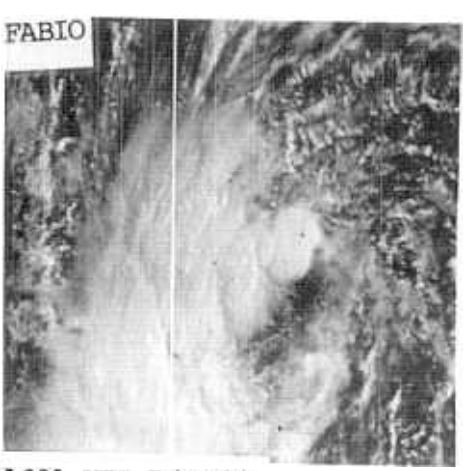

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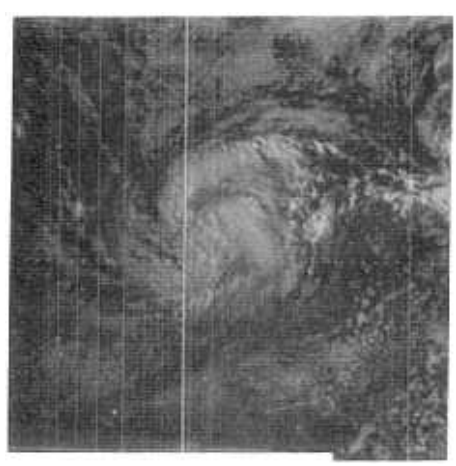

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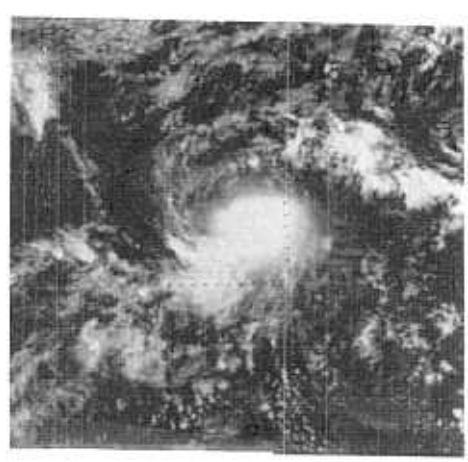

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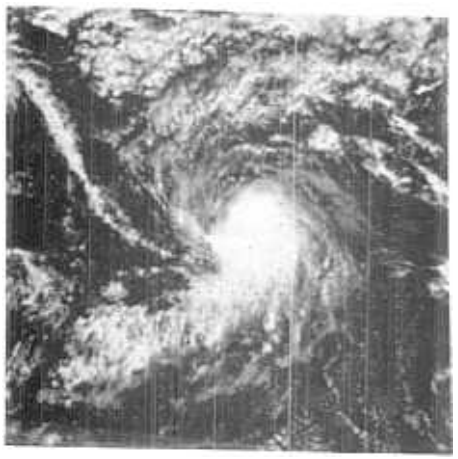

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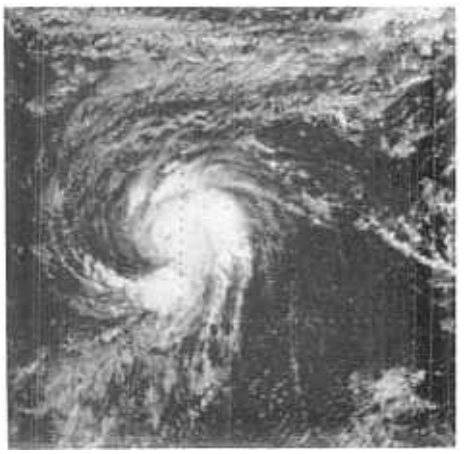

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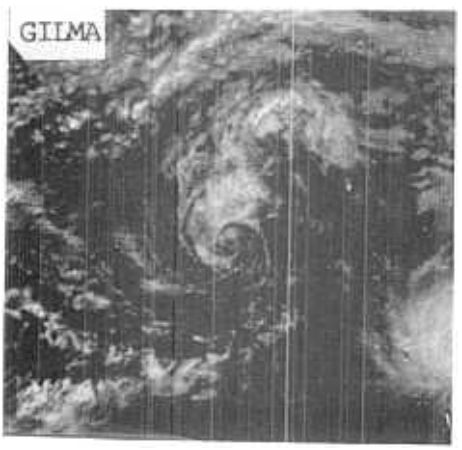

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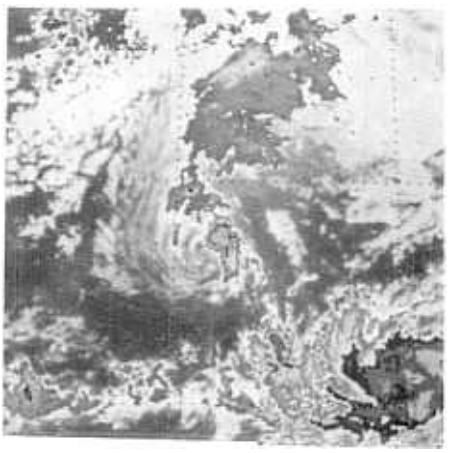

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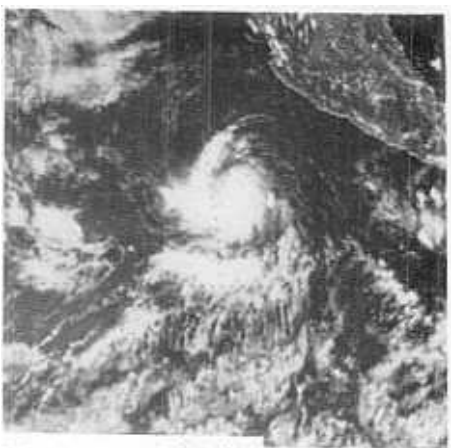
1006 mb



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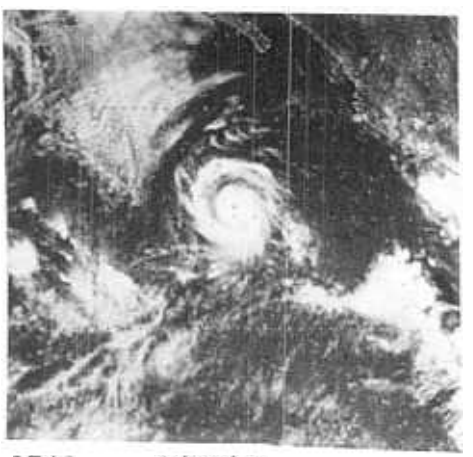

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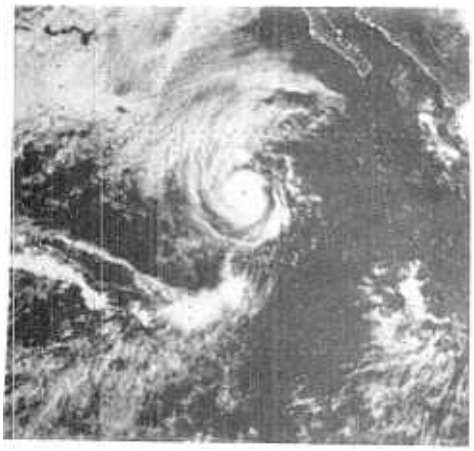

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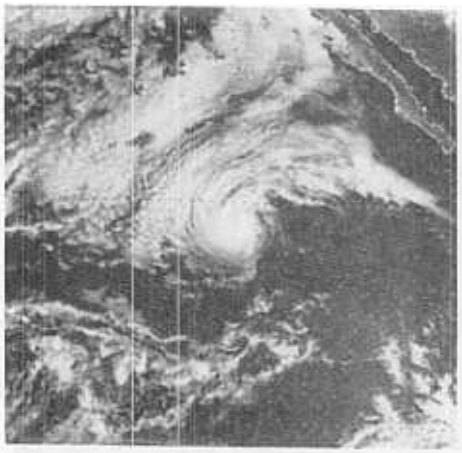

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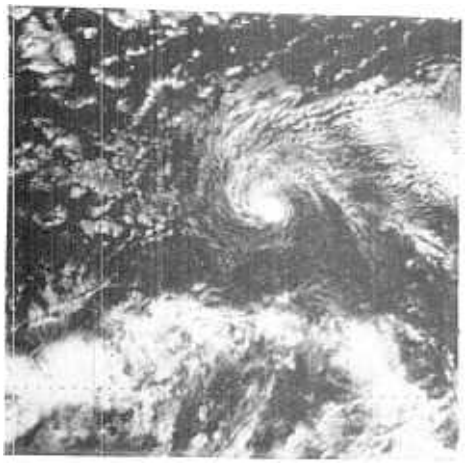
966 mb

1746 UTC 8/05/88
985 mb



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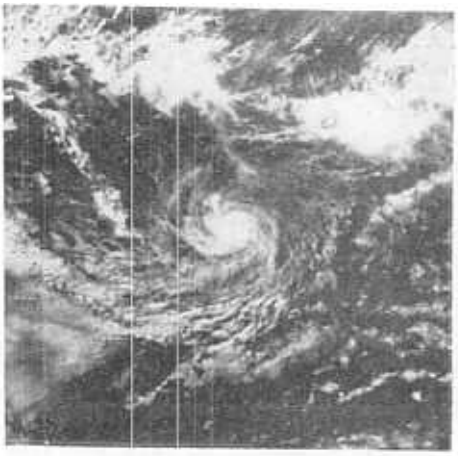

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984 mb

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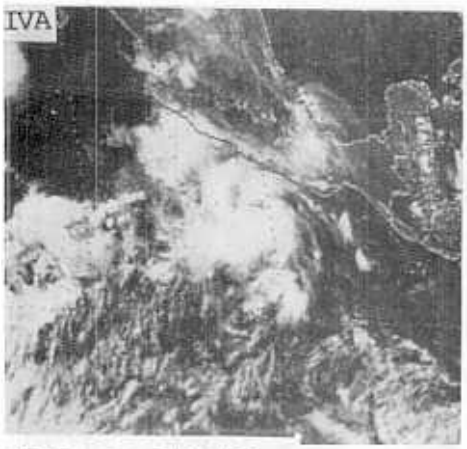

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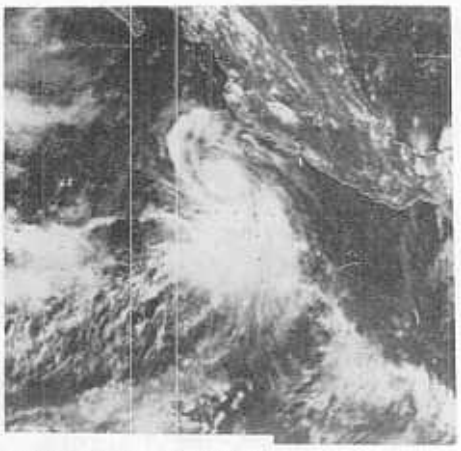

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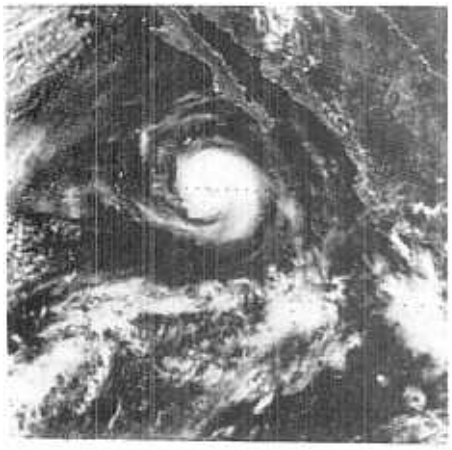

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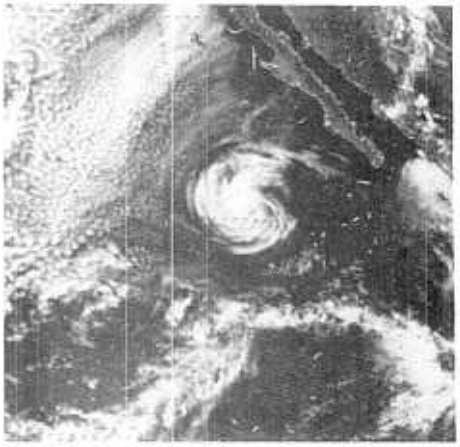

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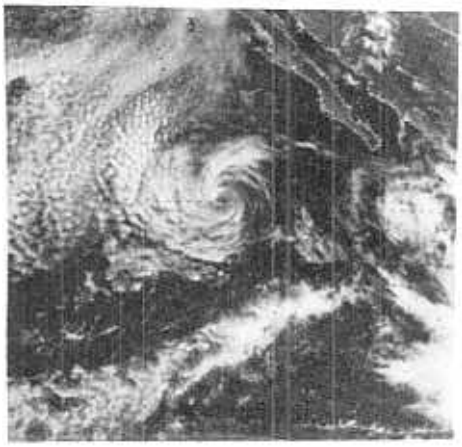

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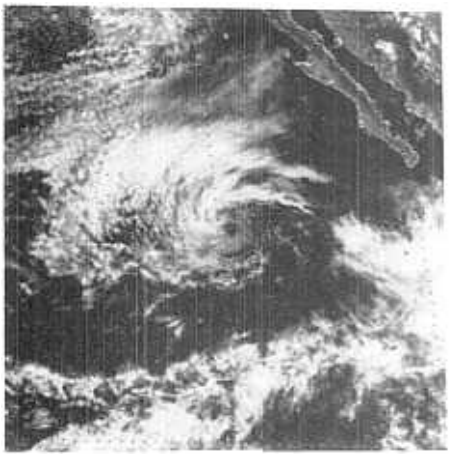

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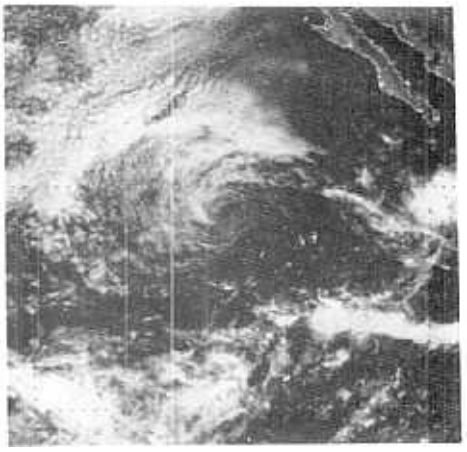

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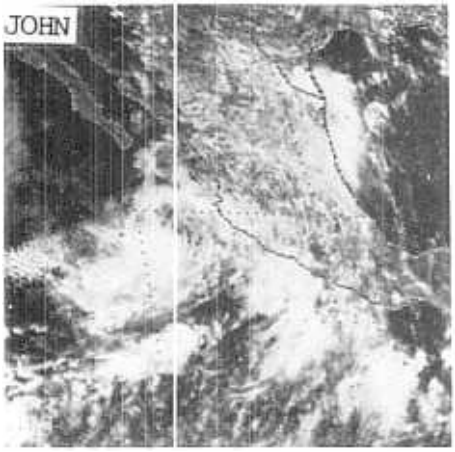

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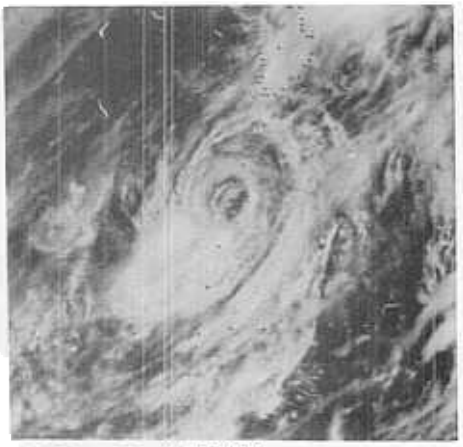

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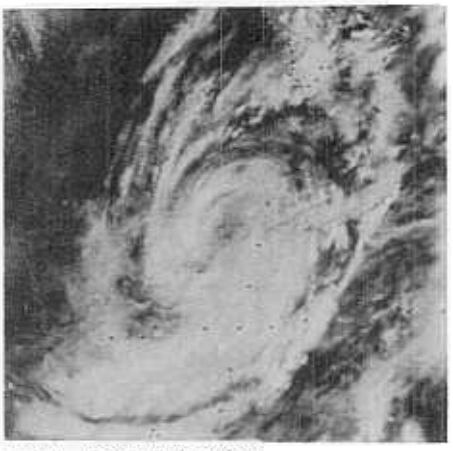

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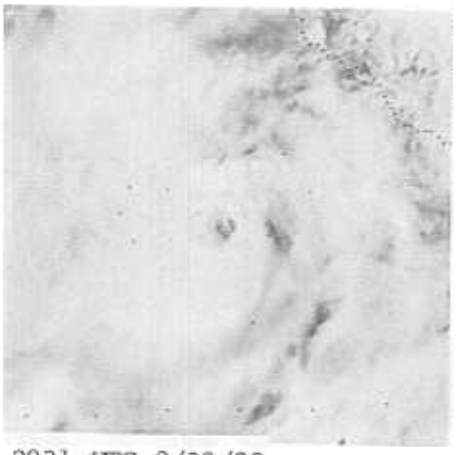
1012 mb

KRISTY

1831 UTC 8/29/88
1007 mb



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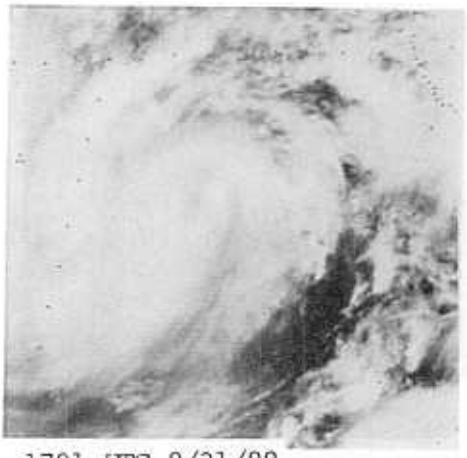

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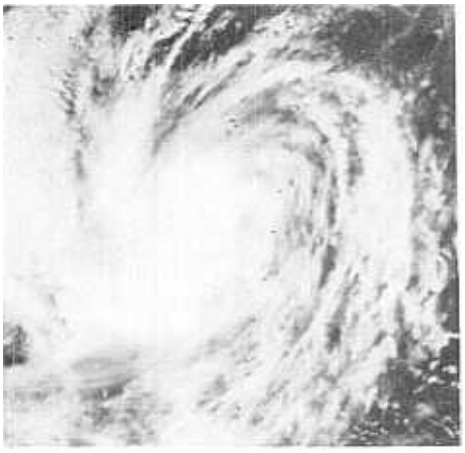
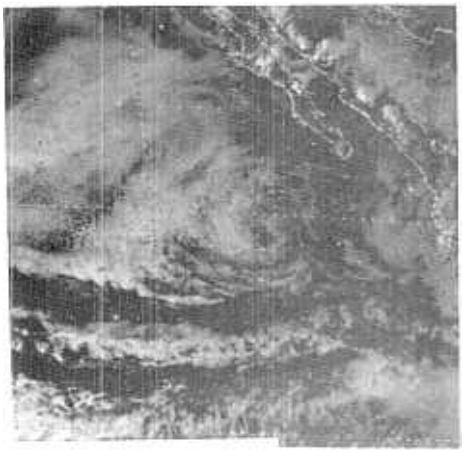


1801 UTC 9/01/88
978 mb

746 UTC 9/02/88
999

1546 UTC 9/03/88
1006 mb



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1012

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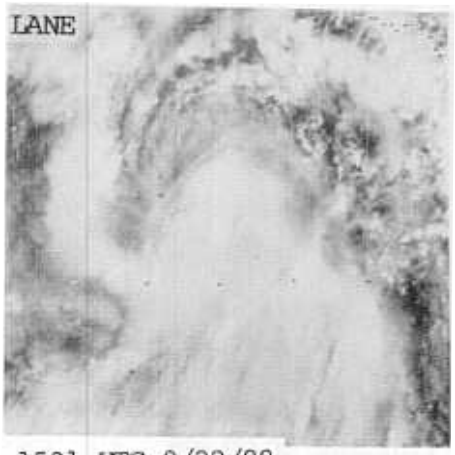

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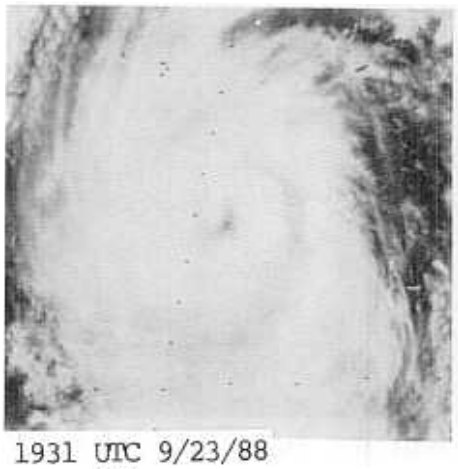

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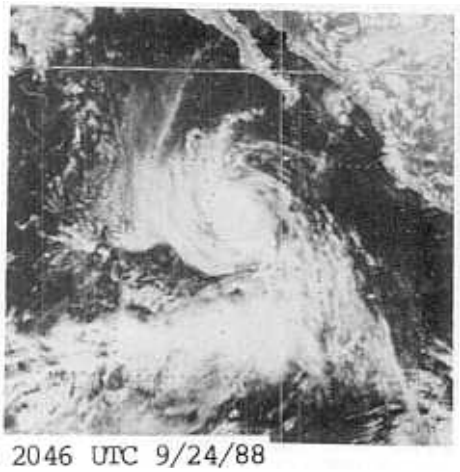

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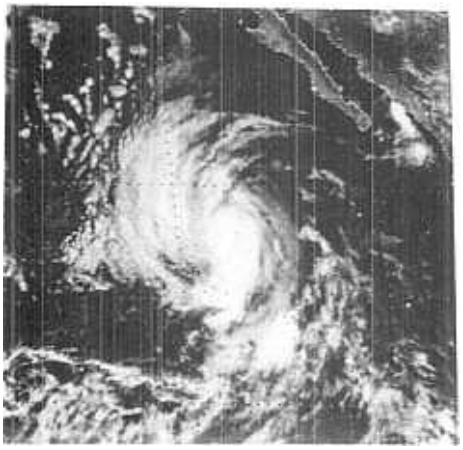
974



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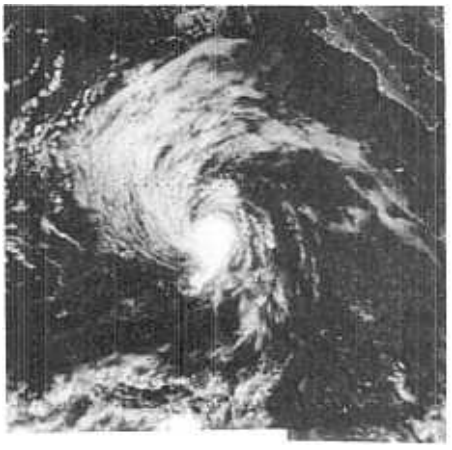

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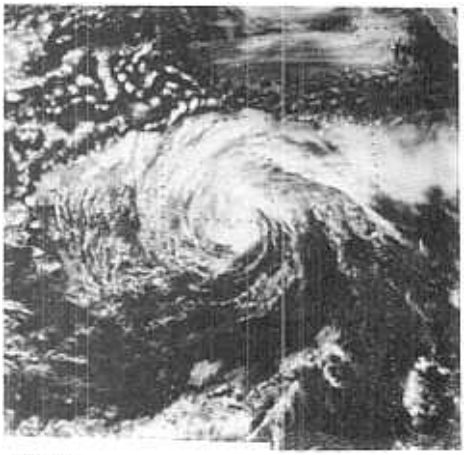

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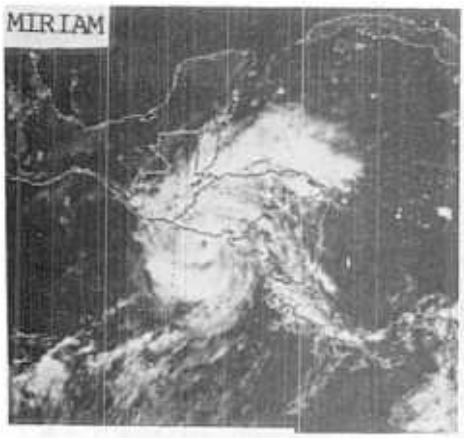
988 mb

2146 UTC 9/28/88
1008

2046 UTC 9/29/88
1014 mb



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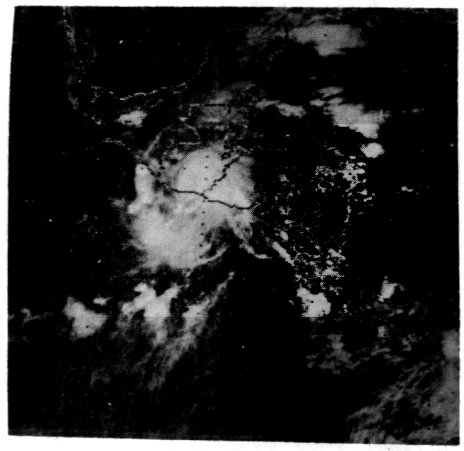
988 mb



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993 mb

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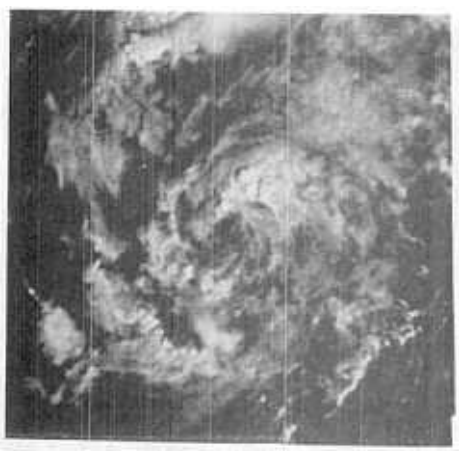
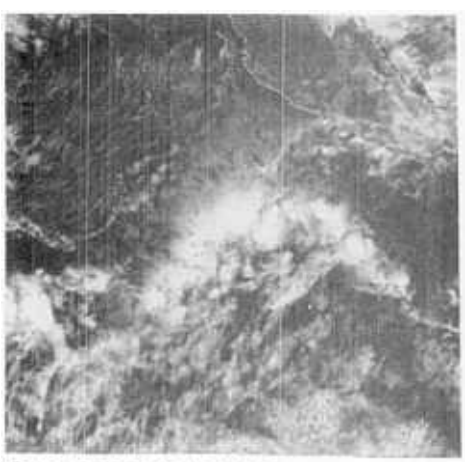


1501 UTC 10/26/88
1005 mb

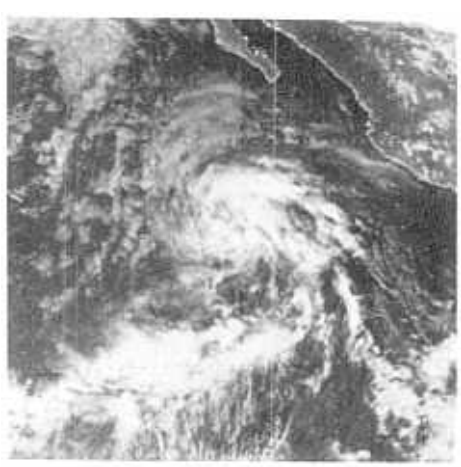
1501 UTC 10/27/88
1006 mb

1646 UTC 10/28/88
1010 mb



1746 UTC 10/29/88
1010 mb

2046 UTC 10/30/88
1007 mb



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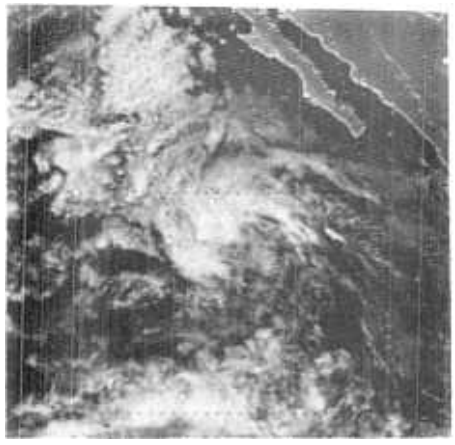

2146 UTC 11/01/88
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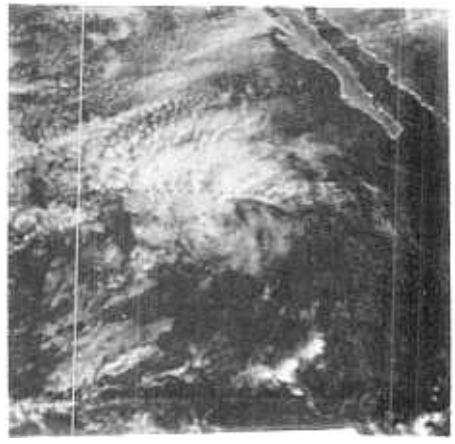

1846 UTC 11/02/88
1010 mb

Table 1. Verification of 1988 tropical storm and hurricane forecasts.
Track model forecast errors (average in nautical miles), eastern Pacific, 1988

	forecast period (hours)					
model	0	12	24	36	48	72
Official	20	45	75	103	138	176
(number of cases)	(175)	(175)	(150)	(128)	(108)	(74)
BAM	68	76	69	109	140	215
	(38)	(38)	(35)	(33)	(29)	(24)
EPCL84	22	47	78	109	138	180
	(170)	(170)	(147)	(123)	(103)	(69)
EPAN85	21	46	77	110	141	191
	(168)	(168)	(145)	(124)	(105)	(71)
EPSS87	22	45	73	103	131	182
	(171)	(171)	(148)	(126)	(106)	(72)
SANBAR	18	52	96	144	193	299
	(72)	(72)	(61)	(52)	(46)	(32)
EPHC81	20	43	71	109	141	183
	(77)	(77)	(67)	(57)	(49)	(32)

TABLE 2. 1988 Eastern North Pacific hurricane season statistics

number	name	class*	dates**	maximum sustained wind ms^{-1} (kt)
1	Aletta	T	16-21 Jun	31 (60)
2	Bud	T	20-22 Jun	23 (45)
3	Carlotta	H	08-15 Jul	34
4	Daniel	T	19-26 July	28
5	Emilia	T	27 Jul-02 Aug	31
6	Fabio	H	28 Jul-09 Aug	62 (120)
7	Gilma	T	28 Jul-03 Aug	23
8	Hector	H	30 Jul-09 Aug	64 (125)
9	Iva	H	05-13 Aug	46 (90)
10	John	T	16-21 Aug	18 (35)
11	Kristy	H	29 Aug-06 Sep	41
12	Lane	H	21-30 Sep	46
13	Miriam	T	23-02 Nov	31

* T: tropical storm, wind speed 18-32 ms^{-1} (34-63 kt).
H: hurricane, wind speed 33 ms^{-1} (64 kt) or higher.

** Dates begin at 0000 UTC and include tropical depression stage.

Be nd po: ro

OFFI FORECASTS ALETTA JUN 17-JUN 19 1988

DATE/TIME GMT	BEST TRACK LAT.	LONG	OPERATIONAL POSITION ERROR LAT.LONG	NM	12HR FORECAST ERROR LAT.LONG	NM	24HR FORECAST ERROR LAT.	LONG	NM	LAST ERROR LAT.	LONG.	NM	LAST ERROR LAT. LONG	NM
061700	14.8101.3		15.2101.4	24	16.0103.2	85	17.3104.5	171		18.5105.5	216		20.0106.0	276	27.0106.5	
061706	15.2101.3		15.8102.5	73	17.0104.0	82	18.3103.5	173		20.3106.5	227		21.5106.5	249	25.0105.5	
061712	15.2101.4		16.0103.3	97	17.0104.6	85	17.9105.7	132		18.3106.9	157		20.0108.0	199	24.0109.0	
061718	15.8101.5		15.8102.5	57	16.0103.0	22	16.3103.5	34		17.3104.0	13		18.5106.0		21.0106.0	
061800	16.1101.5		15.8102.3	29	16.3102.9	35	17.0103.5	29		17.3104.4	42		18.5106.0		20.0106.5	
061806	16.4101.7		15.0102.3	29	14.1102.7	52	16.5103.0	42		16.5103.5			17.0104.0		18.0108.0	
061812	16.7101.9		15.5103.3	44	14.3103.2	50	16.1105.5	33		17.3104.0			18.0105.0		19.0105.0	
061818	17.0102.2		15.7101.3	29	17.6101.5	62	17.7102.0			17.3102.3						
061900	17.2102.5		17.0102.3	20	17.7102.8	57	18.2103.2			18.7103.5						
061906	17.5103.1		17.3103.5		18.0105.0		19.0106.0			20.0106.5			21.0106.5		22.0106.0	
061912	17.5103.5		17.4104.1		18.0105.0		19.5106.0			20.0107.0						
AV VECTOR ERRORS(NM)						56			5			3		223		0
						7			5			3		3		0

OFFICIAL FORECASTS BUD JUN 21-JUN 22 1988

DATE/TIME GMT	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION ERROR LAT.LONG.	NM	12HR FORECAST ERROR LAT.LONG.	NM	24HR FORECAST ERROR LAT.	LONG.	NM	36HR FORECAST ERROR LAT.	LONG.	NM	48HR FORECAST ERROR LAT.	LONG.	NM	72HR FORECAST ERROR LAT.	LONG.	NM
062112	14.0	94.5	15.5	23.5	55	14.2	96.0	13	14.5	97.0	60	15.2	97.2		15.5100.0		16.0103.0	
062118	14.5	95.5	14.5	95.5	21	14.7	95.7	47	15.2	98.1		15.7	99.5		16.0101.0		17.0104.0	
062200	14.9	96.7	15.5	96.2	44	15.0	97.5	42	15.5	99.0		15.2100.5			15.5102.0		17.5105.0	
062206	15.1	97.4	14.9	97.3		15.4	99.5		16.3101.0			15.5102.5			17.0105.0		17.5105.5	
062212	15.5	98.7	15.5	98.0		15.5100.0			6.0101.8			16.5103.5			17.0105.4		18.0109.0	
MEAN VECTOR ERR				4		6			10			0			0		0	
NUMBER OF CASES				3		3			1			0			0		0	

OFFICIAL FORECASTS CARLOTTA JUL 0 JL 13 1988

DATE TIM GMT	BE LA.	LONG	OPERATIONAL POSITION ERROR LAT.LONG	NM	12HR FORECAS ER	NM	24HR FORECAST ERROR LAT.	LONG.	NM	36HR FORECAST ERROR LAT.	LONG.	NM	48HR FOR ERROR LAT.	LONG.	AST NM	72 LAT.	LONG.	CAST ERROR NM
071912	13.9117.0		13.8116.8	13	14.2117.0	13	14.7111.0	43		15.2113.0	91		15.5115.0	133		16.5119.0		228
071918	14.2118.1		14.1117.8	13	14.5119.8	25	14.3111.8	54		15.2113.8	122		15.6115.8	175		16.5120.0		257
072000	14.6119.2		14.4119.3	13	14.7111.1	42	15.1113.1	83		15.5115.0	135		15.8117.0	188		16.6121.0		258
072006	15.0119.3		14.5119.3	34	15.0112.2	31	15.3114.5	79		16.0116.5	127		16.5118.0	168		18.0121.5		
072012	15.5111.4		15.2111.2	21	15.5113.5	49	16.0115.5	97		16.5117.5	139		17.0119.5	196		18.5123.5		
072018	16.0112.5		16.0112.5	0	17.2114.3	12	18.5116.0	29		19.0118.0	55		19.5120.0	85		20.0122.5		
072100	16.6113.5		16.7113.7	12	17.7115.8	21	19.3119.0	33		19.1120.0	35		19.5122.0	139		20.0125.0		
072106	17.3114.5		17.5115.2	41	19.0117.5	20	20.0120.0	45		20.5122.5	91		21.0124.0			21.5127.0		
072112	17.9115.4		18.4116.3	45	19.5118.0	5	20.2120.0	42		21.0122.0	39		21.5124.0			22.0129.0		
072118	18.6116.5		18.5116.5	0	19.5118.5	15	20.0120.5	55		20.5122.5			21.0124.5			22.0129.0		
072200	19.1117.4		19.4117.6	21	20.4119.3	23	21.5121.0	17		22.0123.0			22.5125.0			23.0128.5		
072206	19.8118.5		21.0119.3	30	21.3120.8	12	22.5122.5			23.5124.0			23.5126.0					
072212	20.4119.5		20.8119.6	24	21.9121.4	25	23.0123.0			23.5125.0			24.0127.0					
072218	20.9120.3		20.8120.1		21.3121.5		21.5123.0			21.8124.5								
072300	21.1121.1		21.2121.1		21.9122.8		22.3124.5			23.1125.3			23.5123.0					
MEAN VECTOR ERRORS(NM)				21		24			54			97			150			248
NUMBER OF CASES				13		13			11			9			7			3

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OFFICIAL FORECASTS DANIEL JUL 20-JUL 25 1988

DATE/TIME GMT	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	OPERATIONAL ERROR NM	12HR FORECAST LAT.	12HR FORECAST LONG.	12HR FORECAST ERROR NM	24HR FORECAST LAT.	24HR FORECAST LONG.	24HR FORECAST ERROR NM	36HR FORECAST LAT.	36HR FORECAST LONG.	36HR FORECAST ERROR NM	48HR FORECAST LAT.	48HR FORECAST LONG.	48HR FORECAST ERROR NM	72HR FORECAST LAT.	72HR FORECAST LONG.	72HR FORECAST ERROR NM
072000	15.1113.4		15.0113.2		13	15.5114.5		29	16.0115.0		40	16.5117.5		59	17.0119.5		34	17.5123.0		130
072006	15.3113.8		15.3113.8		0	15.6114.8		3	16.0115.2		36	16.5118.0		83	17.0120.0		125	17.5123.5		181
072012	15.5114.2		15.3114.3		13	15.7115.4		15	16.0115.5		83	16.5117.8		156	17.0119.0		232	17.0122.0		327
072018	15.7114.7		15.0114.7		13	15.5115.8		37	17.0117.0		108	17.3118.2		191	17.5119.5		247	18.0123.0		320
072100	15.1115.5		15.0115.4		3	14.8116.4		54	17.2117.6		130	17.6119.0		170	18.0120.5		235	18.5124.0		320
072106	15.6116.3		15.1116.0		34	14.9117.4		51	17.4118.7		123	17.8120.3		163	18.3122.0		200	19.5125.5		292
072112	17.2117.4		16.3117.0		33	17.5113.5		53	17.9120.0		109	18.4121.3		139	18.8123.4		177	19.0127.0		273
072118	17.8119.5		17.5119.5		13	18.5120.5		30	19.0122.3		51	19.5124.5		79	20.0126.5		79	21.0130.5		150
072200	18.5119.5		18.6119.5		3	19.2121.8		11	20.0124.0		37	20.3126.3		23	20.5128.0		108	21.0131.5		206
072206	18.9120.9		19.0120.7		12	20.1122.8		50	21.0124.8		82	21.5126.7		17	22.0128.5		55	22.5132.0		146
072212	19.1122.1		19.1122.3		11	19.5124.5		12	20.0126.5		32	20.3129.0		105	20.5130.0		132	21.0133.0		256
072218	19.2123.3		19.2123.3		0	19.3125.8		24	19.5127.5		109	19.5130.0		197	20.0132.0		233	20.0135.0		
072300	19.4124.4		19.4124.4		0	19.5126.8		64	19.7129.0		15	20.0131.0		199	20.3133.0		262	20.5136.5		
072306	19.7125.7		19.7125.5		11	19.9128.0		101	20.1130.4		174	20.3132.7		232	20.4135.0		293	20.5139.0		
072312	20.5126.5		20.3126.2		20	21.5128.0		30	22.0130.0		91	22.5132.0		96	23.0133.5		115	23.5135.5		
072318	21.3127.3		21.4127.3		13	23.3129.8		23	24.5130.5		40	25.0132.5		52	25.5134.5			25.0135.5		
072400	22.2128.3		22.3128.3		3	23.4130.2		3	24.5132.0		12	25.0134.0		13	25.5136.0			25.0133.5		
072406	22.7129.2		22.6129.3		3	23.5131.5		20	24.5133.5		32	24.5135.5			25.0137.5			25.5141.0		
072412	23.2130.1		23.2130.5		22	23.8132.8		31	24.5135.0		45	25.0137.0			26.0139.5			26.0146.0		
072418	23.5131.1		23.7131.1		5	24.5133.0		3	25.5134.5			26.5134.5			27.0133.5			28.0142.0		
072500	24.3132.2		24.4132.1		3	25.5134.0		17	26.5135.5			27.5137.5								
072506	24.7133.1		24.9132.2			25.9135.1			27.0137.0			27.5139.1			23.0141.5					
072512	25.1134.1		25.4134.3			26.4136.3			27.3138.3			28.0141.0								

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OFFICIAL FORECASTS EMILIA JUL 29-JUL 31 1988

DATE/TIME GMT	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	OPERATIONAL ERROR NM	12HR FORECAST LAT.	12HR FORECAST LONG.	12HR FORECAST ERROR NM	24HR FORECAST LAT.	24HR FORECAST LONG.	24HR FORECAST ERROR NM	36HR FORECAST LAT.	36HR FORECAST LONG.	36HR FORECAST ERROR NM	48HR FORECAST LAT.	48HR FORECAST LONG.	48HR FORECAST ERROR NM	72HR FORECAST LAT.	72HR FORECAST LONG.	72HR FORECAST ERROR NM
072912	15.1113.6		15.0114.3		23	15.3114.5		70	15.5116.0		76	16.0118.0		46	15.5120.0		42	17.5123.5		
072918	15.2114.4		15.3114.3		8	15.6115.9		13	16.0117.5		13	16.5119.3		13	17.0121.0		36	18.0125.0		
073000	15.2115.3		15.0115.3		11	15.1117.0		5	15.3118.8		37	15.6120.5		33	16.0122.5			17.0126.0		
073006	15.2116.1		15.0115.9		15	15.0117.5		30	15.0119.2		60	15.1120.3		59	15.2122.5			16.0125.0		
073012	15.4116.9		15.3116.9		5	15.4118.5		30	15.5120.0		37	15.3121.8			16.0123.5			17.0127.0		
073018	15.7117.7		15.5117.5		13	15.6119.2		23	15.7120.9		23	16.2122.5			16.5124.0			17.5129.0		
073100	16.0118.4		16.0118.4		0	16.2120.2		0	16.5122.0			16.3123.8			17.0125.5			12.0129.0		
073106	16.2119.3		16.2119.5		11	16.4121.1		8	16.5122.8			16.9124.4			17.0126.0			17.5129.5		
073112	16.2120.2		16.2120.2			16.5121.9			16.3123.5			17.0125.0			17.4125.8			19.0130.0		
073118	16.3121.0		16.2121.2			16.4122.9			16.5124.5			16.3126.3			17.0123.0			17.5131.5		

MEAN VECTOR ERRORS(NM)					11			24			42			38			39			0
NUMBER OF CASES					8			3			6			4			2			0

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Table 3a. continued.

OFFICIAL FORECASTS FABIO JUL 29-AUG 02 1988

DATE/TIME GMT	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION LAT.	LONG.	ERROR NM	12HR FORECAST LAT.	LONG.	ERROR NM	24HR FORECAST LAT.	LONG.	ERROR NM	36HR FORECAST LAT.	LONG.	ERROR NM	48HR FORECAST LAT.	LONG.	ERROR NM	72HR FORECAST LAT.	LONG.	ERROR NM
272918	12.0	165.0	13.0	134.5	65	13.	126.3	43	14.	128.2	84	14.	130.1	25	15.	132.0	126	17.	135.5	217
273000	11.	912	11.	126.1	5	12.	127.9	15	12.	129.8	24	12.	131.9	39	13.	135.5	42	14.	137.0	96
273003	11.	912	11.	136.9	3	11.	123.9	17	12.	130.9	18	13.	132.9	59	13.	134.9	42	13.	139.0	29
273012	11.	912	11.	137.7	3	12.	123.5	5	13.	131.5	8	12.	133.5	21	12.	135.5	26	13.	139.5	18
273018	11.	912	11.	138.5	17	12.	130.8	5	12.	133.0	24	12.	135.0	33	13.	137.0	13	13.	142.0	
273100	12.	013	11.	150.2	35	11.	133.6	37	10.	135.0	65	12.	137.5	53	14.	140.0	111	14.	144.0	
273106	12.	113	12.	151.3	34	12.	133.3	13	10.	135.0	21	12.	137.5	21	12.	139.1	13	13.	144.0	
273112	12.	213	13.	151.7	18	12.	135.7	11	12.	135.7	13	12.	137.7	13	13.	139.7	13	12.	144.0	
273118	12.	413	13.	152.3	16	12.	134.5	11	12.	139.5	13	12.	138.5	11	13.	140.5		13.	144.5	
280100	12.	513	12.	153.3	5	12.	134.8	23	13.	136.4	70	13.	138.3	99	13.	140.3		14.	144.0	
280106	12.	713	12.	154.3	17	12.	133.5	59	13.	137.2	61	13.	138.7		13.	140.3		14.	144.0	
280112	12.	813	13.	155.3	32	13.	136.5	57	13.	138.0	39	13.	139.5		13.	141.1		15.	145.0	
280118	12.	913	13.	156.3	23	13.	138.1	19	13.	140.1		14.	142.1		14.	144.5		16.	149.0	
280200	13.	013	13.	157.5	8	13.	139.5	5	13.	141.8		14.	143.7		14.	145.5		15.	149.0	
280206	13.	013	13.	158.5		13.	140.7		13.	143.0		13.	145.2		13.	147.5		15.	152.0	
280212	13.	213	13.	159.5		13.	141.5		13.	143.5		13.	145.5		14.	148.0		15.	152.5	

MEAN VECTOR ERRORS(NM) 22 23 41 47 49 90
NUMBER OF CASES 14 14 12 10 8 4

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OFFICIAL FORECASTS GILMA JUL 29-JUL 30 1988

DATE/TIME GMT	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION LAT.	LONG.	ERROR NM	12HR FORECAST LAT.	LONG.	ERROR NM	24HR FORECAST LAT.	LONG.	ERROR NM	36HR FORECAST LAT.	LONG.	ERROR NM	48HR FORECAST LAT.	LONG.	ERROR NM	72HR FORECAST LAT.	LONG.	ERROR NM
272918	15.9	136.2	17.9	136.2	119	18.	135.4	61	20.	137.0	136	21.	137.5			22.0	138.5		22.5	140.5
273000	16.	013	16.	136.3	13	16.	135.9	11	18.	137.6		16.	138.5							
273006	16.	013	15.	136.5	11	16.	137.1	54	16.	137.7		16.	138.5							
273012	16.	113	15.	137.3		16.	138.4		16.	139.4										
273018	16.	313	16.	138.5		16.	140.4		17.	142.5		18.	144.5							

MEAN VECTOR ERRORS(NM) 48 42 136 0 0 0
NUMBER OF CASES 3 3 1 0 0 0

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OFFICIAL FORECASTS HECTOR JUL 31-AUG 09 1983

DATE/TIME GMT	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	OPERATIONAL POSITION ERROR NM	12HR FORECAST LAT.	12HR FORECAST LONG.	12HR FORECAST ERROR NM	24HR FORECAST LAT.	24HR FORECAST LONG.	24HR FORECAST ERROR NM	36HR FORECAST LAT.	36HR FORECAST LONG.	36HR FORECAST ERROR NM	48HR FORECAST LAT.	48HR FORECAST LONG.	48HR FORECAST ERROR NM	72HR FORECAST LAT.	72HR FORECAST LONG.	72HR FORECAST ERROR NM
073113	12.3	103.7	12.1	104.3	37	12.7	105.5	32	13.3	108.6	59	13.9	110.8	57	14.5	113.0	67	15.5	117.0	101
080100	12.9	104.3	13.2	104.3	6	13.7	107.5	21	14.5	110.0	15	15.3	112.5	8	15.5	114.5	42	16.5	119.0	77
080106	13.4	105.1	13.2	106.0	13	13.8	108.4	18	14.5	111.3	16	14.9	113.1	30	15.4	115.5	53	16.5	120.3	120
080112	13.9	107.3	13.9	107.5	11	14.7	109.7	23	15.5	112.0	34	16.0	114.0	18	15.5	116.0	25	17.5	120.0	66
080118	14.3	108.5	14.2	108.7	8	15.0	111.0	25	15.5	113.5	11	16.5	115.5	16	17.5	117.5	26	18.5	121.0	17
080200	14.8	109.9	14.6	110.0	5	15.3	112.5	13	16.0	114.5	18	16.5	116.8	31	17.0	119.0	56	18.0	123.0	78
080206	14.7	111.1	14.5	111.3	15	14.9	113.5	41	15.4	115.9	66	15.7	118.4	108	16.2	120.3	153	18.0	126.0	155
080212	15.0	112.1	14.8	112.3	13	15.5	114.5	37	16.0	117.0	59	16.5	119.5	139	17.0	122.0	146	19.5	125.0	120
080218	15.6	113.1	15.4	113.3	13	16.3	115.0	8	17.0	117.0	5	17.5	119.0	30	18.5	121.0	16	20.0	125.0	78
080300	16.1	114.2	16.1	114.3	5	16.8	115.5	5	17.7	118.4	17	18.7	121.4	54	19.5	122.5	37	19.5	125.0	6
080306	16.4	115.2	16.5	115.2	5	17.2	117.4	12	18.0	119.5	29	18.7	121.8	51	19.5	124.0	67	20.0	126.0	104
080312	16.7	116.2	16.8	116.2	5	17.7	118.2	12	18.5	120.2	16	19.0	122.5	38	19.5	124.5	37	20.5	128.0	108
080318	17.2	117.1	17.2	117.1	5	18.0	119.0	15	19.0	121.0	12	19.5	123.0	50	20.5	125.0	96	21.5	129.5	180
080400	17.7	118.0	17.7	118.0	0	18.5	119.9	8	19.5	121.8	21	19.9	123.7	56	20.5	125.5	98	21.0	129.5	150
080406	18.2	119.0	18.0	118.9	13	18.8	120.8	5	19.5	122.6	50	20.5	124.5	129	21.0	126.5	150	21.5	130.5	204
080412	18.6	120.0	18.5	119.9	5	19.4	121.3	41	20.1	123.5	59	20.9	125.8	123	21.5	127.2	176	23.5	131.0	259
080418	18.9	120.9	18.9	121.0	5	19.8	123.0	49	20.5	125.0	102	21.0	127.0	138	21.5	129.0	130	23.0	133.5	236
080500	19.0	122.0	18.9	122.3	5	19.2	124.2	21	19.5	126.3	47	19.8	128.4	97	20.0	130.5	126	20.5	135.5	143
080506	19.0	123.0	19.1	123.3	5	19.4	125.1	25	19.5	127.1	47	19.5	129.2	55	20.0	131.2	90	20.0	135.0	129
080512	19.0	124.0	19.0	124.3	5	18.9	125.8	8	18.9	127.8	68	18.8	129.8	56	18.8	131.8	39	18.5	135.3	125
080518	18.9	124.9	18.9	124.9	5	18.8	127.0	13	18.9	129.3	51	18.8	131.5	59	18.8	133.3	50	18.5	137.0	101
080600	18.9	125.9	18.9	125.9	5	18.9	128.0	21	19.0	130.1	33	19.0	132.2	55	19.0	134.5	58	19.0	139.4	92
080606	18.6	126.9	18.6	126.9	5	18.6	128.7	11	18.5	130.5	25	18.5	132.2	52	18.0	134.5	35	17.5	138.0	
080612	18.6	127.8	18.5	127.8	5	18.4	129.7	7	18.5	131.6	34	18.5	133.5	70	18.5	135.5	108	18.0	139.5	
080618	18.5	128.7	18.5	128.7	5	18.5	130.7	12	18.5	132.5	43	18.5	134.5	90	18.5	136.5	126	18.0	140.0	
080700	18.5	129.7	18.4	129.7	5	18.4	131.6	21	18.5	133.2	59	18.5	135.5	112	18.5	137.5	142	18.5	141.5	
080706	18.4	130.7	18.4	130.7	17	18.5	132.5	43	18.5	134.5	79	18.5	136.5	128	18.5	138.5		19.0	142.5	
080712	18.3	131.8	18.4	131.8	12	18.4	133.4	24	18.5	135.5	43	18.5	137.5	94	19.0	139.5		19.5	143.5	
080718	18.2	133.5	18.3	133.3	19	18.4	135.3	33	18.5	137.5	51	18.5	139.5		18.5	141.5		19.0	145.5	
080800	18.0	134.7	17.9	134.7	3	17.9	136.7	32	17.9	138.6	53	17.9	140.5		17.9	142.0		18.0	144.5	
080806	18.0	136.1	17.9	135.6	29	17.8	137.0	32	17.8	140.0		17.8	142.0		17.8	142.7		18.0	145.0	
080812	18.1	137.4	17.8	137.5	13	18.0	140.5	29	18.0	143.0		18.0	145.5		18.0	145.5		18.5	147.5	
080818	18.4	138.7	18.4	138.5		18.4	141.3		18.4	144.1		18.4	146.8		18.4	148.3		18.4	149.5	
080900	18.6	140.0																		

MEAN VECTOR ERRORS(NM)					19			24			41			55			87			121
NUMBER OF CASES					32			32			30			28			26			22

OFFICIAL FORECASTS IVA AUG 06-AUG 11 19

DATE/TIME GMT	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	OPERATIONAL POSITION ERROR NM	12HR FORECAST LAT.	12HR FORECAST LONG.	12HR FORECAST ERROR NM	24HR FORECAST LAT.	24HR FORECAST LONG.	24HR FORECAST ERROR NM	36HR FORECAST LAT.	36HR FORECAST LONG.	36HR FORECAST ERROR NM	48HR FORECAST LAT.	48HR FORECAST LONG.	48HR FORECAST ERROR NM	72HR FORECAST LAT.	72HR FORECAST LONG.	72HR FORECAST ERROR NM
060600	14.5	102.5	15.0	101.3	55	15.8	104.9	23	16.7	107.8	68	17.5	110.5	131	18.2	113.1	194	19.5	118.1	288
060606	14.9	103.5	15.2	103.2	44	16.0	105.5	17	16.7	107.8	21	17.5	110.0	46	18.0	112.0	92	19.5	115.0	127
060612	15.2	105.5	15.2	105.5	11	15.8	108.5	57	16.5	111.0	53	17.0	113.5	171	17.5	116.0	228	18.5	120.0	261
060618	15.7	106.5	15.5	106.1	53	17.2	108.8	54	18.5	111.0	83	19.5	113.5	157	19.0	116.0	210	20.0	120.0	224
060700	16.2	107.4	16.2	107.1	34	17.2	109.8	57	18.5	112.4	125	19.5	114.9	174	19.5	117.3	219	20.0	121.4	254
060706	16.7	108.4	16.7	108.4	5	17.2	111.1	62	17.5	113.9	156	18.0	116.2	203	18.5	118.5	229	19.5	123.0	309
060712	17.1	109.1	17.2	109.1	5	17.8	111.0	33	18.2	113.5	80	18.5	115.5	116	19.2	117.0	117	20.0	121.0	187
060718	17.6	110.0	17.5	110.2	12	18.2	111.8	22	18.5	113.5	66	19.5	115.4	51	20.0	117.2	54	21.0	121.0	171
060800	13.0	110.5	13.0	110.5	0	18.8	112.3	24	19.5	114.2	55	20.2	115.9	30	21.1	117.7	42	22.5	121.2	220
060806	18.3	111.2	18.5	111.3	13	19.4	113.1	49	20.4	115.0	24	21.1	116.9	18	21.8	119.0	126	22.5	123.0	275
060812	19.2	112.2	19.2	112.5	15	20.0	114.5	25	21.0	116.0	18	22.5	118.5	99	22.5	120.0	172	23.5	123.0	303
060818	20.0	113.2	20.0	113.5	5	21.0	115.4	62	22.5	117.4	153	24.5	119.1	248	25.1	120.9	334	26.5	124.0	
060900	20.4	114.0	20.4	114.2	11	21.0	115.9	54	22.5	117.7	132	23.5	119.4	225	24.6	121.3	316	25.5	125.5	
060906	20.6	115.0	20.7	115.3	17	21.0	117.3	55	22.5	119.4	144	23.5	121.4	237	24.5	123.5	319	24.0	127.0	
060912	20.7	115.8	20.7	115.7	50	21.0	119.0	55	21.5	121.0	152	21.5	123.0	251	22.0	125.0	312	22.5	129.0	
060918	20.6	117.2	20.9	117.1	43	21.2	119.2	58	21.5	121.2	173	21.5	123.5	242	22.0	125.8		22.0	129.5	
061000	20.5	117.8	20.9	117.8	35	21.2	119.5	73	21.5	121.2	149	21.5	123.0	203	21.3	124.6		21.9	127.9	
061006	20.4	117.5	20.9	117.3	54	21.0	119.0	24	20.5	120.0	36	20.5	121.5		20.4	123.0		20.0	125.0	
061012	20.3	117.9	20.7	118.5	52	19.5	119.0	54	19.5	120.0	66	19.5	121.5		19.0	123.5		17.5	125.5	
061018	20.2	117.9	20.5	118.2	17	19.5	119.0	13	19.5	120.0		19.5	121.5		19.0	123.5		17.5	125.5	
061100	20.0	118.3	20.1	118.3	5	19.5	119.0	13	19.5	120.0		19.5	121.5		19.0	123.5		17.5	125.5	
061106	19.9	118.7	19.8	118.7		19.5	119.3		19.5	120.5		19.5	121.5		19.0	123.5		17.5	127.0	
061112	19.7	119.1	19.5	119.1		19.2	119.7		18.5	120.4		18.5	121.5		18.0	123.0		17.5	127.0	

MEAN VECTOR ERRORS(NM)					26			44			92			153			196			239
NUMBER OF CASES					21			21			19			17			15			11

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OFFICIAL FORECASTS JHN AUG 7 18 1988

D	E/	EST TRA		CAS ER		S	AS. ERROR		A E	OR M	DRECAST ERROR	
		AT. ON		LAT.L G	A L	NM	LAT	ONG		LAT. LONG	AT. ONG	NM
	1718	19.1107.8	15.8107.1	24	19.2118.3	42	15.7	197.9		19.2111.1	20.1112.6	21.0115.0
	1500	19.5108.2	19.1108.1		19.5107.3		20.0	110.5		20.5112.0	21.0113.5	22.0117.0
	1506	20.1108.7	19.5109.0		20.1110.1		20.5	111.3		21.5112.5	21.5113.5	22.0115.0
								0		0		0
								0		0		0

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DAT E/TIME	BEST TRACK	OPERATIONAL	ERROR	12HR FORECAST	ERROR	24HR FORECAST	ERROR	36HR FORECAST	ERROR	48HR FORECAST	ERROR	72HR FORECAST	ERROR
AT	LAT. LONG.	POSITION LAT.LONG.	NM	LAT.LONG.	NM	LAT. LONG.	NM	LAT. LONG.	NM	LAT. LONG.	NM	LAT. LONG.	NM
082912	14.4100.0												
083018	15.1101.1	15.0101.0	3	15.6100.8	134	16.2101.7	193	16.3102.6	239	17.3103.4	290	18.5105.0	319
083100	15.7102.2	15.5102.5	21	16.5104.5	24	17.3106.5	21	18.0108.0	6	18.5110.0	21	19.5113.5	165
083106	16.0103.2	15.9103.5	23	17.0105.5	0	18.0107.5	20	18.7109.5	38	19.5111.5	86	20.5115.0	234
083112	16.3104.3	16.3104.6	17	17.0107.0	45	17.8109.3	76	18.5111.5	96	19.0113.5	158	19.5116.0	220
083118	16.9105.1	17.1105.3	15	18.0107.4	23	19.0109.5	54	19.7111.0	78	20.5112.5	155	21.5115.0	220
090100	17.4106.0	17.5106.0	5	18.4107.8	13	19.0109.0	41	20.0111.0	98	21.0113.0	214	22.0116.0	270
090106	17.7106.8	17.3107.0	12	18.4108.7	0	19.0110.5	33	19.5112.2	103	20.0114.0	131	21.0117.5	257
090112	18.1107.7	18.1108.2	23	18.9110.0	29	19.7112.0	105	20.4113.5	139	21.0115.0	226	21.5118.0	
090118	18.5108.5	18.3108.4	5	18.9109.8	23	19.5111.3	37	20.0112.7	153	20.5114.0	159	21.5116.5	
091100	18.4107.5	18.4108.5	0	19.3111.2	74	20.0113.0	170	20.5114.3	214	21.0116.5	251	21.5120.0	
091106	18.5109.9	18.5110.2	17	18.9111.8	61	19.3113.5	132	19.6115.0	141	19.8116.5	169	20.0119.5	
091112	18.4110.3	18.3110.5	18	18.6112.0	63	18.8113.2	72	19.0114.5	78	19.2115.8		19.5118.5	
091118	18.2110.7	17.8111.0	22	17.7112.0	24	17.5113.0	11	17.5114.0	30	17.5115.0		18.0117.0	
092100	17.8111.1	17.7111.2	3	17.7112.0	13	17.6113.0	37	17.5114.0		17.5115.0		18.0117.0	
092106	17.7111.6	17.9111.8	15	17.6112.9	47	17.5114.0	66	17.3115.0		17.2116.0		17.5119.0	
092112	17.9112.2	17.8112.4	12	17.8113.3	24	17.7114.5		17.7116.0		17.7117.5		18.0121.0	
092118	18.2112.7	18.2112.8	5	18.2113.9	15	18.3115.0		18.4116.3		18.5117.5		19.0121.0	
093100	18.3113.1	18.3113.3		18.3114.5		18.4115.5		18.5117.0		18.5118.5		19.5122.0	
093106	18.4113.5	18.6113.5		18.8117.5		18.9115.6		19.0116.5		19.0112.5			

MEAN VECTOR ERRORS(NM)	15	37	75	13	75	1		
NUMBER OF CASES	17	17	15	13	11	7		

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6th Floor, Room 691
Coral Gables, Florida 33146

DATE/TIME GMT	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION ERROR LAT.	LONG.	NM	12HR FORECAST LAT.	LONG.	ERROR NM	24HR FORECAST LAT.	LONG.	ERROR NM	36HR FORECAST LAT.	LONG.	ERROR NM	48HR FORECAST LAT.	LONG.	ERROR NM	72HR FORECAST LAT.	LONG.	ERROR NM
292113	13.6	29.7	14.0	30.0	22	14.5	32.0	50	15.0	34.0	99	15.5	36.0	124	16.0	38.0	124	17.0	42.0	103
292209	14.0	31.0	13.9	30.7	11	14.5	32.9	50	15.2	35.0	77	15.2	37.2	90	15.5	39.5	42	17.5	44.5	23
292215	14.5	32.4	14.2	32.0	33	14.7	34.3	43	15.5	36.5	74	15.5	38.8	72	16.0	41.0	62	17.5	45.5	36
292212	15.2	33.3	14.5	33.5	45	15.6	35.9	15	16.5	38.4	23	16.8	41.0	49	17.3	43.5	78	18.5	47.5	124
292213	15.8	34.9	15.3	35.0	30	17.2	37.7	25	18.2	41.2	52	19.3	44.3	132	20.0	45.5	148	21.0	48.0	174
292300	16.2	36.0	15.2	36.3	17	17.5	39.0	42	18.7	41.5	106	19.5	43.5	138	20.5	45.5	177	21.0	49.0	203
292306	16.6	37.2	15.4	37.5	25	17.5	40.2	49	18.5	43.0	115	19.3	45.1	141	20.0	47.5	181	21.0	51.5	228
292312	16.9	38.3	15.6	38.5	5	17.7	40.8	42	18.5	43.0	82	19.2	45.3	95	20.0	47.5	162	21.0	51.5	212
292313	17.1	39.2	17.0	39.2	5	18.0	41.5	47	18.5	43.5	58	19.5	46.0	120	20.0	48.0	150	21.0	52.0	200
292400	17.2	40.2	17.1	40.3	3	18.3	42.4	50	19.2	44.5	84	19.3	46.3	137	20.5	47.5	180	20.5	51.5	151
292406	17.4	41.1	17.3	41.5	25	17.9	43.8	54	18.5	45.8	60	19.3	47.3	90	19.5	49.0	132	20.5	53.5	135
292412	17.6	42.0	17.5	42.0	9	18.0	44.0	26	18.5	46.0	54	19.3	48.3	98	19.5	50.0	100	20.5	54.5	106
292418	17.7	43.1	17.6	43.2	3	17.7	45.3	3	18.2	47.2	54	19.2	49.5	54	19.3	51.5	95	20.0	55.0	100
292500	17.7	44.2	17.7	44.3	3	17.9	46.0	3	18.2	48.1	53	19.5	50.3	78	19.5	52.0	82	20.5	56.5	112
292506	17.7	45.3	17.2	45.0	34	17.3	46.9	31	17.7	48.6	109	19.6	50.3	93	19.0	52.0	91	19.5	56.5	171
292512	17.6	46.4	17.5	46.2	11	17.5	48.3	29	17.5	50.0	40	19.5	52.0	46	18.5	53.4	57	19.5	57.5	158
292600	17.6	47.7	17.5	47.4	13	17.5	49.8	17	18.0	52.0	24	19.5	54.5	45	19.0	55.5	49	20.0	59.0	
292606	17.6	48.9	17.6	48.8	3	17.9	51.0	11	19.0	53.0	13	20.0	55.1	50	19.5	56.5	76	18.5	61.5	
292612	17.5	50.0	17.6	50.0	0	17.7	52.2	25	17.7	54.5	56	17.5	57.5	155	18.0	59.0	143	19.5	63.5	
292618	17.3	51.2	17.3	51.2	5	17.9	53.4	35	19.0	55.5	94	19.5	57.5	127	18.5	59.0	156	19.5	63.5	
292700	17.1	52.3	17.0	52.3	12	18.5	55.5	32	19.0	57.0	98	19.5	59.5	111	19.5	59.0		20.0	63.5	
292706	16.9	53.4	16.8	53.4	37	18.5	55.5	61	18.5	57.5	47	19.5	59.5	54	20.0	61.5		21.0	63.5	
292712	16.8	54.5	16.8	54.5	17	18.5	55.5	45	16.5	58.0	99	19.5	59.5		19.0	61.5		19.5	63.5	
292718	16.8	55.5	16.8	55.5	17	20.5	57.5	54	21.5	59.5		19.5	59.5		19.0	62.0		19.5	63.5	
292800	16.9	56.7	16.9	56.7	13	21.5	57.5	32	22.0	59.0		22.5	59.5		23.5	61.5		23.0	63.5	
292806	17.0	57.9	17.0	57.9		20.5	57.7		21.0	59.1		21.5	59.5		21.5	61.5		21.0	63.5	
292812	17.0	59.0	17.0	59.0		20.6	58.2		20.5	59.3		21.5	59.5		21.5	61.5		21.0	63.5	

MEAN VECTOR ERRORS(NM) 25 | 17 | 140
NUMBER OF CASES 22 | 0 | 16

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25 1988

DATE/TIME GMT	BEST TRACK LAT.	LONG.	OPERATIONAL POSITION ERROR LAT.	LONG.	NM	12HR FORECAST LAT.	LONG.	ERROR NM	24HR FORECAST LAT.	LONG.	ERROR NM	36HR FORECAST LAT.	LONG.	ERROR NM	48HR FORECAST LAT.	LONG.	ERROR NM	72HR FORECAST LAT.	LONG.	ERROR NM
102312	12.5	87.7	12.4	87.4	13	12.5	89.1	54	12.5	90.5	59	12.9	91.9	53	13.2	93.2	67	14.5	95.0	
102318	12.8	88.5	12.7	88.5	5	13.1	90.3	65	13.3	91.9	71	13.9	93.2	54	14.3	94.5		15.0	95.5	
102400	12.8	88.5	13.1	89.5	61	13.6	91.5	17	14.2	93.2	41	14.5	94.6	46	15.0	96.3		16.0	98.5	
102406	13.0	89.2	13.5	90.2	55	14.3	92.0	25	15.2	93.3	43	16.3	94.5		17.0	96.0		19.0	99.0	
102412	13.3	90.0	13.4	90.4	24	13.6	91.0	55	13.3	92.0	76	14.0	93.0		14.5	94.5		15.5	97.5	
102418	13.5	90.7	14.1	91.4	54	14.6	92.8	53	15.3	93.0		15.3	94.2		15.8	97.4		15.7	99.8	
102500	13.8	91.5	14.2	92.5	63	14.7	94.1	13	15.2	95.7		15.7	97.2		16.3	98.7		17.5	101.5	
102506	14.0	92.1	14.5	93.1		14.9	94.7		15.3	95.2		16.0	98.0		15.5	99.5		18.0	102.5	
102512	14.2	92.3	14.7	93.3		15.1	95.3		15.5	96.8		16.1	98.4		15.7	99.9		18.0	103.0	

MEAN VECTOR ERRORS(NM) 43 | 41 | 58 | 58 | 58 | 0
NUMBER OF CASES 7 | 7 | 5 | 3 | 1 | 0

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1988 SUMMARY FOR OFFICIAL

	PSN. ERR	12HR	24HR	36HR	48HR	72HR
AVERAGE ERROR FOR ALL STORMS	20	33	65	96	133	175
NUMBER OF CASES	175	175	150	128	108	74

Table 3b. Best track wind speed verification for 1988 Eastern Pacific tropical cyclones.

VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM ALETTA

	INITIAL	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 061700Z DATA	-5.0	-15.0	-10.0	-5.0	.0	
FORECAST MADE FROM 061706Z DATA	-10.0	-5.0	.0	-5.0	-5.0	
FORECAST MADE FROM 061712Z DATA	-5.0	-5.0	.0	10.0	15.0	
FORECAST MADE FROM 061718Z DATA	-10.0	-10.0	-5.0	5.0		
FORECAST MADE FROM 061800Z DATA	-10.0	-5.0	5.0	15.0		
FORECAST MADE FROM 061806Z DATA	-10.0	-10.0	-5.0			
FORECAST MADE FROM 061812Z DATA	-5.0	.0	15.0			
FORECAST MADE FROM 061818Z DATA	-10.0	-5.0				
FORECAST MADE FROM 061900Z DATA	-5.0	5.0				
FORECAST MADE FROM 061906Z DATA						
FORECAST MADE FROM 061912Z DATA						

SUMMARY: STORM ALETTA

MEAN ERRORS (KTS)	-7.8	-5.6	.0	4.0	3.3	.0
MEAN ABSOLUTE ERROR (KTS)	7.8	6.7	5.7	8.0	9.7	.0
STANDARD ERROR (KTS)	2.5	5.3	8.2	8.9	10.4	.0
NUMBER OF CASES	5	9	7	5	3	0

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VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM BUD

	INITIAL	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 052112Z DATA	-5.0	-5.0	-5.0			
FORECAST MADE FROM 052118Z DATA	-5.0	-5.0				
FORECAST MADE FROM 052200Z DATA	.0	5.0				
FORECAST MADE FROM 052206Z DATA						
FORECAST MADE FROM 052212Z DATA						

SUMMARY: STORM BUD

MEAN ERRORS (KTS)	-3.3	-1.7	-5.0	.0	.0	.0
MEAN ABSOLUTE ERROR (KTS)	3.3	5.0	5.0	.0	.0	.0
STANDARD ERROR (KTS)	2.9	5.8	.0	.0	.0	.0
NUMBER OF CASES	5	3	1	0	0	0

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VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM CARLOTTA

	INITIAL	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 071212Z DATA	5.0	-5.0	-10.0	-5.0	5.0	10.0
FORECAST MADE FROM 071218Z DATA	.0	-5.0	.0	5.0	20.0	50.0
FORECAST MADE FROM 071300Z DATA	.0	.0	5.0	15.0	30.0	50.0
FORECAST MADE FROM 071306Z DATA	5.0	10.0	15.0	10.0	5.0	
FORECAST MADE FROM 071312Z DATA	.0	5.0	15.0	20.0	15.0	
FORECAST MADE FROM 071318Z DATA	5.0	10.0	20.0	20.0	15.0	
FORECAST MADE FROM 071400Z DATA	.0	5.0	10.0	5.0	20.0	
FORECAST MADE FROM 071406Z DATA	.0	.0	-10.0	-10.0		
FORECAST MADE FROM 071412Z DATA	.0	.0	-10.0	.0		
FORECAST MADE FROM 071418Z DATA	.0	-5.0	.0			
FORECAST MADE FROM 071500Z DATA	.0	.0	15.0			
FORECAST MADE FROM 071506Z DATA	.0	5.0				
FORECAST MADE FROM 071512Z DATA	-5.0	10.0				
FORECAST MADE FROM 071518Z DATA						
FORECAST MADE FROM 071600Z DATA						

: STORM CARLOTTA

MEAN ERRORS (KTS)						
MEAN ABSOLUTE ERROR (KTS)	1.5	4.6	1	1		
STANDARD ERROR (KTS)						
NUMBER OF CASES						

VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM DANIEL

FORECAST MADE FROM 072000Z DATA	.0	-5.0	.0	5.0	5.0	15.0
FORECAST MADE FROM 072006Z DATA	5.0	5.0	10.0	10.0	15.0	25.0
FORECAST MADE FROM 072012Z DATA	.0	5.0	10.0	10.0	20.0	20.0
FORECAST MADE FROM 072018Z DATA	.0	.0	.0	.0	5.0	-5.0
FORECAST MADE FROM 072100Z DATA	.0	.0	.0	5.0	5.0	-10.0
FORECAST MADE FROM 072106Z DATA	.0	-5.0	.0	5.0	.0	-10.0
FORECAST MADE FROM 072112Z DATA	.0	.0	5.0	5.0	.0	-5.0
FORECAST MADE FROM 072118Z DATA	.0	5.0	10.0	5.0	-5.0	-5.0
FORECAST MADE FROM 072200Z DATA	.0	5.0	5.0	-5.0	-20.0	-10.0
FORECAST MADE FROM 072206Z DATA	-5.0	.0	-5.0	-10.0	-20.0	-5.0
FORECAST MADE FROM 072212Z DATA	.0	-5.0	-10.0	-20.0	-20.0	-10.0
FORECAST MADE FROM 072218Z DATA	.0	-5.0	-15.0	-20.0	-15.0	
FORECAST MADE FROM 072300Z DATA	.0	-5.0	-20.0	-15.0	-10.0	
FORECAST MADE FROM 072306Z DATA	-5.0	-10.0	-20.0	-10.0	-5.0	
FORECAST MADE FROM 072312Z DATA	-5.0	-15.0	-15.0	-5.0	5.0	
FORECAST MADE FROM 072318Z DATA	-5.0	-15.0	-10.0	-5.0		
FORECAST MADE FROM 072400Z DATA	-5.0	-5.0	.0	0		
FORECAST MADE FROM 072406Z DATA	-10.0	-5.0	5.0			
FORECAST MADE FROM 072412Z DATA	-5.0	.0	.0			
FORECAST MADE FROM 072418Z DATA	.0	5.0				
FORECAST MADE FROM 072500Z DATA	.0	.0				
FORECAST MADE FROM 072506Z DATA						
FORECAST MADE FROM 072512Z DATA						

MEAN ERROR (KTS)	.7	2.4	6			
MEAN ABSOLUTE ERROR (KTS)	2.1	4.3	7.4	7.9	10.0	10.9
	3.	0	9.3	9.7	12.5	13.2
	2	1	19	17	15	11

VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM EMILIA

	INITIA	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 072912Z DATA	.0	-10.0	-15.0	-5.0	10.0	
FORECAST MADE FROM 072918Z DATA	.0	-10.0	-10.0	5.0	15.0	
FORECAST MADE FROM 073000Z DATA	-10.0	-15.0	-5.0	10.0		
FORECAST MADE FROM 073006Z DATA	-10.0	-15.0	.0	10.0		
FORECAST MADE FROM 073012Z DATA	-15.0	-10.0	5.0			
FORECAST MADE FROM 073018Z DATA	-15.0	.0	10.0			
FORECAST MADE FROM 073100Z DATA	-10.0	5.0				
FORECAST MADE FROM 073106Z DATA	.0	5.0				
FORECAST MADE FROM 073112Z DATA						
FORECAST MADE FROM 073118Z DATA						

SUMMARY: STORM EMILIA

MEAN ERRORS (KTS)	-7.5	-6.3	-2.5	5.0	12.5	0
MEAN ABSOLUTE ERROR (KTS)	7.5	8.8	7.5	7.5	12.5	.0
STANDARD ERROR (KTS)	6.5	8.3	9.4	7.[illegible]	3.5	.0
NUMBER OF CASES	8	8	6	4	2	0

VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FO STOR FABI

	INITIAL	12H	24H	36H	48H	60H
FORECAST MADE FROM 072918Z DATA	.0	-10.0	-5.0	5.0	.0	-10.0
FORECAST MADE FROM 073000Z DATA	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
FORECAST MADE FROM 073006Z DATA	.0	.0	5.0	10.0	20.0	15.0
FORECAST MADE FROM 073012Z DATA	5.0	10.0	10.0	15.0	20.0	10.0
FORECAST MADE FROM 073018Z DATA	.0	10.0	15.0	15.0	10.0	
FORECAST MADE FROM 073100Z DATA	-5.0	-10.0	-15.0	-15.0	-20.0	
FORECAST MADE FROM 073106Z DATA	-5.0	-10.0	-15.0	-15.0	-25.0	
FORECAST MADE FROM 073112Z DATA	-5.0	-10.0	-10.0	-15.0	-25.0	
FORECAST MADE FROM 073118Z DATA	.0	.0	.0	-10.0		
FORECAST MADE FROM 080100Z DATA	-5.0	-5.0	-10.0	-25.0		
FORECAST MADE FROM 080106Z DATA	.0	.0	-5.0			
FORECAST MADE FROM 080112Z DATA	-5.0	-5.0	-10.0			
FORECAST MADE FROM 080118Z DATA	.0	-10.0				
FORECAST MADE FROM 080200Z DATA	.0	-5.0				
FORECAST MADE FROM 080206Z DATA						
FORECAST MADE FROM 080212Z DATA						

JMMARY: STORM FABI

MEAN ERRORS (KTS)	1.3	3.6	3			
MEAN ABSOLUTE ERROR (KTS)	2.5	6.4	8.3	1[illegible].0	15.6	10.0
SD RR (KTS)	3.2	6.9	9.6	14.3	13.9	11.9
NO CA	14	14	12	10		

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VERIFICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FO STOR BILL

	INITIAL	12H	24H	36H	48H	60H
FORECAST MADE FROM 072906Z DATA	-4.0	-10.0	5.0			
FORECAST MADE FROM 072912Z DATA	-10.0	-10.0	5.0			
FORECAST MADE FROM 072918Z DATA	-5.0	5.0				
FORECAST MADE FROM 073000Z DATA	-10.0	.0				
FORECAST MADE FROM 073006Z DATA						
FORECAST MADE FROM 073012Z DATA						

MARY: STORM

MEAN ERRORS (K)	-7.[illegible]	-3.[illegible]	5.0	.0	.0	.0
MEAN ABSOLUTE ERROR (K)						
STANDARD ERROR (KTS)	3.2	7.5	.0	.0	.0	.0
NUMBER OF CASES	4	4	2	0	0	0

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CO

ERRORS(KTS) FOR STORM VECTOR

FORECAST MADE FROM 073118Z DATA	.0	.0	-5.0	-25.0	-50.0	-55.0
FORECAST MADE FROM 080000Z DATA	.0	-5.0	-15.0	-40.0	-55.0	-50.0
FORECAST MADE FROM 080006Z DATA	.0	-5.0	-20.0	-50.0	-50.0	-45.0
FORECAST MADE FROM 080112Z DATA	.0	-10.0	-40.0	-55.0	-60.0	-35.0
FORECAST MADE FROM 080118Z DATA	.0	-25.0	-55.0	-60.0	-55.0	-35.0
FORECAST MADE FROM 080200Z DATA	-5.0	-35.0	-55.0	-55.0	-50.0	-25.0
FORECAST MADE FROM 080206Z DATA	10.0	-20.0	-25.0	-20.0	-10.0	15.0
FORECAST MADE FROM 080212Z DATA	10.0	-5.0	.0	.0	.0	.0
FORECAST MADE FROM 080218Z DATA	10.0	5.0	.0	5.0	10.0	5.0
FORECAST MADE FROM 080300Z DATA	5.0	.0	.0	5.0	10.0	5.0
FORECAST MADE FROM 080306Z DATA	.0	5.0	5.0	10.0	15.0	.0
FORECAST MADE FROM 080312Z DATA	.0	.0	5.0	10.0	15.0	-5.0
FORECAST MADE FROM 080318Z DATA	-5.0	.0	10.0	15.0	.0	-20.0
FORECAST MADE FROM 080400Z DATA	-5.0	10.0	15.0	20.0	-5.0	-30.0
FORECAST MADE FROM 080406Z DATA	-5.0	10.0	15.0	20.0	-5.0	-30.0
FORECAST MADE FROM 080412Z DATA	-5.0	-5.0	-5.0	-10.0	-25.0	-35.0
FORECAST MADE FROM 080418Z DATA	-10.0	-10.0	-15.0	-25.0	-40.0	-40.0
FORECAST MADE FROM 080500Z DATA	-5.0	.0	-5.0	-20.0	-35.0	-35.0
FORECAST MADE FROM 080506Z DATA	.0	.0	-10.0	-35.0	-45.0	-35.0
FORECAST MADE FROM 080512Z DATA	.0	.0	-15.0	-30.0	-35.0	-35.0
FORECAST MADE FROM 080518Z DATA	.0	-5.0	-20.0	-30.0	-40.0	-30.0
FORECAST MADE FROM 080600Z DATA	.0	-10.0	-30.0	-25.0	-35.0	-15.0
FORECAST MADE FROM 080606Z DATA	.0	-15.0	-30.0	-30.0	-30.0	-15.0
FORECAST MADE FROM 080612Z DATA	-5.0	-15.0	-30.0	-25.0	-25.0	
FORECAST MADE FROM 080618Z DATA	-5.0	-10.0	-15.0	.0	5.0	
FORECAST MADE FROM 080700Z DATA	-5.0	-5.0	.0	5.0	10.0	
FORECAST MADE FROM 080706Z DATA	.0	-5.0	.0	10.0	15.0	
FORECAST MADE FROM 080712Z DATA	-5.0	.0	5.0	15.0		
FORECAST MADE FROM 080718Z DATA	-5.0	5.0	15.0	20.0		
FORECAST MADE FROM 080800Z DATA	.0	.0	10.0			
FORECAST MADE FROM 080806Z DATA	.0	10.0	15.0			
FORECAST MADE FROM 080812Z DATA	.0	10.0				
FORECAST MADE FROM 080818Z DATA	.0	10.0				
FORECAST MADE FROM 080900Z DATA						
FORECAST MADE FROM 080906Z DATA						

SUMMARY: STORM VECTOR

MEAN ERRORS (KTS)	-.8	-3.6	-8.7	-13.3	-21.3	-21.7
ABSOLU ERROR (KTS	3.2	7.5	4.	23.1	27.2	33.9
STANDARD ERROR (KTS	5	3	5	1	4	6
NUMBER OF CASES	35	33	31	29	27	23

31 co

R F OF OFFICIAL MAX WIND FORECASTS

ERRORS KTS FOR STORM

	INITIAL	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 080500Z DATA	-5.0	-10.0	-20.0	-12.0	-25.0	-7.0
FORECAST MADE FROM 080506Z DATA	-5.0	-10.0	-15.0	-27.0	-25.0	-7.0
FORECAST MADE FROM 080512Z DATA	.0	-15.0	-12.0	-30.0	-20.0	3.0
FORECAST MADE FROM 080518Z DATA	.0	-5.0	-19.0	-15.0	-5.0	20.0
FORECAST MADE FROM 080700Z DATA	-5.0	-2.0	-20.0	-15.0	-4.0	30.0
FORECAST MADE FROM 080706Z DATA	.0	-14.0	-15.0	-10.0	1.0	30.0
FORECAST MADE FROM 080712Z DATA	-2.0	-20.0	-15.0	-4.0	0.0	40.0
FORECAST MADE FROM 080718Z DATA	-19.0	-20.0	-15.0	-4.0	20.0	45.0
FORECAST MADE FROM 080800Z DATA	.0	5.0	16.0	25.0	40.0	50.0
FORECAST MADE FROM 080806Z DATA	.0	5.0	11.0	25.0	50.0	50.0
FORECAST MADE FROM 080812Z DATA	-5.0	-4.0	-2.0	10.0	10.0	10.0
FORECAST MADE FROM 080818Z DATA	-5.0	-4.0	10.0	10.0	15.0	
FORECAST MADE FROM 080900Z DATA	1.0	-2.0	15.0	20.0	15.0	
FORECAST MADE FROM 080906Z DATA	-4.0	5.0	.0	5.0	.0	
FORECAST MADE FROM 080912Z DATA	-2.0	10.0	10.0	10.0	.0	
FORECAST MADE FROM 080918Z DATA	.0	.0	5.0	.0		
FORECAST MADE FROM 081000Z DATA	.0	5.0	10.0	.0		
FORECAST MADE FROM 081006Z DATA	-5.0	5.0	.0			
FORECAST MADE FROM 081012Z DATA	.0	.0	-10.0			
FORECAST MADE FROM 081018Z DATA	.0	.0				
FORECAST MADE FROM 081100Z DATA	.0	-5.0				
FORECAST MADE FROM 081106Z DATA						
FORECAST MADE FROM 081112Z DATA						
RORS (K S	2.	3.6	3.5	.9	4.3	2..8
MEAN ABSOLUTE ERROR (KTS	2	0				
STANDARD ERROR (	4.4	8.5	12.9	16.5	18.8	20.6
NUMBER OF CASES	21	21	19	17	15	11

** ********** *****

VERIFICATION OF OFFICI MAX WIND FORECAS

ERRORS(KTS) FOR STORM JOHN

FORECAST MADE FROM 081718Z DA						
FORECAST MADE FROM 081800Z DA						
FORECAST MADE FROM 081806Z DA						

SUMMARY: STORM JOHN

MEAN ERRORS (KTS)	.0	5.0	.0	.0	.0	.0
ERROR (KTS)	.0	5.0	.0	.0	.0	.0
STANDARD ERROR (KTS)	.0	.0	.0	.0	.0	.0
NUMBER OF CASES	1	1	0	0	0	0

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ued.

FICATION OF OFFICIAL MAX WIND FORECASTS

ERRORS(KTS) FOR STORM (R

	INITIAL	12HR	24HR	36HR	48HR	72HR
FORECAST MADE FROM 082212Z DAT						
FORECAST MADE FROM 082215Z DATA	-10.0	-15.0	-20.0	-25.0	-25.0	-15.0
FORECAST MADE FROM 083000Z DATA	-10.0	-20.0	-25.0	-25.0	-30.0	-15.0
FORECAST MADE FROM 083006Z DATA	-10.0	-15.0	-15.0	-10.0	-15.0	5.0
FORECAST MADE FROM 083012Z DATA	-10.0	-15.0	-15.0	-20.0	-15.0	5.0
FORECAST MADE FROM 083015Z DATA	5.0	.0	.0	-5.0	.0	20.0
FORECAST MADE FROM 083100Z DATA	.0	.0	-10.0	-5.0	.0	20.0
FORECAST MADE FROM 083106Z DATA	.0	-5.0	-10.0	.0	5.0	25.0
FORECAST MADE FROM 083112Z DATA	.0	-10.0	-10.0	.0	5.0	
FORECAST MADE FROM 083115Z DATA	.0	-5.0	.0	5.0	15.0	
FORECAST MADE FROM 091100Z DATA	-5.0	.0	5.0	10.0	20.0	
FORECAST MADE FROM 091106Z DATA	-10.0	-5.0	.0	10.0	15.0	
FORECAST MADE FROM 091112Z DATA	-5.0	.0	5.0	15.0		
FORECAST MADE FROM 091115Z DATA	-5.0	.0	10.0	20.0		
FORECAST MADE FROM 091200Z DATA	.0	10.0	20.0			
FORECAST MADE FROM 091206Z DATA	5.0	15.0	20.0			
FORECAST MADE FROM 091212Z DATA	.0	10.0				
FORECAST MADE FROM 091215Z DATA	.0	5.0				
FORECAST MADE FROM 091300Z DATA						
FORECAST MADE FROM 091306Z DATA						

ARY: STO

ME ABSOL T ERRO (KTS)	4.	7	3.3 1 0	3	2.3 3	6.4
STANDA D E ROR (KTS)	5.3	9.2	13.5	14.7	15.3	15.5
NUMBE R OF CASE	17	17	1	1	1	7

OF OFFICIAL MAX WIND FOR ST

ERRORS(KTS) FOR STORM LANE

FORECAST MADE FROM 092115Z DATA	-5.0	-10.0	-10.0	-10.0	-25.0	-15.0
FORECAST MADE FROM 092200Z DATA	-5.0	-10.0	-15.0	-20.0	-30.0	-15.0
FORECAST MADE FROM 092206Z DATA	.0	-10.0	-15.0	-20.0	-25.0	-15.0
FORECAST MADE FROM 092212Z DATA	.0	-5.0	-15.0	-20.0	-25.0	-15.0
FORECAST MADE FROM 092215Z DATA	.0	-5.0	-20.0	-25.0	-20.0	-15.0
FORECAST MADE FROM 092300Z DATA	.0	-10.0	-20.0	-20.0	-20.0	-15.0
FORECAST MADE FROM 092306Z DATA	.0	-10.0	-10.0	-10.0	-15.0	-5.0
FORECAST MADE FROM 092312Z DATA	.0	-10.0	-5.0	-5.0	-10.0	.0
FORECAST MADE FROM 092315Z DATA	.0	.0	5.0	.0	-5.0	.0
FORECAST MADE FROM 092400Z DATA	.0	5.0	5.0	.0	-5.0	-10.0
FORECAST MADE FROM 092406Z DATA	.0	10.0	10.0	5.0	-5.0	-5.0
FORECAST MADE FROM 092412Z DATA	5.0	10.0	10.0	5.0	.0	.0
FORECAST MADE FROM 092418Z DATA	.0	.0	.0	-5.0	-5.0	5.0
FORECAST MADE FROM 092500Z DATA	.0	.0	.0	-5.0	-10.0	-5.0
FORECAST MADE FROM 092506Z DATA	.0	.0	-5.0	-10.0	-15.0	-5.0
FORECAST MADE FROM 092512Z DATA	.0	.0	-5.0	-10.0	-10.0	15.0
FORECAST MADE FROM 092518Z DATA	.0	-5.0	-5.0	-5.0	.0	
FORECAST MADE FROM 092600Z DATA	-5.0	-5.0	-10.0	-5.0	.0	
FORECAST MADE FROM 092606Z DATA	-5.0	-5.0	-5.0	-5.0	.0	
FORECAST MADE FROM 092612Z DATA	.0	-5.0	-5.0	5.0	10.0	
FORECAST MADE FROM 092618Z DATA	.0	.0	5.0	10.0		
FORECAST MADE FROM 092700Z DATA	.0	5.0	10.0	15.0		
FORECAST MADE FROM 092706Z DATA	5.0	10.0	15.0			
FORECAST MADE FROM 092712Z DATA	5.0	10.0	15.0			
FORECAST MADE FROM 092718Z DATA	5.0	10.0				
FORECAST MADE FROM 092800Z DATA	5.0	10.0				
FORECAST MADE FROM 092806Z DATA						
FORECAST MADE FROM 092812Z DAT						

SUMMARY: STORM LANE

MEAN ERRORS (KTS)	2	-.3	-2.5	-5.1	-7.3	-5.3
MEAN ABSOLUTE ERROR (KTS)	1.7	6.2	8.9	9.3	10.7	9.4
STANDARD ERROR (KTS	3.0	7.4	0.5	2.2	11.	9.0
NUMBER OF CASES	25	25	24	22	20	15

Table 3b. continued.

SUMMARY: ALL 12 STORMS

	INITIAL	12HR	24HR	36HR	48HR	72HR
MEAN ERRORS (KTS)	-2.1	-2.7	-3.4	-4.5	-6.0	-2.7
MEAN ABSOLUTE ERROR (KTS)	3.2	5.5	10.2	13.3	16.1	17.5
STANDARD ERROR (KTS)	5.0	8.5	13.4	17.5	20.9	21.1
NUMBER OF CASES	170	170	147	126	108	75

LEGEND FOR TABLE 4.

OBSERVATIONAL UNIT

Satellite

GOES-6 = Geostationary Operational Environmental Satellite

RESOLUTION

Satellite

Classification confidence*, location and confidence**, visable or infrared resolution (km).

* 1 =completely certain as to current intensity number used.
2 =tends to vary up and down by 1/2 T or S number.
3 =might vary up or down by one T or S number, or more.

**1 =well defined eye with certain picture registration.
2 =well defined eye with uncertain picture registration.
3 =well defined circulation center with certain picture registration.
4 =well defined circulation center with uncertain picture registration.
5 =poorly defined circulation center with certain picture registration.
6 =poorly defined circulation center with uncertain picture registration

(Example-1,1, Vsbl,1 = classification confidence 1, location confidence 1, visible picture with 1 kilometer resolution.)

(Example-2,5, IR 8 = classificition confidence 2, location confidence 5, infrared picture with 8 kilometer resolution.)

Table 4. Center Fix positions and intensity evaluations for 1988 Tropical Cyclones.

CENTER FIXES

TROPICAL STORM ALETTA 17-21 JUNE 1988

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	17	0000	15.2	101.4	35		1005						GOES 7	2,- VIS 1	
02	17	0530	15.8	102.6	45		1000						GOES 7	2,5 VIS 8	
03	17	1200	15.5	103.0	55		994						GOES 7	2,5 IR 8	
04	17	1637	15.9	102.5	45		1000						SIX DMSP		
05	17	1800	15.8	102.1	55		994						GOES 7	2,3 VIS 1	
06	18	0000	15.7	101.8	55		994						GOES 7	2,3 VIS 1	
07	18	0530	15.9	102.1	55		994						GOES 7	2,5 IR 8	
08	18	1200	16.3	102.7	55		994						GOES 7	2,5 IR 1	
09	18	1500	16.7	103.4									GOES 7	-,5 VIS 1	
10	18	1800	16.7	101.8	55		994						GOES 7	2,3 VIS 1	
11	19	0000	17.0	102.3	55		994						GOES 7	1,3 VIS 1	
12	19	0530	17.2	103.7	55		994						GOES 7	2,5 IR 8	
13	19	1200	17.4	104.1	45		1000						GOES 7	2,5 IR 8	
14	19	1500	17.5	103.8									GOES 7	-,- VIS 1	
15	19	1800	17.5	104.2	35		1005						GOES 7	2,3 VIS 1	
16	20	0000	17.5	105.0									GOES 7	2,3 VIS 1	
17	20	0439	17.8	105.5	25								FIV DMSP		
18	20	0530	17.3	106.8									GOES 7	-,3 IR 8	
19	20	1200	17.5	106.3									GOES 7	-,- ----	
20	20	1800	17.5	106.4									GOES 7	-,- VIS 1	
21	21	0000	17.3	107.5									GOES 7	-,5 VIS 1	
22	21	1200	16.5	108.0									GOES 7	-,5 IR 4	

CENTER FIXES

TROPICAL STORM BUD 21-23 JUNE 1988

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	POSITION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT. LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	TEMP. C IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	21	0000	12.0	93.5									GOES 7	2,3 VIS 1	
02	21	0600	13.6	93.1	30		1009						GOES 7	2,5 IR 8	
03	21	1200	13.6	93.5	30		1009						GOES 7	2,5 IR 8	
04	21	1800	14.4	95.3	35		1005						GOES 7	2,3 VIS 8	
05	22	0000	14.5	95.9	45		1000						GOES 7	2,3 VIS 1	
06	22	0600	14.9	97.2	45		1000						GOES 7	-,- IR 8	
07	22	1200	15.6	97.9	45		1000						GOES 7	2,5 IR 8	
08	22	1800	16.0	100.0	35		1005						GOES 7	2,3 VIS 1	
09	23	0000	16.6	99.8	30		1009						GOES 7	2,5 VIS 1	
10	23	1620	17.0	101.4	25								SIX/DMSP		

CENTER FIXES

HURRICANE CARLOTTA 08-15 July 1988

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	POSITION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	TEMP. C IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	08	0000											GOES 7	-,5 VIS 1	
02	08	0600											GOES 7	-,5 IR 8	
03	08	1200											GOES 7	-,5 IR 8	
04	08	1500			25								GOES 7	2,5 VIS 1	
05	08	1800			30		1009						GOES 7	2,5 VIS 1	
06	09	0000			30		1009						GOES 7	2,3 IR 8	
07	09	0300			30		1009						GOES 7	1,5 IR 8	
08	09	0600			30		1009						GOES 7	2,5 IR 8	
09	09	1200			35		1005						GOES 7	2,5 IR 8	
10	09	1500			35		1005						GOES 7	2,5 VIS 1	
11	09	1800			45		1000						GOES 7	2,5 VIS 1	
12	10	0000			45		1000						GOES 7	2,3 VIS 1	
13	10	0600			55		994						GOES 7	2,5 IR 8	
14	10	1200			55		994						GOES 7	2,5 IR 8	
15	10	1500											GOES 7	-,5 VIS 1	
16	10	1800			55		994						GOES 7	2,5 VIS 1	
17	11	0000			55		994						GOES 7	2,5 VIS 1	
18	11	0600			55		994						GOES 7	2,5 IR 8	
19	11	1200			55		994						GOES 7	2,5 IR 8	
20	11	1500											GOES 7	-,5 VIS 1	
21	11	1800			45		1000						GOES 7	2,5 VIS 1	
22	12	0000			55		994						GOES 7	2,3 VIS 1	
23	12	0600			55		994						GOES 7	2,5 IR 8	
24	12	1200			45		1000						GOES 7	2,5 IR 8	
25	12	1650			45		1000						FIV/DMSP		
26	12	1800			45		1000						GOES 6	2,5 VIS 1	
27	13	0000			35		1005						GOES 7	2,3 IR 8	
28	13	0600			30		1009						GOES 7	2,5 IR 8	
29	13	1200			25								GOES 6	2,5 IR 8	
30	13	1800	[illegible]	[illegible]									GOES 6	-,5 VIS 1	

CENTER FIXES

Hurricane CARLOTTA (continued)

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	POSITION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	TEMP. C IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
31	14	0000	21.6	124.3									GOES 7	-,3 VIS 1	
32	14	0600	21.0	125.0									GOES 6	-,5 IR 8	
33	14	1200	21.8	127.4									GOES 6	-,5 IR 8	
34	14	1500	21.0	126.5									GOES 7	-,5 VIS 1	
35	14	1800	21.5	126.2									GOES 7	-,5 VIS 1	
36	15	0000	21.0	127.1									GOES 7	-,3 VIS 1	
37	15	0600	21.0	127.6									GOES 6	-,5 IR 8	
38	15	1200	21.0	128.2									GOES 6	-,5 IR 8	

Post season analysis of the satellite data indicates that Carlotta reached minimal hurricane strength (65 KTS) at 11/1200Z and maintained minimal hurricane status until 12/0000Z on the 12th.

CENTER FIXES

TROPICAL STORM DANIEL 19-26 July 1988

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	19	0000	14.2	111.1									GOES 6	-,5 VIS 1	
02	19	0600	13.4	112.1	25								GOES 6	2,5 IR 8	
03	19	1200	13.6	112.3	25								GOES 7	2,5 IR 8	
04	19	1613	15.7	112.9	25								FIV/DMSP		
05	19	1800	15.0	113.1	35		1005						GOES 7	2,5 VIS 1	
06	20	0000	15.0	113.2	35		1005						GOES 6	2,3 VIS 1	
07	20	0242	15.6	112.9	35		1005						SIX/DMSP		
08	20	0600	15.7	113.6	35		1005						GOES 6	2,5 IR 8	
09	20	0900	14.9	114.1	45		1000						GOES 6	2,3 IR 8	
10	20	1200	15.0	114.3	45		1000						GOES 7	2,5 IR 8	
11	20	1735	16.3	115.0	30		1009						FIV/DMSP		
12	20	1800	15.7	114.7	45		1000						GOES 7	2,5 VIS 1	
13	21	0000	16.0	115.4	45		1000						GOES 6	2,5 VIS 1	
14	21	0230	16.1	115.5	35		1005						SIX/DMSP		
15	21	0600	16.0	116.5	45		1000						GOES 6	2,5 IR 8	
16	21	1200	17.0	117.4	45		1000						GOES 7	2,5 IR 8	
17	21	1800	17.6	118.6	50		997						GOES 7	2,3 VIS 1	
18	22	0000	18.6	119.5	45		1000						GOES 6	2,3 VIS 1	
19	22	0600	19.0	120.7	45		1000						GOES 6	2,3 IR 8	
20	22	1200	19.0	122.3	40		1003						GOES 7	2,5 IR 8	
21	22	1800	19.2	123.3	40		1003						GOES 7	1,3 VIS 1	
22	23	0000	19.4	124.4	45		1000						GOES 6	2,3 VIS 1	
23	23	0600	19.7	125.5	35		1005						GOES 7	2,5 IR 8	
24	23	1200	20.2	126.2	40		1003						GOES 7	2,5 IR 8	
25	23	1800	21.6	127.1	40		1003						GOES 7	2,3 VIS 1	
26	24	0000	22.3	128.3	55		994						GOES 7	2,3 VIS 1	
27	24	0600	22.6	129.3	55		994						GOES 7	3,5 IR 8	
28	24	1200	23.3	130.6	45		1000						GOES 7	2,5 IR 8	
29	24	1800	23.7	131.1	45		1000						GOES 7	1,3 VIS 1	
30	24	2100	24.1	131.6									GOES 6	-,2 VIS 1	

CENTER FIXES

TROPICAL CYCLONE DANIEL (continued)

FIX	DATE		POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. SLP 700MB	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ALT.
31	25	0000	24.4	132.1	35		1005					GOES 7	2,2 VIS 1	
32	25	0300	24.7	131.9								GOES 6	-,5 IR 8	
33	25	0322	24.5	132 5	35							FOR/DMSP		
34	25	0600	25.0	133.5	35							GOES 7	3,5 IR 8	
35	25	1200	25.3	134.2	30							GOES 6	2,5 IR 8	
36	25	1800	25.7	134.9	30							GOES 6	2,5 VIS 1	
37	26	0000	25.8	135.0								GOES 6	-,3 VIS 1	
38	26	0600	26.3	134.2								GOES 7	-,5 IR 8	
39	26	1200	26.3	135.7								GOES 6	-,5 IR 8	

CENTER FIXES

TROPICAL STORM EMILIA 27 July - 02 August 1988

FIX	DATE	TIME	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	27	1500	13.5	108.1	25								GOES 6	2,5 VIS 1	
02	27	1800	13.7	108.6	25								GOES 6	2,5 VIS 1	
03	28	0000	14.3	109.5	30		1009						GOES 6	2,5 VIS 1	
04	28	0600	14.3	110.1	30		1009						GOES 7	2,5 IR 8	
05	28	1200	14.6	110.7	30		1009						GOES 6	2,5 IR 8	
06	28	1638	15.7	111.5	25								FIV/DMSP		
07	28	1800	14.9	111.2	30		1009						GOES 6	2,5 VIS 1	
08	28	2100	15.2	111.6									GOES 6	-,2 VIS 1	
09	29	0000	15.0	111.8	30		1009						GOES 6	2,5 VIS 1	
10	29	0232	14.6	113.3	25								FIV/DMSP		
11	29	0300	15.1	112.1									GOES 6	-,5 IR 4	
12	29	0600	15.0	112.6	30		1009						GOES 7	2,5 IR 8	
13	29	1200	15.0	114.0	30		1009						GOES 6	2,5 IR 4	
14	29	1800	15.3	114.3	45		1000						GOES 6	2,5 VIS 1	
15	30	0000	15.0	115.3	45		1000						GOES 6	2,3 VIS 1	
16	30	0220	14.3	115.1	35		1005						SIX/DMSP		
17	30	0600	14.9	115.1	55		994						GOES 7	2,5 IR 8	
18	30	1245	15.5	116.9	55		994						GOES 7	2,5 IR 8	
19	30	1715	15.6	117.4	55		994						GOES 7	2,3 VIS 1	
20	30	1740	15.4	117.1	35		1005						SIX/DMSP		
21	31	0000	16.0	118.4	55		994						GOES 7	2,3 VIS 1	
22	31	0208	16.2	118.7	35		1005						FOR/DMSP		
23	31	0600	16.2	119.7	45		1000						GOES 7	2,3 IR 8	
24	31	1215	16.1	120.2	45		1000						GOES 6	2,5 IR 4	
25	31	1715	16.1	121.2	35		1005						GOES 6	2,3 VIS 1	
26	31	1720	16.2	121.2	25								3 /DMSP		
27	01	0000	16.2	121.9									GOES 7	-,3 VIS 1	
28	01	0155	16.3	122.1	25								SIX/DMSP		
29	01	0600	16.2	122.6									GOES 6	-,5 IR 4	
30	01	1145	16.5	123.3									GOES 6	-,3 IR 1	
31	01	1700	15.4	123.2	25								FOR/DMSP		

CENTER FIXES

TROPICAL STORM EMILIA (continued)

FIX NO.	DATE	TIME (GMT)	POSITION LAT.	POSITION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT. LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)		EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
32	01	1715	16.0	124.1								GOES 7	-,3 VIS 1	
33	02	0000	15.2	124.2								GOES 7	-,- VIS 1	
34	02	0325	15.0	124.3								SIX/DMSP		
35	02	0600	15.0	124.6								GOES 6	-,5 IR 8	
36	02	1145	14.0	125.3								GOES 6	-,3 IR 8	
37	02	1715	13.5	126.1								GOES 7	-,5 VIS 1	

CENTER FIXES

URRICANE FABIO 28 July - 09 August 1988

FIX	DATE	TIME (UTC)	POSIT LAT.	MAX WIND SFC.	MIN. PRES	MIN. 700MB HT.(M)	TEMP. C OUT IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	28	1500	11.9 120.4							GOES 6	2,5 VIS 1	
02	28	1800	12.1 120.9							GOES 6	2,5 VIS 1	
03	28	2100	12.3 121.3							GOES 6	-,2 VIS 1	
04	29	0000	11.7 121.0	30	1009					GOES 6	2,5 VIS 4	
05	29	0300	11.7 121.4							GOES 6	-,5 IR 8	
06	29	0600	11.7 121.4	30						GOES 7	2,5 IR 8	
07	29	1200	12.2 123.0	30						GOES 6	2,5 IR 8	
08	29	1800	11.8 124.6	25						SIX/DMSP		
09	29	1800	13.2 124.5	45	1000					GOES 6	2,5 VIS 1	
10	30	0000	11.5 125.9	55	994					GOES 6	2,- VIS 1	
11	30	0220	12.4 126.5	35	1005					SIX/DMSP		
12	30	0600	11.6 126.7	65	987					GOES 7	2,5 IR 8	
13	30	1215	11.9 127.7	65	987					GOES 6	2,5 IR 8	
14	30	1740	11.9 128.6	35	1005					SIX/DMSP		
15	30	1745	11.9 128.9	65	987					GOES 6	2,5 VIS 1	
16	31	0000	11.9 130.2	65	987					GOES 7	2,3 VIS 1	
17	31	0350	11.8 130.9	45	1000					SIX/DMSP		
18	31	0600	12.0 130.3	55	994					GOES 7	2,5 IR 8	
19	31	1245	12.5 130.9	65	987					GOES 7	2,5 IR 8	
20	31	1720	12.7 131.6	55	994					SIX/DMSP		
21	31	1816	12.2 132.5	77	979					GOES 6	2,5 IR 8	
22	01	0000	12.6 133.2	77	979					GOES 7	2,3 VIS 1	
23	01	0337	13.0 133.3	77	979					TWO/DMSP		
24	01	0600	12.7 134.1	77	979					GOES 6	2,5 IR 8	
25	01	1145	12.9 135.7	77	979					GOES 6	1,5 IR 1	
26	01	1745	12.9 136.1	77	979					GOES 6	1,5 VIS 1	
27	01	1842	13.1 136.2	77	979					SIX/DMSP		
28	02	0000	13.1 137.6	90	970					GOES 7	2,3 VIS 1	
29	02	0325	13.2 138.2	65	987					SIX/DMSP		
30	02	0600	12.8 138.5	90	970					GOES 6	2,3 IR 8	
31	02	1145	13.2 139.6	90	970					GOES 6	2,5 IR 8	
32	ENTERED THE CENTRAL PACIFIC BASIN											

CENTER FIXES

TROPICAL STORM GILMA 28 July - 03 August 1988

FIX NO.	DATE	TIME (GMT)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT. LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	28	1200	15.4	135.0	25								GOES 6	5,5 IR 8	
02	28	1800	15.6	135.8	25								GOES 6	5,5 VIS 1	
03	28	2100	15.8	136.0									GOES 6	-,2 VIS 1	
04	29	0000	16.2	135.9	30		1009						GOES 6	2,2 VIS 8	
05	29	0300	16.4	136.1									GOES 6	-,5 IR 8	
06	29	0600	16.5	136.1	35		1005						GOES 7	5,5 IR 8	
07	29	1200	17.0	136.1	35								GOES 6	2,5 IR 8	
08	29	1800	16.6	135.9	25								SIX/DMSP		
09	29	1800	17.9	136.2	45		1000						GOES 6	2,5 VIS 1	
10	30	0000	16.2	136.3	45		1000						GOES 6	2,3 VIS 1	
11	30	0402	16.4	136.5	25								SIX/DMSP		
12	30	0600	16.0	136.6	40		1003						GOES 7	2,1 IR 8	
13	30	1146	16.3	137.3	35		1005						GOES 6	2,3 IR 8	
14	30	1715	16.5	138.4	30		1009						GOES 6	2,3 VIS 1	
15	31	0000	16.8	139.4	30		1009						GOES 7	2,3 VIS 1	
ENTERED THE CENTRAL PACIFIC BASIN															

CENTER FIXES

HURRICANE HECTOR 31 July - 09 August 1988

FIX	DATE	TIME	POSITION LAT.	LON.	SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	30		11.3	98.6	25								SIX/DMSP		
02	31		11.4	99.4	25								GOES 7	2,3 VIS 1	
03	31		11.2	100.4	25								SIX/DMSP		
04	31		11.5	101.9	30-35		1007						GOES 7	3,5 IR 8	
05	31		11.9	103.0	30		1009						GOES 7	2,5 IR 8	
06	31		12.3	103.5	35		1005						FIV/DMSP		
07	31		12.1	104.3	35		1005						GOES 7	2,5 VIS 1	
08	01		13.0	104.8	45		1000						GOES 7	2,3 VIS 1	
09	01		13.4	105.4	35		1005						SIX/DMSP		
10	01		13.1	106.2	55		994						GOES 6	2,3 IR 8	
11	01		13.9	107.5	55		994						GOES 7	1,5 IR 8	
12	01		14.2	108.4	55		994						FIV/DMSP		
13	01		14.1	108.6	55		994						GOES 7	2,3 VIS 1	
14	02		14.6	110.0	65		987						GOES 7	2,3 VIS 1	
15	02		14.8	110.1	55		994						SIX/DMSP		
16	02		14.5	111.0	90		970						GOES 6	1,1 IR 8	
17	02		15.0	112.2	102		960						GOES 7	1,1 IR 8	
18	02		15.4	113.0	115		948						GOES 7	1,1 IR 8	
19	03		16.1	114.2	115		948						GOES 7	2,1 VIS 1	
20	03		16.2	114.5	115		948						ONE/DMSP		
21	03		16.3	115.2	127		935						GOES 6	1,1 IR 8	
22	03		16.8	116.2	127		935						GOES 7	2,1 IR 8	
23	03		17.0	117.2	115		948						ONE/DMSP		
24	03		17.1	117.1	115		948						GOES 7	1,1 IR 8	
25	04		17.7	118.0	115		948						GOES 6	1,3 VIS 1	
26	04		17.9	118.2	115		948						TWO/DMSP		
27	04		18.0	118.9	115		948						GOES 6	1,3 IR 8	
28	04		18.6	119.9	115		948						GOES 6	2,2 IR 8	
29	04		18.7	120.4									GOES 6	-2, IR 8	
30	04		18.9	121.0	90		970						TWO/DMSP		

CENTER FIXES

HURRICANE HECTOR (continued)

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
31	04	1800	18.9	121.0	90		970						GOES 6	2,2 VIS 1	
32	05	0000	18.9	122.0	85		973						GOES 6	2,3 VIS 1	
33	05	0247	19.0	122.4	90		970						TWO/DMSP		
34	05	0600	19.2	123.2	77		979						GOES 6	2,3 IR 8	
35	05	1200	18.9	123.9	77		979						GOES 6	2,3 IR 8	
36	05	1723	18.8	124.8	65		987						SIX/DMSP		
37	05	1800	18.8	124.9	65		987						GOES 6	2,3 VIS 1	
38	06	0000	18.9	125.9	65		987						GOES 6	2,3 VIS 1	
39	06	0235	18.5	126.3	65		987						TWO/DMSP		
40	06	0600	18.6	126.8	65		987						GOES 6	2,1 IR 8	
41	06	1200	18.5	127.8	65		987						GOES 6	2,3 IR 8	
42	06	1703	18.3	128.3	55		994						SIX/DMSP		
43	06	1800	18.6	128.6	77		979						GOES 7	2,1 IR 8	
44	07	0000	18.4	129.7	77		979						GOES 6	1,3 VIS 1	
45	07	0222	18.3	130.9	77		979						TWO/DMSP		
46	07	0515	18.4	130.8	77		979						GOES 6	2,1 IR 8	
47	07	1146	18.4	132.0	65		987						GOES 6	2,3 IR 8	
48	07	1800	18.2	133.1	65		987						GOES 7	2,3 VIS 1	
49	08	0000	18.0	134.7	65		987						GOES 7	2,3 VIS 1	
50	08	0352	18.3	135.5	35		1005						SIX/DMSP		
51	08	0615	17.6	136.0	65		987						GOES 6	2,5 IR 8	
52	08	1200	17.8	137.5	55		994						GOES 7	2,3 IR 8	
53	08	1800	18.4	138.5	45		1000						GOES 7	2,3 VIS 1	
54	08	1805	18.3	138.4	35		1005						FOR/DMSP		
55	09	0000	18.6	140.0	35		1005						GOES 6	2,3 VIS 1	

---------- ENTERED THE CENTRAL PACIFIC BASIN----------

CENTER FIXES

HURRICANE IVA 05 - 13 August 1988

FIX	DATE	TIME (UTC)	POSIT LAT.	MAX WIND (KT SFC.	FLT	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)		OBS. UNIT	RESOLUTION	ACFT. ALT.
01	04		13.4 94.8	25								GOES 7	2,2 VIS 1	
02	05		13.1 96.3	25								GOES 7	2,5 VIS 1	
03	05		13.5 98.1	25								GOES 7	2,5 IR 8	
04	05		13.8 99.9	25								GOES 7	2,5 IR 8	
05	05		14.2 101.2	25								SIX/DMSP		
06	05		14.4 101.1	30		1009						GOES 7	2,5 VIS 1	
07	06		15.0 101.8	35								GOES 7		
08	06		14.7 102.8	35		1005						SIX/DMSP		
09	06		15.2 103.2	45		1000						GOES 7	2,5 IR 8	
10	06		15.2 105.5	45		1000						GOES 7	2,5 IR 8	
11	06		16.1 106.2	35		1005						SIX/DMSP		
12	06		16.5 106.1	55		994						GOES 7	2,3 VIS 1	
13	07		16.5 107.1	65		987						GOES 6	1,3 VIS 1	
14	07		16.3 107.5	55		994						FIV/DMSP		
15	07		16.7 108.4	65		987						GOES 7	2,3 IR 8	
16	07		17.2 109.1	65		987						GOES 7	2,3 IR 8	
17	07		17.6 109.9	65		987						GOES 7	2,5 VIS 1	
18	08		18.1 110.5	90		970						GOES 7	-,3 VIS 1	
19	08		18.1 110.7	90		970						ONE/DMSP		
20	08		18.8 111.7	90		970						GOES 7	2,1 IR 8	
21	08		19.2 112.5	90		970						GOES 7	2,3 IR 8	
22	08		19.8 112.9	77		979						ONE/DMSP		
23	08		20.1 113.3	90		970						GOES 7	2,1 VIS 1	
24	09		20.4 114.2	90		970						GOES 7	2,3 VIS 1	
25	09		20.3 114.6	90		970						FIV/DMSP		
26	09		20.7 115.3	90		970						GOES 7	2,1 IR 8	
27	09		20.9 116.9	77		979						GOES 6	2,3 IR 8	
28	09		20.9 116.9	77		979						SIX/DMSP		
29	09		20.9 117.4	65		987						GOES 6	2,5 VIS 1	
30	10		20.8 117.8	55		994						GOES 6	2,5 VIS 1	

CENTER FIXES

HURRICANE IVA (Continued)

FIX NO.	DATE	TIME (UTC)	POSIT LAT.	POSIT LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT.LVL.	MIN. PRES. (MB)	MIN. [illegible] (n.mi.)	P. C OUT	P. C IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
31	10	0145	21.6	117.9	30		1009						FIV/DMSP		
32	10	0545	20.0	118.0	55		994						GOES 6	2,5 IR 8	
33	10	1200	20.1	118.3	45		1000						GOES 7	2,5 IR 8	
34	10	1725	20.9	119.8	45		1000						TRE/DMSP		
35	10	1800	20.1	118.2	40-45		1002						GOES 7	1,3 VIS 1	
36	11	0000	20.1	118.3	35		1005						GOES 7	2,3 VIS 1	
37	11	0315	20.1	119.7	30		1009						SIX/DMSP		
38	11	0600	19.8	118.7	35		1005						GOES 6	2,5 IR 8	
39	11	0900	19.7	118.9									GOES 6	-,5 IR 8	
40	11	1200	19.0	119.1	35		1005						GOES 7	2,5 IR 8	
41	11	1706	19.4	119.5	30		1009						TRE/DMSP		
42	11	1800	19.5	119.6	30		1009						GOES 7	2,3 VIS 1	
43	12	0000	19.4	119.8	30		1009						GOES 7	3,3 IR 1	
44	12	0302	19.6	119.8	25								TRE/DMSP		
45	12	0600	19.2	120.0	25		1009						GOES 7	-,- IR 1	
46	12	1200	18.5	120.5	25								GOES 7	2,5 IR 8	
47	12	1800	18.7	121.2	20-25								GOES 7	1,3 VIS 1	
48	13	0000	18.4	121.5									GOES 6	-,3 VIS 1	
49	13	0250	18.2	121.5									FOR/DMSP		
50	13	0600	18.2	122.2									GOES 6	-,5 IR 8	
51	13	1200	17.5	122.5									GOES 7	-,5 IR 8	
52	13	1800	17.6	122.8									GOES 7	-,3 VIS 1	
53	13	1807	17.6	122.8									SIX/DMSP		

CENTER FIXES

TROPICAL STORM JOHN 16 - 21 August 1988

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	16	1500	16.3	106.0	25								GOES 6	2,5 VIS 1	
02	16	1708	17.5	105.4	25								FIV/DMSP		
03	16	1800	17.3	106.0	25								GOES 6	2,3 VIS 1	
04	17	0000	18.1	106.1	30								GOES 6	2,5 IR 8	
05	17	0200	18.2	106.6	25								FIV/DMSP		
06	17	0600	18.1	107.2	30		1009						GOES 7	2,5 IR 8	
07	17	1200	18.7	108.0	30		1009						GOES 7	2,5 IR 8	
08	17	1648	18.6	108.7	35		1005						SIX/DMSP		
09	17	1800	18.8	107.5	35		1005						GOES 6	2,5 VIS 1	
10	18	0000	19.4	108.1	35		1005						GOES 6	2,3 VIS 1	
11	18	0600	19.3	109.2	35		1005						GOES 7	2,5 IR 8	
12	18	1200	20.3	109.5	30		1009						GOES 7	2,5 IR 8	
13	18	1628	21.5	109.7	30		1009						SIX/DMSP		
14	18	1800	21.5	109.8	30		1009						GOES 7	2,3 VIS 1	
15	19	0000	21.6	110.5	25								GOES 7	2,2 VIS 1	
16	19	0135	21.8	110.4	30		1009						FIV/DMSP		
17	19	0600	22.0	110.6	30		1009						GOES 7	2,5 IR 8	
18	19	1200	22.2	111.2	25								GOES 7	2,5 IR 8	
19	19	1609	21.1	110.6	25								TRE/DMSP		
20	19	1800	21.1	110.7	25								GOES 6	2,3 VIS 1	
21	20	0000	21.2	110.5									GOES 7	-,2 VIS 1	
22	20	0123	21.4	110.5	25								FIV/DMSP		
23	20	0600	21.0	111.0	25								GOES 7	2,5 IR 8	
24	20	1215	21.0	110.0	30		1009						GOES 6	2,5 IR 8	
25	20	1549	21.6	110.0	25								FIV/DMSP		
26	20	1745	22.4	109.6	30		1009						GOES 7	2,5 VIS 1	
27	21	0000	22.3	110.3									GOES 7	-,5 VIS 1	
28	21	0600	22.6	110.7									GOES 6	-,5 IR 4	

CENTER FIXES

HURRICANE KRISTY 29 August - 06 September 1988

FIX	DATE		POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT. (M)		EYE C=CIR.DIA.	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	29		14.5	102.5										
02	29		14.2	99.8	30		1009						-,5 VIS 1	
03	29		14.7	99.7	30		1009						2,5 IR 8	
04	29		15.0	101.0	30		1009						2,5 IR 8	
05	30		15.7	102.2	30		1009						2,5 VIS 1	
06	30		16.1	103.6	45		1000						2,5 VIS 1	
07	30		16.3	104.6	55		994						2,3 IR 8	
08	30		16.8	105.0	30		1009						2,3 IR 8	
09	30		17.2	105.3	65		987							
10	31		17.5	106.0	65		987						2,3 VIS 1	
11	31		17.4	106.2	55		994						2,3 VIS 1	
12	31		17.8	107.0	65		987							
13	31		18.2	108.0	65		987						1,1 IR 8	
14	31		18.3	108.3	65		987						2,5 IR 8	
15	31		18.3	108.4	77		979							
16	01		18.4	109.5	77		979						2,3 VIS 1	
17	01		18.3	109.7	65		987						1,1 IR 8	
18	01		18.5	110.2	77		979					P		
19	01		18.3	110.6	77		979						2,3 IR 8	
20	01		17.7	110.9	65		987						2,3 IR 8	
21	01		17.6	111.0	65		987					SP		
22	02		17.7	111.0	55		994							
23	02		18.2	111.1	65		987						2,1 VIS 1	
24	02		18.0	111.8	55		994							
25	02		17.8	112.4	55		994						2,5 IR 8	
26	02		18.2	112.4	35		1005						2,5 IR 8	
27	02		18.2	112.8	45		1000					SP		
28	03		18.3	113.2	45		1000						2,3 VIS 1	
29	03		18.5	113.3	35		1005						2,1 VIS 1	
30	03		18.6	113.4	45		1000							
													2,3 IR 8	

CENTER FIXES

HURRICANE KRISTY (continued)

FIX NO.	DATE	TIME (GMT)	POSITION LAT.	POSITION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT. LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C IN	TEMP. C OUT	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
31	03	1200	18.7	113.8	30		1009						GOES 6	5,3 IR 8	
32	03	1616	18.9	114.4	25								TRE/DMSP		
33	03	1800	18.6	114.5	25								GOES 6	2,3 VIS 1	
34	04	0000	18.8	114.8									GOES 7	-,3 VIS 1	
35	04	0140	18.8	114.9	25								SIX/DMSP		
36	04	0600	18.7	115.0									GOES 7	-,5 IR 8	
37	04	1200	18.8	114.8	25								GOES 7	2,3 IR 8	
38	04	1738	18.9	115.1	25								TRE/DMSP		
39	04	1800	18.6	115.2	25								GOES 7	2,3 VIS 1	
40	05	0000	18.9	114.8									GOES 7	-,3 VIS 1	
41	05	0128	18.6	115.1	25								SIX/DMSP		
42	05	1200	18.4	114.6	30		1009						GOES 7	2,5 IR 8	
43	05	1718	19.2	114.3									FIV/DMSP		
44	05	1800	18.8	113.9	25								GOES 7	2,3 VIS 1	
45	06	0000	18.7	113.4									GOES 7	-,3 VIS 1	
46	06	0600	19.0	113.0									GOES 7	-,5 IR 8	
47	06	1200	18.9	113.1									GOES 6	-,5 IR 8	

CENTER FIXES

HURRICANE LANE 21-30 SEPTEMBER 1988

FIX	DATE	TIME	TION LON.	MAX WIND (KT) SFC.	MAX WIND (KT) FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	TEMP. C IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	21	0000										GOES 7	-,5 VIS 1	
02	21	0600		25								GOES 7	2,5 IR 8	
03	21	1200		25								GOES 6	2,5 IR 8	
04	21	1524		25								SIX/DMSP		
05	21	1730		35		1005						GOES 7	2,5 VIS 1	
06	22	0000		35		1005						GOES 7	2,3 VIS 1	
07	22	0405		25								SIX/DMSP		
08	22	0600		45		1000						GOES 7	2,5 IR 8	
09	22	1200		50		998						GOES 7	2,5 IR 8	
10	22	1646		45		1000						SIX/DMSP		
11	22	1800		55		994						GOES 7	2,3 VIS 1	
12	23	0000		65		987						GOES 7	2,3 VIS 1	
13	23	0600		65		987						GOES 7	2,5 IR 8	
14	23	1200		77		979						GOES 7	2,5 IR 8	
15	23	1353		45		1000						TWO/DMSP		
16	23	1626		77		979						ONE/DMSP		
17	23	1800		90		970						GOES 7	2,3 VIS 1	
18	23	2247		77		979						TWO/NOAA		
19	24	0000		90		970						GOES 6	1,1 VIS 1	
20	24	0237		77		979						ONE/DMSP		
21	24	0507		77		979						ONE/DMSP		
22	24	0600		90		970						GOES 7	2,- IR 8	
23	24	1133		77		979						SIX/NOAA		
24	24	1200		90		970						GOES 7	2,3 VIS 1	
25	24	1340		77		979						SIX/DMSP		
26	24	1606		77		979						ONE/DMSP		
27	24	1800		77		979						GOES 7	2,3 VIS 1	
28	25	0000		77		979						GOES 6	2,3 VIS 1	
29	25	0600		77		979						GOES 6	2,3 IR 8	
30	25	1200		77		979						GOES 7	2,5 IR 8	

CENTER FIXES

HURRICANE LANE (Continued)

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
	25	1728	17.6	117.2	65		987						SIX/DMSP		
	25	1800	17.5	117.4	65-71		983						GOES 7	2,3 VIS 1	
	26	0000	17.8	119.1	65		987						GOES 6	2,5 IR 8	
	26	0600	17.6	120.0	65		987						GOES 6	2,5 IR 8	
	26	0609	17.7	120.2	45		1000						SIX/DMSP		
	26	1200	17.6	120.9	65		987						GOES 7	2,5 IR 8	
	26	1708	17.7	121.8	55		994						SIX/DMSP		
	26	1800	17.8	121.9	65		987						GOES 7	2,3 VIS 1	
	27	0000	18.0	122.8	65		987						GOES 6	2,5 VIS 1	
	27	0549	18.8	123.3	35		1005						SIX/DMSP		
	27	0600	18.0	123.6	65		987						GOES 6	2,3 IR 8	
	27	1200	18.7	124.3	55		994						GOES 6	2,3 IR 8	
	27	1800	19.6	125.8	55		994						GOES 6	1,3 VIS 1	
	27	1830	20.0	126.0	30		1009						SIX/DMSP		
	28	0000	20.1	127.2	45		1000						GOES 6	2,2 VIS 1	
	28	0600	19.8	128.8	35		1005						GOES 6	2,5 IR 8	
	28	0711	20.2	128.6	30		1009						SIX/DMSP		
	28	1200	20.4	129.6	35		1005						GOES 6	2,5 IR 8	
	28	1800	21.2	131.0	30		1009						GOES 6	2,3 VIS 1	
	28	1810	20.9	131.2	25								FOR/DMSP		
	29	0000	21.5	132.3	25								GOES 6	2,3 VIS 1	
	29	0600	22.1	133.7	25								GOES 7	2,5 IR 8	
	29	0651	21.6	133.7	25								FOR/DMSP		
	29	1200	22.4	135.6	25								GOES 6	2,5 IR 8	
	29	1750	22.9	136.1									FOR/DMSP		
	29	1800	22.9	136.2									GOES 6	-,5 VIS 1	
	30	0030	23.1	137.2									GOES 6	-,3 VIS 1	
	30	0600	22.8	138.1									GOES 7	-,5 IR 8	
	30	0631	23.6	138.5									SIX/DMSP		
	30	1200	23.5	139.1									GOES 6	-,5 IR 8	

C FIXES

TROPIC L S 23 SEPTEMBER - 02 NOVEMBER 1988

FIX NO.	DATE	T	TION LON.		FLT. LVL.	HT. (M)	C IN	EYE C=CIR.DIA.	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
01	23	1459	12.7	88.0	45					FIV/		
02	23	1800	12.8	88.5	65					GOES	2,1 VIS 1	
03	23	2222	12.8	88.9	45					FIV/NOAA		
04	23	2347	13.1	89.1	45					SIX/DMSP		
05	24	0000	13.1	89.5	65					GOES 7	2,1 IR 8	
06	24	0600	13.5	90.2	65					GOES 7		
07	24	1200	12.9	90.3	55					GOES 7		
08	24	1232	13.3	90.8	35					FIV/DMSP		
09	24	1439	13.7	90.9	35					FIV/DMSP		
10	24	1800	14.1	91.4						GOES 7		
11	25	0000	14.6	92.4	45	1000				GOES 7	-,5 IR 8	
12	25	0320	14.3	93.7	35	1005				FIV/DMSP		
13	25	0600	14.6	93.1	45	1000				GOES 7		
14	25	1200	14.7	93.8	45	1000				GOES 7	2,5 IR 8	
15	25	1800	13.6	94.0	45	1000				GOES 7	2,3 VIS 1	
16	26	0000	13.3	94.7	30	1009				GOES 7	2,5 IR 8	
17	26	0441	--.-	--.-	35	1005				---/DMSP		
18	26	0600	13.5	95.2	30	1009				GOES 7	IR 8	
19	26	1200	13.3	95.5						GOES 7	IR 8	
20	26	1541	12.3	96.5	25					TRE/DMSP		
21	26	1800	12.1	96.4						GOES 7	-,3 VIS 1	
22	27	0000	11.8	96.8							-,3 IR 8	
23	27	0421	11.6	97.4	25					P		
24	27	0600	11.9	97.7							- IR 8	
25	27	1521	11.6	97.7	25					P		
26	27	1800	11.8	97.8						GOES 7	-,5 VIS 1	
27	28	0000	11.7	99.9	25					GOES 7	1,5 VIS 1	
28	28	0402	12.1	99.3	25					FIV/DMSP		
29	28	0600	12.0	100.0						GOES 7	-,- IR 8	
30	30	0000	12.1	108.0						GOES 6	-,5 VIS 1	

CENTER FIXES

TROPICAL STORM MIRIAM (Continued)

FIX NO.	DATE	TIME (UTC)	POSITION LAT.	LON.	MAX WIND (KT) SFC.	FLT.LVL.	MIN. PRES. (MB)	MIN. 700MB HT.(M)	TEMP. C OUT	IN	EYE C=CIR.DIA. E=ELIP.(N.MI.)	CHARACTER-ISTICS	OBS. UNIT	RESOLUTION	ACFT. ALT.
31	30	1200	13.2	108.4									GOES 7	2,5 IR 8	
32	30	1603	13.2	110.4	25								FIV/DMSP		
33	30	1800	13.2	110.4	25								GOES 6	2,3 VIS 1	
34	31	0000	14.0	111.5	25								GOES 7	2,5 —— -	
35	31	0444	14.2	111.1	25								FIV/DMSP		
36	31	0600	14.4	112.5	25								GOES 7	2,5 IR 8	
37	31	1200	15.0	113.3	30								GOES 7	2,5 IR 8	
38	31	1724	15.9	112.8	35		1005						FIV/DMSP		
39	31	1800	15.9	113.7	30		1009						GOES 7	2,3 VIS 1	
40	01	0000	16.5	114.0	30		1009						GOES 6	2,3 VIS 1	
41	01	0600	16.9	114.8	30		1009						GOES 6	2,5 IR 8	
42	01	0605	17.3	113.8	35		1005						FIV/DMSP		
43	01	1200	17.6	115.8	30		1009						GOES 6	2,3 IR 8	
44	01	1705	18.1	116.3	35		1005						FIV/DMSP		
45	01	1800	17.9	117.1	35		1005						GOES 6	2,3 VIS 1	
46	02	0000	18.0	117.0	35		1005						GOES 6	2,5 VIS 1	
47	02	0545	18.4	118.9	35		1005						TRE/DMSP		
48	02	0600	18.0	117.4	35		1005						GOES 7	2,5 IR 8	
49	02	1200	18.4	117.9	25								GOES 6	2,5 IR 8	
50	02	1645	19.0	119.4	25								FOR/DMSP		
51	02	1800	18.7	119.1									GOES 6	-,5 VIS 1	