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# PRECIPITATION FREQUENCY AND INTENSITY AT THE IDAHO NATIONAL ENGINEERING LABORATORY

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# Abstract

Daily precipitation data was obtained from 18 measurement sites in the Upper Snake River plain. These stations had periods of record ranging from 13 to 81 years. This data was used to calculate the frequency with which various daily precipitation amounts might be expected in the INEL area. Hourly data was also available at 12 sites with periods of records ranging from five to 47 years. The hourly data was used to investigate the return years of storms of durations less than 24 hours. Storms were examined for frequency of occurrence for both the winter and convective seasons. Storms with the highest rate of rainfall were due to thunderstorms during the convective season. Return periods of convective season storms were compared with the isopluvial maps for the Upper Snake River Plain from the "Rainfall Frequency Atlas of the United States" published by the United States Weather Bureau in 1961. Comparisons of both the 24-hour storms and those of shorter durations were favorable. Equations were developed for calculating return periods of storms of various intensities for both the winter and convective seasons.

## Introduction

Engineers are asked to design structures able to withstand precipitation events of a given intensity. To designate the intensities for which structures must be designed, the idea of a "design basis storm" has arisen. A design storm is the frequency of occurrence of a storm of a given intensity. Structures can then be designed to withstand a storm intensity, as defined by the design basis storm, that will be expected to occur only some specified number of years. The frequency of occurrence of storms of a specified intensity is also used in assessing flood potential. The concept is important at the Idaho National Engineering Laboratory (INEL) where facilities using, processing, or storing nuclear materials may be located.

In 1961 The United States Weather Bureau published a rainfall frequency atlas (Hershfield, 1961) containing isopluvial maps from which estimates of the return years of storms of could be made. Thirty five years of additional data has been added to the database since the publication of that document. This report examines storms based on this larger database and helps analytically to specify those INEL design basis storms.

## Background

The INEL is located along the western edge of the Upper Snake River Plain in southeastern Idaho (Figure 1). To the west of the INEL are the Lost River, Lemhi, and Bitterroot-Centennial Mountain Ranges. Moist air masses coming from the Pacific Ocean lose much of their moisture as precipitation over these mountains. As a result, the Snake River Plain has a semi-arid climate. The type of precipitation occurring in the Snake River Plain is dependant upon the season. In the summer, precipitation most often falls as rain showers or thunderstorms. In the spring and autumn rain showers, or periods of rain, or snow may occur. Most precipitation in the winter comes as snow. Precipitation can occur in any month but the heaviest accumulations are generally in the spring or early summer. The most intense periods of rainfall are associated with thundershowers.

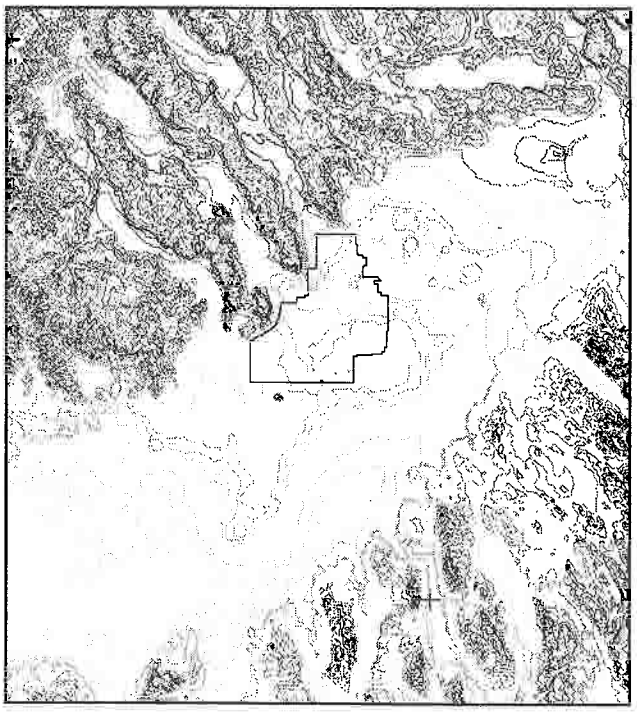

**Figure 1.** Setting of the INEL in the Snake River Plain.

## Precipitation at the INEL

Daily precipitation has been measured continuously at the Central Facilities Area (CFA) of the INEL since January of 1950. CFA is listed in the National Climatic Data Center (NCDC) records as station Idaho Falls 46W. Meteorological data from CFA has been reported to the NCDC since January of 1952. Table 1 lists the monthly and annual average number of days as a percent of occurrence during which specified amounts of precipitation fell at CFA. The table follows a similar table contained in the "Climatography of the Idaho National Engineering Laboratory" and includes data measurements from 1950 through 1995. In the table it can be seen that less than a tenth of an inch of precipitation was recorded on most days when precipitation fell. During the months of July through October precipitation exceeding one hundredth of an inch was measured on only about 12% of the days. That amount was exceeded on about 20% or more of the days during the rest of the year. It can also be seen that days on which more than 1 inch of precipitation was recorded were rare. Storms of that intensity are usually of the thunderstorm variety and they usually occurred between the months of April and September.

Table 1. **Average percentage of days precipitation recorded at CFA exceed the following inches per day**

| | > 0.01 (%) | > 0.10 (%) | > 0.50 (%) | > 1.00 (%) |
|---|---|---|---|---|
| January | 22.4 | 6.9 | 0.7 | 0.0 |
| February | 19.4 | 7.3 | 0.7 | 0.0 |
| March | 19.8 | 6.9 | 0.2 | 0.0 |
| April | 20.3 | 8.0 | 0.7 | 0.1 |
| May | 25.1 | 12.9 | 1.3 | 0.0 |
| June | 23.1 | 11.2 | 1.9 | 0.3 |
| July | 11.9 | 4.4 | 0.7 | 0.1 |
| August | 12.3 | 4.9 | 1.0 | 0.0 |
| September | 12.5 | 6.4 | 0.9 | 0.2 |
| October | 12.0 | 5.6 | 0.6 | 0.0 |
| November | 18.7 | 7.5 | 0.4 | 0.0 |
| December | 21.6 | 8.1 | 0.4 | 0.1 |
| ANNUAL | 18.3 | 7.5 | 0.8 | 0.1 |

Figure 2 contains the precipitation amount versus return years computed from the complete duration precipitation data from the 43 years of daily data from CFA. The solid line represents data from the entire year while the dotted line represents only data measured between

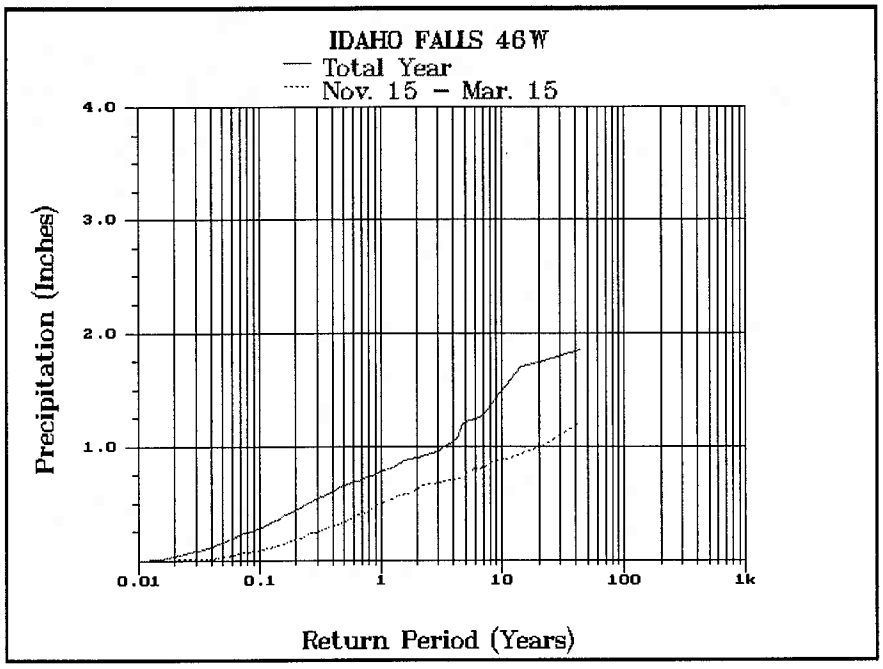


**Figure 2**. Idaho Falls 46W (CFA) precipitation amount versus return years.

November 15 and March 15. It should be noted that a factor of 1.13 was applied to the data correcting for the 24-hour observational times. This was the correction found necessary (Hershfield 1961) to equate observational day and 1440 minute rainfall.

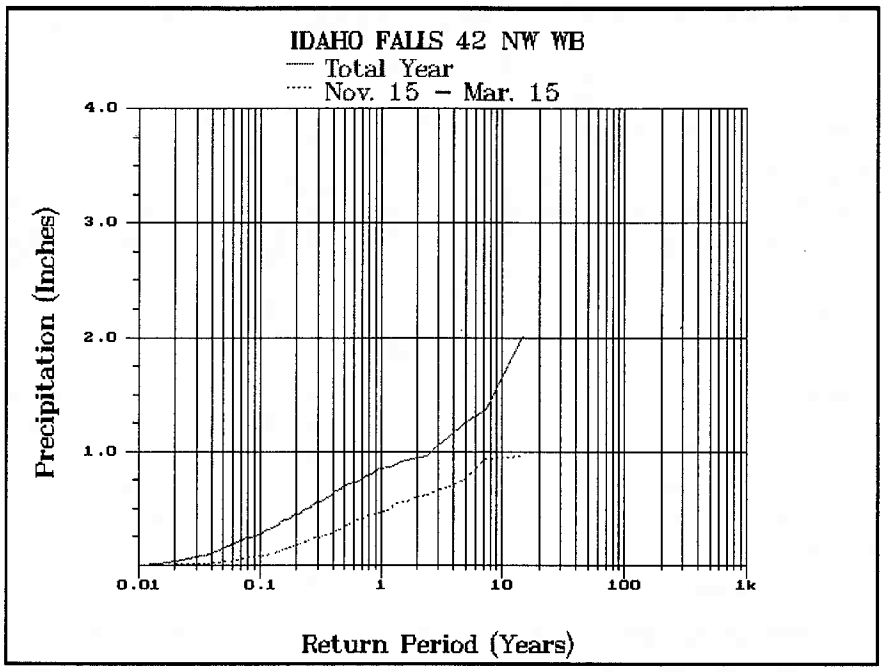


**Figure 3**. Idaho Falls 42 NW WB (TAN) precipitation amount versus return years.

Precipitation was also measured at Test Area North (TAN) on the INEL. Measurements from that station were reported to the NCDC from March 1954 through June 1969. The station is listed in the NCDC records as Idaho Falls 42 NW WB. Figure 3 contains the precipitation amount versus return year plot computed from the 16 years of data from TAN. The two stations are only about 25 miles apart so one would expect the plots to be similar. Curves from both stations are fairly straight lines for return periods up to several years. For this portion of the plot both stations are quite similar. For longer return periods they began to deviate from one another. The long return periods are generated by extreme precipitation events, and it may take a long history for extreme events to order themselves properly for return year calculations. A 100-year storm may occur, for example, at a station that has only been recording data for a few years. Data from any measuring station is a random sample from an unknown population. If the data histories from the two stations were long enough to represent the true populations, the plots would be suspected to be similar for their entire length.

Return year plots from other measuring sites in the Upper Snake River Plain were also usually straight lines for the first five or ten return years. Return year plots at some stations, such as the National Weather Service station at Pocatello Municipal, were close to a straight line for the entire length of the plot. Figure 4 depicts the plots for the Pocatello station. That station and the ones at CFA and TAN are, or were in the case of TAN, maintained by professional meteorologists. Quality control at those stations should be especially good.

The dotted winter time curves appear quite straight, at all three sites. It appears that a shorter data collection history is required for making return year calculations for winter data than for the total year. This may be because the extreme events that cause the deviations from a straight line are mostly due to convective season thunderstorms. Understanding winter time precipitation is important because three flooding episodes have occurred since the early 1950's when meteorological data began to be recorded at the INEL. Each of these episodes was associated with winter time thaws, where rain was combined with melting snow on a frozen surface. Equation (1) describes a straight line derived from the winter time precipitation at CFA. Using the equation the winter season precipitation amounts may be calculated as a function of return years.

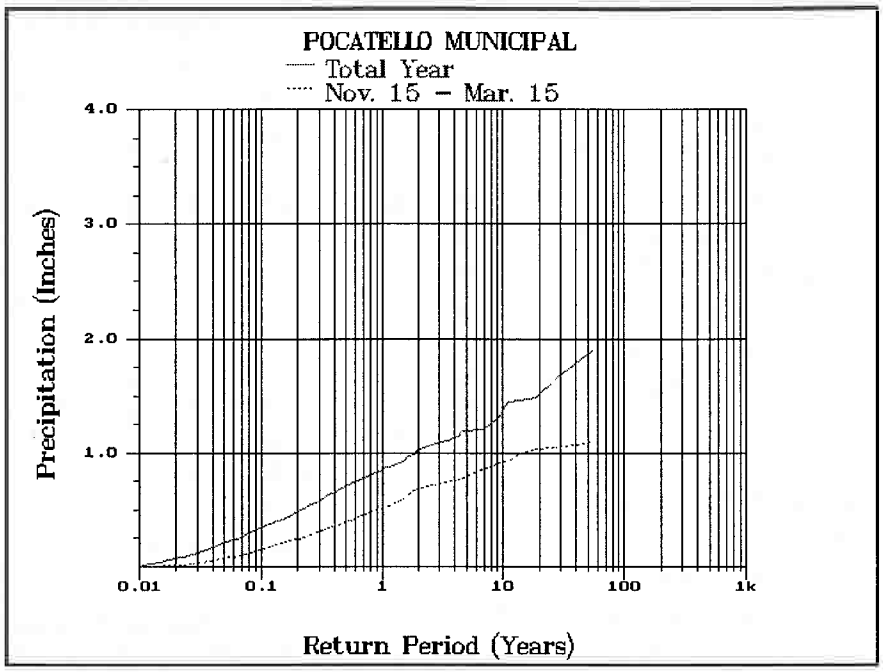


**Figure 4.** Pocatello Municipal precipitation amount versus return years.

$$Precip = 0.478 + 0.394 \times \log(ReturnYears) \quad \textbf{(1)}$$

The slopes of the winter season curves at CFA and TAN are similar and equation (1) works well for either INEL site. It also fits the Pocatello data quite nicely since the winter time slope there is also similar. This does not mean that it would work well anywhere in the Snake River Plain. Some sites had winter time return year plots with quite different slopes.

**Regional Frequency Analysis**

One way to obtain a long data history is to do a regional analysis where data from a number of stations is grouped together. By grouping the data it is hoped that the extreme precipitation events will fall into their proper positions in the data string and form a well-behaved line. To combine data records from multiple stations, the assumption is made that the precipitation events are independent. In the winter time most storms are due to synoptic conditions and may cover a wide area. The same storm may affect two or more stations so the assumption of independence

may not be valid. Consequently a convective season extending from April 15 though September 30 was defined. During this season most of the precipitation that results in accumulations of more than 0.5 inches per day comes as scattered showers. These storms cover a small area and do not generally last very long. The distance between stations is great enough that these events are usually independent.

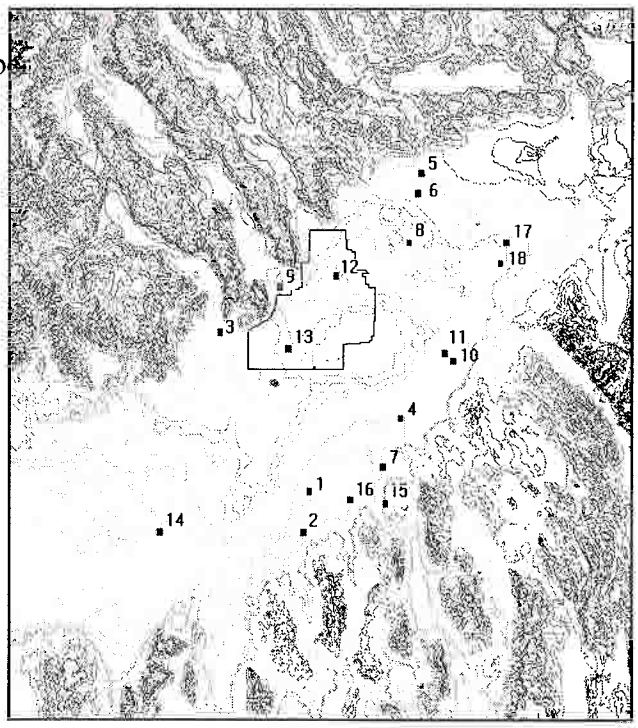


**Figure 5.** Upper Snake River NCDC daily precipitation stations.

Convective season precipitation events greater than 0.5 inches per day from 18 NCDC reporting stations in the South East Idaho setting were combined to yield a partial duration record of about 765 years. The stations used in this study are all in the Upper Snake River Plain. Station elevations range from 1307 meters above mean sea level at Minidoka in the south, to 1661 meters at the Dubois Experiment Station in the north. The stations are listed in Table 2 and displayed in figure 5. A summary of the daily data for each station describing annual and monthly maximum, minimum, and average precipitation is included in the data appendix.

**Table 2. Upper Snake River NCDC stations reporting Daily Precipitation Data.**

| Nbr | Station Name | Begin Date | End Date | Rec Years | % Cov | Latitude | Longitude | Elevation |
|---|---|---|---|---|---|---|---|---|
| 1 | ABERDEEN EXPRMNT STN | 04/01/1914 | 12/31/1994 | 81 | 99 | N42:57:00 | W112:50:00 | 1342.6 |
| 2 | AMERICAN FALLS 1 SW | 08/01/1948 | 08/31/1994 | 47 | 99 | N42:47:00 | W112:52:00 | 1316.1 |
| 3 | ARCO 3 SW | 08/01/1948 | 11/30/1994 | 47 | 92 | N43:36:00 | W113:20:00 | 1624.0 |
| 4 | BLACKFOOT 4 NNE | 08/01/1948 | 11/28/1994 | 47 | 86 | N43:15:00 | W112:19:00 | 1374.5 |
| 5 | DUBOIS EXPERIMENT ST | 01/01/1925 | 12/31/1994 | 70 | 100 | N44:15:00 | W112:12:00 | 1660.9 |
| 6 | DUBOIS FAA AIRPORT | 08/01/1948 | 04/17/1962 | 15 | 100 | N44:10:00 | W112:13:00 | 1564.0 |
| 7 | FORT HALL 1 NNE | 08/01/1948 | 12/31/1994 | 47 | 99 | N43:03:00 | W112:25:00 | 1360.9 |
| 8 | HAMER 4 NW | 10/01/1948 | 12/31/1994 | 47 | 99 | N43:58:00 | W112:16:00 | 1460.0 |
| 9 | HOWE | 09/01/1948 | 12/31/1994 | 47 | 95 | N43:47:00 | W113:00:00 | 1469.1 |
| 10 | IDAHO FALLS 2 ESE | 05/01/1952 | 12/31/1994 | 42 | 91 | N43:29:00 | W112:01:00 | 1452.4 |
| 11 | IDAHO FALLS FANNING | 08/01/1948 | 02/28/1994 | 47 | 100 | N43:31:00 | W112:04:00 | 1441.4 |
| 12 | IDAHO FALLS 42 NW WB | 03/01/1954 | 06/30/1969 | 16 | 94 | N43:50:00 | W112:41:00 | 1461.0 |
| 13 | IDAHO FALLS 46 W | 01/01/1952 | 12/31/1994 | 43 | 100 | N43:32:00 | W112:57:00 | 1505.1 |
| 14 | MINIDOKA 10WNW | 10/01/1966 | 04/30/1988 | 22 | 81 | N42:47:00 | W113:40:00 | 1307.5 |
| 15 | POCATELLO 2 NE | 05/30/1899 | 12/31/1994 | 13 | 11 | N42:54:00 | W112:24:00 | 1472.7 |
| 16 | POCATELLO MUNICIPAL | 01/01/1939 | 12/31/1994 | 56 | 100 | N42:55:00 | W112:36:00 | 1357.6 |
| 17 | SAINT ANTHONY 1 WNW | 08/01/1948 | 12/31/1994 | 47 | 97 | N43:58:00 | W111:43:00 | 1508.8 |
| 18 | SUGAR | 08/01/1948 | 05/31/1976 | 29 | 98 | N43:53:00 | W111:45:00 | 1491.0 |

Annual averages vary from a low of 8.26 inches at Howe, with a standard deviation of 2.33 inches, to a high of 13.94 inches at Saint Anthony 1 WNW, with a standard deviation of 2.86 inches. Annual average precipitation is generally within a standard deviation at all stations. The highest recorded annual precipitation was 23.09 inches measured in 1963 at Blackfoot 4 NNE and the lowest was 4.37 inches recorded in 1956 at Idaho Falls 42 NW. Averages and standard deviations are related to the first and second moments of a distribution. Two other measures of a distribution are its skewness, a measure of the asymmetry of a distribution, and kurtosis, a measure of the distributions peakedness. Skewness and kurtosis are the third and forth moments respectively, of the distribution. Higher moments are usually less robust than lower moments so values of skewness and kurtosis should be used with caution. Annual kurtosis values are usually less than three at all stations. This suggests that the distribution about the mean be flatter than a Gaussian distribution. The annual skewness numbers are usually small positive numbers showing some skewness toward values higher than the mean. Monthly kurtosis and skewness numbers are variable and likely have limited useful interpretations. The wettest months at all stations are April, May, and June, with May usually contributing the most precipitation, and June contributing the second most amounts.

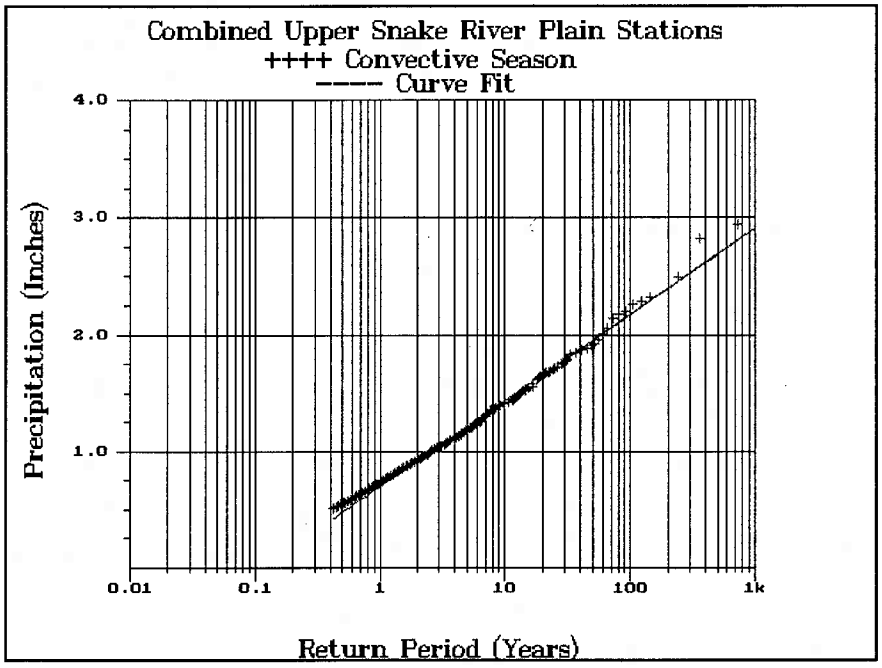


**Figure 6**. Combined Upper Snake River Plain Stations for daily (24 hour) precipitation.

Figure 6 contains the plot of the convective season precipitation amount versus return years for the combined Upper Valley stations. Equation (2) describes the straight line fitting the data points.

$$Precip = 0.700 + 0.737 \times \log(ReturnYears) \qquad (2)$$

The above equation can be used to calculate precipitation amounts as a function of return years for other than winter season cases.

## Comparisons of 24-hour storms with the Rainfall Frequency Atlas

Hershfield (1961) used the long term precipitation records from more than sixteen hundred stations to develop return periods for 24 hour duration storms. He also used short term records from about five thousand stations to define short return period storms. From these results he constructed isopluvial maps for the continental United States for storms with return periods of two and 100 years. He then interpolated isopleth maps for other storm durations and return periods. Figures 7 through 9 are sections displaying the Northwest United States taken from Hershfield's 24-hour rainfall maps for 10, 50, and 100 year return periods. From figure 7 for example, one can estimate for the INEL area, a 10-year 24-hour rainfall of about 1.5 inches. Using equation (2) to calculate a 10-year 24-hour storm returns a result of 1.4 inches. In the same manner estimates of a 50-year 24-hour rainfall from figure 8 would be a little more than 2 inches, and a 100-year 24-hour rainfall from figure 9 is between 2.0 and 2.5 inches. Equation (2) results for the 50-year and 100-year 24-hour storms are 2.0 and 2.2 inches respectively. Equation (2) results are in good agreement with the Hershfield isopluvial maps for 24-hour storms.

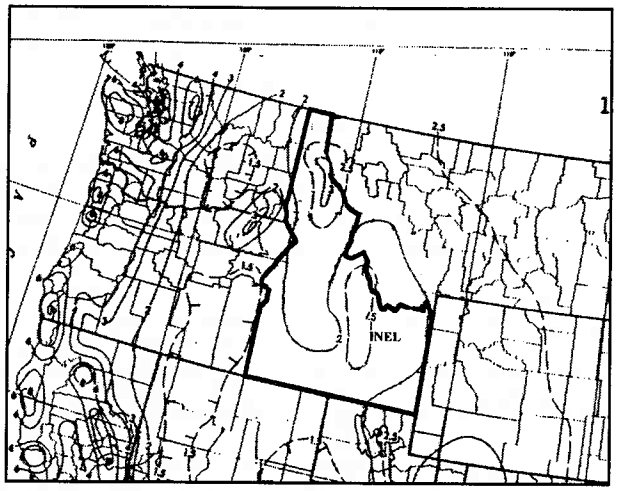


**Figure 7.** 10-yr 24-hr precipitation (inches).

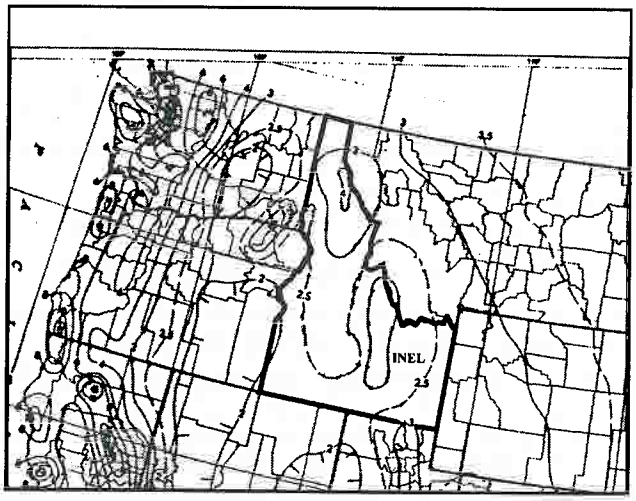


**Figure 8.** 50 year 24-hr precipitation (inches).

## Storm durations less than 24 hours

Engineers and hydrologists are sometimes required to estimate the potential precipitation that may occur in intervals shorter than one day. Hourly precipitation data permits calculation of precipitation return periods for storms less than 24 hours in duration. Table 3 is a listing of 12 stations existing in the region surrounding the Upper Snake River Plain that report hourly precipitation data to the NCDC.

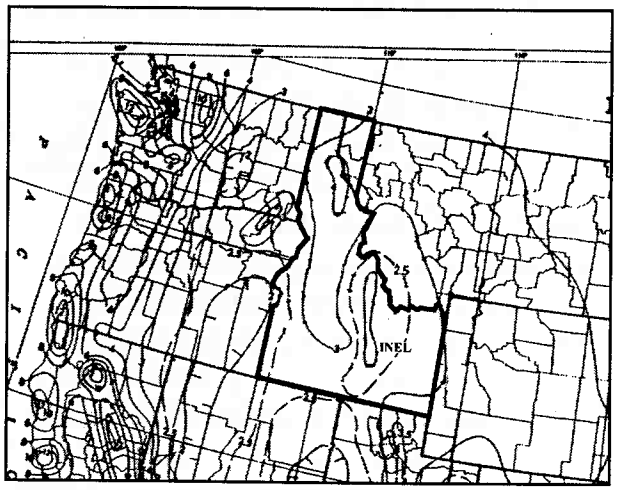


**Figure 9.** 100-yr 24-hr precipitation (inches).

The station locations are displayed on a topographical map with the INEL site boundaries in figure 10.

Table 3. Upper Snake River NCDC stations reporting Hourly Precipitation Data.

| Nbr | Station Name | Begin Date | End Date | Rec Years | % Cov | Latitude | Longitude | Elevation |
|---|---|---|---|---|---|---|---|---|
| 1 | BLACKFOOT DAM | 07/01/1948 | 09/30/1971 | 24 | 56 | N43:00:00 | W111:43:00 | 1891.0 |
| 2 | CAREY 3 NNW | 10/01/1962 | 09/30/1968 | 6 | 33 | N43:21:00 | W113:57:00 | 1476.0 |
| 3 | CAREY | 09/01/1968 | 11/30/1984 | 17 | 95 | N43:17:00 | W113:56:00 | 1458.0 |
| 4 | DUBOIS EXPERIMENT ST | 07/01/1948 | 12/28/1994 | 40 | 81 | N44:15:00 | W112:12:00 | 1660.9 |
| 5 | DUBOIS FAA AIRPORT | 08/01/1948 | 04/30/1956 | 9 | 99 | N44:10:00 | W112:13:00 | 1564.0 |
| 6 | IDAHO FALLS 2 ESE | 05/01/1952 | 04/30/1960 | 9 | 96 | N43:29:00 | W112:01:00 | 1452.4 |
| 7 | IDAHO FALLS 16 SE | 04/01/1960 | 12/29/1994 | 35 | 93 | N43:21:00 | W111:47:00 | 1783.0 |
| 8 | IDAHO FALLS FANNING | 07/01/1948 | 05/31/1952 | 5 | 96 | N43:31:00 | W112:04:00 | 1441.4 |
| 9 | IDAHO FALLS 42 NW WB | 03/01/1954 | 07/07/1969 | 15 | 92 | N43:50:00 | W112:41:00 | 1461.0 |
| 10 | IDAHO FALLS 46 W | 03/01/1954 | 03/31/1982 | 27 | 81 | N43:32:00 | W112:57:00 | 1505.1 |
| 11 | MACKAY RANGER STN | 07/01/1948 | 12/28/1994 | 47 | 91 | N43:55:00 | W113:37:00 | 1797.4 |
| 12 | POCATELLO MUNICIPAL | 07/01/1948 | 12/28/1994 | 47 | 100 | N42:55:00 | W112:36:00 | 1357.6 |

Two of these stations (IDAHO FALLS 46 W and IDAHO FALLS 42 NW WB) are within the boundaries of the INEL. Though the period of record of hourly data collection for the stations is relatively short, it is interesting that at both stations the largest 24-hour storm accumulation occurred in less than three hours. This is not surprising in the desert climate of the Snake River Plain. Storms of heaviest intensity are of the thunderstorm variety and they seldom last more than a few hours.

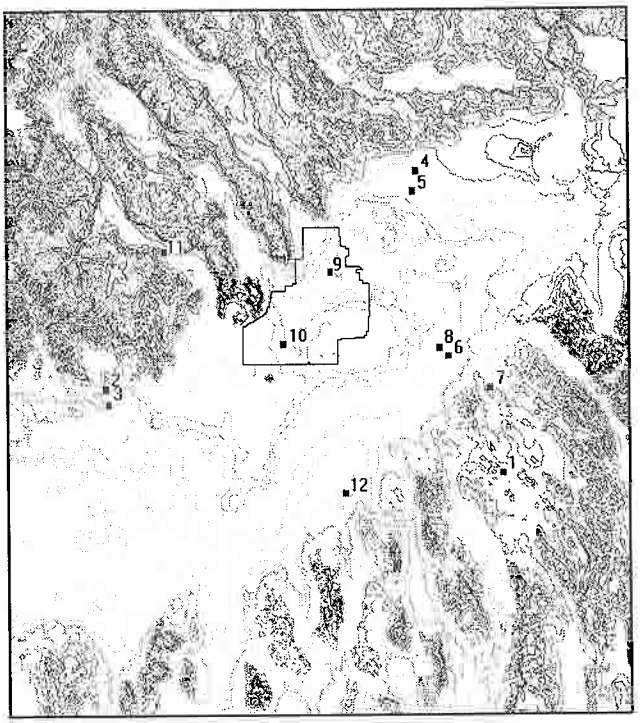


**Figure 10.** Stations reporting hourly precipitation data to NCDC.

Some stations listed in Table 3 are not in the Snake River Plain. Blackfoot Dam, Idaho Falls 16 SE, and Mackay Ranger Station are mountain stations. The Dubois Experiment Station is in the Snake River Plain, but its precipitation is believed to be enhanced due to the nearness of mountains that face the direction of the prevailing winds. Yet, the ratio of precipitation for any given duration to the daily precipitation is similar at all stations. The similarity is shown in Table 4, where the average and standard deviation of ratios for 1, 3, 6, and 12 hour precipitation accumulations to the daily total are contained. Statistics in Table 4 were computed from the partial duration series

of events greater than 0.5 inches per 24 hours.

**Table 4. Average Ratios and Standard Deviations of short intervals to daily total**

| STATION | 1 hr ave | 1 hr sigma | 3 hr ave | 3 hr sigma | 6 hr ave | 6 hr sigma | 12 hr ave | 12 hr sigma |
|---|---|---|---|---|---|---|---|---|
| BLACKFOOT DAM | 0.246 | 0.114 | 0.412 | 0.139 | 0.559 | 0.155 | 0.459 | 0.137 |
| CAREY 3 NNW | 0.228 | 0.121 | 0.420 | 0.108 | 0.584 | 0.115 | 0.779 | 0.119 |
| CAREY | 0.175 | 0.073 | 0.349 | 0.105 | 0.503 | 0.113 | 0.712 | 0.117 |
| DUBOIS EXPERIMENT ST | 0.249 | 0.152 | 0.433 | 0.169 | 0.584 | 0.164 | 0.779 | 0.145 |
| DUBOIS FAA AIRPORT | 0.248 | 0.127 | 0.416 | 0.144 | 0.548 | 0.141 | 0.745 | 0.134 |
| IDAHO FALLS 2 ESE | 0.248 | 0.151 | 0.389 | 0.150 | 0.538 | 0.149 | 0.722 | 0.131 |
| IDAHO FALLS 16 SE | 0.221 | 0.113 | 0.407 | 0.130 | 0.560 | 0.143 | 0.765 | 0.136 |
| IDAHO FALLS FANNING | 0.226 | 0.124 | 0.397 | 0.143 | 0.529 | 0.158 | 0.741 | 0.143 |
| IDAHO FALLS 42 NW WB | 0.269 | 0.144 | 0.441 | 0.173 | 0.597 | 0.180 | 0.785 | 0.143 |
| IDAHO FALLS 46 W | 0.241 | 0.130 | 0.423 | 0.147 | 0.580 | 0.152 | 0.769 | 0.137 |
| MACKAY RANGER STN | 0.233 | 0.130 | 0.415 | 0.146 | 0.569 | 0.150 | 0.771 | 0.138 |
| POCATELLO MUNICIPAL | 0.227 | 0.117 | 0.408 | 0.143 | 0.557 | 0.147 | 0.743 | 0.129 |
| COMBINED | 0.233 | 0.128 | 0.413 | 0.147 | 0.564 | 0.152 | 0.761 | 0.137 |

Using the combined statistics from the last row of Table 4, it can be seen 41% (0.413) of the daily precipitation is accumulated in three hours. Of course this is only an average. Assuming the distribution of these ratios is normal, 95% of the time the percent of the daily precipitation that occurs in three hours is within two standard deviations of the average, or between 12% and 71% of the daily total. If we only consider the upper half of the distribution, we can assume 98% of the time not more than 71% of the daily accumulation will occur in three hours.

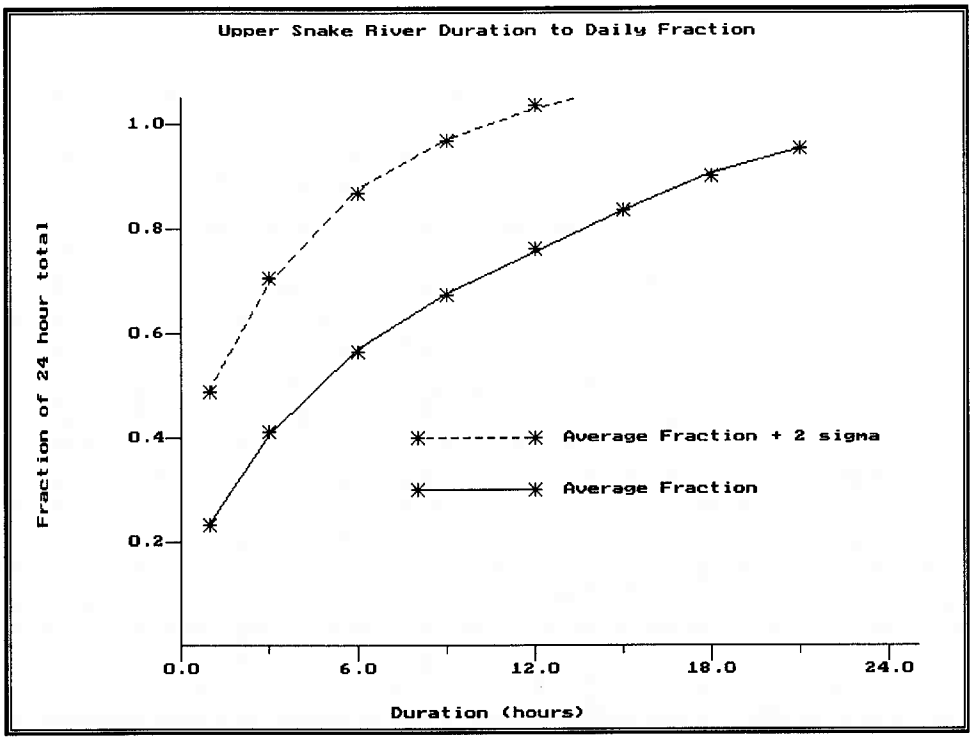


**Figure 11.** Adjustment factor for durations less than 24 hours.

Figure 11 is a graphical depiction of the last line in table 4. The solid curve is the average fraction of the daily precipitation accumulation as a function of duration period. The dashed line is the average fraction plus two standard deviations. Equation (3) is a 4th order polynomial fitting the dashed curve in figure 11. F is the multiplication factor to apply to 24-hour storm results and D is the desired storm duration in hours.

$$F = 0.358 + 0.149 \times D - 0.014 \times D^2 + 6.857 \times 10^{-4} \times D^3 - 1.309 \times 10^{-5} \times D^4 \qquad \textbf{(3)}$$

Using equation (3) one can compute the factor for adjusting the 24 hour precipitation totals without estimating the factor from the graph.

**Comparisons of shorter duration storms with the Rainfall Frequency Atlas**

To compare the ratio technique described above for estimating return years for storms of durations less than 24 hours, sections of Hershfield's isopluvial maps for 6-hour storms are presented in figures 12 through 14. These map sections depict storms of 10-year, 50-year, and 100-year return periods for the Northwestern United States.

Equation (3) yields a factor of 0.88 for the 6-hour Upper Snake River Plain storm. Applying this factor to the 10-year 24-hour storm yields a 6-hour storm result of 1.2 inches. The 6-hour storm results for return years of 50 and 100 years are 1.7 inches and 1.9 inches respectively. These values may be compared with results of between 1 and 1.5 inches from figure 12, about 1.5 inches from figure 13, and between 1.5 and 2 inches from figure 14.

The ratio technique results, are also in the range of the results from the Hershfield maps.

**Future Considerations**

In this paper data from stations scattered across the Upper Snake River Plain were used to do a regional analysis. No attempt has been made to see how precipitation patterns might vary throughout the region. New data sources are becoming available that might make such a work feasible in the future. The INEL meteorological measuring network operated by the Air Resources Laboratory at Idaho Falls (MESONET) has been collecting 5-minute precipitation data at 12 locations in the Upper Snake River Plain for about three years. Two new stations, Kettle Butte and Monteview, were added in late 1995 with

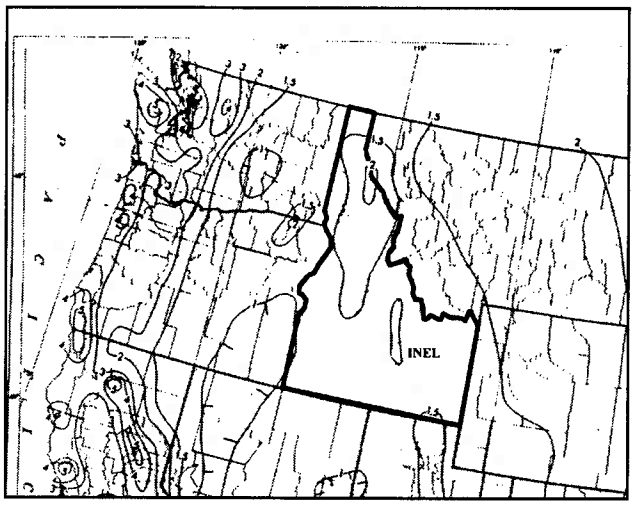


**Figure 12.** 10-yr 6-hr precipitation (inches).

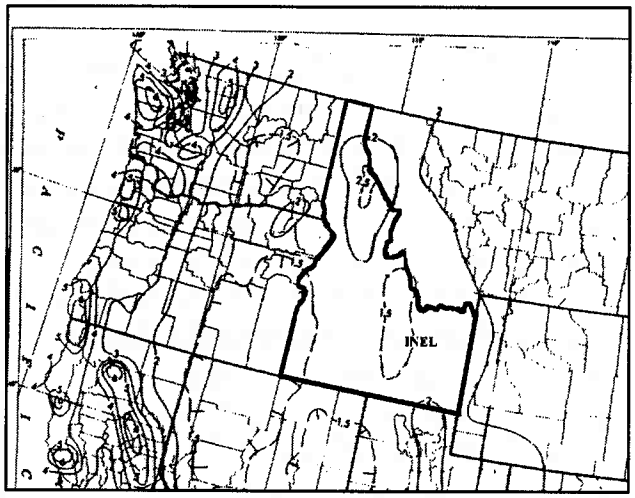


**Figure 13.** 50-yr 6-hr precipitation (inches).

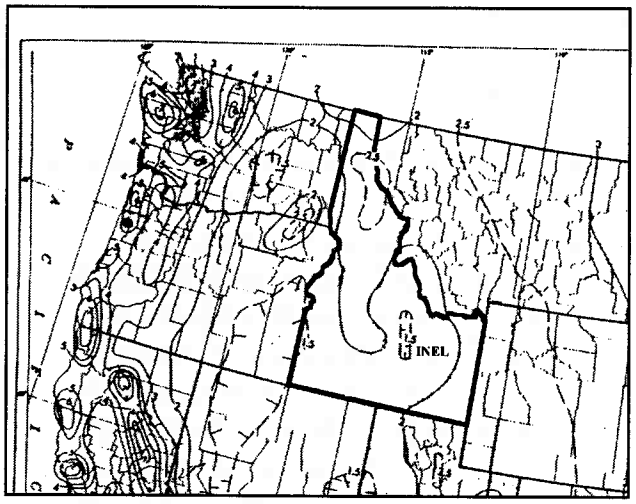


**Figure 14.** 100-yr 6-hr precipitation (inches).

**Table 5. MESONET Stations with 5-minute precipitation data.**

| Nbr | Station Name | Begin Date | End Date | Rec Years | % Cov | Latitude | Longitude | Elevation |
|---|---|---|---|---|---|---|---|---|
| 1 | CFA 690 (690) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:32:11 | W112:57:12 | 1505.7 |
| 2 | ABERDEEN (ABE) | 01/01/1993 | 12/31/1995 | 3 | 94 | N43:02:02 | W112:48:31 | 1336.5 |
| 3 | ARCO (ARC) | 01/01/1993 | 12/31/1995 | 3 | 92 | N43:37:27 | W113:17:52 | 1636.8 |
| 4 | DUBOIS (DUB) | 01/01/1993 | 12/31/1995 | 3 | 86 | N44:14:33 | W112:12:06 | 1671.8 |
| 5 | EBR II (EBR) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:35:39 | W112:37:31 | 1560.6 |
| 6 | GRID III (GRI) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:35:23 | W112:56:23 | 1487.4 |
| 7 | LOFT (LOF) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:51:35 | W112:43:50 | 1490.5 |
| 8 | SUGAR CITY (SUG) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:53:47 | W111:44:17 | 1492.0 |
| 9 | RICHFIELD (RIC) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:03:29 | W114:08:05 | 1327.4 |
| 10 | ROBERTS (ROB) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:44:33 | W112:07:32 | 1496.6 |
| 11 | RWMC (RWM) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:30:04 | W113:02:25 | 1542.3 |
| 12 | TABOR (TAB) | 01/01/1993 | 12/31/1995 | 3 | 96 | N43:19:09 | W112:41:29 | 1429.5 |
| 13 | Kettle Butte (KET) | 12/12/1995 | 12/31/1995 | 0 | New | N43:32:55 | W112:19:32 | 5135.0 |
| 14 | Monteview (MON) | 12/12/1995 | 12/31/1995 | 0 | New | N44:00:54 | W112:32:08 | 4855.0 |

Bureau of Reclamation funding. These stations are listed in table 5 and displayed in figure 15. Four more stations are planned to be installed in 1996 with funding from the Department of Energy. They will be at Terreton, Fort Hall, the Lost River rest station, and Idaho Falls. In addition, The National Weather Service has installed a Doppler radar to monitor above the Snake River Plain in the Pocatello and Idaho Falls areas. The radar went into service in February of 1996. These new data sources will make it possible to study storm events in much finer resolution than ever before possible. The radar data, in conjunction with the MESONET precipitation data for example, will allow estimates of total moisture deposited in key areas per storm. Determining preferred storm tracks may be possible.

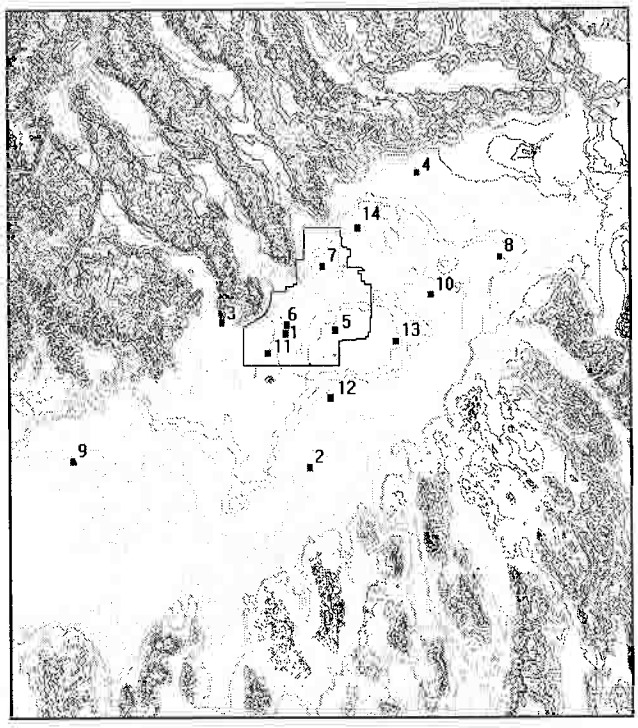


**Figure 15.** Current INEL meteorological stations measuring precipitation.

## Conclusions

Equations and graphs have been developed to calculate return years for storms of varying durations. Systematic differences were found between winter and warm season storms. If winter time situations are the concern, the daily precipitation amount as a function of return years can be computed from equation (1). For storms from periods other than the winter season equation (2) should be used. Return periods of storm durations of less than

24 hours can be computed by applying an empirically determined factor to the daily results obtained from equations (1) or (2). The factor can either be read from the dashed curve in figure 11, or computed with equation (3).

Results of the regional analyses for the convective season were compared with Hershfield's "Rainfall Frequency Analysis" published in 1961. The comparison was very good though different techniques were used and more than 30 years of data has been added since the publication of Hershfield's paper. The comparability gives credence to both methods. Convective season results of this paper are based on data collected in the Upper Snake River Plain and should only be used in that area. Winter time results were based on CFA data and should not be applied beyond the INEL area

**Acknowledgments**

The author would like to thank David George and Gene Start for fruitful discussions and for materials used in connection with this study.

**References**

Hershfield, D. M. 1961. Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper 40. U.S. Department of Commerce, Washington D.C.

Clawson, K. L., G. E. Start, N. R. Ricks. 1989. Climatography of the Idaho National Engineering Laboratory, 2nd Edition. DOE/ID-12118. U.S. Department of Energy Idaho Operations Office.

## APPENDIX
## Daily NCDC Data Summaries

The following tables contain monthly and annual statistics for the period of record for each station. The NCDC database and the software used to generate these tables as was provided by EarthInfo, Inc. Of Boulder, Colorado. The following data descriptions were taken from the EarthInfo, Inc. users manual for their Summary of the Day software. A column exists for each of the 12 months of the year and a 13th column for the annual values. Row headings label the computed statistics as follows:

**# Days** - total number of days with an observed value.

**Avg Day** - average daily precipitation for each month, and for the year.

**# Valid** - the number of valid months or years used in making the calculations. To be valid a month must have fewer than nine missing days. A year is not valid unless it has 12 valid months. Statistics are calculated using only the valid months or years.

**Maximum** - maximum monthly or annual precipitation during the period of record.

**Max Yr** - year in which the maximum occurred.

**Minimum** - minimum monthly or annual precipitation during the period of record.

**Min Yr** - year in which the minimum occurred.

**Std Dev** - standard deviation of the monthly precipitation totals. A minimum of two monthly or annual values is required for this calculation.

**Skew** - skewness of the monthly or annual precipitation totals. Skewness characterizes asymmetry of a distribution around its mean. A perfectly symmetrical distribution has a skewness of zero. A positive skewness suggests the distribution is biased toward values higher than the mean and a negative skewness indicates the bias is toward values less than the mean. A minimum of three values is needed to make skewness calculations.

**Kurt** - kurtosis of the monthly or annual precipitation totals. Kurtosis measures the relative peakedness or flatness of a distribution. A value of three describes a normal or Gaussian distribution. A distribution having a kurtosis value less than or greater than three is flatter or more peaked respectively, than a normal distribution. Kurtosis calculations are made only when there at least four valid data points.

SUMMARY

Station ABERDEEN EXPRMNT STN
PO Code ID
Stn ID 10
County BINGHAM
Years 1915-27 29-83 85-94

Parameter Prcp
Latitude N42:57:00
Longitude W112:50:00
Elevation 1342.6

% Coverage 99
Begin M/Yr 04/1914
End M/Yr 12/1994
# Record Years 81

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 2467 | 2228 | 2448 | 2390 | 2477 | 2398 | 2477 | 2509 | 2428 | 2510 | 2427 | 2503 | 29262 |
| Avg Day | 0.02 | 0.02 | 0.02 | 0.03 | 0.04 | 0.03 | 0.01 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 |
| # Valid | 80 | 79 | 79 | 80 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 78 |
| Maximum | 2.37 | 2.64 | 2.84 | 2.26 | 3.19 | 5.32 | 2.64 | 3.63 | 3.25 | 3.44 | 2.82 | 3.56 | 14.07 |
| Max Yr | 1969 | 1986 | 1946 | 1963 | 1917 | 1967 | 1984 | 1968 | 1940 | 1938 | 1942 | 1964 | 1980 |
| Minimum | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 4.87 |
| Min Yr | 1920 | 1990 | 1994 | 1987 | 1940 | 1919 | 1990 | 1992 | 1987 | 1988 | 1976 | 1991 | 1939 |
| Average | 0.68 | 0.64 | 0.70 | 0.85 | 1.10 | 0.86 | 0.45 | 0.50 | 0.64 | 0.82 | 0.74 | 0.74 | 8.71 |
| Std Dev | 0.48 | 0.47 | 0.54 | 0.58 | 0.77 | 0.79 | 0.51 | 0.60 | 0.65 | 0.69 | 0.56 | 0.59 | 2.39 |
| Skew | 1.35 | 1.42 | 1.64 | 0.61 | 0.81 | 2.69 | 1.68 | 2.50 | 1.49 | 1.07 | 1.11 | 1.99 | 0.34 |
| Kurt | 4.80 | 5.78 | 5.96 | 2.47 | 3.08 | 14.11 | 6.22 | 11.40 | 5.59 | 4.27 | 4.25 | 9.22 | 2.03 |

SUMMARY

Station AMERICAN FALLS 1 SW
PO Code ID
Stn ID 227
County POWER
Years 1949-53 55-72 74-93

Parameter Prcp
Latitude N42:47:00
Longitude W112:52:00
Elevation 1316.1

% Coverage 99
Begin M/Yr 08/1948
End M/Yr 08/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1419 | 1298 | 1426 | 1350 | 1426 | 1350 | 1426 | 1457 | 1380 | 1395 | 1379 | 1426 | 16732 |
| Avg Day | 0.03 | 0.03 | 0.03 | 0.04 | 0.05 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 |
| # Valid | 46 | 46 | 46 | 45 | 46 | 45 | 46 | 47 | 46 | 45 | 46 | 46 | 43 |
| Maximum | 3.54 | 3.58 | 3.35 | 3.13 | 4.17 | 3.39 | 3.33 | 4.05 | 3.22 | 2.53 | 3.29 | 4.60 | 21.88 |
| Max Yr | 1980 | 1986 | 1989 | 1971 | 1980 | 1967 | 1984 | 1968 | 1982 | 1974 | 1983 | 1983 | 1983 |
| Minimum | 0.13 | 0.07 | 0.11 | 0.13 | 0.13 | 0.08 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.11 | 4.64 |
| Min Yr | 1961 | 1988 | 1965 | 1959 | 1992 | 1974 | 1988 | 1956 | 1987 | 1988 | 1976 | 1989 | 1966 |
| Average | 1.00 | 0.84 | 1.06 | 1.13 | 1.54 | 0.98 | 0.56 | 0.64 | 0.73 | 0.86 | 1.08 | 0.92 | 11.40 |
| Std Dev | 0.71 | 0.59 | 0.72 | 0.80 | 1.05 | 0.76 | 0.61 | 0.70 | 0.74 | 0.66 | 0.71 | 0.86 | 3.63 |
| Skew | 1.47 | 2.09 | 1.00 | 0.72 | 0.92 | 1.67 | 2.24 | 2.56 | 1.29 | 0.87 | 0.99 | 2.57 | 0.80 |
| Kurt | 5.13 | 10.44 | 3.79 | 2.45 | 3.01 | 5.67 | 9.96 | 12.41 | 4.27 | 3.10 | 4.01 | 10.41 | 3.27 |

SUMMARY

Station ARCO 3 SW
PO Code ID
Stn ID 375
County BUTTE
Years 1952 54-72 77-78 82 87-91

Parameter Prcp
Latitude N43:36:00
Longitude W113:20:00
Elevation 1624.0

% Coverage 92
Begin M/Yr 08/1948
End M/Yr 11/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1186 | 1183 | 1314 | 1285 | 1366 | 1333 | 1378 | 1424 | 1329 | 1321 | 1213 | 1306 | 15638 |
| Avg Day | 0.03 | 0.03 | 0.02 | 0.02 | 0.04 | 0.04 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 |
| # Valid | 38 | 42 | 42 | 43 | 44 | 44 | 45 | 46 | 44 | 43 | 41 | 42 | 28 |
| Maximum | 4.79 | 3.55 | 2.58 | 2.40 | 4.15 | 4.08 | 3.39 | 3.86 | 2.32 | 1.84 | 2.59 | 4.31 | 15.33 |
| Max Yr | 1969 | 1986 | 1982 | 1975 | 1957 | 1963 | 1985 | 1968 | 1961 | 1956 | 1983 | 1964 | 1968 |
| Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.31 |
| Min Yr | 1991 | 1991 | 1993 | 1992 | 1950 | 1994 | 1994 | 1992 | 1994 | 1988 | 1989 | 1960 | 1956 |
| Average | 0.90 | 0.89 | 0.73 | 0.72 | 1.23 | 1.25 | 0.67 | 0.73 | 0.65 | 0.50 | 0.75 | 0.96 | 9.88 |
| Std Dev | 0.86 | 0.81 | 0.67 | 0.64 | 0.89 | 0.98 | 0.73 | 0.85 | 0.68 | 0.50 | 0.59 | 0.85 | 2.69 |
| Skew | 2.45 | 1.20 | 1.01 | 0.98 | 1.15 | 0.92 | 1.78 | 1.60 | 1.02 | 0.85 | 0.85 | 1.67 | 0.35 |
| Kurt | 11.47 | 4.07 | 3.13 | 3.08 | 4.33 | 3.14 | 6.28 | 5.28 | 2.82 | 2.78 | 3.50 | 6.95 | 1.83 |

SUMMARY

Station BLACKFOOT 4 NNE
PO Code ID
Stn ID 915
County BINGHAM
Years 1949-56 62-63 67-74 84 86 93

Parameter Prcp
Latitude N43:15:00
Longitude W112:19:00
Elevation 1374.5

% Coverage 86
Begin M/Yr 08/1948
End M/Yr 11/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1243 | 1110 | 1199 | 1227 | 1292 | 1224 | 1270 | 1333 | 1178 | 1266 | 1113 | 1179 | 14634 |
| Avg Day | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 |
| # Valid | 41 | 39 | 39 | 41 | 42 | 41 | 41 | 43 | 39 | 41 | 38 | 39 | 21 |
| Maximum | 3.01 | 2.73 | 1.77 | 4.10 | 3.92 | 5.14 | 2.51 | 2.98 | 2.33 | 2.65 | 2.16 | 2.45 | 23.09 |
| Max Yr | 1969 | 1963 | 1968 | 1963 | 1981 | 1963 | 1973 | 1968 | 1948 | 1961 | 1983 | 1971 | 1963 |
| Minimum | 0.00 | 0.08 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.78 |
| Min Yr | 1993 | 1991 | 1988 | 1985 | 1989 | 1994 | 1994 | 1992 | 1993 | 1988 | 1993 | 1993 | 1956 |
| Average | 0.88 | 0.81 | 0.84 | 0.91 | 1.17 | 1.06 | 0.46 | 0.48 | 0.59 | 0.73 | 0.90 | 0.91 | 11.08 |
| Std Dev | 0.70 | 0.65 | 0.52 | 0.82 | 0.97 | 1.08 | 0.53 | 0.57 | 0.63 | 0.65 | 0.63 | 0.69 | 4.11 |
| Skew | 1.05 | 0.97 | 0.09 | 1.64 | 0.82 | 1.43 | 1.71 | 2.21 | 1.15 | 1.00 | 0.36 | 0.44 | 1.23 |
| Kurt | 3.68 | 3.16 | 1.77 | 6.52 | 2.85 | 5.75 | 6.41 | 9.74 | 3.53 | 3.57 | 1.99 | 1.98 | 4.18 |

SUMMARY

Station DUBOIS EXPERIMENT ST
PO Code ID
Stn ID 2707
County CLARK
Years 1925-94

Parameter Prcp
Latitude N44:15:00
Longitude W112:12:00
Elevation 1660.9

% Coverage 100
Begin M/Yr 01/1925
End M/Yr 12/1994
# Record Years 70

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 2168 | 1971 | 2170 | 2099 | 2156 | 2100 | 2170 | 2164 | 2100 | 2161 | 2100 | 2166 | 25525 |
| Avg Day | 0.02 | 0.03 | 0.02 | 0.03 | 0.05 | 0.06 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| # Valid | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Maximum | 2.74 | 2.71 | 2.61 | 3.23 | 4.88 | 8.26 | 3.67 | 3.53 | 3.91 | 3.67 | 3.09 | 2.50 | 20.58 |
| Max Yr | 1969 | 1959 | 1938 | 1978 | 1957 | 1944 | 1977 | 1945 | 1940 | 1938 | 1983 | 1931 | 1983 |
| Minimum | 0.09 | 0.03 | 0.00 | 0.02 | 0.16 | 0.03 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 5.62 |
| Min Yr | 1992 | 1965 | 1965 | 1987 | 1992 | 1974 | 1934 | 1942 | 1987 | 1988 | 1976 | 1976 | 1926 |
| Average | 0.75 | 0.73 | 0.74 | 0.92 | 1.55 | 1.75 | 0.87 | 0.95 | 0.90 | 0.84 | 0.91 | 0.88 | 11.81 |
| Std Dev | 0.48 | 0.51 | 0.56 | 0.69 | 1.08 | 1.20 | 0.75 | 0.83 | 0.79 | 0.71 | 0.69 | 0.54 | 2.91 |
| Skew | 1.37 | 1.14 | 1.13 | 0.95 | 1.08 | 2.28 | 1.72 | 1.17 | 1.15 | 1.11 | 1.00 | 0.65 | 0.50 |
| Kurt | 5.84 | 4.83 | 4.14 | 3.45 | 3.52 | 13.38 | 5.74 | 3.75 | 4.42 | 4.87 | 3.55 | 3.04 | 2.90 |

SUMMARY

Station DUBOIS FAA AIRPORT
PO Code ID
Stn ID 2717
County
Years 1949-60

Parameter Prcp
Latitude N44:10:00
Longitude W112:13:00
Elevation 1564.0

% Coverage 100
Begin M/Yr 08/1948
End M/Yr 04/1962
# Record Years 15

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 424 | 395 | 434 | 407 | 403 | 390 | 403 | 434 | 420 | 434 | 420 | 434 | 4998 |
| Avg Day | 0.02 | 0.03 | 0.02 | 0.02 | 0.05 | 0.05 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.02 | 0.03 |
| # Valid | 13 | 14 | 14 | 13 | 13 | 13 | 13 | 14 | 14 | 14 | 14 | 14 | 12 |
| Maximum | 1.64 | 1.91 | 1.22 | 1.06 | 3.78 | 2.36 | 1.10 | 2.39 | 2.73 | 1.71 | 0.88 | 1.46 | 11.71 |
| Max Yr | 1952 | 1962 | 1958 | 1954 | 1957 | 1954 | 1952 | 1951 | 1961 | 1956 | 1952 | 1955 | 1952 |
| Minimum | 0.40 | 0.30 | 0.07 | 0.05 | 0.68 | 0.50 | 0.01 | 0.06 | 0.00 | 0.00 | 0.03 | 0.11 | 6.28 |
| Min Yr | 1953 | 1956 | 1956 | 1959 | 1950 | 1961 | 1960 | 1956 | 1951 | 1958 | 1959 | 1956 | 1956 |
| Average | 0.76 | 0.87 | 0.58 | 0.54 | 1.57 | 1.46 | 0.55 | 0.66 | 0.73 | 0.62 | 0.41 | 0.75 | 9.33 |
| Std Dev | 0.38 | 0.54 | 0.43 | 0.29 | 0.93 | 0.60 | 0.35 | 0.63 | 0.77 | 0.56 | 0.26 | 0.38 | 1.56 |
| Skew | 1.22 | 0.79 | 0.26 | 0.04 | 0.98 | -0.17 | 0.12 | 1.55 | 1.23 | 0.49 | 0.31 | 0.31 | -0.39 |
| Kurt | 3.16 | 2.08 | 1.38 | 1.89 | 2.87 | 1.50 | 1.65 | 4.60 | 3.65 | 1.88 | 1.87 | 2.01 | 2.28 |

SUMMARY

Station FORT HALL 1 NNE
PO Code ID
Stn ID 3297
County BINGHAM
Years 1949-72 75 77-94

Parameter Prcp
Latitude N43:03:00
Longitude W112:25:00
Elevation 1360.9

% Coverage 99
Begin M/Yr 08/1948
End M/Yr 12/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1412 | 1281 | 1407 | 1359 | 1395 | 1378 | 1418 | 1423 | 1380 | 1451 | 1403 | 1435 | 16742 |
| Avg Day | 0.03 | 0.03 | 0.03 | 0.03 | 0.05 | 0.04 | 0.02 | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 |
| # Valid | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 43 |
| Maximum | 2.84 | 1.97 | 2.80 | 2.56 | 4.95 | 3.09 | 2.68 | 4.04 | 2.75 | 2.98 | 2.53 | 2.37 | 17.45 |
| Max Yr | 1956 | 1986 | 1983 | 1963 | 1957 | 1984 | 1984 | 1968 | 1961 | 1971 | 1988 | 1964 | 1980 |
| Minimum | 0.08 | 0.04 | 0.03 | 0.00 | 0.10 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 6.89 |
| Min Yr | 1961 | 1977 | 1994 | 1969 | 1958 | 1956 | 1990 | 1992 | 1987 | 1988 | 1976 | 1962 | 1966 |
| Average | 0.87 | 0.82 | 0.95 | 0.99 | 1.50 | 1.17 | 0.59 | 0.78 | 0.74 | 0.93 | 0.97 | 0.88 | 11.23 |
| Std Dev | 0.55 | 0.49 | 0.66 | 0.69 | 1.18 | 0.92 | 0.66 | 0.84 | 0.72 | 0.78 | 0.57 | 0.57 | 2.98 |
| Skew | 1.56 | 0.25 | 0.85 | 0.54 | 1.28 | 0.91 | 1.35 | 1.70 | 1.00 | 0.77 | 0.31 | 0.68 | 0.53 |
| Kurt | 5.76 | 2.13 | 3.17 | 2.20 | 4.19 | 2.48 | 4.32 | 6.30 | 3.03 | 2.79 | 2.62 | 2.88 | 2.16 |

SUMMARY

Station HAMER 4 NW
PO Code ID
Stn ID 3964
County JEFFERSON
Years 1949-72 74 76-77 79-91 93-94

Parameter Prcp
Latitude N43:58:00
Longitude W112:16:00
Elevation 1460.0

% Coverage 99
Begin M/Yr 10/1948
End M/Yr 12/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1415 | 1286 | 1414 | 1374 | 1422 | 1371 | 1419 | 1354 | 1362 | 1399 | 1396 | 1444 | 16656 |
| Avg Day | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.04 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| # Valid | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 46 | 45 | 46 | 47 | 42 |
| Maximum | 1.93 | 1.71 | 2.23 | 2.29 | 4.21 | 2.72 | 2.98 | 4.22 | 2.24 | 2.20 | 1.69 | 1.57 | 14.53 |
| Max Yr | 1973 | 1962 | 1963 | 1978 | 1980 | 1984 | 1984 | 1951 | 1963 | 1994 | 1983 | 1970 | 1983 |
| Minimum | 0.01 | 0.00 | 0.00 | 0.00 | 0.13 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.66 |
| Min Yr | 1992 | 1970 | 1965 | 1952 | 1992 | 1981 | 1974 | 1967 | 1987 | 1988 | 1976 | 1976 | 1953 |
| Average | 0.57 | 0.48 | 0.60 | 0.71 | 1.30 | 1.20 | 0.74 | 0.76 | 0.58 | 0.62 | 0.67 | 0.62 | 8.77 |
| Std Dev | 0.42 | 0.42 | 0.49 | 0.58 | 0.87 | 0.65 | 0.67 | 0.75 | 0.55 | 0.59 | 0.47 | 0.39 | 2.41 |
| Skew | 1.19 | 1.12 | 1.10 | 0.99 | 1.16 | 0.26 | 1.21 | 2.48 | 1.31 | 0.90 | 0.48 | 0.50 | 0.46 |
| Kurt | 4.21 | 3.77 | 4.20 | 3.16 | 4.23 | 2.16 | 4.10 | 11.38 | 4.53 | 2.94 | 2.13 | 2.58 | 2.40 |

SUMMARY

Station HOWE
PO Code ID
Stn ID 4384
County BUTTE
Years 1950-73 76-79 81-82 86-94

Parameter Prcp
Latitude N43:47:00
Longitude W113:00:00
Elevation 1469.1

% Coverage 95
Begin M/Yr 09/1948
End M/Yr 12/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1351 | 1228 | 1356 | 1311 | 1352 | 1293 | 1324 | 1366 | 1341 | 1403 | 1365 | 1351 | 16041 |
| Avg Day | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.04 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| # Valid | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 45 | 46 | 43 | 39 |
| Maximum | 3.28 | 2.27 | 1.86 | 3.01 | 3.24 | 3.42 | 3.55 | 3.67 | 2.66 | 1.40 | 2.32 | 2.77 | 12.13 |
| Max Yr | 1969 | 1986 | 1982 | 1978 | 1980 | 1993 | 1984 | 1983 | 1980 | 1991 | 1983 | 1964 | 1968 |
| Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.47 |
| Min Yr | 1991 | 1991 | 1956 | 1987 | 1969 | 1986 | 1988 | 1985 | 1993 | 1988 | 1986 | 1986 | 1956 |
| Average | 0.60 | 0.57 | 0.51 | 0.63 | 1.07 | 1.27 | 0.64 | 0.85 | 0.58 | 0.50 | 0.62 | 0.72 | 8.26 |
| Std Dev | 0.58 | 0.54 | 0.43 | 0.68 | 0.74 | 0.93 | 0.68 | 0.98 | 0.65 | 0.45 | 0.52 | 0.69 | 2.33 |
| Skew | 2.35 | 1.45 | 1.02 | 1.51 | 0.84 | 0.67 | 2.04 | 1.54 | 1.73 | 0.56 | 1.02 | 1.28 | 0.08 |
| Kurt | 11.06 | 4.84 | 3.53 | 4.95 | 3.17 | 2.48 | 8.52 | 4.20 | 5.62 | 1.90 | 3.69 | 3.99 | 1.72 |

SUMMARY

Station IDAHO FALLS 2 ESE
PO Code ID
Stn ID 4455
County BONNEVILLE
Years 1953-55 59-63 66 70-72 79 82-83 86-90 92-94

Parameter Prcp
Latitude N43:29:00
Longitude W112:01:00
Elevation 1452.4

% Coverage 91
Begin M/Yr 05/1952
End M/Yr 12/1994
# Record Years 43

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 983 | 906 | 1107 | 1102 | 1279 | 1230 | 1240 | 1332 | 1260 | 1267 | 1251 | 1147 | 14104 |
| Avg Day | 0.03 | 0.03 | 0.03 | 0.03 | 0.05 | 0.04 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| # Valid | 32 | 32 | 36 | 35 | 41 | 41 | 40 | 43 | 42 | 41 | 42 | 37 | 23 |
| Maximum | 2.38 | 3.13 | 2.27 | 2.82 | 4.56 | 3.09 | 2.13 | 2.66 | 2.76 | 2.49 | 3.20 | 3.18 | 19.63 |
| Max Yr | 1986 | 1986 | 1989 | 1978 | 1993 | 1984 | 1983 | 1972 | 1961 | 1974 | 1988 | 1983 | 1983 |
| Minimum | 0.00 | 0.00 | 0.00 | 0.05 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.60 |
| Min Yr | 1963 | 1991 | 1969 | 1959 | 1961 | 1961 | 1988 | 1966 | 1987 | 1988 | 1976 | 1989 | 1966 |
| Average | 0.89 | 0.91 | 0.91 | 1.04 | 1.51 | 1.27 | 0.54 | 0.76 | 0.78 | 0.93 | 0.98 | 0.96 | 11.66 |
| Std Dev | 0.62 | 0.76 | 0.62 | 0.76 | 1.06 | 0.82 | 0.55 | 0.71 | 0.69 | 0.68 | 0.67 | 0.71 | 4.00 |
| Skew | 0.66 | 0.83 | 0.04 | 0.77 | 1.15 | 0.51 | 0.98 | 0.88 | 0.80 | 0.53 | 1.27 | 0.92 | 0.43 |
| Kurt | 2.63 | 3.22 | 1.97 | 2.66 | 4.10 | 2.20 | 2.97 | 3.03 | 2.98 | 2.44 | 4.78 | 3.74 | 2.29 |

SUMMARY

Station IDAHO FALLS FANNING
PO Code ID
Stn ID 4457
County BONNEVILLE
Years 1949-93

Parameter Prcp
Latitude N43:31:00
Longitude W112:04:00
Elevation 1441.4

% Coverage 100
Begin M/Yr 08/1948
End M/Yr 02/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1424 | 1296 | 1395 | 1349 | 1395 | 1350 | 1395 | 1425 | 1380 | 1426 | 1379 | 1424 | 16638 |
| Avg Day | 0.02 | 0.03 | 0.02 | 0.03 | 0.04 | 0.04 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 |
| # Valid | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 45 |
| Maximum | 2.73 | 2.37 | 1.76 | 2.52 | 4.33 | 3.09 | 1.89 | 2.59 | 2.70 | 2.77 | 2.46 | 2.03 | 15.83 |
| Max Yr | 1949 | 1986 | 1991 | 1975 | 1981 | 1968 | 1987 | 1968 | 1961 | 1974 | 1988 | 1983 | 1980 |
| Minimum | 0.03 | 0.07 | 0.00 | 0.01 | 0.10 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 5.53 |
| Min Yr | 1961 | 1970 | 1965 | 1959 | 1969 | 1956 | 1988 | 1964 | 1987 | 1988 | 1976 | 1976 | 1959 |
| Average | 0.77 | 0.75 | 0.76 | 0.86 | 1.38 | 1.23 | 0.56 | 0.70 | 0.73 | 0.74 | 0.84 | 0.81 | 10.15 |
| Std Dev | 0.53 | 0.55 | 0.46 | 0.68 | 0.94 | 0.78 | 0.49 | 0.59 | 0.67 | 0.60 | 0.59 | 0.49 | 2.71 |
| Skew | 1.76 | 1.09 | 0.24 | 1.03 | 1.23 | 0.60 | 1.07 | 1.26 | 0.89 | 1.00 | 0.91 | 0.55 | 0.20 |
| Kurt | 6.89 | 4.01 | 2.15 | 2.99 | 4.15 | 2.43 | 3.39 | 4.66 | 2.99 | 4.16 | 2.96 | 2.92 | 2.01 |

SUMMARY

Station IDAHO FALLS 42 NW WB
PO Code ID
Stn ID 4459
County BUTTE
Years 1955-56 58-66 68

Parameter Prcp
Latitude N43:50:00
Longitude W112:41:00
Elevation 1461.0

% Coverage 94
Begin M/Yr 03/1954
End M/Yr 06/1969
# Record Years 16

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 434 | 396 | 465 | 450 | 465 | 450 | 434 | 434 | 410 | 434 | 450 | 465 | 5287 |
| Avg Day | 0.02 | 0.02 | 0.01 | 0.02 | 0.04 | 0.04 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 |
| # Valid | 14 | 14 | 15 | 15 | 15 | 15 | 14 | 14 | 13 | 14 | 15 | 15 | 12 |
| Maximum | 2.92 | 1.83 | 1.07 | 1.85 | 5.04 | 3.35 | 1.23 | 2.64 | 2.51 | 1.14 | 1.43 | 2.43 | 15.60 |
| Max Yr | 1969 | 1962 | 1962 | 1963 | 1963 | 1964 | 1962 | 1968 | 1961 | 1964 | 1964 | 1964 | 1963 |
| Minimum | 0.00 | 0.07 | 0.00 | 0.01 | 0.27 | 0.09 | 0.00 | 0.06 | 0.06 | 0.00 | 0.00 | 0.07 | 4.37 |
| Min Yr | 1961 | 1965 | 1956 | 1959 | 1960 | 1956 | 1959 | 1956 | 1964 | 1965 | 1959 | 1960 | 1956 |
| Average | 0.72 | 0.56 | 0.36 | 0.65 | 1.38 | 1.34 | 0.37 | 0.67 | 0.77 | 0.35 | 0.56 | 0.77 | 8.39 |
| Std Dev | 0.69 | 0.57 | 0.33 | 0.62 | 1.27 | 0.88 | 0.33 | 0.65 | 0.68 | 0.39 | 0.44 | 0.67 | 3.21 |
| Skew | 2.18 | 1.37 | 0.93 | 0.73 | 1.60 | 0.75 | 1.11 | 1.78 | 1.10 | 0.90 | 0.46 | 1.07 | 0.78 |
| Kurt | 7.45 | 3.49 | 2.81 | 2.16 | 4.87 | 2.78 | 3.81 | 5.99 | 3.56 | 2.23 | 1.78 | 3.13 | 2.69 |

SUMMARY

Station IDAHO FALLS 46 W
PO Code ID
Stn ID 4460
County BUTTE
Years 1952-94

Parameter Prcp
Latitude N43:32:00
Longitude W112:57:00
Elevation 1505.1

% Coverage 100
Begin M/Yr 01/1952
End M/Yr 12/1994
# Record Years 43

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1332 | 1215 | 1331 | 1290 | 1332 | 1290 | 1328 | 1330 | 1290 | 1332 | 1287 | 1333 | 15690 |
| Avg Day | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.04 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| # Valid | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| Maximum | 2.56 | 2.40 | 1.44 | 2.50 | 4.42 | 3.89 | 2.29 | 3.27 | 3.52 | 1.67 | 1.74 | 3.43 | 14.40 |
| Max Yr | 1969 | 1962 | 1974 | 1963 | 1957 | 1968 | 1985 | 1968 | 1961 | 1983 | 1988 | 1964 | 1963 |
| Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.50 |
| Min Yr | 1961 | 1991 | 1994 | 1977 | 1969 | 1994 | 1963 | 1969 | 1987 | 1977 | 1976 | 1991 | 1966 |
| Average | 0.67 | 0.63 | 0.58 | 0.75 | 1.23 | 1.22 | 0.51 | 0.51 | 0.68 | 0.51 | 0.67 | 0.72 | 8.69 |
| Std Dev | 0.46 | 0.54 | 0.38 | 0.63 | 0.75 | 0.90 | 0.59 | 0.57 | 0.73 | 0.43 | 0.46 | 0.66 | 2.32 |
| Skew | 1.53 | 1.47 | 0.42 | 0.79 | 1.77 | 0.93 | 1.76 | 2.71 | 1.61 | 0.87 | 0.56 | 1.84 | 0.36 |
| Kurt | 7.34 | 5.63 | 2.21 | 2.72 | 8.37 | 3.25 | 5.29 | 13.18 | 6.33 | 3.00 | 2.31 | 7.51 | 2.44 |

SUMMARY

Station MINIDOKA 10WNW
PO Code ID
Stn ID 5972
County MINIDOKA
Years 1967 72-81 85-86

Parameter Prcp
Latitude N42:47:00
Longitude W113:40:00
Elevation 1307.5

% Coverage 81
Begin M/Yr 10/1966
End M/Yr 04/1988
# Record Years 22

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 559 | 533 | 574 | 534 | 536 | 514 | 539 | 526 | 492 | 558 | 506 | 533 | 6404 |
| Avg Day | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 |
| # Valid | 18 | 19 | 19 | 18 | 18 | 17 | 17 | 17 | 16 | 18 | 17 | 16 | 13 |
| Maximum | 3.14 | 3.24 | 1.93 | 2.19 | 2.59 | 2.41 | 2.55 | 0.86 | 1.93 | 1.82 | 2.07 | 2.63 | 13.07 |
| Max Yr | 1980 | 1986 | 1974 | 1971 | 1980 | 1967 | 1985 | 1976 | 1978 | 1975 | 1973 | 1981 | 1980 |
| Minimum | 0.23 | 0.10 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 6.35 |
| Min Yr | 1986 | 1988 | 1969 | 1969 | 1969 | 1974 | 1986 | 1969 | 1974 | 1978 | 1986 | 1986 | 1979 |
| Average | 1.04 | 0.84 | 0.89 | 0.86 | 1.03 | 0.90 | 0.42 | 0.29 | 0.68 | 0.69 | 0.93 | 0.80 | 9.48 |
| Std Dev | 0.81 | 0.71 | 0.53 | 0.66 | 0.77 | 0.64 | 0.64 | 0.28 | 0.48 | 0.45 | 0.68 | 0.77 | 1.72 |
| Skew | 1.40 | 1.87 | 0.40 | 0.56 | 0.71 | 1.19 | 2.21 | 0.55 | 0.72 | 0.61 | 0.17 | 0.87 | 0.13 |
| Kurt | 4.06 | 7.22 | 2.39 | 2.10 | 2.37 | 3.49 | 7.61 | 1.69 | 3.49 | 3.02 | 1.62 | 2.74 | 2.57 |

SUMMARY

Station POCATELLO 2 NE
PO Code ID
Stn ID 7208
County BANNOCK
Years 1957-63 92-94

Parameter Prcp
Latitude N42:54:00
Longitude W112:24:00
Elevation 1472.7

% Coverage 11
Begin M/Yr 05/1899
End M/Yr 12/1994
# Record Years 13

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 340 | 311 | 341 | 330 | 342 | 323 | 341 | 341 | 330 | 341 | 330 | 341 | 4011 |
| Avg Day | 0.02 | 0.04 | 0.03 | 0.04 | 0.06 | 0.04 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| # Valid | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 |
| Maximum | 1.36 | 1.57 | 2.16 | 2.84 | 4.35 | 2.94 | 1.16 | 1.90 | 2.72 | 2.61 | 2.11 | 1.59 | 17.22 |
| Max Yr | 1993 | 1958 | 1957 | 1957 | 1957 | 1963 | 1962 | 1993 | 1961 | 1956 | 1958 | 1992 | 1957 |
| Minimum | 0.12 | 0.61 | 0.13 | 0.26 | 0.21 | 0.09 | 0.00 | 0.01 | 0.06 | 0.00 | 0.07 | 0.43 | 7.86 |
| Min Yr | 1961 | 1956 | 1994 | 1959 | 1992 | 1956 | 1959 | 1958 | 1957 | 1958 | 1959 | 1960 | 1960 |
| Average | 0.73 | 1.17 | 0.88 | 1.19 | 1.78 | 1.06 | 0.55 | 0.70 | 0.85 | 0.93 | 0.95 | 0.82 | 11.99 |
| Std Dev | 0.40 | 0.31 | 0.58 | 0.90 | 1.23 | 0.87 | 0.43 | 0.55 | 0.84 | 0.76 | 0.61 | 0.37 | 3.36 |
| Skew | 0.00 | -0.33 | 0.71 | 0.65 | 0.52 | 0.85 | 0.17 | 0.68 | 0.94 | 0.78 | 0.18 | 0.89 | 0.26 |
| Kurt | 1.80 | 1.87 | 2.73 | 1.70 | 2.34 | 2.43 | 1.30 | 2.54 | 2.55 | 2.61 | 1.95 | 2.26 | 1.34 |

SUMMARY

Station POCATELLO MUNICIPAL
PO Code ID
Stn ID 7211
County POWER
Years 1939-94

Parameter Prcp
Latitude N42:55:00
Longitude W112:36:00
Elevation 1357.6

% Coverage 100
Begin M/Yr 01/1939
End M/Yr 12/1994
# Record Years 56

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1734 | 1582 | 1736 | 1680 | 1736 | 1680 | 1734 | 1736 | 1680 | 1736 | 1680 | 1735 | 20449 |
| Avg Day | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 |
| # Valid | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 |
| Maximum | 3.24 | 2.63 | 2.95 | 3.30 | 3.29 | 3.39 | 2.28 | 3.98 | 3.80 | 2.56 | 2.84 | 3.39 | 20.33 |
| Max Yr | 1980 | 1986 | 1983 | 1963 | 1980 | 1944 | 1984 | 1968 | 1940 | 1956 | 1983 | 1983 | 1983 |
| Minimum | 0.20 | 0.12 | 0.10 | 0.06 | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.07 | 5.34 |
| Min Yr | 1945 | 1970 | 1965 | 1977 | 1940 | 1974 | 1988 | 1958 | 1987 | 1988 | 1976 | 1989 | 1966 |
| Average | 1.06 | 0.92 | 1.13 | 1.12 | 1.31 | 1.06 | 0.52 | 0.63 | 0.76 | 0.89 | 1.10 | 1.03 | 11.55 |
| Std Dev | 0.68 | 0.52 | 0.66 | 0.73 | 0.80 | 0.79 | 0.53 | 0.67 | 0.81 | 0.67 | 0.64 | 0.65 | 3.12 |
| Skew | 1.31 | 0.83 | 0.81 | 0.87 | 0.66 | 1.20 | 1.37 | 2.50 | 1.71 | 0.80 | 0.58 | 1.35 | 0.61 |
| Kurt | 4.31 | 3.91 | 3.41 | 3.20 | 2.81 | 4.14 | 4.36 | 11.92 | 6.25 | 2.82 | 2.86 | 5.33 | 2.90 |

SUMMARY

Station SAINT ANTHONY 1 WNW
PO Code ID
Stn ID 8022
County FREMONT
Years 1949-67 69-74 76 81 83-94

Parameter Prcp
Latitude N43:58:00
Longitude W111:43:00
Elevation 1508.8

% Coverage 97
Begin M/Yr 08/1948
End M/Yr 12/1994
# Record Years 47

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 1356 | 1204 | 1324 | 1348 | 1417 | 1318 | 1420 | 1423 | 1395 | 1451 | 1396 | 1424 | 16476 |
| Avg Day | 0.04 | 0.04 | 0.03 | 0.04 | 0.05 | 0.05 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.05 | 0.04 |
| # Valid | 44 | 43 | 43 | 45 | 46 | 44 | 46 | 46 | 46 | 47 | 47 | 46 | 39 |
| Maximum | 2.98 | 2.90 | 2.62 | 3.49 | 4.66 | 3.78 | 3.11 | 4.69 | 2.72 | 3.92 | 3.52 | 3.23 | 19.72 |
| Max Yr | 1956 | 1952 | 1954 | 1965 | 1980 | 1969 | 1984 | 1968 | 1961 | 1994 | 1988 | 1955 | 1964 |
| Minimum | 0.17 | 0.06 | 0.05 | 0.00 | 0.11 | 0.21 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 8.19 |
| Min Yr | 1992 | 1982 | 1965 | 1979 | 1977 | 1988 | 1988 | 1953 | 1993 | 1978 | 1977 | 1986 | 1976 |
| Average | 1.29 | 1.03 | 1.05 | 1.14 | 1.64 | 1.55 | 0.79 | 0.79 | 0.91 | 0.98 | 1.28 | 1.41 | 13.94 |
| Std Dev | 0.65 | 0.71 | 0.66 | 0.78 | 1.17 | 0.93 | 0.73 | 0.91 | 0.72 | 0.88 | 0.78 | 0.76 | 2.86 |
| Skew | 0.66 | 0.61 | 0.50 | 0.73 | 1.02 | 0.58 | 1.21 | 3.34 | 0.52 | 0.97 | 0.49 | -0.06 | -0.06 |
| Kurt | 2.78 | 2.45 | 2.53 | 3.27 | 3.18 | 2.49 | 4.10 | 14.70 | 2.18 | 3.74 | 2.96 | 2.33 | 2.08 |

SUMMARY

Station SUGAR
PO Code ID
Stn ID 8818
County MADISON
Years 1949 51-53 55 57-75

Parameter Prcp
Latitude N43:53:00
Longitude W111:45:00
Elevation 1491.0

% Coverage 98
Begin M/Yr 08/1948
End M/Yr 05/1976
# Record Years 29

Prcp (in)

| | Jan's | Feb's | Mar's | Apr's | May's | Jun's | Jul's | Aug's | Sep's | Oct's | Nov's | Dec's | Year's |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # Days | 834 | 763 | 834 | 808 | 868 | 810 | 837 | 868 | 840 | 861 | 840 | 836 | 9999 |
| Avg Day | 0.03 | 0.04 | 0.03 | 0.04 | 0.05 | 0.06 | 0.02 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 |
| # Valid | 27 | 27 | 27 | 27 | 28 | 27 | 27 | 28 | 28 | 28 | 28 | 27 | 24 |
| Maximum | 2.06 | 3.18 | 1.39 | 3.38 | 3.70 | 3.61 | 1.51 | 3.79 | 2.51 | 2.16 | 3.02 | 3.34 | 17.83 |
| Max Yr | 1976 | 1949 | 1958 | 1965 | 1957 | 1959 | 1962 | 1968 | 1961 | 1975 | 1956 | 1948 | 1968 |
| Minimum | 0.01 | 0.07 | 0.00 | 0.10 | 0.57 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.17 | 0.09 | 7.43 |
| Min Yr | 1954 | 1972 | 1965 | 1959 | 1974 | 1974 | 1974 | 1952 | 1975 | 1952 | 1954 | 1962 | 1953 |
| Average | 0.98 | 1.00 | 0.82 | 1.07 | 1.53 | 1.78 | 0.68 | 0.83 | 0.89 | 1.00 | 1.09 | 1.29 | 12.95 |
| Std Dev | 0.61 | 0.74 | 0.37 | 0.79 | 0.85 | 1.04 | 0.54 | 0.93 | 0.77 | 0.73 | 0.65 | 0.64 | 2.80 |
| Skew | 0.16 | 1.01 | -0.42 | 1.01 | 0.93 | 0.33 | 0.09 | 2.15 | 0.52 | 0.20 | 0.86 | 0.95 | -0.16 |
| Kurt | 1.91 | 3.98 | 2.25 | 3.63 | 3.05 | 1.69 | 1.28 | 7.07 | 1.97 | 1.51 | 3.79 | 5.03 | 2.30 |