

## NHC Forecast Verification Summary

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The National Hurricane Center issues a 72-hour track and intensity forecast, every six hours, for all tropical cyclones in the Atlantic and eastern Pacific basins. Forecasts for all tropical storms and hurricanes are verified by comparison with a best-track post analysis of all available track and intensity data.

Table 1 lists the official track forecast errors, by storm, for the Atlantic and Table 3 does so for the eastern Pacific. In both basins, the official forecasts were somewhat smaller than the previous 10-year averages. In particular, note that the errors for Hurricane Hugo were quite small, as is normally the case for a smooth storm track.

Tables 2 and 4 list homogeneous comparisons of track forecast errors for a variety of guidance models, for the Atlantic and eastern Pacific, respectively. In the Atlantic, after 24 hours, all of the guidance models performed slightly better than CLIPER, the climatology/persistence control model. NHC83 was the best performer by a small margin, but BAM did as well at 72 hours in spite of its large errors at the earlier forecast periods. These large early errors are the result of BAM not properly incorporating the initial storm motion and it is impressive that it can overcome this poor start. In the eastern Pacific, there is little model improvement over EPCL84.

Finally, Table 5 lists one-minute wind speed forecast errors for both basins for the official forecasts and for the SHIFOR/EP SHIF climatology/persistence models.

Table 1. Official track forecast errors (average in nautical miles), Atlantic, 1989.

storm	forecast period (hours)					
	0	12	24	36	48	72
Allison (no. of cases)	15 (4)	39 (4)	80 (2)	- (0)	- (0)	- (0)
Barry	39 (9)	73 (9)	113 (7)	174 (5)	211 (3)	- (0)
Chantal	15 (4)	26 (4)	33 (2)	- (0)	- (0)	
Dean	11 (29)	44 (29)	88 (27)	137 (25)	189 (23)	319 (19)
Erin	35 (27)	78 (27)	127 (25)	175 (23)	217 (21)	257 (17)
Felix	29 (32)	74 (32)	112 (28)	154 (24)	203 (20)	224 (12)
Gabrielle	10 (49)	35 (49)	72 (47)	126 (45)	198 (43)	381 (39)
Hugo	10 (43)	33 (43)	65 (41)	98 (39)	122 (37)	154 (33)
Iris	9 (10)	69 (10)	138 (8)	214 (6)	288 (4)	
Jerry	14 (11)	45 (11)	104 (9)	147 (7)	174 (5)	203 (1)
Karen	18 (16)	62 (16)	130 (14)	204 (11)	312 (5)	453 (3)
Total	18 (234)	51 (234)	93 (210)	141 (185)	188 (161)	279 (124)

Table 2. Track model forecast errors (average in nautical miles), Atlantic, 1989, homogeneous comparisons. Errors are adjusted for initial position errors.

model	forecast period (hours)					
	0	12	24	36	48	72
Official	17	38	81	130	176	274
CLIPER	17	43	96	149	197	291
NHC83	18	39	77	124	158	266
BAM	44	66	110	155	190	276
(no. of cases)	(86)	(84)	(76)	(67)	(60)	(50)
Official	15	40	86	135	188	301
CLIPER	15	43	96	155	216	355
NHC83	16	39	77	126	159	285
SANBAR	15	41	84	129	183	315
(no. of cases)	(77)	(77)	(69)	(61)	(51)	(33)
Official	14	36	81	129	177	290
CLIPER	14	43	99	162	233	361
QLM	16	67	97	135	193	305
NHC83	15	40	79	117	155	270
(no. of cases)	(74)	(74)	(66)	(57)	(51)	(42)
Official	12	29	73	123	172	301
BAM	41	59	92	132	161	256
CLIPER	13	36	89	154	211	341
NHC83	14	33	66	105	132	256
QLM	16	63	89	130	190	266
SANBAR	14	35	76	116	155	311
(no. of cases)	(46)	(46)	(41)	(37)	(32)	(23)

Table 3. Official track forecast errors (average in nautical miles), Pacific, 1989.

storm	forecast period (hours)					
	0	12	24	36	48	72
Adolph (no. of cases)	15 (12)	59 (12)	116 (10)	153 (8)	209 (6)	280 (2)
Barbara	14 (11)	45 (11)	70 (9)	89 (7)	111 (5)	43 (1)
Cosme	13 (10)	85 (10)	192 (8)	318 (6)	491 (4)	- (0)
Dalilia	15 (16)	40 (16)	73 (14)	117 (12)	162 (10)	275 (6)
Erick	13 (1)	53 (1)	- (0)	(0)	(0)	(0)
Flossie	52 (4)	114 (4)	153 (2)	- (0)	- (0)	- (0)
Gil	16 (13)	42 (13)	78 (11)	105 (9)	132 (7)	211 (3)
Henriette	7 (6)	21 (6)	27 (4)	69 (2)	- (0)	- (0)
Ismael	10 (33)	31 (33)	60 (31)	94 (29)	137 (27)	231 (23)
Juliette	22 (6)	61 (6)	129 (4)	228 (2)	- (0)	- (0)
Kiko	8 (8)	26 (8)	48 (6)	91 (4)	110 (2)	(0)
Lorena	21 (20)	34 (20)	64 (18)	102 (16)	124 (14)	130 (10)
Manuel	18 (6)	39 (6)	90 (4)	180 (2)	- (0)	- (0)
Narda	14 (8)	29 (8)	53 (6)	83 (4)	96 (2)	- (0)
Octave	14 (20)	42 (20)	87 (18)	126 (16)	163 (14)	273 (10)

Table 3. (continued)

storm	forecast period (hours)					
	0	12	24	36	48	72
Priscilla	21 (8)	52 (8)	90 (6)	149 (4)	192 (2)	- (0)
Raymond	11 (33)	41 (33)	86 (31)	137 (29)	179 (26)	272 (22)
Total	15 (215)	43 (215)	82 (182)	125 (150)	164 (119)	237 (77)

Table 4. Track model forecast errors (average in nautical miles), eastern Pacific, 1989, homogeneous comparisons. Errors are adjusted for initial position errors.

model	forecast period (hours)					
	0	12	24	36	48	72
Official (no. of cases)	15 (201)	36 (201)	77 (172)	122 (138)	165 (108)	238 (72)
EPAN85	16	36	80	130	176	257
EPCL84	16	36	77	125	170	232
EPSS87	16	35	71	112	153	228
Official (no. of cases)	15 (44)	36 (44)	73 (39)	111 (29)	145 (23)	238 (18)
EPAN85	16	34	74	117	158	253
EPCL84	16	34	72	118	154	232
EPHC81	16	32	76	125	149	226
EPSS87	16	34	66	103	136	223
SANBAR	23	58	112	185	276	427