Statistical Analysis of Climatological Data to Characterize Erosion Potential:
5. Joint Precipitation and Freezing Events in Western Oregon

STATISTICAL ANALYSIS OF CLIMATOLOGICAL DATA

TO CHARACTERIZE EROSION POTENTIAL:

5. JOINT PRECIPITATION AND FREEZING EVENTS

IN WESTERN OREGON

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ABSTRACT

When precipitation falls on frozen soil, serious soil loss can occur. In order to assign realistic probabilities to the occurrence of this condition for use in predicting erosion rates over long time periods, a technique for combining characteristics of precipitation and air temperature records is applied to more than 31 years of hourly, wet season data from Portland, Salem, and Eugene, Oregon. Periods of overlapping precipitation and freezing air temperature events are combined into clusters and the values of thirteen characteristics that are associated with each cluster are examined.

The statistical analysis of the cluster characteristics includes discussions of the marginal distributions and order statistics of the individual characteristics as well as joint distributions of several pairs of characteristics. The order statistics provide information about extreme values of individual characteristics (e.g., minimum temperature) whereas the probabilities of occurrence of certain combinations of characteristics (e.g., precipitation amount and freeze index) are estimated by the joint distributions. The results of these analyses provide information regarding the types of precipitation events that occur in combination with freezing air temperatures in western Oregon as well as estimates of specific probabilities that are important in the modeling and forecasting of soil erosion in this region.

ACKNOWLEDGMENTS

CONTENTS

TABLES

STATISTICAL ANALYSIS OF CLIMATOLOGICAL DATA
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1.   INTRODUCTION

Measurements conducted over a five-year period on small agricultural watersheds have identified several combinations of rainfall characteristics, soil temperature, and soil moisture status that control the timing and amount of soil loss in western Oregon (Istok and Kling, 1983; Harward et al., 1980). Rainfall which occurs when the soil is frozen is an example of such combinations of factors. In order to assign realistic probabilities to the occurrence of these conditions, it is necessary to first identify them in the available long-term climatic records. The interpretation of short-term erosion measurements and the ability to predict long-term erosion rates can be enhanced by such analyses.

A cooperative research project was initiated in 1980 between the Departments of Soil Science and Atmospheric Sciences at Oregon State University (OSU). The primary objective of this project is to determine the frequency of occurrence of certain combinations of weather conditions that are associated with severe soil loss from croplands in the Pacific Northwest. Certain characteristics of "precipitation events" (defined for hourly precipitation data) at five locations in Oregon and Washington are described in two earlier reports in this series (Brown et al., 1983a,b). Characteristics of "freezing events" (defined for hourly temperature data) at the same locations are described in Brown et al. (1983c,d). The purpose of this report is to summarize the results of

analyses of periods of overlapping precipitation and freezing events (in terms of "event clusters") for three stations in western Oregon (Salem, Portland, and Eugene). Similar analyses of event clusters for two stations in eastern Oregon and Washington (Pendleton, OR, and Walla Walla, WA) will be described in a separate report.

An event cluster is a summary of air temperature and precipitation measurements during periods of precipitation with freezing air temperatures in terms of several "characteristics". As well as being a convenient way of summarizing a large set of precipitation and temperature data, cluster characteristics are useful for predicting the occurrence of precipitation on frozen soil. These predictions are important in the modeling and forecasting of soil erosion. A more thorough explanation of the definition of an event cluster and of the characteristics associated with a cluster is presented in Section 2.

The data used in this study are described in Section 3. The results of evaluations of precipitation events and freezing events contained within clusters are presented in Section 4. Joint distributions of pairs of cluster characteristics associated with precipitation and freezing events contained within clusters are presented in Section 5. A summary of the results is presented in Section 6.

Three appendices are included with the report. Appendix A contains a description of the cluster data bases. Many of the results of the study are presented in tabular form in the remaining appendices.

2. ANALYSIS APPROACH

Because the occurrence of precipitation on frozen soil is not a commonly measured parameter, few long-term records of such occurrences are available. Hence, in order to consider this factor in predicting runoff or soil loss, it is necessary to develop models for predicting these occurrences based on long-term climatological data. The approach that is used in this report is to summarize significant portions of the long-term record (i.e., those periods containing precipitation and freezing air temperatures) in terms of event "clusters." A cluster is defined as a period of overlapping precipitation and freezing events. The characteristics associated with a cluster are derived from the characteristics of the precipitation and freezing events contained within it. The next two sections briefly summarize the definitions and characteristics of precipitation and freezing events. A more thorough discussion is presented in the four earlier reports in this series (Brown et al., 1983 a,b,c,d). Section 2.3 defines clusters of precipitation and freezing events and Section 2.4 defines the cluster characteristics.

2.1 Precipitation Event Definition and Characteristics

It is convenient to summarize a time series of hourly precipitation amounts in terms of a meteorological concept called a precipitation event. An investigation of precipitation events in western Oregon, which included an analysis of the long-term precipitation record and an evaluation of the hydrologic response to precipitation led to the selection of a particular soil erosion-specific precipitation event definition (Brown et al., 1983a).

3

Precipitation events formulated using the soil erosion-specific definition consist of series of hours within which the maximum number of consecutive dry hours is less than six. That is, two hours with at least 0.01 inches of precipitation that are separated by fewer than six hours with no precipitation are considered to be part of the same precipitation event. An example of the implementation of this definition is presented in Figure 1. The top line in Figure 1 illustrates the grouping of hourly precipitation amounts and hours with no precipitation into precipitation events. In this example, five series of hours satisfy the definition of a precipitation event, as indicated by the five stippled areas.

Several characteristics associated with each precipitation event were calculated from the hourly precipitation amounts. These characteristics (Table 1) include the event duration, magnitude, average intensity, maximum intensity, and hours between events. The definitions of the characteristics are as follows: Duration is the length of the event in hours, from the first hour with precipitation to the last hour with precipitation. Magnitude is the total amount of precipitation that occurred during the event, summed over all hours. Average intensity is the average rate of precipitation per hour. It should be noted that

$$\text{magnitude} = (\text{average intensity}) \times (\text{duration}). \qquad (1)$$

Maximum intensity is the maximum rainfall during any one hour within the event. Finally, hours between events is the total number of dry hours separating the beginning of the event from the end of the previous event. Note that the value of this variable must be greater than or equal to six. Four characteristics that are measures of antecedent rainfall also were calculated for each precipitation event. These

4

5	12	3	17	2	DURATION (hrs)
0.06	0.42	0.03	0.52	0.02	MAGNITUDE (in)
0.012	0.035	0.010	0.031	0.010	AVERAGE INTENSITY (in/hr)
—	7	18	10	9	HOURS BETWEEN EVENTS
0.02	0.10	0.01	0.10	0.01	MAXIMUM INTENSITY (in/hr)
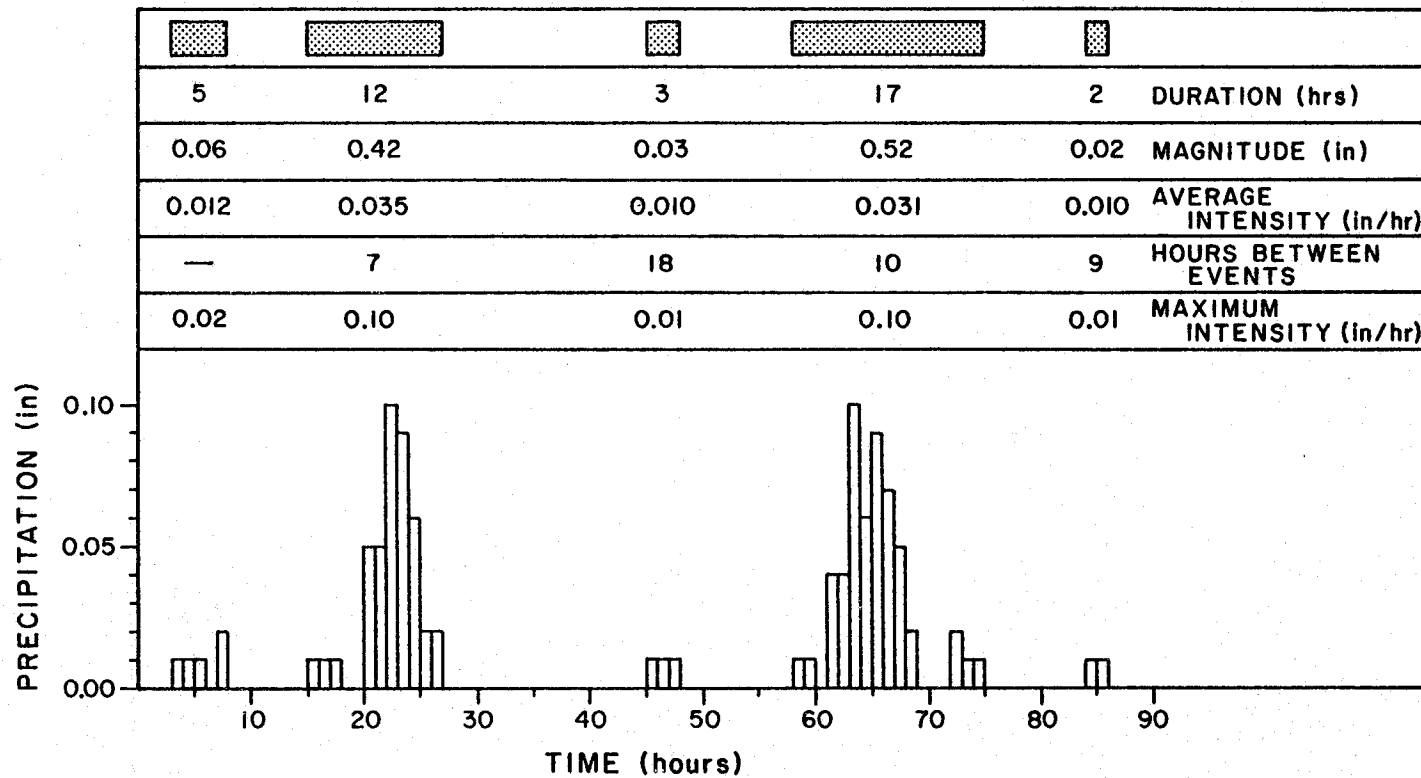
Figure 1. Illustration of the calculation of five precipitation event characteristics.

Table 1. Definitions of calculated characteristics of precipitation events.

F_k = index of first hour of event k in a given year
L_k = index of last hour of event k in a given year
P_i^k = precipitation recorded during hour i in a given year

Variable Name	Definition	Units	Formula
Duration	Length of event from first hour to last.	hrs	$D_k = (L_k + 1) - F_k$
Magnitude	Total amount of precipitation during the event.	in	$M_k = \sum_{i=F_k}^{L_k} P_i$
Average Intensity	Average precipitation intensity during the event.	in/hr	$I_k = \dfrac{M_k}{D_k}$
Hours Between Events	Number of hours separating the event from the previous event.	hrs	$HB_k = F_k - (L_{k-1} + 1)$
Maximum Intensity	Maximum hourly precipitation intensity during the event	in/hr	$IMAX_k = \max_{F_k \leq i \leq L_k} \{p_i\}$
Magnitude for Previous 12 Hours	Total amount of precipitation during the 12 hours preceding the event.	in	$M12_k = \sum_{i=F_{k-12}}^{F_{k-1}} P_i$
Magnitude for Previous 48 Hours	Total amount of precipitation during the 48 hours preceding the event.	in	$M48_k = \sum_{i=F_{k-48}}^{F_{k-1}} P_i$
Magnitude for Previous 168 Hours	Total amount of precipitation during the 168 hours preceding the event.	in	$M168_k = \sum_{i=F_{k-168}}^{F_{k-1}} P_i$
Magnitude for Year Preceding the Event	Total amount of precipitation during the year (wet season) before this event.	in	$MYR_k = \sum_{i-1}^{k-1} M_i$

9

characteristics are the precipitation magnitudes for the 12, 48, and 168 hours prior to the beginning of the event, and the total precipitation magnitude over all hours in the wet season prior to the beginning of the event. A summary of the precipitation event characteristics and antecedent rainfall measures and their definitions is given in Table 1. An example of the computation of the values of the precipitation event characteristics is presented in Figure 1. The results of several types of analyses of the precipitation event characteristics at Portland, Salem, and Eugene are described in Brown et al. (1983a).

2.2 Freezing Event Definition and Characteristics

Because frost occurrence in soil is not a commonly measured parameter, few long-term records of such occurrences are available. Hence, in order to consider this factor in predicting runoff or soil loss it is necessary to develop models based on long-term climatological data. A discussion of the manner in which freezing events, defined with respect to hourly air temperatures, can be useful in predicting the occurrence of frozen soil is presented by Brown et al. (1983c). This section presents an explanation of the definition of a freezing event and a description of the event characteristics.

Brown et al. (1983c) present the following definition of a freezing event: a freezing event begins when the surface air temperature first falls below 32°F and it continues through the ensuing cold period (temperatures below 32°F) and the next warm period (temperatures above 32°F). The event ends and another event begins when the temperature once again falls below 32°F. Hence, each freezing event consists of one cold

7

period and one warm period. A schematic example of the application of this definition to hourly temperature data is illustrated in Figure 2.

Several characteristics are associated with each freezing event. These include characteristics that describe the cold portion of the event and those that describe the warm portion. The characteristics and their definitions are listed in Table 2. Moreover, Figure 3 contains an example of the calculation of the values of the characteristics for a particular event.

The cold period characteristics (defined assuming the temperature data are hourly) are: (a) D_b, the duration of the cold period (i.e., the number of hours during which the temperature is below 32°F); (b) ΣT_b, the sum of degrees below 32°F during the cold period (i.e., the sum of the differences between 32°F and each hourly temperature during the cold period); (c) T_{ab}, the average temperature during the cold period; and (d) T_{mb}, the minimum temperature during the cold period. The warm period characteristics are complementary to the cold period characteristics and are as follows: (a) D_a, the duration of the warm period (i.e., the number of hours during which the temperature is above 32°F; (b) ΣT_a, the sum of degrees above 32°F during the warm period (i.e., the sum of the differences between each hourly temperature and 32°F for each hour in the warm period); (c) T_{aa}, the average temperature during the warm period; and (d) T_{ma}, the maximum temperature during the warm period. A ninth characteristic, D_e, is the total duration of the freezing event.

2.3 Clusters of Precipitation and Freezing Events

The preceding subsections have described how definitions of precipitation and freezing events and event characteristics can be used to

8
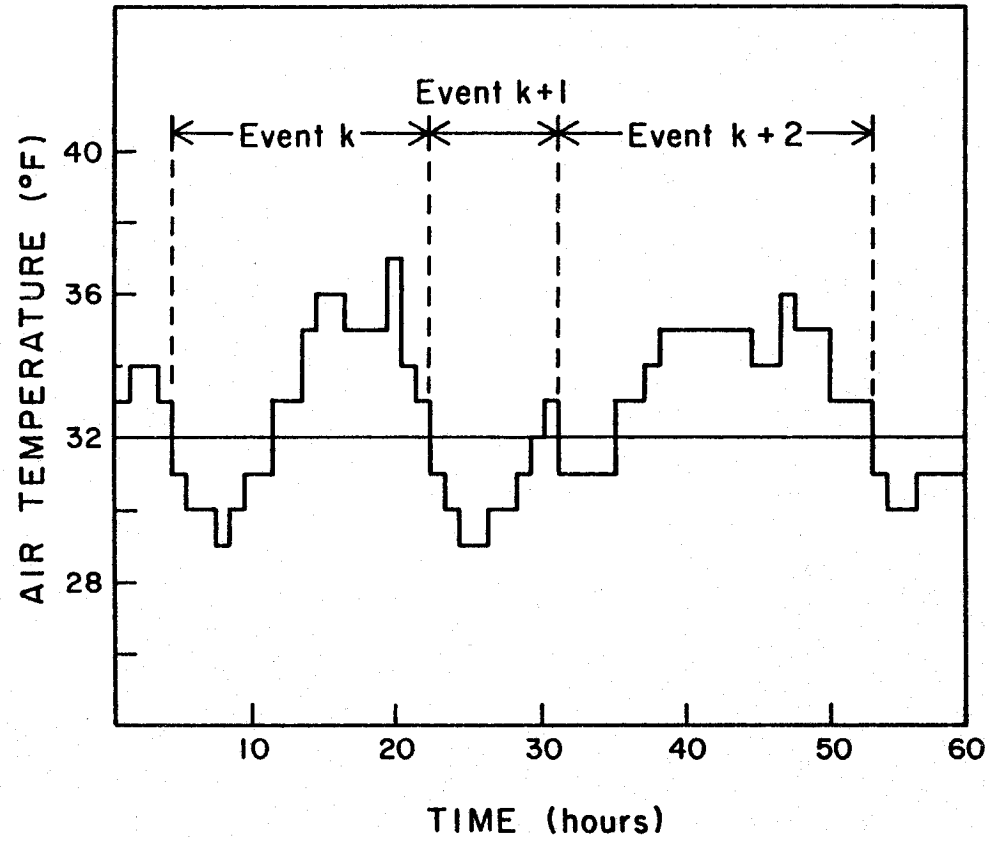
Figure 2. Schematic example of the application of freezing event definition.

Table 2. Definitions of freezing event characteristics for hourly temperature data.

Name	Symbol	Definition†
Cold period characteristics:		
Hours Below 32°F	Db	$Db_k = W_k - C_k$
Sum Below 32°F (°F)	ΣTb	$\Sigma Tb_k = \sum_{i=C_k}^{W_k-1} (32-T_i)$
Average Temperature Below 32°F (°F)	Tab	$Tab_k = 32 - \Sigma Tb_k / Db_k$
Minimum Temperature (°F)	Tmb	$Tmb_k = \min \{T_i\},\ C_k \leq i \leq W_k$
Warm period characteristics:		
Hours Above 32°F	Da	$Da_k = C_{k+1} - W_k$
Sum Above 32°F (°F)	ΣTa	$\Sigma Ta_k = \sum_{i=W_k}^{C_{k+1}-1} (T_i - 32)$
Average Temperature Above 32°F (°F)	Taa	$Taa_k = 32 + \Sigma Ta_k / Da_k$
Maximum Temperature (°F)	Tma	$Tma_k = \max \{T_i\},\ W_k \leq i \leq C_{k+1}$
Duration	De	$De_k = C_{k+1} - C_k$

† T_i = temperature in hour i
  W_k = index of first hour of warm period ($TW_k > 32°F$) in event k
  C_k = index of first hour of event k
  C_{k+1} = index of first hour of event k+1
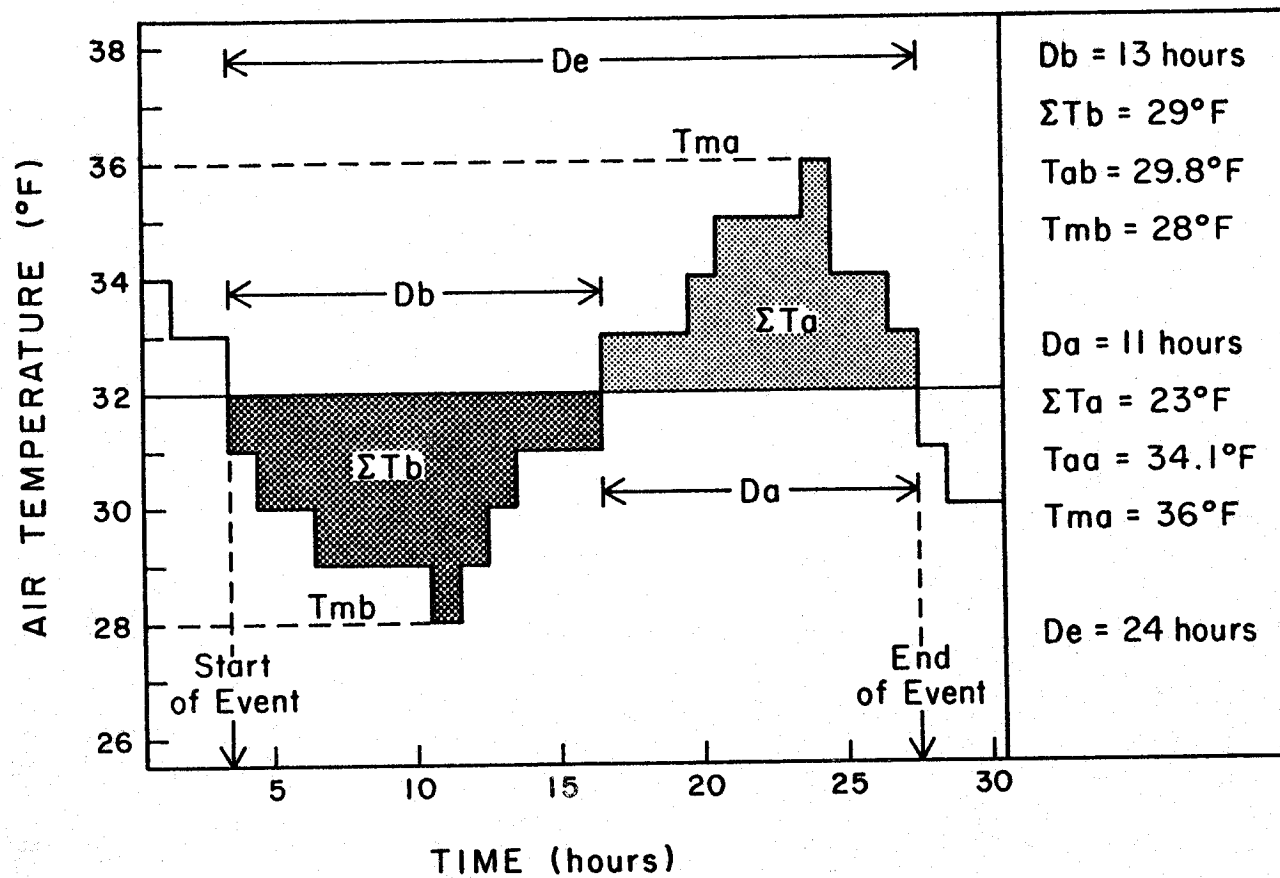
Figure 3. Illustration of the calculation of nine freezing event characteristics.

summarize a time series of hourly precipitation amounts or hourly air temperature values. In order to assign realistic probabilities to the occurrence of precipitation on frozen soil it is necessary to describe periods of time when precipitation occurs while the air temperature is below 32°F. The approach used in this report is to combine precipitation and freezing events which overlap in time into "event clusters". This section describes the definition of event clusters and Section 2.4 describes the "cluster characteristics" which are used to summarize the characteristics of events (both precipitation and freezing events) contained within the cluster.

An event cluster is defined as a period of time which contains overlapping precipitation and freezing events. Because we wish to consider those periods of time during which the soil may have been frozen, only the cold period (temperatures below 32°F) of a freezing event was considered when determining if a precipitation and a freezing event overlapped. A schematic example of the application of this definition to hourly precipitation and air temperature data is illustrated in Figure 4. As seen in Figure 4, each cluster contains at least one precipitation event and at least one freezing event. The cluster begins at the start of the earliest event of either type in the cluster. The cluster ends at the end of the latest precipitation event or at the end of the cold cycle of the latest freezing event in the cluster, whichever occurs last. In this example, three series of events satisfy the definition of an event cluster, as indicated by the three stippled areas.

Event cluster data bases were created for all three western Oregon stations using this definition. These data bases consisted of all event

12
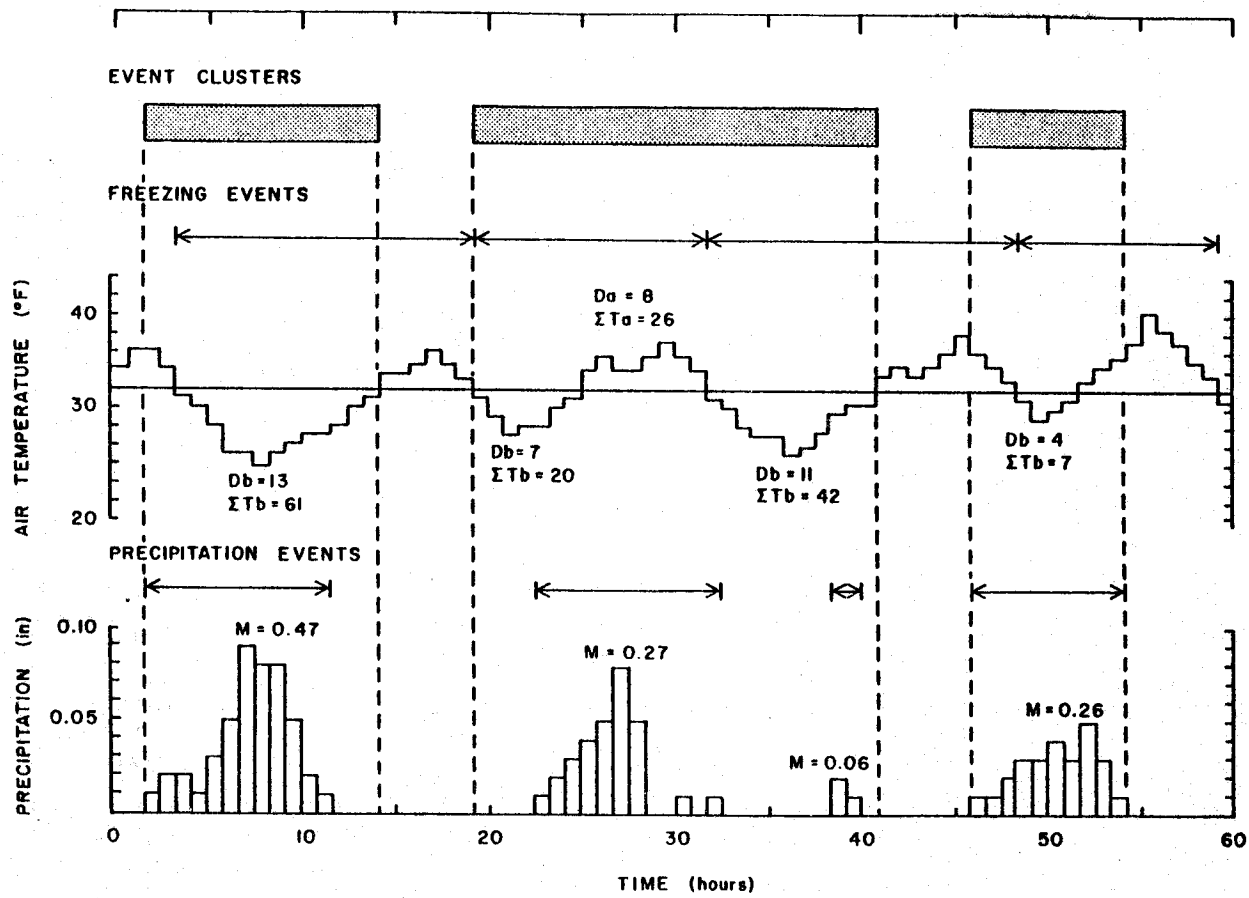
Figure 4. Schematic example of the application of definition of event cluster. See text for further explanation.

clusters satisfying the definition that occurred within the 31½-year series of wet season (October through May) precipitation and freezing events described in Section 3. This procedure identified a total of 73 event clusters at Salem, 64 event clusters at Portland and 60 event clusters at Eugene.

2.4 Cluster Characteristics

As indicated in the previous section, an event cluster may contain several precipitation and freezing events. Several characteristics are associated with each type of event and these were defined in Tables 1 and 2 for precipitation and freezing events, respectively. In order to calculate the frequency of occurrence of event clusters containing events having specified values of event characteristics, several cluster characteristics were defined using the values of event characteristics for those events within a cluster. For example, the duration of precipitation for a cluster is defined as the sum of all precipitation event durations within the cluster. Similarly the cluster characteristic amount of precipitation is the sum of all precipitation event magnitudes within the cluster. Other cluster characteristics were defined using the values of freezing event characteristics for freezing events within the cluster. For example, the minimum temperature for a cluster is defined as the minimum temperature of all freezing events within the cluster.

Table 3 defines each of the cluster characteristics using the precipitation and freezing event characteristics defined in Tables 1 and 2. Six cluster characteristics describe the characteristics of

Table 3. Definitions of calculated characteristics of event clusters.

FP_k = index of first precipitation event in cluster k of a given year.

LP_k = index of last precipitation event in cluster k of a given year.

FF_k = index of first freezing event in cluster k of a given year.

LF_k = index of last freezing event in cluster k of a given year.

Variable name	Definition	Units	Formula†
Duration	Sum of durations of precipitation events in cluster	hrs	$D_k^* = \sum\limits_{i=FP_k}^{LP_k} D_i$
Amount	Sum of magnitudes of precipitation events in cluster	in	$A_k^* = \sum\limits_{i=FP_k}^{LP_k} M_i$
Hours Between Events	Maximum number of hours between precipitation events in cluster	hrs	$HB_k^* = \max\limits_{FP_k \leq i \leq LP_k} \{HB_i\}$
Maximum Intensity	Maximum precipitation intensity during cluster	in/hr	$IMAK_k^* = \max\limits_{FP_k \leq i \leq LP_k} \{IMAK_i\}$
Average Intensity	Average precipitation intensity during cluster	in/hr	$IA_k^* = \dfrac{A_k^*}{D_k^*}$
Freeze Index	Sum of degrees below 32°F for freezing events in cluster	°F	$\Sigma Tb_k^* = \sum\limits_{i=FF_k}^{LF_k} (\Sigma Tb_i)$
Number Below 32°F	Sum of hours below 32°F for freeze events in cluster	hrs	$Db_k^* = \sum\limits_{i=FF_k}^{LF_k} Db_i$
Minimum Temperature	Minimum temperature during cluster	°F	$Tmb_k^* = \min\limits_{FF_k \leq i \leq LF_k} \{Tmb_i\}$
Thaw Index	Sum of degrees above 32°F for freeze events in cluster	°F	$\Sigma Ta_k^* = \sum\limits_{i=FF_k}^{LF_k} (\Sigma Ta_k)$

15

Table 3, continued.

Variable name	Definition	Units	Formula†
Number Above 32°F	Sum of hours above 32°F for freezing events in cluster	hrs	$Da_k^* = \sum\limits_{i=FF_k}^{LF_k} Da_i$
Maximum Temperature	Maximum temperature during cluster	°F	$Tma_k^* = \max\limits_{FF_k \leq i \leq LF_k} \{Tma_i\}$

†The definitions of precipitation and freezing event characteristics used for calculating the cluster characteristics are given in Tables 1 and 2, respectively.

precipitation events within a cluster. These are: (a) number of pre-cipitation events, Np*; (b) duration of precipitation, D*; (c) amount of precipitation, A*; (d) maximum number of hours between precipitation events, HB*; (e) maximum intensity, IMAX*; and (f) average intensity, Ia*. Seven cluster characteristics are used to describe the characteristics of freezing events within a cluster. These are: (a) number of freezing events, Nf*; (b) freeze index (sum of degrees below 32°F), ΣTb*; (c) number of hours below 32°F, Db*; (d) minimum temperature, Tmb*; (e) thaw index (number of degrees above 32°F), ΣTa*; (f) number of hours above 32°F, Da*; and (g) maximum temperature, Tma*. An example of the calculation of the cluster characteristics for the three clusters in Figure 4 is presented in Table 4.

Table 4. Values of thirteen cluster characteristics for the three clusters shown in Figure 4, calculated according to definitions in Table 3.

Characteristic	Units	Cluster		
		I	II	III
Number of Precipitation Events	–	1	2	1
Duration	hrs	12	14	10
Amount	in	0.47	0.33	0.26
Hours Between Events	hrs	0	7	0
Maximum Intensity	in/hr	0.09	0.08	0.05
Average Intensity	in/hr	0.039	0.024	0.026
Number of Freezing Events	–	1	2	1
Freeze Index	°F	61	62	7
Number Below 32°F	hrs	13	18	4
Minimum Temperature	°F	24	25	29
Thaw Index	°F	0	26	0
Number Above 32°F	hrs	0	8	0
Maximum Temperature	hrs	0	36	0

3.   EVENT CLUSTER DATA BASES

The analyses of event clusters described in this report are based on precipitation and freezing event data bases for Salem, Portland, and Eugene, Oregon. The precipitation event data bases consist of precipitation events and precipitation event characteristics calculated from over 31 years (i.e., from mid-1948 to December 31, 1979) of hourly values of precipitation amount for the three stations. A description of this data base is given in Brown et al. (1983a). The freezing event data bases consist of freezing events and freezing event characteristics calculated from over 31 years (i.e., January 1948 to December 1979) of hourly air temperature data for the three stations. A description of this data base is given in Brown et al. (1983c).

An event cluster data base was created for all three western Oregon stations using the definition of event clusters given in Section 2. The portion of record during which the precipitation and freezing event data bases did not overlap (i.e., January to mid-1948) was discarded. A more complete description of the event cluster data bases is presented in Appendix A.

4. MARGINAL DISTRIBUTIONS OF CLUSTER CHARACTERISTICS

The distributions of the individual cluster characteristics are described in this section in terms of (a) marginal empirical frequency distributions; and (b) order statistics, or extreme values. A variety of useful information about event clusters may be obtained from the examination of each of these summaries. For example, the order statistics allow estimation of the extreme values of cluster characteristics that could be expected to occur in a 31-year period.

The marginal distributions of many of the cluster characteristics are summarized using diagrams known as box plots (Tukey, 1977). These diagrams provide a simple and useful way of displaying and comparing distributional data. Each point on a box plot represents a particular quantile value of interest. An example showing box plots of distributions of amount of precipitation (A*) for clusters at Portland, Salem, and Eugene, Oregon is given in Figure 5. As illustrated in this figure, a box surrounds the region from the lower quartile (the 0.25th quantile) to the upper quartile (the 0.75th quantile), the region which contains the middle half of the observations. The length of this region (the interquartile range) provides an estimate of the variability of the characteristic. The line extending from the upper end of each box represents the upper tail of the distribution and, in this case, contains points marking the 0.90th and 0.95th quantile values. The values of some different quantiles may be presented for other characteristics. Typically, lines also would extend from the bottoms of the boxes, depicting the lower tails of the distributions. However, in this case the distributions are quite positively skewed so that the lower tails are very short and are barely distinguishable from the boxes.

20

Figure 5. Box plots of amount of precipitation (A*) for Portland,
Salem, and Eugene. The number at the top of each box
plot is the number of clusters.

Another way of describing the distribution of a cluster characteristic is through the order statistics; that is, the values of the characteristic resequenced from largest to smallest (smallest to largest in the cases of hours between events and minimum temperature). These statistics can be used to obtain estimates of the extreme values of cluster characteristics that could be expected to occur in a 31-year (rounded from 31½-year) period. The values of the characteristics of the most intense, coldest, and highest magnitude clusters are often of the most interest for soil erosion applications.

The marginal distributions and order statistics of some of the thirteen cluster characteristics at Portland, Salem, and Eugene, Oregon, are described in the following subsections. Because of the large number of tables required for the presentation of the order statistics, these tables are located in Appendix B. The lists of order statistics in Appendix B include the values of all of the characteristics of the clusters associated with the largest values of a given characteristic, for all stations.

4.1 Number of Precipitation Events

Frequency distributions for the number of precipitation events contained within individual clusters (Np*) for the three stations are shown in Table 5. These data show that the majority of the clusters consisted of a single precipitation event, with clusters of this type accounting for 67, 81, and 80 percent of all clusters at Portland, Salem, and Eugene, respectively. Also, considering all clusters at all stations, only 4 clusters consisted of five or more precipitation events. The number of precipitation events within clusters for Salem and

Table 5. Frequency distributions of number of precipitation events within clusters (Np*) for Portland, Salem, and Eugene.

Number of precipitation events	Frequency and overall relative frequency[†]		
	Portland (n = 64)	Salem (n = 73)	Eugene (n = 60)
1	43 0.67	59 0.81	48 0.80
2	11 0.17	10 0.14	8 0.13
3	6 0.09	2 0.03	4 0.07
4	1 0.02	1 0.01	0 0.00
$\geq$ 5	3 0.05	1 0.01	0 0.00

[†]The upper number in each entry is the number of clusters which had the indicated number of precipitation events. The lower number is the relative frequency.

Eugene were similar, with Portland having a higher number of clusters containing three or more precipitation events.

4.2 Amount of Precipitation

The box plots representing the distributions of amount of precipitation (A*) for clusters at Portland, Salem, and Eugene are displayed in Figure 5. The shapes of the box plots indicate that the distributions are positively skewed. A few clusters at each station had a large amount of precipitation, but the majority of the clusters had relatively less precipitation. Considering the data for Portland and Salem, the boxes enclose the region from 0.02 inches to 1.04 inches. Hence, 25% of the clusters had 0.02 inches of precipitation or less, while 50% had between 0.02 and 1.04 inches of precipitation. Only 25% of the clusters had an amount of precipitation greater than 1.04 inches. Although the distributions for Portland and Salem are quite similar to one another, there are differences between the box plot for Eugene and those for Salem and Portland. First, the interquartile range (the length of the box) is larger for Eugene, indicating greater variability in the distribution for Eugene. This is because of the larger value of the 0.75th quantile for Eugene. Similarly, the value of the 0.90th quantile for Eugene is much larger than those for Salem and Portland. In general, there appears to be a greater "spread" in the distribution of amount of precipitation during clusters at Eugene than in the distributions at Portland and Salem.

The order statistics of amount of precipitation are shown graphically in Figure 6. The values displayed in this figure are the amounts of precipitation for all the clusters at each station, resequenced from

24
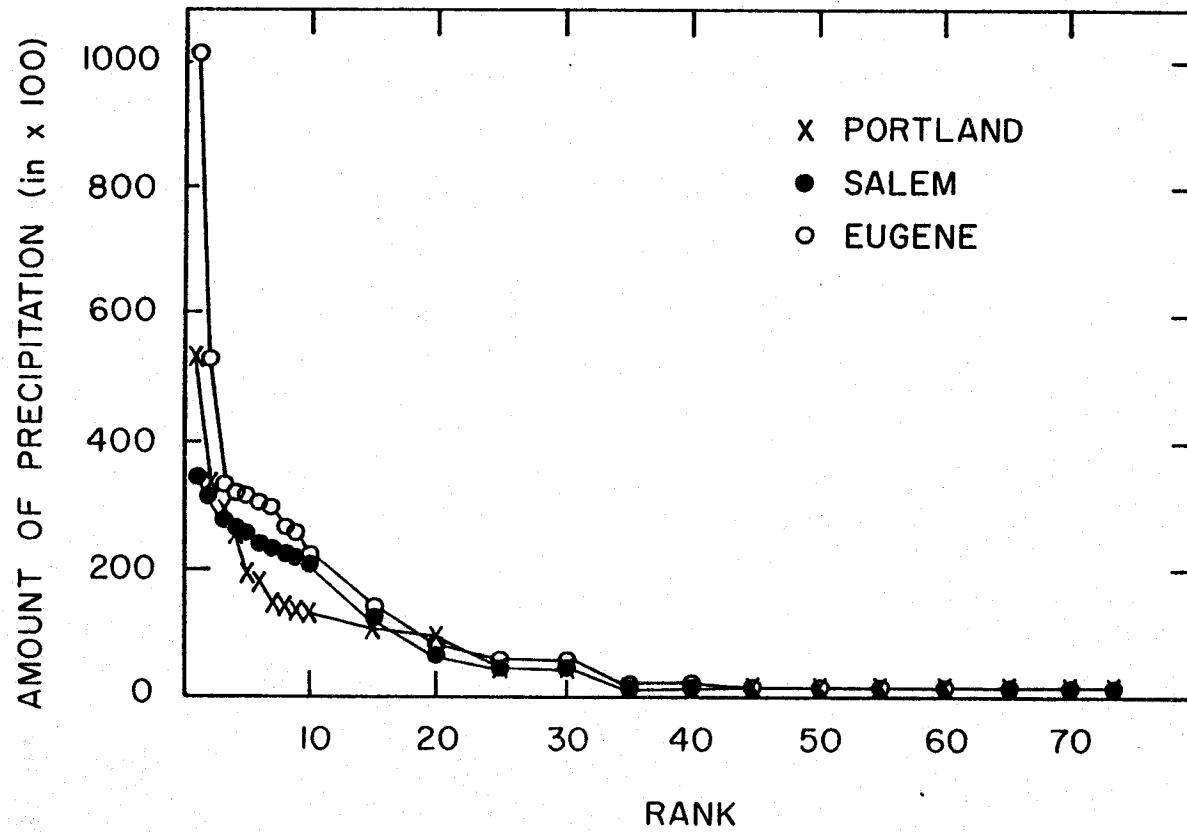
Figure 6. Amount of precipitation (A*) order statistics at Portland, Salem, and Eugene.

largest to smallest. The curves for the three stations are quite similar to one another except for the first ten order statistics where the curves for Portland and Salem are below the curve for Eugene. The first order statistic at each station is quite large. However, the values of the following few order statistics rapidly decrease until about the 20th statistic. At that point, the rate of decrease becomes much smaller. A complete listing of the order statistics of A* for all of the clusters is presented in Appendix B.

4.3 Duration of Precipitation

The marginal distributions of duration of precipitation (D*) at Portland, Salem, and Eugene are illustrated in Figure 7. This characteristic is defined as the sum of the durations of precipitation events within the individual clusters. As shown in Figure 7, the three box plots of D* are quite similar to one another. Most clusters have relatively small values of this characteristic. For example, the 0.75th quantile occurred at 37, 33, and 47 hours of cumulative duration at Portland, Salem, and Eugene, respectively. The major differences between the three stations are (a) Portland has relatively fewer clusters with short durations; (b) the interquartile range for Eugene is larger than those for Portland and Salem; and (c) the value of the 0.95th quantile of D* at Eugene is larger than the value at the other two stations. Order statistics were not computed for this characteristic. However, they could be computed from the tables of order statistics of other cluster characteristics presented in Appendix B.

26
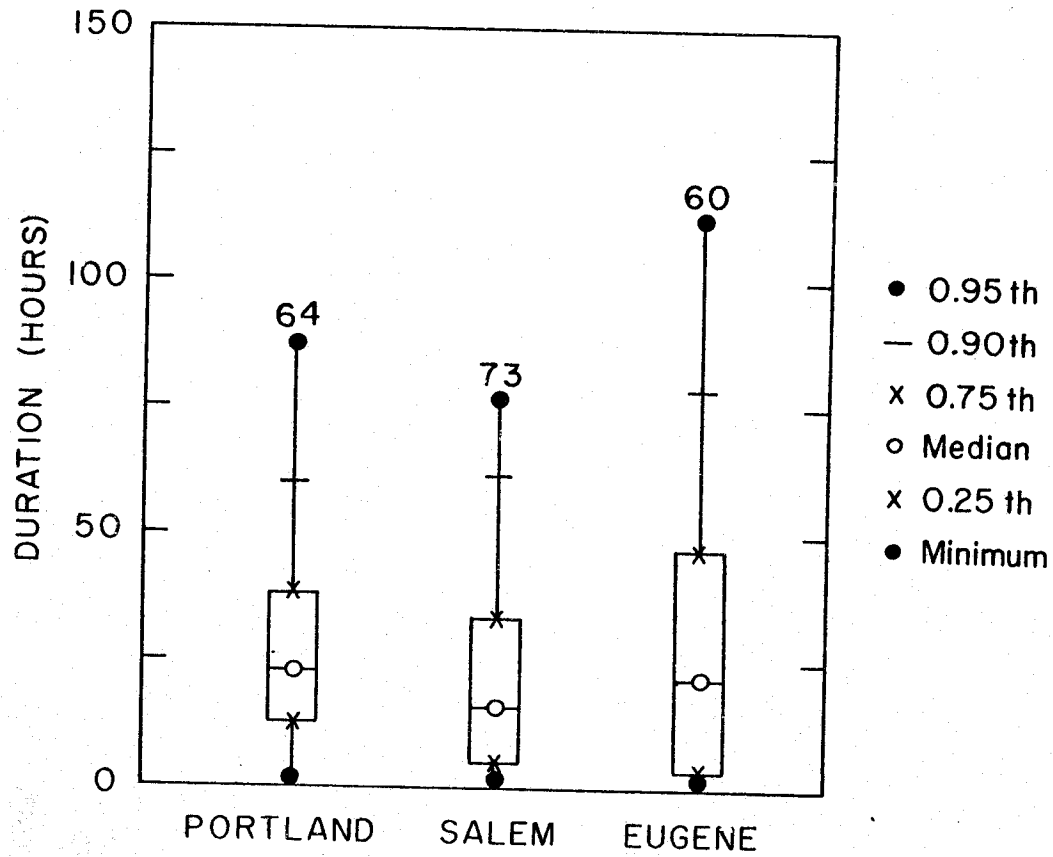
Figure 7. Box plots of duration of precipitation (D*) for Portland, Salem, and Eugene. The number at the top of each box plot is the number of clusters.

4.4 Average and Maximum Intensity

The marginal distributions of average and maximum precipitation intensity ($Ia*$ and $IMAX*$) are shown in Figures 8 and 9, respectively. The distributions for the three stations are quite similar to one another. In general, the interquartile range for Portland is smaller than for Eugene and Salem, indicating less variability in both intensity characteristics at Portland, compared to the other two stations. The values of the 0.95th quantiles of $Ia*$ and $IMAX*$ indicate that a few clusters at Eugene contain precipitation events with average and maximum intensities that are considerably larger than those for Portland and Salem. In fact, the maximum values of $IMAX*$ for the three stations are 0.25, 0.35, and 0.49 in/hr for Portland, Salem, and Eugene, respectively. The maximum values of $Ia*$ are 0.09, 0.06, and 0.11 in/hr for Portland, Salem, and Eugene, respectively.

The order statistics of maximum intensity are presented in Figure 10. The overall shapes of the curves in Figure 10 are similar to those representing the order statistics of amount of precipitation discussed earlier. That is, the values of the first few order statistics are relatively large and these values show a sharp decrease for the next few statistics. Also, after about the 20th order statistic, the three curves nearly coincide and any apparent differences between them is probably not of importance.
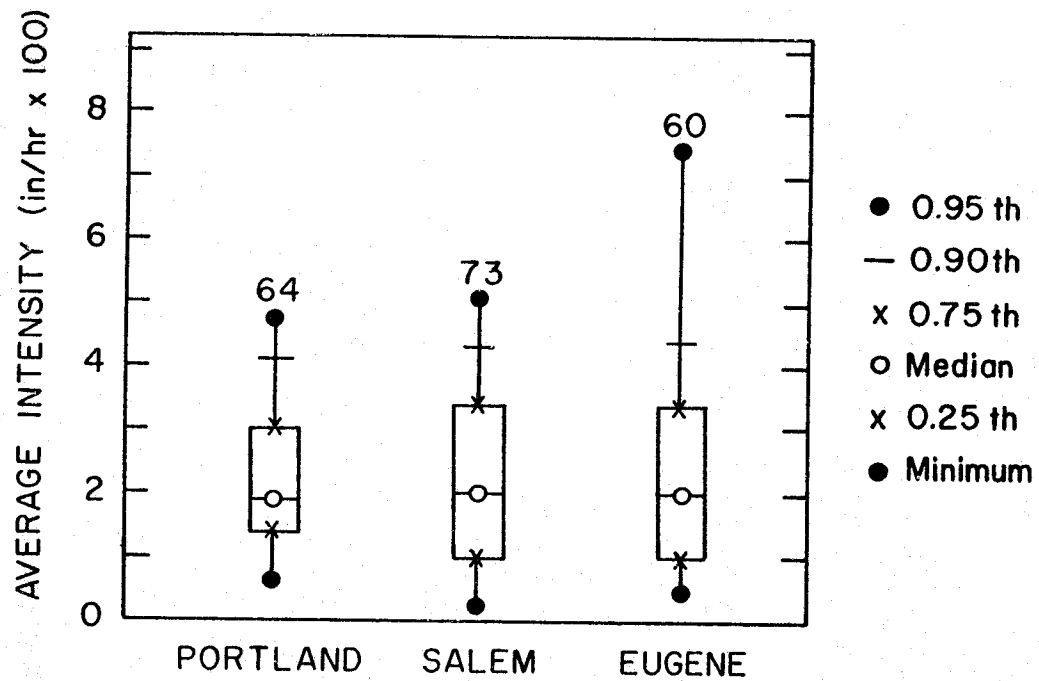
Figure 8. Box plots of average intensity (IA*) for Portland, Salem and Eugene. The number at the top of each box plot is the number of clusters.
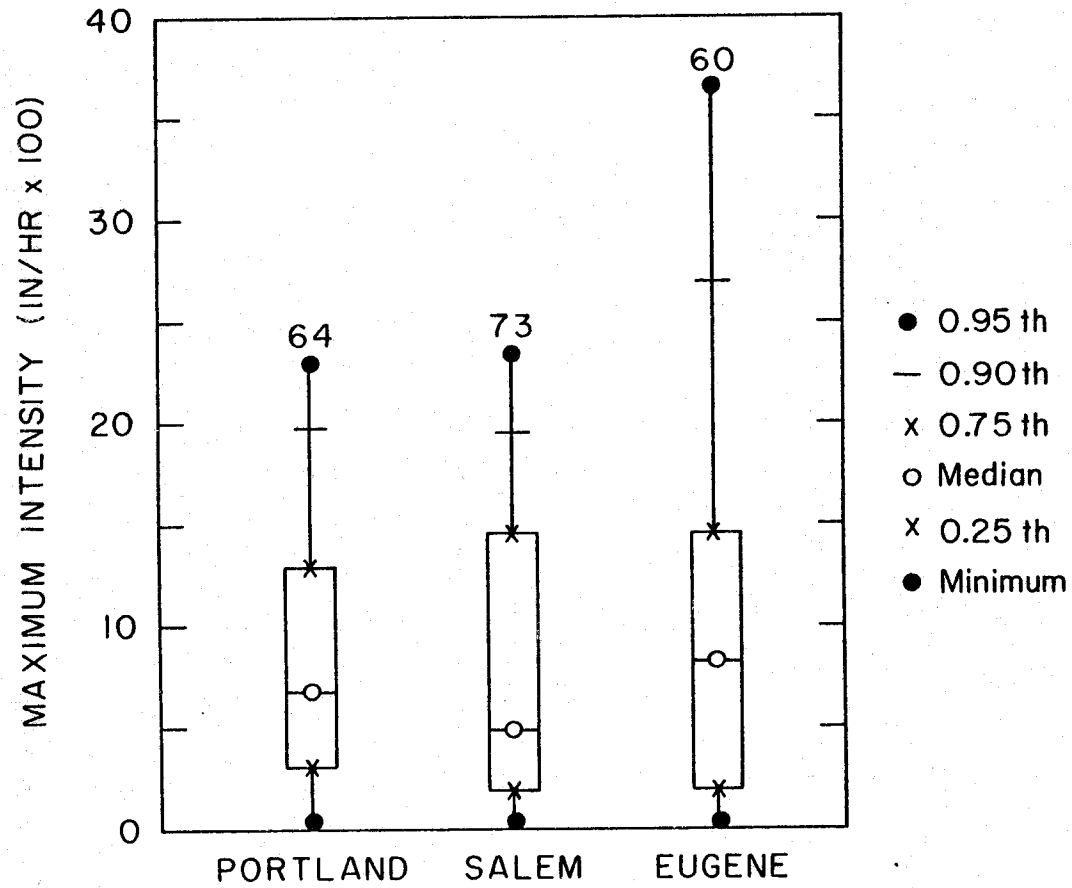
Figure 9.   Box plots of maximum intensity (IMAX*) for Portland,
            Salem, and Eugene. The number at the top of each box
            plot is the number of clusters.
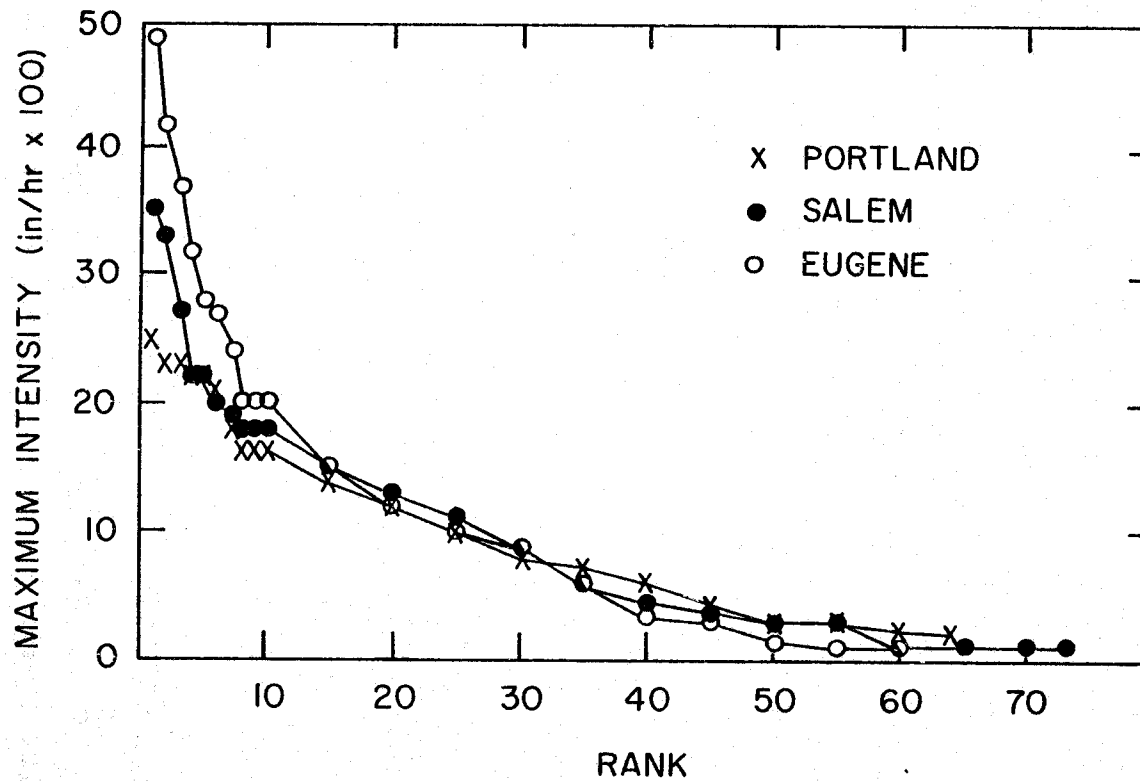
Figure 10. Maximum intensity order statistics (IMAX*) for Portland, Salem, and Eugene.

4.5 Number of Freeze Events

Frequency distributions of the number of freezing events contained within individual clusters (Nf*) for the three stations are presented in Table 6. These data show that clusters consisting of a single freezing event accounted for 84, 93, and 88 percent of all clusters at Portland, Salem, and Eugene, respectively. Only four clusters out of all clusters at all stations consisted of three or more freezing events. The distributions of number of freezing events within clusters at all stations were similar.

4.6 Freeze Index

The characteristic freeze index ($\Sigma Tb*$) can be used to make predictions of frost penetration into soils and thus is of particular interest in this study. The box plots representing the distributions of $\Sigma Tb*$ at Portland, Salem, and Eugene are displayed in Figure 11. As was the case for all of the distributions discussed previously, these distributions are positively skewed, with few large values and many small values of $\Sigma Tb*$. The box plots for the three stations show several differences among the distributions. The box for Portland is larger than the boxes for Salem and Eugene. Moreover, the value of the 0.90-th quantile for Portland is larger than the values for either Salem or Eugene. Salem has relatively fewer clusters containing freezing events with large values of $\Sigma Tb*$ than does Eugene.

The order statistics of $\Sigma Tb*$ are shown graphically in Figure 12. The curves in this figure show the same basic behavior as the curves for the other order statistics. After a few very large values for the first few statistics and a sharp decline at the beginning, the curves level off into trends with gradual downward slopes.

Table 6. Frequency distributions of number of freezing events within clusters for Portland, Salem, and Eugene.

Number of freezing events	Frequency and overall relative frequency[†]		
	Portland (n = 64)	Salem (n = 73)	Eugene (n = 60)
1	54 0.84	68 0.93	53 0.88
2	9 0.14	5 0.07	5 0.08
3	0 0.00	0 0.00	1 0.02
$\geq$ 4	0 0.00	0 0.00	1 0.02

[†]The upper number in each entry is the number of clusters which had the indicated number of precipitation events. The lower number is the relative frequency.
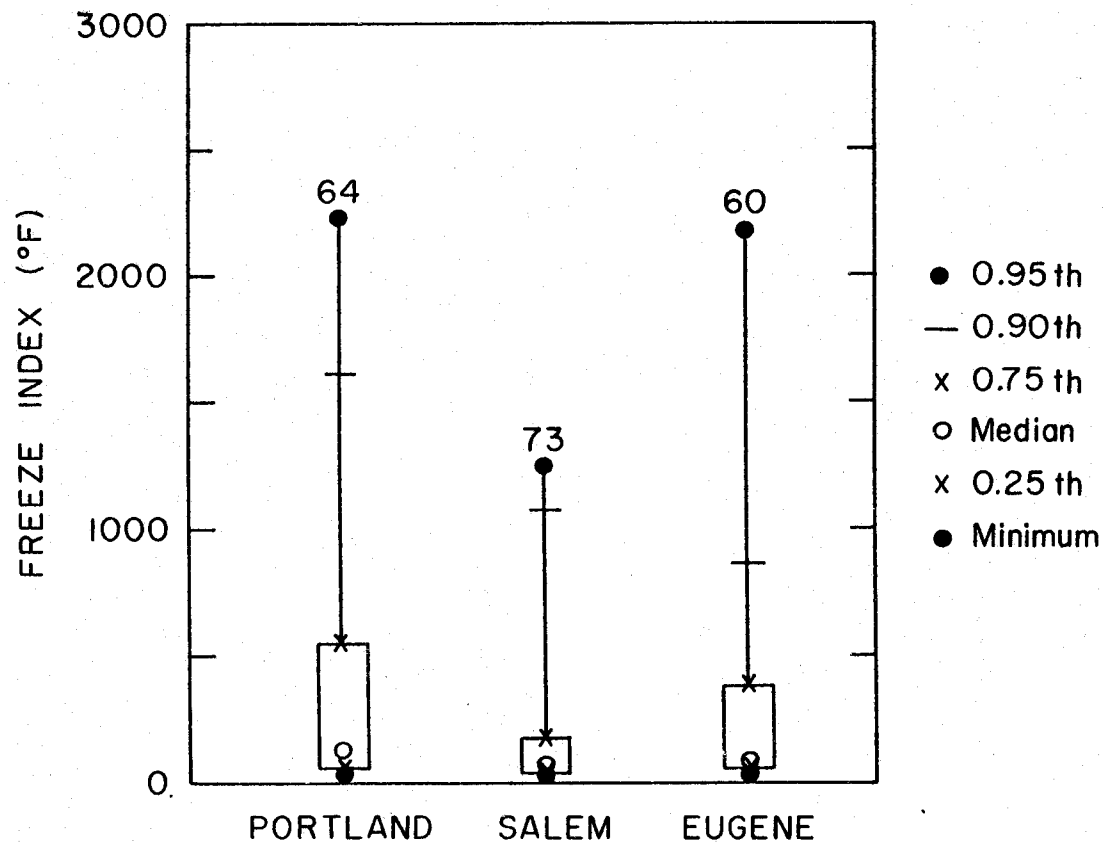
Figure 11. Box plots of freeze index (ΣTb*) for Portland, Salem, and Eugene. The number at the top of each box plot is the number of clusters.
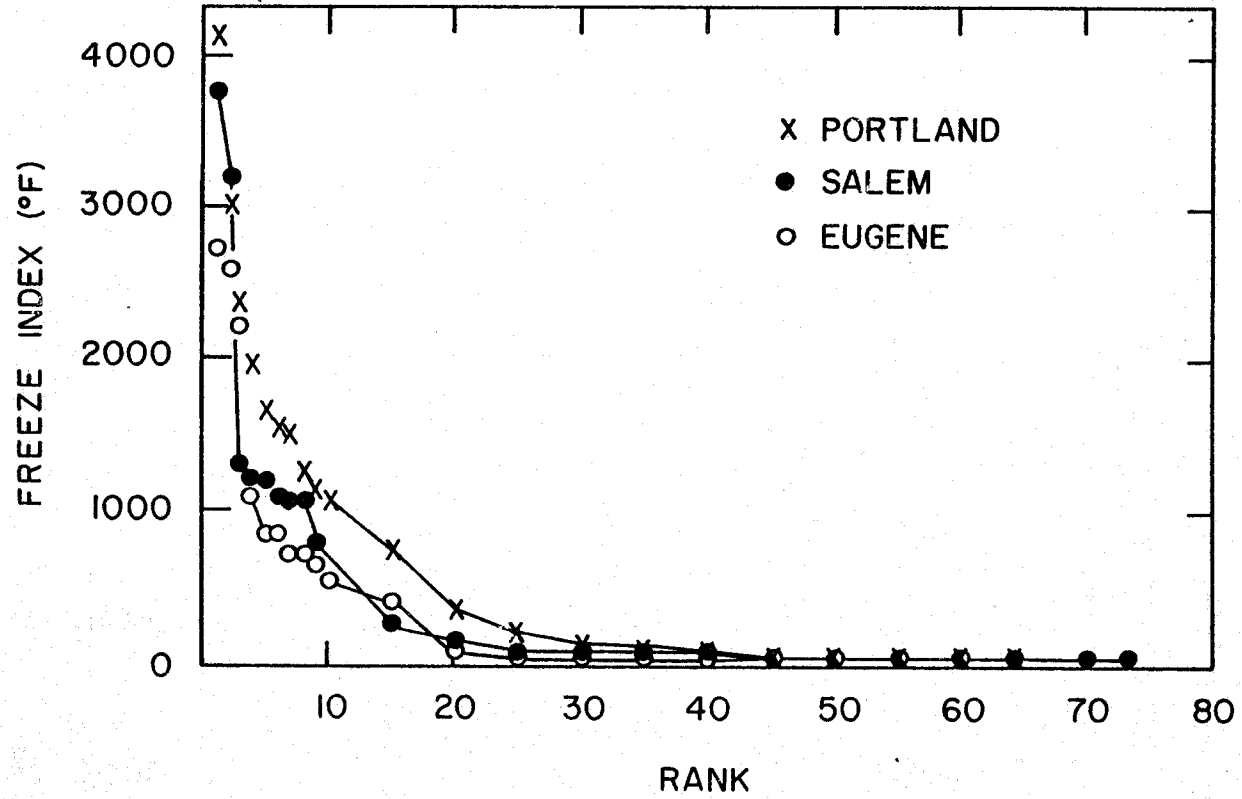
Figure 12. Freeze index (ΣTb^*) order statistics at Portland, Salem, and Eugene.

A complete list of the order statistics of $\Sigma Tb*$ which includes the values of all cluster characteristics for each cluster is given in Appendix B. Additional information regarding the values of $\Sigma Tb*$ for clusters ranked according to the value of other cluster characteristics may be obtained directly from the order statistics for those characteristics. These are also presented in Appendix B. The joint frequencies of occurrence of clusters with various combinations of values of freeze index and other cluster characteristics are presented and discussed in Section 5.

4.7 Number of Hours Below 32°F.

The marginal distributions of the cluster characteristic number of hours below 32°F (Db*) for Portland, Salem, and Eugene are shown in Figure 13. This characteristic is defined as the sum of the number of hours below 32°F during each freezing event for all freezing events in a cluster (Section 2). The relationships between the three distributions are similar to those for the distributions of freeze index (Figure 11). A few cold periods at each station lasted many hours, whereas the majority of the cold periods were of fairly short duration. For example, 75% of the cold periods lasted less than 83, 42, and 53 hours at Portland, Salem, and Eugene, respectively (Figure 13). Portland had a much larger number of clusters with long cold periods than either Salem or Eugene.

The order statistics of number of hours below 32°F are shown in Figure 14. The first few order statistics in Figure 14 are quite large and are followed by a rapid decrease in value at first and then a more gradual decline. The curve for Portland is above the curves for Salem
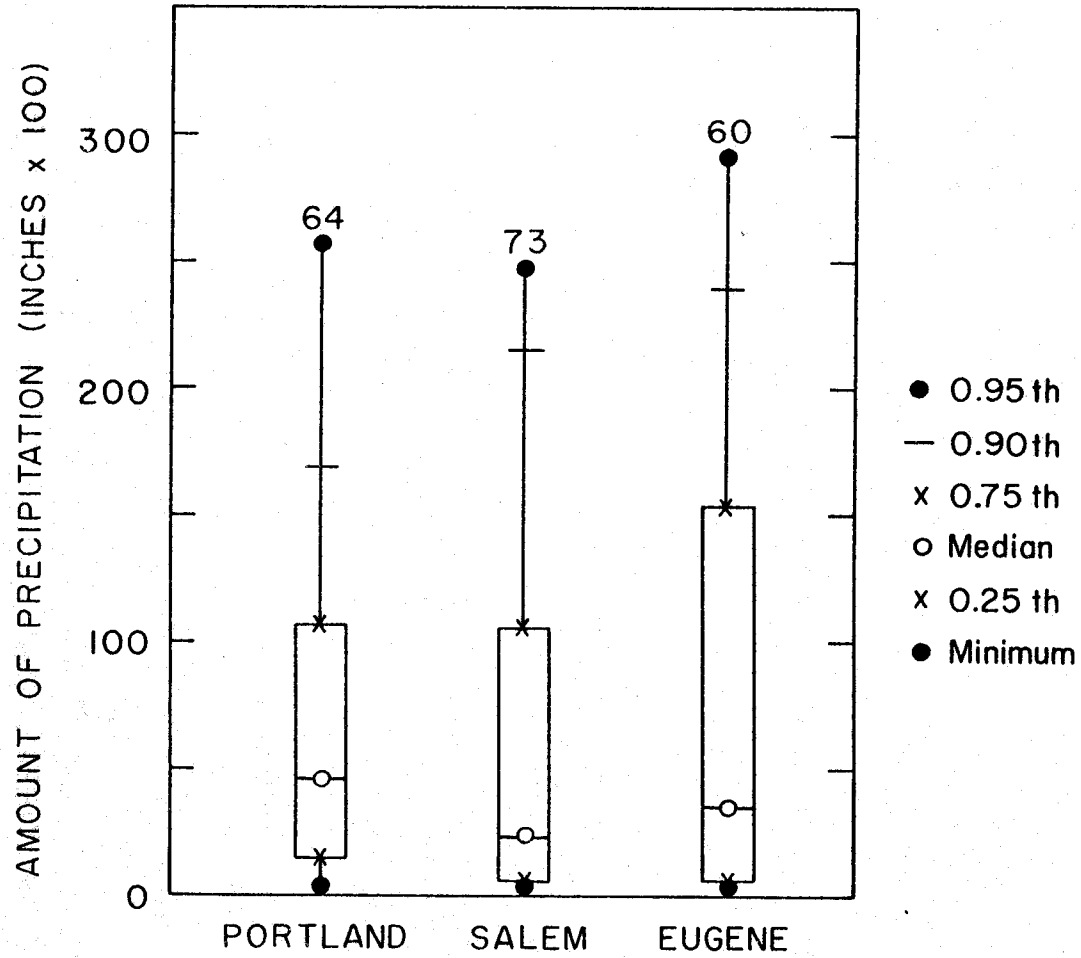
36
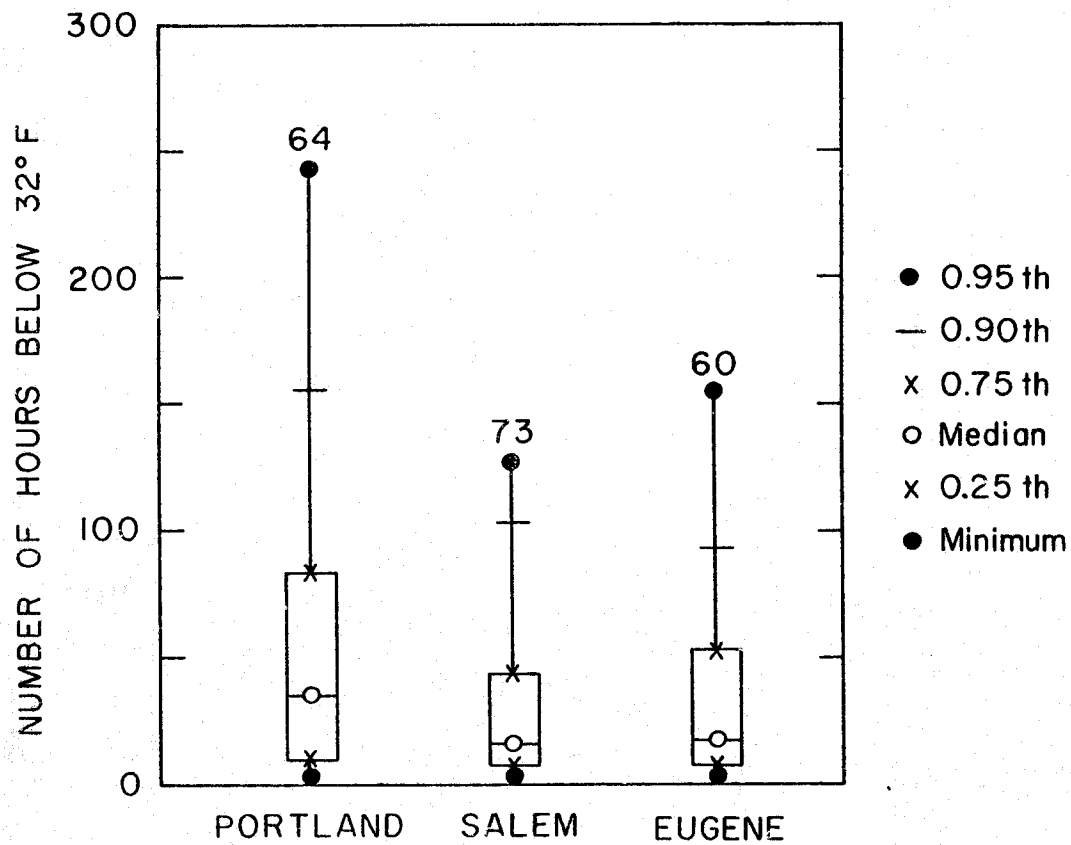
Figure 13. Box plots of number of hours below 32°F (Db*) for Portland, Salem, and Eugene. The number at the top of each box plot is the number of clusters.
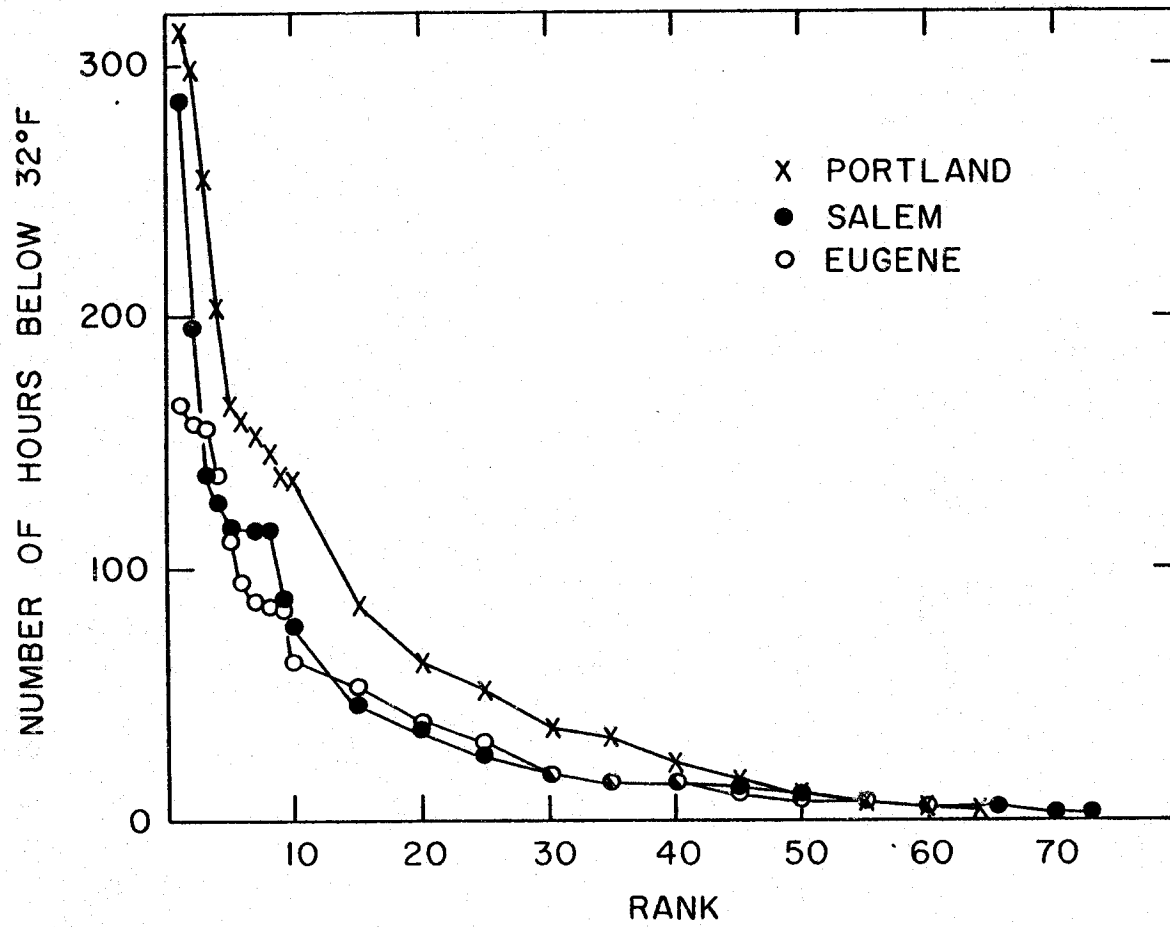
Figure 14. Number of hours below 32°F (Db*) order statistics at Portland, Salem, and Eugene.

and Eugene for the first 45 order statistics. The curves for Salem and
Eugene are nearly identical. A complete listing of the order statistics
of Db*, number of hours below 32°F, which includes the values of all
cluster characteristics for each cluster, is given in Appendix B.

4.8 Minimum Temperature

Figure 15 contains the box plots of the marginal distributions of
minimum temperature (Tmb*) for Portland, Salem, and Eugene. These
distributions are negatively skewed, in contrast to the shapes of the
distributions discussed previously. Most of the clusters had a fairly
high minimum temperature, whereas relatively few had low minimum temper-
atures. The median value of minimum temperature at all three stations
is about 25°F.

Figure 16 presents the order statistics of minimum temperature for
the three stations. The three curves are very similar, starting with
fairly low values and increasing rapidly through the first few statis-
tics. The curves level off and approach 32°F for the later statistics.
The shapes of these curves reflect the shapes of the box plots shown in
Figure 15. A complete list of the order statistics of minimum tempera-
ture is presented in Appendix B.

4.9 Thaw Index, Maximum Temperature, and Number of Hours Above 32°F

Three cluster characteristics were defined using the freezing event
characteristics associated with the warm periods between the freezing
events in the clusters (ΣTa*, Tma*, and Da*). If a cluster contained a
single freezing event, these characteristics are not defined and were
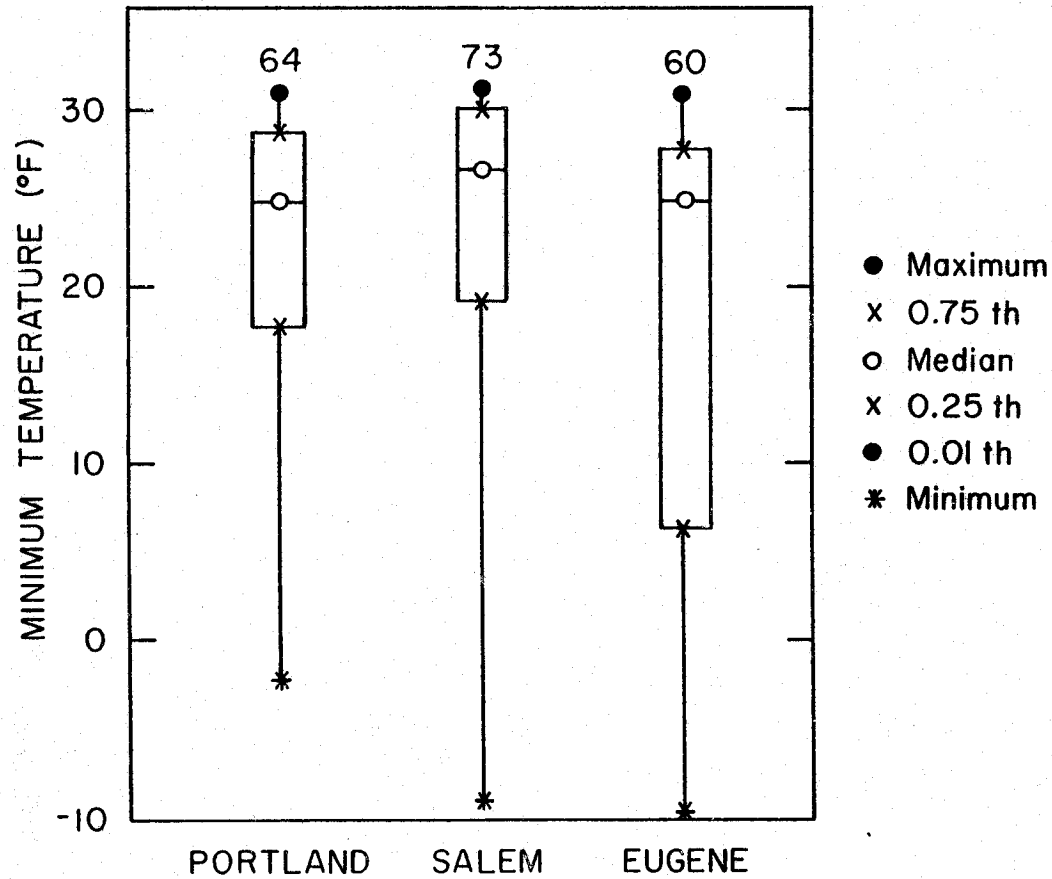
Figure 15.   Box plots of minimum temperature (Tmb*) for Portland, Salem, and Eugene.   The number at the top of each box plot is the number of clusters.
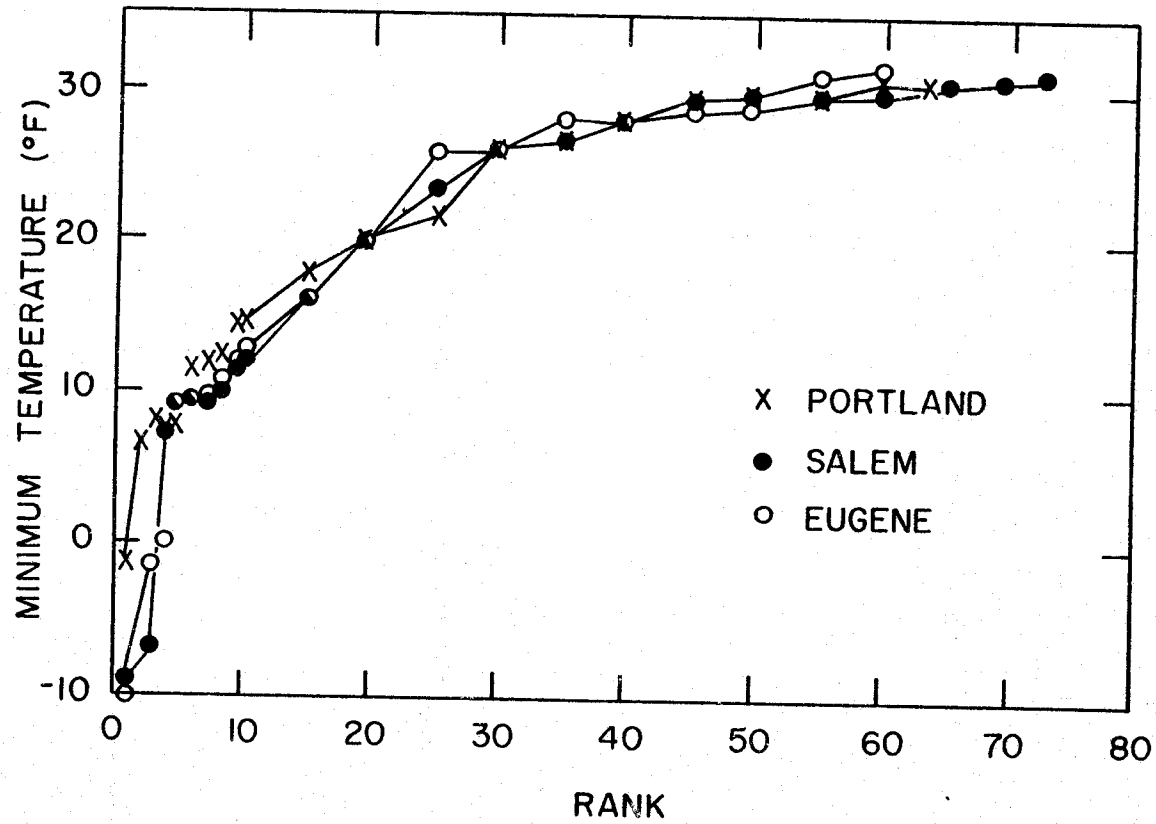
Figure 16. Minimum temperature (Tmb*) order statistics at Portland, Salem, and Eugene.

arbitrarily assigned a value of 0. When a cluster contained two or more
freezing events, the three cluster characteristics ΣTa^*, Tma^*, and Da^*
were calculated using the method described in Section 2.4. Because only
a few clusters contained more than one freezing event and because the
total number of clusters at each site is relatively small, the marginal
distributions of these characteristics were not calculated. A complete
list of cluster characteristics, including these characteristics, is
presented in Appendix B and can be used to calculate any required
descriptive statistics. These "warm period" characteristics are most
useful for interpreting the patterns of precipitation, freezing, and
thawing during a cluster. For example, clusters which contain
relatively long, warm periods between two cold periods may experience
freezing <u>and</u> thawing.

5. JOINT DISTRIBUTIONS OF CLUSTER CHARACTERISTICS

The joint frequency distributions of pairs of cluster characteristics can be used to obtain estimates of the probabilities of occurrence of clusters that have particular combinations of values of the two characteristics. Because clusters are defined as periods of overlapping precipitation and freezing events, joint frequency distributions can be computed from characteristics associated with precipitation and air temperature conditions. For example, it may be of interest to know how frequently precipitation events with large maximum intensities occur when the soil is frozen. The probability of occurrence of this type of condition can be estimated from a table of the joint frequency distribution of maximum intensity (IMAX*) and freeze index (ΣTb*) for event clusters. This information has not been available previously and will be useful in forecasting soil erosion in this region.

Joint frequency distributions are formulated by first dividing the range of values of the characteristics of interest into several categories. For example, in this study, the ranges of all of the cluster characteristics were divided into ten categories. Then a matrix can be formed whose columns represent the categories of one characteristic (e.g., Y) and whose rows represent the categories of the other characteristic (e.g., X). The entries in the matrix are the joint frequencies, f_{ij}, where f_{ij} is the number of times the value of X was in category i and the value of characteristic Y was in category j. The joint relative frequencies, p_{ij}, are calculated by dividing the joint frequencies by the total number of clusters. Total row and column frequencies (which represent the marginal distributions of the row and

column variables) are calculated by summing across the rows and columns, respectively, of the joint frequency table.

The joint frequency distributions of several pairs of cluster characteristics are discussed in the following subsections. Because of the large number of tables required to present all of the joint frequency distributions of interest at all three sites (Portland, Salem, and Eugene), only some of the tables for Salem are presented in this section. However, a complete set of tables of the joint distributions of interest at all three sites is presented in Appendix C.

5.1 Precipitation Amount and Freeze Index

The joint frequency distribution of precipitation amount (A*) and freeze index ($\Sigma Tb*$) is presented in Table 7. Two numerical values are contained in each entry in this table. These are the joint frequency (f_{ij}) and the joint relative frequency (p_{ij}) of each pair of categories. For example, the entries in the second row and first column of Table 7 are 5 and 0.0685. This means that 5 of the 73 Salem event clusters had amounts that were between 0.50 and 1.00 inches and had a freeze index between 0 and 100°F. The joint relative frequency of this pair of categories is 0.0685 (=5/73). The entries in the "ROW TOTALS" column are the marginal row frequencies. They are the sums of the joint frequencies and joint relative frequencies across the table. For example, the second set of entries in the "ROW TOTALS" column, 8 and 0.1096, consists of the total number and overall relative frequency of occurrence of event clusters that had a precipitation amount that was between 0.50 and 1.00 inches. Similarly, the "COLUMN TOTALS" are the marginal column frequencies.

Table 7. Joint frequency distribution of precipitation amount (A*) and freeze index (ΣTb*) at Salem. The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	FREEZE INDEX (DEGREES F)										ROW TOTALS
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	
0	36 .4932	4 .0548	2 .0274	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	2 .0274	46 .6301
50	5 .0685	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	8 .1096
100	4 .0548	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	7 .0959
150	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	2 .0274
200	2 .0274	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0411	7 .0959
250	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
350	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

45

The highest frequencies in Table 7 are in the upper left corner, the region of the table representing low values of A* and low values of ΣTb*. However, for most applications, this is not the portion of Table 7 (or other joint frequency tables) that is of most interest. For forecasting runoff, the important parts of Table 7 would be the regions where the combined effects of amount and freeze index are large (e.g., where ΣTb* is large and A* is medium to large). By setting threshold values of both characteristics it is possible to estimate the probabilities of occurrence of particular types of event clusters. This is accomplished by summing the joint frequencies of the pairs of categories satisfying the threshold values and then dividing by the total number of events. For example, suppose it is of interest to estimate the probability of occurrence of clusters which a freeze index equal to or greater than 400 degrees with an amount of precipitation of 0.5 inches or more. The estimate of this probability, from Table 7 is 0.1096 [=(1+2+1+1+3)/73]. Note that the same answer could have been obtained (except for round-off error) by simply summing the appropriate relative frequencies [i.e., (0.0137 + 0.0274 + 0.0137 + 0.0137 + 0.0411) = 0.1096]. The probabilities of occurrence of other combinations of categories of amount and freeze index can be estimated in a similar manner.

In an earlier report in this series (Brown et al., 1983c), the results of a discriminant analysis for predicting the occurrence of soil frost using freezing event characteristics were discussed. In that study the characteristics "minimum temperature" and "sum of degrees below 32°F" were shown to be significant for predicting the occurrence

of shallow soil frost. Although the coefficients in the discriminant functions would be expected to vary with soil type and management practices, it should be possible to identify the values of "minimum temperature" and "freeze index" for event clusters which would be expected to accompany shallow soil frost. Then, using the tables in Appendix C of this report, the frequency of occurrence of soil frost and various levels of precipitation amount could be determined.

5.2   Precipitation Amount and Minimum Temperature

Table 8 contains the joint frequency distribution of precipitation amount (A*) and minimum temperature (Tmb*) for Salem. The larger joint frequencies in Table 8 are in the upper right corner. That is, most of the event clusters had small precipitation amounts and large (i.e., near 32°F) minimum temperatures. This feature of this joint distribution is a result of the skewed shapes of the marginal distributions of A* and Tmb*. Many of the joint frequency distributions discussed in subsequent sections also have this pattern of frequencies.

The probabilities of occurrence of particular combinations of amount of precipitation and minimum temperature can be estimated using the frequencies in Table 8 as they were for amount and freeze index using the frequencies in Table 7. For example, at Salem, the estimated probability of occurrence of an event cluster with a minimum temperature of less than 10°F and a precipitation amount of at least 0.5 inches is 0.0548 [=(1+2+1)/73]. Similar probabilities can be estimated from the other tables of amount -- minimum temperature joint distributions that are presented in Appendix C.

47

Table 8. Joint frequency distribution of precipitation amount (A*) and minimum temperature (Tmb*) at Salem. The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF
MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	0	0	0	2	2	4	7	16	15	46
	0.0000	0.0000	0.0000	0.0000	.0274	.0274	.0548	.0959	.2192	.2055	.6301
50	0	0	0	0	0	0	2	0	3	3	8
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0274	0.0000	.0411	.0411	.1096
100	0	1	0	0	0	1	0	1	2	2	7
	0.0000	.0137	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0274	.0274	.0959
150	0	0	0	0	2	0	0	0	0	0	2
	0.0000	0.0000	0.0000	0.0000	.0274	0.0000	0.0000	0.0000	0.0000	0.0000	.0274
200	0	1	0	0	0	2	0	1	1	2	7
	0.0000	.0137	0.0000	0.0000	0.0000	.0274	0.0000	.0137	.0137	.0274	.0959
250	0	0	0	0	0	1	0	0	1	0	2
	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	0.0000	.0137	0.0000	.0274
300	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350	0	0	0	0	0	0	0	0	0	1	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0137
400	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
450 AND ABOVE	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
COLUMN TOTALS	0	2	0	0	4	6	6	9	23	23	
	0.0000	.0274	0.0000	0.0000	.0548	.0822	.0822	.1233	.3151	.3151	

48

5.3 Maximum Intensity and Freeze Index

Table 9 contains the joint frequency distribution of maximum intensity (IMAX*) and freeze index (ΣTb*) at Salem. Two regions of Table 9 are of interest for forecasting runoff. The first contains the lower rows which correspond to clusters which had large maximum intensities. When the rate of precipitation is high enough to exceed the infiltration rate of the soil, runoff will occur. Because large values of freeze index are associated with soil frost, which may decrease the infiltration rate of the soil, the second region of importance for forecasting runoff contains the right-most columns. When the soil surface is frozen, as indicated by large freeze index values, even precipitation events with moderate-to-low values of maximum intensity may result in runoff. The probability of occurrence for each of these situations can be estimated from the joint frequencies for maximum intensity and freeze index for Portland, Salem, and Eugene, presented in Appendix C.

5.4 Maximum Intensity and Minimum Temperature

Very few clusters contained precipitation events with large maximum intensities (IMAX*) and freezing events with low minimum temperatures (Tmb*) as seen in the joint frequency distribution for this pair of variables presented in Table 10. In fact, only two clusters (2.74%) had a minimum temperature of 0°F or less and a maximum intensity of 0.09 in/hr or more. If we consider clusters with a minimum temperature of 20°F or less and a maximum intensity of at least 0.09 in/hr, however, the relative frequency of occurrence rises to 0.1507 [=2+2+4+3)/73]. Over 31% of all clusters had minimum temperatures of 30°F or higher, and

49

Table 9. Joint frequency distribution of maximum intensity (IMAX*) and freeze index (ΣTb*). The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	LOWER BOUNDS FOR INTERVALS OF FREEZE INDEX (DEGREES F)										ROW TOTALS
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	13 .1781	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	1 .0137	15 .2055
2	4 .0548	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0685
3	6 .0822	2 .0274	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	10 .1370
4	6 .0822	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
5	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
6	2 .0274	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0548
7	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
8	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
9 AND ABOVE	16 .2192	3 .0411	0 0.0000	3 .0411	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	6 .0822	30 .4110
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

50

Table 10. Joint frequency distribution of maximum intensity (IMAX*) and minimum temperature (Tmb*). The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEGREES F)										ROW TOTALS
	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	
0	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	0	0	0	0	1	1	0	2	9	2	15
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	0.0000	.0274	.1233	.0274	.2055
2	0	0	0	0	0	0	1	0	1	3	5
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0411	.0685
3	0	0	0	0	1	1	1	2	1	4	10
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	.0137	.0274	.0137	.0548	.1370
4	0	0	0	0	0	0	0	0	3	3	6
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0411	.0411	.0822
5	0	0	0	0	0	0	0	0	1	1	2
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0137	.0274
6	0	0	0	0	0	0	1	2	0	1	4
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0274	0.0000	.0137	.0548
7	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0	0	0	0	0	0	0	1	0	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	0.0000	.0137
9 AND ABOVE	0	2	0	0	2	4	3	2	8	9	30
	0.0000	.0274	0.0000	0.0000	.0274	.0548	.0411	.0274	.1096	.1233	.4110
COLUMN TOTALS	0	2	0	0	4	6	6	9	23	23	
	0.0000	.0274	0.0000	0.0000	.0548	.0822	.0822	.1233	.3151	.3151	

51

the soil surface was probably not frozen during these events. The joint frequency distributions for this pair of characteristics for all three western Oregon stations are presented in Appendix C.

5.5 Average Intensity and Freeze Index

High values of average intensity ($Ia*$) occurred more frequently at Salem in clusters which had low values of freeze index ($\Sigma Tb*$) than for clusters which had large values of this characteristic (Table 11). In fact, the frequency of occurrence of clusters with an average intensity of at least 0.03 in/hr was 0.2329 for clusters with a freeze index of less than 400 degrees and only 0.0411 for clusters with a freeze index of 400 degrees or more. The highest frequencies in Table 11 are in the region of low values of freeze index and moderate-to-low average intensity. Combinations of particular values of these two character-istics can give additional information about the processes of runoff resulting from precipitation on frozen soil.

5.6 Average Intensity and Minimum Temperature

Table 12 contains the joint frequency distribution of average intensity ($Ia*$) and minimum temperature ($Tmb*$) at Salem. This table is qualitatively similar to Table 10, which contains the joint frequency distributions of maximum intensity and minimum temperature at Salem. Most of the Salem event clusters had high minimum temperatures and moderate-to-low average intensities. Only two clusters contained pre-cipitation events with an average intensity of 0.02 in/hr or more and a minimum temperature less than 0°F. Tables of the joint frequency dis-tributions of these two characteristics at Portland, Salem and Eugene are presented in Appendix C.

Table 11. Joint frequency distribution of average intensity (Ia*) and freeze index (ΣTb*). The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	FREEZE INDEX (DEGREES F)										ROW TOTALS
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	
0.0	3 .0411	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	4 .0548
0.5	4 .0548	1 .0137	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
1.0	20 .2740	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	23 .3151
1.5	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	3 .0411
2.0	6 .0822	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	9 .1233
2.5	3 .0411	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096
3.0	3 .0411	2 .0274	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	7 .0959
3.5	2 .0274	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	5 .0685
4.0	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
4.5 AND ABOVE	4 .0548	0 0.0000	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

53

Table 12. Joint frequency distribution of average intensity (Ia*) and minimum temperature (Tmb*). The top number in each entry is the joint frequency and the lower number is the joint relative frequency (n=73).

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0.0	0	0	0	0	0	1	0	1	1	1	4
	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0137	.0137	.0548
0.5	0	0	0	0	0	1	0	1	3	1	6
	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0411	.0137	.0822
1.0	0	0	0	0	1	0	1	4	9	8	23
	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0548	.1233	.1096	.3151
1.5	0	0	0	0	1	1	0	0	1	0	3
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	0.0000	0.0000	.0137	0.0000	.0411
2.0	0	1	0	0	0	0	1	2	1	4	9
	0.0000	.0137	0.0000	0.0000	0.0000	0.0000	.0137	.0274	.0137	.0548	.1233
2.5	0	0	0	0	1	1	2	0	3	1	8
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	.0274	0.0000	.0411	.0137	.1096
3.0	0	0	0	0	1	0	1	0	2	3	7
	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	0.0000	.0274	.0411	.0959
3.5	0	1	0	0	0	1	0	1	1	1	5
	0.0000	.0137	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0137	.0137	.0685
4.0	0	0	0	0	0	0	0	0	0	2	2
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0274	.0274
4.5 AND ABOVE	0	0	0	0	0	1	1	0	2	2	6
	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0137	0.0000	.0274	.0274	.0822
COLUMN TOTALS	0	2	0	0	4	6	6	9	23	23	
	0.0000	.0274	0.0000	0.0000	.0548	.0822	.0822	.1233	.3151	.3151	

54

6. SUMMARY AND CONCLUDING REMARKS

The results presented in the preceding sections provide a statistical description of periods of precipitation with concurrent freezing air temperatures in western Oregon. The concept of an event "cluster," consisting of precipitation and freezing events, makes it possible to obtain estimates of particular probabilities that are of importance in predicting soil erosion in this region. The tables in the appendices can be used by researchers and others concerned with problems of soil erosion resulting from precipitation on frozen soil. Some general conclusions regarding the characteristics of precipitation and freezing event clusters in western Oregon include the following:

(a) The number of precipitation and freezing event clusters identified in the historical record was relatively small (64, 73, and 60 for Portland, Salem, and Eugene, respectively). On the average, about two clusters would be expected to occur in any particular year.

(b) The majority of the clusters consisted of one precipitation event and one freezing event (59, 77, and 73 percent of all clusters at Portland, Salem, and Eugene, respectively). Only one cluster out of all clusters at all stations consisted of 4 or more freezing events and only three clusters consisted of 5 or more precipitation events.

(c) Very few clusters had large values of precipitation amount or intensity and low minimum temperature or large freeze index. This indicates that the occurrence of precipitation on soil which is deeply frozen occurs infrequently. At Salem, clusters which had 1 or more inches of precipitation and a freeze index of 100°F or more occurred, on the average, once every 2.6 years.

55

Although these conclusions are based on the analysis of precipitation and freezing event clusters defined specifically for applications in predicting soil erosion, they also characterize conditions of importance for decisions regarding agricultural practices (for example, choosing a planting date or planning herbicide applications). The methodology outlined in this report is general and can be applied to other types of combinations of precipitation and freezing events (defined, perhaps, for other types of applications) at other locations of interest.

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APPENDICES

Contents

APPENDIX A

Data Base Description

Precipitation and freezing event data bases were created from hourly air temperature and precipitation data for Portland, Salem, and Eugene, Oregon, for mid-1948 through 1979 according to the procedures described in Section 2. The hourly data were obtained from the National Climatic Center (NOAA, U.S. Department of Commerce) at Asheville, North Carolina. These data are stored at the Climatic Research Institute at Oregon State University (OSU). Procedures for accessing the precipitation and freezing event data bases were given in Brown et al. (1983a) and Brown et al. 1983c, respectively.

The precipitation and freezing event data were combined into event clusters using the procedures described in Section 2, and a cluster parameter file was created for each site. The files consist of individual data records for each cluster at a site during the period of record. All the cluster characteristics that were evaluated in this study are included in the record for each cluster. The data files are binary and are archived on magnetic tape at the OSU Computer Center under the file names PRTCLS (Portland clusters), SALCLS (Salem clusters), and EUGCLS (Eugene clusters). Copies of the files, on magnetic tape, also will be stored by the Department of Soil Science at OSU at the conclusion of this project.

The archived data files may be retrieved from tape and copied onto direct access files by submitting the computer routine ARCHYR which is stored under user number GAUI5C. Before submitting ARCHYR, it is necessary to edit that routine in order to retrieve the desired data files

under the appropriate user number. That is, the USER, CHARGE, TITLE, and RETRIEV statements in ARCHYR must be changed. The RETRIEV statement is of the form

> RETRIEV,RF=pfn1/pfn2/pfn3/...,R.

For example, the statement

> RETRIEV,RF=PRTCLS/SALCLS,R.

would cause the files PRTCLS and SALCLS to be retrieved and stored as direct access files.

Each record on the binary event files contains the following fifteen variables (in the order listed):

1) Hour the cluster started, counting from January 1, 1900 (integer)

2) Hour the cluster ended, counting from January 1, 1900 (integer)

3) Number of precipitation events (integer)

4) Precipitation duration, in hours (integer)

5) Precipitation amount, in hundredths of an inch (integer)

6) Maximum number of hours between precipitation events, in hours (integer)

7) Maximum intensity, in hundredths of an inch per hour (integer)

8) Average intensity, in hundredths of an inch per hour (floating point)

9) Number of freezing events (integer)

10) Freeze index, in °F (integer)

11) Number of hours below 32°F, in hours (integer)

12) Minimum temperature, in °F (integer)

13) Thaw index, in °F (integer)

14) Number of hours above 32°F, in hours (integer)

15) Maximum temperature, in °F (integer)

Note that average intensity is the only floating point variable.

APPENDIX B

Order Statistics

The following tables contain "order statistics" for each of the clusters at each site (Portland, Salem, and Eugene, Oregon). These statistics are the values of the cluster characteristics ordered from largest to smallest (smallest to largest in the case of minimum temperature) according to the characteristic of interest. For example, the duration order statistics are formulated by sorting the clusters in order of decreasing duration and listing the characteristics of the ordered clusters. The tables of order statistics are organized by characteristic, with separate tables for each site. An index listing the location of each table is given in the table of contents for the appendices (p. 58).

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY AMOUNT OF PRECIPITATION

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	740106:16	740116:17	1	115	544	0	23	4.7	1	1514	145	12	0	0	0
2	500113:16	500120:18	5	96	332	28	12	3.5	2	1827	150	8	25	10	35
3	551111:07	551119:07	3	65	274	98	21	4.2	1	1283	159	14	0	0	0
4	681228:19	690103:21	3	90	242	42	14	2.7	1	1656	139	8	0	0	0
5	570222:05	570224:12	1	56	198	0	16	3.5	1	15	9	29	0	0	0
6	540119:17	540122:14	1	39	177	0	16	4.5	1	383	49	20	0	0	0
7	540115:19	540118:07	3	45	161	9	13	3.6	1	131	36	26	0	0	0
8	630128:08	630201:07	2	64	158	31	25	2.5	1	238	76	24	0	0	0
9	500123:17	500205:10	9	81	140	66	9	1.7	2	4152	300	-2	7	3	36
10	721214:17	721217:16	2	46	138	6	10	3.0	1	185	34	23	0	0	0
11	781121:12	781123:10	1	36	137	0	22	3.8	2	157	34	22	5	2	35
12	701122:03	701124:01	1	34	130	0	22	3.8	1	41	29	29	0	0	0
13	771121:16	771123:19	1	44	123	0	11	2.8	1	80	24	26	0	0	0
14	730110:19	730112:03	1	33	116	0	12	3.5	1	23	14	30	0	0	0
15	591117:12	591118:19	1	32	108	0	15	3.4	1	1	1	31	0	0	0
16	641216:00	641220:10	1	30	108	0	12	3.6	1	1546	106	8	0	0	0
17	560126:21	560128:08	1	15	105	0	23	7.0	2	115	34	22	1	1	33
18	510130:16	510203:01	1	34	102	0	12	3.0	2	188	53	25	2	1	34
19	500113:06	500113:16	1	11	97	0	16	8.8	1	58	7	20	0	0	0
20	711208:03	711208:21	1	19	89	0	18	4.7	1	5	5	31	0	0	0
21	600302:03	600304:23	4	36	81	14	14	2.3	1	239	58	25	0	0	0
22	551218:07	551219:10	1	27	81	0	13	3.0	1	66	28	27	0	0	0
23	671219:03	671221:17	2	35	69	29	8	2.0	1	200	56	15	0	0	0
24	511230:22	520106:17	3	32	62	17	8	1.9	1	954	164	21	0	0	0
25	680127:17	680130:12	1	33	62	0	10	1.9	1	197	54	25	0	0	0
26	690121:17	690127:10	2	37	58	7	5	1.6	1	1088	136	17	0	0	0
27	690127:17	690130:14	2	31	57	7	7	1.8	1	725	70	18	0	0	0
28	780102:14	780103:23	1	31	56	0	6	1.8	1	98	25	26	0	0	0
29	490119:17	490128:07	3	30	54	113	10	1.8	1	1920	205	11	0	0	0
30	600118:14	600120:05	1	24	52	0	7	2.2	1	138	39	26	0	0	0
31	720203:17	720206:07	1	37	51	0	8	1.4	1	127	42	25	0	0	0
32	721203:23	721214:12	2	16	51	146	14	3.2	1	2345	254	15	0	0	0
33	570117:16	570130:21	5	24	43	174	10	1.8	1	3042	317	7	0	0	0
34	701218:17	701220:21	1	21	40	0	6	1.9	1	103	32	27	0	0	0
35	490201:18	490203:15	2	21	37	8	7	1.8	2	84	36	28	1	1	33
36	711228:14	711229:12	1	22	37	0	4	1.7	1	33	20	30	0	0	0
37	710113:01	710114:08	1	29	36	0	5	1.2	1	10	7	30	0	0	0
38	620228:01	620228:19	1	19	35	0	5	1.8	1	2	2	31	0	0	0
39	630110:14	630114:16	1	28	32	0	6	1.1	1	882	83	13	0	0	0
40	510304:07	510306:03	2	39	31	7	2	.8	1	32	13	27	0	0	0
41	551216:00	551216:21	1	22	29	0	3	1.3	1	1	1	31	0	0	0
42	511224:22	511226:00	1	16	26	0	6	1.6	2	74	19	22	7	4	35
43	500101:16	500105:07	1	15	25	0	5	1.7	1	550	87	16	0	0	0
44	710112:01	710112:21	1	20	24	0	4	1.2	1	3	3	31	0	0	0
45	561205:14	561208:12	3	13	21	27	3	1.6	1	307	67	23	0	0	0
46	611212:23	611214:01	1	24	20	0	3	.8	2	27	18	29	1	1	33
47	560214:19	560217:17	2	23	20	38	3	.9	2	356	56	18	3	2	34
48	511224:08	511227:09	2	17	17	6	6	1.0	2	30	20	29	2	2	33
49	551215:07	551215:21	1	10	16	0	4	1.6	1	5	5	31	0	0	0
50	490129:13	490130:05	1	17	14	0	2	.8	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY AMOUNT OF PRECIPITATION

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY		NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
							MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)							
51	750209:01	750209:21	1	20	13	0	2	.7	1	19	9	29	0	0	0
52	600109:07	600111:01	1	7	13	0	7	1.9	1	112	42	25	0	0	0
53	600113:14	600114:12	1	8	12	0	7	1.5	1	59	21	27	0	0	0
54	510306:19	510307:08	1	7	11	0	3	1.6	1	22	8	28	0	0	0
55	560130:16	560205:08	1	11	11	0	2	1.0	1	972	137	14	0	0	0
56	590102:07	590106:08	1	7	11	0	4	1.6	1	792	97	17	0	0	0
57	490118:17	490119:10	1	7	9	0	8	1.3	1	18	13	29	0	0	0
58	490204:21	490205:05	1	3	8	0	3	2.7	1	11	8	29	0	0	0
59	720125:19	720128:12	1	4	4	0	2	1.0	1	564	65	20	0	0	0
60	570220:07	570220:10	1	2	4	0	3	2.0	1	3	3	31	0	0	0
61	770108:19	770112:05	2	2	2	7	1	1.0	1	367	83	20	0	0	0
62	641231:07	641231:08	1	1	2	0	2	2.0	1	3	2	30	0	0	0
63	720130:17	720131:12	1	1	1	0	1	1.0	1	113	19	22	0	0	0
64	600114:21	600115:01	1	1	1	0	1	1.0	1	5	4	30	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY AMOUNT OF PRECIPITATION

| | START DATE AND HOUR (YYMMDD:HH) | END DATE AND HOUR (YYMMDD:HH) | CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER | | | | | | CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER | | | | | | |
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	570221:17	570226:07	1	106	361	0	19	3.4	1	13	12	30	0	0	0
2	701121:19	701125:14	1	76	264	0	22	3.5	1	151	42	27	0	0	0
3	740110:17	740113:19	1	48	263	0	33	5.5	1	321	37	12	0	0	0
4	551112:17	551119:12	2	64	244	20	27	3.8	1	1055	119	10	0	0	0
5	600302:05	600305:17	1	79	237	0	18	3.0	2	130	38	25	5	5	33
6	500126:01	500204:11	5	67	235	107	16	3.5	1	3187	195	-9	0	0	0
7	630128:10	630131:21	2	58	215	27	16	3.7	1	363	71	20	0	0	0
8	500113:17	500120:01	4	81	214	26	18	2.6	2	1073	113	14	28	18	34
9	500109:10	500111:10	1	49	207	0	35	4.2	1	1	1	31	0	0	0
10	781118:16	781120:08	1	37	206	0	20	5.6	1	15	12	30	0	0	0
11	641216:05	641220:08	2	49	171	7	16	3.5	1	1086	77	9	0	0	0
12	681229:17	690101:05	2	51	150	11	12	2.9	1	827	48	9	0	0	0
13	551218:05	551219:12	1	33	142	0	15	4.3	1	8	8	31	0	0	0
14	540115:16	540117:08	1	41	116	0	18	2.8	1	10	7	30	0	0	0
15	721203:21	721215:21	3	55	114	117	14	2.1	2	3764	286	-7	1	1	33
16	690123:17	690129:21	2	72	112	32	11	1.6	1	1186	137	14	0	0	0
17	771121:21	771123:03	1	30	109	0	15	3.6	1	41	15	28	0	0	0
18	680127:17	680130:10	1	44	108	0	8	2.5	1	207	45	23	0	0	0
19	780101:17	780104:01	1	37	102	0	14	2.8	1	85	33	27	0	0	0
20	510304:09	510306:01	2	34	85	7	9	2.5	1	43	16	28	0	0	0
21	590102:17	590106:08	2	27	79	63	13	2.9	1	733	88	17	0	0	0
22	611213:14	611214:12	1	23	78	0	9	3.4	1	7	7	31	0	0	0
23	520101:16	520104:00	1	16	74	0	22	4.6	1	319	44	19	0	0	0
24	600118:12	600120:12	1	24	71	0	5	3.0	1	175	47	26	0	0	0
25	681222:08	681222:21	1	14	68	0	13	4.9	1	3	3	31	0	0	0
26	690112:00	690112:23	1	11	57	0	9	5.2	1	34	14	27	0	0	0
27	490203:13	490204:13	1	25	52	0	10	2.1	1	1	1	31	0	0	0
28	620223:03	620224:14	1	19	49	0	15	2.6	1	111	18	18	0	0	0
29	701211:21	701213:03	1	21	47	0	12	2.2	2	72	20	24	48	8	40
30	651128:23	651130:00	1	18	44	0	9	2.4	1	27	10	28	0	0	0
31	521130:16	521201:03	1	12	42	0	12	3.5	1	2	2	31	0	0	0
32	710227:01	710228:10	1	28	34	0	6	1.2	1	66	16	20	0	0	0
33	560304:12	560305:17	1	30	29	0	5	1.0	1	2	2	31	0	0	0
34	561206:16	561207:23	1	18	25	0	3	1.4	2	133	23	19	3	2	34
35	681219:19	681222:00	1	28	24	0	6	.9	1	173	39	22	0	0	0
36	491203:19	491204:10	1	5	23	0	16	4.6	1	26	14	29	0	0	0
37	690102:23	690103:14	1	16	23	0	4	1.4	1	6	6	31	0	0	0
38	710112:01	710113:01	1	21	23	0	4	1.1	1	41	23	29	0	0	0
39	601210:21	601211:17	1	20	22	0	4	1.1	1	2	1	30	0	0	0
40	570119:23	570121:08	1	20	19	0	4	1.0	1	85	28	25	0	0	0
41	620227:23	620228:14	1	17	19	0	3	1.1	1	2	2	31	0	0	0
42	660121:19	660122:03	1	5	17	0	6	3.4	1	8	8	31	0	0	0
43	500101:09	500104:03	3	19	17	32	3	.9	1	474	55	11	0	0	0
44	570117:17	570119:14	1	5	17	0	6	3.4	1	243	41	16	0	0	0
45	711228:14	711229:03	1	13	15	0	3	1.2	1	1	1	31	0	0	0
46	551111:08	551112:12	1	13	15	0	3	1.2	1	74	17	21	0	0	0
47	490207:02	490207:16	1	15	13	0	3	.9	1	1	1	31	0	0	0
48	571129:17	571130:00	1	7	10	0	4	1.4	1	1	1	31	0	0	0
49	691202:17	691203:16	1	7	9	0	3	1.3	1	120	17	22	0	0	0
50	510306:19	510307:08	1	8	8	0	4	1.0	1	36	10	25	0	0	0

66

OVERALL ORDER STATISTICS AT SALEM
SORTED BY AMOUNT OF PRECIPITATION

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	510309:00	510309:11	2	7	8	6	3	1.1	1	18	9	29	0	0	0
52	620118:17	620123:23	1	4	6	0	3	1.5	1	1293	125	8	0	0	0
53	671220:01	671220:12	1	2	4	0	3	2.0	1	17	11	30	0	0	0
54	500123:19	500124:11	1	6	4	0	1	.7	1	41	16	27	0	0	0
55	720130:17	720131:14	1	7	3	0	1	.4	1	85	15	22	0	0	0
56	490101:10	490102:08	1	11	3	0	1	.3	1	42	14	26	0	0	0
57	681228:17	681229:10	2	4	3	12	1	.8	1	52	17	25	0	0	0
58	490212:02	490212:07	1	3	3	0	2	1.0	1	2	2	31	0	0	0
59	490124:15	490127:08	2	8	3	10	1	.4	1	601	66	13	0	0	0
60	490211:00	490211:08	1	2	3	0	2	1.5	1	14	8	29	0	0	0
61	760124:21	760126:05	1	2	2	0	1	1.0	1	56	32	29	0	0	0
62	560216:21	560216:17	1	1	2	0	2	2.0	1	288	45	17	0	0	0
63	691203:21	691203:23	1	1	2	0	2	2.0	1	1	1	31	0	0	0
64	490118:16	490119:09	1	4	2	0	1	.5	1	43	16	26	0	0	0
65	720203:19	720204:12	1	2	2	0	1	1.0	1	33	17	29	0	0	0
66	510310:00	510310:05	1	6	2	0	1	.3	1	4	4	31	0	0	0
67	720131:21	720201:00	1	1	2	0	2	2.0	1	4	3	30	0	0	0
68	481224:15	481225:09	1	1	1	0	1	1.0	1	59	19	27	0	0	0
69	781226:17	781227:10	1	1	1	0	1	1.0	1	60	17	27	0	0	0
70	570123:19	570128:12	1	1	1	0	1	1.0	1	1186	114	9	0	0	0
71	720204:17	720205:03	1	1	1	0	1	1.0	1	14	9	30	0	0	0
72	490107:17	490108:09	1	1	1	0	1	1.0	1	49	16	24	0	0	0
73	600112:03	600112:10	1	1	1	0	1	1.0	1	17	6	26	0	0	0

67

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY AMOUNT OF PRECIPITATION

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO.				INTENSITY		NO.						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	641216:07	641223:08	1	127	1015	0	37	8.0	1	717	63	10	0	0	0
2	710109:00	710115:21	1	167	525	0	14	3.1	3	73	31	23	15	12	34
3	600302:12	600306:08	1	93	344	0	14	3.7	1	45	15	28	0	0	0
4	781118:16	781120:10	1	43	321	0	42	7.5	1	6	6	31	0	0	0
5	701122:07	701125:05	1	71	310	0	49	4.4	1	6	6	31	0	0	0
6	630128:14	630202:01	3	79	296	23	17	3.7	1	259	61	24	0	0	0
7	500126:02	500128:14	2	45	283	15	20	6.3	1	77	19	24	0	0	0
8	500120:00	500125:10	1	115	256	0	15	2.2	2	125	32	25	7	4	35
9	690122:17	690129:05	1	69	241	0	13	3.5	4	1189	134	9	20	16	35
10	730109:19	730112:19	1	55	228	0	24	4.1	1	56	26	27	0	0	0
11	510303:09	510306:08	1	72	208	0	20	2.9	1	32	12	28	0	0	0
12	500108:13	500111:18	1	79	196	0	28	2.5	1	2	2	31	0	0	0
13	500112:07	500116:10	2	83	195	18	17	2.3	2	192	42	21	40	17	39
14	740110:17	740113:14	1	46	183	0	32	4.0	1	263	32	13	0	0	0
15	771121:19	771122:19	1	24	153	0	27	6.4	1	20	14	30	0	0	0
16	511228:07	511230:09	1	49	150	0	19	3.1	2	16	7	25	1	1	33
17	570221:01	570222:16	1	31	106	0	11	3.4	1	30	14	28	0	0	0
18	500116:16	500119:06	2	29	102	7	12	3.5	1	584	61	16	0	0	0
19	551215:10	551216:08	1	24	101	0	12	4.2	1	1	1	31	0	0	0
20	510307:15	510309:15	1	49	93	0	20	1.9	1	31	10	25	0	0	0
21	490205:21	490207:16	1	44	88	0	10	2.0	1	14	6	27	0	0	0
22	511224:17	511226:13	1	7	79	0	18	11.3	1	157	41	25	0	0	0
23	780101:19	780103:19	1	33	67	0	9	2.0	1	90	31	27	0	0	0
24	631212:19	631214:10	2	25	57	123	11	2.3	2	74	30	26	40	8	41
25	500128:16	500204:10	3	44	55	64	12	1.3	1	2724	158	-1	0	0	0
26	590102:19	590106:07	1	23	55	0	10	2.4	1	573	85	20	0	0	0
27	551112:23	551117:12	2	27	48	69	5	1.8	1	863	110	15	0	0	0
28	721204:00	721212:10	2	49	47	117	8	1.0	2	2616	166	-10	3	2	34
29	491211:01	491212:00	1	23	40	0	6	1.7	1	11	6	28	0	0	0
30	600419:19	600420:10	1	17	38	0	14	2.2	1	46	5	14	0	0	0
31	681229:17	681231:16	1	24	37	0	6	1.5	1	509	38	14	0	0	0
32	490120:23	490121:10	1	13	33	0	10	2.5	1	9	5	28	0	0	0
33	600311:23	600313:05	1	31	33	0	8	1.1	1	53	5	14	0	0	0
34	561205:23	561207:10	2	10	32	26	9	3.2	1	78	34	28	0	0	0
35	600118:07	600120:19	1	18	25	0	3	1.4	1	148	59	27	0	0	0
36	570124:00	570130:12	3	12	25	14	7	2.1	1	2245	157	0	0	0	0
37	720204:17	720205:14	1	22	22	0	3	1.0	1	3	3	31	0	0	0
38	500101:09	500103:23	3	13	16	8	3	1.2	1	438	53	9	0	0	0
39	490101:19	490105:08	1	4	13	0	10	3.3	1	695	84	15	0	0	0
40	691201:19	691203:19	1	12	10	0	6	.8	1	89	39	28	0	0	0
41	560214:14	560216:14	1	7	8	0	3	1.1	1	278	41	17	0	0	0
42	490123:16	490127:13	2	14	8	9	1	.6	1	866	92	11	0	0	0
43	581228:21	581229:07	1	12	7	0	3	.6	1	30	4	20	0	0	0
44	510307:01	510307:07	1	4	7	0	2	1.8	1	12	5	27	0	0	0
45	490211:00	490211:09	1	3	6	0	3	2.0	1	27	9	27	0	0	0
46	551214:05	551216:18	1	3	6	0	3	2.0	1	3	3	31	0	0	0
47	730108:19	730109:12	1	3	4	0	2	1.3	1	87	18	25	0	0	0
48	490118:16	490119:09	1	3	4	0	2	1.3	1	35	18	28	0	0	0
49	560126:05	560126:08	1	3	4	0	3	1.3	1	4	3	30	0	0	0
50	720126:16	720128:14	1	2	2	0	1	1.0	1	412	47	19	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY AMOUNT OF PRECIPITATION

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	490107:22	490108:09	1	5	2	0	1	.4	1	34	12	25	0	0	0
52	781114:19	781115:12	1	2	2	0	1	1.0	1	126	16	22	0	0	0
53	561130:17	561201:12	1	2	2	0	1	1.0	1	49	20	28	0	0	0
54	771120:23	771121:12	1	2	2	0	1	1.0	1	53	13	27	0	0	0
55	490204:17	490205:08	1	1	1	0	1	1.0	1	21	15	28	0	0	0
56	721212:12	721215:23	1	1	1	0	1	1.0	1	690	83	12	0	0	0
57	641230:19	641231:10	1	1	1	0	1	1.0	1	51	14	20	0	0	0
58	720131:19	720201:10	1	1	1	0	1	1.0	1	59	15	26	0	0	0
59	481221:17	481222:06	1	1	1	0	1	1.0	1	19	12	30	0	0	0
60	481223:16	481226:07	1	1	1	0	1	1.0	1	485	62	18	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY MAXIMUM PRECIPITATION INTENSITY

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	630128:08	630201:07	2	64	158	31	25	2.5	1	238	76	24	0	0	0
2	740106:16	740116:17	1	115	544	0	23	4.7	1	1514	145	12	0	0	0
3	560126:21	560128:08	1	15	105	0	23	7.0	2	115	34	22	1	1	33
4	781121:12	781123:10	1	36	137	0	22	3.8	2	157	34	22	5	2	35
5	701122:03	701124:01	1	34	130	0	22	3.8	1	41	29	29	0	0	0
6	551111:07	551119:07	3	65	274	98	21	4.2	1	1283	159	14	0	0	0
7	711208:03	711208:21	1	19	89	0	18	4.7	1	5	5	31	0	0	0
8	500113:06	500113:16	1	11	97	0	16	8.8	1	58	7	20	0	0	0
9	570222:05	570224:12	1	56	198	0	16	3.5	1	15	9	29	0	0	0
10	540119:17	540122:14	1	39	177	0	16	4.5	1	383	49	20	0	0	0
11	591117:12	591118:19	1	32	108	0	15	3.4	1	1	1	31	0	0	0
12	721203:23	721214:12	2	16	51	146	14	3.2	1	2345	254	15	0	0	0
13	681228:19	690103:21	3	90	242	42	14	2.7	1	1656	139	8	0	0	0
14	600302:03	600304:23	4	36	81	14	14	2.3	1	239	58	25	0	0	0
15	551218:07	551219:10	1	27	81	0	13	3.0	1	66	28	27	0	0	0
16	540115:19	540118:07	3	45	161	9	13	3.6	1	131	36	26	0	0	0
17	730110:19	730112:03	1	33	116	0	12	3.5	1	23	14	30	0	0	0
18	510130:16	510203:01	1	34	102	0	12	3.0	2	188	53	25	2	1	34
19	641216:00	641218:10	1	30	108	0	12	3.6	1	1546	106	8	0	0	0
20	500113:16	500120:18	5	96	332	28	12	3.5	2	1827	150	8	25	10	35
21	771121:16	771123:19	1	44	123	0	11	2.8	1	80	24	26	0	0	0
22	570117:16	570130:21	5	24	43	174	10	1.8	1	3042	317	7	0	0	0
23	721214:17	721217:16	2	46	138	6	10	3.0	1	185	34	23	0	0	0
24	490119:17	490128:07	3	30	54	113	10	1.8	1	1920	205	11	0	0	0
25	680127:17	680130:12	1	33	62	0	10	1.9	1	197	54	25	0	0	0
26	500123:17	500205:10	9	81	140	66	9	1.7	2	4152	300	-2	7	3	36
27	720203:17	720206:07	1	37	51	0	8	1.4	1	127	42	25	0	0	0
28	511230:22	520106:17	3	32	62	17	8	1.9	1	954	164	21	0	0	0
29	490118:17	490119:10	1	7	9	0	8	1.3	1	18	13	29	0	0	0
30	671219:03	671221:17	2	35	69	29	8	2.0	1	200	56	15	0	0	0
31	690127:17	690130:14	2	31	57	7	7	1.8	1	725	70	18	0	0	0
32	490201:18	490203:15	2	21	37	8	7	1.8	2	84	36	28	1	1	33
33	600109:07	600111:01	1	7	13	0	7	1.9	1	112	42	25	0	0	0
34	600118:14	600120:05	1	24	52	0	7	2.2	1	138	39	26	0	0	0
35	600113:14	600114:12	1	8	12	0	7	1.5	1	59	21	27	0	0	0
36	780102:14	780103:23	1	31	56	0	6	1.8	1	98	25	26	0	0	0
37	511224:22	511226:00	1	16	26	0	6	1.6	2	74	19	22	7	4	35
38	701218:17	701220:21	1	21	40	0	6	1.9	1	103	32	27	0	0	0
39	630110:14	630114:16	1	28	32	0	6	1.1	1	882	83	13	0	0	0
40	511226:08	511227:09	2	17	17	6	6	1.0	2	30	20	29	2	2	33
41	710113:01	710114:08	1	29	36	0	5	1.2	1	10	7	30	0	0	0
42	500101:16	500105:07	1	15	25	0	5	1.7	1	550	87	16	0	0	0
43	690121:17	690127:10	2	37	58	7	5	1.6	1	1088	136	17	0	0	0
44	620228:01	620228:19	1	19	35	0	5	1.8	1	2	2	31	0	0	0
45	711228:14	711229:12	1	22	37	0	4	1.7	1	33	20	30	0	0	0
46	551215:07	551215:19	1	10	16	0	4	1.6	1	5	5	31	0	0	0
47	710112:01	710112:21	1	20	24	0	4	1.2	1	3	3	31	0	0	0
48	590102:07	590106:08	1	7	11	0	4	1.6	1	792	97	17	0	0	0
49	510306:19	510307:08	1	7	11	0	3	1.6	1	22	8	28	0	0	0
50	560214:19	560217:17	2	23	20	38	3	.9	2	356	56	18	3	2	34

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	490204:21	490205:05	1	3	8	0	3	2.7	1	11	8	29	0	0	0
52	611212:23	611214:01	1	24	20	0	3	.8	2	27	18	29	1	1	33
53	551216:00	551216:21	1	22	29	0	3	1.3	1	1	1	31	0	0	0
54	570220:07	570220:10	1	2	4	0	3	2.0	1	3	3	31	0	0	0
55	561205:14	561208:12	3	13	21	27	3	1.6	1	307	67	23	0	0	0
56	750209:01	750209:21	1	20	13	0	2	.7	1	19	9	29	0	0	0
57	490129:13	490130:05	1	17	14	0	2	.8	1	1	1	31	0	0	0
58	720125:19	720128:12	1	4	4	0	2	1.0	1	564	65	20	0	0	0
59	641231:07	641231:08	1	1	2	0	2	2.0	1	3	2	30	0	0	0
60	510304:07	510306:03	2	39	31	7	2	.8	1	32	13	27	0	0	0
61	560130:16	560205:08	1	11	11	0	2	1.0	1	972	137	14	0	0	0
62	770108:19	770112:05	2	2	2	7	1	1.0	1	367	83	20	0	0	0
63	600114:21	600115:01	1	1	1	0	1	1.0	1	5	4	30	0	0	0
64	720130:17	720131:12	1	1	1	0	1	1.0	1	113	19	22	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY MAXIMUM PRECIPITATION INTENSITY

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	500109:10	500111:10	1	49	207	0	35	4.2	1	1	1	31	0	0	0
2	740110:17	740113:19	1	48	263	0	33	5.5	1	321	37	12	0	0	0
3	551112:17	551119:12	2	64	244	20	27	3.8	1	1055	119	10	0	0	0
4	701121:19	701125:14	1	76	264	0	22	3.5	1	151	42	27	0	0	0
5	520101:16	520104:00	1	16	74	0	22	4.6	1	319	44	19	0	0	0
6	781118:16	781120:08	1	37	206	0	20	5.6	1	15	12	30	0	0	0
7	570221:17	570226:07	1	106	361	0	19	3.4	1	13	12	30	0	0	0
8	540115:16	540117:08	1	41	116	0	18	2.8	1	10	7	30	0	0	0
9	600302:05	600305:17	1	79	237	0	18	3.0	2	130	38	25	5	5	33
10	500113:17	500120:01	4	81	214	26	18	2.6	2	1073	113	14	28	18	34
11	491203:19	491204:10	1	5	23	0	16	4.6	1	26	14	29	0	0	0
12	630128:10	630131:21	2	58	215	27	16	3.7	1	363	71	20	0	0	0
13	500126:01	500204:11	5	67	235	107	16	3.5	1	3187	195	-9	0	0	0
14	641216:05	641220:08	2	49	171	7	16	3.5	1	1086	77	9	0	0	0
15	771121:21	771123:03	1	30	109	0	15	3.6	1	41	15	28	0	0	0
16	551218:05	551219:12	1	33	142	0	15	4.3	1	8	8	31	0	0	0
17	620223:03	620224:14	1	19	49	0	15	2.6	1	111	18	18	0	0	0
18	721203:21	721215:21	3	55	114	117	14	2.1	2	3764	286	-7	1	1	33
19	780101:17	780104:01	1	37	102	0	14	2.8	1	85	33	27	0	0	0
20	590102:17	590106:08	2	27	79	63	13	2.9	1	733	88	17	0	0	0
21	681222:08	681222:21	1	14	68	0	13	4.9	1	3	3	31	0	0	0
22	521130:16	521201:03	1	12	42	0	12	3.5	1	2	2	31	0	0	0
23	701211:21	701213:03	1	21	47	0	12	2.2	2	72	20	24	48	8	40
24	681229:17	690101:05	2	51	150	11	12	2.9	1	827	48	9	0	0	0
25	690123:17	690129:21	2	72	112	32	11	1.6	1	1186	137	14	0	0	0
26	490203:13	490204:13	1	25	52	0	10	2.1	1	1	1	31	0	0	0
27	651128:23	651130:00	1	18	44	0	9	2.4	1	27	10	28	0	0	0
28	611213:14	611214:12	1	23	78	0	9	3.4	1	7	7	31	0	0	0
29	690112:00	690112:23	1	11	57	0	9	5.2	1	34	14	27	0	0	0
30	510304:09	510306:01	2	34	85	7	9	2.5	1	43	16	28	0	0	0
31	680127:17	680130:10	1	44	108	0	8	2.5	1	207	45	23	0	0	0
32	570117:17	570119:14	1	5	17	0	6	3.4	1	243	41	16	0	0	0
33	710227:01	710228:10	1	28	34	0	6	1.2	1	66	16	20	0	0	0
34	681219:19	681222:00	1	28	24	0	6	.9	1	173	39	22	0	0	0
35	660121:19	660122:03	1	5	17	0	6	3.4	1	8	8	31	0	0	0
36	560304:12	560305:17	1	30	29	0	5	1.0	1	2	2	31	0	0	0
37	600118:12	600120:12	1	24	71	0	5	3.0	1	175	47	26	0	0	0
38	710112:01	710113:01	1	21	23	0	4	1.1	1	41	23	29	0	0	0
39	510306:19	510307:08	1	8	8	0	4	1.0	1	36	10	25	0	0	0
40	690102:23	690103:14	1	16	23	0	4	1.4	1	6	6	31	0	0	0
41	601210:21	601211:17	1	20	22	0	4	1.1	1	2	1	30	0	0	0
42	570119:23	570121:08	1	20	19	0	4	1.0	1	85	28	25	0	0	0
43	571129:17	571130:00	1	7	10	0	4	1.4	1	1	1	31	0	0	0
44	711228:14	711229:03	1	13	15	0	3	1.2	1	1	1	31	0	0	0
45	500101:09	500104:03	3	19	17	32	3	.9	1	474	55	11	0	0	0
46	671220:01	671220:12	1	2	4	0	3	2.0	1	17	11	30	0	0	0
47	551111:08	551112:12	1	13	15	0	3	1.2	1	74	17	21	0	0	0
48	691202:17	691203:16	1	7	9	0	3	1.3	1	120	17	22	0	0	0
49	490207:02	490207:16	1	15	13	0	3	.9	1	1	1	31	0	0	0
50	620227:23	620228:14	1	17	19	0	3	1.1	1	2	2	31	0	0	0

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	510309:00	510309:11	2	7	8	6	3	1.1	1	18	9	29	0	0	0
52	620118:17	620123:23	1	4	6	0	3	1.5	1	1293	125	8	0	0	0
53	561206:16	561207:23	1	18	25	0	3	1.4	2	133	23	19	3	2	34
54	720131:21	720201:00	1	1	2	0	2	2.0	1	4	3	30	0	0	0
55	490212:02	490212:07	1	3	3	0	2	1.0	1	2	2	31	0	0	0
56	691203:21	691203:23	1	1	2	0	2	2.0	1	1	1	31	0	0	0
57	560214:21	560216:17	1	1	2	0	2	2.0	1	288	45	17	0	0	0
58	490211:00	490211:08	1	2	3	0	2	1.5	1	14	8	29	0	0	0
59	781226:17	781227:10	1	1	1	0	1	1.0	1	60	17	27	0	0	0
60	570123:19	570128:12	1	1	1	0	1	1.0	1	1186	114	9	0	0	0
61	681228:17	681229:10	2	4	3	12	1	.8	1	52	17	25	0	0	0
62	481224:15	481225:09	1	1	1	0	1	1.0	1	59	19	27	0	0	0
63	720203:19	720204:12	1	2	2	0	1	1.0	1	33	17	29	0	0	0
64	500123:19	500124:11	1	6	4	0	1	.7	1	41	16	27	0	0	0
65	760124:21	760126:05	1	2	2	0	1	1.0	1	56	32	29	0	0	0
66	490124:15	490127:08	2	8	3	10	1	.4	1	601	66	13	0	0	0
67	720130:17	720131:14	1	7	3	0	1	.4	1	85	15	22	0	0	0
68	600112:03	600112:10	1	1	1	0	1	1.0	1	17	6	26	0	0	0
69	720204:17	720205:03	1	1	1	0	1	1.0	1	14	9	30	0	0	0
70	490107:17	490108:09	1	1	1	0	1	1.0	1	49	16	24	0	0	0
71	510310:00	510310:05	1	6	2	0	1	.3	1	4	4	31	0	0	0
72	490101:10	490102:08	1	11	3	0	1	.3	1	42	14	26	0	0	0
73	490118:16	490119:09	1	4	2	0	1	.5	1	43	16	26	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY MAXIMUM PRECIPITATION INTENSITY

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	701122:07	701125:05	1	71	310	0	49	4.4	1	6	6	31	0	0	0
2	781118:16	781120:10	1	43	321	0	42	7.5	1	6	6	31	0	0	0
3	641216:07	641223:08	1	127	1015	0	37	8.0	1	717	63	10	0	0	0
4	740110:17	740113:14	1	46	183	0	32	4.0	1	263	32	13	0	0	0
5	500108:13	500111:18	1	79	196	0	28	2.5	1	2	2	31	0	0	0
6	771121:19	771122:19	1	24	153	0	27	6.4	1	20	14	30	0	0	0
7	730109:19	730112:19	1	55	228	0	24	4.1	1	56	26	27	0	0	0
8	510307:15	510309:15	1	49	93	0	20	1.9	1	31	10	25	0	0	0
9	500126:02	500128:14	2	45	283	15	20	6.3	1	77	19	24	0	0	0
10	510303:09	510306:08	1	72	208	0	20	2.9	1	32	12	28	0	0	0
11	511228:07	511230:09	1	49	150	0	19	3.1	2	16	7	25	1	1	33
12	511224:17	511226:13	1	7	79	0	18	11.3	1	157	41	25	0	0	0
13	630128:14	630202:01	3	79	296	23	17	3.7	1	259	61	24	0	0	0
14	500112:07	500116:10	2	83	195	18	17	2.3	2	192	42	21	40	17	39
15	500120:00	500125:10	1	115	256	0	15	2.2	2	125	32	25	7	4	35
16	710109:00	710115:21	1	167	525	0	14	3.1	3	73	31	23	15	12	34
17	600302:12	600306:08	1	93	344	0	14	3.7	1	45	15	28	0	0	0
18	600419:19	600420:10	1	17	38	0	14	2.2	1	46	5	14	0	0	0
19	690122:17	690129:05	1	69	241	0	13	3.5	4	1189	134	9	20	16	35
20	551215:10	551216:08	1	24	101	0	12	4.2	1	1	1	31	0	0	0
21	500128:16	500204:10	3	44	55	64	12	1.3	1	2724	158	-1	0	0	0
22	500116:16	500119:06	2	29	102	7	12	3.5	1	584	61	16	0	0	0
23	570221:01	570222:16	1	31	106	0	11	3.4	1	30	14	28	0	0	0
24	631212:19	631214:10	2	25	57	123	11	2.3	2	74	30	26	40	8	41
25	490120:23	490121:10	1	13	33	0	10	2.5	1	9	5	28	0	0	0
26	590102:19	590106:07	1	23	55	0	10	2.4	1	573	85	20	0	0	0
27	490101:19	490105:08	1	4	13	0	10	3.3	1	695	84	15	0	0	0
28	490205:21	490207:16	1	44	88	0	10	2.0	1	14	6	27	0	0	0
29	780101:19	780103:19	1	33	67	0	9	2.0	1	90	31	27	0	0	0
30	561205:23	561207:10	2	10	32	26	9	3.2	1	78	34	28	0	0	0
31	721204:00	721212:10	2	49	47	117	8	1.0	2	2616	166	-10	3	2	34
32	600311:23	600313:05	1	31	33	0	8	1.1	1	53	5	14	0	0	0
33	570124:00	570130:12	3	12	25	14	7	2.1	1	2245	157	0	0	0	0
34	691201:19	691203:19	1	12	10	0	6	.8	1	89	39	28	0	0	0
35	491211:01	491212:00	1	23	40	0	6	1.7	1	11	6	28	0	0	0
36	681229:17	681231:16	1	24	37	0	6	1.5	1	509	38	14	0	0	0
37	551112:23	551117:12	2	27	48	69	5	1.8	1	863	110	15	0	0	0
38	720204:17	720205:14	1	22	22	0	3	1.0	1	3	3	31	0	0	0
39	490211:00	490211:09	1	3	6	0	3	2.0	1	27	9	27	0	0	0
40	600118:07	600120:19	1	18	25	0	3	1.4	1	148	59	27	0	0	0
41	500101:09	500103:23	3	13	16	8	3	1.2	1	438	53	9	0	0	0
42	560126:05	560126:08	1	3	4	0	3	1.3	1	4	3	30	0	0	0
43	581228:21	581229:07	1	12	7	0	3	.6	1	30	4	20	0	0	0
44	551214:05	551214:08	1	3	6	0	3	2.0	1	3	3	31	0	0	0
45	560214:14	560216:14	1	7	8	0	3	1.1	1	278	41	17	0	0	0
46	730108:19	730109:12	1	3	4	0	2	1.3	1	87	18	25	0	0	0
47	490118:16	490119:09	1	3	4	0	2	1.3	1	35	18	28	0	0	0
48	510307:01	510307:07	1	4	7	0	2	1.8	1	12	5	27	0	0	0
49	720126:16	720128:14	1	2	2	0	1	1.0	1	412	47	19	0	0	0
50	481221:17	481222:06	1	1	1	0	1	1.0	1	19	12	30	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY MAXIMUM PRECIPITATION INTENSITY

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	781114:19	781115:12	1	2	2	0	1	1.0	1	126	16	22	0	0	0
52	641230:19	641231:10	1	1	1	0	1	1.0	1	51	14	20	0	0	0
53	721212:12	721215:23	1	1	1	0	1	1.0	1	690	83	12	0	0	0
54	490123:16	490127:13	2	14	8	9	1	.6	1	866	92	11	0	0	0
55	771120:23	771121:12	1	2	2	0	1	1.0	1	53	13	27	0	0	0
56	561130:17	561201:12	1	2	2	0	1	1.0	1	49	20	28	0	0	0
57	720131:19	720201:10	1	1	1	0	1	1.0	1	59	15	26	0	0	0
58	490107:22	490108:09	1	5	2	0	1	.4	1	34	12	25	0	0	0
59	490204:17	490205:08	1	1	1	0	1	1.0	1	21	15	28	0	0	0
60	481223:16	481226:07	1	1	1	0	1	1.0	1	485	62	18	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY FREEZE INDEX

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	500123:17	500205:10	9	81	140	66	9	1.7	2	4152	300	-2	7	3	36
2	570117:16	570130:21	5	24	43	174	10	1.8	1	3042	317	7	0	0	0
3	721203:23	721214:12	2	16	51	146	14	3.2	1	2345	254	15	0	0	0
4	490119:17	490128:07	3	30	54	113	10	1.8	1	1920	205	11	0	0	0
5	500113:16	500120:18	5	96	332	28	12	3.5	2	1827	150	8	25	10	35
6	681228:19	690103:21	3	90	242	42	14	2.7	1	1656	139	8	0	0	0
7	641216:00	641220:10	1	30	108	0	12	3.6	1	1546	106	8	0	0	0
8	740106:16	740116:17	1	115	544	0	23	4.7	1	1514	145	12	0	0	0
9	551111:07	551119:07	3	65	274	98	21	4.2	1	1283	159	14	0	0	0
10	690121:17	690127:10	2	37	58	7	5	1.6	1	1088	136	17	0	0	0
11	560130:16	560205:08	1	11	11	0	2	1.0	1	972	137	14	0	0	0
12	511230:22	520106:17	3	32	62	17	8	1.9	1	954	164	21	0	0	0
13	630110:14	630114:16	1	28	32	0	6	1.1	1	882	83	13	0	0	0
14	590102:07	590106:08	1	7	11	0	4	1.6	1	792	97	17	0	0	0
15	690127:17	690130:14	2	31	57	7	7	1.8	1	725	70	18	0	0	0
16	720125:19	720128:12	1	4	4	0	2	1.0	1	564	65	20	0	0	0
17	500101:16	500105:07	1	15	25	0	5	1.7	1	550	87	16	0	0	0
18	540119:17	540122:14	1	39	177	0	16	4.5	1	383	49	20	0	0	0
19	770108:19	770112:05	2	2	2	7	1	1.0	1	367	83	20	0	0	0
20	560214:19	560217:17	2	23	20	38	3	.9	2	356	56	18	3	2	34
21	561205:14	561208:12	3	13	21	27	3	1.6	1	307	67	23	0	0	0
22	600302:03	600304:23	4	36	81	14	14	2.3	1	239	58	25	0	0	0
23	630128:08	630201:07	2	64	158	31	25	2.5	1	238	76	24	0	0	0
24	671219:03	671221:17	2	35	69	29	8	2.0	1	200	56	15	0	0	0
25	680127:17	680130:12	1	33	62	0	10	1.9	1	197	54	25	0	0	0
26	510130:16	510203:01	1	34	102	0	12	3.0	2	188	53	25	2	1	34
27	721214:17	721217:16	2	46	138	6	10	3.0	1	185	34	23	0	0	0
28	781121:12	781123:10	1	36	137	0	22	3.8	2	157	34	22	5	2	35
29	600118:14	600120:05	1	24	52	0	7	2.2	1	138	39	26	0	0	0
30	540115:19	540118:07	3	45	161	9	13	3.6	1	131	36	26	0	0	0
31	720203:17	720206:07	1	37	51	0	8	1.4	1	127	42	25	0	0	0
32	560126:21	560128:08	1	15	105	0	23	7.0	2	115	34	22	1	1	33
33	720130:17	720131:12	1	1	1	0	1	1.0	1	113	19	22	0	0	0
34	600109:07	600111:01	1	7	13	0	7	1.9	1	112	42	25	0	0	0
35	701218:17	701220:21	1	21	40	0	6	1.9	1	103	32	27	0	0	0
36	780102:14	780103:23	1	31	56	0	6	1.8	1	98	25	26	0	0	0
37	490201:18	490203:15	2	21	37	8	7	1.8	2	84	36	28	1	1	33
38	771121:16	771123:19	1	44	123	0	11	2.8	1	80	24	26	0	0	0
39	511224:22	511226:00	1	16	26	0	6	1.6	2	74	19	22	7	4	35
40	551218:07	551219:10	1	27	81	0	13	3.0	1	66	28	27	0	0	0
41	600113:14	600114:12	1	8	12	0	7	1.5	1	59	21	27	0	0	0
42	500113:06	500113:16	1	11	97	0	16	8.8	1	58	7	20	0	0	0
43	701122:03	701124:01	1	34	130	0	22	3.8	1	41	29	29	0	0	0
44	711228:14	711229:12	1	22	37	0	4	1.7	1	33	20	30	0	0	0
45	510304:07	510306:03	2	39	31	7	2	.8	1	32	13	27	0	0	0
46	511226:08	511227:09	2	17	17	6	6	1.0	2	30	20	29	2	2	33
47	611212:23	611214:01	1	24	20	0	3	.8	2	27	18	29	1	1	33
48	730110:19	730112:03	1	33	116	0	12	3.5	1	23	14	30	0	0	0
49	510306:19	510307:08	1	7	11	0	3	1.6	1	22	8	28	0	0	0
50	750209:01	750209:21	1	20	13	0	2	.7	1	19	9	29	0	0	0

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	490118:17	490119:10	1	7	9	0	8	1.3	1	18	13	29	0	0	0
52	570222:05	570224:12	1	56	198	0	16	3.5	1	15	9	29	0	0	0
53	490204:21	490205:05	1	3	8	0	3	2.7	1	11	8	29	0	0	0
54	710113:01	710114:08	1	29	36	0	5	1.2	1	10	7	30	0	0	0
55	600114:21	600115:01	1	1	1	0	1	1.0	1	5	4	30	0	0	0
56	711208:03	711208:21	1	19	89	0	18	4.7	1	5	5	31	0	0	0
57	551215:07	551215:19	1	10	16	0	4	1.6	1	5	5	31	0	0	0
58	710112:01	710112:21	1	20	24	0	4	1.2	1	3	3	31	0	0	0
59	641231:07	641231:08	1	1	2	0	2	2.0	1	3	2	30	0	0	0
60	570220:07	570220:10	1	2	4	0	3	2.0	1	3	3	31	0	0	0
61	620228:01	620228:19	1	19	35	0	5	1.8	1	2	2	31	0	0	0
62	490129:13	490130:05	1	17	14	0	2	.8	1	1	1	31	0	0	0
63	551216:00	551216:21	1	22	29	0	3	1.3	1	1	1	31	0	0	0
64	591117:12	591118:19	1	32	108	0	15	3.4	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY FREEZE INDEX

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP				INTENSITY		NO. FREEZE	FREEZE	NO.	MIN.	THAW	NO.	MAX.
	START DATE AND HOUR	END DATE AND HOUR	EVENTS	DUR	AMOUNT	MAX DRY	MAXIMUM	AVERAGE	EVENTS	INDEX	BELOW	TEMP	INDEX	ABOVE	TEMP
	(YYMMDD:HH)	(YYMMDD:HH)		(HRS)	(INX100)	(HRS)	(IN/HRX100)	(IN/HRX100)		(F)		(F)	(F)		(F)
1	721203:21	721215:21	3	55	114	117	14	2.1	2	3764	286	-7	1	1	33
2	500126:01	500204:11	5	67	235	107	16	3.5	1	3187	195	-9	0	0	0
3	620118:17	620123:23	1	4	6	0	3	1.5	1	1293	125	8	0	0	0
4	690123:17	690129:21	2	72	112	32	11	1.6	1	1186	137	14	0	0	0
5	570123:19	570128:12	1	1	1	0	1	1.0	1	1186	114	9	0	0	0
6	641216:05	641220:08	2	49	171	7	16	3.5	1	1086	77	9	0	0	0
7	500113:17	500120:01	4	81	214	26	18	2.6	2	1073	113	14	28	18	34
8	551112:17	551119:12	2	64	244	20	27	3.8	1	1055	119	10	0	0	0
9	681229:17	690101:05	2	51	150	11	12	2.9	1	827	48	9	0	0	0
10	590102:17	590106:08	2	27	79	63	13	2.9	1	733	88	17	0	0	0
11	490124:15	490127:08	2	8	3	10	1	.4	1	601	66	13	0	0	0
12	500101:09	500104:03	3	19	17	32	3	.9	1	474	55	11	0	0	0
13	630128:10	630131:21	2	58	215	27	16	3.7	1	363	71	20	0	0	0
14	740110:17	740113:19	1	48	263	0	33	5.5	1	321	37	12	0	0	0
15	520101:16	520104:00	1	16	74	0	22	4.6	1	319	44	19	0	0	0
16	560214:21	560216:17	1	1	2	0	2	2.0	1	288	45	17	0	0	0
17	570117:17	570119:14	1	5	17	0	6	3.4	1	243	41	16	0	0	0
18	680127:17	680130:10	1	44	108	0	8	2.5	1	207	45	23	0	0	0
19	600118:12	600120:12	1	24	71	0	5	3.0	1	175	47	26	0	0	0
20	681219:19	681222:00	1	28	24	0	6	.9	1	173	39	22	0	0	0
21	701121:19	701125:14	1	76	264	0	22	3.5	1	151	42	27	0	0	0
22	561206:16	561207:23	1	18	25	0	3	1.4	2	133	23	19	3	2	34
23	600302:05	600305:17	1	79	237	0	18	3.0	2	130	38	25	5	5	33
24	691202:17	691203:16	1	7	9	0	3	1.3	1	120	17	22	0	0	0
25	620223:03	620224:14	1	19	49	0	15	2.6	1	111	18	18	0	0	0
26	780101:17	780104:01	1	37	102	0	14	2.8	1	85	33	27	0	0	0
27	570119:23	570121:08	1	20	19	0	4	1.0	1	85	28	25	0	0	0
28	720130:17	720131:14	1	7	3	0	1	.4	1	85	15	22	0	0	0
29	551111:08	551112:12	1	13	15	0	3	1.2	1	74	17	21	0	0	0
30	701211:21	701213:03	1	21	47	0	12	2.2	2	72	20	24	48	8	40
31	710227:01	710228:10	1	28	34	0	6	1.2	1	66	16	20	0	0	0
32	781226:17	781227:10	1	1	1	0	1	1.0	1	60	17	27	0	0	0
33	481224:15	481225:09	1	1	1	0	1	1.0	1	59	19	27	0	0	0
34	760124:21	760126:05	1	2	2	0	1	1.0	1	56	32	29	0	0	0
35	681228:17	681229:10	2	4	3	12	1	.8	1	52	17	25	0	0	0
36	490107:17	490108:09	1	1	1	0	1	1.0	1	49	16	24	0	0	0
37	510304:09	510306:01	2	34	85	7	9	2.5	1	43	16	28	0	0	0
38	490118:16	490119:09	1	4	2	0	1	.5	1	43	16	26	0	0	0
39	490101:10	490102:08	1	11	3	0	1	.3	1	42	14	26	0	0	0
40	771121:21	771123:03	1	30	109	0	15	3.6	1	41	15	28	0	0	0
41	500123:19	500124:11	1	6	4	0	1	.7	1	41	16	27	0	0	0
42	710112:01	710113:01	1	21	23	0	4	1.1	1	41	23	29	0	0	0
43	510306:19	510307:08	1	8	8	0	4	1.0	1	36	10	25	0	0	0
44	690112:00	690112:23	1	11	57	0	9	5.2	1	34	14	27	0	0	0
45	720203:19	720204:12	1	2	2	0	1	1.0	1	33	17	29	0	0	0
46	651128:23	651130:00	1	18	44	0	9	2.4	1	27	10	28	0	0	0
47	491203:19	491204:10	1	5	23	0	16	4.6	1	26	14	29	0	0	0
48	510309:00	510309:11	2	7	8	6	3	1.1	1	18	9	29	0	0	0
49	671220:01	671220:12	1	2	4	0	3	2.0	1	17	11	30	0	0	0
50	600112:03	600112:10	1	1	1	0	1	1.0	1	17	6	26	0	0	0

78

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	781118:16	781120:08	1	37	206	0	20	5.6	1	15	12	30	0	0	0
52	490211:00	490211:08	1	2	3	0	2	1.5	1	14	8	29	0	0	0
53	720204:17	720205:03	1	1	1	0	1	1.0	1	14	9	30	0	0	0
54	570221:17	570226:07	1	106	361	0	19	3.4	1	13	12	30	0	0	0
55	540115:16	540117:08	1	41	116	0	18	2.8	1	10	7	30	0	0	0
56	660121:19	660122:03	1	5	17	0	6	3.4	1	8	8	31	0	0	0
57	551218:05	551219:12	1	33	142	0	15	4.3	1	8	8	31	0	0	0
58	611213:14	611214:12	1	23	78	0	9	3.4	1	7	7	31	0	0	0
59	690102:23	690103:14	1	16	23	0	4	1.4	1	6	6	31	0	0	0
60	510310:00	510310:05	1	6	2	0	1	.3	1	4	4	31	0	0	0
61	720131:21	720201:00	1	1	2	0	2	2.0	1	4	3	30	0	0	0
62	681222:08	681222:21	1	14	68	0	13	4.9	1	3	3	31	0	0	0
63	490212:02	490212:07	1	3	3	0	2	1.0	1	2	2	31	0	0	0
64	620227:23	620228:14	1	17	19	0	3	1.1	1	2	2	31	0	0	0
65	521130:16	521201:03	1	12	42	0	12	3.5	1	2	2	31	0	0	0
66	601210:21	601211:17	1	20	22	0	4	1.1	1	2	1	30	0	0	0
67	560304:12	560305:17	1	30	29	0	5	1.0	1	2	2	31	0	0	0
68	711228:14	711229:03	1	13	15	0	3	1.2	1	1	1	31	0	0	0
69	490203:13	490204:13	1	25	52	0	10	2.1	1	1	1	31	0	0	0
70	691203:21	691203:23	1	1	2	0	2	2.0	1	1	1	31	0	0	0
71	571129:17	571130:00	1	7	10	0	4	1.4	1	1	1	31	0	0	0
72	500109:10	500111:10	1	49	207	0	35	4.2	1	1	1	31	0	0	0
73	490207:02	490207:16	1	15	13	0	3	.9	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY FREEZE INDEX

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	500128:16	500204:10	3	44	55	64	12	1.3	1	2724	158	-1	0	0	0
2	721204:00	721212:10	2	49	47	117	8	1.0	2	2616	166	-10	3	2	34
3	570124:00	570130:12	3	12	25	14	7	2.1	1	2245	157	0	0	0	0
4	690122:17	690129:05	1	69	241	0	13	3.5	4	1189	134	9	20	16	35
5	490123:16	490127:13	2	14	8	9	1	.6	1	866	92	11	0	0	0
6	551112:23	551117:12	2	27	48	69	5	1.8	1	863	110	15	0	0	0
7	641216:07	641223:08	1	127	1015	0	37	8.0	1	717	63	10	0	0	0
8	490101:19	490105:08	1	4	13	0	10	3.3	1	695	84	15	0	0	0
9	721212:12	721215:23	1	1	1	0	1	1.0	1	690	83	12	0	0	0
10	500116:16	500119:06	2	29	102	7	12	3.5	1	584	61	16	0	0	0
11	590102:19	590106:07	1	23	55	0	10	2.4	1	573	85	20	0	0	0
12	681229:17	681231:16	1	24	37	0	6	1.5	1	509	38	14	0	0	0
13	481223:16	481226:07	1	1	1	0	1	1.0	1	485	62	18	0	0	0
14	500101:09	500103:23	3	13	16	8	3	1.2	1	438	53	9	0	0	0
15	720126:16	720128:14	1	2	2	0	1	1.0	1	412	47	19	0	0	0
16	560214:14	560216:14	1	7	8	0	3	1.1	1	278	41	17	0	0	0
17	740110:17	740113:14	1	46	183	0	32	4.0	1	263	32	13	0	0	0
18	630128:14	630202:01	3	79	296	23	17	3.7	1	259	61	24	0	0	0
19	500112:07	500116:10	2	83	195	18	17	2.3	2	192	42	21	40	17	39
20	511224:17	511226:13	1	7	79	0	18	11.3	1	157	41	25	0	0	0
21	600118:07	600120:19	1	18	25	0	3	1.4	1	148	59	27	0	0	0
22	781114:19	781115:12	1	2	2	0	1	1.0	1	126	16	22	0	0	0
23	500120:00	500125:10	1	115	256	0	15	2.2	2	125	32	25	7	4	35
24	780101:19	780103:19	1	33	67	0	9	2.0	1	90	31	27	0	0	0
25	691201:19	691203:19	1	12	10	0	6	.8	1	89	39	28	0	0	0
26	730108:19	730109:12	1	3	4	0	2	1.3	1	87	18	25	0	0	0
27	561205:23	561207:10	2	10	32	26	9	3.2	1	78	34	28	0	0	0
28	500126:02	500128:14	2	45	283	15	20	6.3	1	77	19	24	0	0	0
29	631212:19	631214:10	2	25	57	123	11	2.3	2	74	30	26	40	8	41
30	710109:00	710115:21	1	167	525	0	14	3.1	3	73	31	23	15	12	34
31	720131:19	720201:10	1	1	1	0	1	1.0	1	59	15	26	0	0	0
32	730109:19	730112:19	1	55	228	0	24	4.1	1	56	26	27	0	0	0
33	600311:23	600313:05	1	31	33	0	8	1.1	1	53	5	14	0	0	0
34	771120:23	771121:12	1	2	2	0	1	1.0	1	53	13	27	0	0	0
35	641230:19	641231:10	1	1	1	0	1	1.0	1	51	14	20	0	0	0
36	561130:17	561201:12	1	2	2	0	1	1.0	1	49	20	28	0	0	0
37	600419:19	600420:10	1	17	38	0	14	2.2	1	46	5	14	0	0	0
38	600302:12	600306:08	1	93	344	0	14	3.7	1	45	15	28	0	0	0
39	490118:16	490119:09	1	3	4	0	2	1.3	1	35	18	28	0	0	0
40	490107:22	490108:09	1	5	2	0	1	.4	1	34	12	25	0	0	0
41	510303:09	510306:08	1	72	208	0	20	2.9	1	32	12	28	0	0	0
42	510307:15	510309:15	1	49	93	0	20	1.9	1	31	10	25	0	0	0
43	570221:01	570222:16	1	31	106	0	11	3.4	1	30	14	28	0	0	0
44	581228:21	581229:07	1	12	7	0	3	.6	1	30	4	20	0	0	0
45	490211:00	490211:09	1	3	6	0	3	2.0	1	27	9	27	0	0	0
46	490204:17	490205:08	1	1	1	0	1	1.0	1	21	15	28	0	0	0
47	771121:19	771122:19	1	24	153	0	27	6.4	1	20	14	30	0	0	0
48	481221:17	481222:06	1	1	1	0	1	1.0	1	19	12	30	0	0	0
49	511228:07	511230:09	1	49	150	0	19	3.1	2	16	7	25	1	1	33
50	490205:21	490207:16	1	44	88	0	10	2.0	1	14	6	27	0	0	0

| | START DATE AND HOUR (YYMMDD:HH) | END DATE AND HOUR (YYMMDD:HH) | CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER | | | | | | CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER | | | | | | |
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	510307:01	510307:07	1	4	7	0	2	1.8	1	12	5	27	0	0	0
52	491211:01	491212:00	1	23	40	0	6	1.7	1	11	6	28	0	0	0
53	490120:23	490121:10	1	13	33	0	10	2.5	1	9	5	28	0	0	0
54	701122:07	701125:05	1	71	310	0	49	4.4	1	6	6	31	0	0	0
55	781118:16	781120:10	1	43	321	0	42	7.5	1	6	6	31	0	0	0
56	560126:05	560126:08	1	3	4	0	3	1.3	1	4	3	30	0	0	0
57	720204:17	720205:14	1	22	22	0	3	1.0	1	3	3	31	0	0	0
58	551214:05	551214:08	1	3	6	0	3	2.0	1	3	3	31	0	0	0
59	500108:13	500111:18	1	79	196	0	28	2.5	1	2	2	31	0	0	0
60	551215:10	551216:08	1	24	101	0	12	4.2	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY NUMBER OF HOURS BELOW 32F

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	570117:16	570130:21	5	24	43	174	10	1.8	1	3042	317	7	0	0	0
2	500123:17	500205:10	9	81	140	66	9	1.7	2	4152	300	-2	7	3	36
3	721203:23	721214:12	2	16	51	146	14	3.2	1	2345	254	15	0	0	0
4	490119:17	490128:07	3	30	54	113	10	1.8	1	1920	205	11	0	0	0
5	511230:22	520106:17	3	32	62	17	8	1.9	1	954	164	21	0	0	0
6	551111:07	551119:07	3	65	274	98	21	4.2	1	1283	159	14	0	0	0
7	500113:16	500120:18	5	96	332	28	12	3.5	2	1827	150	8	25	10	35
8	740106:16	740116:17	1	115	544	0	23	4.7	1	1514	145	12	0	0	0
9	681228:19	690103:21	3	90	242	42	14	2.7	1	1656	139	8	0	0	0
10	560130:16	560205:08	1	11	11	0	2	1.0	1	972	137	14	0	0	0
11	690121:17	690127:10	2	37	58	7	5	1.6	1	1088	136	17	0	0	0
12	641216:00	641220:10	1	30	108	0	12	3.6	1	1546	106	8	0	0	0
13	590102:07	590106:08	1	7	11	0	4	1.6	1	792	97	17	0	0	0
14	500101:16	500105:07	1	15	25	0	5	1.7	1	550	87	16	0	0	0
15	770108:19	770112:05	2	2	2	7	1	1.0	1	367	83	20	0	0	0
16	630110:14	630114:16	1	28	32	0	6	1.1	1	882	83	13	0	0	0
17	630128:08	630201:07	2	64	158	31	25	2.5	1	238	76	24	0	0	0
18	690127:17	690130:14	2	31	57	7	7	1.8	1	725	70	18	0	0	0
19	561205:14	561208:12	3	13	21	27	3	1.6	1	307	67	23	0	0	0
20	720125:19	720128:12	1	4	4	0	2	1.0	1	564	65	20	0	0	0
21	600302:03	600304:23	4	36	81	14	14	2.3	1	239	58	25	0	0	0
22	560214:19	560217:17	2	23	20	38	3	.9	2	356	56	18	3	2	34
23	671219:03	671221:17	2	35	69	29	8	2.0	1	200	56	15	0	0	0
24	680127:17	680130:12	1	33	62	0	10	1.9	1	197	54	25	0	0	0
25	510130:16	510203:01	1	34	102	0	12	3.0	2	188	53	25	2	1	34
26	540119:17	540122:14	1	39	177	0	16	4.5	1	383	49	20	0	0	0
27	720203:17	720206:07	1	37	51	0	8	1.4	1	127	42	25	0	0	0
28	600109:07	600111:01	1	7	13	0	7	1.9	1	112	42	25	0	0	0
29	600118:14	600120:05	1	24	52	0	7	2.2	1	138	39	26	0	0	0
30	490201:18	490203:15	2	21	37	8	7	1.8	2	84	36	28	1	1	33
31	540115:19	540118:07	3	45	161	9	13	3.6	1	131	36	26	0	0	0
32	781121:12	781123:10	1	36	137	0	22	3.8	2	157	34	22	5	2	35
33	560126:21	560128:08	1	15	105	0	23	7.0	2	115	34	22	1	1	33
34	721214:17	721217:16	2	46	138	6	10	3.0	1	185	34	23	0	0	0
35	701218:17	701220:21	1	21	40	0	6	1.9	1	103	32	27	0	0	0
36	701122:03	701124:01	1	34	130	0	22	3.8	1	41	29	29	0	0	0
37	551218:07	551219:10	1	27	81	0	13	3.0	1	66	28	27	0	0	0
38	780102:14	780103:23	1	31	56	0	6	1.8	1	98	25	26	0	0	0
39	771121:16	771123:19	1	44	123	0	11	2.8	1	80	24	26	0	0	0
40	600113:14	600114:12	1	8	12	0	7	1.5	1	59	21	27	0	0	0
41	711228:14	711229:12	1	22	37	0	4	1.7	1	33	20	30	0	0	0
42	511226:08	511227:09	2	17	17	6	6	1.0	2	30	20	29	2	2	33
43	720130:17	720131:12	1	1	1	0	1	1.0	1	113	19	22	0	0	0
44	511224:22	511226:00	1	16	26	0	6	1.6	2	74	19	22	7	4	35
45	611212:23	611214:01	1	24	20	0	3	.8	2	27	18	29	1	1	33
46	730110:19	730112:03	1	33	116	0	12	3.5	1	23	14	30	0	0	0
47	510304:07	510306:03	2	39	31	7	2	.8	1	32	13	27	0	0	0
48	490118:17	490119:10	1	7	9	0	8	1.3	1	18	13	29	0	0	0
49	750209:01	750209:21	1	20	13	0	2	.7	1	19	9	29	0	0	0
50	570222:05	570224:12	1	56	198	0	16	3.5	1	15	9	29	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY NUMBER OF HOURS BELOW 32F

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	490204:21	490205:05	1	3	8	0	3	2.7	1	11	8	29	0	0	0
52	510306:19	510307:08	1	7	11	0	3	1.6	1	22	8	28	0	0	0
53	710113:01	710114:08	1	29	36	0	5	1.2	1	10	7	30	0	0	0
54	500113:06	500113:16	1	11	97	0	16	8.8	1	58	7	20	0	0	0
55	711208:03	711208:21	1	19	89	0	18	4.7	1	5	5	31	0	0	0
56	551215:07	551215:19	1	10	16	0	4	1.6	1	5	5	31	0	0	0
57	600114:21	600115:01	1	1	1	0	1	1.0	1	5	4	30	0	0	0
58	710112:01	710112:21	1	20	24	0	4	1.2	1	3	3	31	0	0	0
59	570220:07	570220:10	1	2	4	0	3	2.0	1	3	3	31	0	0	0
60	620228:01	620228:19	1	19	35	0	5	1.8	1	2	2	31	0	0	0
61	641231:07	641231:08	1	1	2	0	2	2.0	1	3	2	31	0	0	0
62	490129:13	490130:05	1	17	14	0	2	.8	1	1	1	31	0	0	0
63	551216:00	551216:21	1	22	29	0	3	1.3	1	1	1	31	0	0	0
64	591117:12	591118:19	1	32	108	0	15	3.4	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY NUMBER OF HOURS BELOW 32F

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	721203:21	721215:21	3	55	114	117	14	2.1	2	3764	286	-7	1	1	33
2	500126:01	500204:11	5	67	235	107	16	3.5	1	3187	195	-9	0	0	0
3	690123:17	690129:21	2	72	112	32	11	1.6	1	1186	137	14	0	0	0
4	620118:17	620123:23	1	4	6	0	3	1.5	1	1293	125	8	0	0	0
5	551112:17	551119:12	2	64	244	20	27	3.8	1	1055	119	10	0	0	0
6	570123:19	570128:12	1	1	1	0	1	1.0	1	1186	114	9	0	0	0
7	500113:17	500120:01	4	81	214	26	18	2.6	2	1073	113	14	28	18	34
8	590102:17	590106:08	2	27	79	63	13	2.9	1	733	88	17	0	0	0
9	641216:05	641220:08	2	49	171	7	16	3.5	1	1086	77	9	0	0	0
10	630128:10	630131:21	2	58	215	27	16	3.7	1	363	71	20	0	0	0
11	490124:15	490127:08	2	8	3	10	1	.4	1	601	66	13	0	0	0
12	500101:09	500104:03	3	19	17	32	3	.9	1	474	55	11	0	0	0
13	681229:17	690101:05	2	51	150	11	12	2.9	1	827	48	9	0	0	0
14	600118:12	600120:12	1	24	71	0	5	3.0	1	175	47	26	0	0	0
15	680127:17	680130:10	1	44	108	0	8	2.5	1	207	45	23	0	0	0
16	560214:21	560216:17	1	1	2	0	2	2.0	1	288	45	17	0	0	0
17	520101:16	520104:00	1	16	74	0	22	4.6	1	319	44	19	0	0	0
18	701121:19	701125:14	1	76	264	0	22	3.5	1	151	42	27	0	0	0
19	570117:17	570119:14	1	5	17	0	6	3.4	1	243	41	16	0	0	0
20	681219:19	681222:00	1	28	24	0	6	.9	1	173	39	22	0	0	0
21	600302:05	600305:17	1	79	237	0	18	3.0	2	130	38	25	5	5	33
22	740110:17	740113:19	1	48	263	0	33	5.5	1	321	37	12	0	0	0
23	780101:17	780104:01	1	37	102	0	14	2.8	1	85	33	27	0	0	0
24	760124:21	760126:05	1	2	2	0	1	1.0	1	56	32	29	0	0	0
25	570119:23	570121:08	1	20	19	0	4	1.0	1	85	28	25	0	0	0
26	710112:01	710113:01	1	21	23	0	4	1.1	1	41	23	29	0	0	0
27	561206:16	561207:23	1	18	25	0	3	1.4	2	133	23	19	3	2	34
28	701211:21	701213:03	1	21	47	0	12	2.2	2	72	20	24	48	8	40
29	481224:15	481225:09	1	1	1	0	1	1.0	1	59	19	27	0	0	0
30	620223:03	620224:14	1	19	49	0	15	2.6	1	111	18	18	0	0	0
31	720203:19	720204:12	1	2	2	0	1	1.0	1	33	17	29	0	0	0
32	551111:08	551112:12	1	13	15	0	3	1.2	1	74	17	21	0	0	0
33	681228:17	681229:10	2	4	3	12	1	.8	1	52	17	25	0	0	0
34	781226:17	781227:10	1	1	1	0	1	1.0	1	60	17	27	0	0	0
35	691202:17	691203:16	1	7	9	0	3	1.3	1	120	17	22	0	0	0
36	490107:17	490108:09	1	1	1	0	1	1.0	1	49	16	24	0	0	0
37	710227:01	710228:10	1	28	34	0	6	1.2	1	66	16	20	0	0	0
38	510304:09	510306:01	2	34	85	7	9	2.5	1	43	16	28	0	0	0
39	490118:16	490119:09	1	4	2	0	1	.5	1	43	16	26	0	0	0
40	500123:19	500124:11	1	6	4	0	1	.7	1	41	16	27	0	0	0
41	771121:21	771123:03	1	30	109	0	15	3.6	1	41	15	28	0	0	0
42	720130:17	720131:14	1	7	3	0	1	.4	1	85	15	22	0	0	0
43	491203:19	491204:10	1	5	23	0	16	4.6	1	26	14	29	0	0	0
44	690112:00	690112:23	1	11	57	0	9	5.2	1	34	14	27	0	0	0
45	490101:10	490102:08	1	11	3	0	1	.3	1	42	14	26	0	0	0
46	781118:16	781120:08	1	37	206	0	20	5.6	1	15	12	30	0	0	0
47	570221:17	570226:07	1	106	361	0	19	3.4	1	13	12	30	0	0	0
48	671220:01	671220:12	1	2	4	0	3	2.0	1	17	11	30	0	0	0
49	510306:19	510307:08	1	8	8	0	4	1.0	1	36	10	25	0	0	0
50	651128:23	651130:00	1	18	44	0	9	2.4	1	27	10	28	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY NUMBER OF HOURS BELOW 32F

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	510309:00	510309:11	2	7	8	6	3	1.1	1	18	9	29	0	0	0
52	720204:17	720205:03	1	1	1	0	1	1.0	1	14	9	30	0	0	0
53	490211:00	490211:08	1	2	3	0	2	1.5	1	14	8	29	0	0	0
54	660121:19	660122:03	1	5	17	0	6	3.4	1	8	8	31	0	0	0
55	551218:05	551219:12	1	33	142	0	15	4.3	1	8	8	31	0	0	0
56	611213:14	611214:12	1	23	78	0	9	3.4	1	8	8	31	0	0	0
57	540115:16	540117:08	1	41	116	0	18	2.8	1	7	7	31	0	0	0
58	690102:23	690103:14	1	16	23	0	4	1.4	1	10	7	30	0	0	0
59	600112:03	600112:10	1	1	1	0	1	1.0	1	6	6	31	0	0	0
60	510310:00	510310:05	1	6	2	0	1	.3	1	17	6	26	0	0	0
61	720131:21	720201:00	1	1	2	0	2	2.0	1	4	4	31	0	0	0
62	681222:08	681222:21	1	14	68	0	13	4.9	1	4	3	30	0	0	0
63	490212:02	490212:07	1	3	3	0	2	1.0	1	3	3	31	0	0	0
64	620227:23	620228:14	1	17	19	0	3	1.1	1	2	2	31	0	0	0
65	560304:12	560305:17	1	30	29	0	5	1.0	1	2	2	31	0	0	0
66	521130:16	521201:03	1	12	42	0	12	3.5	1	2	2	31	0	0	0
67	711228:14	711229:03	1	13	15	0	3	1.2	1	1	1	31	0	0	0
68	490203:13	490204:13	1	25	52	0	10	2.1	1	1	1	31	0	0	0
69	691203:21	691203:23	1	1	2	0	2	2.0	1	1	1	31	0	0	0
70	571129:17	571130:00	1	7	10	0	4	1.4	1	1	1	31	0	0	0
71	500109:10	500111:10	1	49	207	0	35	4.2	1	1	1	31	0	0	0
72	601210:21	601211:17	1	20	22	0	4	1.1	1	1	1	31	0	0	0
73	490207:02	490207:16	1	15	13	0	3	.9	1	2	1	30	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY NUMBER OF HOURS BELOW 32F

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	721204:00	721212:10	2	49	47	117	8	1.0	2	2616	166	-10	3	2	34
2	500128:16	500204:10	3	44	55	64	12	1.3	1	2724	158	-1	0	0	0
3	570124:00	570130:12	3	12	25	14	7	2.1	1	2245	157	0	0	0	0
4	690122:17	690129:05	1	69	241	0	13	3.5	4	1189	134	9	20	16	35
5	551112:23	551117:12	2	27	48	69	5	1.8	1	863	110	15	0	0	0
6	490123:16	490127:13	2	14	8	9	1	.6	1	866	92	11	0	0	0
7	590102:19	590106:07	1	23	55	0	10	2.4	1	573	85	20	0	0	0
8	490101:19	490105:08	1	4	13	0	10	3.3	1	695	84	15	0	0	0
9	721212:12	721215:23	1	1	1	0	1	1.0	1	690	83	12	0	0	0
10	641216:07	641223:08	1	127	1015	0	37	8.0	1	717	63	10	0	0	0
11	481223:16	481226:07	1	1	1	0	1	1.0	1	485	62	18	0	0	0
12	500116:16	500119:06	2	29	102	7	12	3.5	1	584	61	16	0	0	0
13	630128:14	630202:01	3	79	296	23	17	3.7	1	259	61	24	0	0	0
14	600118:07	600120:19	1	18	25	0	3	1.4	1	148	59	27	0	0	0
15	500101:09	500103:23	3	13	16	8	3	1.2	1	438	53	9	0	0	0
16	720126:16	720128:14	1	2	2	0	1	1.0	1	412	47	19	0	0	0
17	500112:07	500116:10	2	83	195	18	17	2.3	2	192	42	21	40	17	39
18	560214:14	560216:14	1	7	8	0	3	1.1	1	278	41	17	0	0	0
19	511224:17	511226:13	1	7	79	0	18	11.3	1	157	41	25	0	0	0
20	691201:19	691203:19	1	12	10	0	6	.8	1	89	39	28	0	0	0
21	681229:17	681231:16	1	24	37	0	6	1.5	1	509	38	14	0	0	0
22	561205:23	561207:10	2	10	32	26	9	3.2	1	78	34	28	0	0	0
23	740110:17	740113:14	1	46	183	0	32	4.0	1	263	32	13	0	0	0
24	500120:00	500125:10	1	115	256	0	15	2.2	2	125	32	25	7	4	35
25	710109:00	710115:21	1	167	525	0	14	3.1	3	73	31	23	15	12	34
26	780101:19	780103:19	1	33	67	0	9	2.0	1	90	31	27	0	0	0
27	631212:19	631214:10	2	25	57	123	11	2.3	2	74	30	26	40	8	41
28	730109:19	730112:19	1	55	228	0	24	4.1	1	56	26	27	0	0	0
29	561130:17	561201:12	1	2	2	0	1	1.0	1	49	20	28	0	0	0
30	500126:02	500128:14	2	45	283	15	20	6.3	1	77	19	24	0	0	0
31	730108:19	730109:12	1	3	4	0	2	1.3	1	87	18	25	0	0	0
32	490118:16	490119:09	1	3	4	0	2	1.3	1	35	18	28	0	0	0
33	781114:19	781115:12	1	2	2	0	1	1.0	1	126	16	22	0	0	0
34	600302:12	600306:08	1	93	344	0	14	3.7	1	45	15	28	0	0	0
35	720131:19	720201:10	1	1	1	0	1	1.0	1	59	15	26	0	0	0
36	490204:17	490205:08	1	1	1	0	1	1.0	1	21	15	28	0	0	0
37	771121:19	771122:19	1	24	153	0	27	6.4	1	20	14	30	0	0	0
38	641230:19	641231:10	1	1	1	0	1	1.0	1	51	14	20	0	0	0
39	570221:01	570222:16	1	31	106	0	11	3.4	1	30	14	28	0	0	0
40	771120:23	771121:12	1	2	2	0	1	1.0	1	53	13	27	0	0	0
41	490107:22	490108:09	1	5	2	0	1	.4	1	34	12	25	0	0	0
42	510303:09	510306:08	1	72	208	0	20	2.9	1	32	12	28	0	0	0
43	481221:17	481222:06	1	1	1	0	1	1.0	1	19	12	30	0	0	0
44	510307:15	510309:15	1	49	93	0	20	1.9	1	31	10	25	0	0	0
45	490211:00	490211:09	1	3	6	0	3	2.0	1	27	9	27	0	0	0
46	511228:07	511230:09	1	49	150	0	19	3.1	2	16	7	25	1	1	33
47	701122:07	701125:05	1	71	310	0	49	4.4	1	6	6	31	0	0	0
48	491211:01	491212:00	1	23	40	0	6	1.7	1	11	6	28	0	0	0
49	781118:16	781120:10	1	43	321	0	42	7.5	1	6	6	31	0	0	0
50	490205:21	490207:16	1	44	88	0	10	2.0	1	14	6	27	0	0	0

93

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY NUMBER OF HOURS BELOW 32F

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	600311:23	600313:05	1	31	33	0	8	1.1	1	53	5	14	0	0	0
52	490120:23	490121:10	1	13	33	0	10	2.5	1	9	5	28	0	0	0
53	510307:01	510307:07	1	4	7	0	2	1.8	1	12	5	27	0	0	0
54	600419:19	600420:10	1	17	38	0	14	2.2	1	46	5	14	0	0	0
55	581228:21	581229:07	1	12	7	0	3	.6	1	30	4	20	0	0	0
56	720204:17	720205:14	1	22	22	0	3	1.0	1	3	3	31	0	0	0
57	551214:05	551214:08	1	3	6	0	3	2.0	1	3	3	31	0	0	0
58	560126:05	560126:08	1	3	4	0	3	1.3	1	4	3	30	0	0	0
59	500108:13	500111:18	1	79	196	0	28	2.5	1	2	2	31	0	0	0
60	551215:10	551216:08	1	24	101	0	12	4.2	1	1	1	31	0	0	0

87

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY MINIMUM TEMPERATURE

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	500123:17	500205:10	9	81	140	66	9	1.7	2	4152	300	-2	7	3	36
2	570117:16	570130:21	5	24	43	174	10	1.8	1	3042	317	7	0	0	0
3	500113:16	500120:18	5	96	332	28	12	3.5	2	1827	150	8	25	10	35
4	641216:00	641220:10	1	30	108	0	12	3.6	1	1546	106	8	0	0	0
5	681228:19	690103:21	3	90	242	42	14	2.7	1	1656	139	8	0	0	0
6	490119:17	490128:07	3	30	54	113	10	1.8	1	1920	205	11	0	0	0
7	740106:16	740116:17	1	115	544	0	23	4.7	1	1514	145	12	0	0	0
8	630110:14	630114:16	1	28	32	0	6	1.1	1	882	83	13	0	0	0
9	551111:07	551119:07	3	65	274	98	21	4.2	1	1283	159	14	0	0	0
10	560130:16	560205:08	1	11	11	0	2	1.0	1	972	137	14	0	0	0
11	721203:23	721214:12	2	16	51	146	14	3.2	1	2345	254	15	0	0	0
12	671219:03	671221:17	2	35	69	29	8	2.0	1	200	56	15	0	0	0
13	500101:16	500105:07	1	15	25	0	5	1.7	1	550	87	16	0	0	0
14	690121:17	690127:10	2	37	58	7	5	1.6	1	1088	136	17	0	0	0
15	590102:07	590106:08	1	7	11	0	4	1.6	1	792	97	17	0	0	0
16	690127:17	690130:14	2	31	57	7	7	1.8	1	725	70	18	0	0	0
17	560214:19	560217:17	2	23	20	38	3	.9	2	356	56	18	3	2	34
18	770108:19	770112:05	2	2	2	7	1	1.0	1	367	83	20	0	0	0
19	500113:06	500113:16	1	11	97	0	16	8.8	1	58	7	20	0	0	0
20	720125:19	720128:12	1	4	4	0	2	1.0	1	564	65	20	0	0	0
21	540119:17	540122:14	1	39	177	0	16	4.5	1	383	49	20	0	0	0
22	511230:22	520106:17	3	32	62	17	8	1.9	1	954	164	21	0	0	0
23	781112:12	781123:10	1	36	137	0	22	3.8	2	157	34	22	5	2	35
24	560126:21	560128:08	1	15	105	0	23	7.0	2	115	34	22	1	1	33
25	720130:17	720131:12	1	1	1	0	1	1.0	1	113	19	22	0	0	0
26	511224:22	511226:00	1	16	26	0	6	1.6	2	74	19	22	7	4	35
27	721214:17	721217:16	2	46	138	6	10	3.0	1	185	34	23	0	0	0
28	561205:14	561208:12	3	13	21	27	3	1.6	1	307	67	23	0	0	0
29	630128:08	630201:07	2	64	158	31	25	2.5	1	238	76	24	0	0	0
30	720203:17	720206:07	1	37	51	0	8	1.4	1	127	42	25	0	0	0
31	510130:16	510203:01	1	34	102	0	12	3.0	2	188	53	25	2	1	34
32	600302:03	600304:23	4	36	81	14	14	2.3	1	239	58	25	0	0	0
33	680127:17	680130:12	1	33	62	0	10	1.9	1	197	54	25	0	0	0
34	600109:07	600111:01	1	7	13	0	7	1.9	1	112	42	25	0	0	0
35	771121:16	771123:19	1	44	123	0	11	2.8	1	80	24	26	0	0	0
36	540115:19	540118:07	3	45	161	9	13	3.6	1	131	36	26	0	0	0
37	780102:14	780103:23	1	31	56	0	6	1.8	1	98	25	26	0	0	0
38	600118:14	600120:05	1	24	52	0	7	2.2	1	138	39	26	0	0	0
39	701218:17	701220:21	1	21	40	0	6	1.9	1	103	32	27	0	0	0
40	510304:07	510306:03	2	39	31	7	2	.8	1	32	13	27	0	0	0
41	551218:07	551219:10	1	27	81	0	13	3.0	1	66	28	27	0	0	0
42	600113:14	600114:12	1	8	12	0	7	1.5	1	59	21	27	0	0	0
43	490201:18	490203:15	2	21	37	8	7	1.8	2	84	36	28	1	1	33
44	510306:19	510307:08	1	7	11	0	3	1.6	1	22	8	28	0	0	0
45	750209:01	750209:21	1	20	13	0	2	.7	1	19	9	29	0	0	0
46	511226:08	511227:09	2	17	17	6	6	1.0	2	30	20	29	2	2	33
47	701122:03	701124:01	1	34	130	0	22	3.8	1	41	29	29	0	0	0
48	490118:17	490119:10	1	7	9	0	8	1.3	1	18	13	29	0	0	0
49	611212:23	611214:01	1	24	20	0	3	.8	2	27	18	29	1	1	33
50	490204:21	490205:05	1	3	8	0	3	2.7	1	11	8	29	0	0	0

OVERALL ORDER STATISTICS AT PORTLAND
SORTED BY MINIMUM TEMPERATURE

			CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	570222:05	570224:12	1	56	198	0	16	3.5	1	15	9	29	0	0	0
52	730110:19	730112:03	1	33	116	0	12	3.5	1	23	14	30	0	0	0
53	641231:07	641231:08	1	1	2	0	2	2.0	1	3	2	30	0	0	0
54	710113:01	710114:08	1	29	36	0	5	1.2	1	10	7	30	0	0	0
55	600114:21	600115:01	1	1	1	0	1	1.0	1	5	4	30	0	0	0
56	711228:14	711229:12	1	22	37	0	4	1.7	1	33	20	30	0	0	0
57	490129:13	490130:05	1	17	14	0	2	.8	1	1	1	31	0	0	0
58	710112:01	710112:21	1	20	24	0	4	1.2	1	3	3	31	0	0	0
59	551215:07	551215:19	1	10	16	0	4	1.6	1	5	5	31	0	0	0
60	711208:03	711208:21	1	19	89	0	18	4.7	1	5	5	31	0	0	0
61	620228:01	620228:19	1	19	35	0	5	1.8	1	2	2	31	0	0	0
62	570220:07	570220:10	1	2	4	0	3	2.0	1	3	3	31	0	0	0
63	591117:12	591118:19	1	32	108	0	15	3.4	1	1	1	31	0	0	0
64	551216:00	551216:21	1	22	29	0	3	1.3	1	1	1	31	0	0	0

OVERALL ORDER STATISTICS AT SALEM
SORTED BY MINIMUM TEMPERATURE

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	500126:01	500204:11	5	67	235	107	16	3.5	1	3187	195	-9	0	0	0
2	721203:21	721215:21	3	55	114	117	14	2.1	2	3764	286	-7	1	1	33
3	620118:17	620123:23	1	4	6	0	3	1.5	1	1293	125	8	0	0	0
4	681229:17	690101:05	2	51	150	11	12	2.9	1	827	48	9	0	0	0
5	570123:19	570128:12	1	1	1	0	1	1.0	1	1186	114	9	0	0	0
6	641216:05	641220:08	2	49	171	7	16	3.5	1	1086	77	9	0	0	0
7	551112:17	551119:12	2	64	244	20	27	3.8	1	1055	119	10	0	0	0
8	500101:09	500104:03	3	19	17	32	3	.9	1	474	55	11	0	0	0
9	740110:17	740113:19	1	48	263	0	33	5.5	1	321	37	12	0	0	0
10	490124:15	490127:08	2	8	3	10	1	.4	1	601	66	13	0	0	0
11	690123:17	690129:21	2	72	112	32	11	1.6	1	1186	137	14	0	0	0
12	500113:17	500120:01	4	81	214	26	18	2.6	2	1073	113	14	28	18	34
13	570117:17	570119:14	1	5	17	0	6	3.4	1	243	41	16	0	0	0
14	560214:21	560216:17	1	1	2	0	2	2.0	1	288	45	17	0	0	0
15	590102:17	590106:08	2	27	79	63	13	2.9	1	733	88	17	0	0	0
16	620223:03	620224:14	1	19	49	0	15	2.6	1	111	18	18	0	0	0
17	520101:16	520104:00	1	16	74	0	22	4.6	1	319	44	19	0	0	0
18	561206:16	561207:23	1	18	25	0	3	1.4	2	133	23	19	3	2	34
19	710227:01	710228:10	1	28	34	0	6	1.2	1	66	16	20	0	0	0
20	630128:10	630131:21	2	58	215	27	16	3.7	1	363	71	20	0	0	0
21	551111:08	551112:12	1	13	15	0	3	1.2	1	74	17	21	0	0	0
22	681219:19	681222:00	1	28	24	0	6	.9	1	173	39	22	0	0	0
23	720130:17	720131:14	1	7	3	0	1	.4	1	85	15	22	0	0	0
24	691202:17	691203:16	1	7	9	0	3	1.3	1	120	17	22	0	0	0
25	680127:17	680130:10	1	44	108	0	8	2.5	1	207	45	23	0	0	0
26	490107:17	490108:09	1	1	1	0	1	1.0	1	49	16	24	0	0	0
27	701211:21	701213:03	1	21	47	0	12	2.2	2	72	20	24	48	8	40
28	570119:23	570121:08	1	20	19	0	4	1.0	1	85	28	25	0	0	0
29	681228:17	681229:10	2	4	3	12	1	.8	1	52	17	25	0	0	0
30	510306:19	510307:08	1	8	8	0	4	1.0	1	36	10	25	0	0	0
31	600302:05	600305:17	1	79	237	0	18	3.0	2	130	38	25	5	5	33
32	490101:10	490102:08	1	11	3	0	1	.3	1	42	14	26	0	0	0
33	600112:03	600112:10	1	1	1	0	1	1.0	1	17	6	26	0	0	0
34	490118:16	490119:09	1	4	2	0	1	.5	1	43	16	26	0	0	0
35	600118:12	600120:12	1	24	71	0	5	3.0	1	175	47	26	0	0	0
36	780101:17	780104:01	1	37	102	0	14	2.8	1	85	33	27	0	0	0
37	481224:15	481225:09	1	1	1	0	1	1.0	1	59	19	27	0	0	0
38	690112:00	690112:23	1	11	57	0	9	5.2	1	34	14	27	0	0	0
39	500123:19	500124:11	1	6	4	0	1	.7	1	41	16	27	0	0	0
40	781226:17	781227:10	1	1	1	0	1	1.0	1	60	17	27	0	0	0
41	701121:19	701125:14	1	76	264	0	22	3.5	1	151	42	27	0	0	0
42	510304:09	510306:01	2	34	85	7	9	2.5	1	43	16	28	0	0	0
43	771121:21	771123:03	1	30	109	0	15	3.6	1	41	15	28	0	0	0
44	651128:23	651130:00	1	18	44	0	9	2.4	1	27	10	28	0	0	0
45	491203:19	491204:10	1	5'	23	0	16	4.6	1	26	14	29	0	0	0
46	720203:19	720204:12	1	2	2	0	1	1.0	1	33	17	29	0	0	0
47	510309:00	510309:11	2	7	8	6	3	1.1	1	18	9	29	0	0	0
48	710112:01	710113:01	1	21	23	0	4	1.1	1	41	23	29	0	0	0
49	490211:00	490211:08	1	2	3	0	2	1.5	1	14	8	29	0	0	0
50	760124:21	760126:05	1	2	2	0	1	1.0	1	56	32	29	0	0	0

90

OVERALL ORDER STATISTICS AT SALEM
SORTED BY MINIMUM TEMPERATURE

| | START DATE AND HOUR (YYMMDD:HH) | END DATE AND HOUR (YYMMDD:HH) | CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER | | | | | | CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER | | | | | | |
| | | | NO. PRECIP EVENTS | DUR (HRS) | AMOUNT (INX100) | MAX DRY (HRS) | INTENSITY | | NO. FREEZE EVENTS | FREEZE INDEX (F) | NO. BELOW | MIN. TEMP (F) | THAW INDEX (F) | NO. ABOVE | MAX. TEMP (F) |
							MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)							
51	601210:21	601211:17	1	20	22	0	4	1.1							
52	671220:01	671220:12	1	2	4	0	3	2.0	1	2	1	30	0	0	0
53	540115:16	540117:08	1	41	116	0	18	2.8	1	17	11	30	0	0	0
54	720131:21	720201:00	1	1	2	0	2	2.0	1	10	7	30	0	0	0
55	570221:17	570226:07	1	106	361	0	19	3.4	1	4	3	30	0	0	0
56	781118:16	781120:08	1	37	206	0	20	5.6	1	13	12	30	0	0	0
57	720204:17	720205:03	1	1	1	0	1	1.0	1	15	12	30	0	0	0
58	500109:10	500111:10	1	49	207	0	35	4.2	1	14	9	30	0	0	0
59	690102:23	690103:14	1	16	23	0	4	1.4	1	1	1	31	0	0	0
60	510310:00	510310:05	1	6	2	0	1	.3	1	6	6	31	0	0	0
61	711228:14	711229:03	1	13	15	0	3	1.2	1	4	4	31	0	0	0
62	490203:13	490204:13	1	25	52	0	10	2.1	1	1	1	31	0	0	0
63	681222:08	681222:21	1	14	68	0	13	4.9	1	1	1	31	0	0	0
64	620227:23	620228:14	1	17	19	0	3	1.1	1	3	3	31	0	0	0
65	691203:21	691203:23	1	1	2	0	2	2.0	1	1	1	31	0	0	0
66	490212:02	490212:07	1	3	3	0	2	1.0	1	2	2	31	0	0	0
67	660121:19	660122:03	1	5	17	0	6	3.4	1	2	2	31	0	0	0
68	551218:05	551219:12	1	33	142	0	15	4.3	1	8	8	31	0	0	0
69	490207:02	490207:16	1	15	13	0	3	.9	1	8	8	31	0	0	0
70	571129:17	571130:00	1	7	10	0	4	1.4	1	1	1	31	0	0	0
71	521130:16	521201:03	1	12	42	0	12	3.5	1	1	1	31	0	0	0
72	611213:14	611214:12	1	23	78	0	9	3.4	1	2	2	31	0	0	0
73	560304:12	560305:17	1	30	29	0	5	1.0	1	7	7	31	0	0	0

91

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY MINIMUM TEMPERATURE

	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER						CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
			NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
1	721204:00	721212:10	2	49	47	117	8	1.0	2	2616	166	-10	3	2	34
2	500128:16	500204:10	3	44	55	64	12	1.3	1	2724	158	-1	0	0	0
3	570124:00	570130:12	3	12	25	14	7	2.1	1	2245	157	0	0	0	0
4	500101:09	500103:23	3	13	16	8	3	1.2	1	438	53	9	0	0	0
5	690122:17	690129:05	1	69	241	0	13	3.5	4	1189	134	9	20	16	35
6	641216:07	641223:08	1	127	1015	0	37	8.0	1	717	63	10	0	0	0
7	490123:16	490127:13	2	14	8	9	1	.6	1	866	92	11	0	0	0
8	721212:12	721215:23	1	1	1	0	1	1.0	1	690	83	12	0	0	0
9	740110:17	740113:14	1	46	183	0	32	4.0	1	263	32	13	0	0	0
10	600311:23	600313:05	1	31	33	0	8	1.1	1	53	5	14	0	0	0
11	681229:17	681231:16	1	24	37	0	6	1.5	1	509	38	14	0	0	0
12	600419:19	600420:10	1	17	38	0	14	2.2	1	46	5	14	0	0	0
13	490101:19	490105:08	1	4	13	0	10	3.3	1	695	84	15	0	0	0
14	551112:23	551117:12	2	27	48	69	5	1.8	1	863	110	15	0	0	0
15	500116:16	500119:06	2	29	102	7	12	3.5	1	584	61	16	0	0	0
16	560214:14	560216:14	1	7	8	0	3	1.1	1	278	41	17	0	0	0
17	481223:16	481226:07	1	1	1	0	1	1.0	1	485	62	18	0	0	0
18	720126:16	720128:14	1	2	2	0	1	1.0	1	412	47	19	0	0	0
19	581228:21	581229:07	1	12	7	0	3	.6	1	30	4	20	0	0	0
20	641230:19	641231:10	1	1	1	0	1	1.0	1	51	14	20	0	0	0
21	590102:19	590106:07	1	23	55	0	10	2.4	1	573	85	20	0	0	0
22	500112:07	500116:10	2	83	195	18	17	2.3	2	192	42	21	40	17	39
23	781114:19	781115:12	1	2	2	0	1	1.0	1	126	16	22	0	0	0
24	710109:00	710115:21	1	167	525	0	14	3.1	3	73	31	23	15	12	34
25	630128:14	630202:01	3	79	296	23	17	3.7	1	259	61	24	0	0	0
26	500126:02	500128:14	2	45	283	15	20	6.3	1	77	19	24	0	0	0
27	730108:19	730109:12	1	3	4	0	2	1.3	1	87	18	25	0	0	0
28	490107:22	490108:09	1	5	2	0	1	.4	1	34	12	25	0	0	0
29	510307:15	510309:15	1	49	93	0	20	1.9	1	31	10	25	0	0	0
30	500120:00	500125:10	1	115	256	0	15	2.2	2	125	32	25	7	4	35
31	511228:07	511230:09	1	49	150	0	19	3.1	2	16	7	25	1	1	33
32	511224:17	511226:13	1	7	79	0	18	11.3	1	157	41	25	0	0	0
33	720131:19	720201:10	1	1	1	0	1	1.0	1	59	15	26	0	0	0
34	631212:19	631214:10	2	25	57	123	11	2.3	2	74	30	26	40	8	41
35	780101:19	780103:19	1	33	67	0	9	2.0	1	90	31	27	0	0	0
36	490205:21	490207:16	1	44	88	0	10	2.0	1	14	6	27	0	0	0
37	771120:23	771121:12	1	2	2	0	1	1.0	1	53	13	27	0	0	0
38	510307:01	510307:07	1	4	7	0	2	1.8	1	12	5	27	0	0	0
39	730109:19	730112:19	1	55	228	0	24	4.1	1	56	26	27	0	0	0
40	490211:00	490211:09	1	3	6	0	3	2.0	1	27	9	27	0	0	0
41	600118:07	600120:19	1	18	25	0	3	1.4	1	148	59	27	0	0	0
42	691201:19	691203:19	1	12	10	0	6	.8	1	89	39	28	0	0	0
43	490118:16	490119:09	1	3	4	0	2	1.3	1	35	18	28	0	0	0
44	510303:09	510306:08	1	72	208	0	20	2.9	1	32	12	28	0	0	0
45	491211:01	491212:00	1	23	40	0	6	1.7	1	11	6	28	0	0	0
46	561130:17	561201:12	1	2	2	0	1	1.0	1	49	20	28	0	0	0
47	490204:17	490205:08	1	1	1	0	1	1.0	1	21	15	28	0	0	0
48	600302:12	600306:08	1	93	344	0	14	3.7	1	45	15	28	0	0	0
49	490120:23	490121:10	1	13	33	0	10	2.5	1	9	5	28	0	0	0
50	570221:01	570222:16	1	31	106	0	11	3.4	1	30	14	28	0	0	0

OVERALL ORDER STATISTICS AT EUGENE
SORTED BY MINIMUM TEMPERATURE

				CHARACTERISTICS OF PRECIP EVENTS IN CLUSTER					CHARACTERISTICS OF FREEZE EVENTS IN CLUSTER						
	START DATE AND HOUR (YYMMDD:HH)	END DATE AND HOUR (YYMMDD:HH)	NO. PRECIP EVENTS	DUR (HRS)	AMOUNT (INX100)	MAX DRY (HRS)	INTENSITY MAXIMUM (IN/HRX100)	INTENSITY AVERAGE (IN/HRX100)	NO. FREEZE EVENTS	FREEZE INDEX (F)	NO. BELOW	MIN. TEMP (F)	THAW INDEX (F)	NO. ABOVE	MAX. TEMP (F)
51	561205:23	561207:10	2	10	32	26	9	3.2	1	78	34	28	0	0	0
52	771121:19	771122:19	1	24	153	0	27	6.4	1	20	14	30	0	0	0
53	481221:17	481222:06	1	1	1	0	1	1.0	1	19	12	30	0	0	0
54	560126:05	560126:08	1	3	4	0	3	1.3	1	4	3	30	0	0	0
55	720204:17	720205:14	1	22	22	0	3	1.0	1	3	3	31	0	0	0
56	500108:13	500111:18	1	79	196	0	28	2.5	1	2	2	31	0	0	0
57	781118:16	781120:10	1	43	321	0	42	7.5	1	6	6	31	0	0	0
58	551214:05	551214:08	1	3	6	0	3	2.0	1	3	3	31	0	0	0
59	701122:07	701125:05	1	71	310	0	49	4.4	1	6	6	31	0	0	0
60	551215:10	551216:08	1	24	101	0	12	4.2	1	1	1	31	0	0	0

APPENDIX C

Joint Distributions

The tables in this appendix contain the joint distributions of several pairs of cluster characteristics at each site (Portland, Salem, and Eugene, Oregon). The tables are divided into ten categories for each of the two characteristics (ten rows and ten columns) resulting in 100 joint categories or "cells" in each table. Each cell contains two quantities, the number of clusters in the cell and the overall relative frequency of the clusters in the cell. The column and row totals also summarize the marginal distributions for the two characteristics in the form of the row/column absolute and relative frequencies. The tables of joint frequencies are organized by characteristic, with separate tables for each site. An index listing the location of each table is given in the table of contents for the appendices (p. 58).

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR
INTERVALS OF

FREEZE INDEX
(DEGREES F)

AMOUNT (INCHES X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	20 .3125	3 .0469	0 0.0000	'3 .0469	0 0.0000	2 .0313	0 0.0000	1 .0156	1 .0156	2 .0313	32 .5000
50	4 .0625	3 .0469	2 .0313	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625	14 .2188
100	4 .0625	4 .0625	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0313	10 .1563
150	1 .0156	1 .0156	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0625
200	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156
250	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156
350	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156
COLUMN TOTALS	29 .4531	11 .1719	3 .0469	4 .0625	0 0.0000	2 .0313	0 0.0000	2 .0313	1 .0156	12 .1875	

95

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

FREEZE INDEX
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	36 .4932	4 .0548	2 .0274	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	2 .0274	46 .6301
50	5 .0685	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	8 .1096
100	4 .0548	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	7 .0959
150	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	2 .0274
200	2 .0274	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0411	7 .0959
250	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
350	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF FREEZE INDEX (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	21 .3500	2 .0333	1 .0167	0 0.0000	3 .0500	1 .0167	2 .0333	0 0.0000	2 .0333	2 .0333	34 .5667
50	4 .0667	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	7 .1167
100	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
150	3 .0500	1 .0167	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0833
200	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	3 .0500
250	1 .0167	1 .0167	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
300	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
350	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	2 .0333
COLUMN TOTALS	37 .6167	5 .0833	3 .0500	0 0.0000	3 .0500	3 .0500	2 .0333	1 .0167	2 .0333	4 .0667	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	0	0	0	1	2	3	5	11	10	32
	0.0000	0.0000	0.0000	0.0000	.0156	.0313	.0469	.0781	.1719	.1563	.5000
50	0	0	0	0	0	1	4	2	6	1	14
	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	.0625	.0313	.0938	.0156	.2188
100	0	0	1	0	1	0	0	3	3	2	10
	0.0000	0.0000	.0156	0.0000	.0156	0.0000	0.0000	.0469	.0469	.0313	.1563
150	0	0	0	0	0	0	0	2	2	0	4
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0313	.0313	0.0000	.0625
200	0	0	0	0	1	0	0	0	0	0	1
	0.0000	0.0000	0.0000	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	0.0000	.0156
250	0	0	0	0	0	1	0	0	0	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	.0156
300	0	0	0	0	1	0	0	0	0	0	1
	0.0000	0.0000	0.0000	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	0.0000	.0156
350	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
400	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
450 AND ABOVE	0	0	0	0	0	1	0	0	0	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	.0156
COLUMN TOTALS	0	0	1	0	4	5	7	12	22	13	
	0.0000	0.0000	.0156	0.0000	.0625	.0781	.1094	.1875	.3438	.2031	

98

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	0	0	0	2	2	4	7	16	15	46
	0.0000	0.0000	0.0000	0.0000	.0274	.0274	.0548	.0959	.2192	.2055	.6301
50	0	0	0	0	0	0	2	0	3	3	8
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0274	0.0000	.0411	.0411	.1096
100	0	1	0	0	0	1	0	1	2	2	7
	0.0000	.0137	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0274	.0274	.0959
150	0	0	0	0	2	0	0	0	0	0	2
	0.0000	0.0000	0.0000	0.0000	.0274	0.0000	0.0000	0.0000	0.0000	0.0000	.0274
200	0	1	0	0	0	2	0	1	1	2	7
	0.0000	.0137	0.0000	0.0000	0.0000	.0274	0.0000	.0137	.0137	.0274	.0959
250	0	0	0	0	0	1	0	0	1	0	2
	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	0.0000	.0137	0.0000	.0274
300	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350	0	0	0	0	0	0	0	0	0	1	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0137
400	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
450 AND ABOVE	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
COLUMN TOTALS	0	2	0	0	4	6	6	9	23	23	
	0.0000	.0274	0.0000	0.0000	.0548	.0822	.0822	.1233	.3151	.3151	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF

AMOUNT (INCHES X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	1	0	1	1	5	5	3	14	4	34
	0.0000	.0167	0.0000	.0167	.0167	.0833	.0833	.0500	.2333	.0667	.5667
50	0	0	1	0	0	0	0	1	5	0	7
	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	0.0000	.0167	.0833	0.0000	.1167
100	0	0	0	0	0	0	1	0	1	1	3
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	.0167	.0167	.0500
150	0	0	0	0	0	1	0	1	1	2	5
	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	.0167	.0167	.0333	.0833
200	0	0	0	0	1	0	0	0	2	0	3
	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	.0333	0.0000	.0500
250	0	0	0	0	0	0	0	2	1	0	3
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0333	.0167	0.0000	.0500
300	0	0	0	0	0	0	0	0	1	2	3
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	.0333	.0500
350	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
400	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
450 AND ABOVE	0	0	0	0	0	1	0	1	0	0	2
	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	.0167	0.0000	0.0000	.0333
COLUMN TOTALS	0	1	1	1	2	7	6	8	25	9	
	0.0000	.0167	.0167	.0167	.0333	.1167	.1000	.1333	.4167	.1500	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

NUMBER OF HOURS BELOW 32 F
(HOURS)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0	17 .2656	5 .0781	2 .0313	2 .0313	4 .0625	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156	32 .5000
50	2 .0313	3 .0469	4 .0625	1 .0156	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	2 .0313	14 .2188
100	2 .0313	5 .0781	1 .0156	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	1 .0156	10 .1563
150	1 .0156	1 .0156	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0625
200	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	1 .0156
250	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156
350	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156
COLUMN TOTALS	22 .3438	14 .2188	8 .1250	4 .0625	4 .0625	1 .0156	3 .0469	3 .0469	1 .0156	4 .0625	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

NUMBER OF HOURS BELOW 32 F
(HOURS)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0	34 .4658	6 .0822	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	46 .6301
50	5 .0685	0 0.0000	2 .0274	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	8 .1096
100	3 .0411	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	1 .0137	7 .0959
150	0 0.0000	0 0.0000	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
200	2 .0274	1 .0137	0 0.0000	1 .0137	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	1 .0137	7 .0959
250	0 0.0000	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
350	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
COLUMN TOTALS	45 .6164	9 .1233	8 .1096	3 .0411	1 .0137	3 .0411	2 .0274	0 0.0000	0 0.0000	2 .0274	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

NUMBER OF HOURS BELOW 32 F
(HOURS)

LOWER BOUNDS FOR INTERVALS OF AMOUNT (INCHES X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0	19 .3167	4 .0667	4 .0667	1 .0167	3 .0500	1 .0167	0 0.0000	1 .0167	1 .0167	0 0.0000	34 .5667
50	2 .0333	2 .0333	1 .0167	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	7 .1167
100	2 .0333	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
150	3 .0500	1 .0167	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0833
200	1 .0167	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	3 .0500
250	1 .0167	1 .0167	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
300	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
350	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
450 AND ABOVE	0 0.0000	1 .0167	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0333
COLUMN TOTALS	31 .5167	10 .1667	6 .1000	4 .0667	4 .0667	1 .0167	1 .0167	2 .0333	1 .0167	0 0.0000	

103

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

FREEZE INDEX (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	1 .0156	1 .0156	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0469
2	4 .0625	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	1 .0156	6 .0938
3	5 .0781	0 0.0000	0 0.0000	2 .0313	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	7 .1094
4	3 .0469	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	4 .0625
5	2 .0313	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	1 .0156	4 .0625
6	3 .0469	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	5 .0781
7	2 .0313	2 .0313	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	5 .0781
8	1 .0156	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	4 .0625
9 AND ABOVE	8 .1250	6 .0938	2 .0313	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	9 .1406	26 .4063
COLUMN TOTALS	29 .4531	11 .1719	3 .0469	4 .0625	0 0.0000	2 .0313	0 0.0000	2 .0313	1 .0156	12 .1875	

104

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

FREEZE INDEX (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	13 .1781	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	1 .0137	15 .2055
2	4 .0548	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0685
3	6 .0822	2 .0274	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	10 .1370
4	6 .0822	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
5	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
6	2 .0274	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0548
7	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
8	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
9 AND ABOVE	16 .2192	3 .0411	0 0.0000	3 .0411	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	6 .0822	30 .4110
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

FREEZE INDEX
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	7	1	0	0	2	0	1	0	1	0	12
	.1167	.0167	0.0000	0.0000	.0333	0.0000	.0167	0.0000	.0167	0.0000	.2000
2	3	0	0	0	0	0	0	0	0	0	3
	.0500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0500
3	5	1	1	0	1	0	0	0	0	0	8
	.0833	.0167	.0167	0.0000	.0167	0.0000	0.0000	0.0000	0.0000	0.0000	.1333
4	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0	0	0	0	0	0	0	0	1	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	.0167
6	2	0	0	0	0	1	0	0	0	0	3
	.0333	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	0.0000	.0500
7	0	0	0	0	0	0	0	0	0	1	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	.0167
8	1	0	0	0	0	0	0	0	0	1	2
	.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	.0333
9 AND ABOVE	19	3	2	0	0	2	1	1	0	2	30
	.3167	.0500	.0333	0.0000	0.0000	.0333	.0167	.0167	0.0000	.0333	.5000
COLUMN TOTALS	37	5	3	0	3	3	2	1	2	4	
	.6167	.0833	.0500	0.0000	.0500	.0500	.0333	.0167	.0333	.0667	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

107

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF
MINIMUM TEMPERATURE
(DEGREES F)

MAXIMUM INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0313	0 0.0000	1 .0156	3 .0469
2	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	2 .0313	2 .0313	6 .0938
3	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156	3 .0469	2 .0313	7 .1094
4	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	3 .0469	4 .0625
5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0313	0 0.0000	0 0.0000	2 .0313	4 .0625
6	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	3 .0469	0 0.0000	5 .0781
7	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625	0 0.0000	5 .0781
8	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	1 .0156	2 .0313	0 0.0000	4 .0625
9 AND ABOVE	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625	3 .0469	1 .0156	6 .0938	8 .1250	3 .0469	26 .4063
COLUMN TOTALS	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625	5 .0781	7 .1094	12 .1875	22 .3438	13 .2031	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE (DEGREES F)

MAXIMUM INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	0	0	0	0	1	1	0	2	9	2	15
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	0.0000	.0274	.1233	.0274	.2055
2	0	0	0	0	0	0	1	0	1	3	5
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	.0137	.0411	.0685
3	0	0	0	0	1	1	1	2	1	4	10
	0.0000	0.0000	0.0000	0.0000	.0137	.0137	.0137	.0274	.0137	.0548	.1370
4	0	0	0	0	0	0	0	0	3	3	6
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0411	.0411	.0822
5	0	0	0	0	0	0	0	0	1	1	2
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0137	.0274
6	0	0	0	0	0	0	1	2	0	1	4
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	.0274	0.0000	.0137	.0548
7	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0	0	0	0	0	0	0	1	0	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0137	0.0000	0.0000	.0137
9 AND ABOVE	0	2	0	0	2	4	3	2	8	9	30
	0.0000	.0274	0.0000	0.0000	.0274	.0548	.0411	.0274	.1096	.1233	.4110
COLUMN TOTALS	0	2	0	0	4	6	6	9	23	23	
	0.0000	.0274	0.0000	0.0000	.0548	.0822	.0822	.1233	.3151	.3151	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	0	0	0	0	0	2	2	2	5	1	12
	0.0000	0.0000	0.0000	0.0000	0.0000	.0333	.0333	.0333	.0833	.0167	.2000
2	0	0	0	0	0	0	0	0	3	0	3
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0500	0.0000	.0500
3	0	0	0	0	1	0	1	1	2	3	8
	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	.0167	.0167	.0333	.0500	.1333
4	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0	0	0	0	0	0	1	0	0	0	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	.0167
6	0	0	0	0	0	1	0	0	2	0	3
	0.0000	0.0000	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	.0333	0.0000	.0500
7	0	0	0	1	0	0	0	0	0	0	1
	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0167
8	0	1	0	0	0	1	0	0	0	0	2
	0.0000	.0167	0.0000	0.0000	0.0000	.0167	0.0000	0.0000	0.0000	0.0000	.0333
9 AND ABOVE	0	0	1	0	1	3	2	5	13	5	30
	0.0000	0.0000	.0167	0.0000	.0167	.0500	.0333	.0833	.2167	.0833	.5000
COLUMN TOTALS	0	1	1	1	2	7	6	8	25	9	
	0.0000	.0167	.0167	.0167	.0333	.1167	.1000	.1333	.4167	.1500	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

NUMBER OF HOURS BELOW 32 F
(HOURS)

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	2 .0313	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0469
2	4 .0625	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	6 .0938
3	5 .0781	0 0.0000	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	7 .1094
4	2 .0313	1 .0156	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0625
5	2 .0313	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	4 .0625
6	1 .0156	3 .0469	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0781
7	0 0.0000	3 .0469	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0781
8	1 .0156	0 0.0000	2 .0313	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625
9 AND ABOVE	5 .0781	7 .1094	4 .0625	1 .0156	0 0.0000	1 .0156	1 .0156	3 .0469	0 0.0000	4 .0625	26 .4063
COLUMN TOTALS	22 .3438	14 .2188	8 .1250	4 .0625	4 .0625	1 .0156	3 .0469	3 .0469	1 .0156	4 .0625	

110

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF MAXIMUM INTENSITY (INCHES PER HOUR X 100)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32 F (HOURS)										ROW TOTALS
	0	20	40	60	80	100	120	140	160	180 AND ABOVE	
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	12 .1644	1 .0137	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	15 .2055
2	4 .0548	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0685
3	7 .0959	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	10 .1370
4	4 .0548	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
5	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
6	2 .0274	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0548
7	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
8	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137
9 AND ABOVE	15 .2055	4 .0548	3 .0411	2 .0274	1 .0137	2 .0274	1 .0137	0 0.0000	0 0.0000	2 .0274	30 .4110
COLUMN TOTALS	45 .6164	9 .1233	8 .1096	3 .0411	1 .0137	3 .0411	2 .0274	0 0.0000	0 0.0000	2 .0274	

111

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF — NUMBER OF HOURS BELOW 32 F (HOURS)

MAXIMUM INTENSITY (INCHES PER HOUR X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
1	7 .1167	1 .0167	1 .0167	1 .0167	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	12 .2000
2	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
3	5 .0833	0 0.0000	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	8 .1333
4	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167
6	1 .0167	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
7	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167
8	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	2 .0333
9 AND ABOVE	14 .2333	7 .1167	2 .0333	3 .0500	2 .0333	0 0.0000	1 .0167	1 .0167	0 0.0000	0 0.0000	30 .5000
COLUMN TOTALS	31 .5167	10 .1667	6 .1000	4 .0667	4 .0667	1 .0167	1 .0167	2 .0333	1 .0167	0 0.0000	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

FREEZE INDEX
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0.0	0	0	0	0	0	0	0	0	0	0	0
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.5	4	0	0	1	0	0	0	0	0	0	5
	.0625	0.0000	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0781
1.0	6	2	0	1	0	1	0	0	1	1	12
	.0938	.0313	0.0000	.0156	0.0000	.0156	0.0000	0.0000	.0156	.0156	.1875
1.5	8	3	1	1	0	1	0	2	0	5	21
	.1250	.0469	.0156	.0156	0.0000	.0156	0.0000	.0313	0.0000	.0781	.3281
2.0	2	1	2	0	0	0	0	0	0	0	5
	.0313	.0156	.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0781
2.5	2	0	0	0	0	0	0	0	0	1	3
	.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	.0469
3.0	2	2	0	0	0	0	0	0	0	2	6
	.0313	.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0313	.0938
3.5	3	2	0	0	0	0	0	0	0	1	6
	.0469	.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	.0938
4.0	0	0	0	0	0	0	0	0	0	1	1
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	.0156
4.5 AND ABOVE	2	1	0	1	0	0	0	0	0	1	5
	.0313	.0156	0.0000	.0156	0.0000	0.0000	0.0000	0.0000	0.0000	.0156	.0781
COLUMN TOTALS	29	11	3	4	0	2	0	2	1	12	
	.4531	.1719	.0469	.0625	0.0000	.0313	0.0000	.0313	.0156	.1875	

113

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	FREEZE INDEX (DEGREES F)										ROW TOTALS
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	
0.0	3 .0411	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	4 .0548
0.5	4 .0548	1 .0137	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
1.0	20 .2740	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	23 .3151
1.5	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	3 .0411
2.0	6 .0822	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	9 .1233
2.5	3 .0411	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096
3.0	3 .0411	2 .0274	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	7 .0959
3.5	2 .0274	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	5 .0685
4.0	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
4.5 AND ABOVE	4 .0548	0 0.0000	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
COLUMN TOTALS	48 .6575	7 .0959	3 .0411	3 .0411	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	8 .1096	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	LOWER BOUNDS FOR INTERVALS OF FREEZE INDEX (DEGREES F)										ROW TOTALS
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	
0.0	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167
0.5	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	1 .0167	4 .0667
1.0	11 .1833	2 .0333	1 .0167	0 0.0000	3 .0500	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167	19 .3167
1.5	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167	0 0.0000	5 .0833
2.0	7 .1167	2 .0333	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	11 .1833
2.5	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0333
3.0	4 .0667	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167	6 .1000
3.5	1 .0167	0 0.0000	2 .0333	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0667
4.0	3 .0500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
4.5 AND ABOVE	3 .0500	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	5 .0833
COLUMN TOTALS	37 .6167	5 .0833	3 .0500	0 0.0000	3 .0500	3 .0500	2 .0333	1 .0167	2 .0333	4 .0667	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
0.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	3 .0469	1 .0156	5 .0781
1.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0313	0 0.0000	3 .0469	3 .0469	4 .0625	12 .1875
1.5	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	1 .0156	5 .0781	3 .0469	7 .1094	3 .0469	21 .3281
2.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	2 .0313	2 .0313	5 .0781
2.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	2 .0313	0 0.0000	3 .0469
3.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0,0000	1 .0156	1 .0156	2 .0313	1 .0156	6 .0938
3.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156	3 .0469	1 .0156	6 .0938
4.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156
4.5 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	3 .0469	0 0.0000	1 .0156	5 .0781
COLUMN TOTALS	0 0.0000	0 0.0000	1 .0156	0 0.0000	4 .0625	5 .0781	7 .1094	12 .1875	22 .3438	13 .2031	

116

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	4 .0548
0.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	3 .0411	1 .0137	6 .0822
1.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	4 .0548	9 .1233	8 .1096	23 .3151
1.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	0 0.0000	0 0.0000	1 .0137	0 0.0000	3 .0411
2.0	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	2 .0274	1 .0137	4 .0548	9 .1233
2.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	2 .0274	0 0.0000	3 .0411	1 .0137	8 .1096
3.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	2 .0274	3 .0411	7 .0959
3.5	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	1 .0137	1 .0137	5 .0685
4.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	2 .0274
4.5 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	1 .0137	0 0.0000	2 .0274	2 .0274	6 .0822
COLUMN TOTALS	0 0.0000	2 .0274	0 0.0000	0 0.0000	4 .0548	6 .0822	6 .0822	9 .1233	23 .3151	23 .3151	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF

MINIMUM TEMPERATURE
(DEGREES F)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	-15	-10	-5	0	5	10	15	20	25	30 AND ABOVE	ROW TOTALS
0.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167
0.5	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	1 .0167	0 0.0000	4 .0667
1.0	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	2 .0333	3 .0500	2 .0333	7 .1167	3 .0500	19 .3167
1.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	1 .0167	0 0.0000	3 .0500	0 0.0000	5 .0833
2.0	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	0 0.0000	2 .0333	5 .0833	2 .0333	11 .1833
2.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0333	0 0.0000	2 .0333
3.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	1 .0167	3 .0500	0 0.0000	6 .1000
3.5	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	1 .0167	1 .0167	1 .0167	0 0.0000	4 .0667
4.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	2 .0333	3 .0500
4.5 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	1 .0167	2 .0333	5 .0833
COLUMN TOTALS	0 0.0000	1 .0167	1 .0167	1 .0167	2 .0333	7 .1167	6 .1000	8 .1333	25 .4167	9 .1500	

118

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32 F (HOURS)

AVERAGE INTENSITY (INCHES PER HOUR X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000
0.5	4 .0625	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0781
1.0	6 .0938	1 .0156	1 .0156	1 .0156	2 .0313	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	12 .1875
1.5	4 .0625	5 .0781	3 .0469	2 .0313	2 .0313	0 0.0000	1 .0156	0 0.0000	1 .0156	3 .0469	21 .3281
2.0	2 .0313	1 .0156	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0781
2.5	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	3 .0469
3.0	1 .0156	2 .0313	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	1 .0156	6 .0938
3.5	2 .0313	3 .0469	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0938
4.0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	1 .0156
4.5 AND ABOVE	2 .0313	1 .0156	1 .0156	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0156	0 0.0000	0 0.0000	5 .0781
COLUMN TOTALS	22 .3438	14 .2188	8 .1250	4 .0625	4 .0625	1 .0156	3 .0469	3 .0469	1 .0156	4 .0625	

119

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF

NUMBER OF HOURS BELOW 32 F
(HOURS)

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	0	20	40	60	80	100	120	140	160	180 AND ABOVE	ROW TOTALS
0.0	3 .0411	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0548
0.5	4 .0548	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
1.0	18 .2466	4 .0548	0 0.0000	0 0.0000	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	23 .3151
1.5	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274	0 0.0000	0 0.0000	0 0.0000	3 .0411
2.0	5 .0685	1 .0137	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0137	9 .1233
2.5	3 .0411	1 .0137	2 .0274	0 0.0000	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	8 .1096
3.0	3 .0411	1 .0137	2 .0274	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	7 .0959
3.5	2 .0274	0 0.0000	0 0.0000	1 .0137	0 0.0000	1 .0137	0 0.0000	0 0.0000	0 0.0000	1 .0137	5 .0685
4.0	2 .0274	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0274
4.5 AND ABOVE	4 .0548	1 .0137	1 .0137	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0822
COLUMN TOTALS	45 .6164	9 .1233	8 .1096	3 .0411	1 .0137	3 .0411	2 .0274	0 0.0000	0 0.0000	2 .0274	

120

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF AVERAGE INTENSITY (INCHES PER HOUR X 100)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32 F (HOURS)										ROW TOTALS
	0	20	40	60	80	100	120	140	160	180 AND ABOVE	
0.0	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0167
0.5	1 .0167	1 .0167	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	4 .0667
1.0	11 .1833	1 .0167	4 .0667	1 .0167	1 .0167	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	19 .3167
1.5	3 .0500	1 .0167	0 0.0000	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0833
2.0	5 .0833	3 .0500	1 .0167	0 0.0000	1 .0167	0 0.0000	0 0.0000	1 .0167	0 0.0000	0 0.0000	11 .1833
2.5	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0333
3.0	2 .0333	2 .0333	0 0.0000	0 0.0000	1 .0167	0 0.0000	1 .0167	0 0.0000	0 0.0000	0 0.0000	6 .1000
3.5	1 .0167	1 .0167	0 0.0000	2 .0333	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0667
4.0	2 .0333	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0500
4.5 AND ABOVE	3 .0500	0 0.0000	1 .0167	1 .0167	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0833
COLUMN TOTALS	31 .5167	10 .1667	6 .1000	4 .0667	4 .0667	1 .0167	1 .0167	2 .0333	1 .0167	0 0.0000	