



NATIONAL HURRICANE CENTER

TROPICAL CYCLONE FORECAST VERIFICATION

1973

following tables contain verification statistics for the 1973 tropical cyclone forecasts. The first table contains error summaries for the National Hurricane Center advisory forecasts (designated OFFICIAL) together with those for all operationally available objective techniques. The second and third tables contain homogeneous samples of various groupings of the OFFICIAL forecasts with different objective techniques. The fourth table is a comparison of the preliminary N.H.C. and N.M.C. forecasts and the final (coordinated) forecasts.

The forecast errors, expressed in terms of nautical miles, are computed in the following way. The magnitude of the vector difference (along a great circle) between the forecast displacement for a given time period and the actual displacement taken from the 'best track' is computed for each forecast.

All forecasts for which a given cyclone maintains tropical storm of hurricane intensity are verified. These results are then averaged and tabulated.

The errors in the initial positioning of storms are also computed. For a given forecast, this is simply the magnitude of the great circle distance between the operational initial position and the corresponding 'best track' initial position.

In the N.H.C.-N.M.C. comparison (fourth table) no account was taken of the initial positioning errors. In this table a forecast error simply represents the distance between a corresponding forecast position and 'best track' position

1973 TROPICAL CYCLONE FORECAST VERIFICATION
HOMOGENEOUS SAMPLE OF N.H.C. AND N.M.C. PRELIMINARY FORECASTS AND

OFFICIAL FORECASTS

FORECAST TYPE	FORECAST PERIOD			
	12 HOUR	24 HOUR	48 HOUR	72 HOUR
N.H.C. PRELIMINARY	52	106	235	401
N.M.C. PRELIMINARY	59	126	298	440
OFFICIAL FORECASTS	51	107	239	421
(number of cases)	(47)	(41)	(25)	(14)

(Forecast errors are expressed in terms of vector errors in nautical miles.)

1973 TROPICAL CYCLONE FORECAST VERIFICATION

FORECAST TYPE (no. of cases)	INITIAL POSITION	FORECAST PERIOD			
		12 HOUR	24 HOUR	48 HOUR	72 HOUR
OFFICIAL	24 (98)	57 (98)	107 (84)	239 (54)	346 (28)
HURRAN	24 (60)	56 (60)	122 (54)	293 (40)	383 (20)
CLIPER	22 (95)	59 (95)	131 (83)	299 (55)	385 (27)
SANBAR	16 (43)	55 (43)	103 (37)	295 (25)	480 (12)
NHC-67	18 (86)	50 (86)	91 (74)	228 (50)	322 (22)
NHC-72	22 (95)	56 (95)	114 (83)	269 (55)	350 (27)
NHC-73	17 (43)	45 (43)	87 (37)	226 (25)	353 (11)

DISPLACEMENT ERRORS IN NAUTICAL MILES

1973 TROPICAL CYCLONE FORECAST VERIFICATION

HOMOGENOUS SAMPLE

FORECAST TYPE (no. of cases)	FORECAST PERIOD				72 HOUR
	INITIAL POSITION	12 HOUR	24 HOUR	48 HOUR	
OFFICIAL	18 (86)	52 (86)	102 (74)	249 (48)	397 (22)
CLIPER		54	116	290	370
NHC-67		50	91	226	322
NHC-72		51	96	274	386

DISPLACEMENT ERRORS IN NAUTICAL MILES

1973 TROPICAL CYCLONE FORECAST VERIFICATION

HOMOGENEOUS SAMPLES

FORECAST TYPE (no. of cases)	I.P.	FORECAST PERIOD			
		12 HOUR	24 HOUR	48 HOUR	72 HOUR
OFFICIAL	22 (60)	55 (60)	107 (54)	251 (38)	324 (20)
HURRAN		58	125	300	384
OFFICIAL	17 (43)	54 (43)	97 (37)	248 (24)	387 (12)
SANBAR		55	103	290	480
OFFICIAL	17 (43)	54 (43)	99 (37)	251 (24)	392 (11)
NHC-73		48	95	238	396

DISPLACEMENT ERRORS IN NAUTICAL MILES

VERIFICATION OF FORECASTS

POSITION ERROR (N.M.)	<u>OFFICIAL</u>		
	<u>DISPLACEMENT ERROR</u>		
	<u>24 HOURS</u>	<u>48 HOURS</u>	<u>72 HOURS</u>
17 (56)	76 (34)	187 (12)	356 (2)
23 (197)	101 (176)	238 (133)	385 (113)
<u>1972 21 (63)</u>	<u>135 (55)</u>	<u>365 (36)</u>	<u>688 (23)</u>
22 (316)	105 (265)	259 (181)	435 (138)
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	<u>HURRAN</u>		
1970	83 (25)	160 (11)	337 (2)
	111 (83)	279 (48)	444 (37)
<u>1972</u>	<u>140 (22)</u>	<u>399 (17)</u>	<u>510 (15)</u>
MEAN	112 (130)	288 (76)	458 (54)
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	<u>NHC-67</u>		
	92 (30)	260 (13)	480 (2)
	108 (176)	312 (136)	551 (115)
<u>1972</u>	<u>117 (22)</u>	<u>301 (16)</u>	<u>431 (10)</u>
	114 (246)	333 (177)	591 (138)
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	<u>SANBAR</u>		
	138 (11)	218 (3)	431 (1)
	147 (81)	252 (64)	357 (54)
<u>1972</u>	<u>117 (22)</u>	<u>301 (16)</u>	<u>431 (10)</u>
	140 (114)	260 (83)	370 (65)

(Number in parentheses are the number of forecasts)

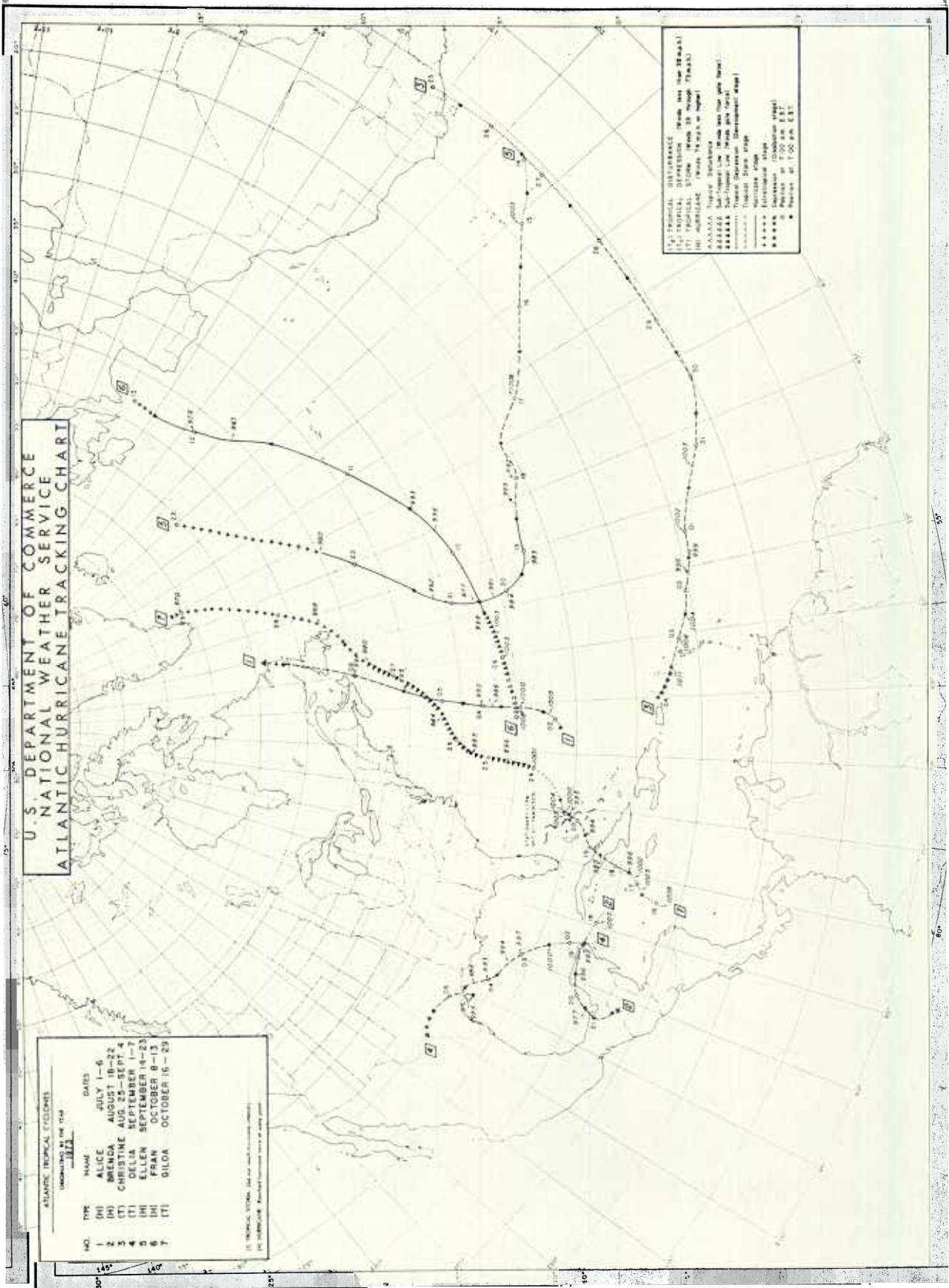
U. S. DEPARTMENT OF COMMERCE
NATIONAL WEATHER SERVICE
ATLANTIC HURRICANE TRACKING CHART

ATLANTIC TROPICAL CYCLONES
OCCURRING BY THE YEAR

NO.	TYPE	NAME	DATES
1	(H)	ALICE	JULY 1-6
2	(H)	BRENDA	AUGUST 18-22
3	(T)	CHRISTINE	AUG. 23-SEPT. 4
4	(T)	DELLA	SEPTEMBER 1-7
5	(H)	ELLEN	SEPTEMBER 14-23
6	(H)	FRAN	OCTOBER 8-13
7	(T)	BILDA	OCTOBER 16-23

(H) TROPICAL HURRICANE (See our weather forecasting department)
(T) TROPICAL TROPHICAL DISTURBANCE (See our weather forecasting department)

(S) TROPICAL DISTURBANCE
(T) TROPICAL DEPRESSION (Wind less than 33 m.p.h.)
(H) TROPICAL HURRICANE (Wind 33 through 74 m.p.h.)
(C) CIRCULAR (Wind 74 m.p.h. or higher)
***** Tropical Storm stage
***** Hurricane stage
***** Hurricane (Chapman stage)
***** Hurricane (Chapman stage)
***** Hurricane (Chapman stage)
***** Hurricane (Chapman stage)
***** Hurricane (Chapman stage)



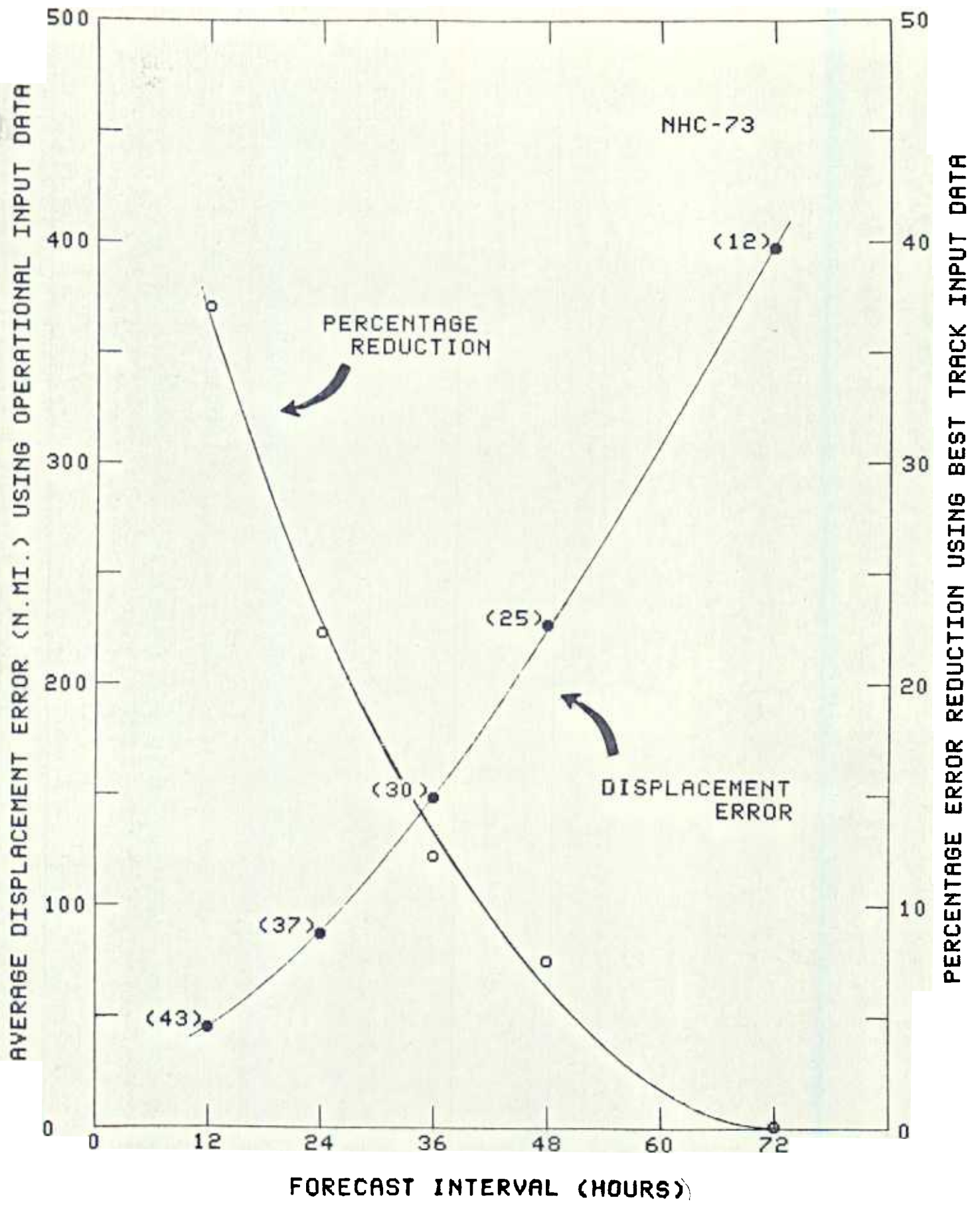
NMC's

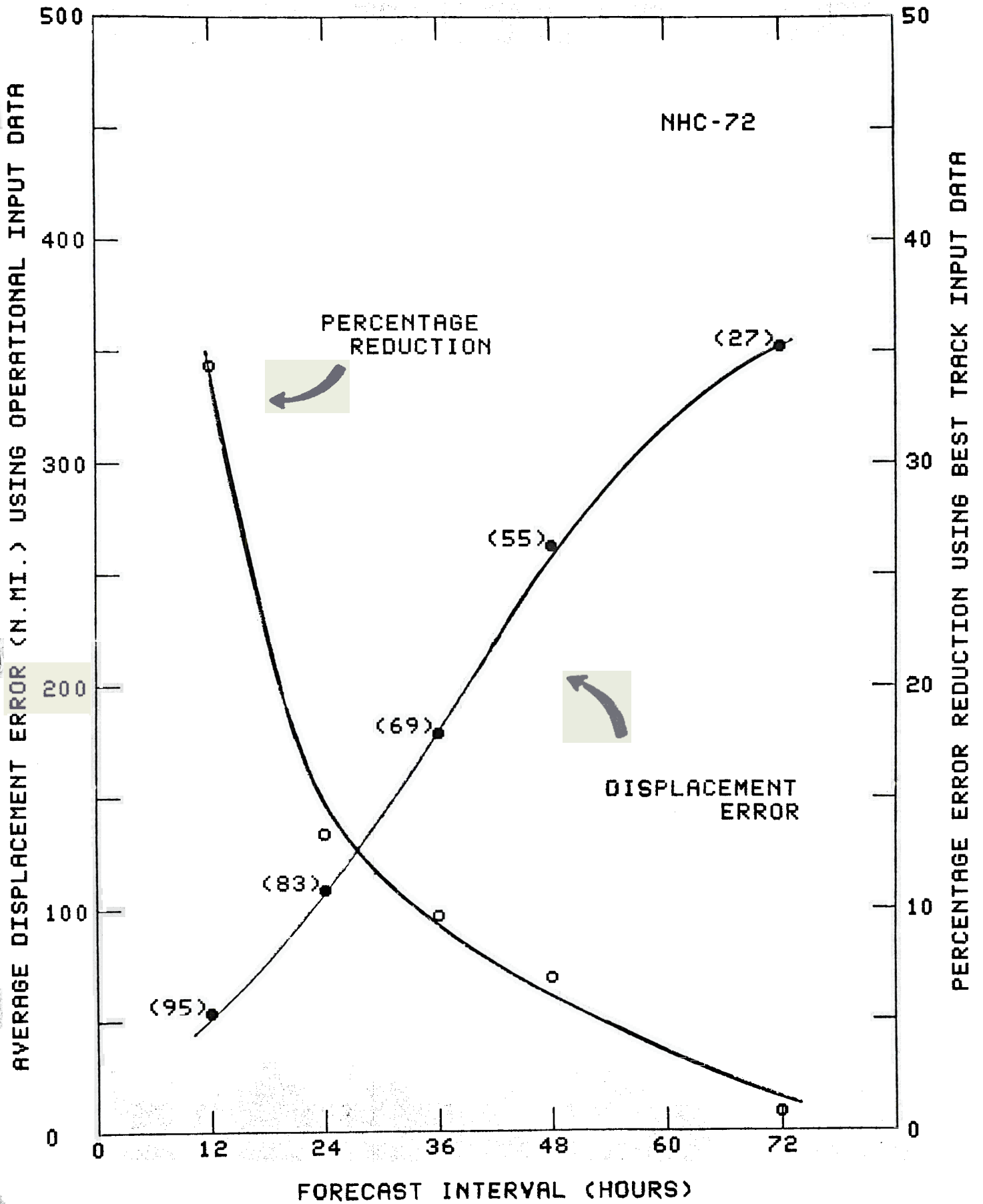
1973 TROPICAL CYCLONE FORECAST VERIFICATION

STORM (cases)	NHC			NMC		
	24HR	48HR	72HR	24HR	48HR	72HR
ALICE	66 5	144 5	378 4	108 5	234 5	528 4
BRENDA	114 11	318 7	612 3	102 11	288 7	492 3
DELIA	174 17	270 11	642 5	192 17	396 11	750 5
GILDA (to 232200)	96 24	222 19	360 14	126 24	306 19	444 14
ALL	120 57	241 42	446 26	139 57	318 42	521 26

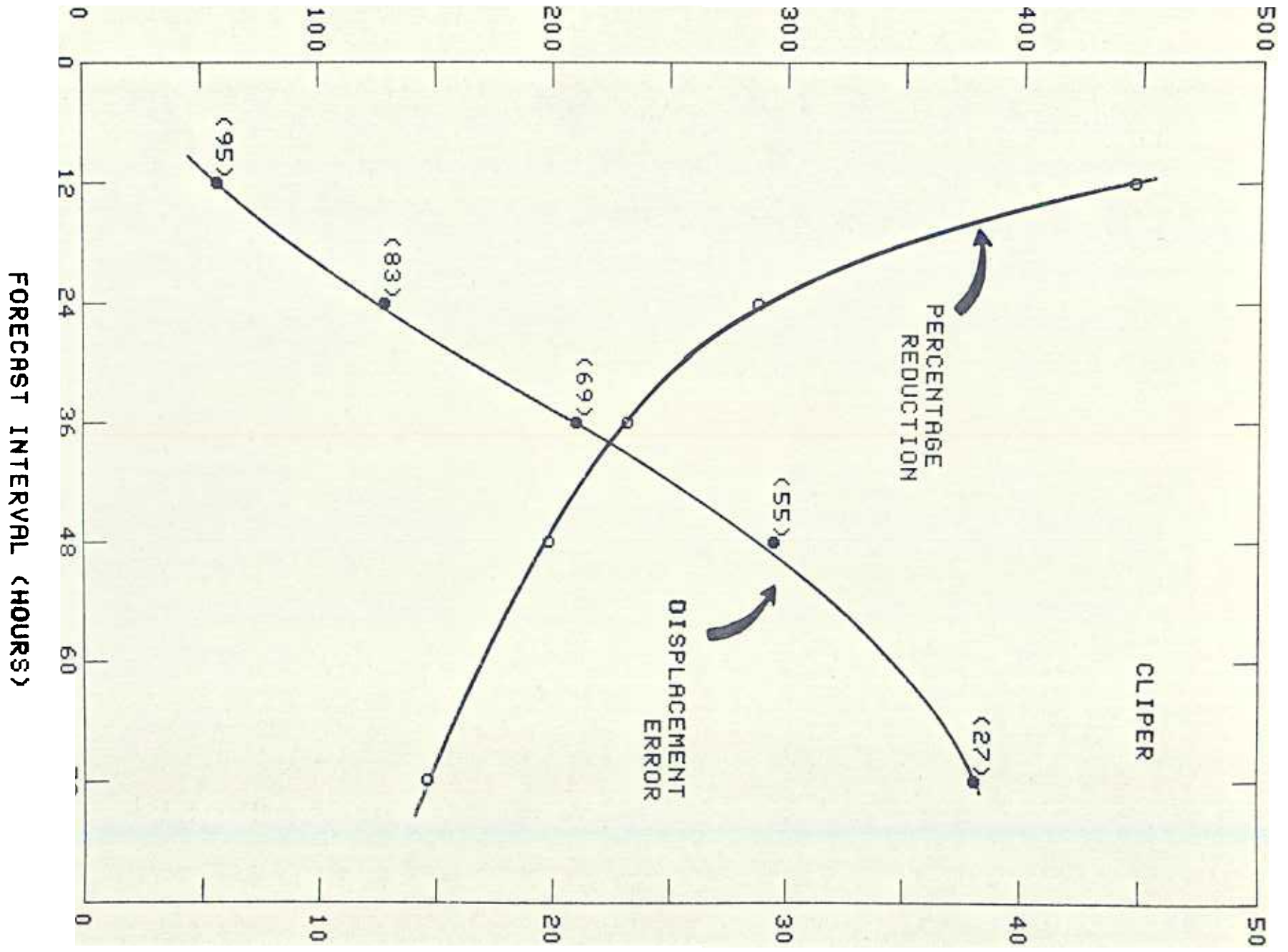
STORM (cases)	NHC			NMC		
	24HR	48HR	72HR	24HR	48HR	72HR
GILDA (after 232200)	116 10	276 10	480 10	116 10	234 9	456 9

TABLE 3.



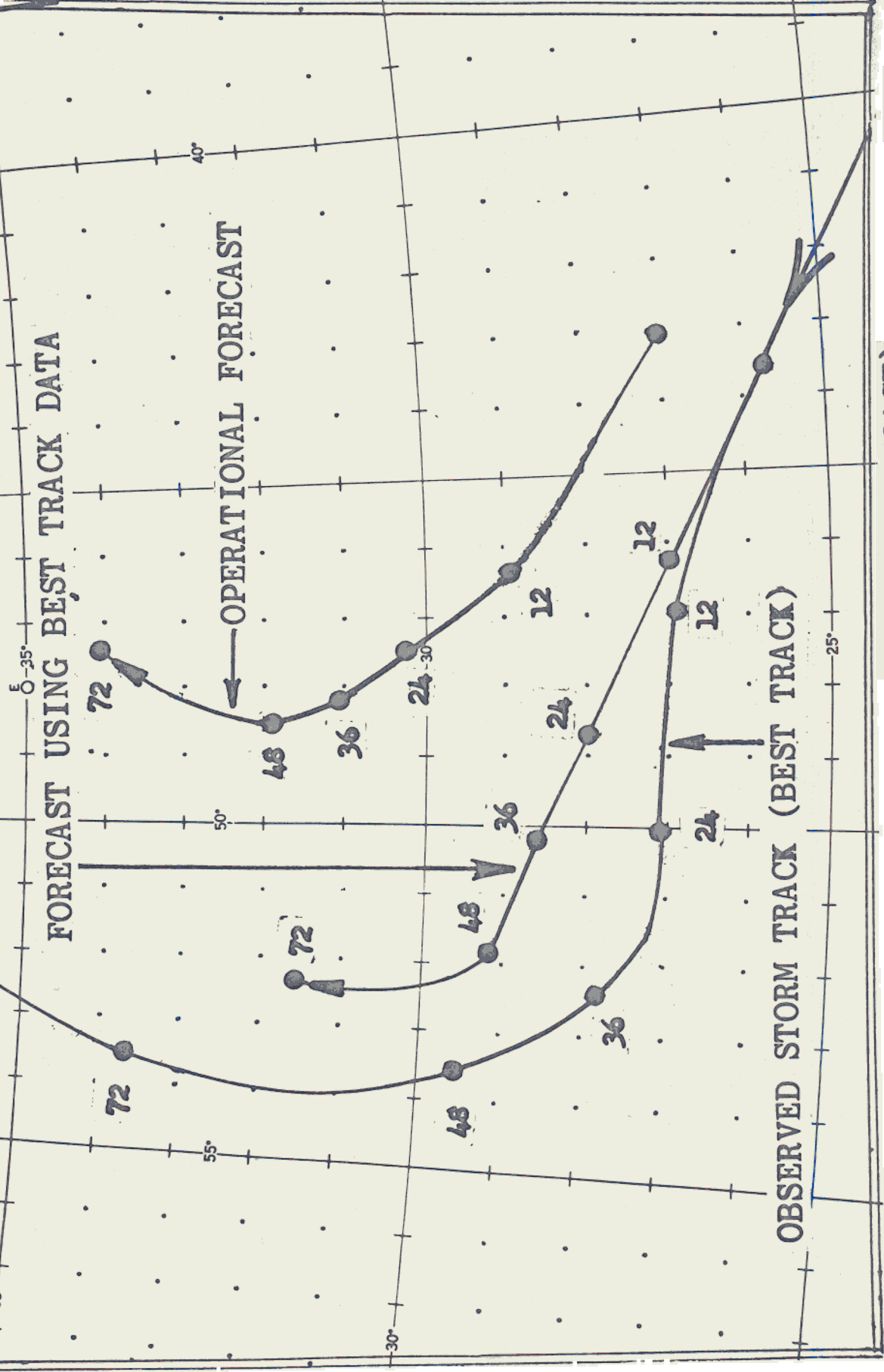


AVERAGE DISPLACEMENT ERROR (N.MI.) USING OPERATIONAL INPUT DATA



PERCENTAGE ERROR REDUCTION USING BEST TRACK INPUT DATA

OPERATIONAL INITIAL MOTION 310/16
BEST TRACK INITIAL MOTION 296/17
VECTOR DIFFERENCE 5Kts



ELLEN 09/20/0000Z (NHC-72 FORECAST)

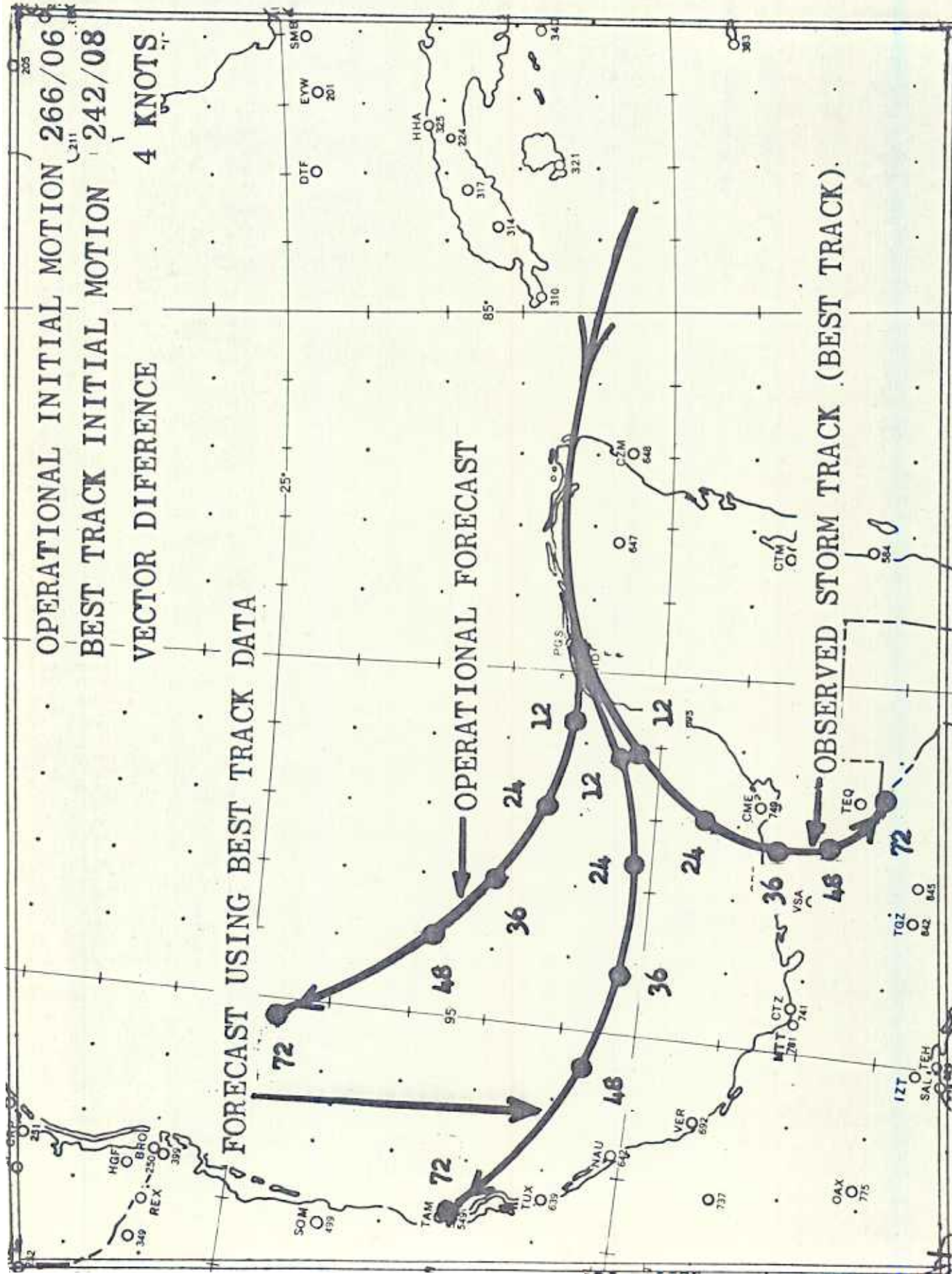
OPERATIONAL INITIAL MOTION 266/06
 BEST TRACK INITIAL MOTION 242/08
 VECTOR DIFFERENCE 4 KNOTS

FORECAST USING BEST TRACK DATA

OPERATIONAL FORECAST

OBSERVED STORM TRACK (BEST TRACK)

BRENDA 08/20/0000Z (CLIPPER FORECAST)



MEAN ZONAL ERROR -0.11 KNOTS
 MEAN MERIDIONAL ERROR -0.01 KNOTS
 CORRELATION COEFFICIENT 0.024
 STND DVN ALONG MAJOR AXIS 3.23 KNOTS
 STND DVN ALONG MINOR AXIS 2.68 KNOTS
 NUMBER OF CASES 465
 ROTATION OF ELLIPSE AXES 3.7 DEGREES

