

A PRECIPITATION NOMOGRAPH IS COMPARED TO
THE MODEL LFM OUTPUT FOUS
PRECIPITATION FORECASTS

BY

Walter J. Blake (1)
National Weather Service
Newark, NJ 07114

1. INTRODUCTION

The object of this paper was to examine the relationship of precipitation with Vertical Velocity (VV) and Relative Humidity (RH) which are developed in the LFM product Fous 61. Table 1 shows the output for 12Z October 3, 1980. The numbers underlined are RH = 81 percent, VV = 02 and TT = .23 which is the rainfall amount predicted by the model for the 6 hours ending 00Z October 4th.

Table 1

FOUS61 KWBC 031200
OUTPUT FROM LFM 12Z OCT 03 80

STA	RH	R1R2R3	VVLI	HHDDFF	TBPSTT
LGA	<u>81</u>	848377	<u>02</u> <u>04</u>	550610	90070 <u>23</u>
18076	837667	03001	531203	9005020	
24059	776816	-0102	512905	9006017	
30060	736644	00305	502613	8909000	
36062	686652	00208	483613	8812000	
42059	666348	-0510	462714	8616000	
48059	656348	-0410	432813	8419000	

Preliminary scatter diagrams showed good relationship with these variables. It was decided to develop a nomograph using actual precipitation in place of TT - the Model LFM forecast with the two independent variables RH and VV. It was also desired to see how closely the nomograph would agree with the LFM forecast (TT).

2. DISCUSSION

The original LFM FOUS61 data covered the period from September 1979 to May 1980 for three stations: La Guardia, Williamsport PA, and Philadelphia PA. Both the 00Z and 12Z transmissions were used. The total number of cases was 200. The data used to test the nomograph covered the period from September 1978 to May 1979 totaling 196 cases.

3. METHOD

The original data was divided into class intervals of units of 10 for Vertical Velocity and in 10 percent increments for Relative Humidity. Table 2 shows how the data was organized. It shows all the data arranged by class interval for VV from -10 to 40 and RH from 60 percent to 100 percent. The average rainfall is obtained for each of the intervals. These values were used to develop charts 1,2,3, and 4.

Table 2

AVERAGES OF VV, RH, AND PRECIPITATION

VV	RH	VV	PCPN	RH	CASES
-10-0	60-69	-10	.036	56.0	14
	70-79	-4	.055	74.6	16
	80-89	-6	.064	86.0	9
1-10	70-79	4.0	.072	71.4	21
	80-89	5.6	.112	84.3	13
	90-100	8.0	.100	92.7	7
11-20	60-69	15.5	.06	62.0	4
	70-79	15.3	.36	74.7	6
	80-89	14.2	.115	84.8	13
	90-100	15.3	.150	94.5	15
21-30	70-79	25.0	.120	72.0	7
	80-89	23.6	.13	85.8	12
	90-100	24.2	.25	96.5	33
31-40	80-89	39.0	.29	81.0	5
	90-100	40.0	.38	98.0	<u>25</u>
TOTAL					200

Charts 1 and 2 were constructed from the values shown in table 2. Note the increasing slopes of the curves with increasing values of VV and RH on both charts. Chart 3 is developed from 2 and 3 and forms the basis for the final nomograph Chart 4.







