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Storms of 1898 - 1900

**By
Jose J. Fernandez-Partagas**

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BY: JOSE. J. FERNANDEZ-PARTAGAS

Introduction.

The present report describes results of the author's continuing efforts of improving historical knowledge of historical tropical cyclones which is planned to be used in determining their frequency variation during the second half of the nineteenth century and early this century. The present report covers the period 1898-1900. The storm documentation in Neumann et al. (1993) has already covered this period, but the study of individual storms corresponding to those years was undertaken by the present author in order to check storm tracks for correctness in the light of information contained in other sources and at the same time trying to identify some new storms to be added to the ones in the above mentioned publication.

Sources and Methods.

Sources that were used in checking the tracks in Neumann et al (1993) were available cyclone lists such as those published in Tannehill (1938), Dunn and Miller (1960), Garriott (1900), Mitchell (1924), Academia de Ciencias (1970) and Garcia-Bonnely (1958), books, reports and articles about storms such as Salivia (1972), Sarasola (1928), Martinez-Fortun (1942), Barnes (1995) Tucker (1982), Ho (1989), Cline (1926), Frankenfield (1915), Alexander (1902), Rappaport and Fernandez-Partagas (1995), Weather Bureau (1901) and meteorological information contained in the Monthly Weather Review and the Historical Weather Maps and in sections of marine and general news published in newspapers such as The New York Times, The Times (London), The Morning Tribune (Tampa), The Miami Metropolis and Diario de la Marina (Havana). Each storm in Neumann et al. (1993) for the period 1898-1900 was checked against the above information sources and appropriate modifications were implemented for the tracks which were found to be in error. The above sources were also used in trying to identify new storms and some weather systems which seem to have had a possibility of having reached tropical storm intensity.

For each year, if new storms were documented, their tracks were combined with those of previously known storms after having applied the necessary modifications to the latter ones; then the storms were numbered in chronological order in accordance to the date they were first detected. Storms tracks for 1898-1900 are displayed on maps in Figs. 1 to 3. Estimated 7 A.M. (E.S.T) positions were denoted by black dots along the tracks, the adjacent numbers indicating the day of the month. The month was indicated for only the starting day of each track and, in addition, for the

first day of the month when a track was found to continue from one month to the next. The storm number was indicated by a large size number near the beginning of the track. For 1898, tracks for tropical storms were denoted by dashed lines and tracks for hurricanes were denoted by solid lines. For 1899-1900, portions of the tracks corresponding to tropical storm intensity or to hurricane intensity were denoted by dashed lines and solid lines, respectively, but, in addition, the depression (dissipation) stage was denoted by asterisks and the extratropical stage was denoted by crosses. The above symbolism was made to be consistent with the one used in Neumann et al. (1993) for the years 1899-1900.

Results.

The detailed study of the storms for the period 1898-1900 is presented in the Appendix. The appendix presents 26 storms on a one-by-one basis. These storms are listed in Table 1. Note in the Table that four new storms were found for the above mentioned period: 2 in 1898, 2 in 1899 and none in 1900. Note, in addition, that some changes along the tracks were implemented for nineteen out of the twenty-two storms displayed in Neumann et al. (1993) for the period 1898-1900. This means that, as a result of the present study, 77.3% of the tracks was not found to be entirely correct. The maximum number of tracks that were modified for an individual year was seven in 1990 and the minimum was four in 1898. The above percentage represents a significant increase with respect to the ones of 37.5% corresponding to the period 1891-1893 and 56.5% corresponding to the period 1894-1897. This increase appears to be associated with the use of the Historical Weather Maps as a new source for checking storm tracks starting in 1899.

TABLE 1
LIST OF STORMS
(1898-1900)

<u>List No.</u>	<u>Ident # & Date (s)</u>	<u>New Case</u>	<u>Track Modified</u>
1	Storm 1, 1898 (Aug.2-3)	No	No
2	Storm 2, 1898 (Aug.30-Sept.1)	No	No
3	Storm 3, 1898 (Sept.3-5)	Yes	---
4	Storm 4, 1898 (Sept.5-20)	No	Yes
5	Storm 5, 1898 (Sept.12-22)	No	No
6	Storm 6, 1898 (Sept.20-28)	No	No
7	Storm 7, 1898 (Sept.25-Oct.6)	No	Yes
8	Storm 8, 1898 (Sept.26-28)	No	Yes
9	Storm 9, 1898 (Oct.2-14)	No	Yes
1	Storm 10, 1898 (Oct.21-23)	Yes	---
11	Storm 11, 1898 (Oct.27-Nov, 4)	No	No
12	Storm 1, 1899 (Jun.26-27)	Yes	---
13	Storm 2, 1899 (Jul.28-Aug.2)	No	Yes
14	Storm 3, 1899 (Aug.3-Sept.3)	No	Yes
15	Storm 4, 1899 (Aug.29-Sept.8)	No	Yes
16	Storm 5, 1899 (Sept.3-15)	No	Yes
17	Storm 6, 1899 (Oct.2-7)	No	Yes
18	Storm 7, 1899 (Oct.26-Nov.4)	No	Yes
19	Storm 8, 1899 (Nov.7-10)	Yes	---
20	Storm 1, 1900 (Aug.2-Sept.15)	No	Yes
21	Storm 2, 1900 (Sept.9-23)	No	Yes
22	Storm 3, 1900 (Sept.11-15)	No	Yes
23	Storm 4, 1900 (Sept.13-18)	No	Yes
24	Storm 5, 1900 (Oct.4-14)	No	Yes
25	Storm 6, 1900 (Oct.10-15)	No	Yes
26	Storm 7, 1900 (Oct.26-29)	No	Yes

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- Salivia. L.A., 1972: Historia de los temporales de Puerto Rico y las Antillas (1492-1970). Editorial Edil, Inc., San Juan, Puerto Rico, 325 pp.
- Sarasola, S., 1928: Los huracanes en las Antillas. Imprenta Clasica Española, Madrid, 254 pp.
- Tannehill, I.R., 1938: Hurricanes, their nature and history. Princeton University Press, Princeton, NJ, 257 pp.
- Tucker, T., 1982: Beware of the hurricane!, the history of the cyclonic tropical storms that have struck Bermuda, 1609-1982. Island Press Limited, Hamilton, Bermuda, 173 pp.
- Weather Bureau, 1901: Report of the Chief of the Weather Bureau, 1900-1901, Vol.1, Government Printing Office, Washington, D.C., 318 pp.

Captions.

Fig.1. Storms of 1898. Estimated positions shown by black dots along the tracks are for 7 A.M. (E.S.T.). Tracks for tropical storms are denoted by dashed lines and tracks for hurricanes are denoted by solid lines.

Fig.2. Storms of 1899. Estimated positions shown by black dots along the tracks are for 7 A.M. (E.S.T.). Dashed lines denote portions of the tracks along which storms attained tropical storm status and solid lines denote portions of the tracks showing hurricane intensity. Depression (dissipation) stages are denoted by asterisks and extratropical stages are denoted by crosses.

Fig.3. Same as Fig.2 but for 1900.