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VERIFICATION OF THUNDERSTORM PROBABILITY
FORECASTS FOR THE SUMMER OF 1975

Donald S. Foster and Ronald M. Reap

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1. INTRODUCTION

Summer operational thunderstorm probability forecasts, developed by Reap and Foster (1975), were implemented during June 1975. These forecasts were distributed to forecast offices nationwide via facsimile and the FAA's request/reply system. They were designed to be used as guidance material for forecasters preparing local and regional forecasts. This paper describes our verification of the thunderstorm probability forecasts issued during the 1975 summer season.

2. THUNDERSTORM PROBABILITY

The thunderstorm probability forecasts were based on equations derived by applying multiple screening regression techniques to model predictors archived on magnetic tape and to predictands tabulated from manually-digitized radar (MDR) data (Reap and Foster, 1975). The model predictors were 24-hr forecasts from the National Meteorological Center (NMC) six-layer primitive equation model and the Techniques Development Laboratory (TDL) three-dimensional trajectory model. The MDR data were collected from hourly teletype reports and archived on magnetic tape. The data were coded for blocks 40-45 nautical miles on a side, whose configuration is shown in figure 1. An MDR value of 4 or greater observed within the period ± 3 hours from 0000 GMT defined a thunderstorm occurrence. As a result, probabilities developed are valid for a 6-hr period centered at 0000 GMT for each block in the MDR grid area shown in figure 1. In effect, this corresponds to a 21-27 hr forecast based on 0000 GMT initial data.

3. VERIFICATION METHOD

Verification was completed in two steps. First, an intermediate data set was created composed of individual daily records containing the forecast probability value and highest MDR code reported for each MDR block in the 6-hr period centered on 0000 GMT. In the second step, verification statistics were actually computed from the intermediate data set and tabulated for visual inspection.

There are a number of verification statistics and scores available for measuring the accuracy of probability forecasts. We decided on two scores that we believe provide sufficient information for a comprehensive analysis of the forecasts.

These scores were computed for individual MDR blocks for 10 probability categories, for each MDR block for all categories, for the whole MDR grid for all categories. Limits of the 10 forecast probability categories selected

were as follows: 0.00 to 0.09, 0.10 to 0.19, 0.20 to 0.29,....., 0.90 to 0.99. The basic tabulation consisted of the number of forecasts and the number of thunderstorm occurrences for each MDR grid block and for each category. From this tabulation a forecast score, F, and a P score were computed for each MDR block and for each forecast category. The F score used here is defined as:

$$F = \frac{(N \times R) - O}{N} \times 100$$

where

- N = Number of forecasts
- R = Average probability of those forecasts
- O = Number of thunderstorm occurrences

For example, if there were 100 forecasts within the 50% to 59% probability category, with a mean probability of 55%, and 55 thunderstorms occurred, F score would be 0 percent (perfect). If there were no occurrences, F score would be +55% (overforecast). If the average probability was 0 percent and 55 thunderstorms occurred, F would be -55% (underforecast). The range of F is from +100 to -100 percent, with 0 percent being a perfect score. This F score may be considered a measure of bias or forecast reliability.

The P score as used here is defined as;

$$P = \frac{1}{N} \sum_{i=1}^N (R_i - I_i)^2 \times 100$$

A perfect score is 0 and worst possible score is 100. The P score measures both reliability and resolution, i.e., the ability of the predictive equation to correctly forecast extreme probability values. When applied to a single probability category as in table 1, it measures primarily only reliability just as the F score, but with greater emphasis on large errors.

4. VERIFICATION STATISTICS

Table 1 shows a sample listing of the raw statistics for the entire MDR grid for each day of the verification period, which included a few test runs made in early June followed by a fairly complete series of operational forecasts from June 12 to September 30. The tenth category, 0.90 to 0.99, was not included since no forecasts were made for this category. In the fourth column from the right there is tabulated the sum of the thunderstorm occurrences for that date. To the right of this column is tabulated the sum of the forecast blocks expected to have thunderstorm occurrences for that date, i.e., the sum of the forecast probabilities. To the right of this column are the F score and the P score for the whole MDR grid for that date.

Table 2 shows a listing of verification statistics for each MDR block during the entire verification period. The I and J block identifiers refer to those illustrated in table 1. For example, Kansas City lies in

MDR block identified by I = 10 and J = 14. Referring to this block in table 2, one sees that 28 forecasts were made in the 0.00 to 0.09 category. Two forecasts were accompanied by thunderstorms for an F score of 3 percent and a P score of 7. For all categories there were 16 forecasts accompanied by thunderstorms. According to the average probability, one would expect 20 thunderstorm occurrences for that block. This makes an F score of 3 percent, just slightly overforecast, and a P score of 13. In this way a reader may determine how accurate the guidance was for any locality in the MDR grid.

Table 3 shows a summary of statistics for each forecast category for the entire MDR grid for the June-September verification period. Of the 81,234 forecasts made, 19,706 had thunderstorm occurrences. This resulted in an average probability of occurrence of 24 percent. The average forecast probability was 23 percent, or 18,658 forecasts expected to be accompanied by thunderstorms. The overall F scores was -1 percent, slightly underforecast, and the total P score was 0.15. (The P score in this table has not been multiplied by 100.) For the whole grid, the thunderstorm probability forecast equation performed quite well. However, when examining the F score on a regional level (see figure 2), underforecasting was found over the southern states. P scores (see figure 3) were also higher for the same area. Tables 2 and 3 show that forecasts in categories between 0.40 and 0.69 would have verified better if they had been one or two categories higher especially in the southern states. The daily F scores (table 1) showed more days with minus scores than plus scores, but there appeared no definite trend throughout the season. We believe that the primary cause of underforecasting was the large departure of daily thunderstorm frequencies from the six-month average frequencies used in developing the forecast equation. Steps have been taken to correct this deficiency for the 1976 season as explained below.

5. SUMMARY AND FUTURE PLANS

The thunderstorm probability forecasts, when verified for the whole MDR grid and for the whole season, were excellent. However, when studied on a regional basis the probabilities were generally too low over the southern states where thunderstorm frequencies are the highest.

Future plans call for updating the current thunderstorm probability equation by including both 1974 and 1975 MDR data in the development sample. Daily frequencies interpolated from monthly values will be offered as a predictor instead of six-month average frequencies in deriving the regression equation for 1976. Monthly values will be applied at the middle of the month and a linear interpolation applied on a day-to-day basis between mid-months. We also plan to develop a separate thunderstorm equation for the winter season from January through March.

REFERENCES

Reap, R. M., and D. S. Foster, 1975: New operational thunderstorm and severe storm probability forecasts based on model output statistics (MOS). Preprints, Ninth Conference on Severe Local Storms, Norman, Oklahoma, Am Meteor. Soc., Boston, Mass., 58-63.

Table 2. (continued)

BLOCK I J	.00-.09		.10-.19		.20-.29		.30-.39		.40-.49		.50-.59		.60-.69		.70-.79		.80-.89		SUM X	SUM F	SUM S	
	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O				F
611	0	0	0	0	34	7	5	17	15	4	6	21	0	0	0	0	0	0	20	22	2	15
612	32	4	3	12	36	9	3	0	23	1	1	8	25	0	0	0	0	0	21	20	-1	15
613	37	5	-5	12	34	8	-8	18	32	9	-3	20	6	2	0	21	0	0	24	18	-5	17
614	31	1	7	4	34	5	0	13	31	6	6	16	13	4	2	21	0	0	16	20	4	12
615	0	0	0	0	29	7	1	18	17	7	8	25	0	0	0	0	0	0	18	21	3	13
616	0	0	0	0	28	6	3	17	19	7	-2	23	1	0	40	16	0	0	19	22	3	14
617	0	0	0	0	23	12	12	21	6	6	20	0	0	0	0	0	0	0	15	22	6	12
618	0	0	0	0	25	1	20	8	20	4	14	18	0	0	0	0	0	8	21	12	8	
619	0	0	0	0	22	7	-7	22	19	5	7	21	0	0	0	0	0	12	20	8	9	
620	47	3	4	6	22	6	-2	19	15	6	-7	25	0	0	0	0	0	16	19	3	11	
621	0	0	0	0	22	8	-11	24	11	3	14	17	1	0	40	16	0	15	20	4	11	
622	46	1	8	3	21	6	-3	21	11	1	25	15	0	0	0	0	0	11	18	7	9	
623	58	3	2	5	25	3	3	10	8	0	33	11	0	0	0	0	0	8	15	6	8	
624	64	0	7	0	22	1	11	6	17	0	25	6	6	2	8	20	0	1	14	12	3	
625	58	6	-2	9	18	4	-7	18	19	2	15	11	8	2	8	20	0	14	15	1	12	
626	53	2	5	4	21	4	-5	16	20	8	-15	27	9	1	23	15	0	15	16	1	12	
627	57	1	6	2	20	2	5	9	19	7	-12	25	5	0	34	11	0	10	15	5	8	
629	58	2	5	4	16	0	16	3	14	0	23	5	5	0	35	12	0	3	14	12	5	
630	53	2	6	4	18	0	15	2	17	1	18	9	5	0	35	12	0	4	12	9	5	
631	54	2	4	1	3	17	1	10	6	15	0	24	6	3	1	1	21	3	8	6	4	
632	64	2	1	3	17	0	15	2	11	1	14	10	1	0	32	11	0	8	6	2	2	
633	65	1	1	2	19	0	15	2	8	0	23	5	1	0	30	9	0	1	7	6	4	
634	64	1	0	2	20	0	15	2	9	0	23	5	0	0	0	0	0	1	6	5	2	
635	76	0	3	0	20	0	15	2	3	13	2	8	14	0	0	0	0	2	8	6	2	
636	71	3	1	4	19	1	10	7	19	4	4	17	0	0	0	0	0	1	7	3	7	
637	57	2	4	3	28	5	-3	15	24	6	-6	22	4	3	-43	38	0	13	14	1	9	
638	55	3	3	5	28	2	8	8	20	6	-6	22	2	2	-67	65	0	16	15	-1	11	
703	39	1	7	3	38	6	-1	13	23	5	2	17	6	2	1	22	0	13	14	3	7	
704	0	0	0	0	54	8	2	11	33	11	-9	23	7	5	-37	35	1	15	18	3	11	
705	0	0	0	0	64	7	4	11	35	8	2	18	3	12	7	26	31	27	23	-4	17	
706	0	0	0	0	57	8	2	12	35	5	10	13	12	12	5	-13	26	25	26	1	16	
707	0	0	0	0	64	4	7	6	33	4	13	12	10	5	-15	27	2	21	24	3	15	
708	32	0	10	1	34	1	11	4	32	2	18	10	10	2	13	17	2	14	21	7	10	
709	0	0	0	0	62	6	4	9	33	7	4	16	12	5	-7	25	0	5	20	13	6	
710	0	0	0	0	62	9	-1	13	29	9	-6	21	17	4	10	19	1	19	22	2	13	
711	0	0	0	0	62	6	4	9	33	2	20	10	13	2	18	17	1	23	22	-1	16	
712	32	2	4	6	32	6	-4	15	37	7	6	15	8	2	9	19	0	17	20	3	13	
713	0	0	0	0	37	10	-2	20	10	8	2	18	17	1	1	59	35	0	23	21	-2	16
714	0	0	0	0	59	6	6	16	18	4	3	21	0	0	0	0	0	19	22	6	13	
715	0	0	0	0	59	8	1	12	26	3	13	12	24	11	-12	26	0	23	22	-1	16	
716	0	0	0	0	58	5	6	8	26	3	14	12	24	7	5	21	1	22	22	2	14	
717	0	0	0	0	63	8	1	11	26	3	14	13	19	6	4	22	0	22	23	1	15	
718	0	0	0	0	63	3	8	5	26	2	17	10	20	6	5	21	0	15	24	8	12	
719	0	0	0	0	68	1	11	3	24	6	5	21	19	6	5	21	0	17	23	5	13	
720	0	0	0	0	69	3	8	5	25	9	-11	24	14	4	10	19	0	11	21	10	9	
721	0	0	0	0	69	3	8	5	24	4	8	15	15	6	-9	25	1	18	20	2	12	
722	47	0	10	1	29	0	7	20	2	15	11	12	3	8	19	1	0	14	20	5	10	
723	56	0	8	1	29	0	16	3	15	0	26	7	9	0	33	11	0	17	18	11	7	
724	51	4	1	7	23	7	-15	24	20	4	6	16	9	4	-11	25	0	19	16	-3	14	
725	0	0	0	0	70	11	-4	14	19	6	-6	21	13	4	2	21	1	21	18	-3	16	
726	0	0	0	0	70	9	0	11	19	8	-16	26	13	5	-5	25	0	21	19	-3	15	

Table 2. (continued)

BLOCK	.00-.09			.10-.19			.20-.29			.30-.39			.40-.49			.50-.59			.60-.69			.70-.79			.80-.89			SUM	SUM	SUM	F	P	S
I	J	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	S			
906		0	0	0	69	8	2	10	13	9	3	0	21	3	2-22	25	1	0	54	29	0	0	0	0	0	0	0	0	17	21	4	12	
907	34	4	-2	10	35	7	-5	16	29	8	-3	20	9	5-22	28	2	1	-6	23	0	0	0	0	0	0	0	0	25	20	-5	17		
908	35	4	-2	10	36	7	-4	16	30	9	-5	21	7	3-10	25	1	0	45	20	0	0	0	0	0	0	0	0	23	19	-3	16		
909	37	1	6	3	34	2	9	6	33	9	-2	20	4	1	9	21	1	0	43	18	0	0	0	0	0	0	0	13	18	5	10		
910	40	1	6	3	34	5	0	12	31	5	8	14	3	0	33	11	1	0	40	16	0	0	0	0	0	0	0	11	17	6	9		
911	36	1	6	3	34	1	12	5	33	4	13	12	5	2	-8	25	1	0	40	16	0	0	0	0	0	0	0	8	19	10	7		
912	32	4	-3	11	34	3	5	8	37	6	8	14	6	1	17	16	0	0	0	0	0	0	0	0	0	0	0	14	19	4	11		
913	26	3	-2	10	36	3	6	8	37	7	6	16	7	1	20	15	0	0	0	0	0	0	0	0	0	0	0	14	19	5	12		
914	0	0	0	0	60	8	0	12	32	8	0	18	13	4	1	21	1	0	40	16	0	0	0	0	0	0	0	14	19	5	12		
915	31	1	7	4	29	6	-6	17	35	11	-6	22	11	3	6	21	0	0	0	0	0	0	0	0	0	0	0	20	20	0	15		
916	39	2	5	5	25	4	0	14	31	9	-4	21	14	5	-2	23	0	0	0	0	0	0	0	0	0	0	0	21	20	-1	15		
917	38	1	7	3	27	7	-10	20	29	6	4	17	13	5	-6	23	2	1	-10	26	0	0	0	0	0	0	0	20	20	0	14		
918	0	0	0	0	64	5	5	7	29	4	11	13	14	2	19	16	2	1	-9	25	0	0	0	0	0	0	0	12	21	8	10		
919	0	0	0	0	61	5	5	7	29	5	7	15	16	6	-5	24	3	1	9	22	0	0	0	0	0	0	0	12	22	4	12		
920	0	0	0	0	59	7	2	10	31	7	3	18	16	6	-4	22	3	2	-24	29	0	0	0	0	0	0	0	17	22	5	11		
921	0	0	0	0	60	3	9	5	32	4	13	12	15	9	-26	30	2	1	-6	28	0	0	0	0	0	0	0	17	22	5	11		
922	0	0	0	0	67	9	-1	11	28	6	4	17	13	6	-13	27	1	0	44	19	0	0	0	0	0	0	0	21	20	-1	14		
923	51	2	6	4	21	6	-13	22	26	2	18	11	10	3	4	21	1	0	41	17	0	0	0	0	0	0	0	13	19	5	11		
924	0	0	0	0	67	13	-7	16	21	10	-21	29	14	7	-16	27	1	0	41	17	0	0	0	0	0	0	0	30	19	-11	20		
925	0	0	0	0	62	11	-3	15	15	4	-2	20	24	16	-32	32	2	1	-6	29	0	0	0	0	0	0	0	32	22	-9	20		
926	0	0	0	0	61	7	3	10	18	5	-3	21	22	15	-33	33	2	0	44	20	0	0	0	0	0	0	0	27	22	-5	17		
927	0	0	0	0	67	9	0	11	19	7	-12	24	16	10	-29	32	1	1	-57	33	0	0	0	0	0	0	0	27	19	-8	17		
928	52	3	3	6	26	5	-4	16	21	6	-4	21	10	5	-17	27	0	0	0	0	0	0	0	0	0	0	0	19	17	-2	13		
929	54	4	1	7	26	3	3	11	22	8	-12	24	7	3	-10	27	0	0	0	0	0	0	0	0	0	0	0	12	16	3	10		
930	57	5	-1	8	23	2	7	8	24	4	7	14	5	1	12	18	0	0	0	0	0	0	0	0	0	0	0	18	16	-2	13		
931	54	0	6	0	22	0	16	3	16	0	24	6	1	0	34	12	0	0	0	0	0	0	0	0	0	0	0	12	16	3	10		
932	54	0	6	0	22	0	14	2	16	1	18	9	1	0	33	11	0	0	0	0	0	0	0	0	0	0	0	15	15	0	11		
933	57	2	5	4	25	7	-13	21	19	4	5	17	5	2	-8	25	0	0	0	0	0	0	0	0	0	0	0	21	17	-4	15		
934	55	3	4	5	22	9	-26	30	21	5	2	19	8	4	-18	29	0	0	0	0	0	0	0	0	0	0	0	15	16	1	11		
935	0	0	0	0	70	5	5	7	29	11	-13	25	7	5	-39	35	0	0	0	0	0	0	0	0	0	0	0	14	15	1	11		
936	53	1	7	2	20	6	-15	23	29	6	3	16	4	2	-19	28	0	0	0	0	0	0	0	0	0	0	0	15	16	1	11		
937	54	3	2	5	29	5	-1	14	24	6	-1	19	2	0	30	9	0	0	0	0	0	0	0	0	0	0	14	15	1	11			
938	57	1	4	2	33	4	3	10	19	2	12	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	15	1	11			
1004	30	1	7	4	38	3	7	8	31	1	22	8	7	0	34	11	2	1	-5	29	1	0	60	36	0	0	6	20	13	8			
1005	30	2	3	6	37	4	4	10	27	1	20	8	12	3	8	19	2	1	-5	29	2	0	44	20	1	0	6	20	10	10			
1006	35	1	6	3	35	6	-2	14	30	5	8	15	6	2	0	21	2	1	-9	26	1	0	59	35	0	0	10	15	19	4	12		
1007	36	2	3	5	31	5	-1	13	33	5	8	14	7	4	-24	30	2	1	-9	26	0	0	0	0	0	0	0	17	19	2	12		
1008	32	3	1	8	32	6	-4	15	37	5	11	13	7	3	-10	26	1	1	-59	34	0	0	0	0	0	0	0	18	19	1	13		
1009	37	1	6	3	32	6	-4	15	35	6	7	15	5	0	34	12	0	0	0	0	0	0	0	0	0	0	0	13	18	5	11		
1010	37	2	4	5	32	4	2	11	36	11	-6	22	4	0	34	12	0	0	0	0	0	0	0	0	0	0	0	17	18	1	12		
1011	37	2	4	5	31	1	12	5	36	7	5	16	5	1	13	18	0	0	0	0	0	0	0	0	0	0	11	18	7	9			
1012	34	1	6	3	35	0	15	2	36	10	-3	20	4	1	9	20	0	0	0	0	0	0	0	0	0	0	0	12	19	6	9		
1013	26	2	2	7	36	6	-2	14	37	7	6	15	7	1	19	15	0	0	0	0	0	0	0	0	0	0	0	16	19	3	13		
1014	28	2	3	7	34	5	0	13	36	7	6	15	8	2	8	19	0	0	0	0	0	0	0	0	0	0	0	16	20	3	13		
1015	33	1	6	3	30	6	-6	17	34	9	-2	19	9	4	-12	26	0	0	0	0	0	0	0	0	0	0	0	16	20	1	14		
1016	43	0	8	3	27	1	12	5	34	6	8	15	6	3	-16	27	0	0	0	0	0	0	0	0	0	0	0	10	18	8	8		
1017	46	2	3	4	27	8	-14	22	30	8	-2	20	6	3	-16	28	0	0	0	0	0	0	0	0	0	0	0	21	17	-3	14		
1018	40	3	2	7	23	3	12	3	35	13	-12	24	10	4	-6	24	1	1	-60	36	0	0	0	0	0	0	0	17	20	-4	15		
1019	0	0	0	0	60	2	10	4	34	5	11	14	12	7	-26	32	3	1	8	23	0	0	0	0	0	0	0	15	22	3	14		
1020	0	0	0	0	57	4	7	7	34	10	-3	21	15	5	-1	21	2	1	9	24	0	0	0	0	0	0	0	20	23	3	14		
1021	0	0	0	0	58	3	8	6	31	8	0	19	18	10	-22	29	2	1	-6	28	0	0	0	0	0	0	0	22	23	1	14		

Table 2. (continued)

BLOCK I J	PROB CAT .00-.09			PROB CAT .10-.19			PROB CAT .20-.29			PROB CAT .30-.39			PROB CAT .40-.49			PROB CAT .50-.59			PROB CAT .60-.69			PROB CAT .70-.79			PROB CAT .80-.89			SUM				
	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	X	S
1205	0	0	0	41	4	6	9	37	13	10	24	25	11	10	25	1	0	45	20	1	1-46	21	0	0	0	0	0	29	25	-4	18	
1206	0	0	0	54	7	1	11	34	11	-7	22	16	9	-24	31	0	0	0	0	0	0	0	0	0	0	0	28	22	-6	18		
1207	30	2	2	6	33	6	-3	15	38	11	-4	21	4	0	34	11	0	0	0	0	0	0	0	0	0	19	18	-1	14			
1208	36	3	0	8	37	3	7	8	34	5	10	13	2	0	31	10	0	0	0	0	0	0	0	0	0	11	17	6	9			
1209	35	1	6	3	35	2	9	6	36	4	13	12	3	1	-3	22	0	0	0	0	0	0	0	0	0	8	18	9	7			
1210	0	0	0	59	3	8	5	43	9	4	16	7	0	32	10	0	0	0	0	0	0	0	0	0	0	12	20	8	10			
1211	0	0	0	60	4	6	7	43	10	2	18	6	2	-1	21	0	0	0	0	0	0	0	0	0	0	16	21	4	12			
1212	0	0	0	59	1	11	3	41	11	-2	20	9	2	10	18	0	0	0	0	0	0	0	0	0	0	14	21	6	11			
1213	0	0	0	53	0	13	2	43	17	-15	26	10	8	-47	38	0	0	0	0	0	0	0	0	0	0	25	21	-4	15			
1214	0	0	0	53	3	7	6	44	16	-11	24	9	5	-22	29	0	0	0	0	0	0	0	0	0	0	24	21	-3	15			
1215	36	2	3	5	25	8	-17	24	41	14	-10	23	4	2	-17	29	0	0	0	0	0	0	0	0	0	26	18	-8	18			
1216	37	0	8	1	25	5	-6	16	43	14	-8	23	4	1	8	19	0	0	0	0	0	0	0	0	0	20	19	-1	14			
1217	40	2	3	5	22	6	-12	20	41	9	3	17	6	3	-18	28	0	0	0	0	0	0	0	0	0	20	19	-1	14			
1218	0	0	0	54	3	8	5	41	10	2	19	14	5	-2	23	0	0	0	0	0	0	0	0	0	0	18	22	4	13			
1219	0	0	0	51	4	8	8	28	5	8	16	28	10	-3	23	2	1	-8	25	0	0	0	0	0	0	20	25	5	14			
1220	0	0	0	44	1	15	4	22	4	7	15	39	15	-5	24	4	1	18	22	0	0	0	0	0	0	21	28	6	14			
1221	0	0	0	47	1	15	4	20	3	10	13	39	11	6	20	3	1	11	24	0	0	0	0	0	0	16	28	11	12			
1222	0	0	0	55	2	11	5	24	5	5	17	29	9	2	21	1	0	43	19	0	0	0	0	0	0	16	25	8	12			
1223	0	0	0	34	2	8	6	15	6	-15	26	12	5	-9	24	0	0	0	0	0	0	0	0	0	0	13	12	-1	15			
1224	0	0	0	39	4	2	9	15	1	20	10	7	5	-39	36	0	0	0	0	0	0	0	0	0	0	10	11	2	12			
1225	26	3	-2	10	13	2	-1	13	17	5	-4	21	5	2	-8	25	0	0	0	0	0	0	0	0	0	12	10	-3	15			
1226	29	1	5	4	14	0	15	2	16	3	6	15	2	0	31	10	0	0	0	0	0	0	0	0	0	4	9	8	7			
1227	51	3	1	6	26	6	-8	18	29	11	-13	25	3	1	-1	23	0	0	0	0	0	0	0	0	0	21	16	-5	14			
1228	50	4	-1	7	28	4	1	12	28	12	-18	27	3	2	-36	36	0	0	0	0	0	0	0	0	0	22	16	-6	14			
1229	50	2	3	4	29	6	-6	17	29	12	-17	27	1	0	32	10	0	0	0	0	0	0	0	0	0	17	16	-1	12			
1230	44	0	8	1	35	12	-19	25	28	5	7	15	2	0	32	10	0	0	0	0	0	0	0	0	0	26	19	-7	18			
1231	0	0	0	63	13	-7	16	32	9	-3	20	7	4	-24	31	0	0	0	0	0	0	0	0	0	0	37	24	-12	21			
1232	0	0	0	53	8	1	13	38	20	-28	32	17	8	-13	25	1	1	-58	34	0	0	0	0	0	0	38	26	-11	21			
1233	0	0	0	46	4	8	9	40	21	-28	32	21	11	-17	28	2	2	-58	33	0	0	0	0	0	0	31	24	-6	19			
1234	0	0	0	55	5	7	9	34	19	-31	34	20	7	-1	22	0	0	0	0	0	0	0	0	0	0	13	19	6	10			
1235	0	0	0	69	4	7	6	32	6	6	16	8	3	-6	24	0	0	0	0	0	0	0	0	0	0	25	25	0	16			
1303	0	0	0	43	3	8	7	38	12	-6	21	22	9	-7	25	1	0	48	23	1	1-46	21	0	0	0	26	25	-1	17			
1304	0	0	0	41	4	6	9	34	10	-4	20	28	11	-6	24	1	0	45	21	1	1-47	22	0	0	0	22	25	3	16			
1305	0	0	0	43	6	2	12	36	7	6	16	23	7	3	20	3	2	-23	26	0	0	0	0	0	0	21	23	2	15			
1306	0	0	0	51	6	3	10	37	11	-4	21	16	3	14	17	1	1	-56	31	0	0	0	0	0	0	16	19	3	12			
1307	29	1	6	4	32	4	3	11	39	10	-1	18	5	1	13	16	0	0	0	0	0	0	0	0	0	10	17	7	9			
1308	37	1	6	3	35	4	4	10	35	5	10	13	2	0	32	10	0	0	0	0	0	0	0	0	0	14	16	2	10			
1309	43	1	5	3	33	5	1	12	33	8	-1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	0	13			
1310	39	3	1	7	35	6	-1	14	33	8	0	19	2	0	30	9	0	0	0	0	0	0	0	0	0	19	20	1	14			
1311	38	3	1	7	24	2	7	8	44	7	8	14	3	1	-2	23	0	0	0	0	0	0	0	0	0	13	19	5	11			
1312	33	3	1	8	25	2	7	9	44	11	-1	19	7	3	-11	26	0	0	0	0	0	0	0	0	0	19	20	1	14			
1313	0	0	0	55	7	0	11	44	16	-11	24	10	7	-38	35	0	0	0	0	0	0	0	0	0	0	30	21	-8	18			
1314	0	0	0	55	4	5	7	44	17	-13	26	10	6	-27	32	0	0	0	0	0	0	0	0	0	0	27	21	-5	17			
1315	35	3	1	8	20	4	-5	16	48	20	-16	28	6	4	-33	33	0	0	0	0	0	0	0	0	0	31	21	-10	19			
1316	36	1	6	3	25	5	-5	16	43	12	-2	20	5	4	-37	38	0	0	0	0	0	0	0	0	0	22	20	-2	14			
1317	36	1	6	3	24	7	-14	22	43	13	-5	21	6	4	-34	34	0	0	0	0	0	0	0	0	0	25	20	-5	16			
1318	0	0	0	54	4	8	4	45	10	4	17	10	6	-26	30	0	0	0	0	0	0	0	0	0	0	21	22	1	14			
1319	0	0	0	44	3	9	7	29	6	4	16	34	12	-2	22	2	2	-59	35	0	0	0	0	0	0	23	26	3	15			
1320	0	0	0	42	2	13	6	22	2	16	10	40	8	14	18	5	2	2	24	0	0	0	0	0	0	14	29	14	12			
1321	0	0	0	40	1	17	5	22	1	21	8	37	4	24	15	10	2	22	20	0	0	0	0	0	0	8	31	21	11			
1322	0	0	0	47	2	13	6	24	2	17	10	36	7	15	18	2	1	-7	24	0	0	0	0	0	0	12	28	14	11			

Table 2. (continued)

BLOCK I J	PROB CAT .00-.09			PROB CAT .10-.19			PROB CAT .20-.29			PROB CAT .30-.39			PROB CAT .40-.49			PROB CAT .50-.59			PROB CAT .60-.69			PROB CAT .70-.79			PROB CAT .80-.89			SUM X	SUM Y	SUM Z	SUM W	SUM V	SUM U	SUM T	SUM S	SUM R	SUM Q	SUM P
	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P	N	O	P											
1508	39	0	7	45	10	-7	17	25	6	-1	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	15	-1	11	0	0	0	0				
1509	41	1	4	41	11	-12	20	27	7	-4	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	15	-4	13	0	0	0	0				
1510	44	2	1	43	10	-8	18	22	6	-3	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	14	-3	13	0	0	0	0				
1511	45	2	2	41	8	-3	16	23	6	-3	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	15	-1	12	0	0	0	0				
1512	37	0	0	29	4	2	12	42	4	14	11	1	0	32	10	0	0	0	0	0	0	0	0	0	0	0	9	18	8	8	0	0	0	0				
1513	0	0	0	48	6	1	11	46	16	-9	24	15	1	25	13	0	0	0	0	0	0	0	0	0	0	0	23	23	0	16	0	0	0	0				
1514	0	0	0	41	4	7	9	30	7	3	18	37	12	1	22	1	0	41	17	0	0	0	0	0	0	0	23	27	4	16	0	0	0	0				
1515	0	0	0	43	4	7	9	30	6	6	16	36	11	2	22	0	0	0	0	0	0	0	0	0	0	0	10	26	14	10	0	0	0	0				
1516	0	0	0	43	1	13	4	33	3	23	13	30	14	-14	27	0	0	0	0	0	0	0	0	0	0	0	27	25	-1	17	0	0	0	0				
1517	0	0	0	42	3	8	7	36	10	-2	20	33	11	-5	24	0	0	0	0	0	0	0	0	0	0	0	23	26	3	15	0	0	0	0				
1518	0	0	0	40	3	8	8	38	8	5	16	29	11	-5	24	1	1-59	35	0	0	0	0	0	0	0	0	24	28	4	16	0	0	0	0				
1519	0	0	0	35	2	12	7	33	6	7	15	39	15	-4	24	1	1-58	33	0	0	0	0	0	0	0	0	34	28	-6	20	0	0	0	0				
1520	0	0	0	40	2	12	6	32	1	22	8	35	9	8	20	2	1-9	25	0	0	0	0	0	0	0	0	34	25	-9	21	0	0	0	0				
1521	0	0	0	39	4	7	9	35	12	-9	23	32	18	-22	30	3	0	41	17	0	0	0	0	0	0	0	14	18	4	11	0	0	0	0				
1522	0	0	0	51	9	-2	15	35	15	-18	28	22	10	-11	27	1	0	41	16	0	0	0	0	0	0	0	14	20	6	10	0	0	0	0				
1523	0	0	0	65	13	-7	16	32	17	-28	33	12	3	8	20	0	0	0	0	0	0	0	0	0	0	0	14	20	6	10	0	0	0	0				
1524	37	0	9	33	5	0	13	31	9	-5	21	8	0	32	11	0	0	0	0	0	0	0	0	0	0	0	1	15	14	4	0	0	0	0				
1525	0	0	0	67	7	3	9	31	10	-7	22	10	2	13	17	0	0	0	0	0	0	0	0	0	0	0	19	20	1	14	0	0	0	0				
1526	0	0	0	54	6	5	10	32	13	-15	26	21	9	-10	25	1	1-60	36	0	0	0	0	0	0	0	0	29	24	-5	18	0	0	0	0				
1527	0	0	0	46	9	-3	16	32	9	-3	20	30	15	-16	28	0	0	0	0	0	0	0	0	0	0	0	33	26	-7	20	0	0	0	0				
1528	0	0	0	51	10	-4	16	35	11	-6	22	22	12	-22	29	0	0	0	0	0	0	0	0	0	0	0	33	24	-8	20	0	0	0	0				
1529	0	0	0	64	2	10	4	37	9	1	17	7	3	-12	26	0	0	0	0	0	0	0	0	0	0	0	14	20	6	10	0	0	0	0				
1530	39	1	5	30	0	15	2	32	0	23	6	1	0	30	9	0	0	0	0	0	0	0	0	0	0	0	1	15	14	4	0	0	0	0				
1531	43	1	5	30	4	2	12	28	2	16	9	1	0	30	9	0	0	0	0	0	0	0	0	0	0	0	7	14	7	7	0	0	0	0				
1532	29	0	9	31	6	-6	16	41	12	-5	20	1	0	33	11	0	0	0	0	0	0	0	0	0	0	0	18	17	-1	13	0	0	0	0				
1533	29	1	6	4	36	9	-10	18	40	14	-10	23	2	1	-18	29	0	0	0	0	0	0	0	0	0	0	25	19	-6	16	0	0	0	0				
1534	32	0	9	33	5	0	12	39	18	-22	29	3	1	-3	22	0	0	0	0	0	0	0	0	0	0	0	24	18	-5	15	0	0	0	0				
1601	0	0	0	30	4	1	11	52	17	-8	23	26	8	3	22	1	1-55	30	0	0	0	0	0	0	0	0	30	26	-3	19	0	0	0	0				
1602	0	0	0	31	3	4	9	61	14	2	18	16	4	8	19	1	1-57	32	0	0	0	0	0	0	0	0	22	26	3	16	0	0	0	0				
1603	0	0	0	32	4	1	11	63	12	6	15	13	4	1	21	1	1-59	34	0	0	0	0	0	0	0	0	21	25	4	15	0	0	0	0				
1604	0	0	0	42	2	9	6	57	11	6	16	10	2	12	18	0	0	0	0	0	0	0	0	0	0	0	19	22	3	14	0	0	0	0				
1605	0	0	0	50	5	4	9	52	13	0	18	7	1	18	16	0	0	0	0	0	0	0	0	0	0	0	7	18	10	7	0	0	0	0				
1606	28	1	5	40	1	13	4	39	5	10	13	2	0	32	10	0	0	0	0	0	0	0	0	0	0	0	16	17	1	12	0	0	0	0				
1607	35	2	5	41	5	3	10	32	9	-6	20	1	0	30	9	0	0	0	0	0	0	0	0	0	0	0	10	16	6	8	0	0	0	0				
1608	37	0	7	46	3	10	7	25	6	-1	19	1	1	-70	49	0	0	0	0	0	0	0	0	0	0	0	16	16	0	11	0	0	0	0				
1609	37	0	7	48	6	3	11	24	10	-18	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	15	1	10	0	0	0	0				
1610	42	1	4	45	5	5	10	22	8	-14	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	15	4	8	0	0	0	0				
1611	46	2	2	43	4	7	9	20	4	3	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	18	10	7	0	0	0	0				
1612	34	0	8	40	4	2	12	43	2	18	8	2	1	-19	28	0	0	0	0	0	0	0	0	0	0	0	33	24	-8	21	0	0	0	0				
1613	0	0	0	45	10	-8	18	47	16	-8	23	17	7	-9	26	0	0	0	0	0	0	0	0	0	0	0	45	30	-13	24	0	0	0	0				
1614	0	0	0	36	7	-1	16	20	10	-24	31	51	27	-19	28	2	1	-8	27	0	0	0	0	0	0	0	46	30	-14	25	0	0	0	0				
1615	0	0	0	35	7	-1	16	22	13	-33	35	49	25	-16	27	3	1	8	23	0	0	0	0	0	0	0	39	30	-9	22	0	0	0	0				
1616	0	0	0	35	5	4	12	26	10	-13	25	45	22	-15	27	4	2	-26	29	0	0	0	0	0	0	0	34	30	-3	20	0	0	0	0				
1617	0	0	0	35	5	4	12	26	10	-13	25	48	21	-9	25	3	2	-25	28	0	0	0	0	0	0	0	34	30	-3	20	0	0	0	0				
1618	0	0	0	31	3	10	10	27	8	-3	21	43	17	-5	24	4	1	18	24	0	0	0	0	0	0	0	31	31	0	19	0	0	0	0				
1619	0	0	0	31	2	12	8	30	8	-1	20	43	23	-19	28	4	1	18	21	0	0	0	0	0	0	0	31	30	-4	20	0	0	0	0				
1620	0	0	0	35	2	12	7	41	11	-1	19	29	12	-7	25	3	1	8	23	0	0	0	0	0	0	0	26	28	2	17	0	0	0	0				
1621	0	0	0	44	9	-4	16	41	17	-16	26	22	12	-20	29	2	0	41	17	0	0	0	0	0	0	0	38	26	-11	23	0	0	0	0				
1622	0	0	0	49	10	-5	16	38	11	-4	20	21	8	-4	24	1	0	42	18	0	0	0	0	0	0	0	29	24	-4	19	0	0	0	0				
1623	31	7	-13	39	11	-13	21	32	16	-25	31	7	1	19	16	0	0	0	0	0	0	0	0	0	0	0	35	19	-14	23	0	0	0	0				
1624	32	2	4	38	10	-11	20	31	7	-2	17	8	2	8	19	0	0	0	0	0	0	0	0	0	0	0	21	19	-1	15	0	0	0	0				

Table 2. (continued)

BLOCK I J	PROB CAT .00-.09			PROB CAT .10-.19			PROB CAT .20-.29			PROB CAT .30-.39			PROB CAT .40-.49			PROB CAT .50-.59			PROB CAT .60-.69			PROB CAT .70-.79			PROB CAT .80-.89			SUM F	SUM S	SUM P
	N	O	F	N	O	F	N	O	F	N	O	F	N	O	F	N	O	F	N	O	F	N	O	F	N	O	F			
1625	0	0	0	62	7	3	10	34	10	-4	21	11	4	-4	23	1	1	-59	34	0	0	0	0	0	0	22	21	-1	15	
1626	0	0	0	41	6	3	12	35	12	-9	23	30	13	-9	26	2	0	43	18	0	0	0	0	0	0	31	27	-4	20	
1627	0	0	0	32	4	6	11	38	12	-6	22	35	15	-8	26	3	2	-25	27	0	0	0	0	0	0	33	29	-4	20	
1628	0	0	0	35	3	9	9	41	12	-4	21	32	17	-19	28	0	0	0	0	0	0	0	0	0	0	32	27	-4	19	
1629	0	0	0	45	3	9	7	44	12	-2	20	19	7	-4	23	0	0	0	0	0	0	0	0	0	0	22	24	2	15	
1630	0	0	0	60	3	8	5	44	9	4	16	5	3	-29	33	0	0	0	0	0	0	0	0	0	0	15	20	5	11	
1631	0	0	0	55	6	2	9	33	4	13	12	5	1	11	18	0	0	0	0	0	0	0	0	0	0	11	17	7	11	
1632	0	0	0	52	5	4	9	35	18	-26	31	6	6	-68	47	0	0	0	0	0	0	0	0	0	0	29	18	-12	19	
1633	0	0	0	52	8	-1	12	33	18	-29	33	8	5	-31	33	0	0	0	0	0	0	0	0	0	0	31	18	-14	21	
1634	0	0	0	49	2	9	5	39	26	-42	39	5	4	-49	40	0	0	0	0	0	0	0	0	0	0	32	18	-15	21	
1701	0	0	0	23	1	12	5	45	16	-9	24	36	9	9	20	5	0	43	19	0	0	0	0	0	0	26	30	4	19	
1702	0	0	0	27	4	0	12	58	17	-4	21	24	4	17	17	0	0	0	0	0	0	0	0	0	0	25	27	-2	18	
1703	0	0	0	32	1	11	4	61	8	12	13	16	2	20	15	0	0	0	0	0	0	0	0	0	0	11	25	13	11	
1704	0	0	0	42	2	10	6	58	16	-3	20	9	2	10	18	0	0	0	0	0	0	0	0	0	0	20	24	3	14	
1705	22	0	10	1	35	3	8	46	9	4	16	6	1	16	17	0	0	0	0	0	0	0	0	0	0	13	21	7	11	
1706	24	2	1	8	41	7	-1	40	14	-12	24	4	2	-19	28	0	0	0	0	0	0	0	0	0	0	25	19	-5	17	
1707	29	2	2	6	42	7	-1	35	17	-25	31	3	2	-36	35	0	0	0	0	0	0	0	0	0	0	28	19	-9	18	
1708	32	2	3	6	41	8	-3	35	10	-5	21	1	1	-69	48	0	0	0	0	0	0	0	0	0	0	21	18	-3	15	
1709	37	2	4	5	36	7	-3	35	10	-5	21	1	1	-69	47	0	0	0	0	0	0	0	0	0	0	20	18	-2	14	
1710	39	2	5	46	6	3	11	24	4	7	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	16	4	10	
1711	40	0	7	0	48	2	12	5	21	1	18	8	0	0	0	0	0	0	0	0	0	0	0	0	0	9	15	11	4	
1712	33	0	9	1	23	2	6	50	7	9	13	3	0	32	10	0	0	0	0	0	0	0	0	0	0	3	19	9	8	
1713	0	0	0	46	10	-6	17	45	14	-4	21	18	6	-1	23	0	0	0	0	0	0	0	0	0	0	30	25	-4	20	
1714	0	0	0	0	0	0	0	51	14	-5	20	53	30	-21	29	5	2	3	23	0	0	0	0	0	0	46	32	-13	25	
1715	0	0	0	0	0	0	0	46	7	9	13	42	20	-11	26	21	12	-15	26	0	0	0	0	0	0	39	35	-3	21	
1716	0	0	0	0	0	0	0	49	12	-1	18	48	25	-16	28	12	8	-24	29	0	0	0	0	0	0	45	34	-11	23	
1717	0	0	0	0	0	0	0	49	12	-2	18	50	22	-9	26	9	5	-13	26	0	0	0	0	0	0	39	32	-6	22	
1718	0	0	0	32	2	13	8	23	6	0	19	46	23	-16	28	7	5	-28	29	0	0	0	0	0	0	36	31	-4	20	
1719	0	0	0	33	5	3	13	32	13	-15	26	38	20	-19	28	5	3	-18	28	0	0	0	0	0	0	41	29	-11	23	
1720	0	0	0	42	7	0	14	41	15	-11	24	24	14	-25	30	1	0	40	16	0	0	0	0	0	0	36	26	-9	21	
1721	0	0	0	52	11	-7	17	44	21	-23	30	12	4	0	23	1	0	42	18	0	0	0	0	0	0	33	23	-10	22	
1722	0	0	0	60	13	-8	17	39	18	-21	29	13	4	2	22	1	0	41	17	0	0	0	0	0	0	34	22	-11	22	
1723	0	0	0	50	7	2	12	39	7	7	15	19	3	0	23	1	0	42	17	0	0	0	0	0	0	17	24	7	14	
1724	0	0	0	37	1	15	5	37	3	17	11	28	6	12	18	3	0	45	20	0	0	0	0	0	0	10	27	16	11	
1725	0	0	0	28	0	20	4	34	2	20	9	37	6	18	17	6	3	-7	25	0	0	0	0	0	0	11	29	18	11	
1726	0	0	0	29	5	2	14	35	12	-8	23	41	21	-16	27	3	3	-57	32	0	0	0	0	0	0	41	30	-10	23	
1727	0	0	0	34	2	12	7	40	13	-7	23	33	17	-18	27	1	1	-59	35	0	0	0	0	0	0	33	28	-5	19	
1728	0	0	0	31	0	18	3	40	9	3	17	38	16	-8	24	0	0	0	0	0	0	0	0	0	0	25	29	3	16	
1729	0	0	0	35	1	15	5	38	9	2	18	36	25	-35	33	1	1	-60	36	0	0	0	0	0	0	35	29	-6	19	
1730	0	0	0	32	3	10	9	36	8	3	16	40	28	-35	33	0	0	0	0	0	0	0	0	0	0	40	29	-10	21	
1732	0	0	0	40	5	5	11	35	19	-29	33	34	26	-42	36	0	0	0	0	0	0	0	0	0	0	39	26	-12	22	
1733	0	0	0	42	5	4	11	38	18	-22	29	29	16	-22	30	0	0	0	0	0	0	0	0	0	0	50	27	-21	26	
1734	0	0	0	38	2	9	6	42	15	-10	23	13	8	-30	33	0	0	0	0	0	0	0	0	0	0	25	20	-5	17	
1801	0	0	0	21	2	7	9	46	17	-10	24	36	10	5	21	6	0	42	18	0	0	0	0	0	0	29	30	1	20	
1802	0	0	0	26	5	-4	15	65	11	9	15	18	4	12	20	0	0	0	0	0	0	0	0	0	0	20	27	6	16	
1803	0	0	0	35	3	6	8	64	15	1	18	10	4	-7	25	0	0	0	0	0	0	0	0	0	0	22	24	2	15	
1804	0	0	0	46	3	8	7	57	12	3	17	6	1	15	15	0	0	0	0	0	0	0	0	0	0	22	24	2	15	
1805	21	0	10	1	35	2	10	49	14	-5	20	4	2	-18	28	0	0	0	0	0	0	0	0	0	0	16	22	6	13	
1806	0	0	0	57	7	2	11	48	21	-20	29	4	2	-18	29	0	0	0	0	0	0	0	0	0	0	18	21	-8	12	
1807	0	0	0	54	6	3	10	52	17	-8	22	3	1	-2	22	0	0	0	0	0	0	0	0	0	0	30	21	-8	12	

Table 2. (continued)

BLOCK I J	.00-.09			.10-.19			.20-.29			.30-.39			.40-.49			.50-.59			.60-.69			.70-.79			.80-.89			SUM X	SUM Y	SUM Z	SUM W	SUM V	SUM U	SUM T	SUM S	SUM R	SUM Q	SUM P	SUM O
	N	O	P	M	F	P	N	O	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P														
1808	0	0	0	55	4	7	7	51	19	13	25	3	1	-2	22	0	0	0	0	0	0	0	0	0	0	24	21	-3	16										
1809	0	0	0	59	13	-9	17	48	17	-12	24	2	1	-18	28	0	0	0	0	0	0	0	0	0	0	31	20	-10	20										
1810	35	2	2	5	46	13	-12	22	27	7	-3	19	1	1	-70	49	0	0	0	0	0	0	0	0	23	17	-6	16											
1811	39	0	7	0	50	3	10	7	20	1	18	8	0	0	0	0	0	0	0	0	0	0	0	0	4	15	10	5											
1812	35	0	8	1	32	6	-3	15	40	7	5	15	2	0	31	10	0	0	0	0	0	0	0	0	13	18	4	10											
1813	0	0	0	47	9	-5	16	54	20	-11	24	8	2	8	20	0	0	0	0	0	0	0	0	0	31	23	-7	20											
1814	0	0	0	33	8	-6	19	27	7	-1	19	47	23	-16	28	2	1	-8	25	0	0	0	0	0	39	29	-9	23											
1815	0	0	0	0	0	0	0	49	9	5	15	52	27	-16	28	8	6	-32	29	0	0	0	0	0	42	33	-8	22											
1816	0	0	0	0	0	0	0	48	10	2	16	49	26	-18	28	12	6	-8	26	0	0	0	0	0	42	33	-8	22											
1817	0	0	0	0	0	0	0	47	8	5	14	52	21	-6	24	9	6	-24	29	0	0	0	0	0	40	31	-8	22											
1818	0	0	0	29	3	9	10	24	8	-8	23	47	22	-13	27	8	7	-45	33	0	0	0	0	0	40	31	-8	22											
1819	0	0	0	29	4	5	12	32	12	-12	24	41	19	-13	26	3	5	-41	32	0	0	0	0	0	40	30	-9	22											
1820	0	0	0	34	5	3	12	38	10	-1	19	33	12	-3	23	3	1	9	23	0	0	0	0	0	28	28	0	18											
1821	0	0	0	42	5	4	11	44	9	5	17	21	5	10	20	2	1	-9	25	0	0	0	0	0	20	26	5	15											
1822	0	0	0	33	3	8	9	50	9	7	15	22	5	11	19	2	0	43	18	0	0	0	0	0	17	27	9	14											
1823	0	0	0	35	3	8	9	51	11	4	17	19	7	-2	23	2	2	-57	32	0	0	0	0	0	23	26	3	16											
1824	0	0	0	24	1	16	6	38	9	2	17	37	13	-1	23	6	4	-24	29	0	0	0	0	0	27	29	2	18											
1825	0	0	0	0	0	0	0	49	6	12	12	43	10	11	19	12	5	1	24	0	0	0	0	0	31	32	11	16											
1826	0	0	0	0	0	0	0	47	9	6	15	43	16	-2	23	14	9	-22	27	1	0	51	26	0	34	33	-1	20											
1827	0	0	0	0	0	0	0	49	2	20	8	48	11	12	19	11	8	-31	29	0	0	0	0	0	21	33	11	15											
1828	0	0	0	0	0	0	0	51	12	1	17	46	23	-15	27	12	9	-34	30	0	0	0	0	0	44	34	-9	23											
1829	0	0	0	0	0	0	0	42	11	0	19	43	18	-6	24	24	19	-36	30	0	0	0	0	0	48	37	-10	23											
1830	0	0	0	0	0	0	0	46	15	-8	22	39	19	-14	27	29	22	-33	30	0	0	0	0	0	50	37	-12	24											
1831	0	0	0	0	0	0	0	41	9	4	18	45	29	-30	31	18	10	-13	26	0	0	0	0	0	43	30	-12	23											
1832	0	0	0	28	2	12	8	37	14	-12	25	44	27	-26	31	0	0	0	0	0	0	0	0	0	21	26	5	16											
1833	0	0	0	29	3	4	9	63	17	-1	20	16	1	28	14	1	0	41	17	0	0	0	0	0	15	24	8	13											
1901	0	0	0	33	3	5	9	65	11	7	15	11	1	24	14	0	0	0	0	0	0	0	0	0	14	23	8	12											
1902	0	0	0	37	3	6	8	64	7	13	12	8	4	-18	28	0	0	0	0	0	0	0	0	0	12	23	10	11											
1903	0	0	0	41	4	5	9	64	6	15	11	4	2	-18	28	0	0	0	0	0	0	0	0	0	19	22	3	14											
1904	0	0	0	48	3	8	6	55	14	-1	19	6	2	-2	22	0	0	0	0	0	0	0	0	0	36	25	-13	22											
1905	0	0	0	53	10	-4	15	52	24	-22	29	4	2	-19	29	0	0	0	0	0	0	0	0	0	0	27	23	-4	18										
1906	0	0	0	49	6	-2	11	57	29	-26	32	3	1	-2	22	0	0	0	0	0	0	0	0	0	26	21	-5	18											
1907	0	0	0	50	10	-5	16	55	16	-4	20	4	1	6	19	0	0	0	0	0	0	0	0	0	20	27	-4	18											
1908	0	0	0	58	11	-5	15	49	14	-4	21	2	1	-18	28	0	0	0	0	0	0	0	0	0	26	21	-5	18											
1909	0	0	0	46	9	-10	19	44	12	-4	20	2	1	-19	29	0	0	0	0	0	0	0	0	0	23	19	-4	16											
1910	27	1	6	4	36	9	-10	19	44	12	-4	20	2	1	-19	29	0	0	0	0	0	0	0	0	23	19	-4	16											
1911	33	0	8	1	43	3	9	7	32	5	7	14	1	0	30	9	0	0	0	0	0	0	0	0	8	17	9	7											
1912	27	0	9	1	36	2	10	6	44	1	21	7	2	0	32	10	0	0	0	0	0	0	0	0	3	19	14	5											
1913	0	0	0	49	2	10	5	57	16	-3	20	3	0	34	12	0	0	0	0	0	0	0	0	0	18	22	4	13											
1914	0	0	0	33	2	11	7	37	8	4	17	38	13	-1	23	1	0	41	17	0	0	0	0	0	23	28	5	16											
1915	0	0	0	0	0	0	0	48	8	6	14	56	24	-8	25	5	1	23	21	0	0	0	0	0	23	32	-1	20											
1916	0	0	0	0	0	0	0	42	8	5	15	54	29	-18	27	11	7	-21	28	0	0	0	0	0	44	34	-9	23											
1917	0	0	0	0	0	0	0	40	10	-1	19	55	33	-25	30	12	10	-40	31	0	0	0	0	0	53	34	-18	26											
1918	0	0	0	0	0	0	0	49	12	-1	19	49	23	-13	27	9	6	-25	29	0	0	0	0	0	40	31	-8	22											
1919	0	0	0	25	5	0	16	35	10	-3	20	46	21	-13	27	5	4	-38	32	0	0	0	0	0	40	31	-8	22											
1920	0	0	0	25	5	0	16	37	14	-12	25	42	23	-20	29	5	4	-38	30	0	0	0	0	0	46	31	-14	25											
1921	0	0	0	23	5	-2	17	40	18	-19	28	41	22	-19	29	5	4	-38	30	0	0	0	0	0	49	31	-17	26											
1922	0	0	0	0	0	0	0	60	16	-3	19	42	15	-2	23	7	3	0	24	0	0	0	0	0	34	32	-2	21											
1923	0	0	0	0	0	0	0	48	5	15	12	46	12	8	20	11	5	-2	26	0	0	0	0	0	26	35	9	17											
1924	0	0	0	0	0	0	0	34	7	5	16	56	13	12	19	14	6	1	24	0	0	0	0	0	20	32	0	17											
1925	0	0	0	0	0	0	0	27	4	13	14	47	17	0	22	29	12	2	24	2	0	53	28	2	33	38	5	21											

Table 2. (continued)

BLOCK	.00-.09			.10-.19			.20-.29			.30-.39			.40-.49			.50-.59			.60-.69			.70-.79			.80-.89			SUM									
I J	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P	N	F	P							
1926	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
1927	0	0	0	30	4	14	13	47	14	6	21	27	11	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
1928	0	0	0	37	6	9	14	55	20	-1	22	13	6	-3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1929	0	0	0	49	6	13	12	50	28	-21	29	9	6	-25	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1930	0	0	0	35	7	6	16	51	26	-16	27	23	17	-31	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1931	0	0	0	31	8	2	19	44	24	-19	28	34	25	-30	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1932	0	0	0	32	8	2	19	40	25	-27	31	37	23	-19	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2001	13	1	0	46	12	-2	19	52	26	-15	27	11	4	6	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2002	13	0	0	51	5	14	11	7	0	33	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2003	0	0	0	50	4	15	10	7	2	3	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2004	0	0	0	62	8	11	13	8	3	-6	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2005	0	0	0	62	18	-4	21	10	5	-18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2006	0	0	0	62	25	-15	26	12	7	-26	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2007	0	0	0	60	20	-9	23	8	4	-18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2008	0	0	0	60	31	-26	32	3	2	-34	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2009	0	0	0	54	13	-9	18	54	20	-12	25	1	0	33	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2010	0	0	0	55	15	-12	20	51	22	-18	27	3	1	-2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2011	0	0	0	59	5	5	8	47	13	-4	20	3	1	-3	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2012	0	0	0	54	1	11	3	52	5	14	11	3	0	31	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2013	0	0	0	39	3	8	14	58	10	8	15	5	2	-7	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2014	0	0	0	23	0	0	18	3	42	8	6	16	43	14	0	22	1	0	40	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2016	0	0	0	0	0	0	0	36	9	1	18	57	33	-23	29	6	2	9	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	33	2	20	10	22	14	-21	27	16	10	-19	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	0	0	0	0	0	0	0	39	5	13	13	56	31	-20	28	12	8	-23	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2019	0	0	0	0	0	0	0	42	12	-3	20	53	26	-14	27	14	11	-36	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2020	0	0	0	0	0	0	0	38	8	5	17	51	30	-24	30	20	14	-27	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2021	0	0	0	0	0	0	0	0	25	3	16	13	48	23	-12	27	35	26	-31	29	1	1	-49	24	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	26	4	13	14	50	25	-14	27	31	24	-34	29	2	1	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	28	4	13	14	52	12	13	19	24	8	10	23	2	1	-50	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024	0	0	0	0	0	0	0	29	4	13	14	50	18	0	22	25	10	3	23	1	0	51	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	25	1	26	10	35	14	-3	24	41	17	2	25	4	2	2	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	24	0	29	8	41	8	16	18	39	16	2	24	1	0	52	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	26	4	12	14	51	20	-4	23	34	16	-4	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	25	5	7	17	48	19	-4	23	35	23	-23	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	30	8	0	20	50	31	-27	30	29	20	-26	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	44	12	-3	20	54	26	-13	27	11	7	-22	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2103	0	0	0	42	3	8	7	60	10	8	14	7	2	3	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2104	0	0	0	34	4	4	10	63	26	-16	26	12	6	-18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2105	0	0	0	32	2	11	7	55	26	-21	29	21	14	-34	35	1	0	40	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2106	0	0	0	34	1	14	5	58	27	-21	29	16	8	-18	29	1	0	41	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2107	0	0	0	40	4	5	9	63	32	-26	31	6	0	33	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2108	0	0	0	50	9	-3	14	58	23	-15	26	1	0	35	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2109	0	0	0	51	8	-1	12	55	11	4	16	3	1	-2	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2110	0	0	0	43	3	9	7	60	30	-25	31	6	3	-18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2111	0	0	0	31	3	8	9	52	20	-12	25	26	12	-14	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2112	0	0	0	22	1	15	7	36	12	-7	23	51	27	-20	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2115	0	0	0	0	0	0	0	27	2	19	10	65	42	-29	30</																						

Table 2. (continued)

BLOCK I J	PROB CAT .00-.09	PROB CAT .10-.19	PROB CAT .20-.29	PROB CAT .30-.39	PROB CAT .40-.49	PROB CAT .50-.59	PROB CAT .60-.69	PROB CAT .70-.79	PROB CAT .80-.89	SUM	F	P
2116	0 0 0 0	0 0 0 0	20 0 27 7	54 31-21 28	32 17-10 26	1 0 50 25	0 0 0 0	0 0 0 0	0 0 0 0	48	39	-8 24
2117	0 0 0 0	0 0 0 0	18 1 22 10	50 23-10 25	38 25-22 27	1 0 51 26	0 0 0 0	0 0 0 0	0 0 0 0	49	40	-8 23
2118	0 0 0 0	0 0 0 0	21 1 22 9	55 29-17 28	30 14 -3 24	1 0 50 25	0 0 0 0	0 0 0 0	0 0 0 0	44	39	-5 23
2119	0 0 0 0	0 0 0 0	22 4 9 16	54 30-20 28	33 21-20 28	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	55	39	-14 26
2120	0 0 0 0	0 0 0 0	21 3 14 14	45 26-22 29	40 27-24 27	3 1 17 25	0 0 0 0	0 0 0 0	0 0 0 0	57	41	-14 25
2121	0 0 0 0	0 0 0 0	26 5 9 16	52 21 -6 23	53 32-16 26	4 2 1 25	0 0 0 0	0 0 0 0	0 0 0 0	55	43	-11 25
2122	0 0 0 0	0 0 0 0	29 4 13 13	52 20 -2 24	31 16 -8 25	1 1-50 25	0 0 0 0	0 0 0 0	0 0 0 0	51	40	-10 25
2123	0 0 0 0	0 0 0 0	28 1 24 9	41 12 7 21	36 12 10 23	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	32	39	6 21
2124	0 0 0 0	0 0 0 0	0 0 0 0	41 6 19 16	59 21 9 24	5 1 33 26	0 0 0 0	0 0 0 0	0 0 0 0	28	43	14 21
2125	0 0 0 0	0 0 0 0	0 0 0 0	39 5 22 15	59 21 10 24	7 1 38 26	0 0 0 0	0 0 0 0	0 0 0 0	27	44	16 21
2126	0 0 0 0	0 0 0 0	0 0 0 0	49 10 14 17	55 29 -8 26	4 2 1 25	0 0 0 0	0 0 0 0	0 0 0 0	41	43	-2 22
2127	0 0 0 0	0 0 0 0	25 5 7 16	49 20 -5 24	34 19-13 26	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	44	39	-5 23
2128	0 0 0 0	0 0 0 0	36 9 0 19	60 26 -8 25	12 9-34 30	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	44	35	-8 23
2129	0 0 0 0	0 0 0 0	21 3 5 13	34 9 0 19	53 26-15 27	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	38	31	-6 22
2130	0 0 0 0	0 0 0 0	21 3 5 13	34 9 0 19	53 26-15 27	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	38	26	-11 22
2203	0 0 0 0	0 0 0 0	21 3 5 13	34 9 0 19	53 26-15 27	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	38	26	-11 22
2204	0 0 0 0	0 0 0 0	31 4 3 11	64 27-17 26	14 7-18 29	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	24	25	1 16
2205	0 0 0 0	0 0 0 0	28 2 10 8	60 17 -2 20	20 11-22 31	1 0 42 18	0 0 0 0	0 0 0 0	0 0 0 0	30	27	-2 19
2206	0 0 0 0	0 0 0 0	33 3 9 9	60 31-25 31	15 9-27 32	1 0 43 18	0 0 0 0	0 0 0 0	0 0 0 0	43	27	-15 24
2207	0 0 0 0	0 0 0 0	33 3 9 9	61 34-30 33	9 4-12 27	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	41	25	-15 24
2208	0 0 0 0	0 0 0 0	44 2 11 5	64 20 -6 22	1 0 36 13	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	22	23	1 15
2209	0 0 0 0	0 0 0 0	42 5 4 10	63 31-24 30	4 0 32 10	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	36	24	-11 22
2210	0 0 0 0	0 0 0 0	28 0 0 0	60 32-27 31	21 11-20 30	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	43	27	-14 23
2211	0 0 0 0	0 0 0 0	0 0 0 0	52 9 7 14	56 35-29 32	1 1-59 35	0 0 0 0	0 0 0 0	0 0 0 0	45	31	-12 23
2212	0 0 0 0	0 0 0 0	0 0 0 0	36 10 -3 19	68 40-24 30	5 2 1 23	0 0 0 0	0 0 0 0	0 0 0 0	52	35	-16 26
2213	0 0 0 0	0 0 0 0	1 22 9	65 37-21 28	19 13-26 29	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	51	38	-12 24
2214	0 0 0 0	0 0 0 0	22 1 23 9	58 31-17 27	29 21-30 29	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	53	39	-13 24
2215	0 0 0 0	0 0 0 0	17 0 29 8	40 18 -9 25	50 37-31 30	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	55	41	-13 24
2216	0 0 0 0	0 0 0 0	18 1 24 11	33 17-14 26	55 40-29 29	1 0 50 25	0 0 0 0	0 0 0 0	0 0 0 0	58	42	-15 25
2217	0 0 0 0	0 0 0 0	0 0 0 0	47 19 -5 22	56 42-31 29	4 2 1 25	0 0 0 0	0 0 0 0	0 0 0 0	63	43	-19 26
2218	0 0 0 0	0 0 0 0	0 0 0 0	41 15 -1 21	61 46-31 29	5 4-28 24	0 0 0 0	0 0 0 0	0 0 0 0	65	44	-20 26
2219	0 0 0 0	0 0 0 0	0 0 0 0	32 12 -2 22	65 44-23 28	12 7 -7 24	0 0 0 0	0 0 0 0	0 0 0 0	63	46	-15 26
2220	0 0 0 0	0 0 0 0	0 0 0 0	28 10 0 23	63 46-28 28	18 8 8 25	0 0 0 0	0 0 0 0	0 0 0 0	56	47	-8 25
2221	0 0 0 0	0 0 0 0	0 0 0 0	36 12 5 21	56 36-19 27	17 8 5 25	0 0 0 0	0 0 0 0	0 0 0 0	40	43	3 21
2222	0 0 0 0	0 0 0 0	0 0 0 0	48 8 17 16	59 30 -7 25	2 2-48 23	0 0 0 0	0 0 0 0	0 0 0 0	33	42	8 22
2223	0 0 0 0	0 0 0 0	24 0 29 8	41 9 14 19	43 11 18 22	1 1-49 24	0 0 0 0	0 0 0 0	0 0 0 0	21	41	18 18
2224	0 0 0 0	0 0 0 0	23 5 8 18	32 11 2 23	53 17 11 23	1 0 52 27	0 0 0 0	0 0 0 0	0 0 0 0	33	42	8 22
2225	0 0 0 0	0 0 0 0	0 0 0 0	37 13 0 22	63 41-19 26	9 5 -3 24	0 0 0 0	0 0 0 0	0 0 0 0	59	47	-11 25
2226	0 0 0 0	0 0 0 0	0 0 0 0	25 8 5 22	52 33-18 27	32 25-26 24	0 0 0 0	0 0 0 0	0 0 0 0	66	50	-15 25
2227	0 0 0 0	0 0 0 0	0 0 0 0	44 20-11 25	61 50-37 28	4 4-49 24	0 0 0 0	0 0 0 0	0 0 0 0	74	45	-27 27
2228	0 0 0 0	0 0 0 0	23 1 23 9	52 20 -3 23	33 19-15 26	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	40	39	-1 21
2229	0 0 0 0	0 0 0 0	40 12 -4 21	44 17 -6 24	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	33	29	-3 21
2303	0 0 0 0	0 0 0 0	36 3 7 8	71 23 -8 22	2 1-18 29	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	27	24	-3 17
2304	0 0 0 0	0 0 0 0	35 4 7 10	69 38-30 33	5 3-28 32	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	45	24	-19 25
2305	0 0 0 0	0 0 0 0	32 3 7 9	64 33-27 31	12 8-35 35	1 0 40 16	0 0 0 0	0 0 0 0	0 0 0 0	44	25	-17 25
2306	0 0 0 0	0 0 0 0	31 6 -3 16	65 40-36 36	12 6-18 28	1 0 42 17	0 0 0 0	0 0 0 0	0 0 0 0	52	26	-24 29
2307	0 0 0 0	0 0 0 0	41 6 0 12	67 30-20 29	1 0 37 14	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	36	23	-12 22
2308	0 0 0 0	0 0 0 0	50 5 5 9	58 24-18 28	1 0 33 11	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	29	21	-7 19
2309	0 0 0 0	0 0 0 0	43 10 -8 18	65 33-27 32	1 0 32 10	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	43	22	-19 26
2310	0 0 0 0	0 0 0 0	32 2 11 7	68 41-34 36	9 1 21 14	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	44	26	-16 26
2311	0 0 0 0	0 0 0 0	60 34-30 33	28 11 -7 25	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	47	29	-17 26

Table 2. (continued)

BLOCK I J	PROB CAT .00-.09		PROB CAT .10-.19		PROB CAT .20-.29		PROB CAT .30-.39		PROB CAT .40-.49		PROB CAT .50-.59		PROB CAT .60-.69		PROB CAT .70-.79		PROB CAT .80-.89		SUM O	SUM X	SUM F	SUM S	P	
	N	O	F	P	N	O	F	P	N	O	F	P	N	O	F	P	N	O						F
2312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	32	-14	25		
2313	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	36	-11	24		
2314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	40	-17	25		
2315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	43	-16	26		
2316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	46	-19	26		
2317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	45	-22	27		
2318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	46	-19	26		
2319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	46	-27	28		
2320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	49	-21	27		
2321	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	49	-14	25		
2322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	46	-19	25		
2323	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	43	-16	26		
2324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	46	-8	23		
2325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	51	-9	25		
2326	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	54	-16	23		
2327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	46	-21	26		
2328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	36	-2	23		
2403	13	1	2	7	39	2	11	6	56	11	4	16	1	1	-69	47	0	0	0	15	21	6	12	
2404	0	0	0	0	47	4	7	8	61	28	-22	29	1	0	32	10	0	0	0	32	22	-9	20	
2405	0	0	0	0	37	4	5	10	67	29	-19	27	5	2	-7	27	0	0	0	35	24	-10	21	
2406	0	0	0	0	43	8	-3	15	64	31	-24	31	2	0	35	12	0	0	0	39	23	-15	24	
2407	0	0	0	0	58	9	-1	12	50	18	-13	25	1	0	33	11	0	0	0	27	20	-6	18	
2408	21	1	5	5	43	7	0	13	45	13	-6	21	0	0	0	0	0	0	0	21	19	-2	15	
2409	0	0	0	0	52	8	-1	12	57	18	-9	22	0	0	0	0	0	0	0	26	21	-5	17	
2410	0	0	0	0	46	4	6	8	63	18	-5	21	0	0	0	0	0	0	0	22	22	0	16	
2411	0	0	0	0	37	5	2	11	72	21	-5	21	0	0	0	0	0	0	0	26	23	-3	18	
2412	0	0	0	0	23	3	3	11	77	21	-2	20	9	3	-3	23	0	0	0	27	26	-1	18	
2413	0	0	0	0	0	0	0	0	41	6	10	13	68	30	-11	26	0	0	0	36	32	-3	21	
2414	0	0	0	0	0	0	0	0	62	34	-18	28	29	19	-24	29	0	0	0	56	39	-15	26	
2415	0	0	0	0	0	0	0	0	43	22	-16	26	66	40	-17	27	0	0	0	62	43	-17	27	
2416	0	0	0	0	0	0	0	0	37	16	-8	24	69	44	-20	27	3	2	-16	44	45	-9	26	
2417	0	0	0	0	0	0	0	0	40	19	-12	26	66	34	-8	25	3	1	19	49	44	-5	25	
2418	0	0	0	0	0	0	0	0	44	16	1	24	50	19	5	24	1	0	52	39	43	3	23	
2419	0	0	0	0	0	0	0	0	52	25	-12	25	54	23	1	25	3	1	18	49	44	-5	25	
2420	0	0	0	0	0	0	0	0	33	15	-9	25	70	40	-12	27	6	2	19	57	46	-10	26	
2421	0	0	0	0	0	0	0	0	21	10	-11	26	69	45	-20	27	19	12	-10	67	49	-16	26	
2422	0	0	0	0	0	0	0	0	25	14	-19	28	65	55	-39	29	17	14	-30	83	48	-33	28	
2423	0	0	0	0	0	0	0	0	37	21	-21	28	62	49	-34	29	8	6	-23	76	45	-29	28	
2424	0	0	0	0	0	0	0	0	25	8	5	22	65	49	-30	27	17	13	-4	70	48	-21	25	
2425	0	0	0	0	0	0	0	0	20	4	18	19	55	34	-16	26	34	22	-12	60	51	-8	24	
2426	0	0	0	0	0	0	0	0	18	3	22	19	51	38	-28	27	40	26	-12	67	52	-14	24	
2427	0	0	0	0	0	0	0	0	46	22	-13	25	63	42	-23	28	0	0	0	64	43	-19	27	
2428	0	0	0	0	0	0	0	0	63	21	1	22	0	0	0	0	0	0	0	30	33	3	19	
2503	18	0	8	1	58	2	13	5	33	1	20	7	0	0	0	0	0	0	0	21	18	14	5	
2504	0	0	0	0	58	6	5	9	49	14	-5	20	2	1	-19	28	0	0	0	21	21	0	15	
2505	0	0	0	0	55	6	4	9	52	16	-7	22	2	1	-16	30	0	0	0	23	21	-2	16	
2506	0	0	0	0	62	10	-1	13	46	11	-1	18	1	0	35	12	0	0	0	15	15	0	12	
2507	27	3	-4	10	74	10	-2	12	8	2	-2	19	0	0	0	0	0	0	0	15	15	0	12	
2515	0	0	0	0	0	0	0	0	14	4	-1	20	70	37	-16	27	25	7	14	48	40	-8	25	
2516	0	0	0	0	0	0	0	0	45	27	-23	29	54	32	-17	27	1	0	50	59	43	-15	26	
2517	0	0	0	0	0	0	0	0	61	27	-7	25	34	16	-5	26	0	0	0	47	41	-6	24	

Table 2. (continued)

Table with columns: BLOCK I, J, and 11 'PROB CAT' intervals from .00-.09 to .80-.89. Each 'PROB CAT' header has sub-headers N, O, F, P. Data values are listed in rows corresponding to BLOCK I and J values.

Table 3.

109-DAY VERIFICATION SUMMARY FOR 75060100 THROUGH 75093000

PROBABILITY CATEGORY	NR OF FCSTS	FCST PERCENT	CUM FCSTS	CUM PERCENT	FCST W/OCC	FCSTS W/OCC	FCST PERCENT	CUM FCSTS W/OCCURR	CUM PERCENT	FCST W/O	CUM FCSTS W/OCCURR	FCST PERCENT	FCST W/O	CUM PERCENT	FCST W/O	FCST PROB	AVG FCST PROB	OB PROB OF OCC	FCST SCORE	P SCORE
0.90 - 0.99	0	0.0	0	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
0.80 - 0.89	0	0.0	0	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
0.70 - 0.79	0	0.0	0	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
0.60 - 0.69	294	0.4	294	0.4	244	244	0.4	244	0.4	1.2	244	0.4	1.2	0.83	0.0	0.0	0.62	0.83	-21	0.184
0.50 - 0.59	2483	3.0	2737	3.4	1621	1865	8.2	1865	9.5	9.5	1865	13.25	182	1325	0.54	0.54	0.66	0.66	-12	0.237
0.40 - 0.49	5752	7.1	8489	10.5	3411	5276	17.3	5276	26.8	26.8	5276	2344	2344	2344	0.44	0.44	0.59	0.59	-15	0.264
0.30 - 0.39	12491	15.4	20980	25.8	5182	10458	26.3	10458	53.1	53.1	10458	4293	4293	4293	0.34	0.34	0.41	0.41	-7	0.245
0.20 - 0.29	23175	28.5	44155	54.4	6009	16467	30.5	16467	83.6	83.6	16467	5739	5739	5739	0.25	0.25	0.26	0.26	-1	0.190
0.10 - 0.19	24600	30.3	68755	84.6	2752	19219	14.0	19219	97.5	97.5	19219	3634	3634	3634	0.15	0.15	0.11	0.11	4	0.099
0.0 - 0.09	12479	15.4	81234	100.0	487	19706	2.5	19706	100.0	100.0	19706	941	941	941	0.08	0.08	0.04	0.04	4	0.039
TOTAL	81234	100.0			19706		100.0					18658			0.23		0.23	0.24	-1	0.154

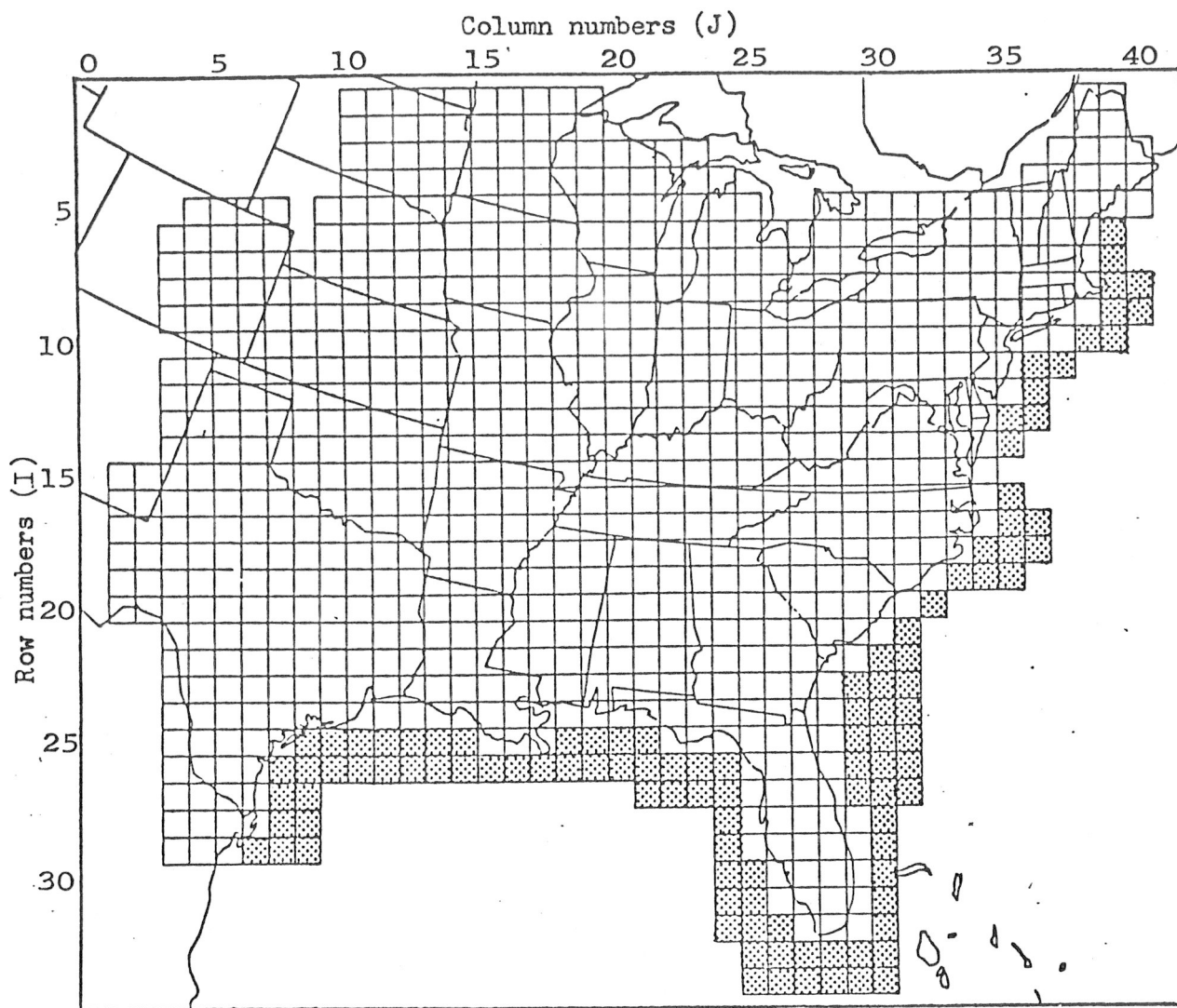


Figure 1. MDR grid region. Data from shaded overwater blocks were not used in the screening regression procedure. Neither were forecasts made for these blocks.

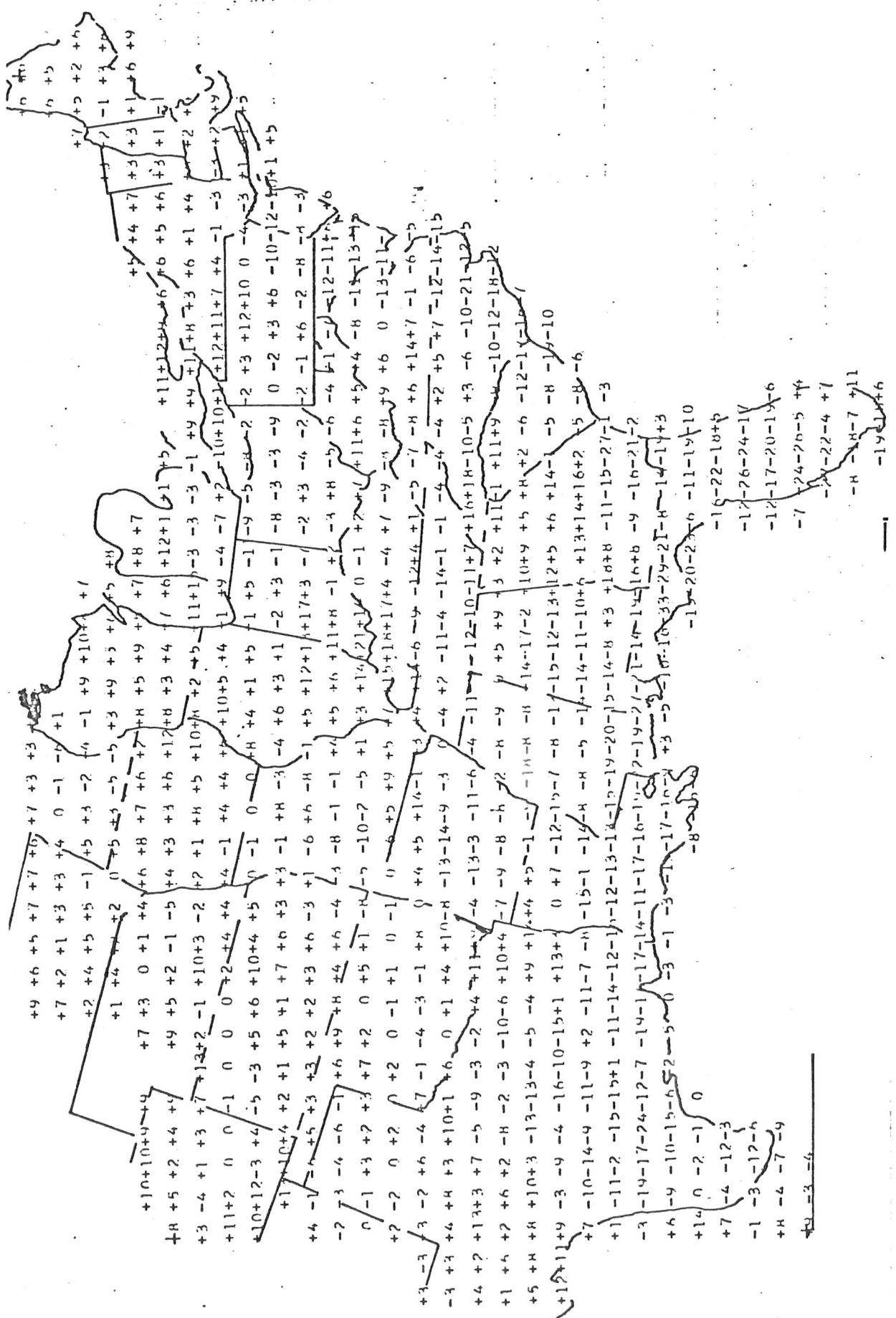


Figure 2. Forecast scores for all categories for period June through September, 1975 (109 days of data).

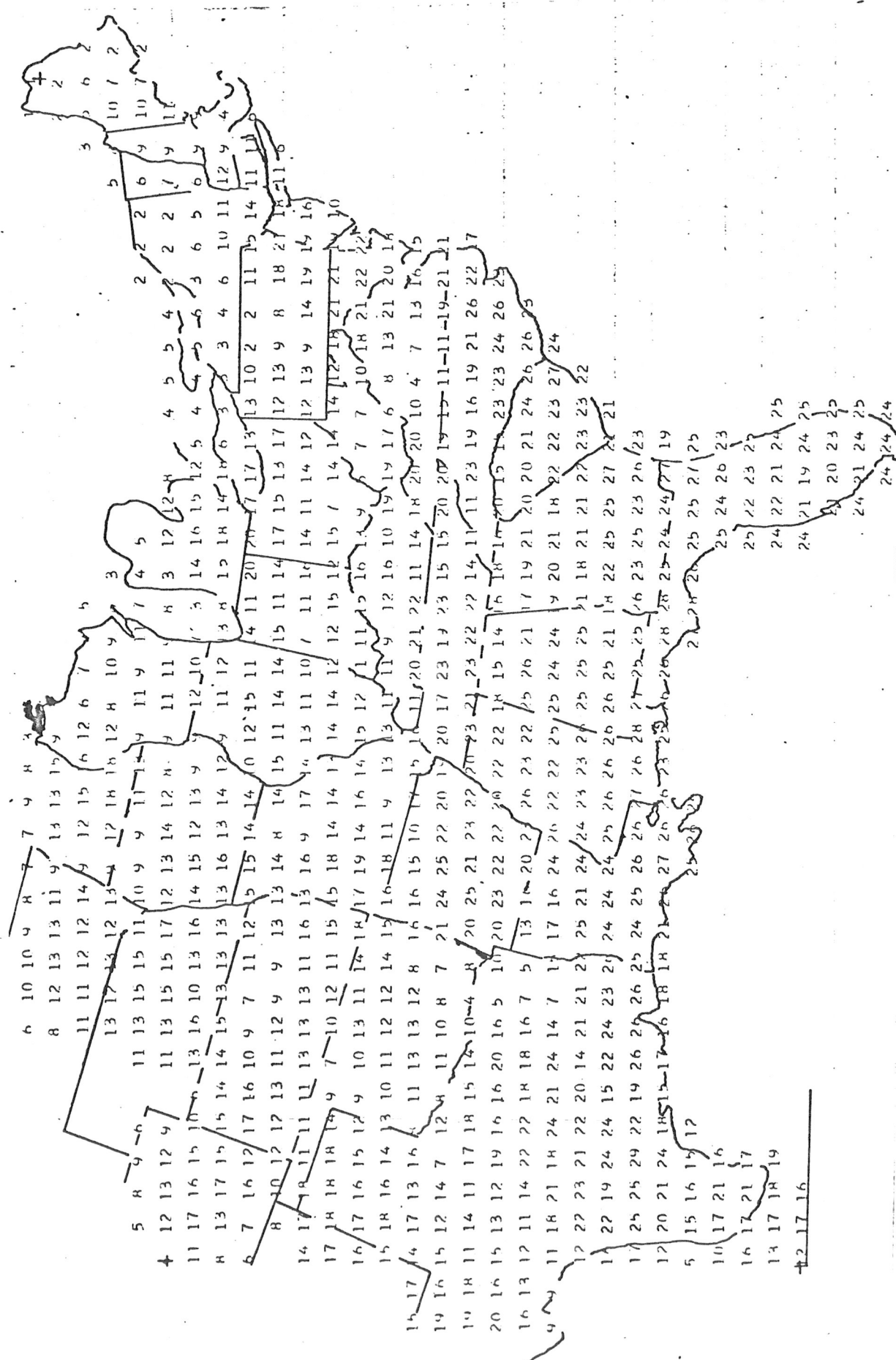


Figure 3. P scores for all categories for period June through September, 1975 (109 days of data).