

Figure 8. Tracks of all tropical cyclones of hurricane intensity passing within 50 n.m.i. of Miami, Florida. The 50 n.m.i. circle is also plotted. The numbers at the beginning and end of each track refer to column 1 of Table 4.

Standard statistical graphs showing frequency for various periods are often produced. Figure 9 gives an example of the annual tropical cyclone frequency, 1886 through 1982.

One of the many objective models in current operational usage at NHC is an analog model as described by Hope and Neumann (1970). This model scans the HURDAT tape and selects tropical cyclones that have characteristics similar to the current tropical cyclone in progress. These analog tropical cyclones are composited and a forecast track is generated. Figure 10 shows an example of an analog forecast for tropical cyclone Anita, 1977. Also included in the plot are the 50% probability ellipses at the forecast intervals of 12, 24, and 36 hr.

Table 5. Computer Printout of All Hurricanes That Passed Within 50 n.mi. of Miami, Florida 1886 through 1983.

MAP INDEX (1)	STARTING DATE (2)	LENGTH (DAYS) (3)	SEASONAL INDEX (4)	STORM'S NAME (5)	CLOSEST POINT OF APPROACH (CPA) (6)	DATE AT CPA (7)	TIME AT CPA (8)	DISTANCE TO CPA (9)	WIND (10)	REF # (11)	REF # (12)
1	8/14/1888	11	3	NOT NAMED	25.6N 80.4W	8/16	1700Z	12. NM	94KT	30	29
2	8/13/1889	10		NOT NAMED	25.2N 80.9W	8/22	1600Z	25. NM	75KT	141	141
3	9/9/1890	10		NOT NAMED	25.2N 80.9W	9/17	2200Z	24. NM	83KT	150	150
4	10/12/1900	10		NOT NAMED	26.6N 80.3W	10/17	1600Z	12. NM	65KT	159	159
5	6/14/1906	10		NOT NAMED	26.6N 80.3W	6/17	0800Z	28. NM	70KT	159	159
6	10/11/1906	10		NOT NAMED	26.6N 80.3W	10/17	0900Z	28. NM	106KT	165	165
7	10/11/1909	10		NOT NAMED	26.6N 80.3W	10/11	2000Z	29. NM	84KT	189	189
8	10/11/1909	11		NOT NAMED	26.6N 80.3W	10/11	1200Z	12. NM	113KT	276	276
9	10/11/1909	11	1	NOT NAMED	26.6N 80.3W	10/21	0500Z	33. NM	95KT	280	280
10	9/23/1909	10		NOT NAMED	26.6N 80.3W	9/28	1700Z	47. NM	86KT	296	296
11	10/30/1909	10		NOT NAMED	26.6N 80.3W	9/29	0100Z	50. NM	100KT	355	355
12	10/30/1941	10	6	NOT NAMED	26.6N 80.3W	11/4	1800Z	2. NM	65KT	357	357
13	10/30/1941	10	6	NOT NAMED	26.6N 80.5W	10/6	1100Z	23. NM	105KT	408	408
14	9/12/1945	9	3	NOT NAMED	26.6N 80.4W	9/15	2300Z	17. NM	119KT	449	449
15	9/7/1947	10	3	NOT NAMED	26.6N 80.4W	9/17	1800Z	31. NM	133KT	461	461
16	10/9/1947	8	3	NOT NAMED	26.6N 80.5W	10/12	0700Z	13. NM	75KT	465	465
17	9/13/1948	8	3	NOT NAMED	26.6N 80.8W	9/22	0500Z	33. NM	97KT	473	473
18	10/3/1948	14	3	NOT NAMED	26.6N 80.1W	10/18	0000Z	11. NM	96KT	474	474
19	10/15/1950	7	1	KING	26.6N 80.2W	10/18	0600Z	4. NM	93KT	496	496
20	8/20/1964	17	5	CLEO	26.6N 80.0W	8/27	0900Z	13. NM	90KT	629	629
21	10/8/1964	10	11	ISABEL	26.6N 80.8W	10/14	2300Z	38. NM	110KT	635	635
22	8/27/1965	11	18	BETTY	26.6N 80.8W	10/11	2300Z	38. NM	110KT	635	635
23	9/21/1965	11	18	INEZ	26.6N 80.3W	9/28	1000Z	44. NM	75KT	635	635
24	8/23/1979	15	4	DAVID	26.6N 80.3W	10/4	1400Z	40. NM	75KT	651	651
25	8/23/1979	15	4	DAVID	26.6N 80.5W	9/3	1100Z	45. NM	85KT	777	777

NOTES

- (1) INDEX NUMBER CORRESPONDS TO INDICIES GIVEN ON MAP AT BEGINNING AND END OF STORM TRACK.
- (2) INITIAL DETECTION DATE OF THIS TROPICAL CYCLONE.
- (3) RECORDED DURATION OF STORM IN CALENDAR DAYS.
- (4) STORM NUMBER FOR GIVEN YEAR CORRESPONDING TO THOSE GIVEN IN REFERENCE (1).
- (5) STORMS WERE NOT FORMALLY NAMED PRIOR TO 1950.
- (6) - (10) THESE COLUMNS GIVE LOCATION AND TIME OF CLOSEST APPROACH AND DISTANCE OF STORM CENTER TO SITE.
- (11) MAXIMUM SUSTAINED WIND SPEED NEAR STORM CENTER WHILE STORM CENTER IS WITHIN SPECIFIED DISTANCE FROM SITE. THIS IS NOT NECESSARILY THE WIND RECORDED AT GIVEN SITE. SEE REFERENCE (2).
- (12) CUMULATIVE STORM INDEX NUMBER BEGINNING WITH STORM 1 IN 1886.

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CONSULT REFERENCES 1 AND 2 FOR DATA LIMITATIONS.

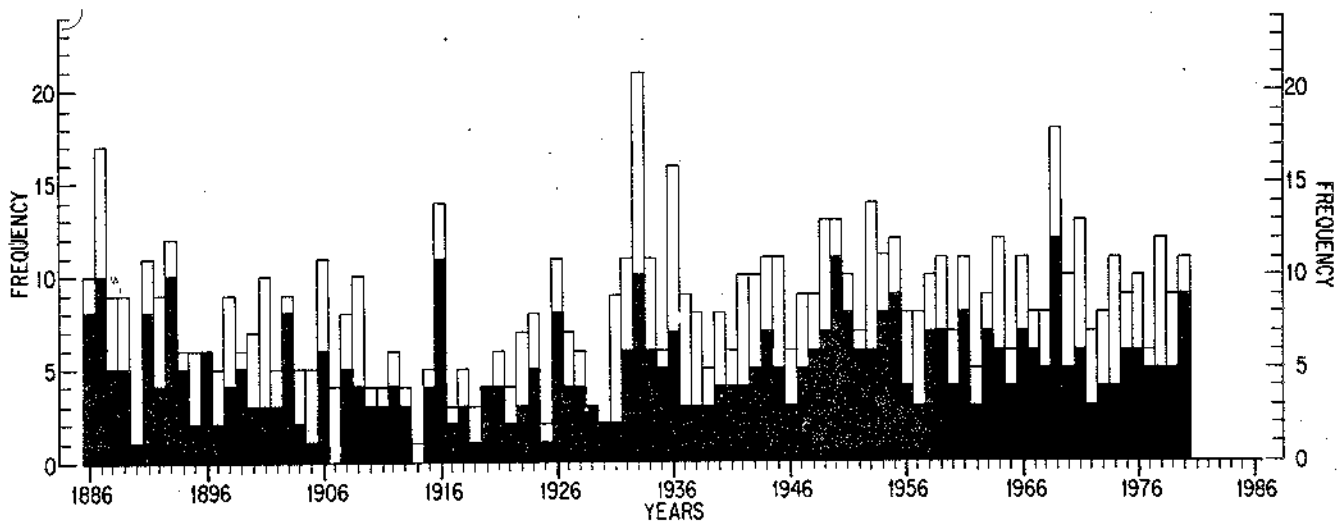


Figure 9. Annual distribution of the 811 recorded Atlantic tropical cyclones that reached at least tropical storm strength (open bar) and the 475 that reached hurricane strength (solid bar), 1886 through 1982. The average annual number of tropical storms and hurricanes over the period of record is 8.4 and 4.9, respectively.

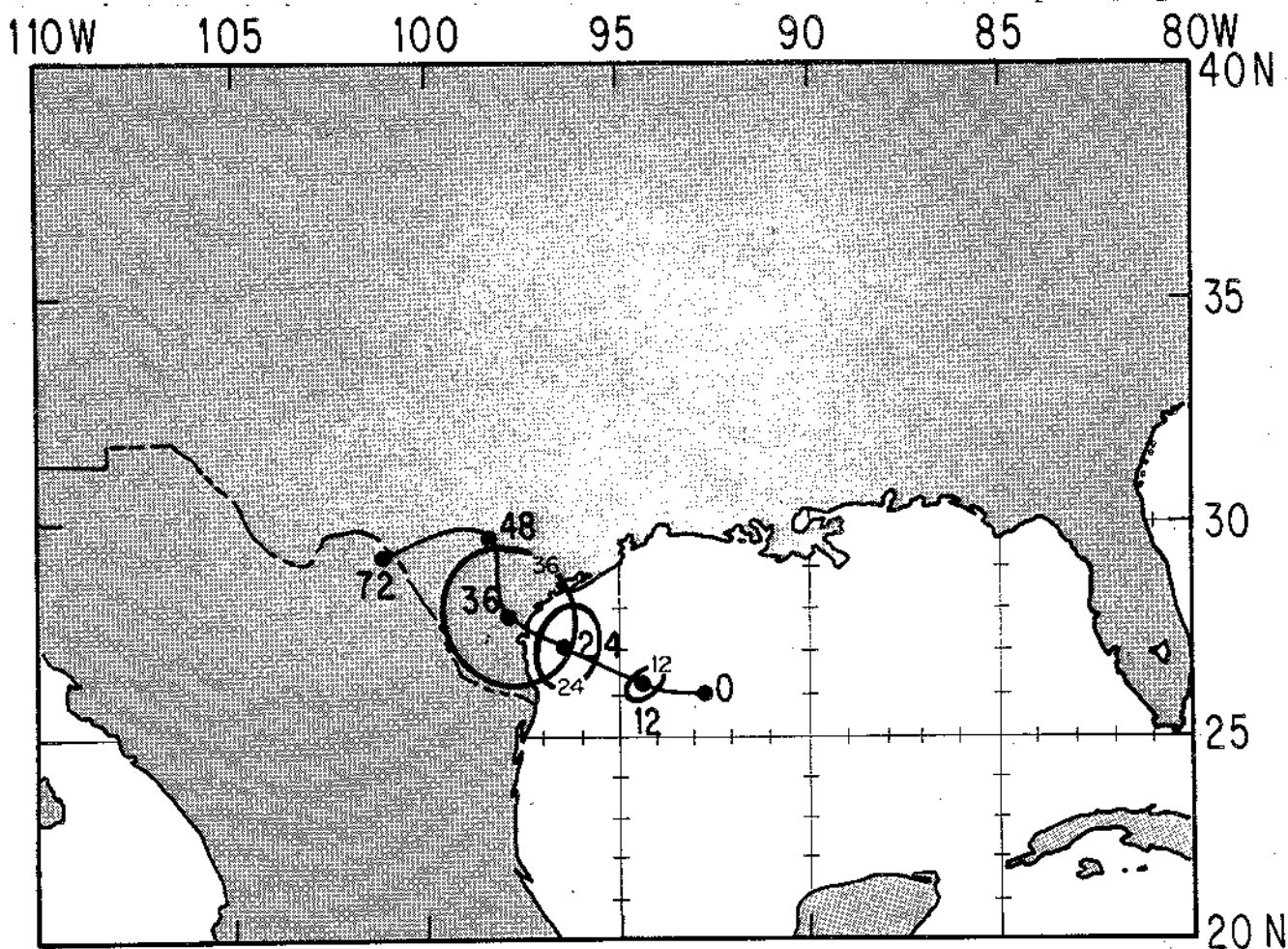


Figure 10. Hurricane analog forecast for Anita, 1977. The initial time is 0000 GMT on September 1, 1977.

These are determined from the scatter of the analog composites at the respective forecast interval. Other forecast models use the climatological information as one of many pieces of information to determine a forecast track.

Uses of the data also include intensity forecasts from regression analyses of the wind data and determination of pressure wind relationships.

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APPENDIX I A SAMPLE PROGRAM TO READ AND WRITE HURDAT

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DIMENSION IDATE(50,5),ALAT(50,4),ALON(50,4),IPED(50,4),IPRE(50,4)
DIMENSION IA(19),IB(58),ICE(50,4)
WRITE(6,1)
1 FORMAT(1H1)
DO 50 I=1,1000
C EACH PASS THROUGH DO LOOP 50 READS ONE STORM
READ(19,2,END=99) (IA(J),J=1,19),M,(IB(J),J=1,58),LSTORM
C 19=HURDAT TAPE. READ TITLE CARD. OBTAIN M WHICH GIVES THE
C NUMBER OF GMT DAYS THAT THE STORM WAS IN EXISTENCE.
2 FORMAT(19A1,I2,58A1,1X,A1)
DO 7 II=1,M
C DO LOOP 7 READS M DATA CARDS AND STORES VALUES IN ARRAYS.
READ(19,5) (IDATE(II,J),J=1,5),((ICE(II,J),ALAT(II,J),ALON(II,J),
IIPED(II,J),IPRE(II,J)),J=1,4)
5 FORMAT(6X,5A1,4(A1,F3.1,F4.1,1X,I3,1X,I4))
7 CONTINUE
READ(19,8) IQ
C READ IDENTIFICATION CARD
8 FORMAT(6X,A2)
C
C DATA FOR ONE STORM READ INTO STORAGE. THE FOLLOWING STATEMENTS
C WRITE THIS DATA OUT.
C
WRITE(6,11)
WRITE(6,12) (IA(J),J=7,19),M,(IB(J),J=1,59)
DO 9 J=1,M
WRITE(6,13) (IDATE(J,K),K=1,5),((ICE(J,K),ALAT(J,K),ALON(J,K),
IIPED(J,K),IPRE(J,K)),K=1,4)
9 CONTINUE
11 FORMAT(1H0,/,/,/,2X,40H-----)
12 FORMAT(1H0,10x,13A1,I2,59A1,/,/,20X,5H0000Z,17X,5H0600Z,17x,
15H1200Z,17X,5H1800Z,/,/,
27X,4HDATE,2X,4(3HLAT,3X,3HLON,2X,3HVEL,1X,4HPRES,3X))
13 FORMAT(1H ,5X,5A1,1X,4(A1,F4.1,1X,F5.1,1X,I3,1X,I4,2X))
50 CONTINUE
99 CONTINUE
STOP
END

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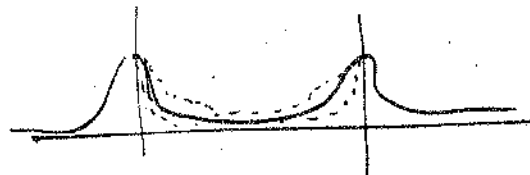
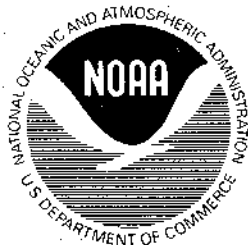
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