

# **Storms of 1877 - 1880**

STORMS OF 1877-1880  
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Introduction.

The present report describes results of continuing activities by its author as part of the effort of improving historical knowledge of tropical cyclones which is planned to be used in determining their frequency variation over the Atlantic Ocean during the second half of the last century and early this century. The study of storms of tropical nature for the period 1851-1876 was covered in previous reports prepared by the author (Fernandez-Partagas, 1994a; Fernandez-Partagas, 1994b; Fernandez-Partagas, 1994c; Fernandez-Partagas, 1995). The present report covers the period 1877-1880. The storm documentation by Neumann et al. (1993) has already covered this latter period, but the study of individual storms corresponding to those years has been undertaken in order to check the tracks in Neumann et al. (1993) for correctness in the light of information contained in other sources and to document the evolution of new storm cases to be added to the ones in their above mentioned publication.

Sources and methods.

The check of previously known storms in Neumann et al. (1993) made use of available tropical cyclone lists by several authors such as Tannehill (1938), Dunn and Miller (1960), Garriott (1900), Salivia (1972) and Garcia-Bonnely (1958), of books and articles such as Vines (1977), Vines (1895), Government Printing Office (1881), Sarasola (1928) and Martinez-Fortun (1942), of meteorological information contained in the Monthly Weather Review and of general news and marine intelligence published in newspapers, primarily in The New York Times and The Times (London). Each storm in Neumann et al. (1993) for the period 1877-1880 was checked against the above information sources and appropriate modifications were proposed for the tracks which were found to be in error.

In addition, the sources above allowed the author of this study to document the evolution of some new storms which, of course, are not included in Neumann et al. (1993). The main source for the documentation of these storms was the information published in the Monthly Weather Review and in the two newspapers mentioned.

Tracks for newly documented storms were then combined with those for previously known storms after having applied to them the proposed corrections along their tracks. Storms for each year in the period 1877-1880 were finally numbered in chronological order in accordance with the day they were first detected, and their tracks were displayed on a map for each individual year. The tracks are shown in Fig. 1 through Fig.4. Estimated 7 A.M. (E.S.T.) positions were denoted by black dots along the tracks, with adjacent numbers indicating the day of the month. The month was indicated only for the starting day of each track and, in addition, for the first day of the month when the track continued from one

month to the next. The storm number was indicated by a large size number near the beginning of the track.

## Results.

The detailed study of the 1877-1880 storms is presented in the Appendix. The appendix presents 40 storms on a one-by-one basis. These storms are listed in Table 1. Five out of the 40 storms (12.5 percent) are new cases which are not included in Neumann et al. (1993). Note in the table that 2 new cases were found for 1878 and also for 1880 while the fifth new case was found for 1879. It should be mentioned for comparison purposes that 6 out of the 36 storms (16.7 percent) which were found for the period 1871-1876 (Fernandez-Partagas, 1995) were new cases.

In regard to the number of previously known storms in Neumann et al. (1993) for which a track modification was proposed by the author of this study, Table 1 shows that some changes along the track were implemented for 23 out of the 35 storms displayed in Neumann et al. (1993) for the period 1877-1880. This means that, as a result of the present study, the majority (65.4 percent) of the tracks for the above mentioned 35 storms was not found to be entirely correct. The maximum number of storm tracks to be modified for an individual year was found to be 7 for 1880 and the corresponding minimum was found to be 4 for 1879. It should be mentioned for comparison purposes that 18 out of the 30 storm tracks (60 percent) which are displayed in Neumann et al. (1993) for the period 1871-1876 were modified in Fernandez-Partagas (1995).

No attempt was made to formally identify the storms as hurricanes or tropical storms. In that regard, this study is consistent with the policy observed by Neumann et al. (1993) for the period 1877-1880. However, the author of this study has referred to the intensity reached by many of the storms in an informal basis.

Table 1  
List of Storms  
(1877-1880)

List No.	Ident. # & Date	Newly Documented	Modified Track
1	Storm 1, 1877 (Aug. 1-4)	No	Yes
2	Storm 2, 1877 (Sept. 14-21)	No	Yes
3	Storm 3, 1877 (Sept. 16-22)	No	Yes
4	Storm 4, 1877 (Sept. 21 - Oct. 5)	No	Yes
5	Storm 5, 1877 (Sept. 24-29)	No	Yes
6	Storm 6, 1877 (Oct. 13-18)	No	No
7	Storm 7, 1877 (Oct. 24-27)	No	Yes
8	Storm 8, 1877 (Nov. 28-30)	No	No
9	Storm 1, 1878 (Jul. 1-3)	No	No
10	Storm 2, 1878 (Aug. 8-18)	No	Yes
11	Storm 3, 1878 (Aug. 19-20)	Yes	---
12	Storm 4, 1878 (Aug. 25-30)	Yes	---
13	Storm 5, 1878 (Sept. 1-13)	No	Yes
14	Storm 6, 1878 (Sept. 12-18)	No	No
15	Storm 7, 1878 (Sept. 24 - Oct. 8)	No	Yes
16	Storm 8, 1878 (Oct. 9-15)	No	Yes
17	Storm 9, 1878 (Oct. 9-16)	No	No
18	Storm 10, 1878 (Oct. 13-19)	No	No
19	Storm 11, 1878 (Oct. 18-25)	No	Yes
20	Storm 12, 1878 (Nov. 25 - Dec. 2)	No	Yes
21	Storm 1, 1879 (Aug. 9-12)	Yes	---
22	Storm 2, 1879 (Aug. 13-20)	No	Yes
23	Storm 3, 1879 (Aug. 19-25)	No	Yes

24	Storm 4, 1879 (Aug. 29 - Sept. 2)	No	No
25	Storm 5, 1879 (Sept. 11-23)	No	No
26	Storm 6, 1879 (Oct. 3-7)	No	No
27	Storm 7, 1879 (Oct. 9-16)	No	No
28	Storm 8, 1879 (Oct. 24-29)	No	Yes
29	Storm 9, 1879 (Nov. 18-21)	No	Yes
30	Storm 1, 1880 (Jun. 21-24)	No	No
31	Storm 2, 1880 (Aug. 4-14)	No	Yes
32	Storm 3, 1880 (Aug. 15-20)	No	Yes
33	Storm 4, 1880 (Aug. 24 - Sept. 2)	No	Yes
34	Storm 5, 1880 (Aug. 26 - Sept. 4)	No	Yes
35	Storm 6, 1880 (Sept. 6-11)	No	Yes
36	Storm 7, 1880 (Sept. 8-10)	Yes	---
37	Storm 8, 1880 (Sept. 27 - Oct. 4)	No	Yes
38	Storm 9, 1880 (Oct. 5-10)	No	Yes
39	Storm 10, 1880 (Oct. 10-16)	Yes	---
40	Storm 11, 1880 (Oct. 21-24)	No	No

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## Captions

Fig. 1 Storms of 1877. Estimated positions shown by black dots along the tracks are for 7 A.M. (E.S.T.).

Fig. 2 Same as Fig. 1 but for 1878.

Fig. 3 Same as Fig. 1 but for 1879.

Fig. 4 Same as Fig. 1 but for 1880.