

REMOVING THE BIAS

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1. INTRODUCTION

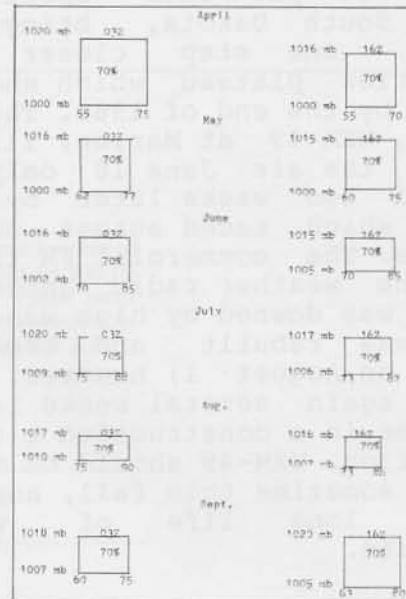
Forecasting the negative is not, as a general rule, done in the field of weather forecasting. However, anyone who forecasts a 30 percent probability of precipitation has in effect forecast a 70 percent probability of a non-event. This short dissertation will attempt to show the value of a non-event.

2. REASONING

NMC guidance, MOS, appears to have a bias toward climatology. As a consequence of this, the forecasts are less reliable in an extremely dry regime. It does, in fact, overforecast convective precipitation in the Central Plains under such conditions. It therefore behooves the local forecaster to devise a climatological method of removing the bias. Since time is of the essence in operational meteorology, the system must not be time-consuming, and must be reasonably accurate. The following gave excellent results in Wichita, KS.

3. METHOD

Determine the sea level pressure and temperature at 10 AM and 9 PM LST, and the beginning times of all thunderstorms for the thunderstorm season over the past 10 years. When these are compiled on a monthly basis, you will have obtained the sea level pressure range and the temperature range of a "Normal" thunderstorm day for the particular month. Actually these ranges will prove too great for use. However, 70 percent of the thunderstorms will be usable. After construction of a block diagram containing these values, enter with the 10 AM or 9 PM temperature and sea level pressure on any given day of the month. If either the temperature or pressure value fall outside the block diagram, the thunderstorm probability is no greater than 30 percent, for the following 8 hours.



4. VERIFICATION

The following verifications are for the thunderstorm season of 1975. The method worked well enough that it was routinely used as a thunderstorm modifier thereafter.

Month	Time	"No" fcsts	Pct correct
Apr	03Z	21	100
	16Z	15	100
May	03Z	12	92
	16Z	14	86
Jun	03Z	11	91
	16Z	11	82
Jul	03Z	8	100
	16Z	7	100
Aug	03Z	12	100
	16Z	13	100
Sep	03Z	20	95
	16Z	24	96

5. NOTES

(a) This method obviously leaves a 30 percent probability, outside the block, at any time. A careful analysis of current charts and upper air soundings determines if the 30 percent is in fact valid.

(b) All percentile errors occurred at sea level pressures below the threshold value indicated.