

EASTERN REGION TECHNICAL ATTACHMENT

No. 76-13B

June 7, 1976

LONG TERM TRENDS IN THE NWS ABILITY TO FORECAST
HEAVY SNOW EVENTS

The National Weather Service is frequently questioned about its ability to forecast hazardous or significant weather events. This study continues the investigation initially reported in Technical Attachment No. 75-1-6, issued on January 6, 1975, and deals with the question for one type of event, heavy snow (>6 inches).

Forecasts are only archived for 3 - 5 years; therefore, we had to resort to forecasts published in the newspapers to reconstruct a long time-series. There is a degree of uncertainty as to whether a newspaper forecast would have mentioned heavy snow. Our sample consisted of precipitation forecasts (when heavy snow occurred) and observations of heavy snow. A forecast of snow when heavy snow occurred was scored as a hit. In this study it is assumed that a trend in the skill of snow forecasts (when heavy snow occurs) reflects the trend in skill of heavy snow forecasts.

Data for the winter seasons 1974 - 1975 and 1975 - 1976 were added to that collected for the winter periods 1945 - 1946 through 1973 - 1974. The following cities were used in this study:

Allentown, PA
Atlantic City, NJ
Baltimore, MD
Bridgeport, CT
Harrisburg, PA

Hartford, CT
New York, NY
Providence, RI
Washington, DC

The prefigurance, i.e. relative frequency of observed events correctly forecast (No. of Hits/No. of Observations), was derived from the added data. Incorporating this information in the presentation of 5- and 9- point moving averages of individual winters (Figure 1), the same upward trend in prefigurance continued. It should be noted that the prefigurance can be improved by increasing the number of snow forecasts without a concomitant increase in skill. We have no evidence to suggest that this has occurred.

In Figure 1, 5- and 9- point moving averages of the annual number of observed heavy snow events were also plotted (lower curves). Comparing these curves with those of prefigurance, it appears that before the late 1960's, a correlation existed between our ability to forecast heavy snow and the annual number of heavy snow events. However, since the late 1960's, our ability to forecast heavy snow has apparently become independent of the frequency of heavy snow events.

In speculating about this recent development, it is interesting to note that detailed computer guidance became available to field forecasters in 1966 with the implementation of the PE-model.

In summary, there is some evidence that the NWS has been doing a better job of forecasting heavy snow events in the last ten years than in prior years.

ACKNOWLEDGMENT

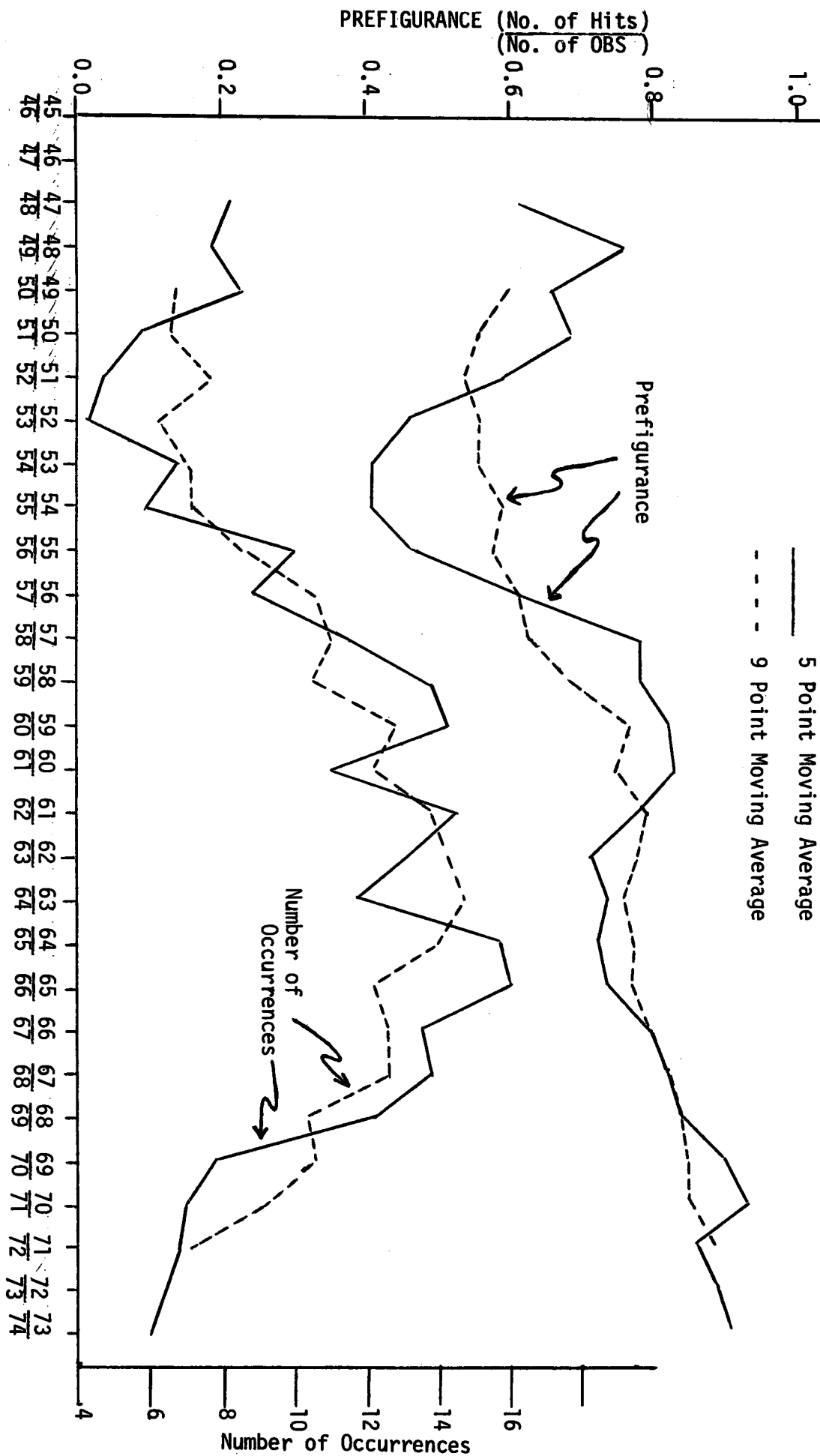
Our thanks to the offices that participated in the search of observational records and forecast files for the necessary data.

SCIENTIFIC SERVICES DIVISION, ERH
June 7, 1976

Attachment: Figure 1

FIGURE 1

LONG TERM TRENDS IN THE ABILITY
TO FORECAST HEAVY SNOW EVENTS



WINTER - SEASONS