AN INTERESTING ANEMOGRAPH RECORD

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[Manuscript received April 28, 1954]

Anemograph records at Hurricane Gate Stations on Lake Okeechobee, Florida, have been obtained by the Corps of Engineers since 1936 as part of the program of operation and planning for the Central and Southern Florida Project Area. Invaluable observational data have been obtained during passage of hurricanes across or near the Lake.

During passage of the storm of September 21–22, 1948, the paper feed at Hurricane Gate Station No. 1 was speeded up to 60 times normal for a 5-minute period starting at 11:12 a. m., September 22, as shown in figure 3, so that each vertical line on the chart represents a 2-second interval. The result was a clearly defined pen trace in contrast to the blurred ink portion at either end of the figure which represents normal conditions of operation. Almost certainly the high rate of feed of the paper has an influence upon the action of the pen arm so that any conclusions drawn must be with that thought in mind.

At the time of this record the hurricane center was located about 60 miles northeast of Hurricane Gate No. 1, which is located at the southwestern portion of Lake Okeechobee as shown in figure 1. There is very little topographic variation surrounding the station, with the extensive marsh grass spreading from west through north to southeast. Details of local obstructions are shown in figure 2.

There are certain indications on figure 3 which are worthy of note. On the wind-speed graph the over-all impression is one of rising and falling wind speed of duration in the order of 15–20 seconds or less. Peaks of speed are particularly noticeable at approximately 11:12:30, 11:12:44, 11:14:20, 11:15:01. These fluctuations probably are indicative of fairly large-scale turbulent structure near the ground surface. The very violent fluctuations in direction near the lull of these periods, particularly noticeable starting at 11:13:56 and 11:15:42, appear to indicate considerable lateral variations in motion coincident with the rise and fall of wind speed. Other repetitive characteristics of about 10-second duration are a very sharp rise in wind speed (about 10 m. p. h.) followed by a gradual subsidence as illustrated at 11:12:48, 11:14:38, and 11:15:28 and relative lulls introduced by sharp falls in speed (about 10 m. p. h.) as indicated at 11:12:08, 11:12:33, 11:13:56, and 11:16:20. These repetitive characteristics

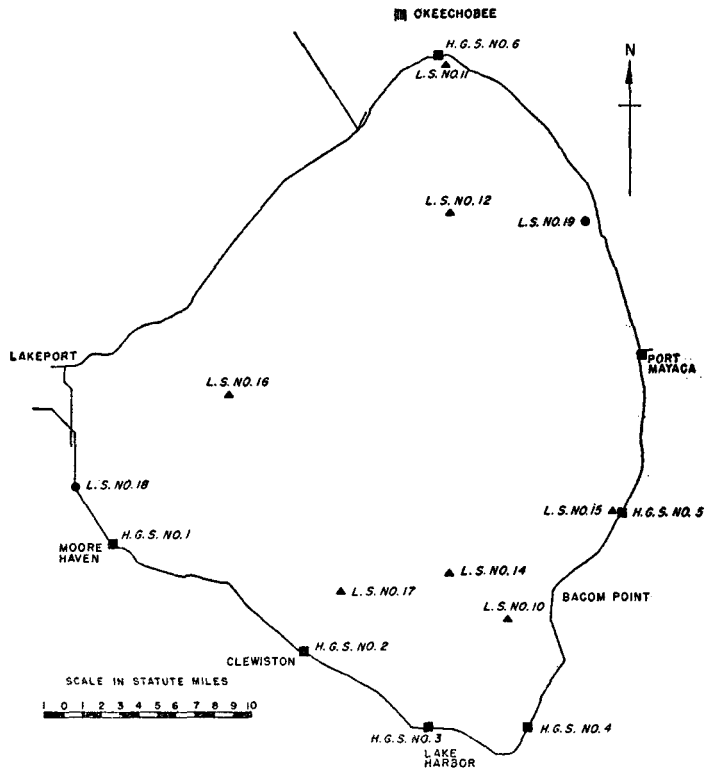

FIGURE 1.—Map of Lake Okeechobee showing locations of meteorological installations. H. G. S. stands for Hurricane Gate Station, L. S. for Lake Station where the instruments are mounted on pylons set up in the Lake.

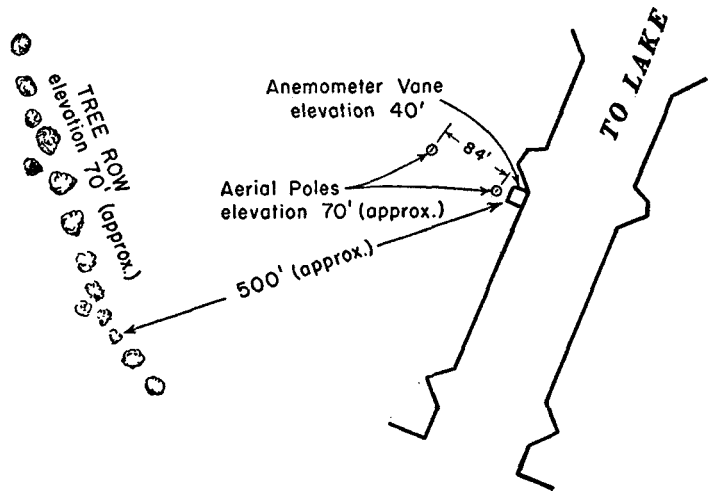

FIGURE 2.—Details of anemometer exposure at Hurricane Gate Station No. 1 where trace shown in figure 3 was made.

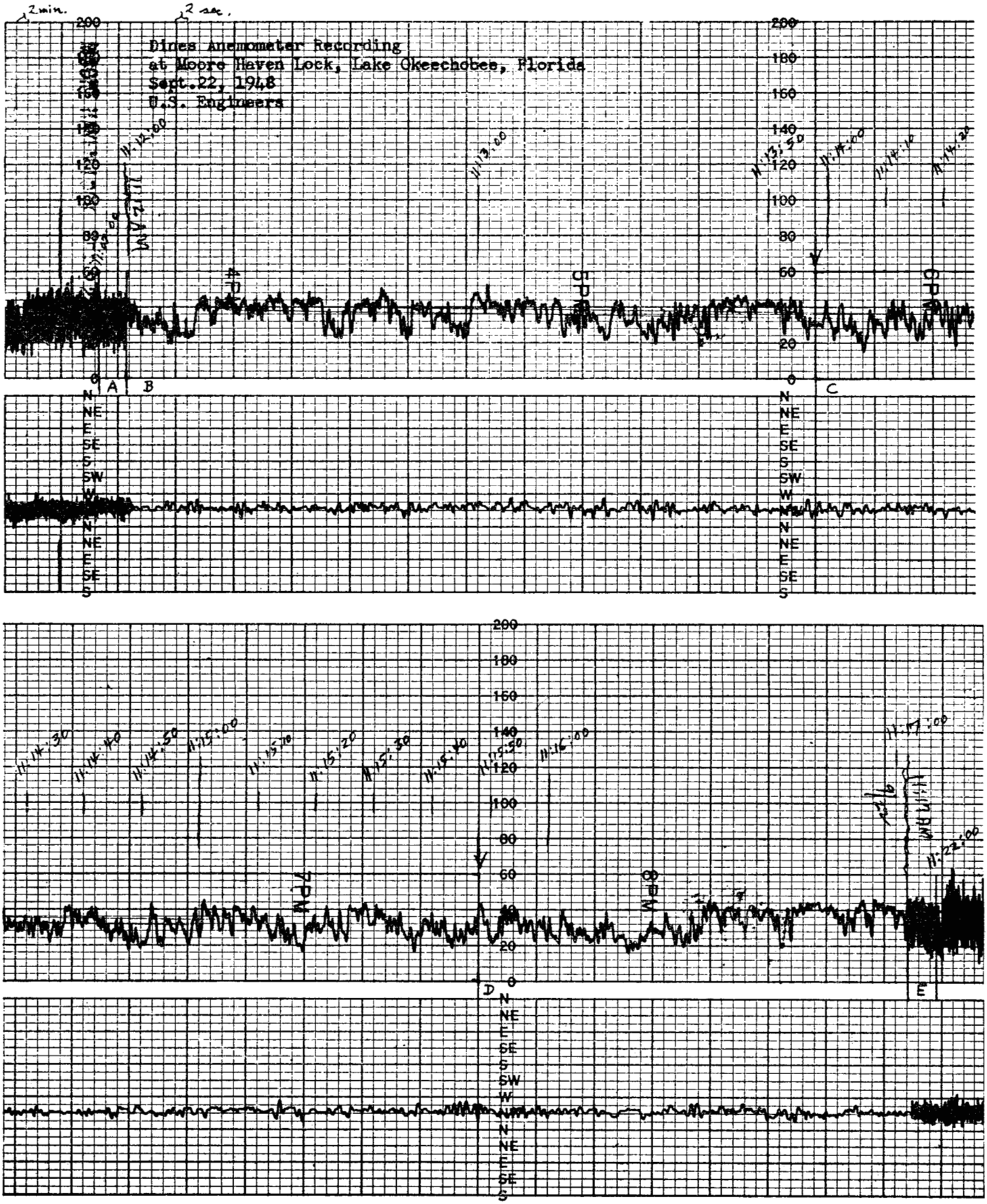

FIGURE 3.—Anemograph record made at Hurricane Gate Station No. 1, Lake Okeechobee, Fla. during the 5-minute interval 11:12 to 11:17 a. m., September 22, 1948, during the passage of a hurricane. The paper feed was speeded up to 60 times normal so that each vertical line represents 2 seconds of elapsed time.

are probably indicative of smaller turbulent structure superimposed upon the larger-scale fluctuations.

During the period immediately prior to and after the speeded up portion of the chart, peak gusts as high as 62 m. p. h. were recorded, whereas during the speed run the maximum recorded speed was 52 m. p. h. This may be attributed to mere coincidence in timing, but it is more likely due to the high rate of paper feed, since from 11:17 a. m. to 2:30 p. m. (not reproduced) peak gusts of 60 m. p. h. or greater were recorded 47 times.

Interpretation of variation of wind speed and direction characteristics for very short intervals of time would be almost pure conjecture, since instrumental lag and sensitivities could produce such variations (cf. Middleton [1]). However, a general feature of figure 3 is the almost invariable shift in wind direction associated with sharp changes in wind speed. This would suggest an instrumental increase of speed as the pitot-tube head is swinging into the wind and a decrease of speed as it is swinging away from the wind during its short-period vibrations. This may be due to inertia of the instrument which would cause the pitot head not to follow slight changes in wind direction immediately or to overshoot when a rapid change in direction takes place.

REFERENCE

W. E. Knowles Middleton, *Meteorological Instruments*, University of Toronto Press, Toronto, Canada, 1941, p. 141.

CORRECTION

A correction intended for vol. 81, No. 3, p. 82 was inadvertently assigned to vol. 80, No. 3, p. 82 in the March 1953 issue and in the 1953 Index. We repeat the correction here in its proper form:

MONTHLY WEATHER REVIEW, vol. 81, No. 3, March 1953, p. 82: In column 2, in text beneath table 1, total March 1953 precipitation at Boston should be 11.00 in. instead of 11.69 in. as given.