S105
E55
no. 688

Statistical Analysis of Climatological Data to Characterize Erosion Potential: 3. Freezing Events in Western Oregon

Special Report 688

September 1983

Agricultural Experiment Station
Oregon State University
Corvallis, Oregon

STATISTICAL ANALYSIS OF CLIMATOLOGICAL DATA TO CHARACTERIZE EROSION POTENTIAL:

3. FREEZING EVENTS IN WESTERN OREGON

Barbara G. Brown
Jonathan D. Istok
Richard W. Katz
Allan H. Murphy
Larry Boersma

AUTHORS: Barbara G. Brown, Richard W. Katz, and Allan H. Murphy are members of the Department of Atmospheric Sciences. Johathan D. Istok and Larry Boersma are members of the Department of Soil Science, Oregon State University, Corvallis.

ABSTRACT

The occurrence of frozen soil has a major effect on runoff and soil loss in western Oregon. Hence, information regarding the probabilities of occurrence of periods during which the soil may be frozen is necessary in order to adequately forecast long-term erosion rates for this region. In order to assign realistic probabilities to the occurrence of these periods, 31 years of hourly temperature data from three locations in western Oregon (Portland, Salem, and Eugene) are summarized in terms of freezing events. The values of several characteristics of freezing events which may be useful for predicting soil frost occurrence are examined.

The statistical analysis of the freezing event characteristics includes consideration of the marginal distributions and order and return statistics of the individual characteristics as well as joint and conditional distributions of several pairs of characteristics. The order and return statistics provide information about extreme values of individual characteristics, whereas the probabilities of occurrence of some combinations of characteristics are estimated by the joint distributions. Examination of the conditional distributions suggests the types of relationships that exist among the characteristics. The results of these analyses provide general information regarding the types of freezing events that occur 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

The development of a computer-accessible temperature data base was a prerequisite for the research described in this report. The difficult and painstaking task of developing the data base was carried out by Bruce A. Peterson. His contribution is gratefully acknowledged. The authors also would like to thank Dr. Moyle Harward, Professor Emeritus of Soil Science, Oregon State University, for his role in initiating this study.

This study was supported by funds provided by the STEEP (Solutions to Environmental and Economic Problems) program and by the Oregon Agricultural Experiment Station. STEEP is administered by the Science and Education Administration, Cooperative Research, United States Department of Agriculture.

CONTENTS

Section Number and Title		Page
	CONTENTS	i
	FIGURES	iii
	TABLES	v
1.	INTRODUCTION	1
2.	APPROACH	3
	2.1 Background	3
	2.2 Freezing Events	5
3.	TEMPERATURE DATA AND ANALYSIS METHODS	10
4.	MARGINAL DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS	12
	4.1 Hours below 32°F	15
	4.2 Sum below 32°F	17
	4.3 Average Temperature below 32°F	20
	4.4 Minimum Temperature	24
	4.5 Warm Period Characteristics	28
5.	JOINT DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS	36
	5.1 Average Temperature below 32°F and Hours below 32°F	37
	5.2 Average Temperature below 32°F and Sum below 32°F	39
	5.3 Average Temperature below 32°F and Minimum Temperature	41
	5.4 Sum below 32°F and Hours below 32°F	41
	5.5 Sum below 32°F and Minimum Temperature	44
	5.6 Hours below 32°F and Minimum Temperature	44
6.	CONDITIONAL DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS	48
	6.1 Sum below 32°F given Hours below 32°F	50
	6.2 Average Temperature below 32°F given Hours below 32°F	51
	6.3 Hours below 32°F given Minimum Temperature	51
	6.4 Sum below 32°F given Minimum Temperature	54
	6.5 Average Temperature below 32°F given Minimum Temperature	54
7.	FREEZING EVENT CHARACTERISTICS AND THE OCCURRENCE OF FROZEN SOIL	57

CONTENTS (continued)

Section Number and Title	Page
8. SUMMARY AND CONCLUDING REMARKS	62
REFERENCES	65
APPENDICES	67
Table of Contents	67
A. Data Base Description	69
B. Order Statistics	71
C. Return Statistics	97
D. Joint Distributions	111
E. Conditional Distributions	131

FIGURES

Number	Title	Page
1	Schematic example of the application of the freezing event definition to a series of hourly temperature data . .	6
2	Schematic example of the calculation of the freezing event characteristics defined in Table 1.	8
3	Box plots of number of hours below 32°F (Db) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	13
4	Order statistics of number of hours below 32°F (Db) at Portland, Salem, and Eugene	16
5	Return statistics of number of hours below 32°F (Db) at Portland, Salem, and Eugene	18
6	Box plots of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	19
7	Order statistics of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene	21
8	Return statistics of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene	22
9	Box plots of average temperature below 32°F (Tab) at Portland, Salem, and Eugene. The number at the top of each plot is the number of events	23
10	Order statistics of average temperature below 32°F (Tab) at Portland, Salem, and Eugene.	25
11	Return statistics of average temperature below 32°F (Tab) at Portland, Salem, and Eugene.	26
12	Box plots of minimum temperature (Tmb) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.	27
13	Order statistics of minimum temperature (Tmb) at Portland, Salem, and Eugene	29
14	Return statistics of minimum temperature (Tmb) at Portland, Salem, and Eugene	30

FIGURES (continued)

Number	Title	Page
15	Box plots of number of hours above 32°F (Da) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	31
16	Box plots of sum of degrees above 32°F (ΣTa) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	32
17	Box plots of average temperature above 32°F (Taa) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	33
18	Box plots of maximum temperature (Tma) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events	34
19	Quantile values of the conditional distributions of sum of degrees below 32°F (ΣTb) given the number of hours below 32°F (Db), at Salem	49
20	Quantile values of the conditional distributions of average temperature below 32°F (Tab) given the number of hours below 32°F (Db) at Salem.	52
21	Quantile values of the conditional distributions of number of hours below 32°F (Db) given the minimum temperature (Tmb) at Salem	53
22	Quantile values of the conditional distributions of sum degrees below 32°F (ΣTb) given the minimum temperature (Tmb) at Salem	55
23	Quantile values of the conditional distributions of average temperature below 32°F (Tab) given the minimum temperature (Tmb) at Salem.	56
24	Box plots of freezing event characteristics at Eugene for events classified as Soil Unfrozen (n=313) and Soil Frozen (n=38).	58

TABLES

Number	Title	Page
1	Definitions of freezing event characteristics for hourly temperature data	7
2	Joint frequency distribution of average temperature below 32°F (Tab) and number of hours below 32°F (Db) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).	38
3	Joint frequency distribution of average temperature below 32°F (Tab) and sum of degrees below 32°F (ΣTb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).	40
4	Joint frequency distribution of average temperature below 32°F (Tab) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188). . .	42
5	Joint frequency distribution of sum of degrees below 32°F (ΣTb) and number of hours below 32°F (Db) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188). . .	43
6	Joint frequency distribution of sum of degrees below 32°F (ΣTb) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188)	45
7	Joint frequency distribution of number of hours below 32°F (Db) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188)	46
8	Results of stepwise discriminant analysis for Soil Frozen and Soil Unfrozen freezing events at Eugene, using the freezing event characteristics shown in Figure 24	60

STATISTICAL ANALYSIS OF CLIMATOLOGICAL DATA TO CHARACTERIZE EROSION POTENTIAL:

3. FREEZING EVENTS IN WESTERN OREGON

Barbara G. Brown, Jonathan D. Istok, Richard W. Katz, Allan H. Murphy,

and Larry Boersma

1. INTRODUCTION

In most erosion studies, the principal climatic variables of interest are precipitation amount and intensity. In the northwestern United States, the occurrence of frozen soil has been shown to be an important additional factor in causing extensive runoff and erosion during the winter months (Zuzel et al., 1982; Harward et al., 1980). Frozen soil acts to increase runoff by decreasing the infiltration rate and, in some situations, by increasing the availability of sediment through frost action (Haupt, 1967). Hence, in attempting to predict runoff and erosion in the Pacific Northwest using weather or climate information, it is necessary to consider both precipitation and freezing conditions and to consider the combined effects of both factors.

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. Some characteristics of "precipitation events" at five locations in Oregon and Washington are described in two earlier reports in this series (Brown et al., 1983a,b). The purpose of this report is to summarize the

results of analyses of long-term air temperature records (in terms of "freezing events") for three stations in western Oregon (Portland, Salem, and Eugene). Similar analyses of freezing events for Pendleton, Oregon, and Walla Walla, Washington, and the characteristics of combined freezing and precipitation events will be described in future reports.

A freezing event is a summary of a series of air temperature measurements in terms of several "characteristics." As well as being a convenient way of summarizing a large set of temperature data, freezing event characteristics may be useful for predicting the occurrence of frozen soil. Some background information regarding the prediction of soil frost occurrence is presented in Section 2. Moreover, Section 2 contains a more thorough explanation of the definition of a freezing event and of the characteristics associated with a freezing event.

The data used in the study and the analysis approach are described in Section 3. The results of evaluations of individual freezing event characteristics are presented in Section 4; the joint and conditional distributions of pairs of freezing event characteristics are considered in Sections 5 and 6, respectively. Finally, some preliminary efforts to use the freezing event characteristics to predict the occurrence of frozen soil are discussed in Section 7 and a summary of the results is presented in Section 8.

Five appendices are included with the report. Appendix A contains a description of the temperature and freezing event data bases. Many of the results of the study are presented in tabular form in the remaining appendices.

2. APPROACH

Because frost occurrence in soil is not a commonly measured parameter, few long records of such occurrences are available. Hence, in order to consider this factor in predicting runoff or soil loss, it is necessary to utilize models of frost penetration and/or to develop simple models based on long-term climatological data that are summarized, for example, in terms of freezing events. This section consists of a brief discussion of models of the occurrence of frozen soil and the depth of frost penetration (Section 2.1) and of an explanation of what is meant by a freezing event (Section 2.2). Certain characteristics that are associated with freezing events also are defined in Section 2.2.

2.1 Background

The occurrence and depth of penetration of frost in a soil profile depend on the boundary temperatures and the thermal characteristics of the soil. With certain simplifying assumptions, heat flow through a soil may be described by Fourier's law of heat conduction (Kirkham and Powers, 1972). The initial applications of this theory to soil freezing were made independently by Stephan and Berggren in the early part of the twentieth century (Jumikis, 1977). Berggren's work was later modified by Aldrich (1956).

The solution of the modified Berggren model is an algebraic equation of the form:

$$X = f(F, K_u, K_f, T_u, T_f, C_u, C_f, L, t) \qquad (1)$$

where X is the depth of frost penetration, F is the cumulative freeze index

of soil surface temperature, K is the thermal conductivity, T is the average temperature, C is the heat capacity, t is the duration of cold temperatures, and L is the latent heat of fusion of the pore water. The subscripts u and f refer to properties of the unfrozen and frozen soil layers, respectively. The only energy input into (1) is F. However, because actual values of F are rarely available, air temperature normally is used as an index for the soil surface temperature (U.S. Corps of Engineers, 1956).

A major difficulty with using (1) to predict the occurrence of soil frost is that a large number of parameters must be estimated. In many situations, the only available information consists of precipitation and air temperature records from a regional weather station, a general description of the site, and a few soil properties. An additional difficulty with using (1) is that the terms K, C, and L depend on the water content of the soil. Thus, accurate predictions of depth of frost penetration using the modified Berggren model also require additional calculations to establish the water content distribution within the soil profile.

In spite of these drawbacks, this model has performed fairly well in many situations. This is because in regions that are characterized by prolonged freezing air temperatures, (1) often is dominated by the cumulative freeze index, F. In the Pacific Northwest, however, soils are not frozen for long periods of time. Instead, frequent short-duration freeze-thaw cycles occur and frost depth depends on the water content near the surface as controlled by the amount of precipitation prior to the beginning of freezing. This complication alone limits the accuracy of frost depth calculations in the Pacific Northwest that are based on conduction heat transfer solutions.

These limitations suggest that a more general representation of "wetness" and "freezing" conditions that is based on readily available climatological data and which allows consideration of combinations of the factors would be useful. One such approach is to use the characteristics of precipitation and freezing events to represent wetness and freezing conditions. For example, soil wetness conditions can be described by the antecedent rainfall characteristics considered in Brown et al. (1983a,b). Moreover, freezing conditions can be represented using several characteristics that are associated with freezing events. These characteristics summarize the information in an air temperature data series that is relevant for the prediction of soil frost. The definition of a freezing event and the characteristics associated with a freezing event are described in the following subsection.

2.2 Freezing Events

A convenient and meaningful definition of a freezing event is the following: A freezing event begins when the surface air temperature first falls below 32°F and 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 period and one warm period. A schematic example of the application of this definition to hourly temperature data is illustrated in Figure 1.

Several characteristics are associated with each freezing event. These include several characteristics that describe the cold portion of the event and several others describing the warm portion. The characteristics and their definitions are listed in Table 1. Moreover, Figure 2 contains an

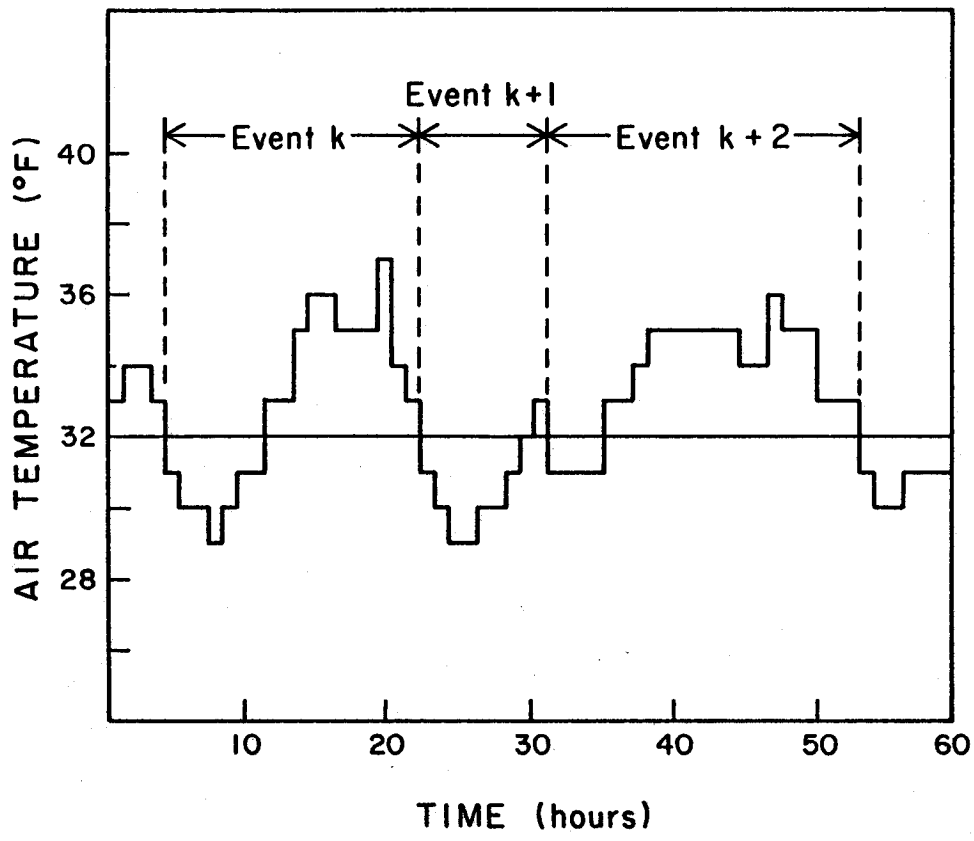

Figure 1. Schematic example of the application of the freezing event definition to a series of hourly temperature data.

Table 1. 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)	$\sum Tb$	$\sum Tb_k = \sum_{i=C_k}^{W_k-1} (32 - T_i)$
Average Temperature Below 32°F (°F)	Tab	$Tab_k = 32 - \sum Tb_k / Db_k$
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)	$\sum Ta$	$\sum Ta_k = \sum_{i=W_k}^{C_{k+1}-1} (T_i - 32)$
Average Temperature Above 32°F (°F)	Taa	$Taa_k = 32 + \sum Ta_k / Da_k$
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 ($T_{W_k} > 32°F$) in event k

C_k = index of first hour of event k

C_{k+1} = index of first hour of event k+1

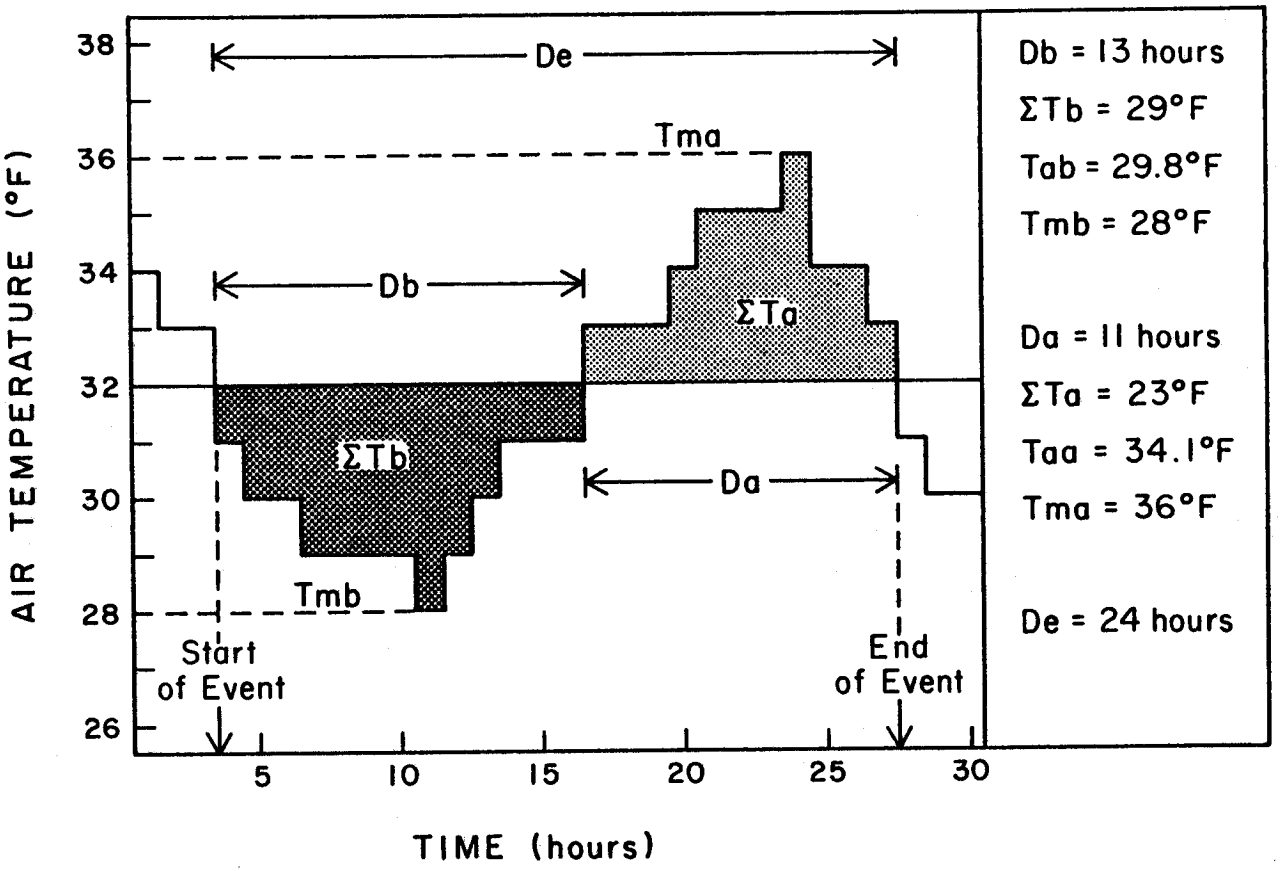

Figure 2. Schematic example of the calculation of the freezing event characteristics defined in Table 1.

example of the calculation of the values of the characteristics for a particular event.

The cold period characteristics include the following (defined assuming the temperature data are hourly): (a) Db, the duration of the cold period (i.e., the number of hours during which the temperature is below 32°F); (b) ΣTb, 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) Tab, the average temperature during the cold period; and (d) Tmb, the minimum temperature during the cold period. The warm period characteristics are complementary to the cold period characteristics and are as follows: (a) Da, the duration of the warm period (i.e., the number of hours during which the temperature is above 32°F); (b) ΣTa, 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) Taa, the average temperature during the warm period; and (d) Tma, the maximum temperature during the warm period. A ninth characteristic, De, is the total duration of the freezing event.

3. TEMPERATURE DATA AND ANALYSIS METHODS

Hourly temperature data for three National Weather Service (NWS) stations in Oregon (Portland, Salem, and Eugene) were used in this study. The length of the data record is 31 years at each station; namely, January 1, 1948 - December 31, 1978. The resolution of the temperature values is to the nearest whole degree Fahrenheit. These data were obtained from the National Climatic Center (NCC) in a standard NCC tape format. In the later years (starting in 1964), temperatures were recorded only once every three hours. Temperature values for the remaining hours were estimated by interpolating between the measured temperature values preceding and following the missing hours.

A freezing event data base was created for each of the three stations (Portland, Salem, and Eugene) using the freezing event definition described in Section 2.2. That is, for each station, each series of hours containing a complete freezing event (cold period and warm period) was grouped together. The hourly temperature data for each event were then summarized using the freezing event characteristics defined in Section 2.2 and in Table 1. Hence, the freezing event data base for each station consists of a set of freezing event characteristics for every freezing event in the 31-year record (753 events at Portland, 1188 at Salem, and 863 at Eugene). A more complete description of the freezing event data bases is presented in Appendix A.

Several types of analyses were applied to the freezing event data. First, the marginal frequency distribution of each characteristic at each station was examined. Also, the extreme events and return statistics for each characteristic were computed. Next, the frequency distributions of combinations of characteristics (joint distributions) were evaluated to

provide estimates of the probabilities of occurrence of some significant events (e.g., the probability of occurrence of a long cold period accompanied by an extremely low minimum temperature). Finally, the conditional distributions of some pairs of characteristics (e.g., Tab given Tmb) were examined in order to investigate the existence of relationships between the characteristics. The results of these analyses are described in Sections 4, 5, and 6.

4. MARGINAL DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS

The distributions of the individual freezing event characteristics are described in this section in terms of (a) marginal empirical frequency distributions; (b) order statistics, or extreme values; and (c) return statistics. Useful information may be obtained from the examination of each of these summaries. For example, the marginal distributions provide general descriptions of the distributional properties of the characteristics, while the order statistics allow estimation of the values of characteristics of the extreme events expected in a 31-year period.

The marginal distributions of the freezing event 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 each plot represents a particular quantile value of interest. An example showing three box plots (the distributions of Db at Portland, Salem, and Eugene, Oregon) is given in Figure 3. As illustrated in Figure 3, 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.

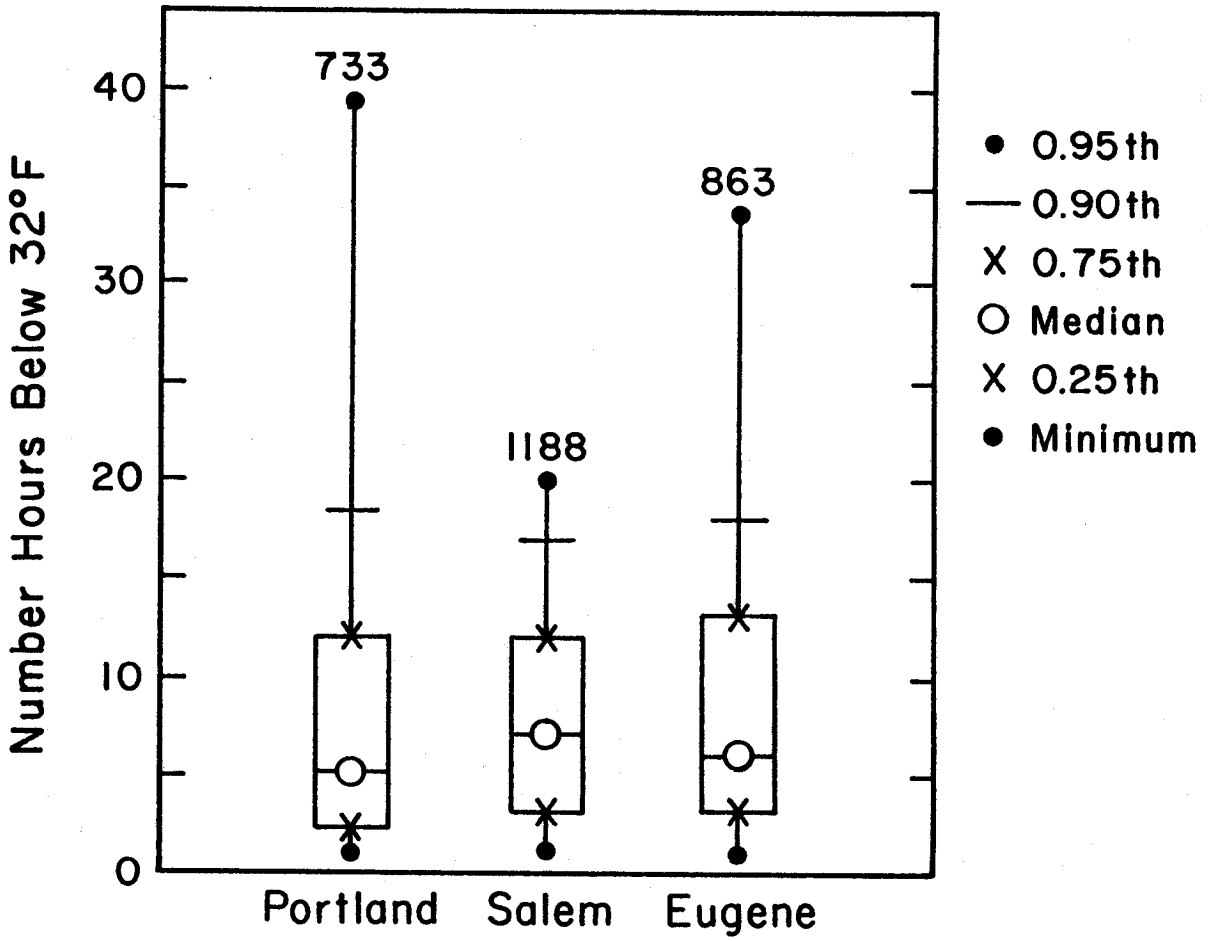

Figure 3. Box plots of number of hours below 32°F (Db) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

Another way of describing the distributions of freezing events characteristics is through the order statistics; that is, the values of the characteristic resequenced from largest to smallest (smallest to largest in the cases of Tab and Tmb). These statistics can be used to obtain estimates of the extreme values of freezing event characteristics that could be expected to occur in a 31-year period. The values of the characteristics of the coldest or longest lasting freezing events are often of the most interest in predicting the occurrence of soil frost.

The numbers and types of extreme events that can be expected to occur in a given year, as opposed to the 31-year extreme events estimated by the order statistics, also are of interest. These extreme events can be estimated using return statistics. The return statistics for a given freezing event characteristic are the values of that characteristic that could be expected to occur once, twice, or more often in a given year. Estimation of the return statistics for a particular freezing event characteristic is accomplished by ordering the events from largest to smallest according to the value of the characteristic (smallest to largest for Tab and Tmb) and then listing the characteristics of every 31st event.

The marginal distributions of eight of the freezing event characteristics at Portland, Salem, and Eugene, Oregon, are described in the following subsections. The distributions of event duration (De) are not presented here since they are not as informative as the distributions of the individual durations of the cold and warm periods (Db and Da), which are presented. The order statistics and return statistics of the four cold period characteristics also are considered in Sections 4.1-4.4. Because of the large number of tables required for the presentation of the order statistics and return statistics, these tables are located in Appendices B and C,

respectively. The tables of order statistics in Appendix B include all the freezing event characteristics associated with each of the first 100 order statistics, for each characteristic of interest at each station. Similarly, the tables of return statistics in Appendix C consist of all the freezing event characteristics associated with each of the return statistics, for each characteristic of interest at each station.

4.1 Hours below 32°F

The marginal distributions of the freezing event characteristic number of hours below 32°F (Db) at Portland, Salem, and Eugene are shown in Figure 3. With the exception of the 0.95th quantiles, the box plots for the three stations are quite similar to one another. The shapes of the box plots indicate that the distributions are positively skewed, with heavy upper tails. That is, there were a few cold periods at each station that lasted many hours, whereas the majority of the cold periods were of fairly short duration. The boxes enclose the region from 2 or 3 hours to 12 or 13 hours. Hence, at least 25 percent of the cold periods lasted 3 hours or less and about 50 percent lasted between 2 and 13 hours. That is, most freezing periods in western Oregon are of short duration. Only 25 percent lasted longer than 12 or 13 hours. The 0.95th quantile values of Db for Portland and Eugene are fairly large (39 and 34 hours, respectively) and are larger than the 0.95th quantile value for Salem. Evidently the proportion of freezing events with long cold periods is smaller at Salem than at the other two stations.

The order statistics of Db are shown graphically in Figure 4. The values displayed in this figure are the durations of the 100 longest-lasting cold periods at each station. The curves for the three stations in

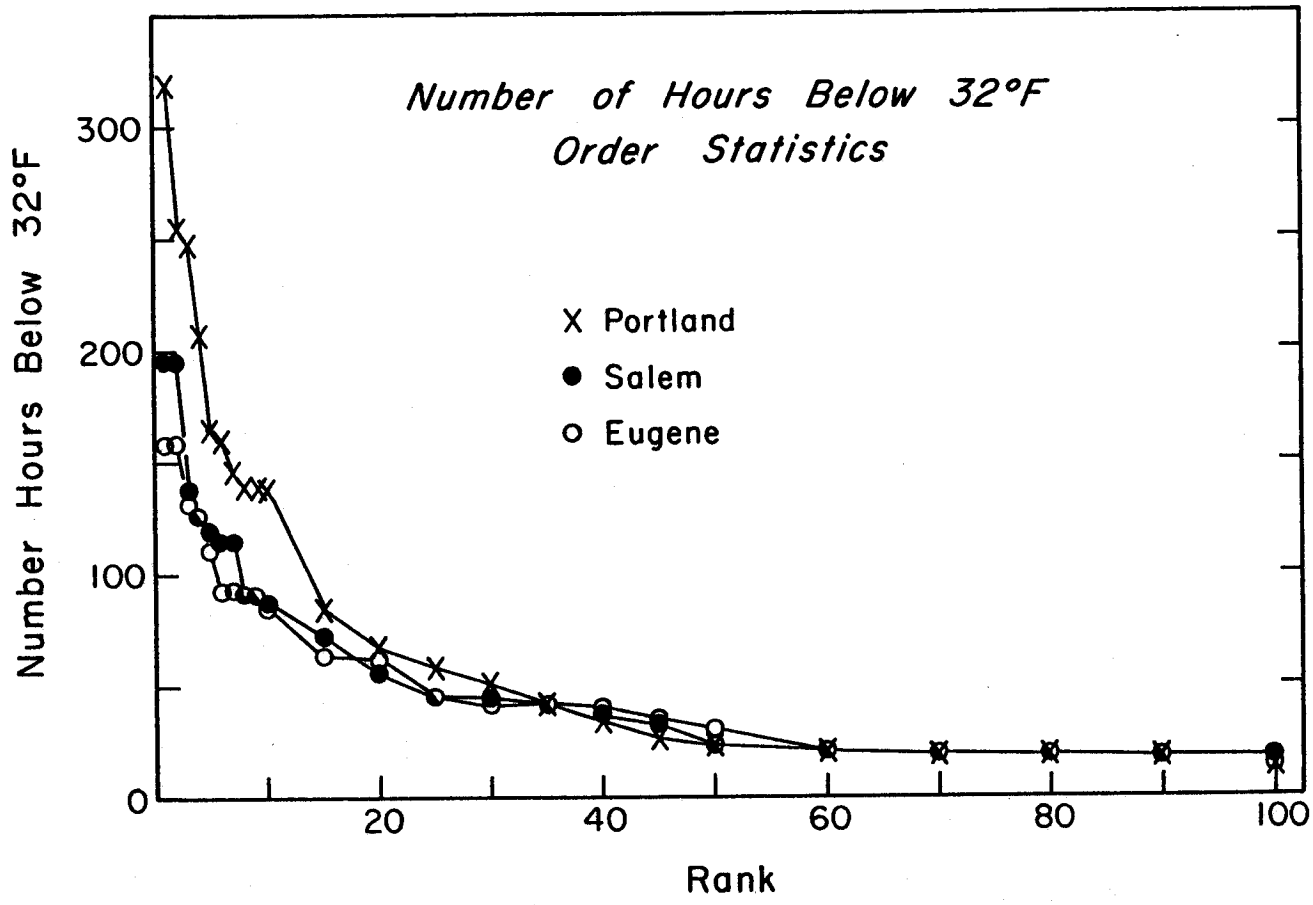

Figure 4. Order statistics of number of hours below 32°F (Db) at Portland, Salem, and Eugene.

Figure 4 are quite similar to one another. The first order statistic at each station is quite large and is followed by a rapid decrease in value for the next few order statistics. The curves level off and the decline is more gradual after about the 20th statistic. A complete listing of the first 100 Db order statistics is presented in Appendix B.

Figure 5 presents the Db return statistics for Portland, Salem, and Eugene. Because the data record is for 31 years, these statistics are the 31st, 62nd, 93rd, etc., largest Db values at the three stations. The first statistic is the duration of a cold period expected to occur once a year; the second is the duration of a cold period expected to occur twice a year, and so on. The curves for the three stations are quite similar for the first few return statistics. However, because more freezing events occurred at Salem than at Portland or Eugene, the Salem curve extends further than the other two curves. Moreover, the Salem curve is above the Portland and Eugene curves for later return statistics. As was suggested by the box plots, there are a few large values of Db, but most of the Db return statistics are fairly small. All the values beyond the tenth return statistic are less than 10 hours, whereas the first statistics range up to nearly 50 hours. A complete listing of the Db return statistics is presented in Appendix C.

4.2 Sum below 32°F

The variable sum below 32°F (ΣTb) can be used as a freeze index in models of frost penetration in soils and thus is of particular interest in this study. The box plots representing the distributions of ΣTb at Portland, Salem, and Eugene are displayed in Figure 6. As was the case for the

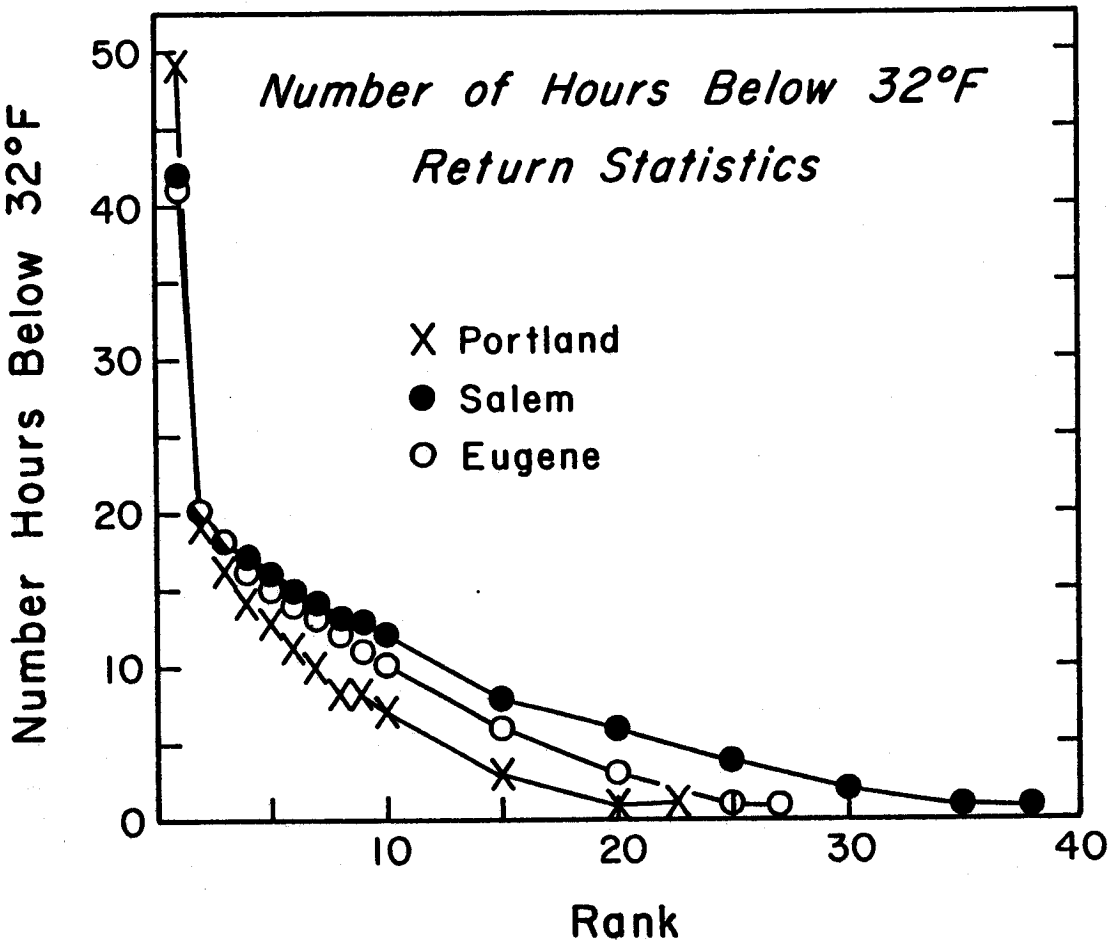

Figure 5. Return statistics of number of hours below 32°F (Db) at Portland, Salem, and Eugene.

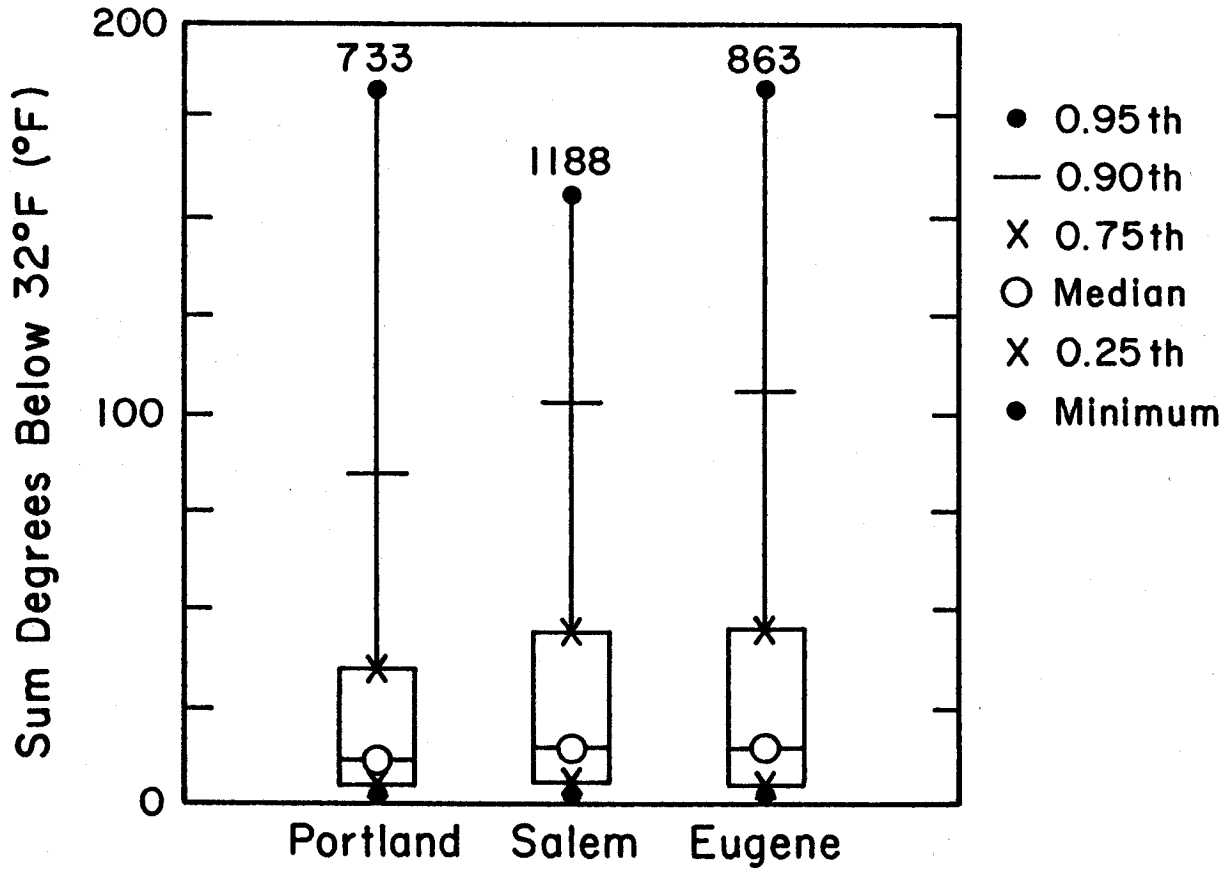

Figure 6. Box plots of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

distributions of Db, these distributions are positively skewed, with relatively few large ΣTb values and relatively many small values. The plots for the three stations are very similar, with only minor differences between them.

The order and return statistics of ΣTb at the three stations are shown graphically in Figures 7 and 8, respectively. The curves displayed in these figures exhibit the same basic behavior as the curves for the Db order and return statistics (Figures 4 and 5). That is, 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.

A complete list of the order statistics of ΣTb is presented in Appendix B and the return statistics are listed in Appendix C. Additional information regarding the values of ΣTb ranked according to the values of other cold period freezing event characteristics may be obtained directly from the order statistics for those characteristics which are also presented in Appendix B. Furthermore, the joint frequencies of occurrence of various combinations of values of ΣTb and other freezing event characteristics are presented and discussed in Section 5.

4.3 Average Temperature below 32°F

Since the average temperature below 32°F (Tab), the average temperature during the cold period, is a function of the ratio of ΣTb and Db, it is a summary characteristic which describes the average intensity of the cold period. Figure 9 contains the box plots depicting the marginal distributions of Tab for Portland, Salem, and Eugene. In contrast to the shapes of the distributions of Db and ΣTb, these distributions are negatively

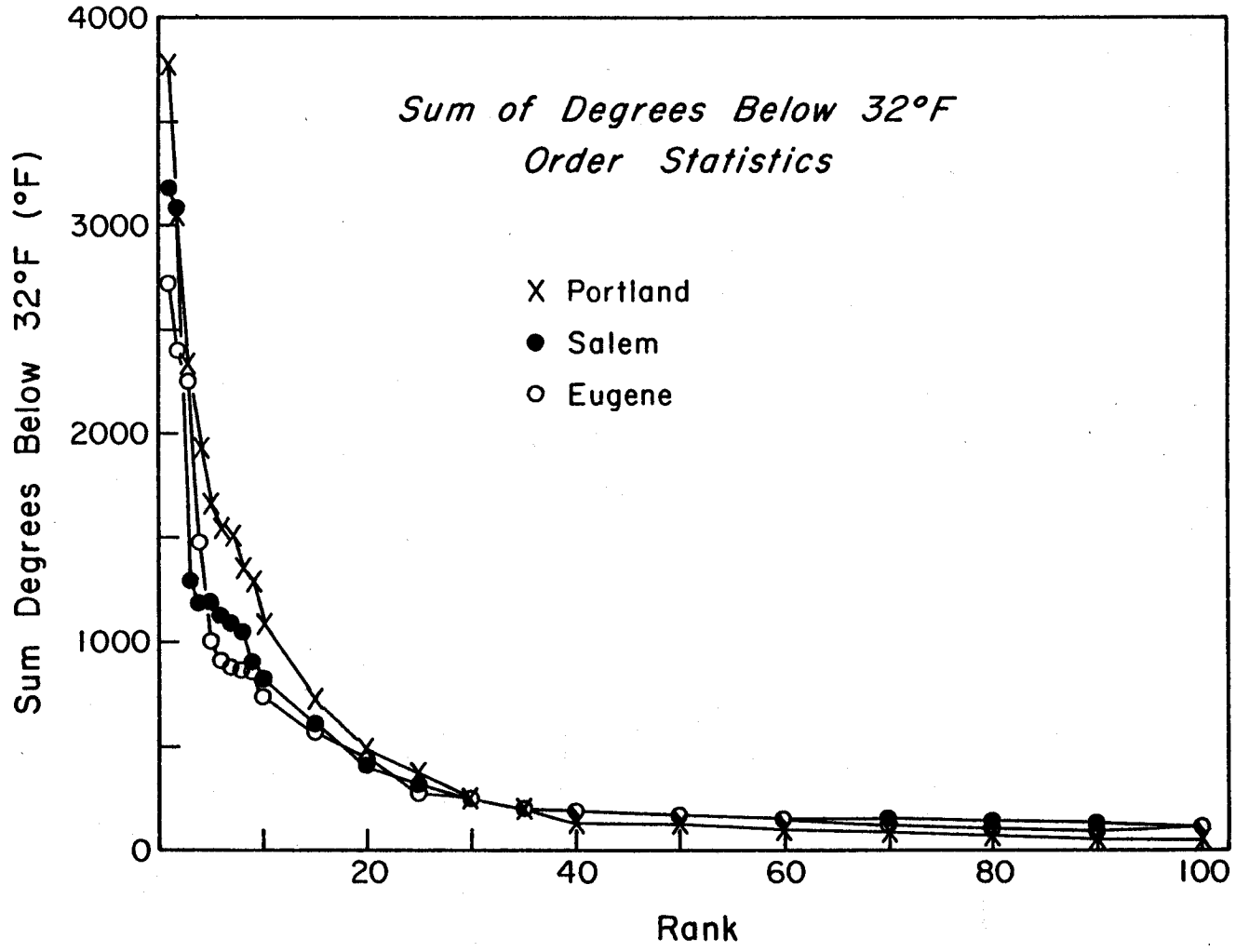

Figure 7. Order statistics of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene.

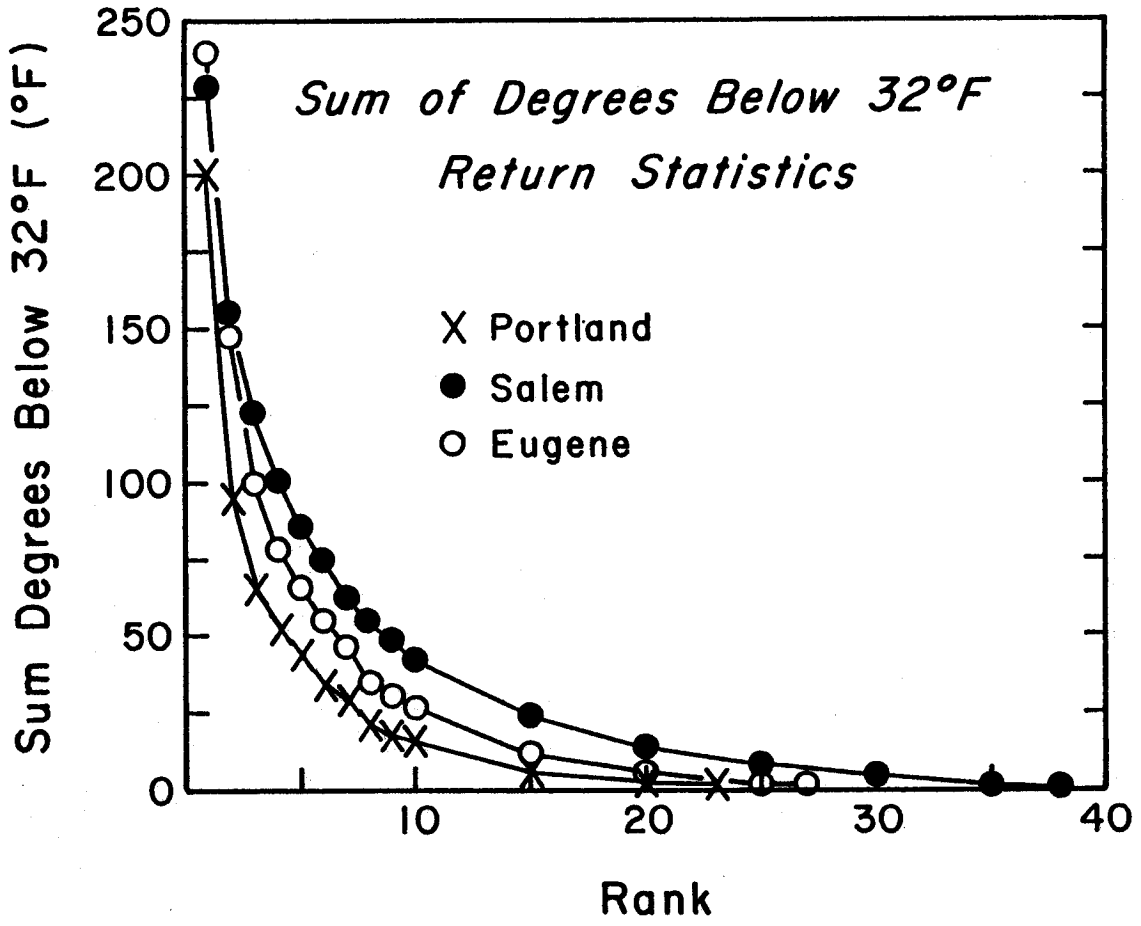

Figure 8. Return statistics of sum of degrees below 32°F (ΣTb) at Portland, Salem, and Eugene.

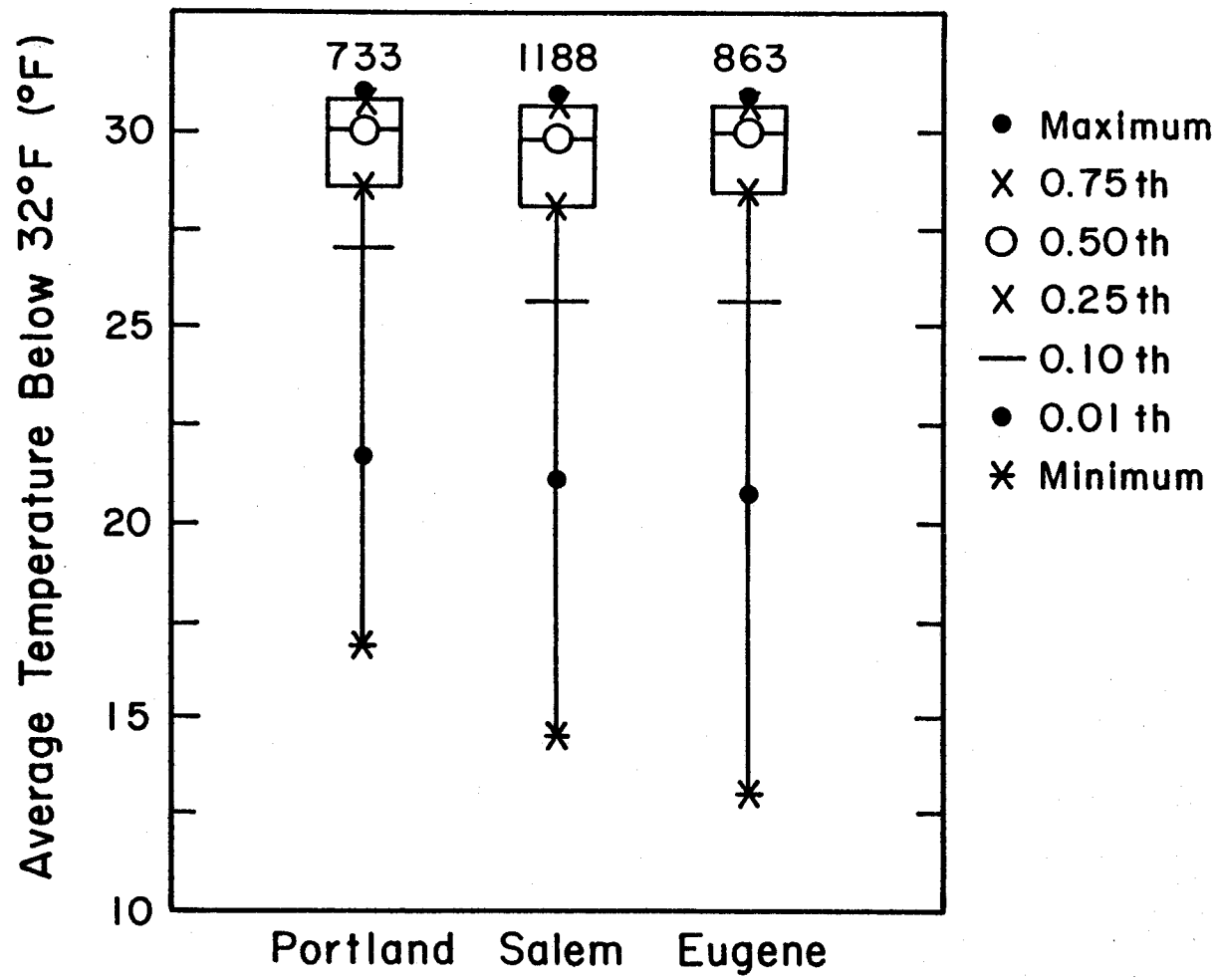

Figure 9. Box plots of average temperature below 32°F (Tab) at Portland, Salem, and Eugene. The number at the top of each plot is the number of events.

skewed. That is, most of the cold periods had fairly high average temperatures, whereas relatively few were characterized by very low average temperatures. In fact, the median value of Tab for all three stations is about 30°F. The only noticeable difference among the three box plots is that the minimum value at Eugene is lower than the minimum value at Salem, which also is lower than the Portland minimum. In other respects, the three box plots are quite similar to one another.

Figures 10 and 11 present the order and return statistics of Tab for the three stations. The shapes of these curves are complementary to the shapes of the curves for Db and ΣTb. That is, the curves in Figures 10 and 11 rapidly increase through the first few statistics, starting with fairly low values for the first statistics. The curves level off and there is a gradual increase in the values for the later statistics. The shapes of these curves reflect the shapes of the box plots in Figure 9. Tables containing complete lists of the Tab order and return statistics at the three stations are presented in Appendices B and C.

4.4 Minimum Temperature

Whereas Tab is an index of the "average" coldness of the cold period, the minimum temperature (Tmb) is an index of the maximum coldness. Hence, Tmb can be used as a measure of how extreme a freezing event is in comparison with other freezing events. Box plots depicting the distributions of Tmb at Portland, Salem, and Eugene are shown in Figure 12. As was the case with Tab, the distributions of Tmb are negatively skewed. Less than one percent of the freezing events had minimum temperatures that were less than 10°F, whereas more than 75 percent of the minimum temperature values were

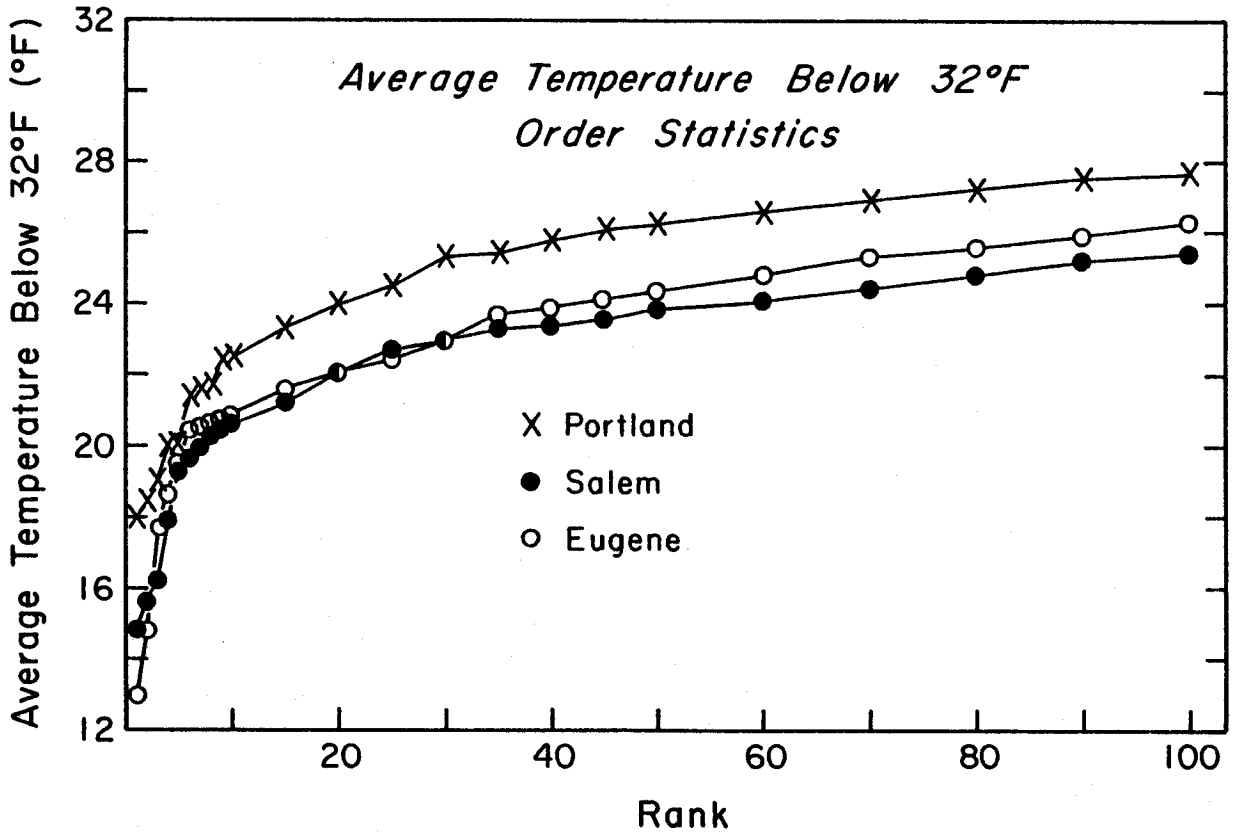

Figure 10. Order statistics of average temperature below 32°F (Tab) at Portland, Salem and Eugene.

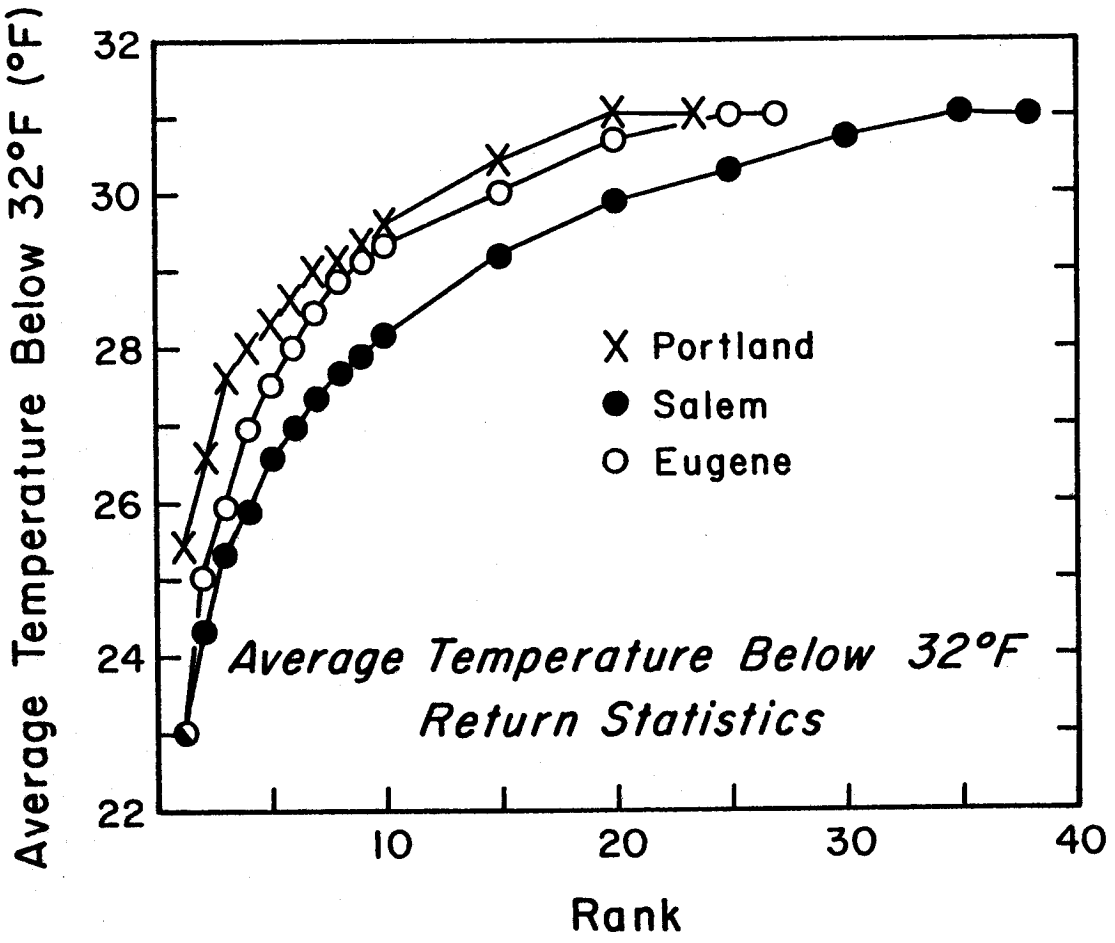

Figure 11. Return statistics of average temperature below 32°F (Tab) at Portland, Salem and Eugene.

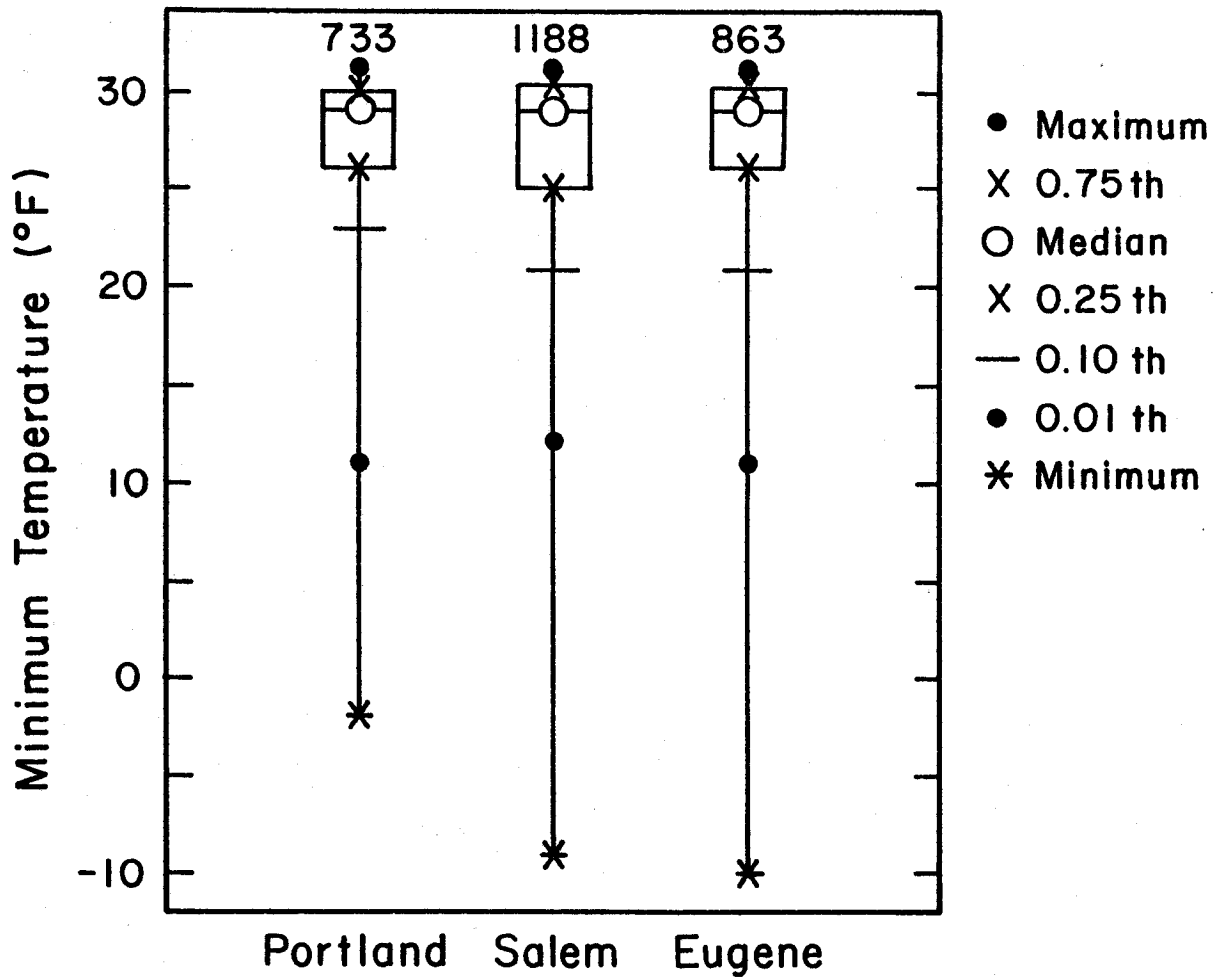

Figure 12. Box plots of minimum temperature (Tmb) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

between 25 and 31°F. The curves of minimum temperature order and return statistics are given in Figures 13 and 14, respectively. The shapes of these curves are similar to the curves of Tab order and return statistics. The Tmb order statistics are listed in Appendix B and the return statistics are presented in Appendix C.

4.5 Warm Period Characteristics

Characteristics describing the warm period following a freezing period were calculated in order to maintain a complete set of information about the temperature record as well as to characterize the temperature conditions occurring between freezing periods. Box plots of the warm period characteristics for Portland, Salem, and Eugene are shown in Figures 15-18. Because freezing periods are often of short duration and do not occur very frequently in western Oregon, many of the warm periods are very long. These long warm periods are not of particular interest since after a certain number of warm hours the soil "recovers" from the preceding freezing temperatures. For this reason the largest values shown in Figures 15-18 are the 0.90th quantiles.

The distributions of the two characteristics number of hours above 32°F (Da) and sum of degrees above 32°F (ΣTa) are positively skewed, whereas the distributions of average temperature above 32°F (Taa) and maximum temperature (Tma) appear to be fairly symmetric. In general, the distributions of Da and ΣTa at the three sites are quite similar to one another. There are, however, some minor differences among the distributions of Taa and Tma at the three sites. In particular, the quartile values of Taa and Tma for Portland are lower than the corresponding values for Salem and Eugene.

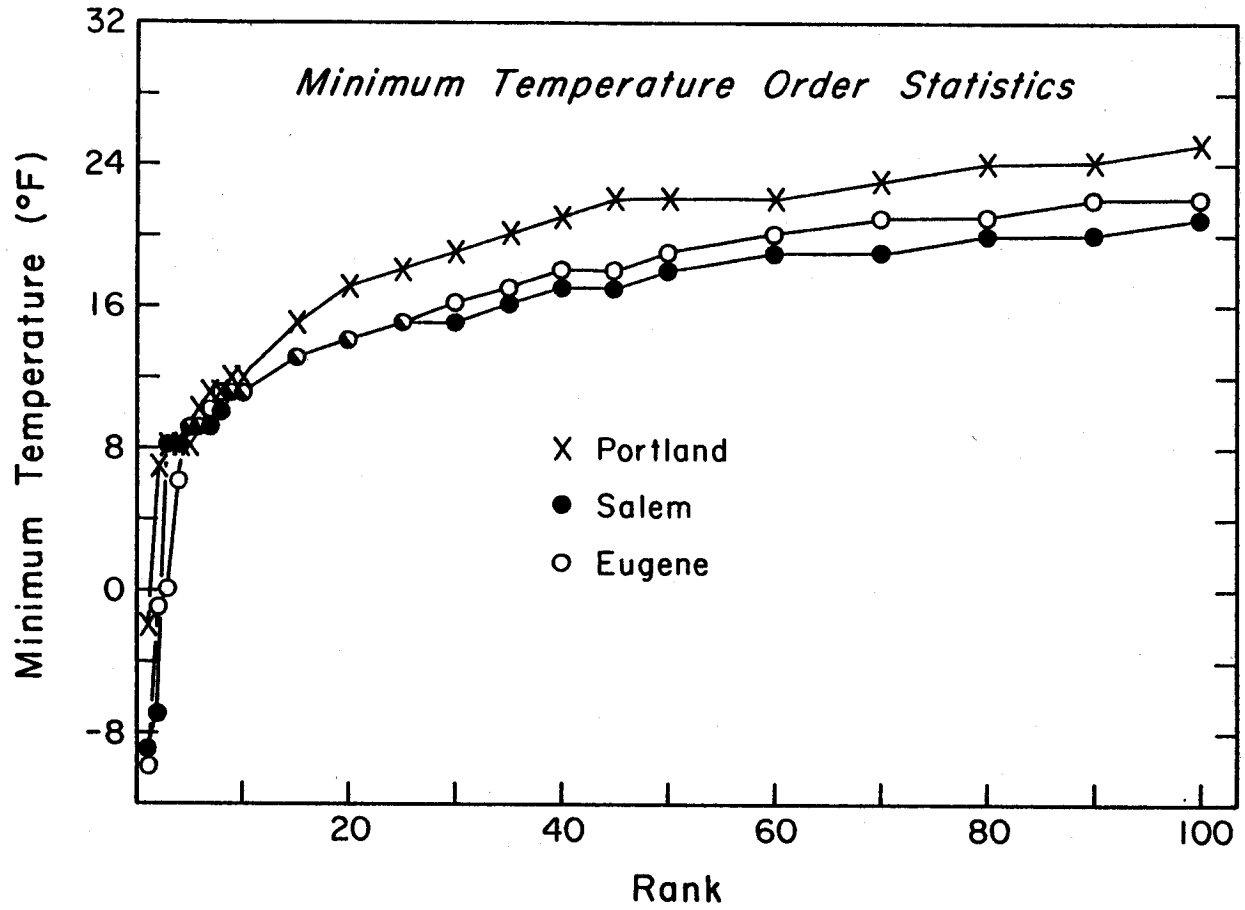

Figure 13. Order statistics of minimum temperature (Tmb) at Portland, Salem, and Eugene.

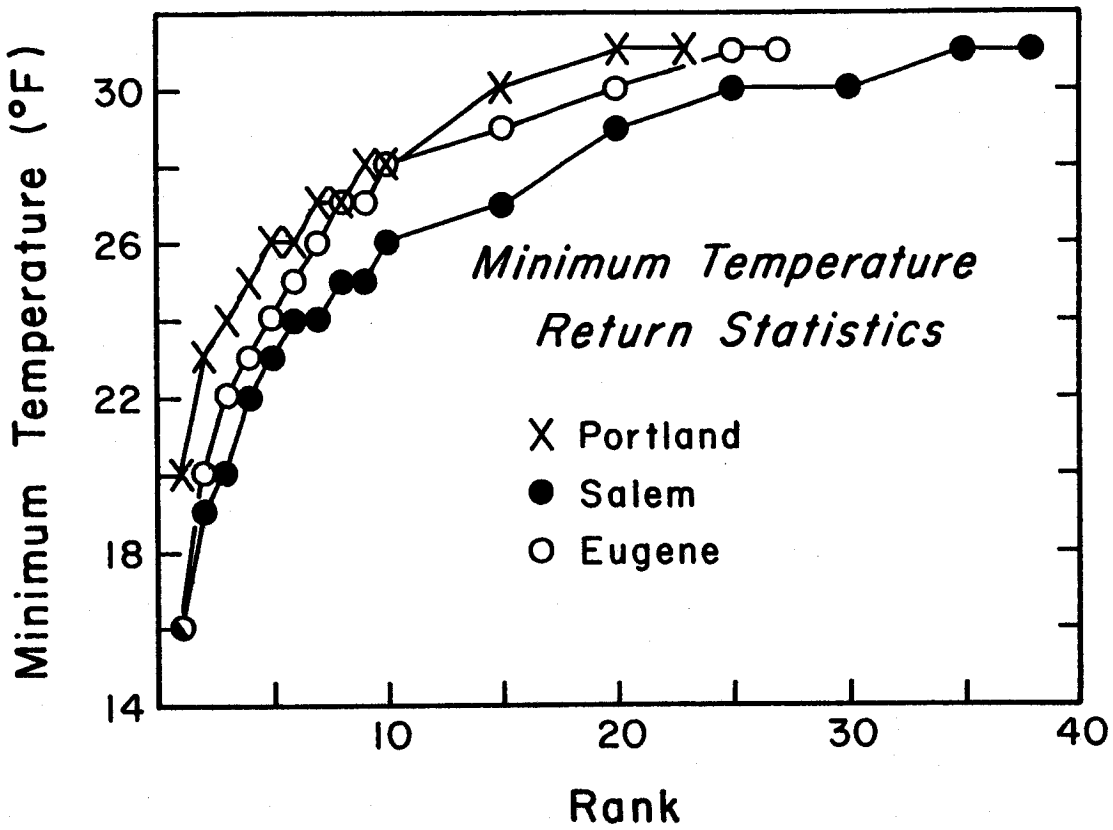

Figure 14. Return statistics of minimum temperature (Tmb) at Portland, Salem, and Eugene.

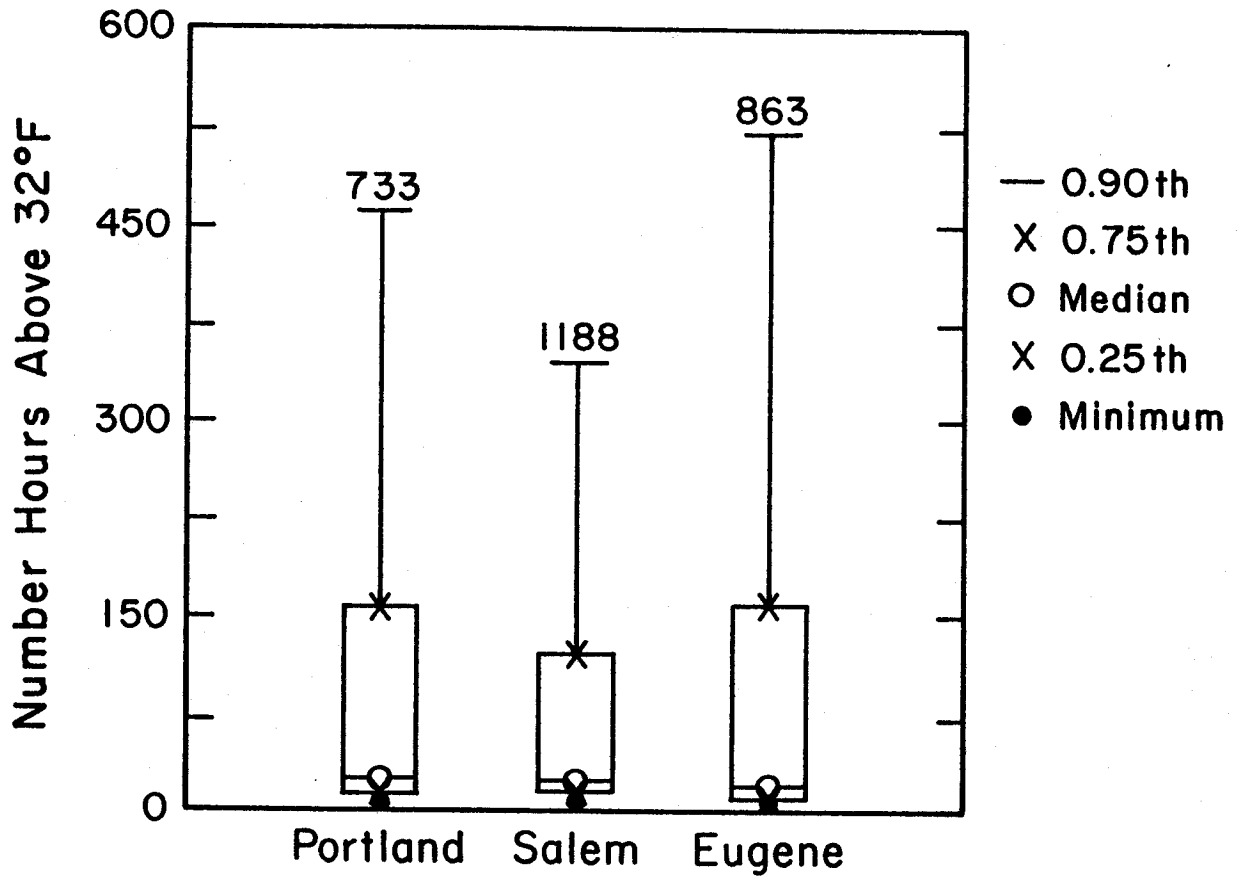

Figure 15. Box plots of number of hours above 32°F (Da) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

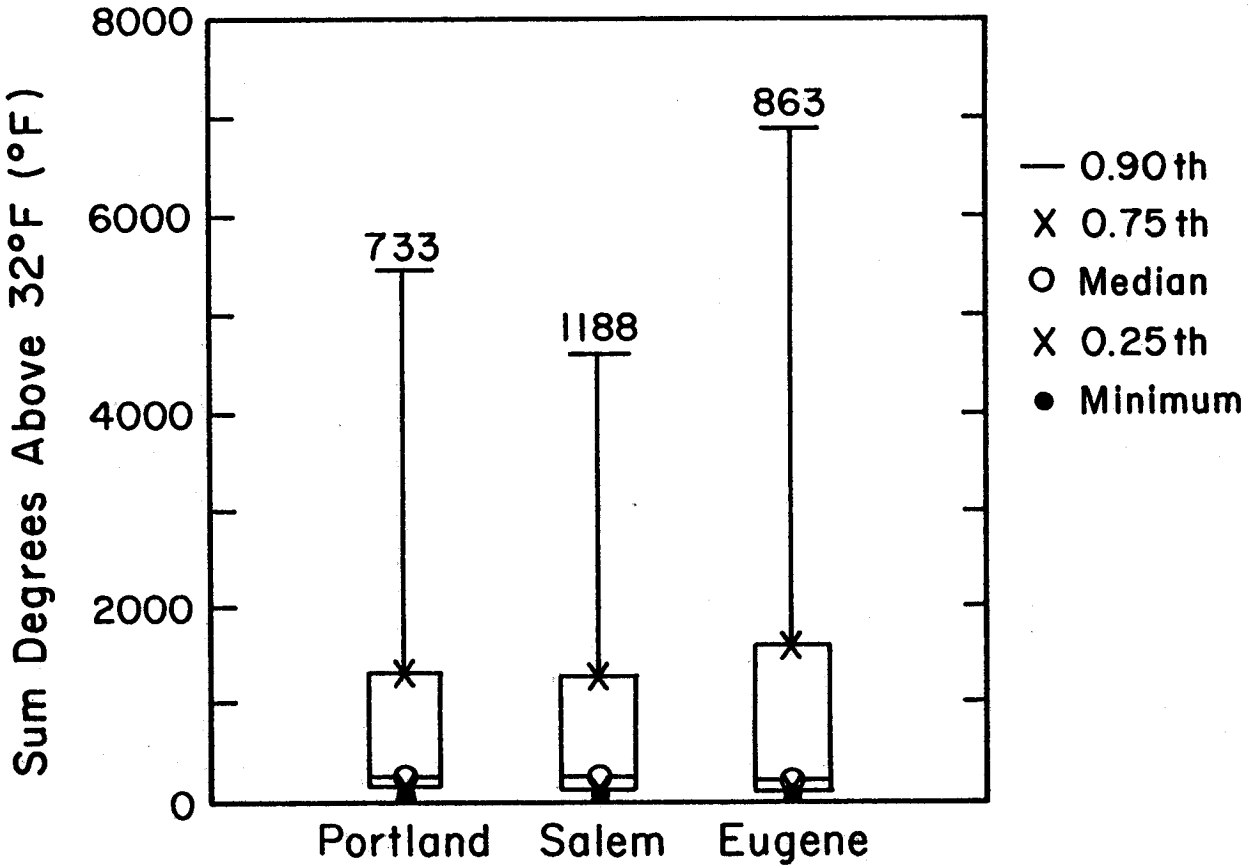

Figure 16. Box plots of sum of degrees above 32°F (ΣTa) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

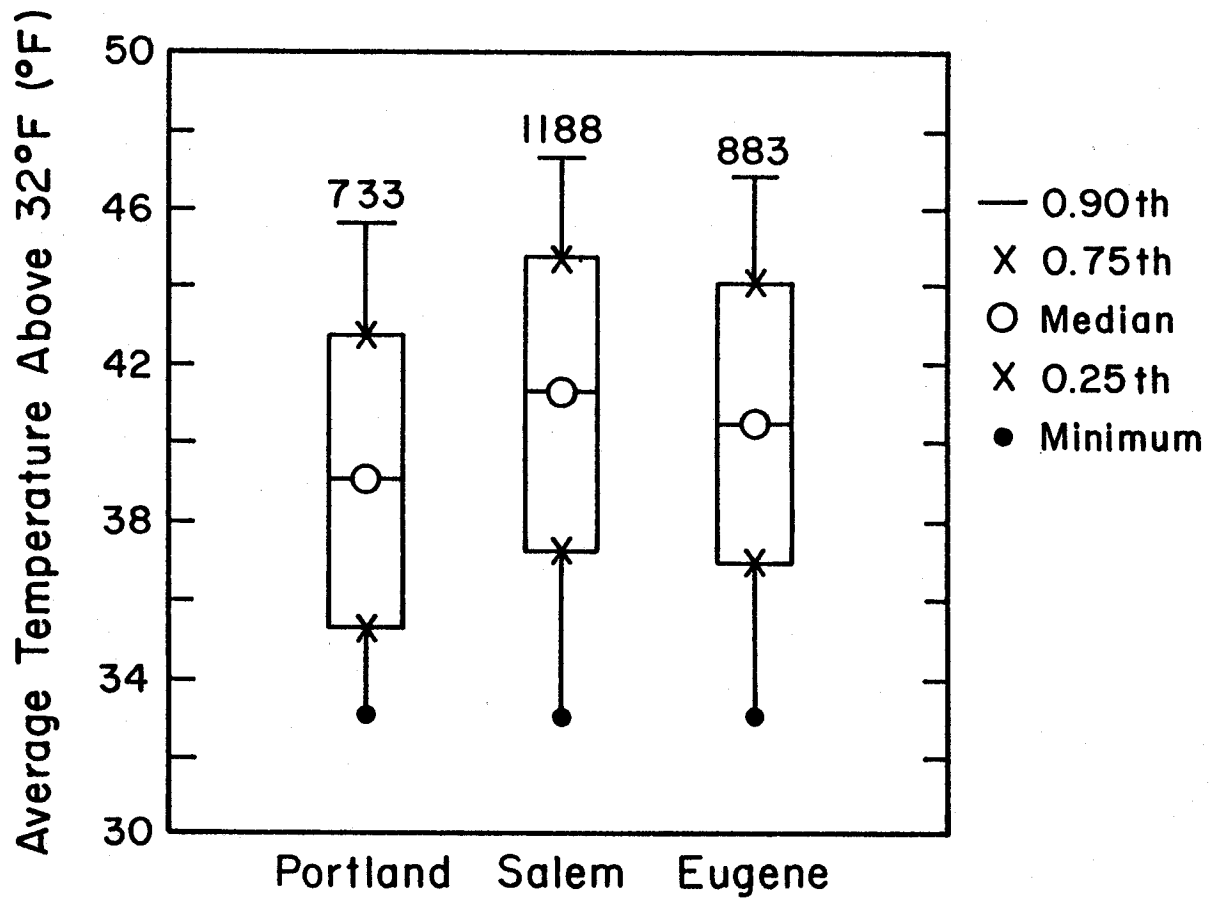

Figure 17. Box plots of average temperature above 32°F (Taa) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

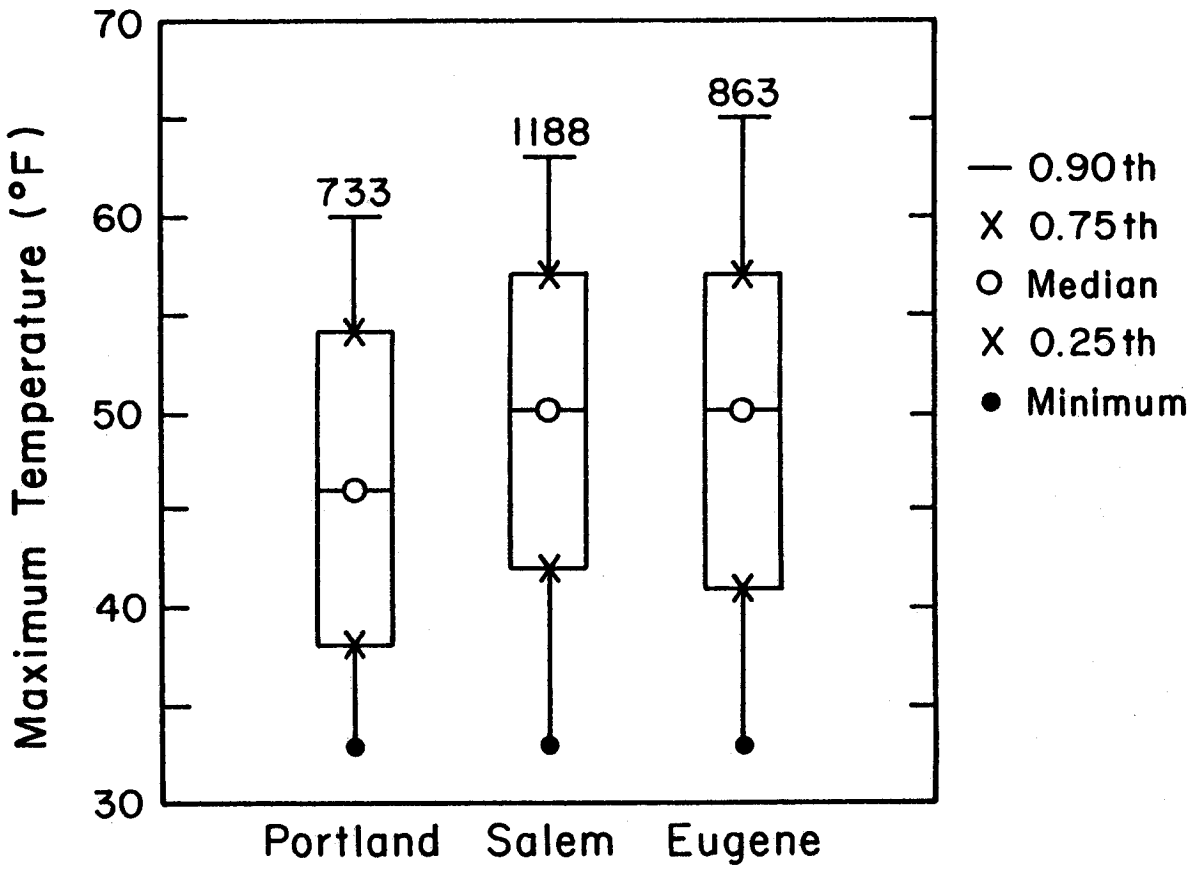

Figure 18. Box plots of maximum temperature (Tma) at Portland, Salem, and Eugene. The number at the top of each box plot is the number of events.

Since the warm period characteristics are of most interest when considered in conjunction with the cold period characteristics, tables of order and return statistics were not calculated for these characteristics. However, the values of the warm period characteristics are presented in the tables of order and return statistics for the cold period characteristics. The values of the warm period characteristics in these tables can provide useful information regarding, for example, the amount of time a soil is allowed to "thaw" following a period of severe freezing.

5. JOINT DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS

The joint frequency distributions of pairs of freezing event characteristics can be used to obtain estimates of the probabilities of occurrence of events that have particular combinations of values of the two characteristics. For example, it may be of interest to know how frequently long freezing periods are accompanied by very low temperatures. The probability of occurrence of this type of event could be estimated from a table of the joint frequency distribution of Db and Tmb.

Joint frequency distributions are formulated by first dividing the range of values of the characteristics of interest into several categories (in this case, the ranges of the freezing event characteristics were divided into ten categories). Then a matrix can be formed whose columns represent the categories of one characteristic, Y say, and whose rows represent the categories of the other characteristic, X say. 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 events. 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 freezing event characteristics are discussed in the following subsections. Because of the large number of tables required to present all 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 D.

5.1 Average Temperature below 32°F and Hours below 32°F

The joint frequency distribution of Tab and Db is presented in Table 2. Two numerical values are contained in each entry in this table. These are the joint frequency (f_{ij}) and the joint relative frequency of occurrence of each pair of categories. For example, the entries in the second row and seventh column of Table 2 are 57 and 0.0480. This means that 57 of the 1188 Salem freezing events had a freezing period that lasted between 10 and 20 hours and had an average temperature during the freezing period that was between 24 and 26°F. The joint relative frequency of this pair of categories is 0.0480 (= 57/1188). 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, 348 and 0.2929, are the total number and overall relative frequency of occurrence of freezing events that had a value of Db that was between 10 and 20 hours. Similarly, the "COLUMN TOTALS" are the marginal column frequencies.

The highest frequencies in Table 2 are in the upper right corner. That is, most of the freezing events at Salem had low values of Db and high values (near 31°F) of Tab. In fact, more than 45 percent of the freezing periods lasted less than 10 hours and had average temperatures of at least 30°F. The less common pairs of categories, representing more intense and/or longer-lasting freezing periods, are of more interest for predicting soil frost.

Table 2. Joint frequency distribution of average temperature below 32°F (Tab) and number of hours below 32°F (Db) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F)										
	12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	30 .0253	211 .1776	536 .4512	778 .6549
10	0 0.0000	0 0.0000	0 0.0000	1 .0008	8 .0067	22 .0185	57 .0480	123 .1035	110 .0926	27 .0227	348 .2929
20	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	2 .0017	7 .0059	0 0.0000	5 .0042	1 .0008	16 .0135
30	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	2 .0017	4 .0034	2 .0017	10 .0084
40	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	4 .0034	4 .0034	3 .0025	3 .0025	0 0.0000	15 .0126
50	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	2 .0017
60	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	1 .0008	0 0.0000	1 .0008	0 0.0000	4 .0034
70	0 0.0000	0 0.0000	1 .0008	0 0.0000	2 .0017	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	4 .0034
80	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	0 0.0000	2 .0017
90 AND ABOVE	0 0.0000	1 .0008	1 .0008	1 .0008	2 .0017	2 .0017	2 .0017	0 0.0000	0 0.0000	0 0.0000	9 .0076
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

By setting threshold values of both categories it is possible to estimate the probabilities of occurrence of particular types of freezing events. 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 freezing events in which the freezing period lasts at least 40 hours and the average temperature during the freezing period is less than 24°F. The estimate of this probability, from Table 2, is 0.0160 [=(1+4+1+2+1+2+1+1+1+1+2+2)/1188]. Note that the same answer could have been obtained (except for round-off error) by simply summing the appropriate relative frequencies. The probabilities of occurrence of other combinations of categories of Db and Tab can be estimated in a similar manner. Moreover, similar calculations can be made from the tables of the joint frequency distributions of Db and Tab for Portland and Eugene which are presented in Appendix D.

5.2 Average Temperature below 32°F and Sum below 32°F

Table 3 contains the joint frequency distribution of Tab and ΣTb at Salem. As was the case with the joint frequency distribution of Tab and Db, the largest joint frequencies are in the upper right corner of Table 3. That is, most of the freezing events had small values of ΣTb and large values of Tab. This characteristic of the joint distribution is a result of the skewed nature of the marginal distributions of Tab and Db.

The probabilities of occurrence of particular combinations of Tab and ΣTb values can be estimated from the frequencies in Table 3, as they were for Tab and Db using the frequencies in Table 2. For example, at Salem, the estimated probability of occurrence of a freezing period in which ΣTb

Table 3. Joint frequency distribution of average temperature below 32°F (Tab) and sum of degrees below 32°F (ΣTb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	20 .0168	150 .1263	328 .2761	566 .4764	1064 .8956
100	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051	24 .0202	44 .0370	6 .0051	7 .0059	0 0.0000	87 .0732
200	0 0.0000	0 0.0000	0 0.0000	1 .0008	3 .0025	0 0.0000	5 .0042	3 .0025	0 0.0000	0 0.0000	12 .0101
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	1 .0008	1 .0008	0 0.0000	0 0.0000	4 .0034
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0034	1 .0008	0 0.0000	0 0.0000	0 0.0000	5 .0042
500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008
600	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	2 .0017
700	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	2 .0017
800	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
900 AND ABOVE	0 0.0000	1 .0008	2 .0017	1 .0008	3 .0025	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	9 .0076
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

is at least 300°F and the average temperature is at most 26°F is 0.0202 [= (2+1+...+3+2)/1188]. Similar probabilities can be estimated from the tables of the joint distributions of Tab and ΣTb for Portland and Eugene which are presented in Appendix D.

5.3 Average Temperature below 32°F and Minimum Temperature

The joint frequency distribution of Tab and Tmb at Salem is presented in Table 4. The pattern of frequencies in this table is such that the highest frequencies are in the lower right corner whereas the frequencies in the upper left corner are extremely small. This pattern is due to the negatively skewed shapes of the marginal distributions of the two characteristics. Moreover, all of the nonzero frequencies in Table 4 are in a region along the diagonal from the upper left corner to the lower right corner of the table. This suggests that the two characteristics Tab and Tmb are strongly related; that is, freezing periods with low average temperatures also always have low minimum temperatures, and vice versa. This relationship is discussed further in Section 6.5. The patterns of frequencies for the joint distributions of Tab and Tmb at Portland and Eugene are similar to the pattern at Salem. Appendix D contains tables of these frequencies.

5.4 Sum below 32°F and Hours below 32°F

Table 5 contains the joint frequency distribution of ΣTb and Db at Salem. Because of the positively skewed nature of both ΣTb and Db, the highest joint frequencies are in the upper left corner of Table 5. In fact, more than 65 percent of the freezing events at Salem had freezing periods that lasted less than 10 hours and during which the total number of

Table 4. Joint frequency distribution of average temperature below 32°F (Tab) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F)										
	12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
3	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
6	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
9	0 0.0000	1 .0008	1 .0008	1 .0008	1 .0008	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051
12	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051	5 .0042	2 .0017	0 0.0000	0 0.0000	0 0.0000	13 .0109
15	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0042	9 .0076	9 .0076	1 .0008	0 0.0000	0 0.0000	24 .0202
18	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	17 .0143	26 .0219	8 .0067	0 0.0000	0 0.0000	51 .0429
21	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	35 .0295	41 .0345	2 .0017	0 0.0000	80 .0673
24	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	110 .0926	89 .0749	0 0.0000	200 .1684
27	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	244 .2054	119 .1002	363 .3056
30 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	447 .3763	447 .3763
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

Table 5. Joint frequency distribution of sum of degrees below 32°F (ΣTb) and number of hours below 32°F (Db) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)										
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	778 .6549	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	778 .6549
10	276 .2323	69 .0581	3 .0025	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	348 .2929
20	6 .0051	8 .0067	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	16 .0135
30	4 .0034	4 .0034	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	10 .0084
40	0 0.0000	4 .0034	5 .0042	2 .0017	3 .0025	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	15 .0126
50	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
60	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	4 .0034
70	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	2 .0017	4 .0034
80	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	2 .0017
90 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	7 .0059	9 .0076
COLUMN TOTALS	1064 .8956	87 .0732	12 .0101	4 .0034	5 .0042	1 .0008	2 .0017	2 .0017	2 .0017	9 .0076	

degrees below freezing was less than 100°F. The probabilities of occurrence of freezing events with particular combinations of values of ΣTb and Db can be estimated from the frequencies in Table 5 in the same manner as they were estimated for other pairs of characteristics. For example, the probability of occurrence of a freezing event at Salem for which Db is at least 60 hours and ΣTb is 600°F or more is 0.0118. Tables of the joint frequency distributions of ΣTb and Db at Portland and Eugene are presented in Appendix D.

5.5 Sum below 32°F and Minimum Temperature

As shown in Table 6, the highest joint frequencies of ΣTb and Tmb at Salem are for high minimum temperatures combined with low values of ΣTb. Only about 3 percent of the freezing events had minimum temperatures that were less than 27°F and had values of ΣTb of at least 200°F. The results for Portland and Eugene (presented in Appendix D) are similar.

5.6 Hours below 32°F and Minimum Temperature

The joint frequency distribution of Db and Tmb at Salem, shown in Table 7, is very much like the joint distribution of ΣTb and Db presented in Table 6. That is, very few of the freezing events had small values of Tmb and large values of Db; on the contrary, most of the events had large values of Tmb and small values of Db. Of the 1188 freezing events at Salem, 438 (36.9 percent) had a minimum temperature of 30 or 31°F and had freezing periods that lasted less than 10 hours. Only 35 (2.9 percent) of the events had a minimum temperature that was less than 24°F and had freezing periods that lasted 30 hours or more. Moreover, the freezing periods of only 16 events (1.3 percent) had minimum temperatures that were

Table 6. Joint frequency distribution of sum of degrees below 32°F (ΣTb) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F) 0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
3	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 .0017	2 .0017
6	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 .0017	2 .0017
9	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	1 .0008	3 .0025	6 .0051
12	0 0.0000	2 .0017	3 .0025	1 .0008	2 .0017	0 0.0000	2 .0017	0 0.0000	1 .0008	2 .0017	13 .0109
15	2 .0017	12 .0101	6 .0051	0 0.0000	2 .0017	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	24 .0202
18	7 .0059	41 .0345	0 0.0000	3 .0025	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	51 .0429
21	53 .0446	25 .0210	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	80 .0673
24	194 .1633	5 .0042	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	200 .1684
27	361 .3039	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	363 .3056
30 AND ABOVE	447 .3763	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	447 .3763
COLUMN TOTALS	1064 .8956	87 .0732	12 .0101	4 .0034	5 .0042	1 .0008	2 .0017	2 .0017	2 .0017	9 .0076	

Table 7. Joint frequency distribution of number of hours below 32°F (Db) and minimum temperature (Tmb) at Salem. The top number in each entry is the joint frequency and the bottom number is the joint relative frequency (n=1188).

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F										
	0	10	20	30	40	50	60	70	80	90 AND ABOVE	ROW TOTALS
3	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 .0017	2 .0017
6	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 .0017	2 .0017
9	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	1 .0008	0 0.0000	2 .0017	6 .0051
12	0 0.0000	3 .0025	1 .0008	2 .0017	2 .0017	0 0.0000	1 .0008	2 .0017	0 0.0000	2 .0017	13 .0109
15	1 .0008	13 .0109	2 .0017	0 0.0000	5 .0042	0 0.0000	2 .0017	0 0.0000	1 .0008	0 0.0000	24 .0202
18	0 0.0000	42 .0354	5 .0042	1 .0008	2 .0017	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	51 .0429
21	6 .0051	67 .0564	2 .0017	2 .0017	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	80 .0673
24	57 .0480	136 .1145	2 .0017	1 .0008	2 .0017	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	200 .1684
27	276 .2323	77 .0648	4 .0034	4 .0034	1 .0008	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	363 .3056
30 AND ABOVE	438 .3687	9 .0076	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	447 .3763
COLUMN TOTALS	778 .6549	348 .2929	16 .0135	10 .0084	15 .0126	2 .0017	4 .0034	4 .0034	2 .0017	9 .0076	

less than 18°F and lasted at least 50 hours. The joint frequency distributions of Db and Tmb at Portland and Eugene are qualitatively similar to the distribution at Salem. The tables containing these frequency distributions are presented in Appendix D.

6. CONDITIONAL DISTRIBUTIONS OF FREEZING EVENT CHARACTERISTICS

The conditional distributions of pairs of freezing event characteristics can provide indications of the types of interactions and relationships that exist between the characteristics. A conditional distribution is formulated by first selecting the subset of events for which one characteristic, X say, has a particular value, x say. Then the conditional distribution of a second characteristic, Y say, given X=x is simply the distribution of Y for the subset of events.

As in the case of the marginal distributions considered in Section 4, the conditional distributions described in this section are characterized by their quantile values (e.g., the values of the 0.10th, 0.25th, 0.50th, 0.75th, and 0.90th quantiles of the distributions). However, instead of using box plots, the quantiles are displayed as in Figure 19. This figure contains the quantile values of the conditional distributions of ΣTb given many different values of Db, at Salem. Each curve in Figure 19 represents a different quantile of the distributions. For example, the points on the lowest curve represent the 0.25th quantile values of the frequency distributions of ΣTb for freezing periods lasting 1, 2, 3, ..., 19 hours. The curves in Figure 19 have been smoothed using a 3-point smoothing algorithm to make the trends more visible.

The conditional distributions of five pairs of freezing event characteristics at Salem are described in the following subsections. Each of these distributions is represented using a diagram similar to Figure 19. The corresponding figures for Portland and Eugene are not presented here because they are quite similar to the figure for Salem. The small differences in the distributions at the three stations are not of importance

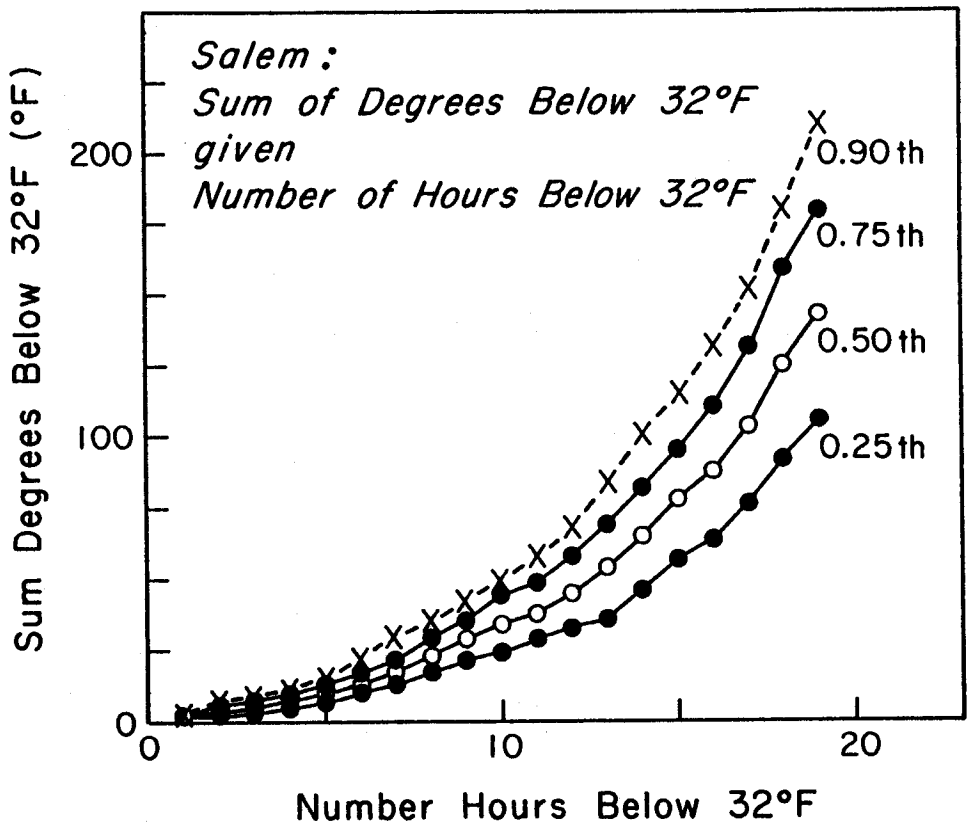

Figure 19. Quantile values of the conditional distributions of sum of degrees below 32°F (ΣTb) given the number of hours below 32°F (Db), at Salem.

since the purpose of examining the conditional distributions is to obtain general (as opposed to quantitative) indications of the types of relationships that exist between the freezing event characteristics. However, tables of the quantile values for the five sets of conditional distributions at Portland, Salem, and Eugene are presented in Appendix E.

6.1 Sum below 32°F given Hours below 32°F

Figure 19 displays the quantiles of the conditional distributions of ΣTb given Db at Salem. The curves in this figure indicate that there is a strong relationship between these two freezing event characteristics: as the length of the freezing period increases, the values of all of the conditional quantiles of ΣTb increase as well. For example, the median value of ΣTb for freezing periods lasting 5 hours is about 9°F, whereas the median value for freezing periods lasting 15 hours is about 78°F, or almost nine times as large. The shapes of the curves appear to be quadratic rather than linear. In fact, values of the conditional quantiles for values of Db greater than 19 hours are not shown here because they are so extreme.

Figure 19 also indicates that the variability of ΣTb increases with increasing duration of the freezing period. This is indicated by the increasing distance between the 0.75th and 0.25th quantile values of ΣTb (the interquartile range) with increasing values of Db. For example, the interquartile range of ΣTb for events with freezing periods lasting 5 hours is about 7°F, whereas the value for events with freezing periods lasting 15 hours is about 38°F.

6.2 Average Temperature below 32°F given Hours below 32°F

There also is a strong relationship between the two freezing event characteristics Tab and Db, as shown in Figure 20. The quantile values of Tab rapidly decrease with increasing Db. Apparently, longer cold periods have colder temperatures overall than do shorter cold periods. The trend in the quantile values appears to be approximately linear, at least for Db values that are less than 20 hours. Note that the observations for larger values of Db have been combined into several groups in order to ensure that each set of quantile values is based on at least 10 events. Hence, the conditional quantile values of Tab for these longer-lasting cold periods are based on fewer observations than the preceding quantiles and they exhibit some deviations from the decreasing trend. The results for Portland and Eugene (presented in tabular form in Appendix E) are similar.

6.3 Hours below 32°F given Minimum Temperature

The trend in the quantile values of Db given Tmb, shown in Figure 21, is not as strong as the trends shown in Figures 19 and 20. Disregarding the conditional quantiles for small values of minimum temperature (which are based on small samples and combined values of minimum temperature), the slopes of the curves are quite gradual. There also is no indication in Figure 21 that the conditional variance of Db is dependent on the value of the minimum temperature. These results suggest that, although there is a relationship between Db and Tmb, it is not a very strong relationship and probably could not be used for predictive purposes.

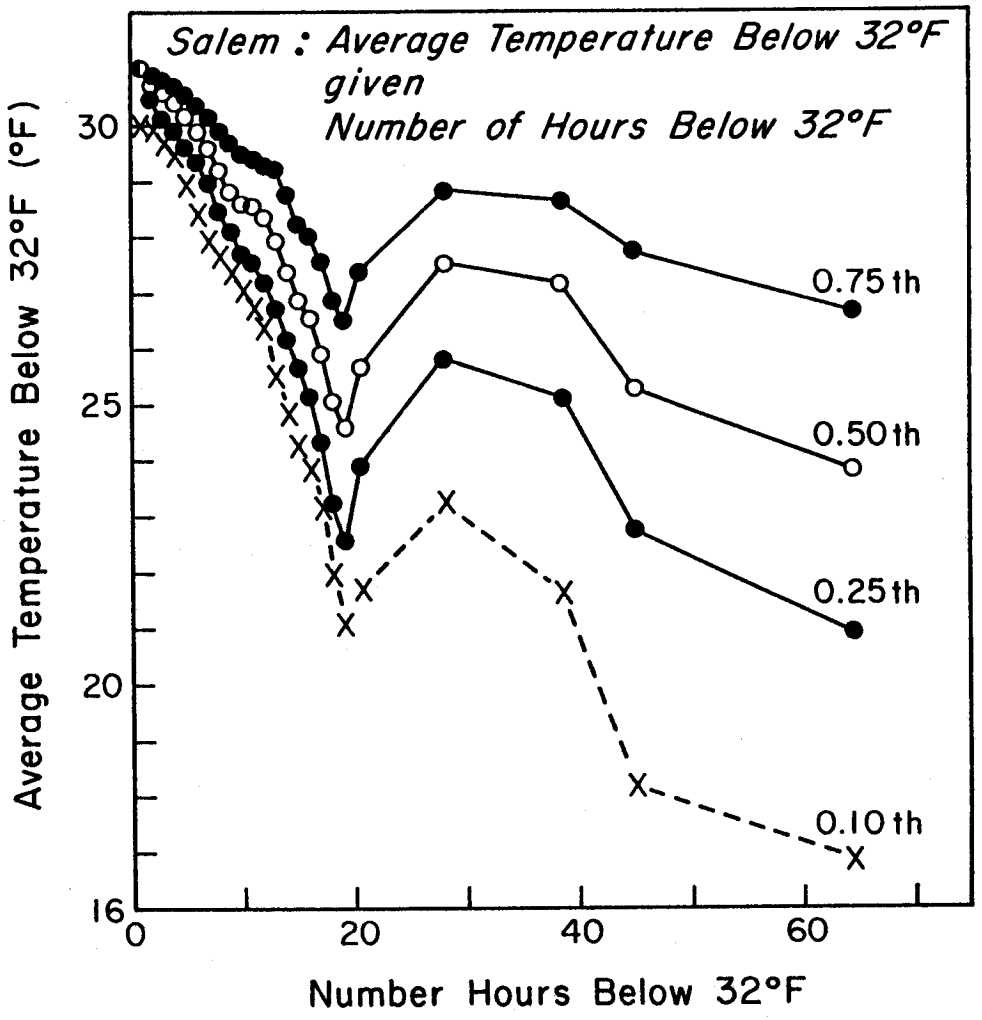

Figure 20. Quantile values of the conditional distributions of average temperature below 32°F (Tab) given the number of hours below 32°F (Db), at Salem.

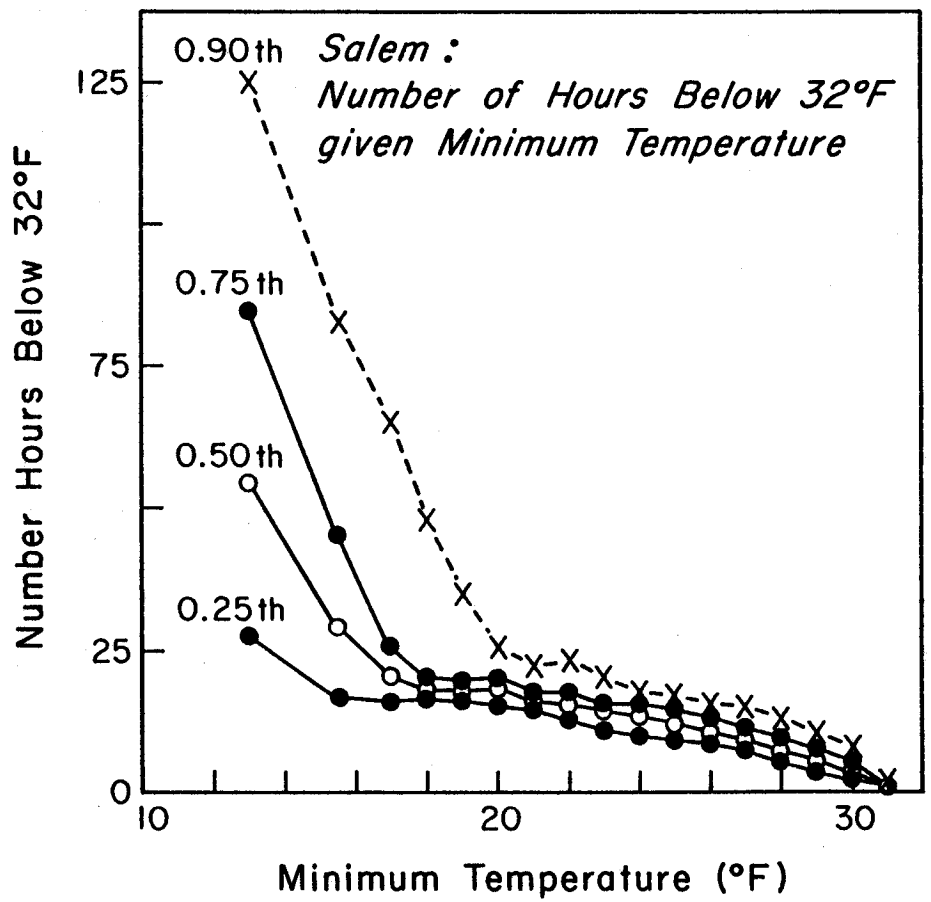

Figure 21. Quantile values of the conditional distributions of number of hours below 32°F (Db) given the minimum temperature (Tmb), at Salem.

6.4 Sum below 32°F given Minimum Temperature

The shapes of the curves in Figure 22, showing the conditional quantiles of ΣTb given Tmb, are quite similar to the curves in Figure 21 depicting the conditional quantiles of Db given Tmb. That is, the slopes of the curves are quite steep for very low values of minimum temperature and are gradual for higher values. Moreover, the variability of ΣTb is apparently independent of Db. The shapes of these curves for the Portland and Eugene distributions also have this form.

6.5 Average Temperature below 32°F given Minimum Temperature

The trend in the conditional quantiles of Tab given Tmb, shown in Figure 23, indicates that there is a very strong linear relationship between these two characteristics. In fact, the slope of the curve of the conditional median of Tab (the 0.50th quantile) is approximately equal to one for values of Tmb greater than 20°F. Since minimum temperature is a commonly measured parameter, whereas the average temperature during a freezing period is <u>not</u> commonly measured, this relationship could potentially be useful for predicting or estimating values of Tab.

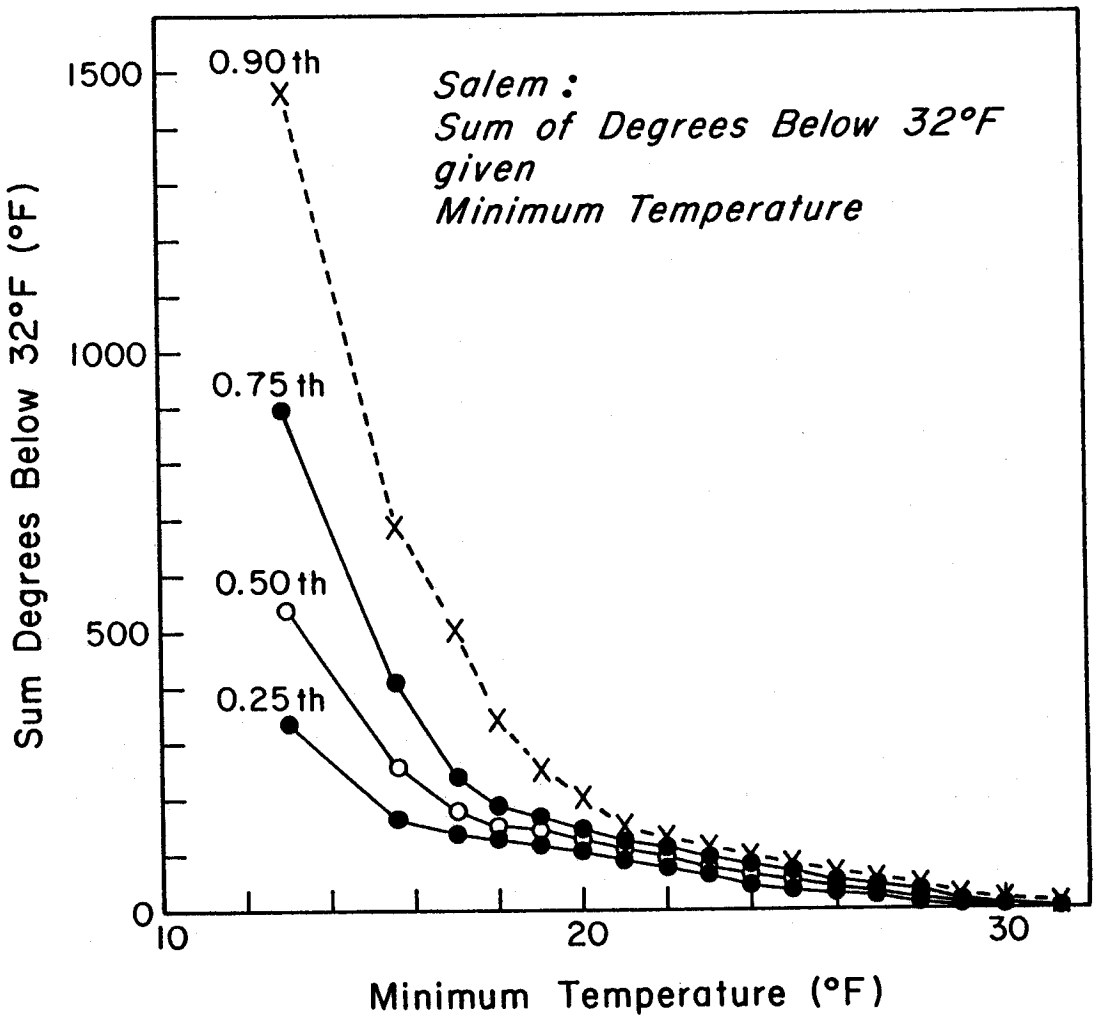

Figure 22. Quantile values of the conditional distributions of sum of degrees below 32°F (ΣTb) given the minimum temperature (Tmb), at Salem.

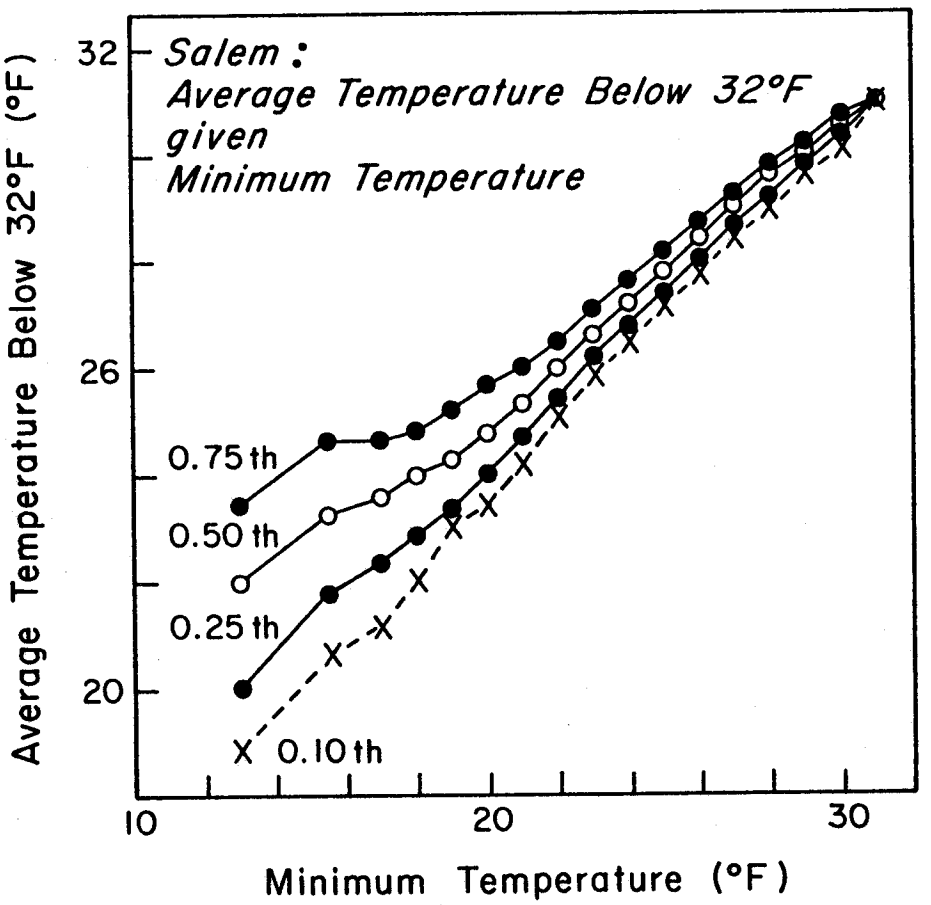

Figure 23. Quantile values of the conditional distributions of average temperature below 32°F (Tab) given the minimum temperature (Tmb), at Salem.

7. FREEZING EVENT CHARACTERISTICS AND THE OCCURRENCE OF FROZEN SOIL

A preliminary study was conducted to identify the freezing event characteristics that have the most potential for use as predictors of soil frost. Approximately 14 years (October 1964 to December 1978) of soil temperature data from Hyslop Experimental Farm (located a few miles north of Corvallis, Oregon, and approximately 35 miles north of Eugene) were matched to the freezing event records for Eugene. Each freezing event was classified as "Soil Frozen" or "Soil Unfrozen" according to the soil temperatures during the cold period of the freezing event. That is, if the soil temperature at a depth of 5 cm was less than 32°C during the cold period of a freezing event then the event was classified as Soil Frozen. Otherwise, the event was classified as Soil Unfrozen.

Quantiles of the marginal distributions of three freezing event characteristics (minimum temperature, number of hours below 32°F, and sum of degrees below 32°F) were calculated separately for the groups of events classified as Soil Frozen and Soil Unfrozen. Box plots displaying these quantiles are presented in Figure 24. These box plots indicate that there are large differences in the values of the freezing event characteristics for the two groups. In particular, the boxes (representing the middle half of the observations) for the two groups do not overlap for any of the three characteristics. Nevertheless, the freezing events cannot be stratified perfectly into Soil Frozen and Soil Unfrozen groups according to these characteristics, as is indicated by the overlap in the tails of the distributions for the two groups.

Stepwise discriminant analysis was used in an exploratory study to determine which freezing event characteristics would be most useful for predicting whether or not the soil is frozen. The three characteristics

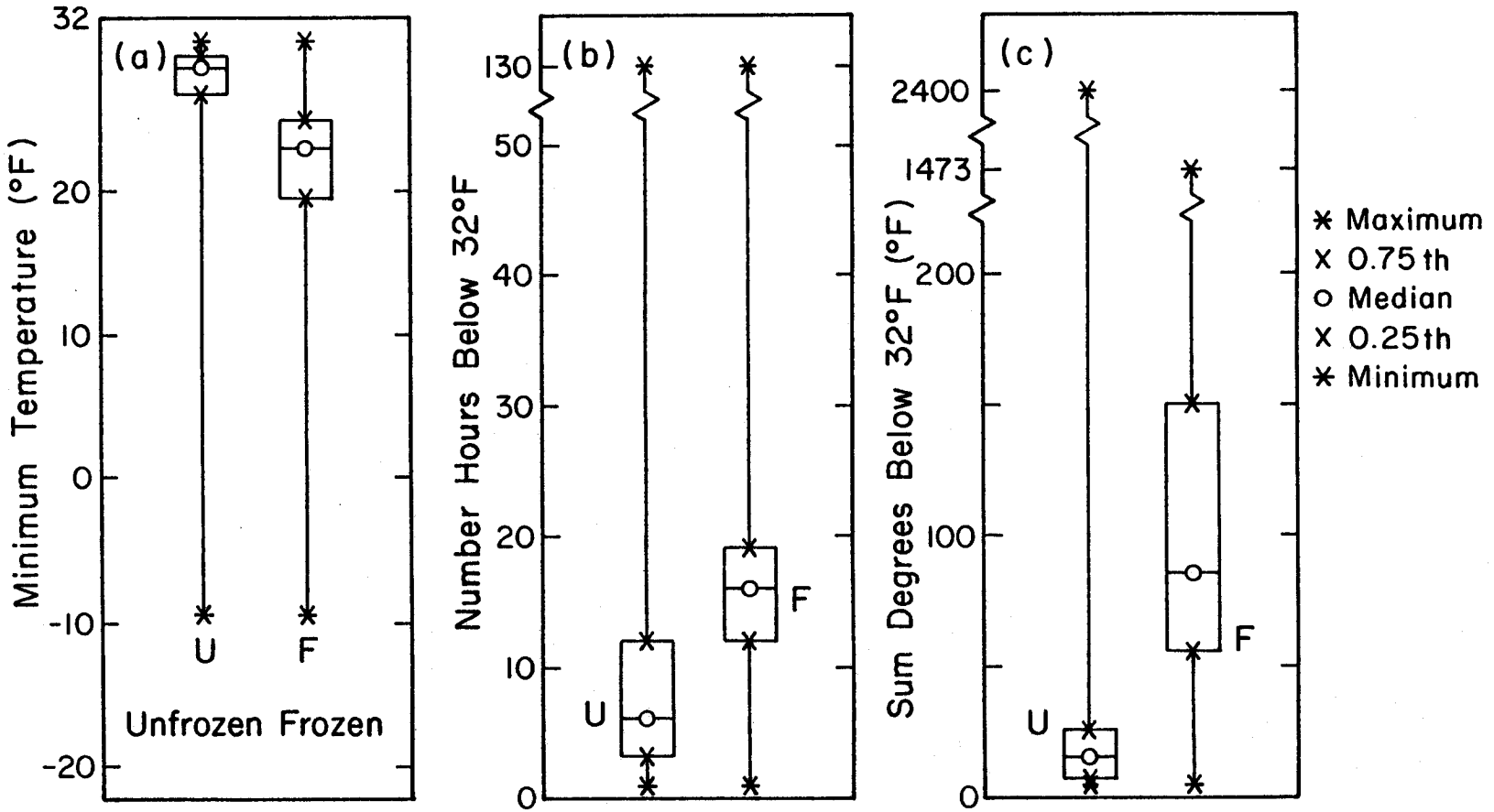

Figure 24. Box plots of freezing event characteristics at Eugene for events classified as Soil Unfrozen (n=313) and Soil Frozen (n=38).

considered in Figure 24 were included in the analysis. The results of the analysis of these data indicated that sum of degrees below 32°F and minimum temperature are significant variables for classifying freezing events as Soil Frozen or Soil Unfrozen. As shown in Table 8, 77 percent of the Soil Frozen events were classified correctly using these two variables, whereas 85 percent of the Soil Unfrozen events were classified correctly. In order to verify the usefulness of the discriminant function with these two variables, it would be necessary to also test the function using an independent data set. A suitable and tested discriminant function of freezing event characteristics could be used to classify future freezing events as either Soil Frozen or Soil Unfrozen, based on probabilities assigned to each group. A major limitation to this approach is that a long record of soil temperature data is required at each site of interest in order to develop and test the discriminant function.

In order to improve the performance of a discriminant function for classifying freezing events as Soil Frozen or Soil Unfrozen, it may be necessary to include other variables in the analysis. Each of the freezing events that was misclassified using the discriminant function (Table 8) and for which the posterior probability (ie., the probability based on the fitted discriminant function) assigned to the "wrong" group was at least 0.75 was considered individually. It was found that (a) 50 percent of these freezing events occurred when the soil was saturated from previous rainfall; (b) 45 percent occurred following a period of frozen soil (i.e., the soil was thawing); and (c) 5 percent occurred when the soil was insulated by snow. The influence of these factors could be incorporated into classifications based on discriminant analysis by considering (a) additional variables computed from the air temperature record and (b) an index

Table 8. Results of stopwise discriminant analysis† for Soil Frozen and Soil Unfrozen freezing events at Eugene, using the freezing event characteristics shown in Figure 24.

Step	Variables Entered	Actual Group	Number Classified as Frozen	Number Classified as Unfrozen	Correct Classifications (Percent)
1.	Sum below 32°F	Frozen	39	18	68
		Unfrozen	38	313	89
2.	Sum below 32°F	Frozen	44	13	77
	Minimum Temperature	Unfrozen	52	299	85

†F-to-enter = 4.0

Prior probablity of an event being in either group = 0.50

describing antecedent soil moisture which could be computed from precipitation data. The use of such combinations of variables will be the subject of the last reports in this series in which the joint frequencies of occurrence of certain pairs of freezing and precipitation event characteristics will be considered.

8. SUMMARY AND CONCLUDING REMARKS

The results of the analyses described in this report have provided some general information regarding the characteristics of freezing events in western Oregon. The marginal distributions of the freezing event characteristics have indicated some properties of the individual characteristics. Moreover, the joint and conditional distributions of the characteristics have provided insights into the types of statistical relationships that exist between pairs of freezing event characteristics. In particular, some general conclusions that may be made regarding the characteristics of freezing events in western Oregon include the following:

(a) The marginal distributions of the freezing event characteristics measuring the duration and total number of degrees below freezing during the cold period (Db and ΣTb) are positively skewed. That is, most freezing events had small values of these characteristics, whereas relatively few freezing events had large values of the characteristics.

(b) The marginal distribution of the freezing event characteristics minimum temperature (Tmb) and average temperature below 32°F (Tab) are negatively skewed. That is, most freezing events had large values of these characteristics (near 31°F), whereas relatively few events had small values of the characteristics.

(c) The values of some pairs of freezing event characteristics are not independent. For example, Tmb is strongly related to Db, ΣTb, and Tab, as is indicated by the plots of the conditional distributions of these characteristics given Tmb.

These conclusions are based on the analysis of temperature data from a specific time period at three stations in western Oregon. Nevertheless, they may also characterize freezing events at other locations and for other time periods. Moreover, the methodology described in this report could easily be applied to the analysis of freezing events at any location or for any time period of interest.

The tables of order and return statistics and joint and conditional distributions presented in the appendices are site-specific and are at least somewhat dependent on the time period considered in this study. Nevertheless, the values contained in these tables provide estimates of many specific probabilities that will be useful in future models of soil frost and runoff in western Oregon. Moreover, the consideration of these results in combination with previous results regarding precipitation events in western Oregon (Brown et al., 1983a) will help further the goal of improving predictions of long-term erosion rates for this region.

REFERENCES

Aldrich, H.P., 1956: Frost penetration below highway and airfield pavements. Bulletin of the Highway Research Board, 135, 124-144.

Brown, B.G., J.D. Istok, R.W. Katz, and A.H. Murphy, 1983a: Statistical Analysis of Climatological Data to Characterize Erosion Potential: 1. Precipitation Events in Western Oregon. Corvallis, Oregon State University, Oregon Agricultural Experiment Station Special Report No. 686, 287pp.

Brown, B.G., J.D. Istok, R.W. Katz, and A.H. Murphy, 1983b: Statistical Analysis of Climatological Data to Characterize Erosion Potential: 2. Precipitation Events in Eastern Oregon/Washington. Corvallis, Oregon State University, Oregon Agricultural Experiment Station Special Report No. 687, 178pp.

Harward, M.E., G.F. Kling, and J.D. Istok (eds.), 1980: Erosion, Sediment, and Water Quality in the High Winter Rainfall Zone of the Northwestern U.S. Corvallis, Oregon State University, Oregon Agricultural Experiment Station Special Report No. 602, 220pp.

Haupt, H.F., 1967: Infiltration, overland flow, and soil movement on frozen and snow covered plots. Water Resources Research, 3, 145-161.

Jumikis, A.F., 1977: Thermal Geotechnics. New Brunswick, New Jersey, Rutgers University Press, 375pp.

Kirkham, D., and W.L. Powers, 1972: Advanced Soil Physics. New York, Wiley, 534pp.

Tukey, J.W., 1977: Exploratory Data Analysis. Reading, Mass., Addison-Wesley, 688pp.

U.S. Corps of Engineers, 1956: Snow Hydrology. North Pacific Division.

Zuzel, J.F., R.R. Allmaras, and R.N. Greenwalt, 1982: Runoff and soil erosion on frozen soils in northeastern Oregon. Journal of Soil and Water Conservation, 37, 351-354.

APPENDICES

Contents

	Page
APPENDIX A. Data Base Description.	69
APPENDIX B. Order Statistics	71
B.1 Hours below 32°F.	72
a. Portland.	72
b. Salem	74
c. Eugene.	76
B.2 Sum below 32°F.	78
a. Portland.	78
b. Salem	80
c. Eugene.	82
B.3 Average Temperature below 32°F.	84
a. Portland.	84
b. Salem	86
c. Eugene.	88
B.4 Minimum Temperature	90
a. Portland.	90
b. Salem	92
c. Eugene.	94
APPENDIX C. Return Statistics.	97
C.1 Hours below 32°F.	98
a. Portland.	98
b. Salem	99
c. Eugene.	100
C.2 Sum below 32°F.	101
a. Portland.	101
b. Salem	102
c. Eugene.	103
C.3 Average Temperature below 32°F.	104
a. Portland.	104
b. Salem	105
c. Eugene.	106
C.4 Minimum Temperature	107
a. Portland.	107
b. Salem	108
c. Eugene.	109
APPENDIX D. Joint Distributions.	111
D.1 Average Temperature below 32°F and Hours below 32°F	112
a. Portland.	112
b. Salem	113
c. Eugene.	113

APPENDICES

Contents (continued)

		Page
D.2	Average Temperature below 32°F and Sum below 32°F	115
	a. Portland	115
	b. Salem	116
	c. Eugene	117
D.3	Average Temperature below 32°F and Minimum Temperature	118
	a. Portland	118
	b. Salem	119
	c. Eugene	120
D.4	Sum below 32°F and Hours below 32°F	121
	a. Portland	121
	b. Salem	122
	c. Eugene	123
D.5	Sum below 32°F and Minimum Temperature	124
	a. Portland	124
	b. Salem	125
	c. Eugene	126
D.6	Hours below 32°F and Minimum Temperature	127
	a. Portland	127
	b. Salem	128
	c. Eugene	129
APPENDIX E.	Conditional Distributions	131
E.1	Sum below 32°F given Hours below 32°F	132
	a. Portland	132
	b. Salem	133
	c. Eugene	134
E.2	Average Temperature below 32°F given Hours below 32°F	135
	a. Portland	135
	b. Salem	136
	c. Eugene	137
E.3	Hours below 32°F given Minimum Temperature	138
	a. Portland	138
	b. Salem	139
	c. Eugene	140
E.4	Sum below 32°F given Minimum Temperature	141
	a. Portland	141
	b. Salem	142
	c. Eugene	143
E.5	Average Temperature below 32°F given Minimum Temperature	144
	a. Portland	144
	b. Salem	145
	c. Eugene	146

APPENDIX A

Data Base Description

Hourly temperature data from Portland, Salem, and Eugene, Oregon, for from 1948 to 1978 were used to create the records of freezing events described and analyzed in this report. These data were obtained from the National Climatic Center (NOAA, U.S. Department of Commerce) at Asheville, North Carolina. The original data tapes that were obtained from the National Climatic Center are stored at the Climatic Research Institute at Oregon State University (OSU).

The hourly data were combined according to the freezing event definition described in Section 2, and an event parameter file was created for each of the three sites. The files consist of individual data records for each freezing event at a site during the period of the data record. All of the freezing event characteristics that were evaluated in the study either are included in the record for each event or may be calculated from the characteristics that are included. The data files are binary and are archived on magnetic tape at the OSU Computer Center under the file names PRTFRZ (Portland events), SALRZ (Salem events), and EUGFRZ (Eugene events). Copies of the files, on magnetic tape, also will be stored by the OSU Department of Soil Science 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 first necessary to edit that routine 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=SALRZ/PRTFRZ,R.

would cause the files SALFRZ and PRTFRZ to be retrieved and stored as direct access files.

Each record on the binary event data files contains the following nine parameters (in the order listed):

(1) First hour of the event, counting from January 1, 1900

(2) Last hour of the event, counting from January 1, 1900

(3) Event duration (hours)

(4) Sum of degrees below 32°F (°F)

(5) Number of degrees below 32°F (°F)

(6) Sum of degrees above 32°F (°F)

(7) Number of degrees above 32°F (°F)

(8) Minimum temperature (°F)

(9) Maximum temperature (°F)

All variables are stored as integers. Note that the freezing event characteristics average temperature below 32°F and average temperature above 32°F can be calculated using the parameters sum of degrees below 32°F and number of degrees below 32°F, and sum of degrees above 32°F and number of degrees above 32°F, respectively (see Table 1).

APPENDIX B

Order Statistics

The following tables contain "order statistics" for each of the cold period freezing event characteristics at each of three sites (Portland, Salem, and Eugene, Oregon). These statistics are the values of the event characteristics for the 100 events with the largest values (or smallest values, for minimum temperature and average temperature below 32°F) of the characteristic of interest. For example, the number of hours below 32°F order statistics are formulated by sorting the events in order of decreasing number of hours below 32°F and listing the characteristics of the first 100 of the ordered events. 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. 67).

ORDER STATISTICS AT PORTLAND
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	570117.16	366	3042	317	22.40	365	48	39.60	7	43
2	721203.23	258	2345	254	22.77	4	4	33.00	15	33
3	500126.05	770	3717	246	16.89	5845	522	43.20	-2	61
4	490119.18	215	1920	205	22.63	9	4	34.25	11	35
5	511230.22	308	954	164	26.18	626	129	36.85	21	44
6	551111.18	532	1283	159	23.93	4041	371	42.89	14	57
7	740106.16	342	1514	145	21.56	2839	191	46.86	12	61
8	681228.20	489	1656	139	20.09	1719	338	37.09	8	52
9	560130.16	205	972	137	24.91	243	64	35.80	14	41
10	690121.18	143	1088	136	24.00	9	5	33.80	17	34
11	500115.18	192	1347	113	20.08	532	76	39.00	8	48
12	641216.00	112	1546	106	17.42	21	6	35.50	8	39
13	590102.08	281	792	97	23.84	2082	171	44.18	17	53
14	500101.16	281	550	87	25.68	859	188	36.57	16	46
15	630110.15	201	882	83	21.37	684	110	38.22	13	45
16	770108.19	319	367	83	27.58	2346	229	42.24	20	56
17	730106.17	101	410	76	26.61	49	20	34.45	23	35
18	630128.13	830	238	76	28.87	11150	749	46.89	24	65
19	690127.17	219	725	70	21.64	739	147	37.03	18	46
20	561205.17	471	307	67	27.42	5723	402	46.24	23	58
21	510127.17	72	499	66	24.44	11	5	34.20	16	35
22	720125.20	70	564	65	23.32	7	4	33.75	20	35
23	620118.22	67	489	65	24.48	2	2	33.00	10	33
24	490108.18	72	512	59	23.32	19	6	35.17	16	37
25	600302.03	387	239	58	27.88	3186	324	41.83	25	55
26	671219.06	353	200	56	28.43	3574	292	44.24	15	57
27	500123.18	59	435	54	23.94	7	3	34.33	12	36
28	680127.17	278	197	54	28.35	2920	224	45.04	25	57
29	560214.19	58	350	53	25.40	3	2	33.50	18	34
30	510130.17	52	185	50	28.30	2	1	34.00	25	34
31	540119.17	347	383	49	24.18	1936	290	38.68	20	50
32	740104.16	48	356	45	24.09	1	1	33.00	19	33
33	740101.18	47	174	42	27.86	5	3	33.67	19	34
34	720203.18	779	127	42	28.98	9942	732	45.58	25	61
35	600109.08	81	112	42	29.33	54	27	34.00	25	39
36	591231.19	49	140	40	28.50	22	9	34.44	23	36
37	600118.14	87	138	39	28.46	108	35	35.09	26	40
38	500113.17	49	480	37	19.03	25	10	34.50	11	35
39	540116.04	65	131	36	28.36	128	28	36.57	26	42
40	721214.17	485	185	34	26.56	6122	445	45.76	23	60
41	781218.21	146	54	34	30.41	1161	103	43.27	28	51
42	701218.18	81	103	32	28.78	218	45	36.84	27	43
43	701122.04	165	41	29	30.59	1334	133	42.03	29	59
44	551218.07	232	66	28	29.64	2143	198	42.82	27	60
45	780102.15	490	98	25	28.08	4724	457	42.34	26	54
46	771121.16	751	80	24	28.67	9450	717	45.18	26	63
47	700110.19	7569	51	23	29.78	178489	7529	55.71	28	102
48	620122.17	151	188	22	23.45	1405	125	43.24	17	55
49	490113.16	52	135	22	25.86	99	28	35.54	23	44
50	620121.17	24	193	21	22.81	5	3	33.67	14	34

ORDER STATISTICS AT PORTLAND
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	611210.16	28	123	21	26.14	5	4	33.25	22	34
52	490104.16	25	112	21	26.67	1	1	33.00	24	33
53	600113.15	30	59	21	29.19	5	5	33.00	27	33
54	720202.17	25	130	20	25.50	6	4	33.50	22	34
55	710104.18	24	111	20	26.45	1	1	33.00	23	33
56	490103.16	24	106	20	26.70	3	3	33.00	23	33
57	490212.19	5939	98	20	27.10	148721	5904	57.19	24	93
58	780101.16	23	82	20	27.90	1	1	33.00	24	33
59	781206.18	25	79	20	28.05	6	3	34.00	25	35
60	711228.16	126	33	20	30.35	822	100	40.22	30	46
61	490112.17	23	182	19	22.42	5	3	33.67	17	34
62	490111.18	23	148	19	24.21	4	3	33.33	20	34
63	720128.18	24	127	19	25.32	10	4	34.50	22	36
64	770107.17	26	126	19	25.37	17	6	34.83	18	36
65	740103.17	23	125	19	25.42	1	1	33.00	19	33
66	651219.18	681	124	19	25.47	5685	660	40.61	24	55
67	720130.17	27	113	19	26.05	13	7	33.86	22	35
68	720129.18	23	111	19	26.16	2	2	33.00	23	33
69	560129.18	22	90	19	27.26	1	1	33.00	23	33
70	490128.17	27	79	19	27.84	8	6	33.33	26	34
71	560127.14	52	72	19	28.21	76	30	34.53	22	36
72	681219.23	213	32	19	30.32	1082	177	38.11	29	46
73	511226.15	37	29	19	30.47	20	16	33.25	29	34
74	770106.19	22	117	18	25.50	4	4	33.00	21	33
75	781121.20	22	91	18	26.94	5	2	34.50	22	35
76	600103.18	134	89	18	27.06	526	102	37.16	25	43
77	481217.18	23	87	18	27.17	7	5	33.40	22	34
78	521124.17	26	71	18	28.06	34	6	37.67	25	41
79	771231.19	21	70	18	28.11	1	1	33.00	24	33
80	480206.18	100	67	18	28.28	530	80	38.63	26	47
81	600102.20	22	67	18	28.28	6	3	34.00	27	35
82	490202.19	36	48	18	29.33	43	15	34.87	28	39
83	490201.19	24	36	18	30.00	1	1	33.00	28	33
84	781119.16	31	29	18	30.39	9	7	33.29	29	34
85	660120.19	270	26	18	30.56	1757	245	39.17	30	50
86	770105.18	25	94	17	26.47	17	6	34.83	24	36
87	481226.19	21	86	17	26.94	2	2	33.00	24	33
88	651215.20	25	60	17	28.47	6	5	33.20	26	34
89	771120.17	23	54	17	28.82	2	2	33.00	28	33
90	490105.17	56	53	17	28.88	169	36	36.69	28	41
91	611211.20	27	28	17	30.35	1	1	33.00	26	33
92	651218.20	22	87	16	26.56	18	5	35.60	23	37
93	781122.18	27	66	16	27.88	32	10	35.20	26	37
94	730125.22	221	55	16	28.56	1875	205	41.15	26	50
95	730105.20	21	50	16	28.88	2	2	33.00	26	33
96	781123.21	22	47	16	29.06	2	2	33.00	26	33
97	710105.18	153	47	16	29.06	1137	133	40.55	27	51
98	561227.19	30	45	16	29.19	53	12	36.42	27	41
99	561226.19	24	30	16	30.13	8	5	33.60	28	35
100	481227.16	122	29	16	30.19	499	93	37.37	29	44

ORDER STATISTICS AT SALEM
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500127.07	740	3187	195	15.66	7166	543	45.20	-9	62
2	721203.21	197	3093	195	16.14	1	1	33.00	-7	33
3	690123.17	151	1186	137	23.34	11	9	33.22	14	34
4	620118.18	242	1293	125	21.66	1283	106	44.10	8	54
5	551112.18	510	1055	119	23.13	5117	386	45.26	10	66
6	570123.19	117	1186	114	21.60	4	3	33.33	9	34
7	651215.18	153	724	114	25.65	171	35	36.89	21	43
8	740106.17	96	1124	91	19.65	7	3	34.33	8	35
9	721212.02	407	671	91	24.63	5288	309	49.11	13	60
10	590102.17	731	733	88	23.67	8791	642	45.69	17	59
11	561226.21	217	189	84	29.75	1013	131	39.73	27	50
12	641216.05	359	1086	77	17.90	3030	279	42.86	9	61
13	630110.16	195	905	77	20.25	852	115	39.41	12	47
14	500116.07	181	811	74	21.04	1140	100	43.40	14	55
15	630128.16	327	363	71	26.89	4360	253	49.23	20	66
16	490124.15	75	601	66	22.89	18	6	35.00	13	38
17	560130.18	71	554	66	23.61	2	2	33.00	15	33
18	720125.19	70	457	65	24.97	4	3	33.33	15	34
19	660118.19	72	169	61	29.23	1	1	33.00	25	33
20	500101.16	62	474	55	23.38	6	4	33.50	11	34
21	701217.19	96	215	52	27.87	214	42	37.10	24	41
22	681229.17	99	827	48	14.77	326	46	39.09	9	46
23	600118.13	688	175	47	28.28	7786	630	44.36	26	62
24	560214.21	461	288	45	25.60	3309	412	40.03	17	51
25	680127.18	204	207	45	27.40	2006	153	45.11	23	57
26	490108.17	47	440	44	22.00	1	1	33.00	13	33
27	570128.16	109	416	44	22.55	424	62	38.84	12	46
28	740104.17	48	410	44	22.68	4	3	33.33	15	34
29	520101.16	64	319	44	24.75	95	19	37.00	19	39
30	690121.18	47	276	43	25.58	2	2	33.00	16	33
31	701121.20	98	151	42	28.40	804	53	47.17	27	58
32	611210.17	55	259	41	25.68	14	9	33.56	16	35
33	570117.17	60	243	41	26.07	107	16	38.69	16	43
34	710101.18	50	166	41	27.95	11	7	33.57	23	34
35	600108.20	80	142	41	28.54	196	34	37.76	25	42
36	510127.21	44	331	40	23.73	2	2	33.00	19	33
37	500113.18	61	262	39	25.28	28	18	33.56	14	34
38	681219.19	62	173	39	27.56	21	16	33.31	22	34
39	591231.19	47	186	38	27.11	21	6	35.50	18	37
40	740110.17	244	321	37	23.32	3167	207	47.30	12	59
41	750129.19	49	128	37	28.54	56	10	37.60	22	43
42	781218.21	143	83	36	29.69	1328	105	44.65	28	51
43	641119.21	386	61	34	30.21	4801	347	45.84	29	58
44	780101.18	511	85	33	29.42	5804	470	44.35	27	54
45	600302.05	48	124	32	28.13	5	5	33.00	25	33
46	760124.21	154	56	32	30.25	1570	116	45.53	29	57
47	570120.05	86	85	28	28.96	310	56	37.54	25	42
48	490119.18	53	215	27	24.04	51	22	34.32	16	38
49	540119.18	120	183	26	24.96	722	91	39.93	18	49
50	710112.03	211	41	23	30.22	2431	170	46.30	29	60

ORDER STATISTICS AT SALEM
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	781206.17	24	85	22	28.14	3	2	33.50	25	34
52	741230.22	215	61	22	29.23	2004	188	42.66	27	52
53	500124.17	62	154	21	24.67	126	38	35.32	21	40
54	510131.14	305	61	21	29.10	4241	273	47.53	28	66
55	490123.17	22	220	20	21.00	2	1	34.00	13	34
56	710104.17	24	180	20	23.00	4	4	33.00	17	33
57	720128.17	25	176	20	23.20	14	5	34.80	19	36
58	730106.17	25	158	20	24.10	4	3	33.33	20	34
59	490104.17	24	151	20	24.45	7	4	33.75	21	35
60	710105.17	154	142	20	24.90	1010	116	40.71	20	49
61	561206.16	28	130	20	25.50	3	2	33.50	19	34
62	700110.19	437	44	20	29.80	6114	406	47.06	29	60
63	490112.17	24	228	19	20.00	13	4	35.25	12	37
64	490110.16	25	208	19	21.05	16	5	35.20	17	37
65	490111.17	24	192	19	21.89	16	5	35.20	14	37
66	510129.17	25	190	19	22.00	9	4	34.25	18	35
67	740101.18	23	171	19	23.00	2	2	33.00	17	33
68	481226.17	30	151	19	24.05	27	10	34.70	19	37
69	490103.17	24	138	19	24.74	10	4	34.50	20	35
70	781225.18	24	121	19	25.63	4	3	33.33	21	34
71	521129.18	23	117	19	25.84	1	1	33.00	20	33
72	511231.17	23	104	19	26.53	1	1	33.00	20	33
73	591205.18	56	98	19	26.84	219	35	38.26	23	42
74	481224.15	26	59	19	28.89	19	7	34.71	27	36
75	620225.18	25	228	18	19.33	17	6	34.83	11	36
76	710228.18	24	199	18	20.94	15	5	35.00	15	36
77	770106.18	25	167	18	22.72	24	6	36.00	18	37
78	490122.17	24	165	18	22.83	19	6	35.17	18	37
79	720202.18	25	160	18	23.11	14	5	34.80	19	36
80	771119.18	27	156	18	23.33	18	7	34.57	17	36
81	481223.17	22	156	18	23.33	3	3	33.00	20	33
82	740103.17	24	151	18	23.61	17	5	35.40	20	36
83	691201.18	24	150	18	23.67	23	6	35.83	21	37
84	630120.18	27	145	18	23.94	44	7	38.29	18	41
85	481217.17	24	145	18	23.94	11	6	33.83	20	35
86	700104.18	25	139	18	24.28	17	6	34.83	18	36
87	490113.17	50	129	18	24.83	163	29	37.62	21	48
88	730107.18	25	127	18	24.94	16	6	34.67	20	36
89	691130.18	24	124	18	25.11	24	6	36.00	22	38
90	720129.18	24	122	18	25.22	15	5	35.00	20	37
91	771118.18	24	118	18	25.44	10	4	34.50	20	35
92	490212.18	177	114	18	25.67	1517	154	41.85	21	57
93	620223.20	22	111	18	25.83	4	3	33.33	18	34
94	781207.17	103	107	18	26.06	834	83	42.05	23	53
95	631202.18	23	94	18	26.78	9	4	34.25	24	35
96	611209.17	24	87	18	27.17	9	4	34.25	23	35
97	600102.18	24	82	18	27.44	13	4	35.25	22	36
98	631211.18	29	81	18	27.50	18	6	35.00	25	36
99	740102.17	24	57	18	28.83	14	5	34.80	27	36
100	560203.18	124	56	18	28.89	542	101	37.37	28	48

ORDER STATISTICS AT EUGENE
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500128.17	731	2724	158	14.76	7138	567	44.59	-1	64
2	570124.00	317	2245	157	17.70	1163	155	39.50	0	52
3	620118.23	222	1473	131	20.76	1050	91	43.54	6	58
4	721205.20	136	2402	126	12.94	12	8	33.50	-10	34
5	551112.23	509	863	110	24.15	5272	395	45.35	15	65
6	690122.17	98	897	92	22.25	8	4	34.00	14	35
7	490123.17	100	866	92	22.59	5	4	33.25	11	34
8	490108.15	98	999	90	20.90	4	3	33.33	11	34
9	651215.18	96	409	90	27.46	4	3	33.33	23	34
10	590102.19	730	573	85	25.26	8871	642	45.82	20	57
11	490101.20	93	695	84	23.73	5	3	33.67	15	34
12	721212.12	466	690	83	23.69	5458	376	46.52	12	61
13	630110.17	195	844	67	19.40	762	119	38.40	12	48
14	560130.18	69	485	65	24.54	1	1	33.00	16	33
15	740107.17	72	725	63	20.49	19	4	36.75	11	38
16	641216.08	348	717	63	20.62	3294	277	43.89	10	61
17	481223.17	72	485	62	24.18	5	3	33.67	18	35
18	561227.17	152	158	62	29.45	615	81	39.59	28	51
19	500116.17	172	584	61	22.43	1027	108	41.51	16	52
20	630128.22	822	259	61	27.75	12263	754	48.26	24	65
21	730106.02	65	363	59	25.85	10	4	34.50	23	36
22	600118.08	713	148	59	29.49	8561	637	45.44	27	63
23	500101.18	71	438	53	23.74	37	18	34.06	9	37
24	720126.16	49	412	47	23.23	1	1	33.00	19	33
25	771118.19	52	177	44	27.98	2	2	33.00	24	33
26	710104.18	171	280	42	25.33	1136	126	41.02	20	50
27	611210.16	52	213	42	26.93	17	6	34.83	21	36
28	510130.17	393	163	42	28.12	5256	349	47.06	22	68
29	560214.21	477	278	41	25.22	3356	427	39.86	17	54
30	740101.18	47	252	41	25.85	10	5	34.00	19	35
31	511224.18	128	157	41	28.17	522	80	38.53	25	48
32	721204.00	44	214	40	26.65	3	2	33.50	21	34
33	600102.20	46	203	40	26.93	11	4	34.75	22	36
34	520101.17	124	203	40	26.93	532	80	38.65	24	47
35	570117.17	151	205	39	26.74	637	110	37.79	20	44
36	691201.19	58	89	39	29.72	99	16	38.19	28	45
37	681230.02	567	509	38	18.61	4781	508	41.41	14	62
38	490112.17	49	442	38	20.37	30	6	37.00	12	40
39	701217.21	145	95	38	29.50	605	94	38.44	26	43
40	660119.21	318	74	38	30.05	2443	278	40.79	29	57
41	500113.20	69	187	37	26.95	41	26	33.58	21	35
42	690127.18	225	278	36	24.28	847	186	36.55	9	45
43	561205.23	511	78	34	29.71	5827	471	44.37	28	58
44	510128.01	40	266	33	23.94	5	3	33.67	18	34
45	700102.00	48	105	33	28.82	55	14	35.93	24	39
46	481215.22	43	104	33	28.85	17	6	34.83	25	36
47	740110.17	247	263	32	23.78	3669	213	49.23	13	61
48	781206.23	118	131	32	27.91	897	81	43.07	25	53
49	780101.20	940	90	31	29.10	11031	896	44.31	27	56
50	730125.21	56	77	30	29.43	72	11	38.55	28	41

ORDER STATISTICS AT EUGENE
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	751220.01	287	70	30	29.67	3295	251	45.13	28	58
52	600109.05	87	64	28	29.71	240	46	37.22	29	41
53	490119.18	30	168	26	25.54	9	3	35.00	18	36
54	680106.00	144	61	26	29.65	936	110	40.51	28	49
55	730109.19	319	56	26	29.85	3225	278	43.60	27	58
56	540119.20	121	153	25	25.88	809	94	40.61	20	51
57	580106.20	1257	52	23	29.74	18493	1223	47.12	28	64
58	740106.17	24	238	21	20.67	6	3	34.00	13	35
59	720128.17	25	192	21	22.86	5	3	33.67	16	35
60	700105.17	25	128	21	25.90	1	1	33.00	21	33
61	521127.17	24	210	20	21.50	10	3	35.33	16	36
62	510129.17	24	209	20	21.55	6	4	33.50	14	34
63	490122.17	24	208	20	21.60	4	2	34.00	15	34
64	740105.17	24	206	20	21.70	5	3	33.67	15	34
65	561130.17	24	49	20	29.55	7	3	34.33	28	36
66	521126.17	24	174	19	22.84	16	5	35.20	18	37
67	481226.17	78	158	19	23.68	439	59	39.44	19	48
68	740103.17	25	150	19	24.11	27	6	36.50	18	39
69	481217.17	24	150	19	24.11	9	5	33.80	19	35
70	720129.18	24	147	19	24.26	10	4	34.50	20	36
71	490105.17	25	145	19	24.37	21	5	36.20	22	39
72	570116.18	23	126	19	25.37	3	2	33.50	20	34
73	740104.18	23	108	19	26.32	9	4	34.25	24	36
74	500124.16	70	99	19	26.79	147	44	35.34	25	39
75	560202.15	28	95	19	27.00	36	7	37.14	23	41
76	500127.14	27	77	19	27.95	22	6	35.67	24	40
77	561201.17	102	61	19	28.79	415	64	38.48	27	52
78	710101.19	23	55	19	29.11	1	1	33.00	27	33
79	521128.17	24	184	18	21.78	20	5	36.00	18	38
80	781112.18	24	177	18	22.17	32	6	37.33	15	39
81	770108.18	340	172	18	22.44	3382	319	42.60	17	60
82	521129.17	347	146	18	23.89	3907	327	43.95	18	64
83	770106.18	25	130	18	24.78	25	6	36.17	21	38
84	621224.18	24	120	18	25.33	21	5	36.20	20	38
85	720202.18	33	117	18	25.50	21	8	34.63	23	36
86	711227.18	146	109	18	25.94	1099	126	40.72	23	49
87	781227.19	22	100	18	26.44	6	4	33.50	25	34
88	710103.19	23	98	18	26.56	4	3	33.33	23	34
89	490212.18	1187	91	18	26.94	16131	1162	45.88	23	63
90	730108.19	24	87	18	27.17	7	5	33.40	25	34
91	651214.19	23	71	18	28.06	7	4	33.75	26	35
92	710102.18	25	55	18	28.94	10	6	33.67	28	34
93	480114.19	23	53	18	29.06	10	4	34.50	26	35
94	580105.19	25	40	18	29.78	5	3	33.67	29	34
95	490118.16	26	35	18	30.06	14	6	34.33	28	36
96	591231.18	23	32	18	30.22	1	1	33.00	30	33
97	601229.19	103	31	18	30.28	142	46	35.09	30	45
98	781113.18	25	176	17	21.65	46	7	38.57	15	42
99	521125.18	23	164	17	22.35	31	6	37.17	16	40
100	521124.18	24	153	17	23.00	40	6	38.67	19	43

ORDER STATISTICS AT PORTLAND
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500126.05	770	3717	246	16.89	5845	522	43.20	-2	61
2	570117.16	366	3042	317	22.40	365	48	39.60	7	43
3	721203.23	258	2345	254	22.77	4	4	33.00	15	33
4	490119.18	215	1920	205	22.63	9	4	34.25	11	35
5	681228.20	489	1656	139	20.09	1719	338	37.09	8	52
6	641216.00	112	1546	106	17.42	21	6	35.50	8	39
7	740106.16	342	1514	145	21.56	2839	191	46.86	12	61
8	500115.18	192	1347	113	20.08	532	76	39.00	8	48
9	551111.18	532	1283	159	23.93	4041	371	42.89	14	57
10	690121.18	143	1088	136	24.00	9	5	33.80	17	34
11	560130.16	205	972	137	24.91	243	64	35.80	14	41
12	511230.22	308	954	164	26.18	626	129	36.85	21	44
13	630110.15	201	882	83	21.37	684	110	38.22	13	45
14	590102.08	281	792	97	23.84	2082	171	44.18	17	53
15	690127.17	219	725	70	21.64	739	147	37.03	18	46
16	720125.20	70	564	65	23.32	7	4	33.75	20	35
17	500101.16	281	550	87	25.68	859	188	36.57	16	46
18	490108.18	72	512	59	23.32	19	6	35.17	16	37
19	510127.17	72	499	66	24.44	11	5	34.20	16	35
20	620118.22	67	489	65	24.48	2	2	33.00	10	33
21	500113.17	49	480	37	19.03	25	10	34.50	11	35
22	500123.18	59	435	54	23.94	7	3	34.33	12	36
23	730106.17	101	410	76	26.61	49	20	34.45	23	35
24	540119.17	347	383	49	24.18	1936	290	38.68	20	50
25	770108.19	319	367	83	27.58	2346	229	42.24	20	56
26	740104.16	48	356	45	24.09	1	1	33.00	19	33
27	560214.19	58	350	53	25.40	3	2	33.50	18	34
28	561205.17	471	307	67	27.42	5723	402	46.24	23	58
29	600302.03	387	239	58	27.88	3186	324	41.83	25	55
30	630128.13	830	238	76	28.87	11150	749	46.89	24	65
31	671219.06	353	200	56	28.43	3574	292	44.24	15	57
32	680127.17	278	197	54	28.35	2920	224	45.04	25	57
33	620121.17	24	193	21	22.81	5	3	33.67	14	34
34	620122.17	151	188	22	23.45	1405	125	43.24	17	55
35	510130.17	52	185	50	28.30	2	1	34.00	25	34
36	721214.17	485	185	34	26.56	6122	445	45.76	23	60
37	490112.17	23	182	19	22.42	5	3	33.67	17	34
38	740101.18	47	174	42	27.86	5	3	33.67	19	34
39	490111.18	23	148	19	24.21	4	3	33.33	20	34
40	591231.19	49	140	40	28.50	22	9	34.44	23	36
41	600118.14	87	138	39	28.46	108	35	35.09	26	40
42	490113.16	52	135	22	25.86	99	28	35.54	23	44
43	540116.04	65	131	36	28.36	128	28	36.57	26	42
44	720202.17	25	130	20	25.50	6	4	33.50	22	34
45	720203.18	779	127	42	28.98	9942	732	45.58	25	61
46	720128.18	24	127	19	25.32	10	4	34.50	22	36
47	770107.17	26	126	19	25.37	17	6	34.83	18	36
48	740103.17	23	125	19	25.42	1	1	33.00	19	33
49	651219.18	681	124	19	25.47	5685	660	40.61	24	55
50	611210.16	28	123	21	26.14	5	4	33.25	22	34

ORDER STATISTICS AT PORTLAND
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	770106.19	22	117	18	25.50	4	4	33.00	21	33
52	720130.17	27	113	19	26.05	13	7	33.86	22	35
53	600109.08	81	112	42	29.33	54	27	34.00	25	39
54	490104.16	25	112	21	26.67	1	1	33.00	24	33
55	710104.18	24	111	20	26.45	1	1	33.00	23	33
56	720129.18	23	111	19	26.16	2	2	33.00	23	33
57	490103.16	24	106	20	26.70	3	3	33.00	23	33
58	701218.18	81	103	32	28.78	218	45	36.84	27	43
59	780102.15	490	98	25	28.08	4724	457	42.34	26	54
60	490212.19	5939	98	20	27.10	148721	5904	57.19	24	93
61	651216.21	47	97	14	25.07	73	28	34.61	20	39
62	770105.18	25	94	17	26.47	17	6	34.83	24	36
63	620225.22	23	93	14	25.36	41	7	37.86	21	40
64	781112.20	27	92	14	25.43	76	13	37.85	22	43
65	781121.20	22	91	18	26.94	5	2	34.50	22	35
66	560129.18	22	90	19	27.26	1	1	33.00	23	33
67	600103.18	134	89	18	27.06	526	102	37.16	25	43
68	481217.18	23	87	18	27.17	7	5	33.40	22	34
69	651218.20	22	87	16	26.56	18	5	35.60	23	37
70	550304.20	34	87	15	26.20	101	18	37.61	22	44
71	481226.19	21	86	17	26.94	2	2	33.00	24	33
72	521125.19	26	86	15	26.27	29	7	36.14	19	39
73	620226.21	33	86	14	25.86	59	13	36.54	22	39
74	781227.23	18	83	14	26.07	2	2	33.00	22	33
75	780101.16	23	82	20	27.90	1	1	33.00	24	33
76	671212.21	32	81	14	26.21	29	8	35.63	22	38
77	771121.16	751	80	24	28.67	9450	717	45.18	26	63
78	761127.22	24	80	12	25.33	86	12	39.17	22	43
79	781206.18	25	79	20	28.05	6	3	34.00	25	35
80	490128.17	27	79	19	27.84	8	6	33.33	26	34
81	600226.22	30	79	13	25.92	76	14	37.43	22	43
82	720131.20	23	74	14	26.71	29	8	35.63	20	38
83	560127.14	52	72	19	28.21	76	30	34.53	22	36
84	521124.17	26	71	18	28.06	34	6	37.67	25	41
85	771231.19	21	70	18	28.11	1	1	33.00	24	33
86	631210.21	21	70	14	27.00	34	7	36.86	22	40
87	770128.23	22	70	13	26.62	30	7	36.29	24	40
88	621225.23	29	68	12	26.33	61	17	35.59	24	38
89	480206.18	100	67	18	28.28	530	80	38.63	26	47
90	600102.20	22	67	18	28.28	6	3	34.00	27	35
91	511224.22	18	67	12	26.42	7	4	33.75	22	35
92	551218.07	232	66	28	29.64	2143	198	42.82	27	60
93	781122.18	27	66	16	27.88	32	10	35.20	26	37
94	570201.22	120	66	13	26.92	945	105	41.00	22	52
95	630119.22	27	65	13	27.00	59	11	37.36	24	42
96	781226.20	27	64	15	27.73	26	11	34.36	24	37
97	570116.19	21	63	15	27.80	11	4	34.75	26	36
98	490102.23	17	63	13	27.15	6	4	33.50	23	34
99	781111.23	21	61	11	26.45	59	9	38.56	22	42
100	651215.20	25	60	17	28.47	6	5	33.20	26	34

ORDER STATISTICS AT SALEM
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500127.07	740	3187	195	15.66	7166	543	45.20	-9	62
2	721203.21	197	3093	195	16.14	1	1	33.00	-7	33
3	620118.18	242	1293	125	21.66	1283	106	44.10	8	54
4	690123.17	151	1186	137	23.34	11	9	33.22	14	34
5	570123.19	117	1186	114	21.60	4	3	33.33	9	34
6	740106.17	96	1124	91	19.65	7	3	34.33	8	35
7	641216.05	359	1086	77	17.90	3030	279	42.86	9	61
8	551112.18	510	1055	119	23.13	5117	386	45.26	10	66
9	630110.16	195	905	77	20.25	852	115	39.41	12	47
10	681229.17	99	827	48	14.77	326	46	39.09	9	46
11	500116.07	181	811	74	21.04	1140	100	43.40	14	55
12	590102.17	731	733	88	23.67	8791	642	45.69	17	59
13	651215.18	153	724	114	25.65	171	35	36.89	21	43
14	721212.02	407	671	91	24.63	5288	309	49.11	13	60
15	490124.15	75	601	66	22.89	18	6	35.00	13	38
16	560130.18	71	554	66	23.61	2	2	33.00	15	33
17	500101.16	62	474	55	23.38	6	4	33.50	11	34
18	720125.19	70	457	65	24.97	4	3	33.33	15	34
19	490108.17	47	440	44	22.00	1	1	33.00	13	33
20	570128.16	109	416	44	22.55	424	62	38.84	12	46
21	740104.17	48	410	44	22.68	4	3	33.33	15	34
22	630128.16	327	363	71	26.89	4360	253	49.23	20	66
23	510127.21	44	331	40	23.73	2	2	33.00	19	33
24	740110.17	244	321	37	23.32	3167	207	47.30	12	59
25	520101.16	64	319	44	24.75	95	19	37.00	19	39
26	560214.21	461	288	45	25.60	3309	412	40.03	17	51
27	690121.18	47	276	43	25.58	2	2	33.00	16	33
28	500113.18	61	262	39	25.28	28	18	33.56	14	34
29	611210.17	55	259	41	25.68	14	9	33.56	16	35
30	570117.17	60	243	41	26.07	107	16	38.69	16	43
31	490112.17	24	228	19	20.00	13	4	35.25	12	37
32	620225.18	25	228	18	19.33	17	6	34.83	11	36
33	490123.17	22	220	20	21.00	2	1	34.00	13	34
34	701217.19	96	215	52	27.87	214	42	37.10	24	41
35	490119.18	53	215	27	24.04	51	22	34.32	16	38
36	490110.16	25	208	19	21.05	16	5	35.20	17	37
37	680127.18	204	207	45	27.40	2006	153	45.11	23	57
38	710228.18	24	199	18	20.94	15	5	35.00	15	36
39	770108.19	23	195	17	20.53	17	5	35.40	15	37
40	490111.17	24	192	19	21.89	16	5	35.20	14	37
41	510129.17	25	190	19	22.00	9	4	34.25	18	35
42	561226.21	217	189	84	29.75	1013	131	39.73	27	50
43	591231.19	47	186	38	27.11	21	6	35.50	18	37
44	540119.18	120	183	26	24.96	722	91	39.93	18	49
45	710104.17	24	180	20	23.00	4	4	33.00	17	33
46	620224.18	24	177	17	21.59	16	7	34.29	14	35
47	720128.17	25	176	20	23.20	14	5	34.80	19	36
48	600118.13	688	175	47	28.28	7786	630	44.36	26	62
49	681219.19	62	173	39	27.56	21	16	33.31	22	34
50	740101.18	23	171	19	23.00	2	2	33.00	17	33

ORDER STATISTICS AT SALEM
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	781112.19	24	170	15	20.67	58	8	39.25	17	43
52	660118.19	72	169	61	29.23	1	1	33.00	25	33
53	770106.18	25	167	18	22.72	24	6	36.00	18	37
54	710101.18	50	166	41	27.95	11	7	33.57	23	34
55	490122.17	24	165	18	22.83	19	6	35.17	18	37
56	521127.19	22	162	15	21.20	17	5	35.40	15	37
57	720202.18	25	160	18	23.11	14	5	34.80	19	36
58	730106.17	25	158	20	24.10	4	3	33.33	20	34
59	771119.18	27	156	18	23.33	18	7	34.57	17	36
60	481223.17	22	156	18	23.33	3	3	33.00	20	33
61	620226.19	30	155	17	22.88	33	11	35.00	19	37
62	500124.17	62	154	21	24.67	126	38	35.32	21	40
63	701121.20	98	151	42	28.40	804	53	47.17	27	58
64	490104.17	24	151	20	24.45	7	4	33.75	21	35
65	481226.17	30	151	19	24.05	27	10	34.70	19	37
66	740103.17	24	151	18	23.61	17	5	35.40	20	36
67	691201.18	24	150	18	23.67	23	6	35.83	21	37
68	560127.17	50	148	17	23.29	129	32	36.03	15	44
69	781113.19	24	146	15	22.27	61	8	39.63	17	43
70	630120.18	27	145	18	23.94	44	7	38.29	18	41
71	481217.17	24	145	18	23.94	11	6	33.83	20	35
72	600108.20	80	142	41	28.54	196	34	37.76	25	42
73	710105.17	154	142	20	24.90	1010	116	40.71	20	49
74	600103.18	28	141	17	23.71	33	10	35.30	21	38
75	700104.18	25	139	18	24.28	17	6	34.83	18	36
76	521126.17	26	139	17	23.82	46	8	37.75	18	41
77	490103.17	24	138	19	24.74	10	4	34.50	20	35
78	521125.17	24	137	17	23.94	48	7	38.86	19	42
79	621225.19	23	136	16	23.50	23	5	36.60	20	38
80	561206.16	28	130	20	25.50	3	2	33.50	19	34
81	490113.17	50	129	18	24.83	163	29	37.62	21	48
82	750129.19	49	128	37	28.54	56	10	37.60	22	43
83	630119.18	24	128	17	24.47	34	7	36.86	20	39
84	781114.19	122	128	16	24.00	1259	104	44.11	20	51
85	730107.18	25	127	18	24.94	16	6	34.67	20	36
86	490127.18	25	127	16	24.06	39	7	37.57	17	40
87	521124.17	24	125	17	24.65	40	6	38.67	19	41
88	770129.19	80	125	15	23.67	769	63	44.21	18	55
89	600302.05	48	124	32	28.13	5	5	33.00	25	33
90	691130.18	24	124	18	25.11	24	6	36.00	22	38
91	630126.19	24	123	16	24.31	49	7	39.00	18	42
92	770107.19	24	123	15	23.80	48	8	38.00	20	41
93	720129.18	24	122	18	25.22	15	5	35.00	20	37
94	770105.19	23	122	16	24.38	31	7	36.43	17	39
95	691129.19	23	122	16	24.38	39	6	38.50	19	40
96	751220.18	267	122	16	24.38	3118	250	44.47	21	55
97	781225.18	24	121	19	25.63	4	3	33.33	21	34
98	600226.20	24	121	15	23.93	50	9	37.56	16	41
99	691202.18	28	120	17	24.94	33	10	35.30	22	37
100	771118.18	24	118	18	25.44	10	4	34.50	20	35

ORDER STATISTICS AT EUGENE
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500128.17	731	2724	158	14.76	7138	567	44.59	-1	64
2	721205.20	136	2402	126	12.94	12	8	33.50	-10	34
3	570124.00	317	2245	157	17.70	1163	155	39.50	0	52
4	620118.23	222	1473	131	20.76	1050	91	43.54	6	58
5	490108.15	98	999	90	20.90	4	3	33.33	11	34
6	690122.17	98	897	92	22.25	8	4	34.00	14	35
7	490123.17	100	866	92	22.59	5	4	33.25	11	34
8	551112.23	509	863	110	24.15	5272	395	45.35	15	65
9	630110.17	195	844	67	19.40	762	119	38.40	12	48
10	740107.17	72	725	63	20.49	19	4	36.75	11	38
11	641216.08	348	717	63	20.62	3294	277	43.89	10	61
12	490101.20	93	695	84	23.73	5	3	33.67	15	34
13	721212.12	466	690	83	23.69	5458	376	46.52	12	61
14	500116.17	172	584	61	22.43	1027	108	41.51	16	52
15	590102.19	730	573	85	25.26	8871	642	45.82	20	57
16	681230.02	567	509	38	18.61	4781	508	41.41	14	62
17	560130.18	69	485	65	24.54	1	1	33.00	16	33
18	481223.17	72	485	62	24.18	5	3	33.67	18	35
19	490112.17	49	442	38	20.37	30	6	37.00	12	40
20	500101.18	71	438	53	23.74	37	18	34.06	9	37
21	720126.16	49	412	47	23.23	1	1	33.00	19	33
22	651215.18	96	409	90	27.46	4	3	33.33	23	34
23	730106.02	65	363	59	25.85	10	4	34.50	23	36
24	710104.18	171	280	42	25.33	1136	126	41.02	20	50
25	560214.21	477	278	41	25.22	3356	427	39.86	17	54
26	690127.18	225	278	36	24.28	847	186	36.55	9	45
27	510128.01	40	266	33	23.94	5	3	33.67	18	34
28	740110.17	247	263	32	23.78	3669	213	49.23	13	61
29	630128.22	822	259	61	27.75	12263	754	48.26	24	65
30	740101.18	47	252	41	25.85	10	5	34.00	19	35
31	740106.17	24	238	21	20.67	6	3	34.00	13	35
32	721204.00	44	214	40	26.65	3	2	33.50	21	34
33	611210.16	52	213	42	26.93	17	6	34.83	21	36
34	521127.17	24	210	20	21.50	10	3	35.33	16	36
35	510129.17	24	209	20	21.55	6	4	33.50	14	34
36	490122.17	24	208	20	21.60	4	2	34.00	15	34
37	740105.17	24	206	20	21.70	5	3	33.67	15	34
38	570117.17	151	205	39	26.74	637	110	37.79	20	44
39	600102.20	46	203	40	26.93	11	4	34.75	22	36
40	520101.17	124	203	40	26.93	532	80	38.65	24	47
41	720128.17	25	192	21	22.86	5	3	33.67	16	35
42	500113.20	69	187	37	26.95	41	26	33.58	21	35
43	521128.17	24	184	18	21.78	20	5	36.00	18	38
44	771118.19	52	177	44	27.98	2	2	33.00	24	33
45	781112.18	24	177	18	22.17	32	6	37.33	15	39
46	781113.18	25	176	17	21.65	46	7	38.57	15	42
47	521126.17	24	174	19	22.84	16	5	35.20	18	37
48	770108.18	340	172	18	22.44	3382	319	42.60	17	60
49	490119.18	30	168	26	25.54	9	3	35.00	18	36
50	521125.18	23	164	17	22.35	31	6	37.17	16	40

ORDER STATISTICS AT EUGENE
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	510130.17	393	163	42	28.12	5256	349	47.06	22	68
52	561227.17	152	158	62	29.45	615	81	39.59	28	51
53	481226.17	78	158	19	23.68	439	59	39.44	19	48
54	511224.18	128	157	41	28.17	522	80	38.53	25	48
55	540119.20	121	153	25	25.88	809	94	40.61	20	51
56	521124.18	24	153	17	23.00	40	6	38.67	19	43
57	740103.17	25	150	19	24.11	27	6	36.50	18	39
58	481217.17	24	150	19	24.11	9	5	33.80	19	35
59	600118.08	713	148	59	29.49	8561	637	45.44	27	63
60	720129.18	24	147	19	24.26	10	4	34.50	20	36
61	770107.19	23	147	17	23.35	26	6	36.33	18	39
62	521129.17	347	146	18	23.89	3907	327	43.95	18	64
63	490105.17	25	145	19	24.37	21	5	36.20	22	39
64	781206.23	118	131	32	27.91	897	81	43.07	25	53
65	770106.18	25	130	18	24.78	25	6	36.17	21	38
66	700105.17	25	128	21	25.90	1	1	33.00	21	33
67	570116.18	23	126	19	25.37	3	2	33.50	20	34
68	781111.18	24	126	17	24.59	31	7	36.43	19	38
69	781114.19	130	126	16	24.13	1379	106	45.01	22	54
70	480127.19	25	125	15	23.67	81	8	42.13	20	48
71	720103.18	25	123	17	24.76	29	7	36.14	21	38
72	521123.18	24	123	16	24.31	60	8	39.50	19	44
73	620226.18	322	122	17	24.82	2823	297	41.51	21	57
74	621224.18	24	120	18	25.33	21	5	36.20	20	38
75	620225.19	23	119	17	25.00	24	5	36.80	20	39
76	630119.18	26	119	17	25.00	45	7	38.43	21	41
77	720202.18	33	117	18	25.50	21	8	34.63	23	36
78	481222.18	23	113	17	25.35	8	4	34.00	18	36
79	621225.18	25	111	17	25.47	45	7	38.43	22	44
80	720201.19	23	110	17	25.53	13	5	34.60	21	35
81	490128.18	54	110	16	25.13	253	37	38.84	24	48
82	711227.18	146	109	18	25.94	1099	126	40.72	23	49
83	740104.18	23	108	19	26.32	9	4	34.25	24	36
84	600104.18	107	108	17	25.65	574	86	38.67	22	45
85	770105.19	23	107	17	25.71	22	6	35.67	21	38
86	720130.18	26	107	16	25.31	35	9	35.89	22	38
87	700102.00	48	105	33	28.82	55	14	35.93	24	39
88	481215.22	43	104	33	28.85	17	6	34.83	25	36
89	480118.20	23	103	15	25.13	50	7	39.14	22	45
90	490121.20	21	101	16	25.69	3	2	33.50	22	34
91	630126.20	24	101	15	25.27	68	9	39.56	20	45
92	781227.19	22	100	18	26.44	6	4	33.50	25	34
93	500124.16	70	99	19	26.79	147	44	35.34	25	39
94	710228.21	21	99	17	26.18	9	4	34.25	22	36
95	710103.19	23	98	18	26.56	4	3	33.33	23	34
96	630120.20	26	97	16	25.94	54	9	38.00	21	44
97	630118.20	22	96	16	26.00	22	6	35.67	21	38
98	551230.19	612	96	15	25.60	7251	596	44.17	23	57
99	701217.21	145	95	38	29.50	605	94	38.44	26	43
100	560202.15	28	95	19	27.00	36	7	37.14	23	41

ORDER STATISTICS AT PORTLAND
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500126.05	770	3717	246	16.89	5845	522	43.20	-2	61
2	641216.00	112	1546	106	17.42	21	6	35.50	8	39
3	500113.17	49	480	37	19.03	25	10	34.50	11	35
4	500115.18	192	1347	113	20.08	532	76	39.00	8	48
5	681228.20	489	1656	139	20.09	1719	338	37.09	8	52
6	630110.15	201	882	83	21.37	684	110	38.22	13	45
7	740106.16	342	1514	145	21.56	2839	191	46.86	12	61
8	690127.17	219	725	70	21.64	739	147	37.03	18	46
9	570117.16	366	3042	317	22.40	365	48	39.60	7	43
10	490112.17	23	182	19	22.42	5	3	33.67	17	34
11	490119.18	215	1920	205	22.63	9	4	34.25	11	35
12	721203.23	258	2345	254	22.77	4	4	33.00	15	33
13	620121.17	24	193	21	22.81	5	3	33.67	14	34
14	490108.18	72	512	59	23.32	19	6	35.17	16	37
15	720125.20	70	564	65	23.32	7	4	33.75	20	35
16	620122.17	151	188	22	23.45	1405	125	43.24	17	55
17	500113.09	8	58	7	23.71	3	1	35.00	20	35
18	590102.08	281	792	97	23.84	2082	171	44.18	17	53
19	551111.18	532	1283	159	23.93	4041	371	42.89	14	57
20	500123.18	59	435	54	23.94	7	3	34.33	12	36
21	690121.18	143	1088	136	24.00	9	5	33.80	17	34
22	740104.16	48	356	45	24.09	1	1	33.00	19	33
23	540119.17	347	383	49	24.18	1936	290	38.68	20	50
24	490111.18	23	148	19	24.21	4	3	33.33	20	34
25	510127.17	72	499	66	24.44	11	5	34.20	16	35
26	620118.22	67	489	65	24.48	2	2	33.00	10	33
27	560130.16	205	972	137	24.91	243	64	35.80	14	41
28	651216.21	47	97	14	25.07	73	28	34.61	20	39
29	720128.18	24	127	19	25.32	10	4	34.50	22	36
30	761127.22	24	80	12	25.33	86	12	39.17	22	43
31	620225.22	23	93	14	25.36	41	7	37.86	21	40
32	770107.17	26	126	19	25.37	17	6	34.83	18	36
33	560214.19	58	350	53	25.40	3	2	33.50	18	34
34	740103.17	23	125	19	25.42	1	1	33.00	19	33
35	781112.20	27	92	14	25.43	76	13	37.85	22	43
36	651219.18	681	124	19	25.47	5685	660	40.61	24	55
37	720202.17	25	130	20	25.50	6	4	33.50	22	34
38	770106.19	22	117	18	25.50	4	4	33.00	21	33
39	500101.16	281	550	87	25.68	859	188	36.57	16	46
40	620226.21	33	86	14	25.86	59	13	36.54	22	39
41	490113.16	52	135	22	25.86	99	28	35.54	23	44
42	600226.22	30	79	13	25.92	76	14	37.43	22	43
43	720130.17	27	113	19	26.05	13	7	33.86	22	35
44	781227.23	18	83	14	26.07	2	2	33.00	22	33
45	550218.00	22	47	8	26.13	82	11	39.45	24	44
46	611210.16	28	123	21	26.14	5	4	33.25	22	34
47	720129.18	23	111	19	26.16	2	2	33.00	23	33
48	511230.22	308	954	164	26.18	626	129	36.85	21	44
49	550304.20	34	87	15	26.20	101	18	37.61	22	44
50	671212.21	32	81	14	26.21	29	8	35.63	22	38

ORDER STATISTICS AT PORTLAND
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	521125.19	26	86	15	26.27	29	7	36.14	19	39
52	621225.23	29	68	12	26.33	61	17	35.59	24	38
53	511224.22	18	67	12	26.42	7	4	33.75	22	35
54	710104.18	24	111	20	26.45	1	1	33.00	23	33
55	781111.23	21	61	11	26.45	59	9	38.56	22	42
56	770105.18	25	94	17	26.47	17	6	34.83	24	36
57	541211.01	3	11	2	26.50	2	1	34.00	26	34
58	710207.00	27	49	9	26.56	139	16	40.69	25	50
59	721214.17	485	185	34	26.56	6122	445	45.76	23	60
60	651218.20	22	87	16	26.56	18	5	35.60	23	37
61	730106.17	101	410	76	26.61	49	20	34.45	23	35
62	770128.23	22	70	13	26.62	30	7	36.29	24	40
63	490104.16	25	112	21	26.67	1	1	33.00	24	33
64	490103.16	24	106	20	26.70	3	3	33.00	23	33
65	630121.01	48	53	10	26.70	241	38	38.34	23	46
66	720131.20	23	74	14	26.71	29	8	35.63	20	38
67	781113.23	137	58	11	26.73	1072	124	40.65	22	51
68	770103.01	47	52	10	26.80	50	29	33.72	23	35
69	570201.22	120	66	13	26.92	945	105	41.00	22	52
70	481226.19	21	86	17	26.94	2	2	33.00	24	33
71	781121.20	22	91	18	26.94	5	2	34.50	22	35
72	631210.21	21	70	14	27.00	34	7	36.86	22	40
73	630119.22	27	65	13	27.00	59	11	37.36	24	42
74	561130.22	3	5	1	27.00	2	2	33.00	27	33
75	600103.18	134	89	18	27.06	526	102	37.16	25	43
76	490212.19	5939	98	20	27.10	148721	5904	57.19	24	93
77	600301.01	26	44	9	27.11	111	17	38.53	24	42
78	490102.23	17	63	13	27.15	6	4	33.50	23	34
79	481217.18	23	87	18	27.17	7	5	33.40	22	34
80	591206.02	44	43	9	27.22	260	35	39.43	25	45
81	560129.18	22	90	19	27.26	1	1	33.00	23	33
82	480211.22	511	52	11	27.27	5729	496	43.55	25	65
83	521128.00	24	47	10	27.30	39	10	35.90	24	40
84	480202.21	70	56	12	27.33	240	52	36.62	25	42
85	710228.23	174	51	11	27.36	1158	159	39.28	24	50
86	770126.00	25	46	10	27.40	88	13	38.77	23	45
87	561205.17	471	307	67	27.42	5723	402	46.24	23	58
88	560312.01	53	32	7	27.43	446	45	41.91	25	49
89	640206.02	22	32	7	27.43	121	13	41.31	26	48
90	761127.01	21	36	8	27.50	93	11	40.45	24	45
91	561127.02	67	27	6	27.50	521	60	40.68	25	49
92	621224.06	15	18	4	27.50	49	10	36.90	25	41
93	601207.01	318	40	9	27.56	2472	303	40.16	25	54
94	521129.21	9	31	7	27.57	1	1	33.00	26	33
95	770108.19	319	367	83	27.58	2346	229	42.24	20	56
96	761128.22	23	53	12	27.58	77	11	39.00	26	44
97	690310.03	25	22	5	27.60	202	18	43.22	26	50
98	630119.00	22	48	11	27.64	39	9	36.33	23	39
99	550220.00	26	39	9	27.67	136	15	41.07	24	51
100	490117.23	19	60	14	27.71	26	5	37.20	26	39

ORDER STATISTICS AT SALEM
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	681229.17	99	827	48	14.77	326	46	39.09	9	46
2	500127.07	740	3187	195	15.66	7166	543	45.20	-9	62
3	721203.21	197	3093	195	16.14	1	1	33.00	-7	33
4	641216.05	359	1086	77	17.90	3030	279	42.86	9	61
5	620225.18	25	228	18	19.33	17	6	34.83	11	36
6	740106.17	96	1124	91	19.65	7	3	34.33	8	35
7	490112.17	24	228	19	20.00	13	4	35.25	12	37
8	630110.16	195	905	77	20.25	852	115	39.41	12	47
9	770108.19	23	195	17	20.53	17	5	35.40	15	37
10	781112.19	24	170	15	20.67	58	8	39.25	17	43
11	710228.18	24	199	18	20.94	15	5	35.00	15	36
12	490123.17	22	220	20	21.00	2	1	34.00	13	34
13	500116.07	181	811	74	21.04	1140	100	43.40	14	55
14	490110.16	25	208	19	21.05	16	5	35.20	17	37
15	521127.19	22	162	15	21.20	17	5	35.40	15	37
16	620224.18	24	177	17	21.59	16	7	34.29	14	35
17	570123.19	117	1186	114	21.60	4	3	33.33	9	34
18	620118.18	242	1293	125	21.66	1283	106	44.10	8	54
19	490111.17	24	192	19	21.89	16	5	35.20	14	37
20	490108.17	47	440	44	22.00	1	1	33.00	13	33
21	510129.17	25	190	19	22.00	9	4	34.25	18	35
22	781113.19	24	146	15	22.27	61	8	39.63	17	43
23	570128.16	109	416	44	22.55	424	62	38.84	12	46
24	740104.17	48	410	44	22.68	4	3	33.33	15	34
25	770106.18	25	167	18	22.72	24	6	36.00	18	37
26	490122.17	24	165	18	22.83	19	6	35.17	18	37
27	620226.19	30	155	17	22.88	33	11	35.00	19	37
28	490124.15	75	601	66	22.89	18	6	35.00	13	38
29	600229.21	32	118	13	22.92	76	17	36.47	20	42
30	710104.17	24	180	20	23.00	4	4	33.00	17	33
31	740101.18	23	171	19	23.00	2	2	33.00	17	33
32	720202.18	25	160	18	23.11	14	5	34.80	19	36
33	551112.18	510	1055	119	23.13	5117	386	45.26	10	66
34	720128.17	25	176	20	23.20	14	5	34.80	19	36
35	560127.17	50	148	17	23.29	129	32	36.03	15	44
36	740110.17	244	321	37	23.32	3167	207	47.30	12	59
37	771119.18	27	156	18	23.33	18	7	34.57	17	36
38	481223.17	22	156	18	23.33	3	3	33.00	20	33
39	690123.17	151	1186	137	23.34	11	9	33.22	14	34
40	500101.16	62	474	55	23.38	6	4	33.50	11	34
41	621225.19	23	136	16	23.50	23	5	36.60	20	38
42	560130.18	71	554	66	23.61	2	2	33.00	15	33
43	740103.17	24	151	18	23.61	17	5	35.40	20	36
44	691201.18	24	150	18	23.67	23	6	35.83	21	37
45	770129.19	80	125	15	23.67	769	63	44.21	18	55
46	590102.17	731	733	88	23.67	8791	642	45.69	17	59
47	600103.18	28	141	17	23.71	33	10	35.30	21	38
48	510127.21	44	331	40	23.73	2	2	33.00	19	33
49	770107.19	24	123	15	23.80	48	8	38.00	20	41
50	521126.17	26	139	17	23.82	46	8	37.75	18	41

ORDER STATISTICS AT SALEM
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	600226.20	24	121	15	23.93	50	9	37.56	16	41
52	521125.17	24	137	17	23.94	48	7	38.86	19	42
53	630120.18	27	145	18	23.94	44	7	38.29	18	41
54	481217.17	24	145	18	23.94	11	6	33.83	20	35
55	781114.19	122	128	16	24.00	1259	104	44.11	20	51
56	490119.18	53	215	27	24.04	51	22	34.32	16	38
57	481226.17	30	151	19	24.05	27	10	34.70	19	37
58	490127.18	25	127	16	24.06	39	7	37.57	17	40
59	730106.17	25	158	20	24.10	4	3	33.33	20	34
60	560127.03	14	63	8	24.13	20	6	35.33	17	37
61	700104.18	25	139	18	24.28	17	6	34.83	18	36
62	611116.21	73	100	13	24.31	489	58	40.43	20	47
63	630126.19	24	123	16	24.31	49	7	39.00	18	42
64	770105.19	23	122	16	24.38	31	7	36.43	17	39
65	691129.19	23	122	16	24.38	39	6	38.50	19	40
66	751220.18	267	122	16	24.38	3118	250	44.47	21	55
67	480127.19	29	114	15	24.40	74	9	40.22	20	47
68	511224.20	22	114	15	24.40	6	6	33.00	21	33
69	490104.17	24	151	20	24.45	7	4	33.75	21	35
70	630119.18	24	128	17	24.47	34	7	36.86	20	39
71	591113.22	20	89	12	24.58	77	8	41.63	16	46
72	770126.19	24	111	15	24.60	100	9	43.11	20	50
73	721212.02	407	671	91	24.63	5288	309	49.11	13	60
74	521124.17	24	125	17	24.65	40	6	38.67	19	41
75	500124.17	62	154	21	24.67	126	38	35.32	21	40
76	480202.20	50	102	14	24.71	202	33	38.12	21	48
77	490103.17	24	138	19	24.74	10	4	34.50	20	35
78	520101.16	64	319	44	24.75	95	19	37.00	19	39
79	550218.19	25	101	14	24.79	106	10	42.60	23	47
80	511223.23	21	79	11	24.82	49	9	37.44	22	42
81	490113.17	50	129	18	24.83	163	29	37.62	21	48
82	770125.21	22	93	13	24.85	91	9	42.11	20	48
83	710105.17	154	142	20	24.90	1010	116	40.71	20	49
84	691202.18	28	120	17	24.94	33	10	35.30	22	37
85	730107.18	25	127	18	24.94	16	6	34.67	20	36
86	540119.18	120	183	26	24.96	722	91	39.93	18	49
87	720125.19	70	457	65	24.97	4	3	33.33	15	34
88	480211.20	30	91	13	25.00	107	16	38.69	21	48
89	691130.18	24	124	18	25.11	24	6	36.00	22	38
90	671212.19	24	109	16	25.19	30	8	35.75	22	38
91	720129.18	24	122	18	25.22	15	5	35.00	20	37
92	500113.18	61	262	39	25.28	28	18	33.56	14	34
93	561130.19	23	94	14	25.29	58	8	39.25	21	44
94	521128.17	25	114	17	25.29	39	8	36.88	19	40
95	720201.19	23	107	16	25.31	31	7	36.43	22	38
96	481222.19	22	100	15	25.33	30	6	37.00	21	39
97	591204.20	22	93	14	25.36	63	8	39.88	22	44
98	630123.20	23	93	14	25.36	60	8	39.50	22	42
99	521123.18	23	112	17	25.41	45	6	39.50	19	43
100	771118.18	24	118	18	25.44	10	4	34.50	20	35

ORDER STATISTICS AT EUGENE
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	721205.20	136	2402	126	12.94	12	8	33.50	-10	34
2	500128.17	731	2724	158	14.76	7138	567	44.59	-1	64
3	570124.00	317	2245	157	17.70	1163	155	39.50	0	52
4	681230.02	567	509	38	18.61	4781	508	41.41	14	62
5	630110.17	195	844	67	19.40	762	119	38.40	12	48
6	490112.17	49	442	38	20.37	30	6	37.00	12	40
7	740107.17	72	725	63	20.49	19	4	36.75	11	38
8	641216.08	348	717	63	20.62	3294	277	43.89	10	61
9	740106.17	24	238	21	20.67	6	3	34.00	13	35
10	620118.23	222	1473	131	20.76	1050	91	43.54	6	58
11	490108.15	98	999	90	20.90	4	3	33.33	11	34
12	640406.23	246	66	6	21.00	3877	238	48.29	13	67
13	600312.23	192	53	5	21.40	2885	186	47.51	14	70
14	521127.17	24	210	20	21.50	10	3	35.33	16	36
15	510129.17	24	209	20	21.55	6	4	33.50	14	34
16	490122.17	24	208	20	21.60	4	2	34.00	15	34
17	781113.18	25	176	17	21.65	46	7	38.57	15	42
18	740105.17	24	206	20	21.70	5	3	33.67	15	34
19	521128.17	24	184	18	21.78	20	5	36.00	18	38
20	600320.23	23	60	6	22.00	388	17	54.82	14	68
21	781112.18	24	177	18	22.17	32	6	37.33	15	39
22	690122.17	98	897	92	22.25	8	4	34.00	14	35
23	521125.18	23	164	17	22.35	31	6	37.17	16	40
24	600321.22	23	48	5	22.40	338	18	50.78	14	62
25	500116.17	172	584	61	22.43	1027	108	41.51	16	52
26	770108.18	340	172	18	22.44	3382	319	42.60	17	60
27	490123.17	100	866	92	22.59	5	4	33.25	11	34
28	600419.22	2473	46	5	22.80	71518	2468	60.98	14	100
29	521126.17	24	174	19	22.84	16	5	35.20	18	37
30	720128.17	25	192	21	22.86	5	3	33.67	16	35
31	521124.18	24	153	17	23.00	40	6	38.67	19	43
32	720126.16	49	412	47	23.23	1	1	33.00	19	33
33	770107.19	23	147	17	23.35	26	6	36.33	18	39
34	480127.19	25	125	15	23.67	81	8	42.13	20	48
35	481226.17	78	158	19	23.68	439	59	39.44	19	48
36	721212.12	466	690	83	23.69	5458	376	46.52	12	61
37	490101.20	93	695	84	23.73	5	3	33.67	15	34
38	500101.18	71	438	53	23.74	37	18	34.06	9	37
39	740110.17	247	263	32	23.78	3669	213	49.23	13	61
40	600323.23	645	49	6	23.83	12030	639	50.83	17	76
41	521129.17	347	146	18	23.89	3907	327	43.95	18	64
42	510128.01	40	266	33	23.94	5	3	33.67	18	34
43	740103.17	25	150	19	24.11	27	6	36.50	18	39
44	481217.17	24	150	19	24.11	9	5	33.80	19	35
45	781114.19	130	126	16	24.13	1379	106	45.01	22	54
46	551112.23	509	863	110	24.15	5272	395	45.35	15	65
47	481223.17	72	485	62	24.18	5	3	33.67	18	35
48	720129.18	24	147	19	24.26	10	4	34.50	20	36
49	690127.18	225	278	36	24.28	847	186	36.55	9	45
50	521123.18	24	123	16	24.31	60	8	39.50	19	44

ORDER STATISTICS AT EUGENE
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	490105.17	25	145	19	24.37	21	5	36.20	22	39
52	600322.23	20	30	4	24.50	292	16	50.25	19	62
53	581228.22	117	30	4	24.50	1500	112	45.39	20	62
54	560130.18	69	485	65	24.54	1	1	33.00	16	33
55	781111.18	24	126	17	24.59	31	7	36.43	19	38
56	521122.23	19	74	10	24.60	76	8	41.50	21	46
57	581227.22	20	37	5	24.60	180	15	44.00	18	49
58	720103.18	25	123	17	24.76	29	7	36.14	21	38
59	770106.18	25	130	18	24.78	25	6	36.17	21	38
60	620226.18	322	122	17	24.82	2823	297	41.51	21	57
61	620225.19	23	119	17	25.00	24	5	36.80	20	39
62	630119.18	26	119	17	25.00	45	7	38.43	21	41
63	480126.22	21	84	12	25.00	66	8	40.25	20	45
64	490128.18	54	110	16	25.13	253	37	38.84	24	48
65	480118.20	23	103	15	25.13	50	7	39.14	22	45
66	560214.21	477	278	41	25.22	3356	427	39.86	17	54
67	590102.19	730	573	85	25.26	8871	642	45.82	20	57
68	630126.20	24	101	15	25.27	68	9	39.56	20	45
69	720130.18	26	107	16	25.31	35	9	35.89	22	38
70	710104.18	171	280	42	25.33	1136	126	41.02	20	50
71	621224.18	24	120	18	25.33	21	5	36.20	20	38
72	481222.18	23	113	17	25.35	8	4	34.00	18	36
73	570116.18	23	126	19	25.37	3	2	33.50	20	34
74	621225.18	25	111	17	25.47	45	7	38.43	22	44
75	720202.18	33	117	18	25.50	21	8	34.63	23	36
76	720201.19	23	110	17	25.53	13	5	34.60	21	35
77	490119.18	30	168	26	25.54	9	3	35.00	18	36
78	551230.19	612	96	15	25.60	7251	596	44.17	23	57
79	600104.18	107	108	17	25.65	574	86	38.67	22	45
80	591113.22	23	76	12	25.67	81	10	40.10	20	47
81	490121.20	21	101	16	25.69	3	2	33.50	22	34
82	770125.21	24	82	13	25.69	118	10	43.80	23	54
83	770105.19	23	107	17	25.71	22	6	35.67	21	38
84	651220.00	52	69	11	25.73	273	40	38.83	22	45
85	601208.20	24	94	15	25.73	29	6	36.83	22	39
86	480202.19	52	93	15	25.80	192	34	37.65	22	46
87	730106.02	65	363	59	25.85	10	4	34.50	23	36
88	740101.18	47	252	41	25.85	10	5	34.00	19	35
89	540119.20	121	153	25	25.88	809	94	40.61	20	51
90	700105.17	25	128	21	25.90	1	1	33.00	21	33
91	711027.22	22	73	12	25.92	79	10	39.90	22	45
92	600227.19	27	91	15	25.93	91	11	40.27	22	45
93	630120.20	26	97	16	25.94	54	9	38.00	21	44
94	711227.18	146	109	18	25.94	1099	126	40.72	23	49
95	630118.20	22	96	16	26.00	22	6	35.67	21	38
96	480211.19	177	90	15	26.00	2087	161	44.96	21	65
97	600226.20	23	90	15	26.00	38	8	36.75	21	39
98	480205.20	22	90	15	26.00	36	7	37.14	21	39
99	710228.21	21	99	17	26.18	9	4	34.25	22	36
100	601207.20	24	80	14	26.29	50	8	38.25	22	42

ORDER STATISTICS AT PORTLAND
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500126.05	770	3717	246	16.89	5845	522	43.20	-2	61
2	570117.16	366	3042	317	22.40	365	48	39.60	7	43
3	681228.20	489	1656	139	20.09	1719	338	37.09	8	52
4	641216.00	112	1546	106	17.42	21	6	35.50	8	39
5	500115.18	192	1347	113	20.08	532	76	39.00	8	48
6	620118.22	67	489	65	24.48	2	2	33.00	10	33
7	490119.18	215	1920	205	22.63	9	4	34.25	11	35
8	500113.17	49	480	37	19.03	25	10	34.50	11	35
9	740106.16	342	1514	145	21.56	2839	191	46.86	12	61
10	500123.18	59	435	54	23.94	7	3	34.33	12	36
11	630110.15	201	882	83	21.37	684	110	38.22	13	45
12	551111.18	532	1283	159	23.93	4041	371	42.89	14	57
13	560130.16	205	972	137	24.91	243	64	35.80	14	41
14	620121.17	24	193	21	22.81	5	3	33.67	14	34
15	721203.23	258	2345	254	22.77	4	4	33.00	15	33
16	671219.06	353	200	56	28.43	3574	292	44.24	15	57
17	500101.16	281	550	87	25.68	859	188	36.57	16	46
18	490108.18	72	512	59	23.32	19	6	35.17	16	37
19	510127.17	72	499	66	24.44	11	5	34.20	16	35
20	690121.18	143	1088	136	24.00	9	5	33.80	17	34
21	590102.08	281	792	97	23.84	2082	171	44.18	17	53
22	620122.17	151	188	22	23.45	1405	125	43.24	17	55
23	490112.17	23	182	19	22.42	5	3	33.67	17	34
24	690127.17	219	725	70	21.64	739	147	37.03	18	46
25	560214.19	58	350	53	25.40	3	2	33.50	18	34
26	770107.17	26	126	19	25.37	17	6	34.83	18	36
27	740104.16	48	356	45	24.09	1	1	33.00	19	33
28	740101.18	47	174	42	27.86	5	3	33.67	19	34
29	740103.17	23	125	19	25.42	1	1	33.00	19	33
30	521125.19	26	86	15	26.27	29	7	36.14	19	39
31	720125.20	70	564	65	23.32	7	4	33.75	20	35
32	540119.17	347	383	49	24.18	1936	290	38.68	20	50
33	770108.19	319	367	83	27.58	2346	229	42.24	20	56
34	490111.18	23	148	19	24.21	4	3	33.33	20	34
35	651216.21	47	97	14	25.07	73	28	34.61	20	39
36	720131.20	23	74	14	26.71	29	8	35.63	20	38
37	500113.09	8	58	7	23.71	3	1	35.00	20	35
38	511230.22	308	954	164	26.18	626	129	36.85	21	44
39	770106.19	22	117	18	25.50	4	4	33.00	21	33
40	620225.22	23	93	14	25.36	41	7	37.86	21	40
41	720202.17	25	130	20	25.50	6	4	33.50	22	34
42	720128.18	24	127	19	25.32	10	4	34.50	22	36
43	611210.16	28	123	21	26.14	5	4	33.25	22	34
44	720130.17	27	113	19	26.05	13	7	33.86	22	35
45	781112.20	27	92	14	25.43	76	13	37.85	22	43
46	781121.20	22	91	18	26.94	5	2	34.50	22	35
47	481217.18	23	87	18	27.17	7	5	33.40	22	34
48	550304.20	34	87	15	26.20	101	18	37.61	22	44
49	620226.21	33	86	14	25.86	59	13	36.54	22	39
50	781227.23	18	83	14	26.07	2	2	33.00	22	33

ORDER STATISTICS AT PORTLAND
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	671212.21	32	81	14	26.21	29	8	35.63	22	38
52	761127.22	24	80	12	25.33	86	12	39.17	22	43
53	600226.22	30	79	13	25.92	76	14	37.43	22	43
54	560127.14	52	72	19	28.21	76	30	34.53	22	36
55	631210.21	21	70	14	27.00	34	7	36.86	22	40
56	511224.22	18	67	12	26.42	7	4	33.75	22	35
57	570201.22	120	66	13	26.92	945	105	41.00	22	52
58	781111.23	21	61	11	26.45	59	9	38.56	22	42
59	781113.23	137	58	11	26.73	1072	124	40.65	22	51
60	521126.21	27	50	13	28.15	56	13	36.31	22	41
61	730106.17	101	410	76	26.61	49	20	34.45	23	35
62	561205.17	471	307	67	27.42	5723	402	46.24	23	58
63	721214.17	485	185	34	26.56	6122	445	45.76	23	60
64	591231.19	49	140	40	28.50	22	9	34.44	23	36
65	490113.16	52	135	22	25.86	99	28	35.54	23	44
66	710104.18	24	111	20	26.45	1	1	33.00	23	33
67	720129.18	23	111	19	26.16	2	2	33.00	23	33
68	490103.16	24	106	20	26.70	3	3	33.00	23	33
69	560129.18	22	90	19	27.26	1	1	33.00	23	33
70	651218.20	22	87	16	26.56	18	5	35.60	23	37
71	490102.23	17	63	13	27.15	6	4	33.50	23	34
72	630121.01	48	53	10	26.70	241	38	38.34	23	46
73	770103.01	47	52	10	26.80	50	29	33.72	23	35
74	630119.00	22	48	11	27.64	39	9	36.33	23	39
75	770126.00	25	46	10	27.40	88	13	38.77	23	45
76	630128.13	830	238	76	28.87	11150	749	46.89	24	65
77	651219.18	681	124	19	25.47	5685	660	40.61	24	55
78	490104.16	25	112	21	26.67	1	1	33.00	24	33
79	490212.19	5939	98	20	27.10	148721	5904	57.19	24	93
80	770105.18	25	94	17	26.47	17	6	34.83	24	36
81	481226.19	21	86	17	26.94	2	2	33.00	24	33
82	780101.16	23	82	20	27.90	1	1	33.00	24	33
83	771231.19	21	70	18	28.11	1	1	33.00	24	33
84	770128.23	22	70	13	26.62	30	7	36.29	24	40
85	621225.23	29	68	12	26.33	61	17	35.59	24	38
86	630119.22	27	65	13	27.00	59	11	37.36	24	42
87	781226.20	27	64	15	27.73	26	11	34.36	24	37
88	480118.21	24	53	13	27.92	43	8	37.38	24	42
89	641119.23	525	51	13	28.08	5496	510	42.78	24	55
90	621224.21	26	51	12	27.75	56	12	36.67	24	42
91	710228.23	174	51	11	27.36	1158	159	39.28	24	50
92	711226.22	22	49	13	28.23	32	8	36.00	24	39
93	521128.00	24	47	10	27.30	39	10	35.90	24	40
94	550218.00	22	47	8	26.13	82	11	39.45	24	44
95	600301.01	26	44	9	27.11	111	17	38.53	24	42
96	761231.01	72	42	10	27.80	178	57	35.12	24	42
97	601229.00	22	41	11	28.27	30	9	35.33	24	39
98	550220.00	26	39	9	27.67	136	15	41.07	24	51
99	761127.01	21	36	8	27.50	93	11	40.45	24	45
100	600302.03	387	239	58	27.88	3186	324	41.83	25	55

ORDER STATISTICS AT SALEM
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	500127.07	740	3187	195	15.66	7166	543	45.20	-9	62
2	721203.21	197	3093	195	16.14	1	1	33.00	-7	33
3	620118.18	242	1293	125	21.66	1283	106	44.10	8	54
4	740106.17	96	1124	91	19.65	7	3	34.33	8	35
5	570123.19	117	1186	114	21.60	4	3	33.33	9	34
6	641216.05	359	1086	77	17.90	3030	279	42.86	9	61
7	681229.17	99	827	48	14.77	326	46	39.09	9	46
8	551112.18	510	1055	119	23.13	5117	386	45.26	10	66
9	500101.16	62	474	55	23.38	6	4	33.50	11	34
10	620225.18	25	228	18	19.33	17	6	34.83	11	36
11	630110.16	195	905	77	20.25	852	115	39.41	12	47
12	570128.16	109	416	44	22.55	424	62	38.84	12	46
13	740110.17	244	321	37	23.32	3167	207	47.30	12	59
14	490112.17	24	228	19	20.00	13	4	35.25	12	37
15	721212.02	407	671	91	24.63	5288	309	49.11	13	60
16	490124.15	75	601	66	22.89	18	6	35.00	13	38
17	490108.17	47	440	44	22.00	1	1	33.00	13	33
18	490123.17	22	220	20	21.00	2	1	34.00	13	34
19	690123.17	151	1186	137	23.34	11	9	33.22	14	34
20	500116.07	181	811	74	21.04	1140	100	43.40	14	55
21	500113.18	61	262	39	25.28	28	18	33.56	14	34
22	490111.17	24	192	19	21.89	16	5	35.20	14	37
23	620224.18	24	177	17	21.59	16	7	34.29	14	35
24	560130.18	71	554	66	23.61	2	2	33.00	15	33
25	720125.19	70	457	65	24.97	4	3	33.33	15	34
26	740104.17	48	410	44	22.68	4	3	33.33	15	34
27	710228.18	24	199	18	20.94	15	5	35.00	15	36
28	770108.19	23	195	17	20.53	17	5	35.40	15	37
29	521127.19	22	162	15	21.20	17	5	35.40	15	37
30	560127.17	50	148	17	23.29	129	32	36.03	15	44
31	690121.18	47	276	43	25.58	2	2	33.00	16	33
32	611210.17	55	259	41	25.68	14	9	33.56	16	35
33	570117.17	60	243	41	26.07	107	16	38.69	16	43
34	490119.18	53	215	27	24.04	51	22	34.32	16	38
35	600226.20	24	121	15	23.93	50	9	37.56	16	41
36	591113.22	20	89	12	24.58	77	8	41.63	16	46
37	590102.17	731	733	88	23.67	8791	642	45.69	17	59
38	560214.21	461	288	45	25.60	3309	412	40.03	17	51
39	490110.16	25	208	19	21.05	16	5	35.20	17	37
40	710104.17	24	180	20	23.00	4	4	33.00	17	33
41	740101.18	23	171	19	23.00	2	2	33.00	17	33
42	781112.19	24	170	15	20.67	58	8	39.25	17	43
43	771119.18	27	156	18	23.33	18	7	34.57	17	36
44	781113.19	24	146	15	22.27	61	8	39.63	17	43
45	490127.18	25	127	16	24.06	39	7	37.57	17	40
46	770105.19	23	122	16	24.38	31	7	36.43	17	39
47	560127.03	14	63	8	24.13	20	6	35.33	17	37
48	510129.17	25	190	19	22.00	9	4	34.25	18	35
49	591231.19	47	186	38	27.11	21	6	35.50	18	37
50	540119.18	120	183	26	24.96	722	91	39.93	18	49

ORDER STATISTICS AT SALEM
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	770106.18	25	167	18	22.72	24	6	36.00	18	37
52	490122.17	24	165	18	22.83	19	6	35.17	18	37
53	630120.18	27	145	18	23.94	44	7	38.29	18	41
54	700104.18	25	139	18	24.28	17	6	34.83	18	36
55	521126.17	26	139	17	23.82	46	8	37.75	18	41
56	770129.19	80	125	15	23.67	769	63	44.21	18	55
57	630126.19	24	123	16	24.31	49	7	39.00	18	42
58	620223.20	22	111	18	25.83	4	3	33.33	18	34
59	510127.21	44	331	40	23.73	2	2	33.00	19	33
60	520101.16	64	319	44	24.75	95	19	37.00	19	39
61	720128.17	25	176	20	23.20	14	5	34.80	19	36
62	720202.18	25	160	18	23.11	14	5	34.80	19	36
63	620226.19	30	155	17	22.88	33	11	35.00	19	37
64	481226.17	30	151	19	24.05	27	10	34.70	19	37
65	521125.17	24	137	17	23.94	48	7	38.86	19	42
66	561206.16	28	130	20	25.50	3	2	33.50	19	34
67	521124.17	24	125	17	24.65	40	6	38.67	19	41
68	691129.19	23	122	16	24.38	39	6	38.50	19	40
69	521128.17	25	114	17	25.29	39	8	36.88	19	40
70	521123.18	23	112	17	25.41	45	6	39.50	19	43
71	630128.16	327	363	71	26.89	4360	253	49.23	20	66
72	730106.17	25	158	20	24.10	4	3	33.33	20	34
73	481223.17	22	156	18	23.33	3	3	33.00	20	33
74	740103.17	24	151	18	23.61	17	5	35.40	20	36
75	481217.17	24	145	18	23.94	11	6	33.83	20	35
76	710105.17	154	142	20	24.90	1010	116	40.71	20	49
77	490103.17	24	138	19	24.74	10	4	34.50	20	35
78	621225.19	23	136	16	23.50	23	5	36.60	20	38
79	630119.18	24	128	17	24.47	34	7	36.86	20	39
80	781114.19	122	128	16	24.00	1259	104	44.11	20	51
81	730107.18	25	127	18	24.94	16	6	34.67	20	36
82	770107.19	24	123	15	23.80	48	8	38.00	20	41
83	720129.18	24	122	18	25.22	15	5	35.00	20	37
84	771118.18	24	118	18	25.44	10	4	34.50	20	35
85	600229.21	32	118	13	22.92	76	17	36.47	20	42
86	521129.18	23	117	19	25.84	1	1	33.00	20	33
87	480127.19	29	114	15	24.40	74	9	40.22	20	47
88	770126.19	24	111	15	24.60	100	9	43.11	20	50
89	511231.17	23	104	19	26.53	1	1	33.00	20	33
90	710103.20	21	103	16	25.56	8	4	34.00	20	34
91	611116.21	73	100	13	24.31	489	58	40.43	20	47
92	770125.21	22	93	13	24.85	91	9	42.11	20	48
93	770128.19	24	90	15	26.00	75	9	40.33	20	45
94	550217.20	23	84	13	25.54	80	9	40.89	20	45
95	720102.21	22	78	14	26.43	40	8	37.00	20	39
96	600228.20	25	76	13	26.15	94	12	39.83	20	46
97	710227.19	23	66	16	27.88	11	5	34.20	20	35
98	680213.23	558	66	11	26.00	10225	546	50.73	20	71
99	651215.18	153	724	114	25.65	171	35	36.89	21	43
100	500124.17	62	154	21	24.67	126	38	35.32	21	40

ORDER STATISTICS AT EUGENE
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	721205.20	136	2402	126	12.94	12	8	33.50	-10	34
2	500128.17	731	2724	158	14.76	7138	567	44.59	-1	64
3	570124.00	317	2245	157	17.70	1163	155	39.50	0	52
4	620118.23	222	1473	131	20.76	1050	91	43.54	6	58
5	500101.18	71	438	53	23.74	37	18	34.06	9	37
6	690127.18	225	278	36	24.28	847	186	36.55	9	45
7	641216.08	348	717	63	20.62	3294	277	43.89	10	61
8	490108.15	98	999	90	20.90	4	3	33.33	11	34
9	490123.17	100	866	92	22.59	5	4	33.25	11	34
10	740107.17	72	725	63	20.49	19	4	36.75	11	38
11	630110.17	195	844	67	19.40	762	119	38.40	12	48
12	721212.12	466	690	83	23.69	5458	376	46.52	12	61
13	490112.17	49	442	38	20.37	30	6	37.00	12	40
14	740110.17	247	263	32	23.78	3669	213	49.23	13	61
15	740106.17	24	238	21	20.67	6	3	34.00	13	35
16	640406.23	246	66	6	21.00	3877	238	48.29	13	67
17	690122.17	98	897	92	22.25	8	4	34.00	14	35
18	681230.02	567	509	38	18.61	4781	508	41.41	14	62
19	510129.17	24	209	20	21.55	6	4	33.50	14	34
20	600320.23	23	60	6	22.00	388	17	54.82	14	68
21	600312.23	192	53	5	21.40	2885	186	47.51	14	70
22	600321.22	23	48	5	22.40	338	18	50.78	14	62
23	600419.22	2473	46	5	22.80	71518	2468	60.98	14	100
24	551112.23	509	863	110	24.15	5272	395	45.35	15	65
25	490101.20	93	695	84	23.73	5	3	33.67	15	34
26	490122.17	24	208	20	21.60	4	2	34.00	15	34
27	740105.17	24	206	20	21.70	5	3	33.67	15	34
28	781112.18	24	177	18	22.17	32	6	37.33	15	39
29	781113.18	25	176	17	21.65	46	7	38.57	15	42
30	500116.17	172	584	61	22.43	1027	108	41.51	16	52
31	560130.18	69	485	65	24.54	1	1	33.00	16	33
32	521127.17	24	210	20	21.50	10	3	35.33	16	36
33	720128.17	25	192	21	22.86	5	3	33.67	16	35
34	521125.18	23	164	17	22.35	31	6	37.17	16	40
35	560214.21	477	278	41	25.22	3356	427	39.86	17	54
36	770108.18	340	172	18	22.44	3382	319	42.60	17	60
37	600323.23	645	49	6	23.83	12030	639	50.83	17	76
38	481223.17	72	485	62	24.18	5	3	33.67	18	35
39	510128.01	40	266	33	23.94	5	3	33.67	18	34
40	521128.17	24	184	18	21.78	20	5	36.00	18	38
41	521126.17	24	174	19	22.84	16	5	35.20	18	37
42	490119.18	30	168	26	25.54	9	3	35.00	18	36
43	740103.17	25	150	19	24.11	27	6	36.50	18	39
44	770107.19	23	147	17	23.35	26	6	36.33	18	39
45	521129.17	347	146	18	23.89	3907	327	43.95	18	64
46	481222.18	23	113	17	25.35	8	4	34.00	18	36
47	581227.22	20	37	5	24.60	180	15	44.00	18	49
48	720126.16	49	412	47	23.23	1	1	33.00	19	33
49	740101.18	47	252	41	25.85	10	5	34.00	19	35
50	481226.17	78	158	19	23.68	439	59	39.44	19	48

ORDER STATISTICS AT EUGENE
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
51	521124.18	24	153	17	23.00	40	6	38.67	19	43
52	481217.17	24	150	19	24.11	9	5	33.80	19	35
53	781111.18	24	126	17	24.59	31	7	36.43	19	38
54	521123.18	24	123	16	24.31	60	8	39.50	19	44
55	600322.23	20	30	4	24.50	292	16	50.25	19	62
56	590102.19	730	573	85	25.26	8871	642	45.82	20	57
57	710104.18	171	280	42	25.33	1136	126	41.02	20	50
58	570117.17	151	205	39	26.74	637	110	37.79	20	44
59	540119.20	121	153	25	25.88	809	94	40.61	20	51
60	720129.18	24	147	19	24.26	10	4	34.50	20	36
61	570116.18	23	126	19	25.37	3	2	33.50	20	34
62	480127.19	25	125	15	23.67	81	8	42.13	20	48
63	621224.18	24	120	18	25.33	21	5	36.20	20	38
64	620225.19	23	119	17	25.00	24	5	36.80	20	39
65	630126.20	24	101	15	25.27	68	9	39.56	20	45
66	480126.22	21	84	12	25.00	66	8	40.25	20	45
67	591113.22	23	76	12	25.67	81	10	40.10	20	47
68	641230.20	775	51	14	28.36	6266	743	40.43	20	56
69	581228.22	117	30	4	24.50	1500	112	45.39	20	62
70	721204.00	44	214	40	26.65	3	2	33.50	21	34
71	611210.16	52	213	42	26.93	17	6	34.83	21	36
72	500113.20	69	187	37	26.95	41	26	33.58	21	35
73	770106.18	25	130	18	24.78	25	6	36.17	21	38
74	700105.17	25	128	21	25.90	1	1	33.00	21	33
75	720103.18	25	123	17	24.76	29	7	36.14	21	38
76	620226.18	322	122	17	24.82	2823	297	41.51	21	57
77	630119.18	26	119	17	25.00	45	7	38.43	21	41
78	720201.19	23	110	17	25.53	13	5	34.60	21	35
79	770105.19	23	107	17	25.71	22	6	35.67	21	38
80	630120.20	26	97	16	25.94	54	9	38.00	21	44
81	630118.20	22	96	16	26.00	22	6	35.67	21	38
82	480205.20	22	90	15	26.00	36	7	37.14	21	39
83	600226.20	23	90	15	26.00	38	8	36.75	21	39
84	480211.19	177	90	15	26.00	2087	161	44.96	21	65
85	521122.23	19	74	10	24.60	76	8	41.50	21	46
86	600228.22	23	66	12	26.50	78	11	39.09	21	45
87	770123.22	23	65	13	27.00	73	9	40.11	21	46
88	600102.20	46	203	40	26.93	11	4	34.75	22	36
89	510130.17	393	163	42	28.12	5256	349	47.06	22	68
90	490105.17	25	145	19	24.37	21	5	36.20	22	39
91	781114.19	130	126	16	24.13	1379	106	45.01	22	54
92	621225.18	25	111	17	25.47	45	7	38.43	22	44
93	600104.18	107	108	17	25.65	574	86	38.67	22	45
94	720130.18	26	107	16	25.31	35	9	35.89	22	38
95	480118.20	23	103	15	25.13	50	7	39.14	22	45
96	490121.20	21	101	16	25.69	3	2	33.50	22	34
97	710228.21	21	99	17	26.18	9	4	34.25	22	36
98	601208.20	24	94	15	25.73	29	6	36.83	22	39
99	480202.19	52	93	15	25.80	192	34	37.65	22	46
100	600227.19	27	91	15	25.93	91	11	40.27	22	45

APPENDIX C

Return Statistics

This appendix contains "return statistics" for each of the cold period freezing event characteristics at each of three sites (Portland, Salem, and Eugene, Oregon). These statistics can be used to obtain an indication of the types of freezing events that are likely to occur once per year, twice per year, three times per year, and so on. The return period statistics are formulated by (1) sorting the events in order of decreasing (or increasing, in the cases of average temperature below 32°F and minimum temperature) value of the characteristic of interest; and (2) selecting and printing the characteristics for every 31st event. That is, the value of the characteristic of interest for the 31st event represents the value of that characteristic that is expected to occur only once per year, the value for the 62nd event represents the value that is expected to occur only twice per year, ..., the value of the characteristic for the 620th event represents the value that is expected to occur 20 times per year, and so on. The tables of return statistics are organized according to 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. 67).

RETURN STATISTICS AT PORTLAND
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	540119.17	347	383	49	24.18	1936	290	38.68	20	50
2	490111.18	23	148	19	24.21	4	3	33.33	20	34
3	781122.18	27	66	16	27.88	32	10	35.20	26	37
4	781215.22	71	54	14	28.14	274	46	37.96	26	44
5	510304.21	52	32	13	29.54	105	36	34.92	27	41
6	781111.23	21	61	11	26.45	59	9	38.56	22	42
7	630126.00	21	32	10	28.80	61	11	37.55	27	42
8	761127.01	21	36	8	27.50	93	11	40.45	24	45
9	481224.01	18	10	8	30.75	9	6	33.50	29	34
10	631128.00	25	13	7	30.14	126	16	39.88	29	49
11	480121.03	20	10	6	30.33	100	13	39.69	29	47
12	600224.03	51	10	5	30.00	314	43	39.30	29	46
13	621201.06	217	8	4	30.00	2188	213	42.27	29	52
14	760312.04	6215	4	4	31.00	156487	6210	57.20	31	90
15	601220.07	19	5	3	30.33	115	15	39.67	30	44
16	570220.07	16	3	3	31.00	30	9	35.33	31	38
17	690314.06	241	3	2	30.50	3780	238	47.88	30	66
18	611125.02	263	2	2	31.00	3098	257	44.05	31	55
19	601223.01	3	3	1	29.00	7	2	35.50	29	36
20	640209.08	65	2	1	30.00	656	64	42.25	30	50
21	511226.10	5	1	1	31.00	2	2	33.00	31	33
22	561130.20	2	1	1	31.00	3	1	35.00	31	35
23	690324.07	5953	1	1	31.00	158796	5952	58.68	31	94

RETURN STATISTICS AT SALEM
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	701121.20	98	151	42	28.40	804	53	47.17	27	58
2	700110.19	437	44	20	29.80	6114	406	47.06	29	60
3	620223.20	22	111	18	25.83	4	3	33.33	18	34
4	490115.19	51	75	17	27.59	153	29	37.28	26	43
5	511213.18	245	68	16	27.75	1803	226	39.98	26	50
6	770128.19	24	90	15	26.00	75	9	40.33	20	45
7	581127.20	22	78	14	26.43	61	8	39.63	23	43
8	550219.20	24	79	13	25.92	108	11	41.82	22	49
9	550109.18	109	20	13	30.46	568	83	38.84	30	46
10	781119.21	23	15	12	30.75	24	8	35.00	30	36
11	770105.00	19	34	11	28.91	29	7	36.14	27	38
12	760305.23	26	46	10	27.40	174	15	43.60	25	55
13	631214.22	71	21	10	29.90	720	60	44.00	29	52
14	510301.23	22	29	9	28.78	104	12	40.67	25	46
15	751212.02	45	48	8	26.00	114	35	35.26	23	41
16	750404.23	26	23	8	29.13	208	16	45.00	28	55
17	701029.01	23	34	7	27.14	214	14	47.29	25	60
18	781026.01	125	16	7	29.71	1538	115	45.37	28	62
19	760209.01	21	9	7	30.71	123	14	40.79	30	47
20	700318.02	24	15	6	29.50	239	18	45.28	29	59
21	531102.01	22	10	6	30.33	134	15	40.93	30	52
22	651125.03	92	13	5	29.40	795	80	41.94	29	49
23	750128.19	7	9	5	30.20	1	1	33.00	30	33
24	660109.05	165	6	5	30.80	1956	158	44.38	30	50
25	591226.19	31	8	4	30.00	107	23	36.65	29	43
26	540303.04	20	5	4	30.75	235	16	46.69	30	57
27	680103.21	5	7	3	29.67	1	1	33.00	29	33
28	760309.05	67	4	3	30.67	756	63	44.00	30	59
29	700129.00	144	3	3	31.00	1688	136	44.41	31	52
30	561202.22	73	3	2	30.50	385	65	37.92	30	51
31	610118.01	3	3	2	30.50	1	1	33.00	30	33
32	741005.05	457	2	2	31.00	9135	453	52.17	31	79
33	770315.07	18	2	1	30.00	240	17	46.12	30	57
34	540118.19	2	1	1	31.00	1	1	33.00	31	33
35	760131.07	17	1	1	31.00	172	16	42.75	31	54
36	520117.21	81	1	1	31.00	459	77	37.96	31	46
37	780316.07	644	1	1	31.00	11534	643	49.94	31	72
38	640323.06	45	1	1	31.00	381	44	40.66	31	51

RETURN STATISTICS AT EUGENE
SORTED BY HOURS BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	511224.18	128	157	41	28.17	522	80	38.53	25	48
2	510129.17	24	209	20	21.55	6	4	33.50	14	34
3	480114.19	23	53	18	29.06	10	4	34.50	26	35
4	490121.20	21	101	16	25.69	3	2	33.50	22	34
5	601206.19	25	71	15	27.27	52	7	39.43	24	43
6	581126.20	24	58	14	27.86	39	7	37.57	23	41
7	570115.22	20	40	13	28.92	13	5	34.60	27	35
8	561121.22	26	36	12	29.00	87	11	39.91	26	47
9	771226.23	118	15	11	30.64	686	105	38.53	30	48
10	520301.22	151	20	10	30.00	1518	140	42.84	29	59
11	490115.00	19	17	9	30.11	80	9	40.89	29	47
12	680128.19	250	17	8	29.88	2874	241	43.93	28	56
13	690311.01	28	19	7	29.29	215	20	42.75	28	54
14	570217.03	25	19	6	28.83	225	18	44.50	27	55
15	751218.05	24	11	6	30.17	59	14	36.21	29	42
16	570216.04	23	15	5	29.00	192	16	44.00	28	55
17	480224.03	188	9	5	30.20	2051	182	43.27	30	62
18	550103.06	13	10	4	29.50	8	5	33.60	28	34
19	481106.21	9	6	4	30.50	3	3	33.00	30	33
20	540429.03	49	7	3	29.67	502	45	43.16	29	52
21	780407.03	673	4	3	30.67	11038	669	48.50	30	75
22	540501.04	4268	5	2	29.50	110670	4266	57.94	29	85
23	510127.19	6	2	2	31.00	1	1	33.00	31	33
24	590304.06	239	2	2	31.00	3113	235	45.25	31	64
25	720430.04	4410	1	1	31.00	124879	4407	60.34	31	104
26	611212.20	540	1	1	31.00	6452	531	44.15	31	56
27	661018.07	1967	1	1	31.00	28900	1959	46.75	31	71

RETURN STATISTICS AT PORTLAND
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	671219.06	353	200	56	28.43	3574	292	44.24	15	57
2	770105.18	25	94	17	26.47	17	6	34.83	24	36
3	781122.18	27	66	16	27.88	32	10	35.20	26	37
4	621224.21	26	51	12	27.75	56	12	36.67	24	42
5	560126.22	16	43	15	29.13	1	1	33.00	26	33
6	480119.21	30	33	12	29.25	62	14	36.43	27	41
7	611211.20	27	28	17	30.35	1	1	33.00	26	33
8	660119.01	17	22	10	29.80	4	4	33.00	28	33
9	480130.21	53	18	11	30.36	117	35	35.34	30	40
10	481217.01	17	15	7	29.86	34	8	36.25	28	40
11	600228.04	27	12	5	29.60	102	22	36.64	28	42
12	611115.05	24	10	3	28.67	198	20	41.90	27	51
13	630108.06	49	8	3	29.33	265	44	38.02	28	42
14	770305.04	5949	6	4	30.50	153535	5944	57.83	30	103
15	631209.03	27	5	3	30.33	147	23	38.39	29	44
16	750311.05	383	4	3	30.67	4328	379	43.42	30	55
17	520125.00	339	3	3	31.00	3970	329	44.07	31	56
18	510421.04	5015	3	1	29.00	139352	5013	59.80	29	97
19	620129.00	27	2	2	31.00	159	20	39.95	31	53
20	640209.08	65	2	1	30.00	656	64	42.25	30	50
21	530301.22	292	1	1	31.00	3999	291	45.74	31	72
22	480121.23	2	1	1	31.00	1	1	33.00	31	33
23	680208.07	71	1	1	31.00	886	69	44.84	31	57

RETURN STATISTICS AT SALEM
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	490112.17	24	228	19	20.00	13	4	35.25	12	37
2	500124.17	62	154	21	24.67	126	38	35.32	21	40
3	720129.18	24	122	18	25.22	15	5	35.00	20	37
4	611116.21	73	100	13	24.31	489	58	40.43	20	47
5	720130.18	27	85	15	26.33	49	12	36.08	22	39
6	710301.18	148	74	12	25.83	900	127	39.09	22	47
7	731102.21	370	62	13	27.23	4853	355	45.67	24	61
8	781110.21	22	55	12	27.42	60	9	38.67	24	42
9	641117.21	22	48	13	28.31	90	9	42.00	24	47
10	670304.23	30	42	10	27.80	199	19	42.47	26	56
11	631129.01	19	38	9	27.78	88	10	40.80	25	47
12	591126.22	148	33	11	29.00	1636	137	43.94	26	59
13	711207.00	458	30	9	28.67	3781	447	40.46	27	49
14	750131.20	338	27	11	29.55	3031	317	41.56	28	55
15	700305.01	97	24	7	28.57	1397	89	47.70	28	56
16	511225.18	106	21	11	30.09	398	90	36.42	29	45
17	510309.00	20	18	9	30.00	20	11	33.82	29	36
18	670223.01	30	16	7	29.71	141	20	39.05	28	53
19	540307.00	98	14	8	30.25	1170	90	45.00	29	60
20	520420.01	215	13	6	29.83	4034	208	51.39	28	76
21	571105.02	22	11	6	30.17	192	15	44.80	29	57
22	580119.00	961	10	6	30.33	14530	944	47.39	30	64
23	750128.19	7	9	5	30.20	1	1	33.00	30	33
24	781101.04	94	8	4	30.00	1563	89	49.56	29	62
25	540206.04	18	7	4	30.25	192	14	45.71	29	55
26	700325.04	48	6	4	30.50	694	42	48.52	30	60
27	571101.05	25	5	4	30.75	222	20	43.10	30	55
28	680319.04	26	4	4	31.00	242	20	44.10	31	59
29	681115.01	503	4	3	30.67	6424	497	44.93	30	59
30	631224.01	3	3	2	30.50	1	1	33.00	30	33
31	600422.01	724	3	2	30.50	13684	720	51.01	30	74
32	630211.07	24	2	2	31.00	255	21	44.14	31	60
33	770206.01	26	2	1	30.00	246	24	42.25	30	54
34	731118.22	459	1	1	31.00	5464	455	44.01	31	54
35	501110.05	16	1	1	31.00	144	15	41.60	31	52
36	650118.07	312	1	1	31.00	4084	310	45.17	31	54
37	550114.07	93	1	1	31.00	732	91	40.04	31	47
38	610112.07	138	1	1	31.00	2252	136	48.56	31	57

RETURN STATISTICS AT EUGENE
SORTED BY DEGREES BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	740106.17	24	238	21	20.67	6	3	34.00	13	35
2	521129.17	347	146	18	23.89	3907	327	43.95	18	64
3	500124.16	70	99	19	26.79	147	44	35.34	25	39
4	781110.20	22	78	14	26.43	45	8	37.63	22	40
5	770123.22	23	65	13	27.00	73	9	40.11	21	46
6	770128.23	21	55	13	27.77	25	6	36.17	26	39
7	730104.00	18	46	12	28.17	4	4	33.00	26	33
8	620223.23	21	35	12	29.08	27	7	35.86	27	38
9	680127.21	22	30	9	28.67	7	7	33.00	27	33
10	550320.01	628	26	7	28.29	8532	618	45.81	26	71
11	640226.03	23	21	6	28.50	155	16	41.69	27	52
12	481108.02	21	18	6	29.00	126	15	40.40	28	49
13	631130.02	22	15	8	30.13	13	8	33.63	29	35
14	760312.02	5333	14	6	29.67	138730	5324	58.06	28	94
15	760125.03	21	12	7	30.29	27	8	35.38	29	39
16	491203.02	19	10	5	30.00	30	9	35.33	29	39
17	501113.02	4	9	3	29.00	1	1	33.00	28	33
18	750327.04	27	8	4	30.00	198	19	42.42	30	53
19	730220.04	27	6	4	30.50	218	21	42.38	30	55
20	591231.05	13	5	4	30.75	36	8	36.50	30	39
21	710113.18	175	4	3	30.67	2413	170	46.19	30	57
22	591116.06	17	3	3	31.00	61	11	37.55	31	43
23	510127.19	6	2	2	31.00	1	1	33.00	31	33
24	510224.01	28	2	2	31.00	133	21	38.33	31	45
25	710319.07	5061	1	1	31.00	127809	5058	57.27	31	100
26	540331.02	697	1	1	31.00	12235	695	49.60	31	75
27	620104.08	142	1	1	31.00	2015	139	46.50	31	62

RETURN STATISTICS AT PORTLAND
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	620225.22	23	93	14	25.36	41	7	37.86	21	40
2	770128.23	22	70	13	26.62	30	7	36.29	24	40
3	601207.01	318	40	9	27.56	2472	303	40.16	25	54
4	581128.05	355	16	4	28.00	3866	350	43.05	26	62
5	770123.23	49	48	13	28.31	201	34	37.91	26	47
6	750221.03	409	20	6	28.67	5667	397	46.27	27	60
7	561201.01	19	30	10	29.00	42	7	38.00	26	41
8	571129.02	868	20	7	29.14	9781	859	43.39	27	57
9	630108.06	49	8	3	29.33	265	44	38.02	28	42
10	680102.23	74	17	7	29.57	344	61	37.64	27	43
11	480117.23	22	24	11	29.82	58	11	37.27	28	44
12	690309.04	23	8	4	30.00	205	19	42.79	29	50
13	550404.05	5317	2	1	30.00	133052	5313	57.04	30	97
14	760205.02	28	13	7	30.14	95	20	36.75	29	42
15	730110.22	297	23	14	30.36	2933	278	42.55	30	58
16	591226.08	43	3	2	30.50	355	39	41.10	30	45
17	651214.04	17	8	6	30.67	45	8	37.63	30	40
18	701129.01	316	11	9	30.78	3279	305	42.75	30	57
19	510201.21	341	3	3	31.00	4699	334	46.07	31	61
20	621210.07	335	2	2	31.00	4054	332	44.21	31	58
21	491018.06	22	1	1	31.00	234	19	44.32	31	52
22	580306.07	91	1	1	31.00	739	88	40.40	31	49
23	750214.04	20	1	1	31.00	82	16	37.13	31	43

RETURN STATISTICS AT SALEM
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	740101.18	23	171	19	23.00	2	2	33.00	17	33
2	611116.21	73	100	13	24.31	489	58	40.43	20	47
3	561130.19	23	94	14	25.29	58	8	39.25	21	44
4	521129.18	23	117	19	25.84	1	1	33.00	20	33
5	631201.19	23	87	16	26.56	36	7	37.14	24	41
6	671213.19	28	76	15	26.93	53	12	36.42	24	41
7	770123.19	26	65	14	27.36	88	9	41.78	23	45
8	551111.20	22	74	17	27.65	2	2	33.00	21	33
9	701217.19	96	215	52	27.87	214	42	37.10	24	41
10	540305.01	47	27	7	28.14	556	39	46.26	26	59
11	600223.02	20	25	7	28.43	153	13	43.77	26	52
12	640223.03	43	20	6	28.67	496	37	45.41	26	59
13	561125.21	22	37	12	28.92	100	10	42.00	27	47
14	620329.06	288	3	1	29.00	5345	283	50.89	29	68
15	760201.00	22	25	9	29.22	124	12	42.33	27	51
16	620309.05	65	8	3	29.33	455	60	39.58	29	49
17	770103.05	43	10	4	29.50	204	38	37.37	28	40
18	490102.21	20	38	16	29.63	7	3	34.33	26	35
19	581213.05	20	9	4	29.75	174	16	42.88	29	52
20	631214.22	71	21	10	29.90	720	60	44.00	29	52
21	591208.02	118	10	5	30.00	1263	109	43.59	29	57
22	671211.21	22	6	3	30.00	68	18	35.78	29	40
23	630212.07	452	2	1	30.00	6586	449	46.67	30	61
24	480125.03	27	9	5	30.20	165	20	40.25	29	51
25	550303.22	22	12	7	30.29	50	10	37.00	29	40
26	551229.04	21	8	5	30.40	62	14	36.43	30	41
27	540124.18	5	3	2	30.50	1	1	33.00	30	33
28	650202.00	118	14	10	30.60	1145	107	42.70	30	56
29	700223.05	73	4	3	30.67	957	69	45.87	30	64
30	621129.03	287	5	4	30.75	3128	282	43.09	30	54
31	710220.21	166	5	5	31.00	1054	136	39.75	31	49
32	520401.02	147	3	3	31.00	2740	143	51.16	31	76
33	480205.07	11	2	2	31.00	43	9	36.78	31	40
34	711228.16	125	1	1	31.00	1107	121	41.15	31	48
35	521226.08	230	1	1	31.00	2834	227	44.48	31	57
36	750306.07	93	1	1	31.00	1204	91	45.23	31	56
37	490106.20	22	1	1	31.00	119	21	37.67	31	43
38	620203.00	29	1	1	31.00	310	27	43.48	31	52

RETURN STATISTICS AT EUGENE
SORTED BY AVERAGE TEMPERATURE BELOW 32

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	521124.18	24	153	17	23.00	40	6	38.67	19	43
2	630119.18	26	119	17	25.00	45	7	38.43	21	41
3	630120.20	26	97	16	25.94	54	9	38.00	21	44
4	520101.17	124	203	40	26.93	532	80	38.65	24	47
5	781109.23	21	45	10	27.50	74	11	38.73	26	44
6	631211.19	24	60	15	28.00	42	7	38.00	26	41
7	701121.01	32	32	9	28.44	84	16	37.25	26	43
8	570217.03	25	19	6	28.83	225	18	44.50	27	55
9	620223.23	21	35	12	29.08	27	7	35.86	27	38
10	711201.00	144	24	9	29.33	1415	134	42.56	28	52
11	510216.02	147	10	4	29.50	1202	137	40.77	28	52
12	700204.02	385	14	6	29.67	4634	375	44.36	28	58
13	491018.02	24	11	5	29.80	176	18	41.78	28	52
14	781106.03	71	12	6	30.00	1003	64	47.67	29	65
15	761231.18	104	6	3	30.00	578	99	37.84	29	47
16	781225.19	24	24	13	30.15	29	7	36.14	29	38
17	630110.06	11	7	4	30.25	21	7	35.00	30	36
18	511210.22	93	8	5	30.40	509	83	38.13	29	41
19	520408.03	5156	6	4	30.50	138545	5148	58.91	30	100
20	631201.00	220	16	12	30.67	1614	188	40.59	30	54
21	500311.00	24	9	7	30.71	146	16	41.13	30	47
22	781120.05	14	6	6	31.00	16	6	34.67	31	35
23	680212.03	27	3	3	31.00	227	21	42.81	31	58
24	720308.06	502	2	2	31.00	8614	497	49.33	31	71
25	750314.07	309	1	1	31.00	3561	307	43.60	31	54
26	590406.06	192	1	1	31.00	3497	190	50.41	31	75
27	570207.05	121	1	1	31.00	1161	117	41.92	31	55

RETURN STATISTICS AT PORTLAND
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	720125.20	70	564	65	23.32	7	4	33.75	20	35
2	561205.17	471	307	67	27.42	5723	402	46.24	23	58
3	521128.00	24	47	10	27.30	39	10	35.90	24	40
4	480127.23	54	42	10	27.80	189	42	36.50	25	45
5	711227.20	20	45	14	28.79	8	4	34.00	26	35
6	581128.05	355	16	4	28.00	3866	350	43.05	26	62
7	581126.03	24	23	6	28.17	104	16	38.50	27	44
8	611117.02	3	8	2	28.00	1	1	33.00	27	33
9	580301.02	28	20	7	29.14	252	21	44.00	28	57
10	621227.04	290	11	6	30.17	3430	281	44.21	28	54
11	511226.15	37	29	19	30.47	20	16	33.25	29	34
12	481224.01	18	10	8	30.75	9	6	33.50	29	34
13	690227.00	220	5	3	30.33	2373	216	42.99	29	54
14	730110.22	297	23	14	30.36	2933	278	42.55	30	58
15	551227.23	20	7	6	30.83	22	8	34.75	30	36
16	601228.05	19	4	3	30.67	71	14	37.07	30	43
17	670305.06	169	3	2	30.50	1641	161	42.19	30	61
18	620313.07	24	2	1	30.00	296	20	46.80	30	59
19	511214.06	217	3	3	31.00	1678	208	40.07	31	49
20	620129.00	27	2	2	31.00	159	20	39.95	31	53
21	600222.07	20	1	1	31.00	148	19	39.79	31	48
22	611206.01	99	1	1	31.00	498	95	37.24	31	44
23	700106.08	90	1	1	31.00	353	88	36.01	31	40

RETURN STATISTICS AT SALEM
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	690121.18	47	276	43	25.58	2	2	33.00	16	33
2	720202.18	25	160	18	23.11	14	5	34.80	19	36
3	770128.19	24	90	15	26.00	75	9	40.33	20	45
4	691202.18	28	120	17	24.94	33	10	35.30	22	37
5	611209.17	24	87	18	27.17	9	4	34.25	23	35
6	570105.18	156	84	15	26.40	971	139	38.99	24	51
7	781121.23	20	44	11	28.00	45	9	37.00	24	40
8	621226.18	219	65	16	27.94	2579	201	44.83	25	53
9	541217.23	20	42	10	27.80	94	9	42.44	25	48
10	761231.18	59	66	16	27.88	192	41	36.68	26	43
11	551204.00	19	36	9	28.00	57	9	38.33	26	45
12	630313.01	97	23	7	28.71	823	88	41.35	26	51
13	740307.21	320	32	12	29.33	4686	307	47.26	27	68
14	551212.22	27	24	10	29.60	85	14	38.07	27	44
15	750311.05	73	9	3	29.00	694	67	42.36	27	51
16	631210.01	19	23	9	29.44	43	9	36.78	28	40
17	630127.19	21	16	8	30.00	1	1	33.00	28	33
18	530226.03	28	13	5	29.40	250	23	42.87	28	57
19	710112.03	211	41	23	30.22	2431	170	46.30	29	60
20	521108.00	27	17	8	29.88	186	19	41.79	29	56
21	550210.01	25	12	7	30.29	185	17	42.88	29	52
22	640220.04	24	10	4	29.50	243	18	45.50	29	57
23	761020.05	25	6	3	30.00	319	21	47.19	29	67
24	671220.01	356	17	11	30.45	4439	340	45.06	30	57
25	531222.21	170	9	7	30.71	1284	157	40.18	30	50
26	500104.06	11	7	5	30.60	1	1	33.00	30	33
27	730402.03	22	5	4	30.75	233	17	45.71	30	55
28	540322.04	24	4	3	30.67	317	21	47.10	30	63
29	520407.05	23	3	2	30.50	305	19	48.05	30	60
30	760209.22	8	2	1	30.00	9	5	33.80	30	35
31	710220.21	166	5	5	31.00	1054	136	39.75	31	49
32	520401.02	147	3	3	31.00	2740	143	51.16	31	76
33	511230.23	18	2	2	31.00	6	4	33.50	31	34
34	520117.21	81	1	1	31.00	459	77	37.96	31	46
35	760229.07	22	1	1	31.00	113	20	37.65	31	44
36	611109.02	95	1	1	31.00	1354	93	46.56	31	59
37	781205.19	5	1	1	31.00	1	1	33.00	31	33
38	611029.04	51	1	1	31.00	569	48	43.85	31	59

RETURN STATISTICS AT EUGENE
SORTED BY MINIMUM TEMPERATURE

	DATE EVENT STARTED (YYMMDD.HH)	DURATION (HOURS)	DEGREES BELOW 32	HOURS BELOW 32	AVE. TEMP BELOW 32 (DEG F)	DEGREES ABOVE 32	HOURS ABOVE 32	AVE. TEMP ABOVE 32 (DEG F)	MINIMUM TEMPERATURE (DEG F)	MAXIMUM TEMPERATURE (DEG F)
1	560130.18	69	485	65	24.54	1	1	33.00	16	33
2	480127.19	25	125	15	23.67	81	8	42.13	20	48
3	600104.18	107	108	17	25.65	574	86	38.67	22	45
4	760206.22	24	54	11	27.09	128	12	42.67	23	53
5	571104.03	24	30	6	27.00	179	17	42.53	24	54
6	660119.01	20	47	12	28.08	15	5	35.00	25	37
7	730104.00	18	46	12	28.17	4	4	33.00	26	33
8	771120.23	20	53	13	27.92	4	4	33.00	27	33
9	571121.01	27	24	8	29.00	109	17	38.41	27	45
10	580106.20	1257	52	23	29.74	18493	1223	47.12	28	64
11	710203.00	116	21	9	29.67	732	106	38.91	28	45
12	560311.02	25	15	6	29.50	142	17	40.35	28	48
13	700221.05	70	8	3	29.33	772	65	43.88	28	58
14	631130.02	22	15	8	30.13	13	8	33.63	29	35
15	541027.04	23	10	5	30.00	244	18	45.56	29	61
16	600223.05	22	7	4	30.25	162	17	41.53	29	52
17	600229.21	46	22	12	30.17	224	32	39.00	30	48
18	730219.02	26	11	7	30.43	199	17	43.71	30	54
19	761126.03	19	7	5	30.60	90	12	39.50	30	45
20	620313.05	6256	5	3	30.33	155460	6246	56.89	30	96
21	510222.05	19	3	2	30.50	170	15	43.33	30	51
22	781120.05	14	6	6	31.00	16	6	34.67	31	35
23	780213.03	359	3	3	31.00	4584	353	44.99	31	58
24	770204.03	20	2	2	31.00	140	15	41.33	31	50
25	730402.04	4419	1	1	31.00	122476	4414	59.75	31	98
26	550315.06	17	1	1	31.00	104	13	40.00	31	46
27	661018.07	1967	1	1	31.00	28900	1959	46.75	31	71

APPENDIX D

Joint Distributions

The tables in this appendix contain the joint distributions of several pairs of freezing event characteristics at three sites (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 events in the cell and the overall relative frequency of the events 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. 67).

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F)										
	12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	19 .0259	139 .1896	349 .4761	508 .6930
10	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	12 .0164	47 .0641	75 .1023	30 .0409	165 .2251
20	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	2 .0027	6 .0082	6 .0082	2 .0027	18 .0246
30	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	0 0.0000	1 .0014	3 .0041	1 .0014	6 .0082
40	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	1 .0014	3 .0041	0 0.0000	6 .0082
50	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	1 .0014	1 .0014	3 .0041	0 0.0000	7 .0095
60	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	2 .0027	1 .0014	0 0.0000	0 0.0000	4 .0055
70	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	1 .0014	0 0.0000	3 .0041
80	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	1 .0014	1 .0014	0 0.0000	0 0.0000	3 .0041
90 AND ABOVE	0 0.0000	0 0.0000	2 .0027	0 0.0000	3 .0041	5 .0068	2 .0027	1 .0014	0 0.0000	0 0.0000	13 .0177
COLUMN TOTALS	0 0.0000	0 0.0000	2 .0027	1 .0014	5 .0068	12 .0164	22 .0300	79 .1078	230 .3138	382 .5211	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F)										
	12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	30 .0253	211 .1776	536 .4512	778 .6549
10	0 0.0000	0 0.0000	0 0.0000	1 .0008	8 .0067	22 .0185	57 .0480	123 .1035	110 .0926	27 .0227	348 .2929
20	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	2 .0017	7 .0059	0 0.0000	5 .0042	1 .0008	16 .0135
30	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	2 .0017	4 .0034	2 .0017	10 .0084
40	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	4 .0034	4 .0034	3 .0025	3 .0025	0 0.0000	15 .0126
50	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	2 .0017
60	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	1 .0008	0 0.0000	1 .0008	0 0.0000	4 .0034
70	0 0.0000	0 0.0000	1 .0008	0 0.0000	2 .0017	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	4 .0034
80	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	0 0.0000	2 .0017
90 AND ABOVE	0 0.0000	1 .0008	1 .0008	1 .0008	2 .0017	2 .0017	2 .0017	0 0.0000	0 0.0000	0 0.0000	9 .0076
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F)										
	12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	4 .0046	3 .0035	4 .0046	136 .1576	395 .4577	544 .6304
10	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	9 .0104	37 .0429	76 .0881	86 .0997	44 .0510	254 .2943
20	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0058	1 .0012	3 .0035	0 0.0000	5 .0058	0 0.0000	14 .0162
30	0 0.0000	0 0.0000	0 0.0000	1 .0012	1 .0012	2 .0023	1 .0012	3 .0035	8 .0093	1 .0012	17 .0197
40	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	3 .0035	5 .0058	2 .0023	0 0.0000	11 .0127
50	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	1 .0012	0 0.0000	1 .0012	0 0.0000	3 .0035
60	0 0.0000	0 0.0000	0 0.0000	1 .0012	2 .0023	1 .0012	2 .0023	1 .0012	1 .0012	0 0.0000	8 .0093
70	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
80	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	1 .0012	0 0.0000	0 0.0000	0 0.0000	3 .0035
90 AND ABOVE	1 .0012	1 .0012	1 .0012	0 0.0000	2 .0023	2 .0023	1 .0012	1 .0012	0 0.0000	0 0.0000	9 .0104
COLUMN TOTALS	1 .0012	1 .0012	1 .0012	2 .0023	14 .0162	23 .0267	52 .0603	90 .1043	239 .2769	440 .5098	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	6 .0082	66 .0900	220 .3001	382 .5211	675 .9209
100	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0041	8 .0109	8 .0109	8 .0109	0 0.0000	27 .0368
200	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	2 .0027	0 0.0000	3 .0041
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0041	2 .0027	0 0.0000	0 0.0000	5 .0068
400	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	1 .0014	2 .0027	1 .0014	0 0.0000	0 0.0000	5 .0068
500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	1 .0014	0 0.0000	0 0.0000	0 0.0000	3 .0041
600	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
700	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027
800	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014
900 AND ABOVE	0 0.0000	0 0.0000	2 .0027	0 0.0000	3 .0041	4 .0055	2 .0027	1 .0014	0 0.0000	0 0.0000	12 .0164
COLUMN TOTALS	0 0.0000	0 0.0000	2 .0027	1 .0014	5 .0068	12 .0164	22 .0300	79 .1078	230 .3138	382 .5211	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	20 .0168	150 .1263	328 .2761	566 .4764	1064 .8956
100	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051	24 .0202	44 .0370	6 .0051	7 .0059	0 0.0000	87 .0732
200	0 0.0000	0 0.0000	0 0.0000	1 .0008	3 .0025	0 0.0000	5 .0042	3 .0025	0 0.0000	0 0.0000	12 .0101
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	1 .0008	1 .0008	0 0.0000	0 0.0000	4 .0034
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0034	1 .0008	0 0.0000	0 0.0000	0 0.0000	5 .0042
500	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008
600	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	2 .0017
700	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	2 .0017
800	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
900 AND ABOVE	0 0.0000	1 .0008	2 .0017	1 .0008	3 .0025	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	9 .0076
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
0	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	4 .0046	14 .0162	78 .0904	233 .2700	440 .5098	771 .8934
100	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	10 .0116	29 .0336	5 .0058	6 .0070	0 0.0000	52 .0603
200	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0058	2 .0023	4 .0046	6 .0070	0 0.0000	0 0.0000	17 .0197
300	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	0 0.0000	0 0.0000	1 .0012
400	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	2 .0023	2 .0023	1 .0012	0 0.0000	0 0.0000	6 .0070
500	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	3 .0035
600	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023
700	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023
800	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	2 .0023	1 .0012	0 0.0000	0 0.0000	0 0.0000	4 .0046
900 AND ABOVE	1 .0012	1 .0012	1 .0012	0 0.0000	2 .0023	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0058
COLUMN TOTALS	1 .0012	1 .0012	1 .0012	2 .0023	14 .0162	23 .0267	52 .0603	90 .1043	239 .2/69	440 .5098	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
3	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014
6	0 0.0000	0 0.0000	1 .0014	0 0.0000	2 .0027	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0055
9	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	1 .0014	1 .0014	0 0.0000	0 0.0000	0 0.0000	3 .0041
12	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	3 .0041	1 .0014	0 0.0000	0 0.0000	0 0.0000	6 .0082
15	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0068	3 .0041	0 0.0000	1 .0014	0 0.0000	9 .0123
18	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	2 .0027	7 .0095	4 .0055	0 0.0000	0 0.0000	14 .0191
21	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	9 .0123	26 .0355	3 .0041	0 0.0000	38 .0518
24	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	48 .0655	63 .0859	1 .0014	113 .1542
27	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	163 .2224	78 .1064	242 .3302
30 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	303 .4134	303 .4134
COLUMN TOTALS	0 0.0000	0 0.0000	2 .0027	1 .0014	5 .0068	12 .0164	22 .0300	79 .1078	230 .3138	382 .5211	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
3	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
6	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
9	0 0.0000	1 .0008	1 .0008	1 .0008	1 .0008	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051
12	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0051	5 .0042	2 .0017	0 0.0000	0 0.0000	0 0.0000	13 .0109
15	0 0.0000	0 0.0000	0 0.0000	0 0.0000	5 .0042	9 .0076	9 .0076	1 .0008	0 0.0000	0 0.0000	24 .0202
18	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	17 .0143	26 .0219	8 .0067	0 0.0000	0 0.0000	51 .0429
21	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017	35 .0295	41 .0345	2 .0017	0 0.0000	80 .0673
24	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	110 .0926	89 .0749	0 0.0000	200 .1684
27	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	244 .2054	119 .1002	363 .3056
30 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	447 .3763	447 .3763
COLUMN TOTALS	0 0.0000	2 .0017	2 .0017	2 .0017	13 .0109	35 .0295	73 .0614	160 .1347	335 .2820	566 .4764	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF AVERAGE TEMPERATURE BELOW 32F (DEG F) 12	14	16	18	20	22	24	26	28	30 AND ABOVE	ROW TOTALS
3	1 .0012	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0035
6	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012
9	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0035	2 .0023	1 .0012	0 0.0000	0 0.0000	0 0.0000	6 .0070
12	0 0.0000	0 0.0000	0 0.0000	2 .0023	5 .0058	6 .0070	0 0.0000	0 0.0000	0 0.0000	0 0.0000	13 .0151
15	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0046	7 .0081	3 .0035	0 0.0000	0 0.0000	0 0.0000	14 .0162
18	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	8 .0093	21 .0243	1 .0012	1 .0012	0 0.0000	32 .0371
21	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	26 .0301	28 .0324	2 .0023	0 0.0000	56 .0649
24	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	59 .0684	55 .0637	0 0.0000	115 .1333
27	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0023	181 .2097	96 .1112	279 .3233
30 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	344 .3986	344 .3986
COLUMN TOTALS	1 .0012	1 .0012	1 .0012	2 .0023	14 .0162	23 .0267	52 .0603	90 .1043	239 .2769	440 .5098	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)										
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	508 .6930	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	508 .6930
10	156 .2128	9 .0123	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	165 .2251
20	10 .0136	8 .0109	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	18 .0246
30	1 .0014	4 .0055	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0082
40	0 0.0000	4 .0055	0 0.0000	2 .0027	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	6 .0082
50	0 0.0000	2 .0027	2 .0027	1 .0014	1 .0014	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	7 .0095
60	0 0.0000	0 0.0000	0 0.0000	1 .0014	2 .0027	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	4 .0055
70	0 0.0000	0 0.0000	1 .0014	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	3 .0041
80	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	0 0.0000	3 .0041
90 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	12 .0164	13 .0177
COLUMN TOTALS	675 .9209	27 .0368	3 .0041	5 .0068	5 .0068	3 .0041	0 0.0000	2 .0027	1 .0014	12 .0164	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F) 0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	778 .6549	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	778 .6549
10	276 .2323	69 .0581	3 .0025	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	348 .2929
20	6 .0051	8 .0067	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	16 .0135
30	4 .0034	4 .0034	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	10 .0084
40	0 0.0000	4 .0034	5 .0042	2 .0017	3 .0025	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	15 .0126
50	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0017
60	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	4 .0034
70	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	2 .0017	4 .0034
80	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	2 .0017
90 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	7 .0059	9 .0076
COLUMN TOTALS	1064 .8956	87 .0732	12 .0101	4 .0034	5 .0042	1 .0008	2 .0017	2 .0017	2 .0017	9 .0076	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F)										
	0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
0	544 .6304	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	544 .6304
10	215 .2491	39 .0452	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	254 .2943
20	5 .0058	4 .0046	5 .0058	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	14 .0162
30	7 .0081	4 .0046	4 .0046	0 0.0000	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	17 .0197
40	0 0.0000	3 .0035	7 .0081	0 0.0000	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	11 .0127
50	0 0.0000	1 .0012	0 0.0000	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	3 .0035
60	0 0.0000	1 .0012	1 .0012	0 0.0000	2 .0023	1 .0012	0 0.0000	2 .0023	1 .0012	0 0.0000	8 .0093
70	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
80	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	2 .0023	0 0.0000	0 0.0000	0 0.0000	3 .0035
90 AND ABOVE	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	0 0.0000	0 0.0000	3 .0035	5 .0058	9 .0104
COLUMN TOTALS	771 .8934	52 .0603	17 .0197	1 .0012	6 .0070	3 .0035	2 .0023	2 .0023	4 .0046	5 .0058	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F) 0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
3	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 .0014	1 .0014
6	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	4 .0055	4 .0055
9	0 0.0000	0 0.0000	0 0.0000	0 0.0000	2 .0027	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	3 .0041
12	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	0 0.0000	1 .0014	3 .0041	6 .0082
15	0 0.0000	2 .0027	1 .0014	0 0.0000	1 .0014	2 .0027	0 0.0000	1 .0014	0 0.0000	2 .0027	9 .0123
18	4 .0055	4 .0055	0 0.0000	4 .0055	0 0.0000	1 .0014	0 0.0000	1 .0014	0 0.0000	0 0.0000	14 .0191
21	24 .0327	11 .0150	0 0.0000	1 .0014	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0014	38 .0518
24	103 .1405	8 .0109	2 .0027	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	113 .1542
27	241 .3288	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	242 .3302
30 AND ABOVE	303 .4134	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	303 .4134
COLUMN TOTALS	675 .9209	27 .0368	3 .0041	5 .0068	5 .0068	3 .0041	0 0.0000	2 .0027	1 .0014	12 .0164	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F) 0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
3	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 .0017	2 .0017
6	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 .0017	2 .0017
9	0 0.0000	0 0.0000	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	0 0.0000	1 .0008	3 .0025	6 .0051
12	0 0.0000	2 .0017	3 .0025	1 .0008	2 .0017	0 0.0000	2 .0017	0 0.0000	1 .0008	2 .0017	13 .0109
15	2 .0017	12 .0101	6 .0051	0 0.0000	2 .0017	1 .0008	0 0.0000	1 .0008	0 0.0000	0 0.0000	24 .0202
18	7 .0059	41 .0345	0 0.0000	3 .0025	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	51 .0429
21	53 .0446	25 .0210	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	80 .0673
24	194 .1633	5 .0042	1 .0008	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	200 .1684
27	361 .3039	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	363 .3056
30 AND ABOVE	447 .3763	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	447 .3763
COLUMN TOTALS	1064 .8956	87 .0732	12 .0101	4 .0034	5 .0042	1 .0008	2 .0017	2 .0017	2 .0017	9 .0076	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF SUM OF DEGREES BELOW 32F (DEG F) 0	100	200	300	400	500	600	700	800	900 AND ABOVE	ROW TOTALS
3	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 .0035	3 .0035
6	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 .0012	1 .0012
9	0 0.0000	0 0.0000	1 .0012	0 0.0000	1 .0012	0 0.0000	0 0.0000	2 .0023	1 .0012	1 .0012	6 .0070
12	5 .0058	0 0.0000	3 .0035	0 0.0000	1 .0012	1 .0012	1 .0012	0 0.0000	2 .0023	0 0.0000	13 .0151
15	1 .0012	5 .0058	4 .0046	0 0.0000	1 .0012	1 .0012	1 .0012	0 0.0000	1 .0012	0 0.0000	14 .0162
18	6 .0070	19 .0220	4 .0046	0 0.0000	2 .0023	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	32 .0371
21	33 .0382	18 .0209	3 .0035	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	56 .0649
24	105 .1217	8 .0093	2 .0023	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	115 .1333
27	277 .3210	2 .0023	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	279 .3233
30 AND ABOVE	344 .3986	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	344 .3986
COLUMN TOTALS	771 .8934	52 .0603	17 .0197	1 .0012	6 .0070	3 .0035	2 .0023	2 .0023	4 .0046	5 .0058	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR PORTLAND

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F										
	0	10	20	30	40	50	60	70	80	90 AND ABOVE	ROW TOTALS
3	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 .0014	1 .0014
6	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	4 .0055	4 .0055
9	0 0.0000	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	3 .0041
12	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	0 0.0000	0 0.0000	1 .0014	3 .0041	6 .0082
15	0 0.0000	1 .0014	1 .0014	0 0.0000	0 0.0000	2 .0027	1 .0014	0 0.0000	1 .0014	3 .0041	9 .0123
18	1 .0014	6 .0082	0 0.0000	0 0.0000	3 .0041	1 .0014	1 .0014	1 .0014	1 .0014	0 0.0000	14 .0191
21	0 0.0000	28 .0382	5 .0068	1 .0014	1 .0014	0 0.0000	1 .0014	1 .0014	0 0.0000	1 .0014	38 .0518
24	34 .0464	65 .0887	6 .0082	2 .0027	2 .0027	3 .0041	0 0.0000	1 .0014	0 0.0000	0 0.0000	113 .1542
27	186 .2538	50 .0682	4 .0055	2 .0027	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	242 .3302
30 AND ABOVE	287 .3915	15 .0205	1 .0014	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	303 .4134
COLUMN TOTALS	508 .6930	165 .2251	18 .0246	6 .0082	6 .0082	7 .0095	4 .0055	3 .0041	3 .0041	13 .0177	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR SALEM

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F										
	0	10	20	30	40	50	60	70	80	90 AND ABOVE	ROW TOTALS
3	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 .0017	2 .0017
6	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 .0017	2 .0017
9	0 0.0000	1 .0008	0 0.0000	0 0.0000	1 .0008	1 .0008	0 0.0000	1 .0008	0 0.0000	2 .0017	6 .0051
12	0 0.0000	3 .0025	1 .0008	2 .0017	2 .0017	0 0.0000	1 .0008	2 .0017	0 0.0000	2 .0017	13 .0109
15	1 .0008	13 .0109	2 .0017	0 0.0000	5 .0042	0 0.0000	2 .0017	0 0.0000	1 .0008	0 0.0000	24 .0202
18	0 0.0000	42 .0354	5 .0042	1 .0008	2 .0017	0 0.0000	0 0.0000	1 .0008	0 0.0000	0 0.0000	51 .0429
21	6 .0051	67 .0564	2 .0017	2 .0017	2 .0017	0 0.0000	0 0.0000	0 0.0000	0 0.0000	1 .0008	80 .0673
24	57 .0480	136 .1145	2 .0017	1 .0008	2 .0017	1 .0008	1 .0008	0 0.0000	0 0.0000	0 0.0000	200 .1684
27	276 .2323	77 .0648	4 .0034	4 .0034	1 .0008	0 0.0000	0 0.0000	0 0.0000	1 .0008	0 0.0000	363 .3056
30 AND ABOVE	438 .3687	9 .0076	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	447 .3763
COLUMN TOTALS	778 .6549	348 .2929	16 .0135	10 .0084	15 .0126	2 .0017	4 .0034	4 .0034	2 .0017	9 .0076	

JOINT FREQUENCIES AND OVERALL RELATIVE FREQUENCIES FOR EUGENE

LOWER BOUNDS FOR INTERVALS OF MINIMUM TEMPERATURE (DEG F)	LOWER BOUNDS FOR INTERVALS OF NUMBER OF HOURS BELOW 32F										
	0	10	20	30	40	50	60	70	80	90 AND ABOVE	ROW TOTALS
3	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 .0035	3 .0035
6	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 .0012	1 .0012
9	0 0.0000	0 0.0000	0 0.0000	1 .0012	0 0.0000	1 .0012	2 .0023	0 0.0000	0 0.0000	2 .0023	6 .0070
12	5 .0058	0 0.0000	2 .0023	3 .0035	0 0.0000	0 0.0000	1 .0012	0 0.0000	1 .0012	1 .0012	13 .0151
15	1 .0012	4 .0046	4 .0046	0 0.0000	1 .0012	0 0.0000	2 .0023	0 0.0000	1 .0012	1 .0012	14 .0162
18	3 .0035	20 .0232	2 .0023	2 .0023	3 .0035	0 0.0000	1 .0012	0 0.0000	1 .0012	0 0.0000	32 .0371
21	0 0.0000	48 .0556	1 .0012	1 .0012	4 .0046	1 .0012	0 0.0000	0 0.0000	0 0.0000	1 .0012	56 .0649
24	21 .0243	86 .0997	0 0.0000	4 .0046	3 .0035	0 0.0000	1 .0012	0 0.0000	0 0.0000	0 0.0000	115 .1333
27	196 .2271	70 .0811	5 .0058	6 .0070	0 0.0000	1 .0012	1 .0012	0 0.0000	0 0.0000	0 0.0000	279 .3233
30 AND ABOVE	318 .3685	26 .0301	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	344 .3986
COLUMN TOTALS	544 .6304	254 .2943	14 .0162	17 .0197	11 .0127	3 .0035	8 .0093	0 0.0000	3 .0035	9 .0104	

APPENDIX E

Conditional Distributions

The conditional distributions of five combinations of freezing event characteristics at three sites (Portland, Salem, and Eugene, Oregon) are presented in this appendix. These distributions are given in the form of quantiles that are listed in individual tables for each pair of characteristics. The tables of distributions are organized according to the pairs of characteristics, 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. 67).

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON HOURS BELOW 32, AT PORTLAND

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	160	1.00	1.00	1.00	1.00	1.00	2.00	3.00	3.00	4.39	5.00
2.00	2.00	76	2.00	2.00	2.00	2.00	3.00	4.00	6.30	8.00	11.00	11.00
3.00	3.00	61	3.00	3.00	3.00	4.00	5.00	6.00	8.00	8.90	10.00	10.00
4.00	4.00	48	4.00	4.00	4.00	5.00	7.50	9.00	11.10	14.20	18.00	18.00
5.00	5.00	35	5.00	5.00	5.00	7.00	10.00	13.00	14.40	17.20	22.00	22.00
6.00	6.00	35	6.00	6.00	7.60	9.00	13.00	17.00	21.80	23.80	27.00	27.00
7.00	7.00	38	7.00	7.00	10.00	13.00	17.00	24.25	31.10	33.30	58.00	58.00
8.00	8.00	34	10.00	10.00	11.50	16.00	21.00	26.25	32.00	38.75	47.00	47.00
9.00	9.00	21	11.00	11.00	11.80	18.00	23.00	38.50	43.80	48.50	49.00	49.00
10.00	10.00	19	12.00	12.00	12.00	26.00	33.00	42.00	52.00	53.00	53.00	53.00
11.00	11.00	21	14.00	14.00	14.40	19.00	28.00	45.00	56.80	60.70	61.00	61.00
12.00	12.00	22	20.00	20.00	22.70	32.00	47.00	51.50	67.70	78.20	80.00	80.00
13.00	13.00	28	16.00	16.00	17.90	30.25	41.00	53.75	66.40	74.95	79.00	79.00
14.00	14.00	21	23.00	23.00	23.80	39.50	54.00	82.00	92.80	96.60	97.00	97.00
15.00	15.00	14	32.00	32.00	33.00	42.25	49.00	63.25	86.50	87.00	87.00	87.00
16.00	17.00	15	28.00	28.00	28.60	45.00	53.00	66.00	89.80	94.00	94.00	94.00
18.00	18.00	12	26.00	26.00	26.90	39.00	68.50	88.50	109.20	117.00	117.00	117.00
19.00	19.00	13	29.00	29.00	30.20	75.50	113.00	126.50	168.40	182.00	182.00	182.00
20.00	21.00	11	33.00	33.00	38.20	79.00	106.00	123.00	180.40	193.00	193.00	193.00
22.00	34.00	10	41.00	41.00	42.00	53.25	89.00	147.50	187.70	188.00	188.00	188.00
36.00	50.00	10	112.00	112.00	113.50	130.00	157.00	362.75	470.30	480.00	480.00	480.00
53.00	67.00	10	197.00	197.00	197.30	229.25	392.50	502.25	558.80	564.00	564.00	564.00
70.00	136.00	10	238.00	238.00	250.90	399.25	758.50	1152.75	1526.10	1546.00	1546.00	1546.00
137.00	317.00	9	954.00	954.00	954.00	1127.50	1656.00	2693.50	3717.00	3717.00	3717.00	3717.00

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON HOURS BELOW 32, AT SALEM

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	170	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	3.00	3.00
2.00	2.00	108	2.00	2.00	2.00	2.00	3.00	3.00	4.00	5.00	5.00	5.00
3.00	3.00	85	3.00	3.00	3.00	4.00	4.00	6.00	7.40	9.00	18.00	18.00
4.00	4.00	74	4.00	4.00	4.00	5.00	6.50	8.00	10.00	10.25	14.00	14.00
5.00	5.00	86	5.00	5.00	6.00	7.00	9.00	12.00	15.00	16.00	17.00	17.00
6.00	6.00	70	6.00	6.00	8.00	10.00	13.00	16.00	22.90	25.00	27.00	27.00
7.00	7.00	70	7.00	7.00	9.10	13.00	16.00	20.50	27.90	30.90	36.00	36.00
8.00	8.00	62	8.00	8.00	13.00	16.00	23.00	29.25	36.70	46.25	63.00	63.00
9.00	9.00	53	11.00	11.00	16.00	22.50	28.00	34.00	40.20	47.20	52.00	52.00
10.00	10.00	50	13.00	13.00	19.10	23.00	36.00	45.25	50.90	53.45	56.00	56.00
11.00	11.00	49	14.00	14.00	22.00	30.50	38.00	47.50	59.00	69.00	79.00	79.00
12.00	12.00	31	13.00	13.00	23.00	31.00	40.00	56.00	63.80	80.00	89.00	89.00
13.00	13.00	40	16.00	16.00	23.10	38.25	58.50	72.25	90.30	99.65	118.00	118.00
14.00	14.00	31	26.00	26.00	28.40	40.00	60.00	78.00	93.80	101.40	102.00	102.00
15.00	15.00	40	41.00	41.00	50.90	65.50	84.50	99.50	124.80	161.20	170.00	170.00
16.00	16.00	39	29.00	29.00	41.00	57.00	81.00	104.00	123.00	128.00	136.00	136.00
17.00	17.00	29	33.00	33.00	52.00	76.00	104.00	132.50	155.00	186.00	195.00	195.00
18.00	18.00	27	50.00	50.00	56.80	94.00	127.00	156.00	173.40	216.40	228.00	228.00
19.00	19.00	12	59.00	59.00	70.70	107.25	144.50	191.50	222.00	228.00	228.00	228.00
20.00	21.00	10	44.00	44.00	45.70	112.75	152.50	177.00	216.00	220.00	220.00	220.00
22.00	34.00	10	41.00	41.00	42.50	59.75	85.00	138.75	211.80	215.00	215.00	215.00
36.00	41.00	11	83.00	83.00	92.00	142.00	186.00	262.00	329.00	331.00	331.00	331.00
42.00	48.00	10	151.00	151.00	153.40	199.00	303.50	422.00	788.30	827.00	827.00	827.00
52.00	77.00	10	169.00	169.00	173.60	326.00	514.00	834.50	1067.90	1086.00	1086.00	1086.00
84.00	195.00	11	189.00	189.00	285.40	724.00	1124.00	1293.00	3168.20	3187.00	3187.00	3187.00

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON HOURS BELOW 32, AT EUGENE

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	101	1.00	1.00	1.00	1.00	1.00	1.00	1.80	2.00	2.00	2.00
2.00	2.00	85	2.00	2.00	2.00	2.00	2.00	3.00	4.00	5.00	7.00	7.00
3.00	3.00	62	3.00	3.00	3.00	3.00	4.00	6.00	7.00	7.85	9.00	9.00
4.00	4.00	64	4.00	4.00	4.00	5.00	7.00	8.00	10.00	13.50	30.00	30.00
5.00	5.00	63	5.00	5.00	5.00	7.00	9.00	12.00	15.00	44.20	53.00	53.00
6.00	6.00	63	6.00	6.00	8.00	10.00	13.00	15.00	20.60	45.20	66.00	66.00
7.00	7.00	34	7.00	7.00	9.00	11.75	16.00	20.75	25.00	26.00	26.00	26.00
8.00	8.00	40	8.00	8.00	12.00	13.25	17.00	21.75	25.80	30.75	34.00	34.00
9.00	9.00	32	10.00	10.00	13.30	15.50	24.50	28.75	31.40	39.00	39.00	39.00
10.00	10.00	37	12.00	12.00	14.60	19.00	29.00	35.50	47.40	53.30	74.00	74.00
11.00	11.00	19	12.00	12.00	13.00	15.00	31.00	46.00	57.00	69.00	69.00	69.00
12.00	12.00	35	16.00	16.00	17.80	29.00	45.00	53.00	68.80	77.60	84.00	84.00
13.00	13.00	27	13.00	13.00	15.60	28.00	47.00	55.00	64.20	75.20	82.00	82.00
14.00	14.00	24	20.00	20.00	22.00	30.50	54.00	67.50	79.00	80.00	80.00	80.00
15.00	15.00	40	21.00	21.00	28.20	53.50	69.50	88.50	95.80	102.90	125.00	125.00
16.00	16.00	18	34.00	34.00	36.70	59.25	80.50	102.50	123.30	126.00	126.00	126.00
17.00	17.00	22	29.00	29.00	37.80	71.25	110.50	123.75	160.70	174.20	176.00	176.00
18.00	18.00	19	31.00	31.00	32.00	53.00	98.00	130.00	177.00	184.00	184.00	184.00
19.00	19.00	13	55.00	55.00	57.40	86.00	126.00	150.00	167.60	174.00	174.00	174.00
20.00	25.00	10	49.00	49.00	49.30	109.00	199.00	209.25	235.20	238.00	238.00	238.00
26.00	33.00	12	56.00	56.00	57.50	65.50	97.00	158.75	265.10	266.00	266.00	266.00
34.00	40.00	12	74.00	74.00	75.20	90.50	203.00	262.00	488.90	509.00	509.00	509.00
41.00	59.00	11	148.00	148.00	149.80	163.00	252.00	363.00	432.80	438.00	438.00	438.00
61.00	84.00	10	158.00	158.00	168.10	428.50	637.00	719.00	832.10	844.00	844.00	844.00
85.00	158.00	10	409.00	409.00	425.40	790.50	948.00	2284.25	2691.80	2724.00	2724.00	2724.00

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON HOURS BELOW 32, AT PORTLAND

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	160	27.00	27.61	29.00	30.00	31.00	31.00	31.00	31.00	31.00	31.00
2.00	2.00	76	26.50	26.50	28.85	30.00	30.50	31.00	31.00	31.00	31.00	31.00
3.00	3.00	61	28.67	28.67	29.33	30.00	30.33	30.67	31.00	31.00	31.00	31.00
4.00	4.00	48	27.50	27.50	29.23	29.75	30.13	30.75	31.00	31.00	31.00	31.00
5.00	5.00	35	27.60	27.60	29.12	29.40	30.00	30.60	31.00	31.00	31.00	31.00
6.00	6.00	35	27.50	27.50	28.37	29.17	29.83	30.50	30.73	31.00	31.00	31.00
7.00	7.00	38	23.71	23.71	27.56	28.54	29.57	30.14	30.57	31.00	31.00	31.00
8.00	8.00	34	26.13	26.13	28.00	28.72	29.38	30.00	30.56	30.75	30.75	30.75
9.00	9.00	21	26.56	26.56	27.13	27.72	29.44	30.00	30.69	30.78	30.78	30.78
10.00	10.00	19	26.70	26.70	26.80	27.80	28.70	29.40	30.80	30.80	30.80	30.80
11.00	11.00	21	26.45	26.45	26.84	27.91	29.45	30.27	30.69	30.73	30.73	30.73
12.00	12.00	22	25.33	25.33	26.36	27.71	28.08	29.33	30.11	30.33	30.33	30.33
13.00	13.00	28	25.92	25.92	26.89	27.87	28.85	29.67	30.62	30.73	30.77	30.77
14.00	14.00	21	25.07	25.07	25.37	26.14	28.14	29.18	30.30	30.36	30.36	30.36
15.00	15.00	14	26.20	26.20	26.23	27.78	28.73	29.18	29.80	29.87	29.87	29.87
16.00	17.00	15	26.47	26.47	26.53	27.88	28.88	29.19	30.25	30.35	30.35	30.35
18.00	18.00	12	25.50	25.50	25.93	27.08	28.19	29.83	30.51	30.56	30.56	30.56
19.00	19.00	13	22.42	22.42	23.14	25.34	26.05	28.03	30.41	30.47	30.47	30.47
20.00	21.00	11	22.81	22.81	23.35	26.14	26.70	28.05	30.12	30.35	30.35	30.35
22.00	34.00	10	23.45	23.45	23.70	26.39	28.72	29.94	30.57	30.59	30.59	30.59
36.00	50.00	10	19.03	19.03	19.53	24.16	28.33	28.62	29.30	29.33	29.33	29.33
53.00	67.00	10	23.32	23.32	23.32	23.79	24.94	28.00	28.42	28.43	28.43	28.43
70.00	136.00	10	17.42	17.42	17.68	21.05	23.92	26.85	28.74	28.87	28.87	28.87
137.00	317.00	9	16.89	16.89	16.89	20.82	22.63	24.42	26.18	26.18	26.18	26.18

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON HOURS BELOW 32, AT SALEM

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	170	29.00	29.00	30.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
2.00	2.00	108	29.50	29.50	30.00	30.50	30.50	31.00	31.00	31.00	31.00	31.00
3.00	3.00	85	26.00	26.00	29.53	30.00	30.67	30.67	31.00	31.00	31.00	31.00
4.00	4.00	74	28.50	28.50	29.50	30.00	30.38	30.75	31.00	31.00	31.00	31.00
5.00	5.00	86	28.60	28.60	29.00	29.60	30.20	30.60	30.80	31.00	31.00	31.00
6.00	6.00	70	27.50	27.50	28.18	29.33	29.83	30.33	30.67	31.00	31.00	31.00
7.00	7.00	70	26.86	26.86	28.01	29.07	29.71	30.14	30.70	30.84	31.00	31.00
8.00	8.00	62	24.13	24.13	27.41	28.34	29.13	30.00	30.38	30.86	31.00	31.00
9.00	9.00	53	26.22	26.22	27.53	28.22	28.89	29.50	30.22	30.51	30.78	30.78
10.00	10.00	50	26.40	26.40	26.91	27.48	28.40	29.70	30.09	30.44	30.70	30.70
11.00	11.00	49	24.82	24.82	26.64	27.68	28.55	29.23	30.00	30.41	30.73	30.73
12.00	12.00	31	24.58	24.58	26.68	27.33	28.67	29.42	30.08	30.82	30.92	30.92
13.00	13.00	40	22.92	22.92	25.05	26.44	27.50	29.06	30.22	30.46	30.77	30.77
14.00	14.00	31	24.71	24.71	25.30	26.43	27.71	29.14	29.97	30.06	30.14	30.14
15.00	15.00	40	20.67	20.67	23.68	25.37	26.37	27.63	28.61	29.05	29.27	29.27
16.00	16.00	39	23.50	23.50	24.31	25.50	26.94	28.44	29.44	29.63	30.19	30.19
17.00	17.00	29	20.53	20.53	22.88	24.21	25.88	27.53	28.94	30.03	30.06	30.06
18.00	18.00	27	19.33	19.33	22.37	23.33	24.94	26.78	28.84	29.09	29.22	29.22
19.00	19.00	12	20.00	20.00	20.32	21.92	24.39	26.36	28.28	28.89	28.89	28.89
20.00	21.00	10	21.00	21.00	21.20	23.15	24.56	26.40	29.73	29.80	29.80	29.80
22.00	34.00	10	24.04	24.04	24.13	27.33	29.10	30.21	30.25	30.25	30.25	30.25
36.00	41.00	11	23.32	23.32	23.40	25.28	27.11	28.54	29.46	29.69	29.69	29.69
42.00	48.00	10	14.77	14.77	15.49	22.41	25.17	27.62	28.39	28.40	28.40	28.40
52.00	77.00	10	17.90	17.90	18.13	20.84	23.49	27.13	29.09	29.23	29.23	29.23
84.00	195.00	11	15.66	15.66	15.75	19.65	23.13	24.63	28.93	29.75	29.75	29.75

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON HOURS BELOW 32, AT EUGENE

HOURS BELOW 32 INTERVAL START	HOURS BELOW 32 INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
1.00	1.00	101	30.00	30.00	30.20	31.00	31.00	31.00	31.00	31.00	31.00	31.00
2.00	2.00	85	28.50	28.50	30.00	30.50	31.00	31.00	31.00	31.00	31.00	31.00
3.00	3.00	62	29.00	29.00	29.67	30.00	30.67	31.00	31.00	31.00	31.00	31.00
4.00	4.00	64	24.50	24.50	29.50	30.00	30.25	30.75	31.00	31.00	31.00	31.00
5.00	5.00	63	21.40	21.40	29.00	29.60	30.20	30.60	31.00	31.00	31.00	31.00
6.00	6.00	63	21.00	21.00	28.57	29.50	29.83	30.33	30.67	30.97	31.00	31.00
7.00	7.00	34	28.29	28.29	28.43	29.04	29.71	30.32	30.71	31.00	31.00	31.00
8.00	8.00	40	27.75	27.75	28.78	29.28	29.88	30.34	30.50	30.98	31.00	31.00
9.00	9.00	32	27.67	27.67	28.51	28.81	29.28	30.28	30.52	30.74	30.89	30.89
10.00	10.00	37	24.60	24.60	27.26	28.45	29.10	30.10	30.54	30.71	30.80	30.80
11.00	11.00	19	25.73	25.73	26.82	27.82	29.18	30.64	30.82	30.91	30.91	30.91
12.00	12.00	35	25.00	25.00	26.27	27.58	28.25	29.58	30.52	30.67	30.67	30.67
13.00	13.00	27	25.69	25.69	27.06	27.77	28.38	29.85	30.80	30.97	31.00	31.00
14.00	14.00	24	26.29	26.29	26.36	27.18	28.14	29.82	30.43	30.54	30.57	30.57
15.00	15.00	40	23.67	23.67	25.61	26.10	27.37	28.43	30.12	30.53	30.60	30.60
16.00	16.00	18	24.13	24.13	24.29	25.59	26.97	28.30	29.71	29.88	29.88	29.88
17.00	17.00	22	21.65	21.65	22.55	24.72	25.50	27.81	29.78	30.23	30.29	30.29
18.00	18.00	19	21.78	21.78	22.17	24.78	26.56	29.06	30.22	30.28	30.28	30.28
19.00	19.00	13	22.84	22.84	23.18	24.11	25.37	27.47	28.98	29.11	29.11	29.11
20.00	25.00	10	20.67	20.67	20.75	21.54	22.28	26.82	29.72	29.74	29.74	29.74
26.00	33.00	12	23.78	23.78	23.83	26.13	28.97	29.66	29.81	29.85	29.85	29.85
34.00	40.00	12	18.61	18.61	19.13	24.87	26.93	29.65	29.95	30.05	30.05	30.05
41.00	59.00	11	23.23	23.23	23.33	25.22	25.85	28.12	29.23	29.49	29.49	29.49
61.00	84.00	10	19.40	19.40	19.51	20.59	23.71	25.34	29.28	29.45	29.45	29.45
85.00	158.00	10	12.94	12.94	13.12	16.97	21.58	24.43	27.24	27.46	27.46	27.46

CONDITIONAL DISTRIBUTIONS OF HOURS BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT PORTLAND

MINIMUM TEMPERATURE INTERVAL START	MINIMUM TEMPERATURE INTERVAL END	N	HOURS BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-2.00	12.00	10	37.00	37.00	38.70	62.25	126.00	215.25	309.90	317.00	317.00	317.00
13.00	17.00	13	19.00	19.00	19.80	39.00	83.00	136.50	216.00	254.00	254.00	254.00
18.00	20.00	14	7.00	7.00	10.50	14.75	30.50	56.00	76.50	83.00	83.00	83.00
21.00	22.00	23	11.00	11.00	11.40	13.00	14.00	19.00	20.60	135.40	164.00	164.00
23.00	23.00	15	10.00	10.00	10.00	11.00	19.00	34.00	70.60	76.00	76.00	76.00
24.00	24.00	24	8.00	8.00	8.50	10.25	13.00	17.75	20.50	62.25	76.00	76.00
25.00	25.00	35	4.00	4.00	6.60	9.00	12.00	15.00	45.20	54.80	58.00	58.00
26.00	26.00	54	2.00	2.00	7.00	8.00	12.00	15.00	18.50	27.75	39.00	39.00
27.00	27.00	63	1.00	1.00	2.40	5.00	7.00	12.00	15.60	20.40	32.00	32.00
28.00	28.00	84	1.00	1.00	2.50	4.00	6.50	10.00	14.00	17.75	34.00	34.00
29.00	29.00	95	1.00	1.00	1.00	2.00	4.00	8.00	13.00	16.40	29.00	29.00
30.00	30.00	133	1.00	1.00	1.00	2.00	3.00	5.00	11.00	13.00	19.32	20.00
31.00	31.00	170	1.00	1.00	1.00	1.00	1.00	2.00	3.00	5.00	7.00	7.00

CONDITIONAL DISTRIBUTIONS OF HOURS BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT SALEM

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	HOURS BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-9.00	11.00	10	18.00	18.00	21.00	53.25	102.50	142.50	195.00	195.00	195.00	195.00
12.00	14.00	13	17.00	17.00	17.80	19.50	44.00	75.50	118.60	137.00	137.00	137.00
15.00	16.00	13	12.00	12.00	13.20	16.00	27.00	43.50	65.60	66.00	66.00	66.00
17.00	17.00	11	8.00	8.00	9.40	15.00	18.00	20.00	79.40	88.00	88.00	88.00
18.00	18.00	11	15.00	15.00	15.20	17.00	18.00	19.00	35.60	38.00	38.00	38.00
19.00	19.00	12	16.00	16.00	16.30	17.00	17.50	20.00	42.80	44.00	44.00	44.00
20.00	20.00	28	11.00	11.00	13.00	14.25	16.00	18.00	20.00	48.05	71.00	71.00
21.00	21.00	22	11.00	11.00	13.30	15.00	16.50	18.00	20.70	100.05	114.00	114.00
22.00	22.00	24	9.00	9.00	11.00	12.25	15.00	16.75	27.50	38.50	39.00	39.00
23.00	23.00	34	8.00	8.00	9.00	10.75	14.00	16.00	18.50	42.00	45.00	45.00
24.00	24.00	49	6.00	6.00	8.00	10.00	13.00	15.00	17.00	17.50	52.00	52.00
25.00	25.00	78	3.00	3.00	7.90	10.00	12.00	15.00	17.00	28.20	61.00	61.00
26.00	26.00	73	4.00	4.00	7.00	8.00	10.00	12.00	16.00	16.00	47.00	47.00
27.00	27.00	88	3.00	3.00	5.00	8.00	9.00	11.75	16.10	20.65	84.00	84.00
28.00	28.00	119	2.00	2.20	4.00	5.00	7.00	9.00	12.00	16.00	33.00	36.00
29.00	29.00	156	1.00	1.00	2.70	4.00	6.00	8.00	12.00	14.00	32.86	34.00
30.00	30.00	209	1.00	1.00	1.00	2.00	3.00	5.00	7.00	9.00	12.90	13.00
31.00	31.00	238	1.00	1.00	1.00	1.00	1.00	2.00	4.00	5.00	7.61	8.00

CONDITIONAL DISTRIBUTIONS OF HOURS BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT EUGENE

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	HOURS BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-10.00	11.00	10	36.00	36.00	37.70	60.50	91.00	137.50	157.90	158.00	158.00	158.00
12.00	14.00	13	5.00	5.00	5.00	5.50	21.00	52.50	88.40	92.00	92.00	92.00
15.00	16.00	11	17.00	17.00	17.00	18.00	20.00	65.00	104.80	110.00	110.00	110.00
17.00	18.00	13	5.00	5.00	5.40	17.00	18.00	29.50	53.60	62.00	62.00	62.00
19.00	20.00	22	4.00	4.00	6.40	14.75	17.50	28.50	45.50	79.30	85.00	85.00
21.00	21.00	18	10.00	10.00	11.80	15.00	17.00	18.75	40.20	42.00	42.00	42.00
22.00	22.00	20	11.00	11.00	12.20	14.00	15.00	17.00	37.90	41.90	42.00	42.00
23.00	23.00	18	11.00	11.00	11.90	13.00	15.00	18.00	62.10	90.00	90.00	90.00
24.00	24.00	30	6.00	6.00	10.10	12.00	14.50	16.25	39.30	51.65	61.00	61.00
25.00	25.00	47	5.00	5.00	9.00	11.00	14.00	15.00	18.20	32.60	41.00	41.00
26.00	26.00	38	5.00	5.00	5.90	7.75	10.00	14.00	17.10	19.00	38.00	38.00
27.00	27.00	62	4.00	4.00	6.00	7.75	9.00	13.00	16.70	24.95	59.00	59.00
28.00	28.00	104	2.00	2.00	4.00	6.00	7.00	11.00	17.50	29.00	60.85	62.00
29.00	29.00	113	2.00	2.00	3.00	4.00	5.00	8.00	12.00	14.60	36.60	38.00
30.00	30.00	157	1.00	1.00	2.00	3.00	4.00	7.00	11.20	14.00	18.00	18.00
31.00	31.00	187	1.00	1.00	1.00	1.00	2.00	2.00	4.00	5.00	8.60	13.00

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT PORTLAND

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-2.00	12.00	10	435.00	435.00	439.50	486.75	1530.00	2200.50	3649.50	3717.00	3717.00	3717.00
13.00	17.00	13	182.00	182.00	184.40	196.50	550.00	1030.00	1920.20	2345.00	2345.00	2345.00
18.00	20.00	14	58.00	58.00	66.00	94.25	161.00	371.00	644.50	725.00	725.00	725.00
21.00	22.00	23	50.00	50.00	59.20	70.00	86.00	113.00	128.80	789.20	954.00	954.00
23.00	23.00	15	46.00	46.00	47.20	53.00	106.00	140.00	348.20	410.00	410.00	410.00
24.00	24.00	24	36.00	36.00	40.00	47.00	58.50	85.00	118.00	209.50	238.00	238.00
25.00	25.00	35	17.00	17.00	24.60	38.00	49.00	56.00	150.20	205.40	239.00	239.00
26.00	26.00	54	8.00	8.00	23.00	28.75	39.50	54.00	73.00	106.25	138.00	138.00
27.00	27.00	63	5.00	5.00	8.00	12.00	21.00	33.00	46.60	64.60	103.00	103.00
28.00	28.00	84	4.00	4.00	6.00	10.00	15.50	22.75	34.00	50.25	54.00	54.00
29.00	29.00	95	3.00	3.00	3.00	5.00	8.00	15.00	25.80	30.40	41.00	41.00
30.00	30.00	133	2.00	2.00	2.00	3.00	4.00	8.00	14.60	19.30	30.62	33.00
31.00	31.00	170	1.00	1.00	1.00	1.00	1.00	2.00	3.00	5.00	7.00	7.00

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT SALEM

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-9.00	11.00	10	228.00	228.00	252.60	738.75	1105.00	1743.00	3177.60	3187.00	3187.00	3187.00
12.00	14.00	13	177.00	177.00	183.00	224.00	416.00	741.00	1073.60	1186.00	1186.00	1186.00
15.00	16.00	13	89.00	89.00	101.80	155.00	215.00	343.00	515.20	554.00	554.00	554.00
17.00	17.00	11	63.00	63.00	74.80	127.00	170.00	208.00	644.00	733.00	733.00	733.00
18.00	18.00	11	111.00	111.00	113.40	125.00	145.00	183.00	189.20	190.00	190.00	190.00
19.00	19.00	12	112.00	112.00	112.60	122.75	144.00	172.00	327.40	331.00	331.00	331.00
20.00	20.00	28	66.00	66.00	75.00	94.75	118.00	137.50	156.20	270.75	363.00	363.00
21.00	21.00	22	60.00	60.00	77.00	92.50	111.00	132.00	153.10	638.50	724.00	724.00
22.00	22.00	24	52.00	52.00	58.00	75.25	87.50	106.25	126.00	161.75	173.00	173.00
23.00	23.00	34	31.00	31.00	47.00	58.25	77.50	91.75	104.00	176.25	207.00	207.00
24.00	24.00	49	25.00	25.00	38.00	46.50	59.00	75.00	90.00	99.00	215.00	215.00
25.00	25.00	78	18.00	18.00	31.90	39.00	52.00	67.00	82.30	91.70	169.00	169.00
26.00	26.00	73	14.00	14.00	23.00	28.00	35.00	42.00	58.20	67.30	175.00	175.00
27.00	27.00	88	8.00	8.00	14.90	21.25	28.50	33.75	50.40	60.55	189.00	189.00
28.00	28.00	119	5.00	5.20	9.00	13.00	16.00	23.00	32.00	43.00	78.60	83.00
29.00	29.00	156	3.00	3.00	5.00	7.25	11.00	15.75	23.00	28.15	58.15	61.00
30.00	30.00	209	2.00	2.00	2.00	3.00	5.00	8.00	10.00	13.50	17.90	20.00
31.00	31.00	238	1.00	1.00	1.00	1.00	1.00	2.00	4.00	5.00	7.61	8.00

CONDITIONAL DISTRIBUTIONS OF DEGREES BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT EUGENE

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	DEGREES BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-10.00	11.00	10	278.00	278.00	294.00	647.25	932.50	2284.25	2691.80	2724.00	2724.00	2724.00
12.00	14.00	13	46.00	46.00	46.80	56.50	238.00	599.50	875.80	897.00	897.00	897.00
15.00	16.00	11	164.00	164.00	166.40	177.00	208.00	584.00	829.40	863.00	863.00	863.00
17.00	18.00	13	37.00	37.00	41.80	129.50	168.00	225.00	402.20	485.00	485.00	485.00
19.00	20.00	22	30.00	30.00	36.30	96.75	126.00	169.75	372.40	548.85	573.00	573.00
21.00	21.00	18	65.00	65.00	65.90	90.00	108.50	128.50	213.10	214.00	214.00	214.00
22.00	22.00	20	62.00	62.00	69.40	76.50	96.50	110.25	161.20	201.00	203.00	203.00
23.00	23.00	18	47.00	47.00	53.30	65.50	81.50	100.75	367.60	409.00	409.00	409.00
24.00	24.00	30	30.00	30.00	49.20	53.00	70.50	86.25	170.30	228.20	259.00	259.00
25.00	25.00	47	14.00	14.00	34.00	43.00	55.00	69.00	99.20	120.20	157.00	157.00
26.00	26.00	38	13.00	13.00	17.70	26.00	36.00	53.50	63.40	72.20	95.00	95.00
27.00	27.00	62	12.00	12.00	14.00	20.00	27.00	34.25	55.70	61.00	148.00	148.00
28.00	28.00	104	6.00	6.05	9.00	14.00	18.00	29.75	47.00	67.75	154.55	158.00
29.00	29.00	113	4.00	4.00	6.00	8.00	10.00	15.00	24.60	29.90	72.60	74.00
30.00	30.00	157	2.00	2.00	3.00	4.00	6.00	11.00	16.00	22.00	31.42	32.00
31.00	31.00	187	1.00	1.00	1.00	1.00	2.00	2.00	4.00	5.00	8.60	13.00

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT PORTLAND

MINIMUM TEMPERATURE INTERVAL START	MINIMUM TEMPERATURE INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-2.00	12.00	10	16.89	16.89	16.94	18.62	20.82	22.96	24.42	24.48	24.48	24.48
13.00	17.00	13	21.37	21.37	21.79	22.79	23.84	24.67	27.33	28.43	28.43	28.43
18.00	20.00	14	21.64	21.64	22.48	24.00	25.22	26.38	27.72	27.86	27.86	27.86
21.00	22.00	23	25.32	25.32	25.34	25.50	26.18	26.92	27.76	28.20	28.21	28.21
23.00	23.00	15	25.86	25.86	26.04	26.56	26.70	27.40	27.98	28.50	28.50	28.50
24.00	24.00	24	25.47	25.47	26.23	26.74	27.43	27.92	28.25	28.72	28.87	28.87
25.00	25.00	35	26.56	26.56	27.25	27.56	27.92	28.60	29.05	29.34	29.38	29.38
26.00	26.00	54	26.50	26.50	27.66	28.00	28.45	28.88	29.33	29.48	30.35	30.35
27.00	27.00	63	27.00	27.00	28.17	28.50	28.93	29.25	29.56	29.63	30.00	30.00
28.00	28.00	84	28.00	28.00	28.90	29.31	29.50	29.81	30.00	30.11	30.41	30.41
29.00	29.00	95	29.00	29.00	29.00	29.67	30.00	30.22	30.48	30.62	30.80	30.80
30.00	30.00	133	30.00	30.00	30.00	30.00	30.50	30.67	30.75	30.76	30.82	30.83
31.00	31.00	170	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT SALEM

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-9.00	11.00	10	14.77	14.77	14.86	16.02	19.49	22.03	23.36	23.38	23.38	23.38
12.00	14.00	13	20.00	20.00	20.10	21.02	22.00	23.33	25.02	25.28	25.28	25.28
15.00	16.00	13	20.53	20.53	20.70	21.94	23.93	25.28	25.92	26.07	26.07	26.07
17.00	17.00	11	20.67	20.67	20.74	22.27	23.33	24.13	25.36	25.60	25.60	25.60
18.00	18.00	11	22.00	22.00	22.14	22.83	23.94	24.96	26.85	27.11	27.11	27.11
19.00	19.00	12	22.88	22.88	22.95	23.33	24.21	25.16	25.47	25.50	25.50	25.50
20.00	20.00	28	22.92	22.92	23.48	24.03	24.87	25.96	26.56	27.43	27.88	27.88
21.00	21.00	22	23.67	23.67	23.91	24.61	25.40	25.70	26.50	27.48	27.65	27.65
22.00	22.00	24	24.82	24.82	25.03	25.36	25.86	26.62	27.57	28.30	28.54	28.54
23.00	23.00	34	24.79	24.79	25.71	26.30	26.64	26.95	27.39	28.10	28.56	28.56
24.00	24.00	49	25.50	25.50	26.56	26.77	27.30	27.80	28.31	28.66	29.08	29.08
25.00	25.00	78	26.00	26.00	26.93	27.30	27.67	28.13	28.67	28.94	29.23	29.23
26.00	26.00	73	27.44	27.44	27.73	28.00	28.38	28.87	29.23	29.44	29.63	29.63
27.00	27.00	88	28.00	28.00	28.33	28.67	29.00	29.33	29.63	29.83	30.38	30.38
28.00	28.00	119	28.44	28.47	28.94	29.20	29.50	29.71	30.00	30.13	30.24	30.25
29.00	29.00	156	29.00	29.00	29.50	29.80	30.00	30.17	30.29	30.37	30.46	30.50
30.00	30.00	209	30.00	30.00	30.00	30.33	30.50	30.67	30.75	30.80	30.87	30.92
31.00	31.00	238	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00

CONDITIONAL DISTRIBUTIONS OF AVERAGE TEMPERATURE BELOW 32, CONDITIONED ON MINIMUM TEMPERATURE, AT EUGENE

MINIMUM TEMPERATURE INTERVAL START	INTERVAL END	N	AVERAGE TEMPERATURE BELOW 32 QUANTILES MINIMUM	.01-TH	.10-TH	.25-TH	MEDIAN	.75-TH	.90-TH	.95-TH	.99-TH	MAXIMUM
-10.00	11.00	10	12.94	12.94	13.12	16.97	20.69	22.87	24.22	24.28	24.28	24.28
12.00	14.00	13	18.61	18.61	18.92	20.52	21.55	22.60	23.74	23.78	23.78	23.78
15.00	16.00	11	21.50	21.50	21.52	21.65	22.35	23.73	24.46	24.54	24.54	24.54
17.00	18.00	13	21.78	21.78	22.04	23.10	23.94	24.91	25.46	25.54	25.54	25.54
19.00	20.00	22	23.00	23.00	23.36	24.22	25.00	25.44	26.48	28.12	28.36	28.36
21.00	21.00	18	24.60	24.60	24.75	24.96	25.97	26.54	26.95	27.00	27.00	27.00
22.00	22.00	20	24.13	24.13	24.44	25.51	25.86	26.54	27.52	28.09	28.12	28.12
23.00	23.00	18	25.50	25.50	25.59	25.92	26.76	27.02	27.91	28.38	28.38	28.38
24.00	24.00	30	25.13	25.13	26.32	26.87	27.09	27.63	27.93	28.36	28.82	28.82
25.00	25.00	47	26.44	26.44	27.08	27.40	27.77	28.23	28.92	29.19	29.40	29.40
26.00	26.00	38	27.40	27.40	27.81	28.11	28.41	28.93	29.21	29.52	29.83	29.83
27.00	27.00	62	27.92	27.92	28.58	28.77	29.10	29.50	29.82	29.98	30.44	30.44
28.00	28.00	104	28.50	28.50	29.00	29.21	29.54	29.75	30.00	30.04	30.58	30.60
29.00	29.00	113	29.20	29.20	29.61	29.83	30.00	30.20	30.37	30.46	30.66	30.67
30.00	30.00	157	30.00	30.00	30.00	30.33	30.50	30.67	30.75	30.80	30.91	30.92
31.00	31.00	187	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00