

CORRESPONDENCE

REMARKS ON "A PRESEASON HURRICANE OF SUBTROPICAL ORIGIN"

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I have just read the article by Moore and Davis (*Monthly Weather Review*, vol. 79, No. 10, 1951, pp. 189-195) on the May 1951 hurricane and believe that they are correct about the importance of the sea surface temperature in influencing the movement of this storm.

At the time of the May storm we were looking at the sea-surface isotherms as published by Fuglister (*Papers in Physical Oceanography and Meteorology*, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, vol. X, No. 2, 1947, 25 pp.). Here the comparison of the track with the isotherms is even more striking than that shown in Moore and Davis' figure 1. Looking at Fuglister's chart for May, one can see the cold sea surface over which the storm would have to pass if it were going to hit Long Island. The 1938 and 1944 New England hurricanes did finally move over colder water (but not as cold as in the May case) with great intensity, but they were no longer true tropical storms, apparently maintaining their energy in a manner similar to extra-tropical storms.

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A comparison between an unpublished study by us on the favorable circumstances leading to the early formation of Hurricane Able, 1951, and the study by Moore and Davis (*Monthly Weather Review*, vol. 79, No. 10, 1951, pp. 189-195) brings to light: (1) a possible error in their figure 1, and (2) a variation in the solar constant associated with the hurricane occurrence.

The point concerning their figure 1 is raised by comparing it to a map in our study showing average sea-surface temperatures in May (for 5-degree latitude-longitude areas taken from *Atlas of Climatic Charts of the Oceans*, U. S. Weather Bureau, 1938). Our temperatures values are at variance with their isotherms, suggesting a possible error unless they have more complete and later data than we have. Also, a further check reveals that their 70° isotherm does not agree with the May Atlantic Ocean sea-surface temperature chart, U. S. Hydrographic Office, 1943. [Mook, in his comments has, of course, pointed to the more recent sea-surface temperature charts by Fuglister.]

Mention of our second point seems desirable for the sake of completeness of the discussion of Hurricane Able. According to Abbot (*Smithsonian Miscellaneous Collections*, Smithsonian Institution, Washington, vol. 110, No. 1, 1948), "We are not to infer that a depression of the solar constant is always necessary to bring on a hurricane. Nevertheless, frequently it appears to be the impulse which starts the cataclysm." Table 1 shows that the lowest, provisional values of the solar constant in May 1951 were recorded on the 14th and 16th. As Hurricane Able was

TABLE 1.—Provisional solar constant values from Montezuma, Chile (Courtesy L. B. Aldrich, director, Astrophysical Observatory, Smithsonian Institution)

1951 May 1.....	1.914	1951 May 12.....	30	1951 May 21.....	35
2.....	25	13.....	21	22.....	34
3.....	34	14.....	13	23.....	30
4.....	43	15.....	15	25.....	26
6.....	34	16.....	13	26.....	27
7.....	36	17.....	15	29.....	28
8.....	22	18.....	25	30.....	24
10.....	28	19.....	29	31.....	32
11.....	33	20.....	40		

first recognized on the 17th this is another case of a hurricane that was definitely preceded by a depression of the solar constant, as judged from the 26 recorded observations. It is of further interest to note, in table 2, that among the monthly means for the past 8 years, that of May 1951 is significantly the lowest.

TABLE 2.—Monthly mean solar constant values, 1944-51 (May 1951 value is provisional)

May 1944.....	1.944	21 values.
May 1945.....	47	28 values.
May 1946.....	47	19 values.
May 1947.....	43	16 values.
May 1948.....	50	16 values.
May 1949.....	44	13 values.
May 1950.....	44	21 values.
May 1951.....	27	26 values.

REPLY

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We thank Messrs. Mook and Malkin for their comments about our *Monthly Weather Review* article, "A Preseason Hurricane of Subtropical Origin." We are pleased at the interest shown in it.

The source of the sea-surface temperature data was an article by Giles Slocum, "The Normal Temperature Distribution of the Surface Water of the Western North

Atlantic Ocean," *Monthly Weather Review*, vol. 66, No. 2, pp. 39-43. We regret that a credit line was inadvertently omitted from the chart and the references.

While the Atlas referred to by Malkin and the article by Slocum are from the same observational material, the former gives the values for only 5-degree squares. The isotherms in Mr. Slocum's article, which we have used except for minor smoothing due to drafting limitations, are based on 1° intervals. The apparent discrepancy may result from the more exact delineation of the isotherms with the smaller intervals. The point which we were

emphasizing is further supported by the fact pointed out by Mook that, based on the later publication by Fuglister, the relation between the path of the storm and the isotherm pattern is even more striking than in our original chart.

The comments by Malkin regarding the possible effect of variations in the solar constant are interesting. They suggest the desirability of examining the possible correlation with other such abnormal storms. The one along the East Coast February 2-4, 1952, is a case in point.