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A Climatology of San Francisco rainfall, 1849-1991

Jan Null
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Null, Jan, M.A.

San Jose State University, 1992

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A CLIMATOLOGY OF SAN FRANCISCO RAINFALL,
1849-1991

A Thesis

Presented to

The Faculty of the Department of Geography
San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

By

Jan Null

December, 1992

©

1992

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ABSTRACT

A CLIMATOLOGY OF SAN FRANCISCO RAINFALL, 1849-1991

By Jan Null

This thesis represents the first comprehensive rainfall climatology of San Francisco, California for the seasons 1849 through 1991. The history of the San Francisco rainfall records is delineated in detail. An extensive methodology is developed to manipulate the extensive 143 season dataset. The rainfall record is examined and found to be homogeneous. Monthly and seasonal data are characterized using standard statistical measurements. The return periods for both wet and dry events are calculated. The seasonal variability is explored with no significant statistical trend found. Daily data is analyzed to determine rainfall characteristics and their probabilities for each day of the year. Finally, the relationship of San Francisco rainfall to El Niño events, and intraseasonal variation in rainfall are examined.

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I. INTRODUCTION

Background

During the period 1975 through the early 1990's the state of California has experienced wide variations in precipitation, from too little to too much and back again. This variability has impacted all segments of the California populace, and has had serious effects on the economy and landscape. To plan for and mitigate the effects of such precipitation fluctuations, governmental officials, researchers and the public need to have sufficient data upon which to base their risk management decisions. In addition to the daily short-term meteorological forecasts, decision makers need detailed climatological data that document past events.

At present, datasets of California precipitation are incomplete and scattered throughout a variety of documents and other climatological sources. They consist primarily of raw, unfiltered and untested data. There is no comprehensive analysis of rainfall data and its variability for San Francisco. The available data are either incomplete or not delineated in a manner generally useful to the decision maker.

Objectives

The overall objective of this study is to conduct an indepth climatological analysis of the San Francisco rainfall record. San Francisco's dataset was chosen for this study for several reasons. Foremost, it represents the oldest continuous rainfall record in California. Also, because the city is centrally located, it is generally representative of other coastal sites in northern and central California, and is specifically representative of those in the San Francisco Bay Area.

The manner in which these objectives will be accomplished is as follows:

- First, the rainfall data will be collected and analyzed to determine if it is climatologically representative for the site in question. Monthly and seasonal rainfall data for San Francisco are readily available; however, no single body of work exists employing the daily rainfall records. None of the existing records has undergone rigorous testing to determine statistical representativeness. If the data are found not to be valid, then adjustments will have to be made to make it representative.
- Once the data have been verified, the second step of the analysis process will be to delineate them in a concise and meaningful manner. This will be done by developing comprehensive tables of daily, monthly and seasonal rainfall for San Francisco. In addition, various statistical parameters will be utilized to describe the San Francisco record.
- The rainfall data will be used to calculate the return interval for particular San Francisco rainfall events. The expected return periods for various dry (drought) and

wet (flood) annual events will be determined. Additionally, the probability of various daily rainfall events will be calculated. These types of frequency analyses are especially useful to persons, such as water managers and flood control engineers, who must make risk management decisions.

- The 143 seasonal records will be analyzed to determine if any discernible trends exist through the record. These time series will be tested to tell if any trends are statistically significant.
- The San Francisco data will also be analyzed to determine any possible relationship of precipitation and trends to El Niño Southern Oscillation (ENSO) events.
- The intraseasonal rainfall distribution will be examined.
- The body of work developed will serve as a resource as well as a model for similar studies of rainfall at other California sites.

Literature Review

Several climatologies of San Francisco (McAdie, 1913; Null, 1978; Pericht, 1988; Root, 1960) have been published. These studies consist primarily of tables of climatological data. General climatological descriptions of California and the San Francisco Bay Area are found in Lantis (1970) and Gilliam (1962) and are subjective in style. Otherwise the monthly and seasonal precipitation records of, San Francisco have been analyzed only in a limited manner (Denn & Lunn, 1977; Loffman, 1975;

Null, 1991; Rowntree, 1991, 1992). No published data were found that compiled or analyzed the daily precipitation records for San Francisco.

Numerous studies of climatic variables (e.g., rainfall, temperature) have focused on the western United States, and to a lesser extent the climate of California (Bradley, 1976b; Breaker, 1989); Denn & Lunn, 1977; Goodridge, 1982; Granger, 1979; Michaelson, Haston & Davis, 1987; Quintana, 1986; Rantz, 1971; Shultz, 1965). These works have relied primarily on published annual climatological data available from the U. S. Weather Bureau, National Weather Service and the National Climatic Data Center. With the exception of error-checking for arithmetic when the data are received by these agencies, the published data are not subjected to rigorous statistical testing (United State Department of Commerce, 1992b).

The importance of utilizing reliable precipitation records is acknowledged (Pyke, 1972), but only Bradley (1976a, 1976b), Granger (1979) and Quintana (1986) have tested rainfall series for homogeneity. There is also considerable disparity in the data formats (annual, seasonal, or water year), length of station records and density of data networks.

Bradley (1976b) and Thom (1981) cite the two most commonly used methods of establishing the randomness (i.e., the homogeneity) of rainfall records as the double-mass graphical analysis and non-parametric Mann-Kendall test. Quintana (1986) uses both methodologies in analyzing Santa Cruz County, CA rainfall records. The double-mass graphical analysis methodology, detailed by Linsley, Kohler and

Paulus (1949) and Conrad and Pollak (1950), was also recommended by the former California Climatologist, Jim Goodridge (personal communication, January, 1991). The Mann-Kendall nonparametric tests are explained in Bradley (1976a) and GB-Stat (Dynamic Microsystems, 1990) the statistical software used for this study. Recent literature (United States Department of Commerce, 1992b) has also cited the Wilcoxon rank-sum test, but no actual studies were found using this method.

Recent literature is rich with studies of El Niño-Southern Oscillation (ENSO) events. However, only a single paper (Schonher & Nicholson, 1989) was found that directly addressed the relationship of ENSO to California rainfall. The typing of ENSO events used in Schonher and Nicholson was adapted from Fu, Diaz and Fletcher (1986) and Quinn, Neal and Antunez de Mayolo (1987). It was updated through the 1991 season by Diaz (personal communication, April 1992), one of the authors of Fu et al. (1986).

The only works that address intraseasonal patterns of rainfall in California are by Rowntree (1991, 1992). These works were based on preliminary San Francisco rainfall data developed by Null (1991).

There is no work that establishes a complete dataset of the San Francisco rainfall record, verifies it and statistically analyzes it. All of the references cited have either incomplete datasets, do not analyze the records completely, or both.

II. SAN FRANCISCO GEOGRAPHY

Topography

San Francisco is in an area of "exceedingly diversified topography" (McAdie, 1903) that is favorable to numerous microclimates (McAdie, 1913; Gilliam, 1962). Winds are channeled over and around the City of San Francisco by the terrain, resulting in pronounced differences in the weather across relatively short distances (Root, 1960; Null, 1978).

The development of the extremely varied California landscape is a consequence of the interaction between of the North American and Pacific tectonic plates (Alt & Hyndman, 1975). The most prominent features, and most important in their effect upon state's climate (Root, 1960), are the Sierra Nevada and Coast ranges, between which lies the Great Valley. All three, generally oriented from northwest to southeast, are parallel to the motion of the North American plate.

San Francisco, which is described by approximately a seven mile by seven mile square, sits at the northern end of a peninsula, straddling the Coast Range just south of where it is broken by the Golden Gate. The melting of the ice sheets that covered the North American continent during the Pleistocene caused sea level to rise and flood the structural depression which is now San Francisco Bay (Howard, 1962;

Alt & Hyndman, 1991). Outflow from the Sacramento and San Joaquin Rivers, fed by the drainages from the surrounding Sierra Nevada and Coast Range, maintains the breach as the only major outlet to the Pacific. San Francisco's steep topography is the boundary between the Pacific Ocean on the west, San Francisco Bay to the east and the Golden Gate to the north. The highest terrain is toward the south, where the elevations rise to over 900 feet, with Mount Davidson's peak of 938 feet the tallest, followed closely by Mount Sutro at 920 feet and both North and South Twin at 919 feet. In addition to the primary north-northwest to south-southeast ridgeline, a number of significant hills dominate the San Francisco horizon, as spurs off of the main axis. The city's steepness is shown by the fact that the 60 meter elevation contour is generally within one mile of sea level (United States Geological Survey, 1973a, 1973b).

Because of the small area that San Francisco covers there are no significant natural drainage basins within the city limits. Those which may have existed historically have long since been constrained to underground culverts and the storm drain system.

Climate

The sharp topography and maritime surroundings of San Francisco couple with the unique California climate to produce a number of extremely varied microclimates within its 46 square miles. California's location in the middle latitudes and on the

west coast of the North American continent, places it in the relatively rare Mediterranean (Etesian) type climate (Köppen type Cs). The only other regions of the earth sharing this climate type are the southwestern tip of Africa, the west coast of Chile, the west coast of Australia, and of course, the region surrounding the Mediterranean Sea (Critchfield, 1966). This type of climate type is generally characterized by moist mild winters and dry summers.

San Francisco's climate is further modified by the location of the City on the northern end of a peninsula, surrounded on three sides by the relatively cool waters of the Pacific Ocean and San Francisco Bay. In addition to the normal cool temperatures of the mid-latitude Pacific Ocean, the water temperatures are modified by the upwelling of cold water along the California coast. This phenomenon is caused by the persistence of the Pacific High and the northwest winds that are constrained by the Coast Range to blow parallel to the coastline. The effects of these winds, the Coriolis Force and resultant sub-surface Ekman Spiral, causes a net transport of surface waters away from the shore. Consequently, as the surface waters drift away from the coast, they are replaced by the upwelling of colder waters from below (Ahrens, 1991).

Summertime in San Francisco is characterized by cool marine air and persistent coastal stratus and fog, with average maximum temperatures between 60°F and 70°F, and minima between 50°F and 55°F. The mornings will typically find the entire city overcast followed by clearing on the warmer bay side, but only partial

clearing on the cooler ocean side. The summertime temperature gradient across the city is generally from northwest to southeast, with the warmer readings farthest from the coast and in the wind sheltered valleys east of the Coast Range bisector. These differences are enhanced further by a strong afternoon and evening seabreeze that is a result of the temperature (and consequently pressure) difference between the Pacific Ocean and the interior valleys of California. These westerly winds are channeled through the Golden Gate and lesser breaks in the high terrain of the Coast Range, reaching a maximum during the afternoon with speeds between 20 and 30 miles per hour being typical (Root, 1960).

Rainfall from May through September is relatively rare, with an aggregate of less than an inch, or only about 5 percent of the yearly average total of approximately 21.5 inches. Off-season rains which do occur are usually the result of weak early or late season occluded fronts, or surges of subtropical moisture from the south that result in brief showers or thundershowers spreading into the area. Considerable moisture is due to drizzle when the marine layer deepens sufficiently. This is seldom enough to measure (i.e., less than .01 inch) on any given day, except along the immediate coast.

Winter temperatures in San Francisco are quite temperate, with highs between 55°F and 60°F and lows in the 45°F to 50°F range (Null, 1978). The main source region of wintertime fog in San Francisco is the Great Valley. Radiation fog is formed in the moist regions of the Sacramento River Delta and is advected through

Figure 1. Rantz Isohyet Analysis (1971)

Suisun and San Pablo Bays and into San Francisco Bay on cool easterly drainage winds. This type of fog is less common than that of summer, but is typically much denser and has a greater impact upon transportation systems due to greatly reduced visibilities (Root, 1960).

Over 80 percent of San Francisco's seasonal rain falls between November and March, occurring over about 10 days per month. Winter rains on the California coast are primarily due to occluded fronts on a trajectory from the west-northwest, and an occasional cold front from the Gulf of Alaska. These systems are driven southward

during the winter as the Pacific High drifts south and westerlies and Polar jetstream dip south of 40°N. Winter thunderstorms occur on the average only twice per season in cold unstable post-frontal airmasses.

There is also considerable areal variation of annual precipitation amounts. The isohyet (contours of equal rainfall) analysis developed by Rantz (1971) depicts a maximum (22 " contour) over the higher terrain in the south central portion of San Francisco (see Figure 1). This is primarily due to the orographic effects resulting from uplift of the airflow from the Pacific striking the Coast Range. The 20" contour is along the western edge and also across the northeastern quadrant of San Francisco, with the 18" contour just touching the waterfront in the extreme northeast.

Snow is extremely rare in San Francisco, with only 10 documented instances of measurable snow at the official observing site in the past 143 seasons. Snow has fallen on a number of other occasions, but usually only in trace amounts or at the higher elevations. Additionally, some of these occurrences are not true snow events but were the result of either small hail or ice pellets (Pericht, 1988).

Spring and fall are transition periods for San Francisco. These seasons usually produce the most cloud-free days between the overcast days of summertime stratus and the rain laden clouds of winter. San Francisco's hottest days are typically during the spring and fall when high pressure builds into the Pacific Northwest and Great Basin, and dry offshore winds replace the Pacific seabreeze. The three hottest days in San Francisco occurred in September and October (Pericht, 1988).

The occurrence of rainfall during the early spring and fall is infrequent, with only about 5 days per month on the average. While most storms during these periods produce light precipitation, the occasional coupling of polar and subtropical airmasses can produce heavy rainfall events. For example, the "Columbus Day Storm" (October 11, 1962 through October 13, 1962) dropped over five inches of rain on San Francisco (Null, 1978).

The diversity of San Francisco's microclimates in general and its rainfall patterns in particular must be considered when utilizing the data from a single site. In a relatively flat region, without the influences of the ocean and topography, there is little discernible change in annual rainfall averages with distance. However, as can be seen in Figure 1, within a distance of only a few miles in San Francisco there can be as much as a 20 percent difference in average annual rainfall (i.e., from 18" to 22").

III. THE SAN FRANCISCO RAINFALL RECORD

History

Weather conditions have been observed in San Francisco since 1847 when the first observations were made at the Presidio of San Francisco. However, the Presidio records were taken only intermittently. It was not until the summer of 1849, when the population of San Francisco increased significantly because of the Gold Rush, that the consecutive rainfall record began. Official consecutive temperature records have been kept from 1871 until present. Measurements of wind, pressure, humidity and sunshine were taken for approximately 102 years, also beginning in 1871, but were discontinued in 1973 when the Weather Bureau Office moved to San Francisco Airport.

Rainfall has been measured by a number of individuals and governmental agencies since 1849, and more importantly, at a number of different locations (Pericht, 1988). A portion of this research is devoted to the examination of the effect that the movement of the site has had upon the veracity of the long term rainfall record. The other meteorological parameters that have been measured are even more susceptible to site relocations, and should be the subject of research as well.

The continuous San Francisco rainfall record extends back to August 14, 1849

when Thomas Tennent, a maker of nautical and mathematical instruments, began taking daily measurements shortly after his arrival in San Francisco. Tennent was born a Quaker in Philadelphia in 1822, and apprenticed as an instrument maker. Early in 1849 he made the 95 day journey to California from the east coast via the Panama Canal, walking the final 110 miles from Monterey. While waiting for his instruments to arrive from the East, Thomas Tennent served as a surveyor and also as a miner (Bay of San Francisco: A History, 1892).

When he finally set up his shop, making nautical instruments for the many ships stopping at San Francisco during the Gold Rush, he installed a rain gauge on the roof. This location was on the northeast corner of Union and Dupont (now Grant), and was the first of six locations at which Thomas Tennent would take observations between August 14, 1849 and February 1, 1871. These sites were all confined to a relatively small area in the vicinity of Nob Hill and Telegraph Hill (see Table 1 and Figure 2). He supplied his meteorological data, along with sunrise, sunset, moon and tide tables, to the local newspapers. His meteorological data were eventually published in Tennent's Nautical Almanac beginning in 1868 and continuing until 1890.

Tennent became a prominent San Franciscan and served three terms as a member of the Board of Supervisors. During his tenure as a surveyor he designed the street layout for all of San Francisco west of Larkin Street, and the house numbering system which is still in use (Bay of San Francisco: A History, 1892).

Several other individuals also took weather observations during the Gold Rush. Dr. William O. Ayres took complete weather observations from 1856 until 1868; however, nearly thirty months of data during that period are either missing or were never taken (Loffman, 1975).

Another prominent early San Franciscan, Dr. Henry Gibbons took observations of rainfall and temperatures from 1850 until at least 1880. Like Tennent he sold his data to the newspapers as a Meteorological Table. Gibbons was one of the founders of California Academy of Sciences, a President of the California State Medical Society and a professor at the Medical College of the Pacific (Bay of San Francisco: A History, 1892).

McAdie (1913) also notes that records of rainfall and temperature were taken by Dr. T. M. Logan and Mr. John Pettee. This is the only reference in the literature to these individuals

On March 1, 1871 the U.S. government took over as the official weather observer for San Francisco when the Army Signal Service began to take the observations. The Signal Service accepted the rainfall data from Thomas Tennent as the "official" early record. This was because of Tennent's expertise as an instrument maker and the fact that he recorded rainfall to the nearest one-hundredth of an inch, while Gibbons measured only to the nearest one-tenth inch (Loffman, 1975). Because of the extreme variability of temperatures, the early temperature records of Tennent, Ayres and Gibbons were not incorporated into the official record (Loffman, 1975).

Consequently, the official San Francisco temperature records do not begin until 1871.

From that time to present, the U. S. government has taken weather observations in San Francisco, first as the Signal Service, and then the United States Weather Bureau (later renamed the National Weather Service). Since 1871, the observation site was moved another six times, but has remained in the northeastern quadrant of the city.

The ninth observation site, at the Mills Building, was destroyed by the earthquake and fire on April 18, 1906, and observations were taken at a private residence about 2 miles to the west until October 1, 1906. There is a discrepancy in the records (Null, 1978; Pericht 1988) as to whether observations were taken between April 18 and May 1, 1906. However, records compiled by McAdie (1906) indicate rainfall for San Francisco on several dates during that period. This corresponds to data available at several other nearby sites during the same period, and has been incorporated into this research.

In 1936, the observation site was moved to the roof of the Federal Office Building (FOB) on Fulton Street, where it remained until 1983. The forty-seven years at this locale was the longest at any site. In April 1973, the Climatology Office in the Federal Building was closed. Readings from that site, and subsequently Mission Dolores, were transmitted by telephone line to the National Weather Service Office at San Francisco International Airport.

Observers discovered that there was a "minor malfunction" in the rain gauge at

the FOB from January 1973 to April 1982 (Pericht, 1988). The FOB readings were found to be only about 70% of actual amounts (by comparison to data from surrounding sites). The record was corrected by substituting data from KGO Television, which was only 2 blocks away, and has been accepted by the National Climatic Data Center (NCDC) as representative (Pericht, 1988).

The most recent San Francisco rainfall site is at Mission Dolores, 1.3 miles south of the FOB, where it was moved in April 18, 1983. This site is the southernmost of the 13 locations, yet it remains within a 1.5 mile radius circle that encompasses all of the aforementioned sites.

The rain gauge that Thomas Tennent used was a six inch square container which funneled into a two inch square receiver, and was capable of holding 4 inches of precipitation (Melnick, 1978). With the establishment of the Signal Service observations in 1871, all observations have been made using a "standard" eight inch circular gauge. Readings from the site were telemetered to the NWS office at San Francisco Airport beginning in 1973.

Table 1. Station Locations (see Figure 2)

Fig. #	Location	Dist. from Last	Began	Ended	Elev. ASL
1	NE Corner Union & Dupont (now Grant)	0.0 mi	8/14/1849	7/1/1851	125'
2	Stockton & California	0.6 mi SSW	7/2/1851	7/1862	175'
3	Powell between Pacific & Broadway	0.3 mi NNW	7/1862	Summer 1863	120'
4	Sacramento between Taylor & Jones	0.4 mi SW	Summer 1863	7/1864	330'
5	Leavenworth between Pine & California	0.2 mi SW	7/1874	7/1866	260'
6	Battery St. between Washington & Jackson	0.9 mi ENE	7/1866	2/1/1871	14'
7	Merchants Exch. Bldg Sacramento & Leidesdorff	0.2 mi SW	2/2/1871	9/3/1890	15'
8	Phelan Bldg. Market & O'Farrell	0.5 mi SW	9/4/1890	10/31/92	41'
9	Mills Bldg. 220 Montgomery St	0.3 mi	11/1/1892	4/18/1906	25'
10	Residence 3018 Clay St	3.1 mi W	5/1/1906	10/1/1906	257'
11	Merchants Exch. Bldg 465 California St	3.0 mi E	10/1/1906	5/12/1936	17'
12	Federal Office Bldg 50 Fulton St	1.0 mi SW	5/13/1936	4/18/1983	52'
13	Mission Dolores 16th & Dolores St	1.3 mi SW	4/18/1983	6/30/1991	75'

Figure 2. Station Locations (see Table 1)

San Francisco Rainfall Data

The San Francisco rainfall record has been chosen for this research for several reasons. It represents the oldest continuous rainfall record in California at a location that is centrally located within California. San Francisco was also chosen because it has been a National Weather Service site in a large urban area and, consequently, monitored closely throughout its period of record.

The rainfall record will be examined on the basis of a July 1 to June 30 season, rather than on the calendar year. The use of rainfall seasons is more appropriate for climates that experience a natural break due to dry summers, such as Mediterranean climates. This greatly diminishes the possibility of rainfall events being split on the transition from December 31 to January 1. This seasonal methodology has been adopted by the National Weather Service (1992) and by researchers of west coast climates, including Granger (1976, 1979), Bradley (1976) and Quintana (1986). For the purposes of brevity in this study, the beginning year of the rainfall season in question will be used. For example, the rainfall season for the period of July 1, 1989 to June 30, 1990 will be denoted as the 1989 season.

The rainfall season in California differs only slightly from the October 1 to September 30 "water year" used by hydrologists and many water agencies. The start of the water year is normally before the rainy season begins in an area with dry summers, and near the time of minima between summer and winter precipitation for areas with year round rainfall.

The San Francisco rainfall data gathered for this research have been compiled from numerous data sources. The daily and monthly rainfall records for San Francisco consist of hand written records as well as published records from the Weather Bureau, National Weather Service (NWS) and the National Climatic Data Center (NCDC) in Asheville, North Carolina.

The primary source for the daily rainfall data from July 1, 1849 until August 11, 1899 was Climate of San Francisco, California (McAdie, 1899), and from the original hand written records. These were found by the author in a storage room at the National Weather Service San Francisco Airport office. Both contained a compilation of Tennent's and the early Signal Service records. (Tennent began taking rainfall records on August 14, 1949, and McAdie (1899) determined that no rainfall occurred between July 1, 1849 and August 14, 1849.)

Rowntree (1990) compiled and error-checked these various daily datasets into a series of 141 MacIntosh Excel spreadsheets, one for each season from 1849 through 1989. They have been converted to IBM Quattro Pro spreadsheet format and updated through June 30, 1992 by the author (see Appendixes A-1 through A-143).

Monthly data for San Francisco were compiled by Null (1978) from data archived by the National Weather Service at San Francisco Airport. The data were from the original hand-written records, Local Climatological Data summary sheets as well as published data from the National Climatic Data Center (NCDC). The monthly and seasonal data (see Appendix B-1) were updated by Pericht (1988) and by

the author through June 1992.

Initial error checking of the monthly data were accomplished by comparing the sums of the monthly amounts with the available published San Francisco records. Subsequently, the monthly and seasonal amounts were cross-checked against the monthly sums of the daily data from Rowntree (1990). Discrepancies were henceforth resolved by comparison to original daily and monthly records.

In addition to the San Francisco records, data for 15 surrounding sites in the San Francisco Bay hydrologic region (Goodridge, 1990) with at least 100 year of record (1889-1991) were used to test the representativeness of the San Francisco data in the homogeneity testing. These data, which came from a hydrologic database, maintained by former California State Climatologist James Goodridge, are for the water year. A seasonal mean for these stations was calculated to generate a regional average or "index" that was used to test the San Francisco data. The Goodridge data have not been rigorously scrutinized, but any minor single station errors will be masked by the averaging process (Table 2, and Figure 3).

Table 2. Sites from Goodridge (1990) (see Figure 3)

Station	Latitude	Longitude	Elevation
Berkeley	37.87 ° N	122.25 ° W	299
Calistoga	38.58	122.58	364
Chabot Reservoir	37.95	122.12	245
Kentfield	37.95	122.55	80
Lagunitas Lake	37.95	122.58	785
Livermore	37.68	121.77	490
Los Gatos	37.22	121.98	428
Mt. Hamilton	37.33	121.65	4206
Napa	38.28	122.27	73
Niles	37.58	121.97	100
Pilarcitos	37.55	122.42	625
San Andreas	37.35	122.40	377
San Jose	37.33	121.90	95
San Rafael	38.00	122.55	120
Crystal Springs	37.50	122.32	300

Figure 3. Goodridge (1990) Locations

Data from 26 rain gauges maintained by the San Francisco Department of Public Works were also examined (Yates, 1988). These gauges are part of the San Francisco Hydrologic and Hydraulic Data Acquisition and Recording (SFHHDAR) system, which was developed to augment data for the sewer and storm drain system in San Francisco. This record has only seven years of data (1976-1983), but is the only one that has representative areal coverage for all areas of San Francisco (Table 3 and Figure 4).

Yates (1988) also developed an isohyetal analysis for San Francisco using the SFHHDAR dataset. This has been reproduced as Figure 5. Because the SFHHDAR record encompasses only a short period of record, there may be differences from a longer term analysis. This is apparent comparing the Yates analysis to the isohyet analysis done by Rantz (see Figure 1).

Table 3. SFHHDAR Raingauge Locations (see Figure 4)

Gage #	Location	Type	Drainage
14	Livingston and Marine	Pole	North Shore
27	Ferry Building	Rooftop	North Shore
28	Bay and Kearney	Pole	North Shore
29	San Francisco Maritime Museum	Rooftop	North Shore
21	Corbett and Romain	Pole	Channel
22	Twin Peaks and Corbett	Tanktop	Channel
23	18th and Church	Pole	Channel
24	4th St. at 3rd St.	Pole	Channel

Table 3, Continued

Gage #	Location	Type	Drainage
26	Scott and California	Pole	Channel
2	Lobos and Plymouth	Pole	Islais Creek
41	Prague at Cordova	Pole	Islais Creek
42	Candlestick Park	Pole	Islais Creek
43	Olmstead at Bowdoin	Pole	Islais Creek
44	City College North Gym	Pole	Islais Creek
46	30th at Laidley	Pole	Islais Creek
47	Starr King School Cafeteria	Pole	Islais Creek
9	Cabrillo at 7th	Pole	Richmond
11	30th at Anza	Pole	Richmond
12	San Francisco Legion of Honor	Rooftop	Richmond
13	Baker Beach	Pole	Richmond
3	San Francisco Zoo	Pole	Sunset
4	Eucalyptus at Sylvan	Pole	Sunset
5	Marne and Portola	Pole	Sunset
7	34th at Quintara	Pole	Sunset
8	Lurline and Funston	Pole	Sunset
10	RSWPCP Main Building	Rooftop	Sunset

Figure 4. SFHHDAR Locations (see Table 3)

Figure 5. SFHHDAR Isohyet Analysis (Yates, 1988)

Although the emphasis of this research deals with daily, monthly and seasonal rainfall data, for completeness, a compilation of very short-term data (Goodridge, 1982, 1992) has been included. Goodridge (1982) compiled National Weather Service records for the California Department of Water Resources for use in drainage design. The dataset has been maintained by Goodridge (1992) has been updated through 1990 (see Appendix C-1).

This short duration data includes the maximum 3, 6, 12 and 24 hour rainfall amounts for each season from 1890 through 1990. Beginning in 1907 and continuing through 1990, there is also 5, 10, 15 and 30 minute and 1 and 2 hours maxima. Most noticeable are data missing from the 1916 season for durations less than two-hours, and data less than one-hour duration from the 1985 season, and also for the 1987 through 1990 seasons.

IV. HOMOGENEITY TESTING

Definitions

Because climate (and consequently climatic data) can be highly variable, it is often difficult to differentiate between fluctuations occurring randomly and those that have meteorological significance. It is therefore necessary with any climatic time series to determine if the data are homogeneous. Conrad and Pollack (1950) offer the following definition: *A numerical series representing the variations of a climatological element is called "homogeneous" if the variations are caused only by variations of weather and climate.*

It is impossible, due to naturally occurring variations, to tell if a climatological time series is "absolutely homogeneous." Consequently, systematic errors caused by other than natural reasons must be deduced by examining data from surrounding sites. This methodology is defined by Conrad and Pollak (1950) as follows: *A climatological series is relatively homogeneous with respect to a synchronous series at another place if the differences (or ratios) of pairs of homologous average constitute a series of random numbers that satisfies the law of errors.*

Generally there are two ways, discontinuity and trend, that nonrandomness can be introduced into a precipitation record (Quintana, 1986). These can sometimes be

discerned from station histories, but often a statistical analysis is necessary to test for any nonrandomness.

The first, and most common, type of nonrandomness is a "discontinuity", due to abrupt changes in the precipitation ratio. Most discontinuities in rainfall records result from changes in the location of the gauge, instrument malfunctions, or from changes in the gauge's exposure. Factors that can affect the exposure of a site include nearby construction, vegetation growing or being cut down, or height changes. These type of changes can cause a distinct break in the times series.

Trend is second type of nonrandomness. This occurs when there is a gradual shift in the slope of the time series. Changes in trend may be the result of natural or human-induced factors, such as the growth of vegetation or by nearby construction.

Readers should note that the establishment of homogeneity does not guarantee the accuracy of the data, only that it is homogeneous over the period of interest and only at the site of interest. *The largest source of error connected with rain gauge readings lies in the assumption that they represent the actual precipitation at the site* (Court, 1960).

Methods of Testing for Homogeneity

Tests for homogeneity of a rainfall record take the form of the null hypothesis (H_0) that the series exhibits the characteristics of a random series. Therefore, by using statistical tests that reject the null hypothesis, it can be determined whether or

not the rainfall record is indeed nonrandom (Bradley, 1976a).

Time series, such as rainfall records, are generally tested for homogeneity using nonparametric tests because the frequency distribution of the data is not known. Two widely used nonparametric tests used to determine the homogeneity of a rainfall record are a double-mass analysis (Linsley, Kohler & Paulus, 1949) and the Kendall tau (τ) correlation test (Thom, 1981). Both of these are both relatively simple nonparametric tests that have no specific requirement to know the Gaussian (normal) distribution of the data.

Double-mass analysis is a graphical technique that is an objective means of determining breaks in a time series. The accumulated sums of a dependent variable are plotted versus the accumulated sum of the average of the independent variables in a scattergram. For precipitation data, the dependent variable would be the amount of rainfall at the station of interest and the independent variables would be the average of the rainfall at representative surrounding stations. A "best fit" line is then drawn and it should be a nearly linear plot if representative stations were found. Changes in the slope of the plot indicate a possible discontinuity in the data. If distinct slope changes occur, then there will be an intersection of adjacent linear plots. These "break points" should then be examined to determine the source of the change. Corrections can be made to the record by adjusting the dependent variable using the ratios of the change in the slope.

Double-mass plots do have the disadvantage of not being sensitive to breaks

near either end of the record, and are also only useful for those periods that stations have over-lapping records. Furthermore, they cannot distinguish the cause of break (Linsley et al., 1949). The cause of the break would need to be determined by a careful examination of the station history.

The other methodology suggested by Thom (1981) is the use of a nonparametric test. Because natural trends in climatological series are not likely to linear, nonparametric tests are used to identify these trends. The Kendall tau (τ) rank correlation is such a robust non-parametric test of the statistical alternative to trend (i.e., randomness) (McCullagh, 1974). It takes the form:

$$\tau = \frac{S}{\frac{1}{2}N(N-1)} \quad (1)$$

where N is the number of pairs and S is the ordered ranking of the pairs.

The statistical significance is then tested by calculating a z-score (McCullagh, 1974). The z-score, z , expresses a specific value in terms of the number of standard deviations it is from the mean. It takes the form:

$$z = \frac{\tau}{\sqrt{\frac{2(2N+5)}{9N(N-1)}}} \quad (2)$$

where τ is the Kendall tau statistic and N is the number of pairs examined.

Results of Homogeneity Testing

The seasonal rainfall record for San Francisco (1889 to 1991) was converted to "water year" to facilitate homogeneity testing with the Goodridge dataset. All of the stations from Goodridge are in the San Francisco Bay drainage province (Department of Water Resources, 1981), are within 60 miles of San Francisco and have at least 100 year of overlapping records. The 15 stations used were Lagunitas Lake, Kentfield, San Rafael, Calistoga, Napa, Berkeley, Chabot Reservoir, Livermore,

Mount Hamilton, Niles, San Jose, Los Gatos, San Andreas, Upper Crystal Springs and Pilarcitos (see Table 2 and Figure 3). While it would have been desirable to use the "rainfall season" throughout this study, the Goodridge data were arrayed solely by water year. The shift from rainfall season to water year (i.e., July 1 to October 1) should have no significant effect upon the homogeneity testing, as this three month period is characteristically dry, accounting for less than 3% of the seasonal average (Null, 1978). Once the homogeneity of the San Francisco record can be verified, the record can be used as either rainfall season or water year.

The data were tested using both the double-mass graphical analysis and the Kendall rank correlation statistic. All calculations were done using GB-Stat (1991), a commercial statistics package; data were imported from Quattro Professional 4.0 (1992).

The double-mass plot (Figure 6) was constructed by plotting the accumulated sum of rainfall at San Francisco along the ordinate, and the accumulated sum of the average of 15 other stations in the region along the abscissa. A visual analysis of the double-mass plot shows a minor change in slope that corresponded to the period in 1906 (i.e., the San Francisco sum is 362.61 and the 15 station sum is 577.73) when the rain gauge was moved several times following the San Francisco Earthquake. Immediately after the quake, there was a period of building in San Francisco; a trend which continues. While this type of analysis does not specify the reason for any changes, it can be surmised from the station record that the 1906 moves resulted in

the minor adjustment in the slope of the plot.

The calculation of the Kendall rank correlation statistic yielded a value of $\tau = 1.00$, with a resulting z-score of 14.81. This has a statistical significance of $< .0001$. This shows that there is a very strong correlation between the San Francisco record and the average for the 15 surrounding stations studied. Because of the minor break in the double-mass plot and that the Kendall rank correlation was so robust, then the null hypothesis "that changes to the time series are random" must be rejected.

This can also be seen by comparing the linear trend of the time series from 1849 to 1991 (Figure 7) with the trends for the 1849 to 1905 (Figure 8) and 1907 to 1991 (Figure 9) periods. The apparent negative trend ($Y = 77.0112 - 0.0289X$) for the entire period is a result of the strong downward bias ($Y = 143.8281 - .0644X$) from the first 56 years of record. Since 1907 the trend been nearly flat ($Y = 24.9618 - .0023X$).

Further research using the San Francisco rainfall dataset should address this possible break in the record and its significance. This can be done by adjusting the slope of the curve on either side of the break to match the other. It is problematical as to which side is adjusted, depending if it is desired to have the "old" record match "new" or vice-versa.

Figure 7. Least Squared Fit, 1849-1991
 $Y = 77.0112 - 0.0289X$

Figure 8. Least Squared Fit, 1849-1905

$$Y = 143.8281 - 0.0644X$$

Figure 9. Least Squared fit, 1907-1991
 $Y = 24.9618 - 0.0023X$

V. STATISTICAL ANALYSIS

Methodology and Definitions

A wide array of statistical parameters can be used to describe climatological data and its distribution. These include many common statistical terms as well as some unique to climatology. The following functions are those that will be used in statistically describing the rainfall record of San Francisco.

The "mean" is the arithmetic average of rainfall over time and represents the central tendency of the data. The mean seasonal rainfall, $\bar{x}$, is given by the expression:

$$\bar{x} = \frac{\sum x}{n} \quad (3)$$

The mean alone is usually not sufficient enough to characterize a station's rainfall. For example, San Francisco and North Platte, Nebraska both receive about 20 inches of rainfall per year, yet with very different seasonal distributions. San Francisco receives approximately 85 percent of its rain between October and April, and North Platte's receives about 85% between March and September.

The "standard deviation" (σ) of a population is a measure of the extent to which individual values are scattered about, or vary from, the arithmetic mean.

Mathematically the standard deviation, σ , is expressed:

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}} \quad (4)$$

where x is values of each sample, $\bar{x}$ is the mean, and n is the number of samples. It is in the same units as the sample.

If there are large differences between the samples and mean, then the higher the variability of the sample. With a normal (i.e., Gaussian) distribution it can be anticipated that approximately 68% of the values will be within one standard deviation of the mean, 27% between one and two standard deviations of the mean and the 4% between two and three standard deviations (McCullagh, 1974). A large standard deviation in a rainfall record would indicate that the mean poorly represents the amount of rainfall that can be expected in any given year.

The "coefficient of variation" provides the same information, but is normalized on the basis of the mean precipitation. The coefficient of variation, cv , is expressed as:

$$cv = \frac{\sigma}{\bar{x}} \quad (5)$$

where σ is the standard deviation and $\bar{x}$ is the mean.

For example, if the coefficient of variation for two stations is the same, then the ratio of the fluctuation about the mean is the same for both, even though they may have different means. The coefficient of variation is a dimensionless number because it is a ratio of the mean and standard deviation which had the same units of measure (Bradley, 1976b).

The "coefficient of skew" is another dimensionless number. It is a measure of the lack of symmetry, or lopsidedness of a dataset. It is computed using the sum of the cube of the individual deviations divided by the cube of the standard deviation. The coefficient of skew, g , is expressed:

$$g = \frac{N}{(N-1)(N-2)} \sum \left(\frac{x_i - \bar{x}}{s} \right)^3 \quad (6)$$

where N is the number of values, x represents the individual values and $\bar{x}$ is the mean.

Rainfall data usually have a positive skew, meaning that the peak of the frequency distribution (i.e., the most likely rainfall amount) is shifted to the left of the mean (Panofsky & Brier, 1968). This occurs because rainfall values are bounded by zero at the lower end and unbounded at the upper end. The coefficient of skew is used to select frequency factors when assigning return periods to specific rainfall events (Goodridge, 1982).

Applying these statistical measures to the monthly dataset (see Appendix B-1) yields an overall picture of San Francisco rainfall seasons (see Table 4 and Figure 10). As discussed earlier, the rainfall season reaches a maximum in mid- winter, with 85% of the total seasonal rainfall falling from October through April.

Table 4. Monthly Characteristics

	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.
Avg.	0.02	0.03	0.28	1.03	2.57	4.13	4.54	3.57	3.11	1.48	0.58	0.15
Std.Dev.	0.07	0.10	0.57	1.20	2.22	3.07	3.36	2.58	2.07	1.55	0.77	0.32
C.V.	3.67	2.91	2.05	1.16	0.87	0.74	0.74	0.72	0.67	1.05	1.32	2.16
Median	0.00	0.00	0.06	0.65	1.99	3.45	3.91	2.95	2.69	1.02	0.30	0.03
Max	0.73	0.78	5.07	7.28	11.78	15.16	24.36	12.52	9.04	10.06	4.02	2.57
Year	1975	1976	1904	1889	1885	1866	1862	1878	1983	1936	1925	1884
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.03	0.00	0.00	0.00
Year	*90	*88	*45	*12	*4	1989	1920	1864	1923	*4	*16	*49

* More than one event. Number denotes total occurrences.

Figure 10. Average Monthly Rainfall

Wet and Dry Period Return Periods

The frequency of a specific rainfall event occurring is defined by its return period. The return period is determined by fitting a station's rainfall record to a specific distribution curve which is representative of the location of interest.

Through an analysis of historical rainfall data from over 1500 California rainfall sites, Wu and Goodridge (1976) have assigned distribution curves to both short (i.e., less than one year) and long duration events. The distribution curve

assigned by Wu and Goodridge to one year California rainfall events is a gamma, Pearson Type III, distribution.

The frequency that a given event will exceed a certain threshold is then determined by the relationship of the chosen distribution to the calculated coefficient of skew. A multiplier for each exceedence factor, Γ , corresponding to a particular coefficient of skew was derived from the Pearson Type III table. The return period, R_E , is calculated by multiplying the standard deviation by this factor, and adding the resulting product to the mean:

$$R_E = (\Gamma * \sigma) + \bar{X} \quad (7)$$

where R_E is the return period and Γ is the multiplier from gamma distribution.

The following statistical parameters from the entire 143 season period of record were used to calculate the return periods for specific dry and wet events at San Francisco (see Table 5 and Table 6).

Period of Record:	143 Seasons
Mean Rainfall:	21.50 inches
Median:	20.745 inches
Minimum:	7.42 inches
Maximum:	49.27 inches
Range:	41.85 inches
Standard Deviation:	7.43 inches
Coefficient of Skewness:	.85

Tables 5 and 6 show the expected frequency at which a specific amount of rainfall at San Francisco would statistically be expected to occur. For example, a

seasonal amount of 7.76 inches has a return period of 200 years, or an exceedence factor of .005. Similarly, a season receiving 46.27 inches would also have a return period of 200 years.

Table 5. Return Periods of Less than Normal Rainfall

Return Period (Years)	Exceedence Frequency	Amount (Inches)
5	.2000	15.19
10	.1000	12.88
20	.0500	11.22
25	.0400	10.78
40	.0250	9.95
50	.0200	9.60
100	.0100	8.65
200	.0050	7.76
1000	.0010	6.48
2000	.0005	5.97
10000	.0001	5.28

Table 6. Return Periods of Greater than Normal Rainfall

Return Period (Years)	Exceedence Frequency	Amount (Inches)
5	.8000	27.40
10	.9000	31.58
20	.9500	35.31
25	.9600	36.43
40	.9750	38.81
50	.9800	39.86
100	.9900	43.14
200	.9910	46.27
1000	.9990	53.21
2000	.9995	56.12
10000	.9999	62.61

For completeness the short-term frequency and duration data computed by Goodridge (1992) has been included as Appendix C-3.

Variations with Time

An examination of the time series for the entire period of record shows that the seasonal rainfall has fluctuated with time. Using the "normal" period of 30 years, running 30 year means and standard deviations were calculated and plotted (see Figure 11 and Appendix B-2). This was accomplished for each 30 year period, beginning with the period of 1849-1878 and continuing for each of the 30 year periods through 1962-1991.

Figure 11. 30 Year Mean and Standard Deviation

These data are shown in Figure 11, with the seasonal rainfall, running 30 year mean and running 30 year standard deviation plotted against time. There was a maximum in the 30 year standard deviation in 1890 when it peaked at 9.60 inches, then a gradual decline to a minimum of 5.22 inches in 1921. After remaining relatively flat, between 5.22 and 6.58, from 1921 through 1957 the standard deviation has risen slowly to above 8 inches by 1986.

The data were also analyzed for five, ten and fifteen year periods (Appendix B-2). The decadal and thirty year means and standard deviations are summarized in

Table 7. To delineate longer wet and dry periods the data were also sorted by accumulated seasonal rainfall for one, two, three, four and five year periods and are summarized in Appendix B-3.

Table 7. 10 and 30 Season Subperiod Rainfall

Period	10 Year Mean	10 Year Std. Dev.	30 Year Mean	30 Year Std. Dev.
1850-1859	22.75	7.28		
1860-1869	25.79	11.29		
1870-1879	22.70	7.59	23.75	9.02
1880-1889	23.60	6.27	24.03	8.72
1890-1899	21.88	9.03	22.73	7.72
1900-1909	21.05	2.92	22.17	6.62
1910-1919	20.81	6.66	21.24	6.71
1920-1929	19.91	5.87	20.59	5.42
1930-1939	18.73	4.93	19.82	5.93
1940-1949	22.08	5.84	20.25	5.74
1950-1959	21.35	8.10	20.72	6.59
1960-1969	18.91	5.28	20.78	6.66
1970-1979	19.68	7.99	19.98	7.32
1980-1989	23.55	8.17	20.71	7.55

Despite these "apparent trends" seen in Figure 11, an analysis done by Fairley (1991) showed that the "trends" were random. To do this Fairley generated 100 different random series from the 142 year dataset with eight cases showing a larger deviation than the actual time series. Using these simulated runs, he determined that the "apparent" shift was not statistically significant. The upper panel of Figure 12

shows the actual running 30 year mean rainfall times series and the bottom panel shows one of the randomly generated time series. This random series was the best of the eight that was generated in mimicking the real dataset.

However, it is important to note that the Fairley analysis only shows that any changes in the running 30 year mean annual rainfall record were not "statistically significant." It does not say that there was absolutely no variability in the record. This collaborates Granger (1977) who found no significant trend in California rainfall over the period 1872-1971.

Figure 12. Simulation of Actual vs. Simulated Rainfall

VI. ANALYSIS OF DAILY DATA

Discussion

Short-term precipitation forecasting is done as a matter of course from one to five days (National Weather Service, 1990), and only a general outlook is produced for the period of six to ten days. For many activities that are sensitive to rainfall, decision-makers must often plan well beyond this time frame. One basis for these decisions is an analysis of climatological data.

To develop a daily climatological dataset for these purposes, a methodology for reducing the long-term daily San Francisco rainfall record will be developed. From this dataset, the frequency and amount of rain that has fallen on any date during the period of record will be derived. Additionally, the climatological probability of rainfall occurring on a given date, the average amount of rain that has fallen on a given day, and the occurrence of discrete amounts of daily rainfall, will be determined.

Methodology

As with the analysis of the monthly and seasonal data, there were several phases to the reduction of the dataset from the original Macintosh spreadsheets into a MS-DOS compatible format. In addition to the dataset that resulted, the methodology

to translate between the two most commonly used, but incompatible platforms, is an extremely valuable tool in itself.

The original Macintosh Excel spreadsheets were saved in the standardized Lotus format (.WK1 file extension). Initially, these Macintosh spreadsheets were then read into a MS-DOS machine through a special disk controller and its associated software that reads and writes both DOS or Macintosh data files. Later, data were saved directly to a MS-DOS formatted 1.44 MB disk using a newer Macintosh equipped with a Superdrive.

In the next step, the 143 individual DOS .WK1 spreadsheets were consolidated into a single Quattro Pro (.WQ1 format) spreadsheet. This large file (approximately 630, 000 bytes) served as a master file for all the work done in this study. Because of its size, and the limitations of working with a file in excess of fifty-one thousand datapoints, Quattro spreadsheet sub-files for 30 year periods were created. Eventually it was necessary to produce even smaller files (5 and 10 year sub-periods) to increase processing speed and improve data management.

The data were initially screened to examine each day of the year for all 143 years for non-blank entries. This was done using an @COUNT function, which accumulates a count of all entries that are not blank or numerically zero, to derive the number of times it had rained on each day of the year. The resultant data were arrayed into a table showing all 366 days of the year (including February 29th) as the Number of Rain Days, 1849-1991 (see Appendix D-1).

By developing a filtering formula for each day, similar tables were constructed for days when the rainfall was greater than or equal to .10 inch, .25 inch and .50 inch (Appendices D-2, D-3 and D-4). The procedure to calculate these used the @IF and @COUNT operators, examining each cell for values greater than or equal to the given value, then using the @COUNT function to count those that successfully passed the test.

The climatological probability of an event is defined as the ratio of the number of times that the event has occurred to the total number of events of all types. In the case of the Probability of Daily Rain, 1849-1991 (Appendix D-5), the count for each day (Appendix D-1) was divided by 143, the total number of seasons analyzed.

Appendix D-6 summarizes the Average Daily Rainfall, 1849-1991 for each day of the year. These were derived by summing the rainfall that had fallen on any given day and dividing by the 143 seasons of record.

Also calculated is the Rainy Day Average, 1849-1991 (Appendix D-7), which indicates the average amount of rainfall on days that it rained. The rainy day average is computed by taking the total amount it has rained on a given day, and dividing it by only the number of days it rained. One application of the rainy day average is by the National Weather Service (1992) in quantitative precipitation forecasting to normalize forecasts in orographic areas.

Using an @MAX function to find the maximum value in a group of cells, the Maximum Daily Rain was found for each day (Appendix D-8). This value represents

the greatest amount that it has rained on any given date.

Finally the Accumulated Seasonal Rainfall, 1849-1991 (Appendix D-9 and Figure 13), was developed from the average daily rainfall data. Beginning with July

1st, the average daily rainfall amounts were added consecutively to derive the amount of rain that accumulates through the season. For example, the amount on January 23rd would be the average rainfall expected to have fallen since the beginning of the rainfall season. The final amount on the June 30th, therefore, represents the average annual rainfall.

Analysis

As would be expected in a Mediterranean climate, the average daily rainfall amounts peaked both in frequency and intensity during December and January, and reached a minima in July and August. There were only two days, the 7th and 14th of July on which measurable rain has not been recorded in 143 seasons of interest. Coincidentally, the 8th of July has had rain on four separate occasions. This includes the wettest July day on record in San Francisco with .72 inches.

A regression analysis of average daily rainfall was performed. It showed that the data are best defined with a third order equation:

$$Y=6.388-.393X+.006X^2 \quad (8)$$

where X is the day of season, and Y is the count for the day. There is a .948 positive correlation between X and Y , with a degree of confidence of .0001. An even stronger correlation and better fit could probably be achieved with a curve fitted as a function of a sine wave.

The cumulative daily rainfall was also subjected to a regression analysis. The best fit was obtained by applying a 7th order equation of the form:

$$Y=.120-.026X+.001X^2-.00003X^3+\dots \quad (9)$$

where X is the day of the season, and Y is the cumulative rainfall through that day.

The fit of the data to this equation is excellent with a positive correlation of .9999 and a .0001 degree of confidence.

The daily San Francisco rainfall dataset generated by Rowntree (1990) is the only complete listing of every day of measurable rainfall in San Francisco since the records began in 1849. By utilizing this unique dataset, it was possible to calculate the various characteristics of the rainfall record on any day of the year. These records have already been used by the author to provide date specific San Francisco rainfall climatology information to other researchers and the general public.

VII. RELATIONSHIP TO ENSO EVENTS

An apparent factor in the variability of the seasonal rainfall in California is the occurrence of ENSO events. In this section the relationship between ENSOs and San Francisco rainfall for the period 1949 through 1991 will be examined. This limited period was chosen because two of the primary sources of data on El Niño-Southern Oscillation events (Fu et al., 1986; Schonher & Nicholson, 1989) concentrated on this time frame.

The term "El Niño" is the commonly used term for periodic positive sea surface temperature (SST) anomalies in a wide area of the equatorial eastern Pacific. This semi-regular occurrence is between three and seven years and of varying intensities (Philander, 1991). The Southern Oscillation is the breakdown in the normal trade wind pattern across the Pacific as the sea level atmospheric pressures increases over the western Pacific and decreases in the eastern Pacific. A linkage has been established between El Niño and the Southern Oscillation (Fu et al., 1986), and the combination is collectively called ENSO.

Fu et al. (1986) classified ENSO events into three different types, based upon the intensity and areal extent of the SST anomalies for the 11 ENSO events between 1950 and 1982. Both 1987 and 1991 have also been classified as ENSO years by

Diaz (personal communication April 23, 1992), a co-author of Fu et al. (1986) paper.

As shown in the Figure 14, Type 1 events result when a very warm SST anomaly, greater than 1.7° , extends along the equator from 160°E to 80°W . The following eight seasons have been classified as Type 1, "strong" events: 1951, 1957,

1965, 1968, 1972, 1977, 1982 and 1991 (see Figure 15). Additionally, Schonher and Nicholson (1989) have classified all but 1965 as "wet" California seasons.

The seasons of 1953, 1963 and 1969 have been characterized as Type 2 events by Fu et al., and as "normal" by Schonher and Nicholson. Additionally, Diaz has classified the 1987 season as Type 2. There is only a minor positive

Figure 15. Normalized Rainfall and ENSO Type

SST anomaly (less than 1.7°C) during these events, but it extends across most of the equatorial Pacific, between 120°E and 80° .

Finally, only 1976 has been classified by Fu et al. as a Type 3 ENSO event, and by Schonher and Nicholson as "dry." The SST pattern associated with Type 3 shows only a minor positive SST anomaly (less than 1.7°C), confined to the equatorial Pacific east of 150°W to 80°W .

An analysis of these ENSO events in relation to the daily, monthly and seasonal San Francisco rainfall record shows several interesting characteristics. However, because the period of record for these ENSO events is relatively short, no attempt is made here to develop a statistical analysis of this portion of the data.

In this section, the terminology "much above normal" and "much below normal" refer to values greater than one standard deviation above and below the mean. Simply "above normal" and "below normal" will be used to denote amounts that are greater or less than the mean by less than one standard deviation.

Monthly Analysis

The strongest signal that is apparent is for a positive monthly precipitation anomaly during February. During this month, five out of the eight Type 1 ENSO seasons were much above normal and one other was above normal (see Table 8). January and March totals also showed a wet bias during Type 1 ENSO events with three of the eight seasons being much above normal. For January precipitation, two

additional seasons were above normal, and March had two above the mean.

Table 8. Relationship of ENSO Type 1 to Monthly Rainfall

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Mean	1.18	2.88	3.54	4.37	3.15	3.13	1.38
Std Dev	1.37	2.33	2.39	2.68	2.29	2.26	1.35
1951	0.81 -	3.33 +	7.92 ++	10.69 ++	2.62 -	4.90 +	1.08 -
1957	3.46 ++	1.13 -	3.60 +	4.38 -	7.78 ++	8.22 ++	5.47 ++
1965	0.01 -	4.79 +	3.51 -	3.27 -	2.72 -	0.80 --	0.36 -
1968	0.62 -	2.67 -	3.91 +	7.74 ++	7.26 ++	1.01 -	1.74 +
1972	5.41 ++	6.40 ++	3.53 -	9.38 ++	6.32 ++	2.63 -	0.02 --
1977	0.17 -	2.22 -	3.30 -	6.94 +	4.14 +	5.90 ++	4.21 ++
1982	2.79 ++	5.62 ++	2.22 -	5.77 +	8.06 ++	9.04 ++	3.48 ++
1991	2.35 +	0.50 -	2.32 -	2.09 -	6.34 ++	4.14 +	0.38 -

Note. Rainfall data in inches

- Greater than 1 standard deviation below mean
- Less than 1 standard deviation below mean
- + Less than 1 standard deviation above mean
- ++ Greater than 1 standard deviation above mean

Intraseasonal Analysis

As would be expected from the monthly data, there was also a strong positive relationship between ENSO events and intraseasonal rainfall of January through March. Of the eight Type 1 seasons, the period January through March has rainfall which was much above normal six times and another above the mean. Rainfall during February through March period was slightly above normal three times and

much above normal three times.

Rainfall in the second half of the season (i.e., January through June) shows a very strong positive precipitation anomaly, with five much above normal and two others slightly above. The first half (Jul.-Dec.) rainfall signature was weaker, being much above the mean during two of the Type 1 ENSO events and slightly above another three. For the entire season, four of the eight rainfall events were much above normal and two more were slightly above.

Table 9. Relationship of ENSO Type 1 to Intraseasonal Rainfall

	Jan.-Mar.	Feb.-Mar.	Jul.- Dec.	Jan.- Jun.	Season
Mean	10.65	6.28	7.99	12.53	20.52
Std Dev	4.99	3.78	4.11	5.65	7.56
1951	18.21++	7.52 +	12.58 ++	19.98 ++	32.56 ++
1957	20.38 ++	16.00 ++	9.66 +	26.82 ++	36.48 ++
1965	6.79 -	3.52 -	8.82 +	7.51 -	16.33 -
1968	16.01 ++	8.27 +	7.29 -	17.80 +	25.09 +
1972	18.33 ++	8.95 +	15.93 ++	18.43 ++	34.36 ++
1977	16.98 ++	10.04 ++	6.68 -	21.19 ++	27.87 +
1982	22.87 ++	17.10 ++	11.35 +	26.82 ++	38.17 ++
1991	12.84 +	10.75 ++	5.59 -	13.61 +	19.20 -

Note. Rainfall data in inches

- Greater than 1 standard deviation below mean
- Less than 1 standard deviation below mean
- + Less than 1 standard deviation above mean
- ++ Greater than 1 standard deviation above mean

Daily Analysis

Along with the positive anomalies for the monthly data, the daily rainfall amounts yielded a much above normal number of rainy days during ENSO seasons. During the eight Type 1 ENSO events, five exceeded a standard deviation above the mean number of all rain events and another was slightly above. The number of days with more than a half inch of rain was greater than the mean during two of the eight seasons and much above normal four times.

Table 10. Relationship of ENSO Type 1 to Daily Rainfall

	Days > Trace	Days $\leq$.50"	Days $\geq$.50"
Mean	67	52	14
Std Dev	14	10	6
1951	90 ++	70 ++	20 ++
1957	97 ++	65 ++	32 ++
1965	54 -	43 -	11 -
1968	93 ++	77 ++	16 +
1972	84 ++	59 +	25 ++
1977	81 +	57 +	24 ++
1982	97 ++	70 ++	27 ++
1991	59 -	42 --	17 +

Note. Rainfall data in inches

- Greater than 1 standard deviation below mean
- Less than 1 standard deviation below mean
- + Less than 1 standard deviation above mean
- ++ Greater than 1 standard deviation above mean

Conclusions

There are strong signatures of above normal rainfall during seasons with corresponding ENSO Type 1 events, which are the strongest events. There appeared to be the strongest relationship between these ENSO events and above normal San Francisco seasonal rainfall during the period January through March. This carries over into the total number of rainy days, though there is no preference for days with greater amounts of rain as opposed to lighter events.

This is typically the time of year when ENSO events peak (i.e., there is the greatest positive SST anomaly), resulting in increased convection in the subtropical Pacific and a northward displacement of the subtropical jetstream. At the same time, the polar jet is near its southernmost position, with a net result of a pattern very conducive for heavy California rainfall events.

Conversely, a minimum was seen with the Type 3 event in 1976, though with only a single sample it is impossible to draw precise conclusions. The Type 2 events were similarly sparse with only four events during the forty-one seasons of interest. These years were classified by Schonher and Nicholson (1989) as "normal," and all four fall within one-half of a standard deviation of the mean.

The evidence from ENSO events presented here is not complete enough to use as a predictor; however, it does provide another source of information for decision makers. It also points to the importance of not merely identifying the existence of an ENSO event, but also to determining the "type" of event that it is. The evaluation of

additional El Niños, both past and future, will be necessary to draw any firm conclusions as to any significant impact upon San Francisco rainfall.

VIII. INTRASEASONAL VARIABILITY

Nearly as important as the amount of rainfall for a given season is the distribution and variability of the precipitation during that season. Depending upon the activity, the time of year that the rain falls can have a significant effect. For example, activities such as water management benefit more from late season precipitation rain as opposed to an equal amount at the beginning of the season. This was evidenced during the multi-year California drought from 1986 to 1991, when the heavy rainfall during the "Miracle Marches" of 1989 and 1991 and the "Fabulous February" of 1992 kept the state from having an even more critical water crisis.

The intraseasonal variability of the precipitation can also impact surface runoff, antecedent soil conditions, plant growth and numerous other ecological factors. Even something as seemingly mundane as the quality of a given wine grape harvest can be impacted by climatic factors (Lantis, Steiner & Karinen, 1970).

The two most common methodologies for climate "typing" (i.e., Köppen and Thornthwaite) are based on averages of monthly and seasonal rainfall. Neither examines the characteristics of any particular season. This deficiency has been addressed by Rowntree (1991,1992) who uses the long term San Francisco rainfall record to classify intraseasonal rainfall. Portions of Rowntree's work are replicated

here with the redefinition or addition of several categories.

It should be noted that these classifications are subjective and the use of slightly different criteria to delineate the individual categories could result in more or fewer cases falling into a particular group. Additionally, each season has been classified into only one type, though some exhibit the characteristics (or partial characteristics) of multiple categories. To classify each season, the characteristic that had the most significant impact upon the season's deviation from a normal year was the overriding criteria.

In this section, seasonal rainfall that is at least one standard deviation (7.43 inches) above the 143 year mean (21.50 inches) is defined as "wet." Conversely, "dry" seasons are those that are at least one standard deviation below the mean.

Wet Season Patterns

Rowntree (1991, 1992) has proposed six different signatures for the 21 wet seasons where the rainfall exceeded 28.93 inches (i.e., more than one standard deviation above the mean). An examination of the data supports the use of only five categories, with the "multi-day" and "one-day" events combined being redefined as "big-storm" (see Table 11). In some cases, these big-storms were the result of a single storm (i.e., numerous consecutive days of rain) or several storms during the month.

The "big-storm" category accounted for six of the twenty-one seasons that

were classified as wet. They were characterized by near normal rainfall for the season combined with a large storm event that pushed the seasonal total into the wet category. The wettest season on record in San Francisco, 1861, had 49.27 inches of rain and falls into the big-storm category. The month of January 1862 had a total of 24.36 inches, during which 18.63 inches fell in two storm periods.

The second most prevalent signature is characterized as "late-season" wetness, with the positive rainfall anomalies during March, April or May. This pattern also occurred during six seasons, the most recent being 1982 with an accumulation of 12.99 inches for March, April and May.

The "multi-month" category occurred during five of the twenty-one wet seasons. In each of these seasons at least four out of the five wet months (i.e., November through March) had above normal rainfall. Characteristic of this pattern would be the 1867 season when November, December, January, February and March had 3.41, 10.69, 9.50, 6.13 and 6.30 inches, respectively, for a total of 36.03 inches.

The last two wet categories, "Bi-modal" and "Early Season," are only composed of two cases each, but are unique and deserve mention. Bi-modal events are defined by Rowntree as those that have early and late season abnormally high rainfall that bracket a normal or dry mid-winter. For example, San Francisco received 11.78 inches of rain in November of 1885, but February and March 1886 had a total of only 2.31 inches followed by a wet April that had more than three times its mean with a total of 5.28 inches.

The second wettest season on record for San Francisco was 1889 during which 45.85 inches fell. This season characterizes the "early-season" wet pattern, with over half of the season's rain (23.99 inches), and more than a full season's mean seasonal rainfall for October, November and December alone.

Each of the six wettest seasons on record in San Francisco (i.e., 1861, 1889, 1867, 1981, 1982 and 1957) were seasons identified by (Quinn et al., 1987) as ENSO. Of the six wet seasons since 1950, which were categorized by Fu et al. (1986), four have been during Type 1 ENSO events. Two of these four ENSO events (i.e., 1957, 1982) had late season characteristics. This timing corresponds to the peak of the ENSO events when the subtropical jet has been displaced northward and the polar jet is near its southernmost track. Correspondingly, the late season rains are to some extent the result of the transport of subtropical moisture into the westerlies and over San Francisco.

Table 11. Wet Season Characteristics

Season	Total (Inches)	# Days of Rain	# Months > Mean	# Months > +1 STD	Characteristic
1861	49.27	83	4	3	Big-storm
1889	45.85	107	5	2	Early Season
1867	38.84	78	5	3	Multi-month
1981	37.10	81	5	3	Big-storm
1982	36.75	100	4	3	Late Season
1957	36.48	97	3	2	Late Season
1852	35.26	70	3	2	Big storm
1877	35.18	83	3	2	Late Season
1940	35.05	93	4	2	Late Season
1866	34.92	71	4	2	Big-storm
1972	34.36	89	3	3	Early Season
1849	33.10	52	4	2	Multi-month
1885	33.05	86	1	1	Bi-modal
1951	32.56	90	4	2	Multi-month
1883	32.32	78	2	1	Late Season
1875	31.19	74	5	2	Multi-month
1924	30.81	76	3	2	Bi-modal
1871	30.78	73	3	2	Big-storm
1880	29.86	66	3	2	Big-storm
1913	29.60	74	4	2	Multi-month
1966	29.41	81	4	2	Late Season

Dry Season Patterns

There were also 21 seasons classified as "dry," with the seasonal total being more than a standard deviation below the long term mean (i.e., less than 14.04 inches). Rowntree (1992) found these cases "harder to characterize because the variability of low-end rainfall is very high." Consequently, mutually exclusive categories were not developed, but rather primary and secondary characteristics were defined. The primary characteristic identifies the overall seasonal signature and the secondary identifies traits within that season.

As was the case with the wet seasons, the Rowntree (1992) characteristics for dry seasons were modified somewhat. Those seasons in which all five months (i.e., November through March) received less than normal rainfall were reclassified with a primary characteristic of "all-dry." Twelve of the twenty-one dry seasons fall into this category. Another six seasons that began initially as dry but received some late season precipitation are termed "late-onset." The final three dry seasons had some early season wetness but then became dry are classed as "early-onset."

Several secondary patterns are seen for the dry seasons. One is the idea of "peaks and valleys" during dry years when one winter month has normal or greater than normal rainfall. This happened during 14 of the 21 dry seasons and is counter to the notion that all months are dry during a drought.

A variation on the "peaks and valleys" idea is that of the "miracle March." This has occurred during 10 of the 21 dry seasons, most recently during the 1990

season (in the middle of the multi-year drought of the late 1980s and early 1990s) when 5.89 inches fell, partially mitigating the impact of ongoing dryness. The impact on seasons that had wet Aprils or Mays is less because of the relatively low amount of normal rain that falls late in the season.

Another characteristic is the concept of "prolonged intra-seasonal dry spells," which are defined as periods of greater than 21 days without measurable precipitation after the onset of the rainy season. The 1876 season had a prolonged dry period, going 60 days without rain, but dry periods of between 31 and 43 days were more common.

As stated, some seasons (both wet and dry) may fall into more than a single category. These signatures are only a starting point in analyzing the characteristics of seasonal rainfall. Further research in this area should focus on further refinement of these signatures and their more objective classification.

Table 12. Dry Season Characteristics

Season	Total Inches	Days of Rain	Months < Mean	Months < -1Std	Primary	Secondary
1850	7.42	49	5	3	All-dry	Worst case
1975	7.97	47	5	3	All-dry	False promise
1897	9.38	54	5	2	All-dry	Early/Late
1863	10.08	37	5	1	All dry	Nov. tease
1919	10.46	42	4	1	Late onset	Avg Mar./Apr.
1958	10.46	44	4	2	Late onset	Only Jan./Feb.
1876	11.04	42	5	2	All-dry	False Promise
1971	11.06	60	5	1	All-dry	Almost Avg. Dec.
1976	11.06	41	5	1	All Dry	Almost Avg. Mar.
1917	11.48	41	3	2	Late onset	Avg. Feb./Mar.
1923	11.62	41	5	0	All-dry	Almost Avg. Feb.
1912	11.97	58	5	1	All-dry	Almost Avg. Jan.
1963	12.32	55	4	2	Early onset	Nov. tease
1938	12.53	46	5	0	All-dry	Almost Avg. Jan.
1933	12.91	49	3	3	Late onset	Peaks & Valleys
1930	13.54	55	4	1	Early onset	Wet Jan.
1862	13.74	54	5	1	All-dry	Avg. Jan./Feb.
1986	13.86	65	4	1	Late onset	Avg. Jan./Feb.
1960	13.87	68	4	1	Early onset	Nov. tease
1911	14.06	72	5	1	All-dry	Mar. Miracle
1990	14.08	64	4	1	Late onset	Mar. Miracle

IX. SUMMARY AND CONCLUSIONS

The development of this climatology for San Francisco rainfall met its initial objectives of developing, verifying and analyzing comprehensive database. It also highlighted the need for specific methodologies for further studies of this type. In addition to the data that were generated by this study, several areas became evident that should be the subject of more indepth or additional research.

The San Francisco 143 season dataset presented several significant challenges. Because of its long period of record, it spanned several generations of data collection and encompassed original hand-written records through today's computer accessible formats. The consolidation of these multiple sources into a consistent format was primarily accomplished by Rowntree (1990) and subsequently error checked and updated by the author. Additionally, the finding and collating of supporting datasets proved to be a non-trivial matter.

Developing a methodology that would allow the conversion of data between platforms (i.e., MS-DOS and MacIntosh) and between formats (i.e., Excel, Lotus and Quattro) was also a significant task. However, this process did highlight considerations for future projects of this scope. A second important factor was how to process extremely large datasets. Consideration had to be given to the combined

capabilities of both the hardware and software used.

The homogeneity testing of the San Francisco rainfall record showed a minor "break" in the record at approximately the time of the 1906 earthquake. While this break is statistically minor, it is something which future users of the long term record may want to take into consideration. For applications that use data that spans the break, adjustments should be made to compensate for the minor change in the slope of the data.

The statistical analysis of the monthly and seasonal data was an essential base to build a complete picture of San Francisco rainfall. This was partially accomplished by looking at the return periods of both wet and dry events and by examining the variation of the time-series.

The return period analysis showed that some of the "extreme" seasonal events of the past decade and a half were generally within the range of 5 to 15 year events. This is exclusive of multi-year events such as the droughts of 1975-1976 and 1986-1991 or the wet years of 1981-1982.

Analyzing the time-series also showed that the apparent variations with time are not statistically significant. However, it does point for the need to look at trends extremely carefully.

The development of the daily rainfall records, like the monthly and seasonal datasets, required devising a workable methodology for such a huge dataset. The resultant analysis provided a way to examine the various aspects of the daily record.

The various data developed in the analysis sections were utilized to look at the relationship between San Francisco rainfall and ENSO events and at intraseasonal characteristics. There were several distinct rain signatures during seasons with Type 1 ENSO's. These were most evident in the monthly data during late winter. The monthly and daily records were also used in identifying both wet and dry season characteristics.

Besides generating the specific data, this research points toward other areas of study of the San Francisco rainfall record, towards means of accomplishing similar studies, and areas for further research. These areas include:

- Use of a consistent computer format. The most universal is high density (1.44 MB) MS-DOS formatted disks and data as either ASCII or Lotus files.
- The continuous updating of relevant databases. Establish a program to keep datasets current and up-to-date.
- Find additional datasets. There are numerous sources of data that are kept by agencies other than the NWS which could be used to enhance the climatological analysis.
- Make adjustments for non-homogeneity. For California in general, and San Francisco in particular, do additional homogeneity testing and make appropriate adjustments.
- Develop isohyet analyses. The only isohyet analyses available for San Francisco and the Bay Area are either very out of date, or based on very short periods of

record.

- Combine rainfall climatology with other environmental measurements. Correlate current data with sources such as tree-rings, glacial cores and drought indices to develop longer term climatologies.
- Extend return period research. The return period analyses are only for single season and should be extended to multiple seasons.
- Develop probability analysis and return period data further for use in hazard planning. This data should be made available to agencies such as water districts, planners and other public officials.
- Further analyze time-series. Time-series of varying lengths (i.e., other than 30 years) should be examined to look for trends.

This climatology is more than just a compilation of the rainfall statistics for the 143 years of San Francisco rainfall. It accomplished three important goals. First, it developed several methodologies of gathering and processing an extremely large dataset. Next, it provided numerous analyses of the data to characterize San Francisco rainfall since 1849. Finally, it provides a starting point for additional research into San Francisco rainfall and its relationship to other environmental elements in California.

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Appendix A-1. San Francisco Daily Rainfall, 1849-1850

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.25		0.12			
2					1.84		1.10					
3						0.45						
4					0.25		0.15	0.45				
5					1.18							
6					1.45		0.05	0.15	0.84			
7									1.05			
8					1.94		1.45		0.71			
9				1.20								
10				0.25	0.71							
11						1.30						
12						0.84						
13					0.45	0.15	0.25					
14							0.60					
15									0.76			
16					0.84	0.34						
17						0.05	0.25					
18						0.22			0.58			
19						1.21				0.32		
20						0.37	0.15					
21						0.54						
22							0.05	0.18	0.47			
23							0.58					
24							0.48					
25							0.25			0.12		
26						0.41	0.53	0.99		0.02		
27												
28												
29							2.20					
30				1.69								
31						0.32						
Monthly												
Total:	0.00	0.00	0.00	3.14	8.66	6.20	8.34	1.77	4.53	0.46	0.00	0.00
Days of												
Rain:	0	0	0	3	8	12	15	4	7	3	0	0
Season:										Total	33.10	
										Days	52	

Appendix A-2. San Francisco Daily Rainfall, 1850-1851

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.08						
2										0.28		
3										0.18		
4							0.11			0.06		
5							0.18	0.02				
6							0.09	0.11				0.02
7							0.22					
8										0.42		
9										0.06		
10												
11						0.26						
12			0.10									
13						0.35						
14												
15			0.15									
16										0.13		
17						0.36				0.06		
18								0.04	0.23		0.58	
19					0.47				0.40	0.04	0.06	
20								0.12	0.08		0.03	
21			0.07		0.10			0.12	0.02			
22					0.04				0.03			
23			0.01		0.11							
24					0.02			0.13	0.03			
25									0.22			
26							0.12					
27									0.38			
28					0.13				0.22			
29					0.05				0.21			
30									0.12			
31												
Monthly												
Total:	0.00	0.00	0.33	0.00	0.92	1.05	0.72	0.54	1.94	1.23	0.67	0.02
Days of												
Rain:	0	0	4	0	7	4	5	6	11	8	3	1
Season:											Total	7.42
											Days	49

Appendix A-3. San Francisco Daily Rainfall, 1851-1852

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.03			0.30			
2				0.18			0.07		0.15			
3						0.85			0.60			
4						0.12	0.03		0.02			
5						0.23			0.80			
6								0.05	1.20			
7			1.03	0.03					0.75			
8					1.47				1.15			
9									0.70			
10									0.32			
11												
12												
13												
14									0.10			
15									0.04			
16					0.37							
17		0.02						0.02			0.32	
18					0.03							
19						0.28						
20					0.24	0.14						
21						0.06						
22						2.00				0.17		
23						0.55						
24						0.60						
25						0.20				0.02		
26						0.30						
27						0.26			0.25	0.07		
28						0.24	0.16	0.03				
29					0.10	0.30		0.04				
30						0.82	0.32					
31						0.12			0.30			
Monthly												
Total:	0.00	0.02	1.03	0.21	2.21	7.10	0.58	0.14	6.68	0.26	0.32	0.00
Days of												
Rain:	0	1	1	2	5	17	4	4	14	3	1	0
Season:										Total	18.55	
										Days	52	

Appendix A-4. San Francisco Daily Rainfall, 1852-1853

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.82					0.02	
2						0.06						
3						0.19	0.02					
4						0.21	0.04					
5						0.20	0.69					
6							0.01					
7							2.06					
8							0.13		0.14			
9					0.02							
10							0.20				0.02	
11					0.40		0.33			0.81	0.25	
12											0.03	
13					0.30					0.36		
14					0.80	0.52	0.18		0.76			
15					0.25	0.03			0.02			
16						0.20				3.45		
17					0.20	3.00				0.14		
18					0.62	1.40						
19						0.05				0.07		
20										0.11	0.02	
21					1.10	0.21						
22						0.07		0.29				
23					0.12	0.76		0.15				
24						0.11		0.37			0.03	
25						2.54		0.34				
26								0.27				
27							0.25		2.85		0.01	
28				0.80	0.30	0.31	0.01		0.62	0.08		
29					1.16	1.72			0.47	0.35		
30					0.04	0.75						
31						0.05						
Monthly												
Total:	0.00	0.00	0.00	0.80	5.31	13.20	3.92	1.42	4.86	5.37	0.38	0.00
Days of												
Rain:	0	0	0	1	12	20	11	5	6	8	7	0
Season:											Total	35.26
											Days	70

Appendix A-5. San Francisco Daily Rainfall, 1853-1854

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2									0.02			
3									0.20			
4						0.05		0.22	0.07			
5						0.01		0.51				
6								0.16				
7												
8										0.01		
9					0.11	0.20		0.70		0.01		
10				0.10	0.02	1.35		0.52		0.03		
11					0.02			0.12		0.20		0.03
12					0.15	0.11	0.59	1.06	0.07			
13					0.08	0.02	1.22		2.25			
14					0.25		0.27		0.50			
15			0.11		0.37		0.29		0.20			
16							0.32					
17			0.10	0.02	0.14				0.03			0.05
18					0.02		0.15					
19						0.10		0.01	0.13	0.05	0.02	
20						0.33		0.05		0.43		
21								0.91		0.25		
22						0.01	0.01	1.10				
23						0.02	0.42	0.25	0.02			
24			0.02				0.55			0.42		
25					0.68		0.06	0.56				
26			0.23		0.40			0.48				
27					0.04			1.26				
28						0.12		0.13		1.72		
29									0.02			
30		0.04										
31												
Monthly												
Total:	0.00	0.04	0.46	0.12	2.28	2.32	3.88	8.04	3.51	3.12	0.02	0.08
Days of												
Rain:	0	1	4	2	12	11	10	16	11	9	1	2
Season:											Total	23.87
											Days	79

Appendix A-6. San Francisco Daily Rainfall, 1854-1855

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1		0.01					1.26	0.09	0.54	0.10		
2						0.02	0.32		0.34		0.03	
3			0.04			0.04	0.80		0.16			
4				0.18			0.15		0.56			
5							0.03		0.10			
6							0.08					
7						0.06	0.32	0.05	0.23			
8							0.29	0.24	0.03			
9				0.22			0.17					
10			0.06	0.23				0.22		0.80		
11										0.38	0.05	0.03
12									0.20	0.17		
13				0.20					0.04	0.50	0.30	
14									0.03	1.65	1.15	
15			0.05							1.05		
16										0.19		
17										0.10		0.05
18					0.32							
19											0.10	
20											0.25	
21												
22				0.10	0.02			0.15				
23				0.31				0.11				
24				0.65								
25				0.22				0.25				
26				0.32				1.29				
27								0.52		0.05		
28								1.85				
29												
30							0.19		1.21			
31						0.75	0.06		1.20			
Monthly												
Total:	0.00	0.01	0.15	2.43	0.34	0.87	3.67	4.77	4.64	4.99	1.88	0.08
Days of												
Rain:	0	1	3	9	2	4	11	10	12	10	6	2
Season:											Total	23.83
											Days	70

Appendix A-7. San Francisco Daily Rainfall, 1855-1856

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												0.03
2										0.32		
3						0.10						
4						0.07		0.03				
5						0.17						
6						0.30						
7						1.15						
8							0.38					
9							1.05			0.21		
10					0.02	0.23	1.04			0.58		
11							0.72			1.04		
12										0.17		
13					0.05	0.22						
14						0.05	0.67		1.02			
15						0.20	0.32					
16												
17												
18												
19						0.24		0.12			0.28	
20						0.38	0.55	0.33				
21					0.10	0.75	0.10				0.08	
22					0.21	0.10	1.14				0.40	
23					0.13		0.47					
24							1.22					
25							1.08					
26						0.80						
27						1.00						
28					0.08			0.02	0.05			
29									0.10			
30					0.08		0.66		0.20	0.62		
31									0.23			
Monthly												
Total:	0.00	0.00	0.00	0.00	0.67	5.76	9.40	0.50	1.60	2.94	0.76	0.03
Days of												
Rain:	0	0	0	0	7	15	13	4	5	6	3	1
Season:											Total	21.66
											Days	54

Appendix A-8. San Francisco Daily Rainfall, 1856-1857

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.13			
2							0.15					
3							0.44					
4							0.21	0.37				
5							0.12	0.43				
6												
7				0.31		0.15						
8									0.03			
9												
10			0.02					0.07				
11			0.05			0.28		0.05				
12						0.21		0.31				
13								0.53				
14				0.01		0.04		1.27				
15					0.16	0.03		1.30				
16				0.02	0.06		0.24	0.84				
17				0.03	0.20	0.45	1.19					
18							0.10	0.04				
19								0.04				
20					0.90							
21					0.17				0.18			
22					0.70				0.03			
23						0.20						
24				0.08	0.22	0.24		0.87	0.29			
25	0.02							1.17				
26								0.85				
27						0.20		0.45	0.36			
28					0.06	0.08			0.47			
29					0.32							0.12
30						0.48				0.05		
31						1.39			0.13			
Monthly												
Total:	0.02	0.00	0.07	0.45	2.79	3.75	2.45	8.59	1.62	0.00	0.05	0.12
Days of												
Rain:	1	0	2	5	9	12	7	15	8	0	1	1
Season:										Total	19.91	
										Days	61	

Appendix A-9. San Francisco Daily Rainfall, 1857-1858

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1										0.42		
2					0.10							
3					0.35							
4					0.88	0.15				0.27		
5					0.31	0.20						
6				0.17		0.26						
7				0.44			0.03	0.03		0.72		
8				0.32						0.14		
9						0.22						
10		0.03				0.43	0.25					
11						1.68	0.37					
12						0.22	0.40		0.52			
13							0.51	0.05				
14								0.30				
15								0.44				
16								0.41	0.17			
17								0.25	0.04			
18												0.05
19								0.20			0.23	
20							0.83	0.15			0.06	
21							0.55				0.05	
22							1.42					
23												
24					0.15	0.98			0.40			
25					0.49							
26					0.14				0.37			
27					0.17				1.80			
28		0.02			0.04				0.60			
29					0.33				1.65			
30					0.05							
31												
Monthly												
Total:	0.00	0.05	0.00	0.93	3.01	4.14	4.36	1.83	5.55	1.55	0.34	0.05
Days of												
Rain:	0	2	0	3	11	8	8	8	8	4	3	1
Season:										Total	21.81	
										Days	56	

Appendix A-10. San Francisco Daily Rainfall, 1858-1859

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.24			0.38	
2											1.07	
3									0.21			
4						0.07			0.29			
5						0.27						
6								0.16				
7								0.08	0.20			
8								0.54	0.20	0.13		
9								0.11				
10						1.80		0.12		0.03		
11						1.02		0.62		0.02		
12						0.08		0.78				
13								0.14				
14						0.17						
15								0.34				
16								0.14				
17						0.06		1.04				
18		0.04										
19					0.27							
20				0.30	0.20				0.15			
21				2.06	0.14	0.05			1.07			
22					0.04				0.73		0.06	
23				0.12		0.42		0.13			0.04	
24				0.26		0.64		0.34				
25								0.12				
26		0.12			0.04	0.28		0.08	0.03			
27	0.02					1.04	0.05	1.11	0.04			
28	0.03					0.20	0.21	0.23				
29									0.03			
30							0.17		0.07			
31						0.04	0.85			0.09		
Monthly												
Total:	0.05	0.16	0.00	2.74	0.69	6.14	1.28	6.32	3.02	0.27	1.55	0.00
Days of												
Rain:	2	2	0	4	5	14	4	18	11	4	4	0
Season:											Total	22.22
											Days	68

Appendix A-11. San Francisco Daily Rainfall, 1859-1860

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.08		0.40	0.49		
2					0.06		0.07				0.12	
3		0.02			0.36		0.24			0.05	0.62	
4					0.90	0.04	0.21			1.32	0.43	
5					0.84		0.56		0.37	0.65	0.12	
6					0.92		0.22		0.03	0.06		0.07
7					0.80		0.23	0.60		0.04		
8					0.13					0.44		
9												
10									0.13			
11											0.17	
12								0.10	0.03			
13								0.43				
14								0.04				
15			0.03					0.17	0.10			
16								0.14	0.17			
17					0.07							
18											0.39	
19										0.09		
20												
21					0.14							
22					0.23		0.03		0.39		0.35	
23				0.05	0.25	0.21			0.11		0.28	
24					0.31	0.63					0.04	
25					1.73	0.38					0.28	
26					0.51	0.21					0.06	
27						0.10			0.05			
28									0.90			0.02
29					0.03			0.12	0.62			
30												
31									0.69			
Monthly												
Total:	0.00	0.02	0.03	0.05	7.28	1.57	1.64	1.60	3.99	3.14	2.86	0.09
Days of												
Rain:	0	1	1	1	15	6	8	7	13	8	11	2
Season:										Total	22.27	
										Days	73	

Appendix A-12. San Francisco Daily Rainfall, 1860-1861

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.02	0.21					
2										0.16		
3				0.01						0.15	0.10	
4				0.12			1.03			0.03		
5				0.08			0.49					0.04
6				0.01		0.04	0.23					
7						0.13		0.06				
8												
9								0.12				
10	0.21					0.02		0.14				
11					0.21	0.13		2.02				
12					0.35	0.07						0.04
13												
14						0.37						
15						0.23	0.03					
16						0.78						
17				0.04		0.04						
18						0.26						
19				0.17		0.27	0.14					
20				0.08		0.21	0.22				0.65	
21						0.15		0.21			0.25	
22						0.58						
23						1.03	0.12	0.08	0.79			
24				0.12		0.77		0.10	0.07	0.17		
25						0.63		0.99	0.04			
26						0.13			2.53			
27				0.03		0.07			0.40			
28				0.11	0.02				0.04			
29				0.04					0.18			
30				0.10					0.03			
31						0.23						
Monthly												
Total:	0.21	0.00	0.00	0.91	0.58	6.16	2.47	3.72	4.08	0.51	1.00	0.08
Days of												
Rain:	1	0	0	12	3	21	8	8	8	4	3	2
Season:										Total	19.72	
										Days	70	

Appendix A-13. San Francisco Daily Rainfall, 1861-1862

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.05				0.11		
2			0.02					0.79	0.02	0.13	0.02	
3						0.07				0.07	0.56	
4										0.01		
5							2.67	0.04				
6						1.02	1.49					
7						0.29						
8						1.65	1.35			0.09		
9						0.18	3.50		0.01	0.17		
10					0.27		2.46		0.47	0.02		
11							1.25		0.57	0.01	0.03	0.05
12					0.74				0.18		0.11	
13					0.29		0.22					
14					0.05				0.25	0.12		
15					0.08		0.49		0.11			
16					0.39	0.01	2.46		0.12			
17					0.22		2.64					
18							0.52				0.02	
19					0.56		0.72	0.44				
20							1.69					
21							0.55	2.09				
22						0.03	1.00	0.80				
23						1.06		0.84				
24						0.56		0.33				
25						2.02		1.49				
26					0.48			0.38				
27					0.60	0.23	0.04	0.33				
28						0.17			0.07			
29					0.08	0.70	0.76		0.20			
30					0.34	1.25	0.55		0.20			
31						0.25						
Monthly												
Total:	0.00	0.00	0.02	0.00	4.10	9.54	24.36	7.53	2.20	0.73	0.74	0.05
Days of												
Rain:	0	0	1	0	12	16	18	10	11	9	5	1
Season:										Total	49.27	
										Days	83	

Appendix A-14. San Francisco Daily Rainfall, 1862-1863

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.27					
2												
3							0.12					
4				0.05			0.71					
5							0.46	0.44				
6					0.11			0.16				
7					0.02				0.05			
8								0.11		0.19		
9						0.19						
10					0.02							
11							0.15	0.16				
12								0.71				
13										0.12		
14								0.11		0.10		
15										0.38		
16				0.07				0.40		0.32		
17								0.58	0.16			
18						0.12		0.47	0.19		0.14	
19							0.74		0.11		0.09	
20						0.05	0.36	0.05	0.56	0.24		
21						0.32				0.10		
22						1.01	0.76					
23						0.17	0.06					
24						0.14			0.04			
25									0.07			
26									0.88	0.12		
27										0.04		
28												
29				0.02								
30				0.38		0.22						
31						0.13						
Monthly												
Total:	0.00	0.00	0.00	0.52	0.15	2.35	3.63	3.19	2.06	1.61	0.23	0.00
Days of												
Rain:	0	0	0	4	3	9	9	10	8	9	2	0
Season:										Total	13.74	
										Days	54	

Appendix A-15. San Francisco Daily Rainfall, 1863-1864

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.33	0.12			0.91		
2												
3										0.35		
4										0.23		
5							0.39					
6												
7												
8												
9						0.15						
10						0.05					0.01	
11					0.05	0.02					0.10	
12					0.07							
13						0.27					0.01	
14					0.87						0.11	
15					0.92		0.14		0.03			
16					0.64							
17									0.04		0.55	
18									0.89			
19			0.03									
20									0.02			
21						0.37						
22												
23						0.52						
24						0.09						
25												
26										0.08		
27									0.06			
28									0.14			
29							0.37		0.09			
30									0.07			
31							0.81		0.18			
Monthly												
Total:	0.00	0.00	0.03	0.00	2.55	1.80	1.83	0.00	1.52	1.57	0.78	0.00
Days of												
Rain:	0	0	1	0	5	8	5	0	9	4	5	0
Season:										Total	10.08	
										Days	37	

Appendix A-16. San Francisco Daily Rainfall, 1864-1865

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.51					
2						0.33						
3						0.13			0.21			
4						0.03			0.38			
5						0.04						
6						0.92	0.08			0.21		
7			0.01							0.62		
8												
9										0.11		
10						0.01						
11						1.05						
12						2.56			0.07			
13						0.99		0.30				
14						0.04		0.10				
15					0.14	0.27		0.08				
16								0.12				
17												
18							0.07	0.40			0.45	
19								0.24	0.08		0.18	
20												
21												
22		0.11										
23		0.03			0.05	0.38						
24		0.07		0.02			0.07					
25					0.48	0.47	0.88					
26				0.05	3.98	0.81	0.38					
27				0.06	0.42		0.74	0.05				
28					0.44	0.02	0.91	0.05				
29					0.50	0.04						
30					0.67	0.30						
31						0.52	1.50					
Monthly												
Total:	0.00	0.21	0.01	0.13	6.68	8.91	5.14	1.34	0.74	0.94	0.63	0.00
Days of												
Rain:	0	3	1	3	8	18	9	8	4	3	2	0
Season:											Total	24.73
											Days	59

Appendix A-17. San Francisco Daily Rainfall, 1865-1866

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.01		0.36				
2						0.01		0.16				
3								0.43				
4								0.19				
5							0.30	0.22	0.02			
6							0.19		0.21			
7				0.03			0.41					
8				0.07		0.04	1.51		0.66			0.04
9								0.16	0.30			
10							0.40					
11							0.46					
12							0.60	0.06				
13					0.18	0.06	0.60					
14					0.37							
15												
16					0.07		0.23					
17					1.03		2.17		0.02			
18					0.27				0.21			
19					0.06		0.11		0.41			
20					0.06		2.22		0.23			
21					0.63		1.14				0.06	
22					1.12	0.04	0.15				0.22	
23						0.15	0.08					
24			0.06			0.25	0.31					
25				0.01					0.36		1.05	
26			0.18			0.02					0.01	
27								0.07			0.05	
28								0.47			0.07	
29									0.02	0.12		
30				0.15	0.40				0.11			
31									0.49			
Monthly												
Total:	0.00	0.00	0.24	0.26	4.19	0.58	10.88	2.12	3.04	0.12	1.46	0.04
Days of												
Rain:	0	0	2	4	10	8	16	9	12	1	6	1
Season:											Total	22.93
											Days	69

Appendix A-18. San Francisco Daily Rainfall, 1866-1867

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.53	0.03		0.17	0.32		
2					0.68				0.16	0.15		
3					0.25	0.13						
4					0.14		0.18					
5					0.31		0.65			0.40		
6			0.07				0.51			0.15		
7												
8									0.40			
9					0.07					0.02		
10										0.67		
11						0.53	0.11			0.50		
12						0.01	0.75			0.15		
13												
14							0.05					
15			0.04			0.63						
16					0.26	0.43						
17									0.16			
18						0.95		0.49				
19					0.02	4.28	0.23	0.15				
20						3.62	0.18	2.12				
21						0.64	0.58	2.22	0.34			
22						0.31	0.17	0.30				
23							0.40					
24					0.38	0.06	0.35					
25					0.29	0.71		0.08				
26					0.28	0.56	0.78	0.14				
27						0.32		1.02				
28						0.63		0.68				
29					0.14	0.40						
30					0.53	0.42	0.19		0.05			
31									0.30			
Monthly												
Total:	0.00	0.00	0.11	0.00	3.35	15.16	5.16	7.20	1.58	2.36	0.00	0.00
Days of												
Rain:	0	0	2	0	12	18	15	9	7	8	0	0
Season:										Total	34.92	
										Days	71	

Appendix A-19. San Francisco Daily Rainfall, 1867-1868

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.02	0.93		0.56			0.01
2						0.18	0.33		0.20			
3							0.12		1.55	0.10		
4							0.15		0.55			
5				0.20	0.62							
6					0.75							
7						0.15		0.06		0.20		
8						0.55	0.66					
9						0.24				0.38		
10						0.33				0.30		
11							0.12		0.19	0.70		
12							0.87			0.47		0.05
13							0.43		0.56	0.06	0.01	
14			0.04						0.44	0.04		
15									0.14	0.06		
16						0.04	0.12					
17						1.62						
18						0.69	0.41					
19					0.79		0.43				0.02	
20						0.48	0.64		0.16			
21					0.75	0.84		0.64	1.05			
22						1.68	1.08	0.54	0.90			
23						0.72	0.99	0.14				0.17
24					0.44	0.08	0.84	0.86				
25					0.06	1.35	0.36	0.69				
26							1.02	1.61				
27								1.02				
28								0.37				
29						0.06		0.20				
30						0.21						
31						1.45						
Monthly												
Total:	0.00	0.00	0.04	0.20	3.41	10.69	9.50	6.13	6.30	2.31	0.03	0.23
Days of												
Rain:	0	0	1	1	6	18	17	10	11	9	2	3
Season:											Total	38.84
											Days	78

Appendix A-20. San Francisco Daily Rainfall, 1868-1869

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.06			1.28					
2				0.08			0.53	0.44				
3								0.30				
4				0.01	0.05	0.01						
5												
6												
7							0.10	0.20		0.28		
8								0.82				
9								0.32				
10							0.01	1.67				
11							0.07	0.15				
12									0.05			
13									0.08			
14							0.08		0.10			
15									0.14			0.02
16									0.63	0.45		
17						0.05			0.55	0.69		
18					0.30	0.55			0.18	0.68		
19					0.64				0.48	0.09	0.06	
20									0.67			
21						0.07					0.02	
22						0.18	0.15					
23						1.20	1.45					
24						0.29	0.19		0.01			
25					0.08	0.47	0.25					
26						0.92	0.20		0.10			
27							0.15					
28							0.54					
29					0.11	0.18	1.10		0.15			
30						0.32	0.25					
31						0.10						
Monthly												
Total:	0.00	0.00	0.00	0.15	1.18	4.34	6.35	3.90	3.14	2.19	0.08	0.02
Days of												
Rain:	0	0	0	3	5	12	15	7	12	5	2	1
Season:											Total	21.35
											Days	62

Appendix A-21. San Francisco Daily Rainfall, 1869-1870

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1			0.12						0.11	0.48		
2										0.21	0.02	
3										0.09		
4												
5												
6					0.14							
7						0.41						
8						1.10				0.01		
9								0.41				
10					0.65	0.13	0.09	0.02	0.02			
11					0.20	0.14	0.11		0.14	0.16		
12					0.05		0.14	0.14	0.18	0.58		
13					0.05		0.35					
14							0.53	0.11				
15							0.31	0.34				
16									0.22			
17									1.05			
18				0.02			0.76					
19				0.17			1.03	0.08			0.18	
20				0.36			0.27	0.86				
21				0.74				0.25				
22						0.22	0.30	0.90				
23						0.46		1.57	0.27			
24						0.51		0.10				
25						1.34						
26												
27					0.04							
28					0.06							
29												
30									0.01			
31												
Monthly												
Total:	0.00	0.00	0.12	1.29	1.19	4.31	3.89	4.78	2.00	1.53	0.20	0.00
Days of												
Rain:	0	0	1	4	7	8	10	11	8	6	2	0
Season:										Total	19.31	
										Days	57	

Appendix A-22. San Francisco Daily Rainfall, 1870-1871

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.59						
2						0.57						
3												
4					0.01			0.37		0.13		
5						1.42				0.07		
6					0.02	0.12		0.12	0.26	1.28		
7					0.22	0.32						
8								0.02		0.01	0.01	
9							0.42					
10							0.32					
11												
12									0.02			
13						0.09		0.14				
14						0.27		0.13	0.01			0.01
15								0.67	0.01			
16										0.39	0.04	
17							0.21		0.12	0.01		
18							0.78		0.02			
19									0.28			
20								0.72				
21								1.02				
22							0.28	0.28				
23							0.62	0.29	0.57			
24												
25									0.02			
26												
27											0.05	
28							0.44					
29					0.18						0.13	
30			0.03									
31												
Monthly												
Total:	0.00	0.00	0.03	0.00	0.43	3.38	3.07	3.76	1.31	1.89	0.23	0.01
Days of												
Rain:	0	0	1	0	4	7	7	10	9	6	4	1
Season:											Total	14.11
											Days	49

Appendix A-23. San Francisco Daily Rainfall, 1871-1872

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.16			
2						0.10	0.01	0.07				
3					0.09		0.71					
4								0.16				0.02
5		0.02					0.19		0.73			0.01
6							0.08					
7							0.05	0.46				
8							2.36	0.65	0.02			
9							0.34	0.69	0.28			
10												
11							0.17	0.42				
12					0.02		0.01		0.19			
13							0.01			0.06		
14					0.15			0.12				
15					0.08			0.02		0.35		
16								0.49		0.22		0.01
17						0.25		0.22		0.04		
18						2.83		0.08				
19						3.12				0.03		
20						0.30						
21						0.91		0.42				
22								0.73				
23						2.48						
24					0.29	0.19		1.28			0.02	
25					0.60			0.02				
26					0.81	0.04		0.13		0.09		
27				0.07	0.11	1.05		0.94	0.02	0.02		
28					0.66	0.40						
29						0.82						
30						0.17					0.01	
31						1.70	0.07		0.19		0.15	
Monthly												
Total:	0.00	0.02	0.00	0.07	2.81	14.36	4.00	6.90	1.59	0.81	0.18	0.04
Days of												
Rain:	0	1	0	1	9	14	11	17	7	7	3	3
Season:											Total	30.78
											Days	73

Appendix A-24. San Francisco Daily Rainfall, 1872-1873

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.06	0.02				
2							0.09	0.27		0.05		0.01
3					0.20		0.06	0.13				
4					0.02	0.02		0.27				
5							0.10	0.01	0.47			
6									0.10			
7												
8					0.01		0.01	0.64				
9								0.23				
10												
11					0.49		0.12	0.19				
12					0.01			0.16				
13								0.05				
14												
15								0.12	0.11			
16								0.13	0.09			0.01
17												
18								0.82				
19												
20										0.14		
21										0.22		
22						0.63						
23						0.42						
24						1.48		0.05				
25			0.04	0.05		1.39						
26				0.04		1.47		0.02				
27	0.01			0.02		0.06		0.75				
28					0.62	0.32		0.08		0.02		
29					1.44	0.06			0.01			
30						0.05	0.12		0.01			
31						0.05	1.02					
Monthly												
Total:	0.01	0.00	0.04	0.11	2.79	5.95	1.58	3.94	0.79	0.43	0.00	0.02
Days of												
Rain:	1	0	1	3	7	11	8	17	6	4	0	2
Season:										Total	15.66	
										Days	60	

Appendix A-25. San Francisco Daily Rainfall, 1873-1874

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.03	0.89		0.58		0.23	
2							0.77	0.30				
3						1.61			0.26	0.04		
4						0.85					0.03	
5		0.05				1.01			0.13	0.04	0.13	
6				0.06	0.32	0.15		0.01			0.20	0.09
7				0.77		0.42			0.06			0.04
8						0.10			0.24			
9						0.91		0.11				
10								0.15				
11								0.03	0.26			
12								0.23	0.65	0.70		
13						0.06		0.81	0.05	0.02		
14						0.27	0.05	0.20	0.53			
15						0.14	0.38		0.08			
16						0.57	0.39	0.08	0.01			
17							0.79	0.28				
18						0.04	0.04					
19						0.39	0.82					
20							0.02					
21					0.04		0.08					
22	0.01					0.34	0.01				0.04	
23											0.03	0.01
24												
25		0.03					0.31	0.01	0.10			
26							0.03		0.02			
27							0.11		0.39			
28						0.29	0.62					
29					0.01	1.16						
30					0.79	1.34	0.24			0.10		
31						0.04	0.11					
Monthly												
Total:	0.01	0.08	0.00	0.83	1.16	9.72	5.66	2.21	3.36	0.90	0.66	0.14
Days of												
Rain:	1	2	0	2	4	19	17	11	14	5	6	3
Season:											Total	24.73
											Days	84

Appendix A-26. San Francisco Daily Rainfall, 1874-1875

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.02		0.06						
2						0.05		0.27	0.45			
3			0.02			0.05		0.04				
4					0.04				0.23			
5					1.34							
6										0.06	0.01	
7					0.04							
8											0.14	
9				0.17								
10							0.01					
11							0.04					
12												
13				0.02			0.07					0.09
14							1.48				0.07	
15						0.02						0.53
16				0.03			0.20					0.40
17												
18				0.11			1.87					
19							1.92					
20							0.01					
21				0.28								
22				0.03	0.10		0.53		0.01			
23					3.98		1.76					
24					1.05		0.06		0.22			
25				1.58		0.15	0.06	0.01	0.01			
26				0.25								
27				0.20					0.05			
28									0.33			
29												
30										0.04		
31												
Monthly												
Total:	0.00	0.00	0.02	2.69	6.55	0.33	8.01	0.32	1.30	0.10	0.22	1.02
Days of												
Rain:	0	0	1	10	6	5	12	3	7	2	3	3
Season:										Total	20.56	
										Days	52	

Appendix A-27. San Francisco Daily Rainfall, 1875-1876

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.47	0.52	0.22					
2							0.52		0.94	0.23		
3						0.44	1.47		1.03			
4						0.10	0.13		0.32			
5									0.02			
6					0.16		0.20		0.84			
7					0.01		1.29	0.21	1.13	0.60		
8							0.15	1.80	0.60			
9								0.21		0.18		
10												
11					0.01			1.35				
12								0.01	0.22			
13					0.57				0.17			
14					0.10							
15					0.29							
16					0.47							
17					2.30							
18					1.13					0.09		
19					0.05	0.38	0.25				0.15	
20					0.03		0.18				0.09	0.04
21						0.06	0.04			0.15		
22						0.83	0.65					
23					0.05	0.19	1.50					
24					0.17		0.42	0.30				
25					0.01	1.50	0.12	0.13				
26					1.18	0.02	0.36					
27				0.22			0.04	0.90				
28				0.02		0.11		0.01				
29									0.22	0.04		
30					0.27							
31							0.01					
Monthly												
Total:	0.00	0.00	0.00	0.24	7.27	4.15	7.55	4.92	5.49	1.29	0.24	0.04
Days of												
Rain:	0	0	0	2	17	10	17	9	10	6	2	1
Season:										Total	31.19	
										Days	74	

Appendix A-28. San Francisco Daily Rainfall, 1876-1877

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.33	0.04			
2								0.01	0.32			
3										0.03		
4			0.20		0.06							
5												
6	0.01								0.15			
7												
8										0.08		
9									0.01			
10									0.56			
11												
12								0.52				
13								0.10				
14		0.01								0.04		
15										0.02		
16				0.53	0.19		0.34			0.07		
17				0.49			0.57					
18				0.43			0.21				0.18	
19							0.35			0.02		
20								0.01				
21							0.08					
22								0.05				
23												
24												
25				0.09				0.16				
26												
27				1.06								0.01
28				0.56			0.44					
29			0.18	0.20			0.62					
30							1.63					
31							0.08					
Monthly												
Total:	0.01	0.01	0.38	3.36	0.25	0.00	4.32	1.18	1.08	0.26	0.18	0.01
Days of												
Rain:	1	1	2	7	2	0	9	7	5	6	1	1
Season:										Total	11.04	
										Days	42	

Appendix A-29. San Francisco Daily Rainfall, 1877-1878

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.23						
2					0.08							
3									0.57			
4					0.21			0.95	0.03			
5					0.25							
6					0.07		0.02	0.66	1.01			
7							0.28	0.33	0.07			0.01
8							0.59	0.14				
9												
10							0.34	0.02	0.07			
11					0.56			1.78				
12								0.17				
13								0.61	0.73			
14					0.04		0.52	1.92	0.26			
15					0.06		1.94					
16	0.02				0.17	0.23	1.97	0.42		0.16		
17						0.99		0.92	0.05	0.29		
18							0.28	1.25	0.01			
19							0.10	0.39				
20								0.14	0.16		0.05	
21				0.27		0.36	0.13		0.30	0.61	0.09	
22				0.35			1.15					
23				0.01	0.13	0.49		0.60				
24							1.68	0.40	0.28			
25				0.02			0.02		0.15			
26							0.13	1.16	0.15			
27							1.13	0.47	0.37			
28						0.36	0.17	0.19	0.02			
29							0.02		0.15			
30							0.78		0.18			
31							0.72				0.02	
Monthly												
Total:	0.02	0.00	0.00	0.65	1.57	2.66	11.97	12.52	4.56	1.06	0.16	0.01
Days of												
Rain:	1	0	0	4	9	6	19	19	18	3	3	1
Season:											Total	35.18
											Days	83

Appendix A-30. San Francisco Daily Rainfall, 1878-1879

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2									0.13			
3												
4					0.11				1.57	0.03		
5					0.01				2.73	0.11		
6						0.14			1.14	0.30	0.05	
7						0.01			0.95	0.10		
8								0.10	0.13	0.07		
9						0.08	0.22	1.66	1.05			
10							0.83	0.11		0.24		0.05
11							0.01	0.78				
12								0.98				
13							0.28	0.04		0.13		
14				1.27	0.45					0.12		
15								0.51				
16							0.05	0.04				
17	0.01							0.66			0.93	
18								0.02	0.25	0.01	0.22	
19									0.20	0.26	0.74	
20									0.16	0.52		
21									0.03			
22							0.04		0.32			
23							1.04					
24							0.29		0.01			
25							0.33					
26							0.15		0.08			
27			0.03									
28			0.07				0.26				0.41	
29			0.11			0.04						
30			0.34			0.31	0.02					
31												
Monthly												
Total:	0.01	0.00	0.55	1.27	0.57	0.58	3.52	4.90	8.75	1.89	2.35	0.05
Days of												
Rain:	1	0	4	1	3	5	12	10	14	11	5	1
Season:										Total	24.44	
										Days	67	

Appendix A-31. San Francisco Daily Rainfall, 1879-1880

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.08				0.25		
2						0.23	0.12		0.09	1.85		
3						0.37			0.57	0.12		
4									0.01		0.05	
5					0.03	0.68				0.05	0.11	
6				0.43	0.14					0.59		
7				0.13		0.23	0.24					
8					0.07	0.14	0.12					
9	0.01				0.94	0.09	1.03	0.31		0.77		
10						0.09	0.03	0.18			0.03	
11				0.07	0.05						0.84	
12				0.15	0.16					0.11	0.09	
13					0.19					0.07		
14					0.21					0.59		
15								0.14		1.33		
16										0.27		
17									0.38	0.06		
18						0.04		0.58		0.09		
19						1.55		0.22		0.48		
20						0.11				1.81		
21						0.42		0.33		1.39		
22		0.02				0.20		0.06		0.23		
23								0.05	0.23			
24									0.15			
25							0.16					
26							0.47					
27							0.06		0.09			
28						0.23			0.48			
29					0.86				0.05			
30					1.38							
31									0.03			
Monthly												
Total:	0.01	0.02	0.00	0.78	4.03	4.46	2.23	1.87	2.08	10.06	1.12	0.00
Days of												
Rain:	1	1	0	4	10	14	8	8	10	17	5	0
Season:											Total	26.66
											Days	78

Appendix A-32. San Francisco Daily Rainfall, 1880-1881

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						1.22		0.01	0.02			
2					0.01	1.50						
3						0.72		1.00				0.41
4						0.04		0.06				
5						0.50		0.11		0.22		
6										0.02		
7								0.29				0.28
8				0.05				0.08	0.05			
9						0.08		0.01	0.67	0.25	0.05	
10										0.34		
11												
12								0.10				
13							0.77	0.38				
14						1.81	0.74					
15						0.36	0.09	0.28	0.11			
16						0.26	0.17	1.37		1.09		
17						0.43				0.01		
18						0.25						
19						1.66	0.04					
20						0.79	0.01					
21												
22						0.27				0.01		
23					0.31	0.47				0.06		
24					0.01	0.98						
25						0.42		0.12				
26							0.01	0.83	0.01			
27						0.41		0.01	0.04			
28							1.18					
29						0.16	4.67					
30							0.96					
31							0.05				0.17	
Monthly												
Total:	0.00	0.00	0.00	0.05	0.33	12.33	8.69	4.65	0.90	2.00	0.22	0.69
Days of												
Rain:	0	0	0	1	3	19	11	14	6	8	2	2
Season:											Total	29.86
											Days	66

Appendix A-33. San Francisco Daily Rainfall, 1881-1882

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.27			0.04		0.02	
2						0.02	0.12		0.02	0.01	0.14	
3				0.10		0.18	0.08			0.03	0.02	
4						0.87	0.14					
5						0.60	0.03			0.30		
6						0.02	0.06					0.02
7												
8										0.27		
9						0.15		0.03	0.13	0.44		
10						0.03		0.80	0.73			
11						0.31		0.07	0.34			
12								0.28	0.13			
13								0.05	0.66			
14									0.49			
15					1.34	0.52			0.63			
16					0.30			0.41	0.06			
17					0.02							
18									0.18			
19									0.04	0.06		0.02
20												
21												
22			0.25							0.05		
23							0.40	0.10				
24						0.33	0.22	0.52		0.06	0.03	
25				0.01			0.06	0.06				
26				0.20		0.37	0.33	0.60				
27				0.01		0.18		0.04				
28				0.12	0.10							
29					0.02							
30				0.10	0.16							
31							0.24					
Monthly												
Total:	0.00	0.00	0.25	0.54	1.94	3.85	1.68	2.96	3.45	1.22	0.21	0.04
Days of												
Rain:	0	0	1	6	6	13	10	11	12	8	4	2
Season:											Total	16.14
											Days	73

Appendix A-34. San Francisco Daily Rainfall, 1882-1883

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.20	0.37		0.57				0.01	0.01
2					1.85					0.09		
3				1.40	1.63					0.46		
4											1.21	
5											0.88	
6				0.29				0.13			0.58	
7				0.15								
8											0.03	
9					0.13							
10				0.19								
11						0.07				0.02	0.05	
12						0.01			0.01	0.10	0.07	
13				0.39				0.40			0.04	
14								0.51				
15											0.58	
16											0.05	
17							0.03					
18						0.30						
19						0.55				0.76		
20						0.01						
21					0.01							
22						0.08						
23					0.15							
24				0.03		0.09	0.91					
25							0.39					
26					0.03				1.55			
27									0.48			
28						0.14			0.46			
29					0.01		0.02		0.30			
30			0.26	0.01					0.18	0.08		
31						0.76			0.03		0.02	
Monthly												
Total:	0.00	0.00	0.26	2.66	4.18	2.01	1.92	1.04	3.01	1.51	3.52	0.01
Days of												
Rain:	0	0	1	8	8	9	5	3	7	6	11	1
Season:											Total	20.12
											Days	59

Appendix A-35. San Francisco Daily Rainfall, 1883-1884

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.18				
2						0.11		0.02				
3							0.16	0.29	0.04			
4								0.66	0.02			
5							0.48	0.83	0.07			
6								0.22	0.45			
7					0.87			0.20	0.51			
8					0.45		0.04		1.39	0.04		0.54
9									1.94	1.43		0.13
10								0.01	0.07	1.24		
11								0.01		1.41		0.27
12										0.30		0.96
13										0.04		0.48
14								0.65	1.03	1.14		
15								1.17	0.04	0.32		
16								1.29				
17								0.78				
18								0.23	0.06		0.10	
19												
20								0.11				
21						0.28						
22									0.08			0.09
23						0.15				0.15		0.10
24				0.10	0.28	0.17					0.12	
25				0.08		0.12	0.08		1.00		0.01	
26				1.19		0.01	0.50		0.12	0.26		
27				0.05		0.07	0.38		0.97			
28						0.01	0.09		0.45			
29			0.28				1.44					
30			0.14				0.75					
31							0.02					
Monthly												
Total:	0.00	0.00	0.42	1.42	1.60	0.92	3.94	6.65	8.24	6.33	0.23	2.57
Days of												
Rain:	0	0	2	4	3	8	10	15	16	10	3	7
Season:											Total	32.32
											Days	78

Appendix A-36. San Francisco Daily Rainfall, 1884-1885

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.42	0.02				
2							0.03	0.06				
3										0.01		
4		0.03								0.04		
5										0.02		
6										0.07		
7			0.12				0.05			1.44		
8			0.09				0.01			1.11		
9					0.07		0.52			0.25		0.09
10							0.50			0.02		0.10
11							0.29					
12				0.07	0.19							
13				1.10			0.47					
14				0.64							0.04	
15				0.74								
16						0.10				0.01		
17						0.60				0.19		
18						0.57		0.09	0.55			
19						0.63		0.06				
20						1.62		0.06				
21						0.28		0.01				
22						0.48						
23						2.01						
24		0.01				0.52						
25						0.37			0.12			
26						0.41						
27						0.02	0.15					
28						0.07	0.02			0.01		
29							0.06					
30			0.12				0.01		0.16			
31									0.18			
Monthly												
Total:	0.00	0.04	0.33	2.55	0.26	7.68	2.53	0.30	1.01	3.17	0.04	0.19
Days of												
Rain:	0	2	3	4	2	13	12	6	4	11	1	2
Season:										Total	18.10	
										Days	60	

Appendix A-37. San Francisco Daily Rainfall, 1885-1886

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.01				0.01	0.49		
2	0.01								0.08	0.03		
3					0.03				0.15			
4					0.78				0.02			0.01
5					0.16				0.02		0.02	
6					1.56				0.03	0.49		
7					0.17				0.16	0.24	0.21	
8	0.05				0.03				0.17	0.08		
9					0.45				0.45	1.01	0.14	
10					0.42	0.29			0.06	1.14		
11										0.30		
12							0.03			0.36		
13				0.40			0.12			0.28		
14				0.31		0.05	0.01					
15					1.20	0.02	0.03			0.23		
16					0.86				0.01	0.32		
17					1.67		0.11		0.65	0.31		
18					0.52		0.44					
19					0.01		0.85					
20					0.20		0.96					
21					0.18	2.78	0.28					
22					0.51	0.34	0.52					
23						0.09	2.35	0.01				
24			0.11		2.58	0.59	0.07					
25					0.05	0.33	0.66					
26						0.48	0.84	0.02				
27							0.15	0.03				
28					0.04			0.18				
29				0.01	0.35							
30						0.02						
31									0.26			
Monthly												
Total:	0.06	0.00	0.11	0.72	11.78	4.99	7.42	0.24	2.07	5.28	0.37	0.01
Days of												
Rain:	2	0	1	3	21	10	15	4	13	13	3	1
Season:											Total	33.05
											Days	86

Appendix A-38. San Francisco Daily Rainfall, 1886-1887

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.18				
2								0.04	0.14			
3									0.52			
4								2.22	0.08			
5								2.92				
6						0.15		0.01		0.43	0.01	
7						0.47		0.24		0.02		
8						0.98				1.37		
9						0.13		0.12		0.13	0.02	
10								0.28				
11					0.05			0.50				
12								0.79		0.01		
13					0.02		0.05	0.36		0.04		0.07
14								0.55				
15							0.05					
16	0.23			0.72				0.33				
17									0.06			
18				0.03			0.02		0.04			
19							0.76					
20					0.75		0.80	0.04				
21					0.02		0.19	0.34				
22						0.14						
23												
24								0.32				
25										0.25		
26												
27				0.08			0.03					
28				0.01								
29				0.04		0.16				0.05		
30			0.01	0.60		0.04						
31											0.03	
Monthly												
Total:	0.23	0.00	0.01	1.48	0.84	2.07	1.90	9.24	0.84	2.30	0.06	0.07
Days of												
Rain:	1	0	1	6	4	7	7	16	5	8	3	1
Season:											Total	19.04
											Days	59

Appendix A-39. San Francisco Daily Rainfall, 1887-1888

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1		0.01				0.83	0.79	0.05	0.90			0.03
2						0.11	0.32		0.35			0.02
3						0.07	1.43		0.18		0.19	0.01
4						0.08	0.62		1.21	0.11	0.04	
5			0.04		0.01		0.29		0.17			
6			0.17		0.01							
7			0.01			0.03			0.05			
8						0.16			0.02			
9						0.03						
10						0.01		0.20				0.02
11								0.24				
12						0.04		0.34				
13							0.01		0.15			0.01
14								0.10				0.06
15											0.03	0.05
16												
17							0.02	0.01				0.03
18												
19												0.04
20							0.93					
21			0.02				0.64					
22			0.05				0.09					
23							0.10					
24							0.02		0.02		0.03	
25												
26						0.11						
27							0.14					
28					0.40	0.64						
29					0.15	0.95	0.12					
30					0.42	0.28	0.27		0.26			
31							1.02		0.29		0.09	
Monthly												
Total:	0.00	0.01	0.29	0.00	0.99	3.34	6.81	0.94	3.60	0.11	0.38	0.27
Days of												
Rain:	0	1	5	0	5	13	16	6	11	1	5	9
Season:											Total	16.74
											Days	72

Appendix A-40. San Francisco Daily Rainfall, 1888-1889

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1			0.01			0.03						
2						0.02				0.08	0.04	
3										0.03		
4							0.81			0.05	0.15	
5										0.04	1.29	
6				0.02				0.01			0.43	
7									0.39		0.02	
8						0.03			0.20	0.30	0.08	
9				0.01		1.01			0.65	0.01		
10						0.09			0.46	0.02		
11			0.04			0.04	0.11		0.03			
12			0.01				0.11		0.95		0.01	
13						1.51			2.54	0.21	0.05	
14			0.92			0.13			0.28			
15					1.36	0.74		0.03	0.78	0.22	0.10	
16					0.81	0.05		0.01	0.23			
17				0.05	0.96				0.01			
18					0.13		0.14	0.06	0.52			
19					0.01							
20					0.37				0.68			
21	0.01				0.01	0.19	0.10					
22					0.24	0.35						
23					0.02	0.10	0.01	0.01	0.01			
24						0.07		0.59				
25								0.01				
26		0.01				1.09						
27						0.11			0.05			0.03
28												
29					0.01	0.24						
30				0.05	0.07							
31												
Monthly												
Total:	0.01	0.01	0.98	0.13	3.99	5.80	1.28	0.72	7.78	0.96	2.17	0.03
Days of												
Rain:	1	1	4	4	11	17	6	7	15	9	9	1
Season:											Total	23.86
											Days	85

Appendix A-41. San Francisco Daily Rainfall, 1889-1890

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.09	0.05					
2						0.03	0.85					
3						0.36	0.37					
4						0.51	0.36	0.03	0.29			
5						1.44	0.29	0.04	0.04			
6						1.28	0.02		0.31	0.55		
7				1.06		0.53	0.01		0.23		0.45	
8						1.44			0.65		0.01	
9				0.01		0.05			0.16			
10	0.01					0.33	0.03		0.02		0.45	
11						0.34					0.16	
12						0.70	0.48					
13							0.36					
14												
15							0.23	0.07				
16							1.04	1.07				
17				0.70	0.38	0.50	0.45	0.29		0.01		0.05
18				1.33	0.74	0.69	0.69	0.70	1.31	0.52		
19					0.58	1.12	0.34	1.27	0.72	0.02		
20				1.25	0.56	0.26	0.03	0.74				
21				0.68	0.02	0.81	0.55	0.62				
22				0.60	0.35	1.24	0.36	0.23	0.04			
23				0.05		0.09	0.16		0.03			
24						1.42	0.72	0.01				
25				0.71		0.32	1.83	0.09	0.08			
26				0.72		0.04			0.23			
27				0.14								
28				0.01		0.08						0.05
29							0.19		0.40	0.05		
30				0.02	0.27	0.14	0.20		0.22	0.03		
31												
Monthly												
Total:	0.01	0.00	0.00	7.28	2.90	13.81	9.61	5.16	4.73	1.18	1.07	0.10
Days of												
Rain:	1	0	0	13	7	24	23	12	15	6	4	2
Season:										Total	45.85	
										Days	107	

Appendix A-42. San Francisco Daily Rainfall, 1890-1891

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.06	0.42	0.68			
2							0.15		0.10			
3						1.83	0.26		0.13			
4						0.18	0.49					
5						0.02		0.07	0.19	0.01		
6									0.01	0.74	0.60	
7										0.51		
8	0.02											
9												
10								0.01	0.06	0.41		
11								0.01		0.01		0.10
12								0.01	0.02			0.01
13										0.18		
14								0.04		0.14		
15							0.01	3.38	0.06			
16								0.54	0.23	0.34		
17							0.01	0.04		0.10		
18								0.34				
19								0.02				
20												
21								0.46				
22								0.69				
23								0.22				
24						0.26		0.12				
25						0.17		0.10				
26								0.22	0.34			
27								0.18	0.06		0.52	
28								0.39	0.08		0.09	
29			0.29			0.79						
30			0.02								0.03	
31											0.01	
Monthly												
Total:	0.02	0.00	0.31	0.00	0.00	3.25	0.98	7.26	1.96	2.44	1.25	0.11
Days of												
Rain:	1	0	2	0	0	6	6	19	12	9	5	2
Season:											Total	17.58
											Days	62

Appendix A-43. San Francisco Daily Rainfall, 1891-1892

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.05	0.30	0.78	0.30	0.26	0.26	0.19	
2									0.16	0.02	0.07	
3						0.50						
4						0.25		0.34			0.01	
5					0.06						0.02	
6								0.39			0.32	
7							0.37				0.02	
8						0.09	0.09					
9	0.09		0.01			0.29						
10			0.01								0.08	
11	0.01											
12												
13			0.08									
14										0.18		
15			0.04						0.45	0.05	1.15	
16						0.48						
17								0.04		0.06		
18					0.01			1.03	0.47			
19					0.25	0.50		0.71	0.22			
20								0.05	0.06			
21								0.01		0.38		
22			0.63						0.01			
23						0.06			0.01			
24							0.32	0.03		0.08		
25							0.74					
26							0.10					
27						0.40			0.29			
28				0.03		0.03						
29						2.21			0.72	0.26		
30		0.02		0.01	0.19	0.40	0.01		0.20	0.10		
31						0.11	0.01					
Monthly												
Total:	0.10	0.02	0.77	0.04	0.56	5.62	2.42	2.90	2.85	1.39	1.86	0.00
Days of												
Rain:	2	1	5	2	5	13	8	9	11	9	8	0
Season:											Total	18.53
											Days	73

Appendix A-44. San Francisco Daily Rainfall, 1892-1893

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.06		0.03				
2						1.22		0.19				
3						1.30		0.09				
4						0.18		0.57	0.94			
5								0.28	0.10	0.23		
6				0.05				0.04		0.49		
7										0.01		
8								0.36	0.59	0.03		
9				0.26				1.06				
10									0.08	0.10		
11									0.98	0.04		
12								0.13	0.04			
13												
14									0.01			
15							0.27		0.10			
16				0.91			0.05		0.05		0.04	
17											0.11	
18									0.06			
19									0.36			
20						0.01			0.52			
21									0.15			
22						0.04				0.13		
23					0.35	0.26			0.07			
24						1.14			0.02			
25					0.31	0.57						
26					0.05	0.30	0.66					
27					0.88		0.64					0.03
28				0.02	0.62		0.04					
29			0.02		0.39							
30				0.33	1.31		1.39		0.01			
31				0.08								
Monthly												
Total:	0.00	0.00	0.02	1.65	3.91	5.08	3.05	2.75	4.08	1.03	0.15	0.03
Days of												
Rain:	0	0	1	6	7	10	6	9	16	7	2	1
Season:											Total	21.75
											Days	65

Appendix A-45. San Francisco Daily Rainfall, 1893-1894

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.23					
2							0.40		0.34			0.20
3							0.01					0.02
4												0.17
5					0.02			0.50	0.08			
6			0.02		0.10				0.10			
7					0.01			0.09	0.02			
8			0.07					0.03				
9				0.10				0.07	0.02			
10								0.14				
11			0.12					0.01				
12												
13												
14						0.50	0.04				0.29	
15				0.02			1.84	0.38				
16							0.08	0.05	0.04			0.15
17							0.22	0.10				0.02
18							0.15	0.14				
19							0.02	0.85				
20							2.61	0.33				
21					0.03	0.97	0.16				0.12	
22					0.01	0.04	0.17			0.01		
23					0.06	0.01						
24					1.26	0.43						
25					0.03	0.01				0.19	0.63	
26	0.02				1.69	0.23				0.27	0.05	
27					0.37	0.06				0.03	0.21	
28					0.09							
29					0.30		0.05					
30				0.04	0.21		0.01					
31											0.01	
Monthly												
Total:	0.02	0.00	0.21	0.16	4.18	2.25	5.99	2.69	0.60	0.50	1.31	0.56
Days of												
Rain:	1	0	3	3	13	8	14	12	6	4	6	5
Season:											Total	18.47
											Days	75

Appendix A-46. San Francisco Daily Rainfall, 1894-1895

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.03				0.01	0.26	
2						0.18					0.01	
3						0.02						
4						0.56	1.96				0.04	
5						0.60	0.15					
6						0.23	0.06					
7						0.83						
8						0.87	0.82					
9							0.01					
10						0.23		0.06		0.02		
11								0.96				
12								0.91				
13							0.45	0.10	0.02	0.09		
14									0.01			
15						0.10						
16						0.01	1.40					
17						0.21	0.61		0.10			
18				0.58		0.99	0.44		0.05			
19				0.02		1.21	0.11					
20				0.45		0.14			0.67			
21				0.04		1.19	0.32		0.04			
22						0.16	0.63	0.19	0.20			
23				0.64			0.03	0.09				
24												
25												
26										0.37	0.14	
27					0.88	0.30			0.35	0.54	0.07	
28						0.39			0.45	0.21	0.08	
29			0.68			0.37						
30			0.37			0.02						
31						0.37						
Monthly												
Total:	0.00	0.00	1.05	1.73	0.88	9.01	6.99	2.31	1.89	1.24	0.60	0.00
Days of												
Rain:	0	0	2	5	1	22	13	6	9	6	6	0
Season:										Total	25.70	
										Days	70	

Appendix A-47. San Francisco Daily Rainfall, 1895-1896

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.18				
2									0.55			
3					0.19				0.45			
4					0.04				0.07		0.04	
5	0.01				1.04	0.09			0.25	0.91		
6					0.02	0.11			0.05	0.53		
7												
8												
9										0.24		
10			0.09							0.06		
11			0.09								0.27	
12			0.56									
13			0.03				0.56			0.03		
14							0.17			0.09		
15				0.06		0.13	0.28		0.32	0.14		
16				0.01		0.02	0.46		0.74	0.01		
17						0.13	0.98					
18						0.01	1.18					
19						0.33	0.04					
20				0.01		0.27	1.01		0.03			
21				0.03		0.34	0.21	0.01	0.02	0.22	0.33	
22									0.10	0.02	0.03	
23							0.52		0.01	0.69		
24										1.90		
25							0.68			0.10		
26							0.55		0.16	0.13		
27					0.26		1.35	0.01	0.10			
28					0.12		0.15	0.05				
29					0.11			0.03		0.09	0.05	
30												
31												
Monthly												
Total:	0.01	0.00	0.77	0.11	1.78	1.43	8.14	0.28	2.85	5.16	0.72	0.00
Days of												
Rain:	1	0	4	4	7	9	14	5	13	15	5	0
Season:												
Total											21.25	
Days											77	

Appendix A-48. San Francisco Daily Rainfall, 1896-1897

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								1.23	0.38	0.20		
2								0.05	0.88			
3								0.42	0.36			
4								0.66				
5								0.61	0.27			
6								0.01	0.74	0.03		
7								0.36	0.15			
8									0.12			
9					0.31				0.01			
10												
11	0.04			0.01				0.02				
12								0.03				
13						0.28	0.01	0.17				
14						0.02		0.02				0.03
15			0.02			0.07						
16					0.01	1.65	0.03	0.06			0.02	
17					0.24			0.01	0.04		0.59	
18		0.01	0.01			0.02		0.27	0.08			
19		0.02	0.08		0.14			0.39	0.03	0.04		0.03
20					0.44			0.09	0.03			0.16
21												
22			0.40		0.31							
23			0.01		2.00	0.02						
24					1.11		0.06					
25												
26				0.54		0.53						
27				0.94		0.79	0.18		0.10			
28						0.11	0.09	0.01	1.33			
29				0.04			0.77					
30		0.06				0.56	0.04					
31				0.02		0.29	1.08		0.04			
Monthly												
Total:	0.04	0.09	0.52	1.55	4.56	4.34	2.26	4.41	4.56	0.27	0.61	0.22
Days of												
Rain:	1	3	5	5	8	11	8	17	15	3	2	3
Season:										Total	23.43	
										Days	81	

Appendix A-49. San Francisco Daily Rainfall, 1897-1898

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.20				0.18
2												
3			0.02					0.02				
4					0.23							
5					0.01			0.08				
6					0.03		0.32	0.17		0.19		
7						0.75	0.03	0.19	0.05			
8						0.27			0.08			
9						0.01						0.01
10												
11						0.07	0.31					
12							0.02	0.01				
13				0.01							0.03	
14					0.01	0.12					0.35	
15							0.25		0.04		0.89	
16									0.03		0.04	
17							0.09					
18												
19							0.03					
20					0.11							
21				0.27				0.44			0.01	
22				0.01							0.06	
23				1.41	0.42							
24					0.22			0.78				
25					0.02		0.07	0.02	0.04			
26								0.01				
27								0.21			0.03	
28											0.03	
29												
30			0.08									
31												
Monthly												
Total:	0.00	0.00	0.10	1.70	1.05	1.22	1.12	2.13	0.24	0.19	1.44	0.19
Days of												
Rain:	0	0	2	4	8	5	8	11	5	1	8	2
Season:											Total	9.38
											Days	54

Appendix A-50. San Francisco Daily Rainfall, 1898-1899

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.47	0.08	0.22			0.01
2				0.24			0.22		0.01			
3							0.03	0.02				
4												
5												
6							0.03					
7				0.45			0.93					
8									0.02			
9							0.22					
10							0.78					
11							0.27		0.01			
12												
13							0.22					
14						0.59	0.21		0.21			
15							0.29		0.95			
16									0.93			
17												
18												
19					0.24	0.70			0.38			
20					0.12	0.32			0.23			
21									0.11			
22			0.09		0.04				2.15			
23				0.12					1.48	0.03		
24									0.87	0.45	0.10	
25			0.73						0.01	0.05		
26			0.24									
27										0.03		
28												
29					0.06	0.01			0.03			
30										0.06		
31				0.05							0.76	
Monthly												
Total:	0.00	0.00	1.06	0.86	0.46	1.62	3.67	0.10	7.61	0.62	0.86	0.01
Days of												
Rain:	0	0	3	4	4	4	11	2	15	5	2	1
									Season:		Total	16.87
											Days	51

Appendix A-51. San Francisco Daily Rainfall, 1899-1900

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.77			0.08		
2							0.79	0.08		0.26		
3							1.56		0.45	0.11		
4					0.14			0.02	0.46		0.10	
5						0.05	0.18		0.09			
6									0.13			
7						0.08	0.62		0.09			
8					0.14	0.11			0.69			
9					0.12							
10					0.70						0.22	
11				0.02	0.12	0.11						0.01
12				0.07	0.30	0.04				0.18		
13				1.44						0.24		
14						0.91						
15					0.23	0.46						0.04
16						0.09						
17					0.31	0.11						
18								0.02				
19				0.02	0.09							
20				0.24				0.50		0.21		
21				1.80	1.51			0.01				
22								0.01				
23				0.01								
24												
25												
26												
27												
28					0.02		0.01					
29				0.12	0.11		0.18					
30				0.20		0.69						
31												
Monthly												
Total:	0.00	0.00	0.00	3.92	3.79	2.65	4.11	0.64	1.91	1.08	0.32	0.05
Days of												
Rain:	0	0	0	9	12	10	7	6	6	6	2	2
Season:										Total	18.47	
										Days	60	

Appendix A-52. San Francisco Daily Rainfall, 1900-1901

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.01	0.01						0.03	
2							0.04			0.10		
3				0.30			0.04	0.09				
4				0.32			1.22	0.59				
5				0.02			0.57	0.55				
6							1.75			0.05		
7					0.17			0.01				
8							0.07	0.28				
9												
10									0.65			
11							0.54		0.10			
12			0.45	0.03		0.03	0.15					
13								0.09				
14			0.01			0.41		0.08				
15												
16					0.92	0.70						
17					0.70	0.10		0.07				
18				0.10	0.09			0.48				
19				0.19	0.08			0.79				
20					0.39	0.04	0.25	0.05			0.20	
21					1.40	0.09	0.63				0.26	
22							0.53					
23								1.95				
24												
25					0.15				0.05			
26											0.20	
27												
28				0.21						0.16		
29										0.72		
30										0.61		
31				0.30								
Monthly												
Total:	0.00	0.00	0.46	1.48	3.91	1.37	5.79	5.03	0.80	1.64	0.69	0.00
Days of												
Rain:	0	0	2	9	9	6	11	12	3	5	4	0
Season:											Total	21.17
											Days	61

Appendix A-53. San Francisco Daily Rainfall, 1901-1902

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.01	0.55	0.19		
2				0.04		0.34	0.14	0.15	0.25			
3						0.20			0.02			
4						0.08		0.01		0.01		
5						0.23		0.18	0.08	0.05		
6						0.05			0.69	0.15	0.24	
7								0.46			0.02	
8								0.97	0.49	0.01		
9					0.04			0.03	0.14			
10					0.85							
11								0.23				
12								0.02			0.02	
13											0.56	
14								0.58			0.02	
15					0.22			0.72				
16					0.01							
17								0.12				
18							0.08		0.10			
19					0.12		0.17		0.05			
20					0.39			0.53		0.04		
21					1.20		0.14	1.08				
22							0.27	0.30				
23			0.67				0.35	0.13	0.10	0.21		
24					0.10		0.05	0.84		0.23		
25				0.01			0.01	0.60	0.18			
26				0.09								
27				0.43				0.31				
28				0.07	0.40							
29			0.02		0.15					0.05		
30			0.09							0.04		
31							0.02				0.19	
Monthly												
Total:	0.00	0.00	0.78	0.64	3.48	0.90	1.23	7.27	2.65	0.98	1.05	0.00
Days of												
Rain:	0	0	3	5	10	5	9	19	11	10	6	0
Season:											Total	18.98
											Days	78

Appendix A-54. San Francisco Daily Rainfall, 1902-1903

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.01	0.15	0.63		0.39		
2									0.04			
3								0.27	0.14			
4								0.01	0.75			
5						0.19			0.17			
6						0.01						
7					0.19	0.01		0.31				
8								0.43	0.25			
9					0.77	0.07				0.01		
10					0.62	0.78						
11						0.34		0.10				
12						0.01			0.10			
13				0.21	0.04				1.30			
14					0.04				0.02			
15												
16					0.02	0.03			0.78	0.16		
17									0.01			
18					0.28							
19					0.02		0.01					
20												
21				0.45			0.04					
22				0.08			0.24	0.01	0.02			
23				0.61			0.66					
24				0.24			0.08		0.01			
25				0.11			0.35					
26						0.85	0.43					
27							1.00					
28							0.01		1.12			
29									0.37			
30							0.61		0.21			
31						0.02	0.15		0.94			
Monthly												
Total:	0.00	0.00	0.00	1.70	1.98	2.32	3.73	1.76	6.23	0.56	0.00	0.00
Days of												
Rain:	0	0	0	6	8	11	12	7	16	3	0	0
Season:										Total	18.28	
										Days	63	

Appendix A-55. San Francisco Daily Rainfall, 1903-1904

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1											0.30	
2									0.11			
3										0.03		
4					0.49		0.15	0.47	0.03			
5								0.13	0.02			
6								0.13	0.08			
7					0.06			0.02	0.30			
8								0.10	0.15			
9				0.02					0.03			
10				0.15			0.02		1.29			
11					0.07			0.49	0.23			
12					0.10	0.07		2.28	0.01			
13					0.10	0.05						
14					0.58				0.27	0.21		
15								0.15	0.08			
16						1.06	0.09	0.37		0.12		
17							0.59		0.78			
18					0.04	0.36			0.21	0.03		
19					0.25	0.06	0.20	0.03	0.41	0.40		
20					2.39				0.12	0.02		
21					0.15			0.14				
22								0.32	0.09	0.12		
23					0.02				0.42			
24								0.71	0.38			
25								0.01				
26								0.50	0.01	0.36		
27								0.04	0.22			
28									0.70			
29									0.07			
30												
31						0.03						
Monthly												
Total:	0.00	0.00	0.00	0.17	4.25	1.63	1.05	5.89	6.01	1.29	0.30	0.00
Days of												
Rain:	0	0	0	2	11	6	5	16	23	8	1	0
Season:												
Total											20.59	
Days											72	

Appendix A-56. San Francisco Daily Rainfall, 1904-1905

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.02			1.23			1.07	
2								0.04			0.11	
3								T			T	
4	T				T	0.01		0.41				
5								0.12				
6				T							0.08	
7				0.08							0.78	
8		T		0.54			0.38				0.01	
9				0.68		0.18						
10				0.03								
11				0.72		0.10			0.02		T	
12						0.12	T		0.33			
13						T	0.29		0.15			
14			T	0.26					0.04			
15	0.02				0.32		0.55	0.05	0.13	0.36		
16							0.01	0.81	0.04			
17			T					0.01	T	0.13		
18					T		0.73		0.93	0.31		
19								0.03	0.31	0.04		
20							0.94		0.03	0.08		
21							0.16		0.22	0.41		
22	T		0.02				0.16		0.09			
23		0.01	3.09			0.43			0.18			
24		0.05	1.39		0.01	0.19	0.70					
25			0.31			0.01						
26			0.26						0.07	T	T	
27					0.56	T			0.22		T	
28									0.09		T	
29						0.10						
30				0.06	0.16	0.38	T					
31						0.07	0.12					
Monthly												
Total:	0.02	0.06	5.07	2.37	1.07	1.59	4.04	2.70	3.15	1.33	2.05	0.00
Days of												
Rain:	3	3	7	8	7	12	12	9	16	7	10	0
Season:											Total	23.45
											Days	94

Appendix A-57. San Francisco Daily Rainfall, 1905-1906

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1										0.01		
2												
3									0.90			0.20
4									0.02			0.02
5												
6												
7												
8												
9							0.05	0.01				
10								0.22				
11							0.15		0.14		0.01	0.10
12							1.00	0.10	0.13			
13							0.54		0.22			
14							0.22	1.27	0.49		0.04	
15						0.44	0.23	0.05	0.05			0.23
16							0.33		0.03			
17						0.26	0.88	0.28				
18						0.11	0.47	0.66				
19					0.03	0.12						
20						0.65		0.58	0.41			
21								0.17	0.01			
22												
23					0.18		0.03	0.55	1.37	0.51		
24					0.01			0.33	0.03	0.14	0.21	
25									0.13		0.85	
26					0.33	0.07			0.28		0.10	0.01
27					0.05			0.08		0.26	1.27	
28						0.08					0.27	
29					0.32				0.04			
30						0.32			0.70			
31									0.07			
Monthly												
Total:	0.00	0.00	0.00	0.00	0.92	2.05	3.90	4.30	5.02	0.92	2.75	0.56
Days of												
Rain:	0	0	0	0	6	8	10	12	17	4	7	5
									Season:		Total	20.42
											Days	69

Appendix A-58. San Francisco Daily Rainfall, 1906-1907

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.61	0.10			
2					0.30		0.03	1.33		0.01		
3					0.02		0.02	0.11				
4					0.67		0.59		0.15	0.08		
5									0.14	0.01		0.02
6		0.03					0.32		0.02			0.05
7			0.04			0.88	0.73					
8			0.02			0.05	0.26		0.06			
9						0.01	0.27		0.75			
10						2.44	0.02		0.30		0.01	
11				0.01		0.51	0.01		0.21		0.01	0.40
12						0.43	0.03					0.07
13						0.15	0.32					0.73
14						0.04	0.30			0.01		
15	0.02				0.02		0.01		0.03			
16	0.03			0.01			0.60	0.24	1.15			
17							0.16	0.09	0.29			
18									1.55			
19									0.51		0.01	
20	0.02				0.05				0.14			
21								0.39	0.39			
22						0.33		0.10	0.25			
23			0.12			0.04			1.37			
24						0.14	0.06	0.15	0.59			
25						0.74	0.04		0.40			
26						0.53	0.03		0.02			
27	0.01						0.33					0.01
28					0.53		0.08					
29				0.01								
30		0.08				0.60						
31						0.01	0.20				0.01	
Monthly												
Total:	0.08	0.11	0.18	0.03	1.59	6.90	4.41	3.02	8.42	0.11	0.04	1.28
Days of												
Rain:	4	2	3	3	6	15	21	8	20	4	4	6
Season:											Total	26.17
											Days	96

Appendix A-59. San Francisco Daily Rainfall, 1907-1908

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.02			2.04	0.07		0.15	
2								1.00	0.21			
3			0.11				0.39		0.14			
4						0.09		0.08	0.07			
5								0.05	0.38			
6						0.30		0.05				
7											0.01	
8		0.02					0.07	0.72				0.01
9						0.01	0.01	0.23				
10						0.95					0.20	
11				0.06							0.01	
12						0.21	0.19					
13						0.03	0.31					
14											0.24	
15						0.61				0.05		
16					0.01							
17							0.10					
18							0.29				0.15	
19					0.01	0.17	0.02					
20							2.09					
21							0.08			0.10		
22				0.12						0.04		
23				0.01			0.83			0.03		
24							0.11		0.01			
25				0.77		0.09	0.24		0.01			
26				0.32		0.39	0.01					
27							0.01					
28						0.12		0.57				
29				0.01		0.15	0.13	0.65				
30				0.07		0.48			0.01			
31						0.06						
Monthly												
Total:	0.00	0.02	0.11	1.36	0.04	3.66	4.88	5.39	0.90	0.22	0.76	0.01
Days of												
Rain:	0	1	1	7	3	14	16	9	8	4	6	1
Season:											Total	17.35
											Days	70

Appendix A-60. San Francisco Daily Rainfall, 1908-1909

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.18	0.01				
2						0.08	0.23	0.90	0.04			
3							0.04	0.32	0.11			
4						0.96	0.04	0.04	0.01			
5						0.04	0.39	0.28				
6							0.15	0.17	0.73			
7							0.02	0.73	0.02			
8						0.17	0.81	0.24				
9						0.34	0.04					
10								0.75				
11				0.05			0.29	1.17				
12	0.02						0.62	0.92				
13		0.01				0.01	0.75					
14				0.31			0.77	0.31				
15			0.05	0.13		0.01	0.68	0.09				
16			0.05			0.09	0.58	0.10				
17							0.03					
18								0.24				
19			0.01	0.04			1.24	0.05	0.05			
20			0.02				0.65	0.90	1.02			
21					0.31		0.20		0.15			
22					0.02	0.27	0.21					
23					0.31	0.01	0.10		0.14			
24							0.93	0.31	0.26			
25					0.70		0.82		0.09			
26							0.02					
27												
28									0.25			
29				0.08					0.40			
30							0.62					
31						0.17	0.10					
Monthly												
Total:	0.02	0.01	0.13	0.61	1.34	2.15	10.51	7.53	3.27	0.00	0.00	0.00
Days of												
Rain:	1	1	4	5	4	11	26	18	13	0	0	0
Season:										Total	25.57	
										Days	83	

Appendix A-61. San Francisco Daily Rainfall, 1909-1910

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.49		0.53	0.02					
2				0.34								
3												
4						0.96						
5					0.04	0.28						
6						0.66		0.46				
7						0.02		0.18				
8					0.49	1.40		0.05				
9					0.48	0.06	0.14	0.46				
10					0.29	0.02	0.02			0.18	0.02	
11										0.08		
12												
13					0.10		0.74					0.02
14							0.12	0.08	0.61			
15							0.62		0.01			
16							0.18		0.03			
17									0.01			
18				0.04				0.30				
19				0.05	0.23	0.01		0.05	0.75	0.01		
20				0.01	0.31	0.04			0.28			
21							0.05		1.06			
22					0.07		0.04	0.19	0.23			
23					0.24		0.37	0.01				
24					0.12		0.61	0.26			0.01	
25			0.57		0.03	0.04	0.04	0.01	0.01			
26			0.14			0.02	0.26		0.26			
27								0.03	0.53			
28			0.07	0.20				0.01				
29			0.02	0.10								
30					0.03	0.46				0.04		
31						1.09	0.03					
Monthly												
Total:	0.00	0.00	0.80	1.23	2.43	5.59	3.24	2.09	3.78	0.31	0.03	0.02
Days of												
Rain:	0	0	4	7	12	14	14	13	11	4	2	1
Season:										Total	19.52	
										Days	82	

Appendix A-62. San Francisco Daily Rainfall, 1910-1911

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.12	0.55			
2						0.16		0.43	0.14			
3						0.84		0.48	0.31			
4									0.74	0.51		
5								0.04	0.26	0.32	0.15	
6								0.02	1.64			0.03
7									0.46			
8					0.03				0.06			
9					0.03	0.09	0.71		0.28	0.01		
10				0.04		0.57	0.07	0.66	0.13	0.02		
11				0.39	0.06	0.07	0.94	0.36		0.02		
12				0.22			1.15	0.43				
13							1.73	0.08				
14							0.87					
15			0.04				0.01					
16											0.02	
17											0.04	
18					0.09						0.07	
19							0.91					
20							0.76					
21												
22												
23					0.02		0.53					
24					0.25		1.25					
25							0.45					
26							0.03			0.01		
27							0.95	0.10				
28			0.01				1.40	0.30				
29							1.21					
30							0.67					
31							0.15					
Monthly												
Total:	0.00	0.00	0.05	0.65	0.48	1.73	13.79	3.02	4.57	0.89	0.28	0.03
Days of												
Rain:	0	0	2	3	6	5	18	11	10	6	4	1
Season:											Total	25.49
											Days	66

Appendix A-63. San Francisco Daily Rainfall, 1911-1912

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.16			0.16				0.01	
2												
3						0.16						
4						0.28			0.04			
5						0.28			2.07			
6						0.19		0.04	0.22			
7							0.20	0.15	0.06	0.03		
8				0.01	0.03				0.02	0.02		
9				0.11	0.28		0.22			0.06		
10					0.17		0.09			0.64		
11									0.38	0.16		0.02
12									0.82			0.04
13					0.01			0.07	0.07			
14								0.14				
15					0.11		0.08		0.41			
16						0.35	0.19					
17						0.01			0.01			
18							0.20	0.01				
19											0.01	
20											0.28	0.01
21											0.05	
22							0.10				0.32	0.02
23						0.02	0.02					0.47
24							0.06			0.05	0.03	0.25
25							0.72			0.01	0.71	
26							0.43			0.16	0.06	
27						0.50						
28						0.19				0.04		
29						0.18				0.06		
30						0.01				0.15		
31						0.37						
Monthly												
Total:	0.00	0.00	0.00	0.28	0.60	2.54	2.47	0.41	4.10	1.38	1.47	0.81
Days of												
Rain:	0	0	0	3	5	12	12	5	10	11	8	6
Season:											Total	14.06
											Days	72

Appendix A-64. San Francisco Daily Rainfall, 1912-1913

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.02						
2			0.02		0.01					0.15		
3			0.02		0.20					0.19		
4												
5			0.12		0.65					0.22		
6			1.09		0.34							
7					0.01					0.02		
8							1.04	0.08			0.15	
9					0.42		0.18				0.09	
10					0.12							
11												
12							0.11			0.01		
13							0.05					
14					0.04	0.57	0.35					
15						0.02	0.93					
16						0.56	0.45					
17							0.25		0.61		0.13	
18							0.41		0.06			
19					0.15				0.01			
20									0.02			
21								0.06	0.39			
22				0.12			0.07		0.05			0.01
23								0.21	0.32			0.01
24								0.08				
25				0.26								
26				0.04								
27											0.26	
28				0.06						0.01		
29				0.01								
30						0.11						
31						0.02			0.01			
Monthly												
Total:	0.00	0.00	1.25	0.49	1.94	1.30	3.84	0.43	1.47	0.60	0.63	0.02
Days of												
Rain:	0	0	4	5	9	6	10	4	8	6	4	2
Season:											Total	11.97
											Days	58

Appendix A-65. San Francisco Daily Rainfall, 1913-1914

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.74		0.09		0.02			
2							0.64					
3										0.01		
4					0.51					0.46		
5					0.02							
6					0.01							0.15
7							0.47				0.02	
8										0.39		
9										0.09		
10					0.07	0.16						
11					0.36							
12					0.79	0.48	1.86					
13					0.04		0.20					
14							0.85					
15										0.02	0.04	
16							0.18	0.02				
17						0.05	1.09	0.47				
18					2.21		0.28	0.78				
19						0.25	0.18	0.41				
20					0.17	0.01		2.22				
21						0.83	1.09	0.50		0.01		
22	0.06					0.74	0.83	0.58			0.24	
23	0.01						0.52				0.02	0.02
24					0.15	0.23	0.52				0.05	0.12
25					0.03	0.19	0.86	0.06				
26					0.55		0.10					
27					0.21					0.01		
28		0.01							0.05			
29					0.36	0.35			0.94			
30						0.98			0.08			
31				0.35		1.14						
Monthly												
Total:	0.07	0.01	0.00	0.35	6.22	5.41	9.76	5.04	1.09	0.99	0.37	0.29
Days of												
Rain:	2	1	0	1	15	12	16	8	4	7	5	3
Season:										Total	29.60	
										Days	74	

Appendix A-66. San Francisco Daily Rainfall, 1914-1915

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.16	0.05		0.64				
2						0.66		1.16			0.02	
3						0.02	0.21	0.08			0.37	
4						0.38	0.01	0.04			0.45	
5						0.23	0.63				0.04	
6						0.12	0.23					
7								0.71		0.25		
8						0.01	0.95	0.94			0.09	
9				0.01		1.01		0.52			0.39	
10						0.65		0.37			0.28	
11	0.02					0.08	0.48	0.02	0.02		1.05	
12							0.42		0.17	0.05		
13					0.01		0.24		0.01			
14							0.02					
15								0.13				
16						0.88		0.66			0.21	
17				0.25		1.02		0.14			0.26	
18						0.06		0.10				
19				0.03		0.06		0.21				
20								0.39				
21							0.04	0.11		0.01		
22								0.43				
23								0.24			0.01	
24							0.33	0.31				
25							0.39			0.22		
26						0.26	0.07		0.05	0.08		
27					0.04		0.54	0.16	1.21	0.01		
28					0.05		0.40		0.75			
29					0.09		0.47		0.02			
30					0.35		0.22		0.78			
31							1.09		0.01			
Monthly												
Total:	0.02	0.00	0.00	0.29	0.70	5.49	6.74	7.36	3.02	0.62	3.17	0.00
Days of												
Rain:	1	0	0	3	6	15	18	20	9	6	11	0
Season:											Total	27.41
											Days	89

Appendix A-67. San Francisco Daily Rainfall, 1915-1916

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.77		0.14			
2						0.13	2.01	0.01				
3						3.28	1.66	0.17				
4	0.01				0.04		0.04	1.60	0.65			
5							0.57	0.05				
6							0.15	0.03			0.07	
7								0.13				
8					0.47	0.04	0.69					
9					0.21		0.75	0.08				
10							0.02	0.07				
11						0.03						
12						0.41	0.24					
13						2.21	1.08					
14						0.06	1.23					
15					0.03		0.36					
16					0.10		0.04					
17						0.21	0.72					
18							0.06		0.11			
19							0.02		0.20			
20									0.08			
21								0.24				
22							0.61	0.05	0.15			
23				0.01	0.04		0.51					
24							1.39					
25							0.01	0.06				
26					0.03		0.06	0.37				
27							1.05	0.72				
28						0.05	0.35	0.02				
29							0.19	0.17				
30							0.01					
31												
Monthly												
Total:	0.01	0.00	0.00	0.01	0.92	6.42	14.59	3.77	1.33	0.00	0.07	0.00
Days of												
Rain:	1	0	0	1	7	9	26	15	6	0	1	0
Season:											Total	27.12
											Days	66

Appendix A-68. San Francisco Daily Rainfall, 1916-1917

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	0.03			0.11		0.51	0.04			0.01		
2			0.01			1.11	0.98			0.01		
3				0.05		0.47	0.01					
4				0.09	0.38	0.04						
5					0.20	0.01	0.32					
6				0.01	0.16							
7												
8				0.02					0.37	0.03		
9				0.21		0.01			0.31			
10				0.03								
11								0.35		0.25	0.01	
12							0.13	0.01				
13		0.01							0.63			
14		0.21										
15												
16								0.02				
17											0.02	
18								0.07				
19								0.28				
20								0.74				
21			0.47			0.04		1.03				
22						0.31				0.03		
23						1.01		0.39				
24						0.19		0.59				
25					0.57	0.27		0.12				
26					0.19	0.08		0.21				
27						0.33						
28		0.07				0.18	0.03				0.02	
29							0.20		0.11		0.01	
30			0.72				0.12					
31						0.23						
Monthly												
Total:	0.03	0.29	1.20	0.52	1.50	4.79	1.83	3.81	1.42	0.33	0.06	0.00
Days of												
Rain:	1	3	3	7	5	15	8	11	4	5	4	0
Season:										Total	15.78	
										Days	66	

Appendix A-69. San Francisco Daily Rainfall, 1917-1918

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.11				
2												
3												
4								0.18				
5					0.12			0.62				
6								1.01	0.04			
7								0.09	0.13	0.08		
8									0.02			
9										0.48		
10					0.17				0.75			
11					0.08				0.04			
12							0.30	0.05	0.37	0.04		
13								0.39				
14							0.45	0.08				
15							0.06					
16						0.05		0.54				
17								0.14	0.17			
18									0.25			
19								0.61	0.27			
20								0.36				
21								0.12				
22			0.02					0.06				
23								1.43				
24												
25						0.63						
26						0.04			0.69			
27					0.02							
28					0.02							
29												
30					0.40							
31												
Monthly												
Total:	0.00	0.00	0.02	0.00	0.81	0.72	0.81	5.79	2.73	0.60	0.00	0.00
Days of												
Rain:	0	0	1	0	6	3	3	15	10	3	0	0
Season:											Total	11.48
											Days	41

Appendix A-70. San Francisco Daily Rainfall, 1918-1919

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.04				0.05				
2									0.42			
3					0.51							
4				0.03	1.38			0.09		0.01		
5				0.06				0.28		0.07		
6						1.49		0.09	0.18			
7						0.03		0.67				
8						0.65						
9						0.12		1.00				
10							0.16	2.86				
11			0.14					0.58				
12			1.51				0.06	0.06	0.66			
13			0.86						0.66	0.02		
14			0.02		0.14			0.33	0.13			
15				0.01	0.03		0.03		0.02			
16				0.03			0.20	0.08				
17					0.06	0.05						
18					2.24				0.24			
19					0.02	0.01	1.57					
20						0.27	0.44					
21								0.39				
22								0.05				
23					1.20		0.11	0.22				
24												
25								0.11				
26					0.02			1.60				
27								0.02	0.42			
28								0.56				
29									0.01			
30												
31												
Monthly												
Total:	0.00	0.00	2.53	0.17	5.60	2.62	2.57	9.31	2.74	0.10	0.00	0.00
Days of												
Rain:	0	0	4	5	9	7	7	18	9	3	0	0
Season:											Total	25.64
											Days	62

Appendix A-71. San Francisco Daily Rainfall, 1919-1920

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.17		0.02		0.41	0.27			
2						0.34			0.37			
3						0.56						
4						0.20	0.01					
5	0.01					0.14	0.03					
6												
7			0.11			0.02						
8												
9									0.95	0.48		
10						1.09						
11						0.54						
12												
13									0.08			
14										0.33		0.04
15									0.51	0.55		
16									0.04			
17												
18												
19								0.02				
20									0.26			
21						0.25	0.18		0.37			
22						0.05	0.04	0.17	0.20			
23								0.07				
24				0.10								
25									0.20			
26												
27								0.19				
28			0.08									
29			0.20		0.03			0.37				
30					0.41							
31												
Monthly Total:	0.01	0.00	0.39	0.27	0.44	3.21	0.26	1.23	3.25	1.36	0.00	0.04
Days of Rain:	1	0	3	2	2	10	4	6	10	3	0	1
									Season:		Total Days	10.46 42

Appendix A-72. San Francisco Daily Rainfall, 1920-1921

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.39					0.15	
2												
3						0.11			0.01	0.01		
4						0.09		0.05	0.04		0.04	
5							0.38	0.01	0.42		0.10	
6				0.85		0.65	0.01		0.30			
7					0.07	0.62						
8				0.08		0.02						
9				0.41		0.36						
10				0.07	0.18	0.04						
11				0.16	0.58	0.67			0.03	0.03		
12					0.21		0.01		0.14	0.04		
13					0.06			0.40				
14								0.22				
15					0.65							
16					0.01		0.35	0.23		0.46		
17						0.02	2.40	0.01				
18				0.25	0.11	0.63	0.87		0.05			
19				0.01	0.45	0.81	0.51					
20							0.04	0.21			0.07	
21					0.15	0.45		0.25	0.55		0.03	
22									0.74			
23			0.13			1.77						
24						0.25	0.12					
25												
26					0.18		0.46					
27							0.03					
28											0.01	
29							0.43				0.12	
30					0.05	0.60	0.69					
31												
Monthly												
Total:	0.00	0.00	0.13	1.83	2.70	7.48	6.30	1.38	2.28	0.54	0.52	0.00
Days of												
Rain:	0	0	1	7	12	16	13	8	9	4	7	0
Season:											Total	23.16
											Days	77

Appendix A-73. San Francisco Daily Rainfall, 1921-1922

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.10	0.56	0.08				
2												
3									0.24			
4				0.03			0.07		0.11			
5												
6							0.62					
7								0.43				
8						0.02		1.14			0.25	
9								0.57	0.06			0.24
10								0.85	0.82			
11								0.09	0.08			
12										0.44		
13												0.02
14				0.13						0.03		
15								0.07	0.22			
16							0.03	0.03	0.07			
17			0.20				0.01	0.34				
18			0.03			0.02		0.07				
19			0.12			0.15		1.13			0.30	
20						0.44						
21					0.24	0.93		0.06				
22				0.18	0.61	0.37						
23						0.15		0.11	0.14			
24					0.24	1.05		0.04				
25					0.01	0.81		0.04				
26				0.18		2.03		0.10				
27					0.33	0.19	0.15		0.18			
28							0.15		0.14			
29						0.13	0.82		0.08			
30									0.13			
31									0.11			
Monthly												
Total:	0.00	0.00	0.35	0.52	1.43	6.39	2.41	5.15	2.38	0.47	0.55	0.26
Days of												
Rain:	0	0	3	4	5	13	8	16	13	2	2	2
Season:											Total	19.91
											Days	68

Appendix A-74. San Francisco Daily Rainfall, 1922-1923

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.05						0.07		0.01
2				0.20					0.02	0.36		
3				1.41			0.12			0.03		
4						0.14				2.03		
5						0.66	0.06			0.23		
6					2.04	0.26						
7					0.09	0.54						
8				0.18	1.31							
9				0.57	0.33	0.63				0.89		
10				0.31		0.25		0.02		0.11		
11						1.12		0.65				
12						0.57		0.10				
13						0.17						
14												
15												
16						0.78	0.44					
17						0.07	0.25			0.20		
18												
19												
20												
21												
22							0.50					0.02
23							0.63					0.03
24						0.22	0.41					
25												
26				0.20								
27				0.02		1.13	0.12					
28						0.68	0.15				0.02	
29						0.06	0.15				0.04	
30						0.14	0.01					
31				0.01		0.35			0.01			
Monthly												
Total:	0.00	0.00	0.00	2.95	3.77	7.77	2.84	0.77	0.03	3.92	0.06	0.06
Days of												
Rain:	0	0	0	9	4	17	11	3	2	8	2	3
									Season:		Total	22.17
											Days	59

Appendix A-75. San Francisco Daily Rainfall, 1923-1924

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.08	0.19	0.27		
2							0.01		1.01			
3				0.02			0.57			0.03		
4												
5								0.23				
6				0.27		0.16		1.62				
7				0.09		0.14	0.07	1.07				
8					0.20			0.28				
9												
10												
11												
12												
13						1.18						
14												
15								0.02				
16				0.03								
17						0.03			0.02			
18						0.08						
19												
20									0.02			
21			0.01									
22									0.09			
23									0.05			
24			0.11						0.20			
25			0.32				0.75		0.38			
26							0.46					
27		0.01					0.89					
28												
29					0.29	0.01						
30				0.05		0.05						
31						0.26						
Monthly												
Total:	0.00	0.01	0.44	0.46	0.49	1.91	2.75	3.30	1.96	0.30	0.00	0.00
Days of												
Rain:	0	1	3	5	2	8	6	6	8	2	0	0
Season:										Total	11.62	
										Days	41	

Appendix A-76. San Francisco Daily Rainfall, 1924-1925

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.13						0.05
2												
3								0.41		0.45		
4					0.44	0.42		0.69	0.02	1.34		
5				0.50		1.23		1.19				
6				0.09		0.01		0.55				
7					0.19	0.70		0.36				
8					0.34	0.19		0.37				
9					0.53				0.04		0.19	
10								0.31		0.33	0.03	
11								1.04			0.10	
12								1.38			1.34	
13							0.19	0.02			0.05	
14							0.02					
15				0.66		0.11						
16				0.07		0.04		0.09		0.01		
17										0.02	0.08	
18		0.01								0.29	0.86	
19										0.22	1.24	
20						0.70		0.53		0.07	0.03	
21				0.05		2.85		0.03				
22						0.03		0.93				
23				0.02								
24							0.01					
25							1.22					
26				0.01								
27				0.90		0.05	0.05		0.01			
28				0.62					0.35			
29				0.06		0.70			0.31			
30						0.21	0.13		1.53		0.04	
31									0.37		0.06	
Monthly												
Total:	0.00	0.01	0.00	2.98	1.50	7.37	1.62	7.90	2.63	2.73	4.02	0.05
Days of												
Rain:	0	1	0	10	4	14	6	14	7	8	11	1
Season:											Total	30.81
											Days	76

Appendix A-77. San Francisco Daily Rainfall, 1925-1926

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.01	0.34						
2						0.01	0.04	1.18				
3								0.29				
4	0.06							0.77		1.89	0.07	
5				0.26				0.08		0.81		
6			0.28	0.01						0.22	0.06	
7									0.02	1.00	0.02	
8										1.06		
9					0.31					0.01		
10					0.11			0.18		0.01		
11				0.03	0.42			0.84		0.03		
12				0.01	0.33			0.97				
13								0.57				
14							0.13					
15								0.14				
16			0.04		0.47		0.08					
17						0.36	0.36			0.23		
18			0.13			0.14		0.01	0.23			
19						0.16		0.36				
20												
21												
22								0.01				
23												
24												
25												
26												
27												
28							2.38					
29					0.39							
30					0.28		0.98					
31							1.51					
Monthly												
Total:	0.06	0.00	0.45	0.31	2.32	1.01	5.48	5.40	0.25	5.26	0.15	0.00
Days of												
Rain:	1	0	3	4	8	5	13	12	2	9	3	0
Season:											Total	20.69
											Days	60

Appendix A-78. San Francisco Daily Rainfall, 1926-1927

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				1.31				0.02		1.46		
2				0.01		0.32	0.25	0.80	0.20	0.22		
3								1.43		0.01		
4									0.35			
5							0.35	0.07				
6							0.45	0.05			0.01	
7												0.38
8										0.14		
9				0.14					0.47			
10				0.44			0.79					
11					0.41							
12					0.54			0.05				
13								0.45	0.58			
14								0.78	0.04			
15							0.14	0.57		0.02		
16							0.49	0.51				
17						0.18		0.67	0.09			
18					0.06		0.01	0.28				
19					1.33		0.46	0.39			0.04	
20						0.22	0.09	0.03				
21					0.14	0.13		0.40				
22					0.25	0.09						
23					0.68	0.08		0.32				
24					0.34			0.02				
25		0.04			0.87	0.02		0.01				
26					1.02		0.34					
27					0.11		0.23			0.10	0.05	
28					1.43		0.11		0.01			
29					0.03		0.06					
30												
31									0.45			
Monthly												
Total:	0.00	0.04	0.00	1.90	7.21	1.04	3.77	6.85	2.19	1.95	0.10	0.38
Days of												
Rain:	0	1	0	4	13	7	13	18	8	6	3	1
Season:											Total	25.43
											Days	74

Appendix A-79. San Francisco Daily Rainfall, 1927-1928

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.31	0.04		0.19		
2							0.06	0.34	0.05	0.98		
3								1.04	0.02	0.06		
4								0.11	0.02			
5					0.02			0.06	0.50			
6					0.03				0.01			
7					0.40				0.31			
8					0.09	0.03			0.25		0.26	
9					1.36	0.62			0.19			
10						0.25						
11										0.01		
12					0.67	0.05			0.01			
13					0.06	0.73	0.16					
14					0.01							
15					0.01							
16										0.04		
17										0.03		
18												
19												
20					0.44							
21					0.01		0.05					
22							0.38		0.48			
23							0.10	0.05	1.69			
24						0.69	0.17	0.32	0.14			
25						0.24			0.19			
26				0.42	0.08				0.70			
27						0.11			0.09			
28						0.61	1.07					
29				0.05		0.30	0.10	0.01				
30				1.22								
31				0.24		0.31						
Monthly												
Total:	0.00	0.00	0.00	1.93	3.18	3.94	2.40	1.97	4.65	1.31	0.26	0.00
Days of												
Rain:	0	0	0	4	12	11	9	8	15	6	1	0
Season:										Total	19.64	
										Days	66	

Appendix A-80. San Francisco Daily Rainfall, 1928-1929

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.03		0.76				
2				0.01	0.07	1.40		0.42				
3					0.82		0.24	0.90		0.36		
4				0.02				0.04		0.26		0.02
5										0.03		0.08
6												
7									0.20			0.02
8									0.01	0.02		0.11
9									0.54			0.11
10					0.02	0.86			0.39			
11			0.02									
12					1.48	0.95			0.21			
13					0.67	0.02						
14					0.29							
15							0.69		0.19			0.52
16							0.02					
17												
18							0.12	0.02		0.25		
19							0.24			0.02		
20												
21										0.01		
22									0.02	0.06		
23												
24						1.31						
25												
26												
27						0.27						
28							0.01					
29				0.01		0.05						
30			0.01									
31											0.01	
Monthly												
Total:	0.00	0.00	0.03	0.04	3.35	4.89	1.32	2.14	1.56	1.01	0.01	0.86
Days of												
Rain:	0	0	2	3	6	8	6	5	7	8	1	6
Season:											Total	15.21
											Days	52

Appendix A-81. San Francisco Daily Rainfall, 1929-1930

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2									0.08		0.02	
3									0.74		0.14	
4							0.80		1.24			
5							0.10		0.54			
6							0.68					
7												
8							0.07					
9						0.05	0.09					
10						1.27						
11						0.36	0.04					
12						0.21	0.75			0.07		
13						0.01	0.64		0.06	1.14		
14							0.19		0.87	0.06		
15						1.17	1.18					
16							0.12					
17				0.01		0.02	0.14					
18							0.16			0.01		
19								0.33				
20								0.31				
21								0.25				
22								0.88				
23								0.08				
24								0.85		0.08		
25								0.14		0.16		
26								0.10		0.01		
27												
28												
29										0.03		
30							0.03					
31												
Monthly												
Total:	0.00	0.00	0.00	0.01	0.00	3.09	4.99	2.94	3.53	1.56	0.16	0.00
Days of												
Rain:	0	0	0	1	0	7	14	8	6	8	2	0
Season:											Total	16.28
											Days	46

Appendix A-82. San Francisco Daily Rainfall, 1930-1931

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.74	0.01				
2							0.37					
3								0.03				
4								0.03				
5							1.59					0.11
6												
7							0.71					
8				0.01	0.10			0.02				
9								0.02	0.04			0.02
10								0.05	0.03			
11				0.37		0.03			0.93			
12				0.51		0.06			0.17	0.02		
13					0.08		0.64	0.01				
14								0.20			0.02	
15					1.03		0.07					0.19
16					0.22		0.01					
17					0.01			0.01				
18								0.41	0.40			
19												
20												
21							0.19					
22							0.68					
23			0.01				0.47	0.09				
24			0.07						0.08		1.08	
25										0.08		
26					0.05			0.22		0.21		
27					0.06				0.03			
28												
29												
30			0.02		0.01							
31						0.89	0.03					
Monthly												
Total:	0.00	0.00	0.10	0.89	1.56	0.98	5.50	1.10	1.68	0.31	1.10	0.32
Days of												
Rain:	0	0	3	3	8	3	11	12	7	3	2	3
Season:											Total	13.54
											Days	55

Appendix A-83. San Francisco Daily Rainfall, 1931-1932

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.29	0.29				
2						0.02	0.18	0.05		0.07	0.06	
3												
4								0.01		0.01		
5								0.84				
6								0.76				
7						0.01						
8								0.96	0.10			
9					0.05				0.02			
10					0.08	0.19						
11						0.22	0.03					
12							0.08					
13					0.08	1.11			0.01	0.04		
14					1.98	0.02	0.65		0.61			0.03
15					0.13		0.58	0.09				
16					0.37		0.47			0.06		
17					0.07	0.01	0.08					
18						0.02	0.03					
19									0.11			
20					0.01	0.85					0.04	
21						0.20						
22				0.42		0.28						
23				0.15		0.97				0.07		
24						0.79				0.18		
25				0.11	0.08	0.34						
26					0.08	0.87	0.19					
27						1.94	0.07			0.03		
28						0.49			0.01		0.26	
29						0.10	0.09				0.18	
30						0.18	0.14			0.01	0.10	
31						0.63	0.35				0.01	
Monthly												
Total:	0.00	0.00	0.00	0.68	2.93	9.24	3.23	3.00	0.86	0.47	0.65	0.03
Days of												
Rain:	0	0	0	3	10	20	14	7	6	8	6	1
Season:											Total	21.09
											Days	75

Appendix A-84. San Francisco Daily Rainfall, 1932-1933

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1											0.25	
2					0.11							
3							0.49					
4					0.15							0.01
5					0.02							
6											0.09	
7											0.75	
8						0.15					0.10	
9						0.02						
10											0.06	
11						0.02		0.58	0.31			
12								0.19	0.59			
13									0.02			
14									0.15			
15							0.03		0.18			
16						0.41		0.36	0.67			
17											0.03	
18							1.17					
19						1.07	0.09					
20						0.07	0.01					
21						0.34	0.92				0.08	
22				0.01		0.03	0.54		0.06			
23						0.64	0.12					
24							0.68					
25							0.23		0.17			
26									0.02			
27					0.01		0.79		0.56			
28					0.03		0.23		0.20	0.02		
29					0.17		0.37			0.04		
30					0.51							
31							0.01					
Monthly												
Total:	0.00	0.00	0.00	0.01	1.00	2.75	5.68	1.13	2.93	0.06	1.36	0.01
Days of												
Rain:	0	0	0	1	7	9	14	3	11	2	7	1
Season:											Total	14.93
											Days	55

Appendix A-85. San Francisco Daily Rainfall, 1933-1934

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.66					
2						0.65	0.02					
3						0.25						
4												0.49
5								0.10				0.15
6								0.05				
7								0.39				
8								0.01				
9												
10												
11						0.34						
12						0.20	0.01					
13						0.20						
14						0.13	0.02	0.04				
15						0.24	0.01	1.19				
16								0.16				
17												
18								0.08				
19							0.23	0.32				
20												
21												
22							0.08	0.40		0.31		
23								0.57		0.04		
24			0.11							0.04	0.09	
25			0.03					1.19				0.04
26								0.18			0.02	
27											0.01	
28				0.02		0.18			0.06			
29				0.91		1.27			0.01			
30				0.48		0.45				0.12		
31				0.08		0.28						
Monthly												
Total:	0.00	0.00	0.14	1.49	0.00	4.19	1.03	4.68	0.07	0.51	0.12	0.68
Days of												
Rain:	0	0	2	4	0	11	7	13	2	4	3	3
Season:											Total	12.91
											Days	49

Appendix A-86. San Francisco Daily Rainfall, 1934-1935

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.04				0.13			
2										0.03		
3					0.01		0.33	0.09	0.01	0.35		
4							1.58		0.14	0.07		
5							0.11			0.01		
6				0.04					0.51	0.42		
7							0.60	0.06	0.18	1.54		
8							0.13		0.08	0.01		
9							0.82	0.03				
10							0.13					
11								0.01				
12								0.17				
13						1.44	1.04	0.15		0.09		
14					1.39	0.08	0.13		0.02	0.34		
15					0.01		0.05			0.48	0.01	
16	0.01				0.02	0.11	0.44			0.02		
17					0.60		0.15					
18				0.02	1.40		0.53					
19									0.07			
20								0.05	0.10			
21				0.13					0.21			
22					0.09				0.83			
23			0.13		0.10				0.03			
24												
25												
26						0.45						
27						0.69		0.06				
28						0.36		1.76				
29						0.90	0.19			0.09		
30					0.10	0.03						
31				0.69								
Monthly												
Total:	0.01	0.00	0.13	0.88	3.76	4.06	6.23	2.38	2.31	3.45	0.01	0.00
Days of												
Rain:	1	0	1	4	10	8	14	9	12	12	1	0
Season:											Total	23.22
											Days	72

Appendix A-87. San Francisco Daily Rainfall, 1935-1936

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.07	1.08			0.61				
2							1.28	0.01		0.14	0.01	0.01
3						0.02	0.02			0.63	0.01	
4							0.21					
5												0.02
6			0.01			0.11						0.12
7						0.02	0.04					0.13
8						0.22	0.85					
9							0.86					
10				0.03			0.47	1.16				
11				0.21		0.48	0.51	2.02				
12						0.04		0.42				
13							0.65	0.70			0.01	
14			0.04	0.79			0.31	0.62			0.06	
15			0.03	0.34	0.04		0.24	0.27				
16								0.45				
17								0.90				
18								0.26				
19								0.09				
20								0.63				
21					0.02			0.57		0.14		
22					0.10			0.20		0.02		
23								0.60				
24								0.55	0.24			
25												
26		0.25				0.59						
27						0.03				0.01	0.31	
28						1.05			0.01		0.09	
29						0.28			0.03	0.15		
30						0.41			0.73			
31							0.33					
Monthly												
Total:	0.00	0.25	0.08	1.44	1.24	3.25	5.77	10.06	1.01	1.09	0.49	0.28
Days of												
Rain:	0	1	3	5	4	11	12	17	4	6	6	4
Season:											Total	24.96
											Days	73

Appendix A-88. San Francisco Daily Rainfall, 1936-1937

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.16	0.48		0.12		
2							0.10	0.01				
3												
4							0.01	1.12				
5							0.15	0.32		0.38		
6								0.23				
7								0.01			0.01	
8	0.03									0.13		
9		0.02							0.05			0.01
10							0.59	0.01		0.07		0.20
11							1.45	0.53	0.74			
12								0.04	0.77			
13							0.02	1.05	0.14			
14					0.01		0.50					
15						0.30	0.19		0.09	0.05		0.26
16						0.02						0.12
17								0.01	0.14		0.05	
18							0.15	0.07				
19								0.01	1.18			
20						0.03			0.09			
21									1.90			
22									0.14			
23									0.81			
24						0.32	0.04	0.70	0.65			
25								0.29				
26						1.03	0.26			0.11		
27						0.29	0.28		0.35			
28						0.04	0.34					
29							0.32					
30				0.69		0.91	0.70					
31												
Monthly												
Total:	0.03	0.02	0.00	0.69	0.01	2.94	5.26	4.88	7.05	0.86	0.06	0.59
Days of												
Rain:	1	1	0	1	1	8	16	15	13	6	2	4
Season:											Total	22.39
											Days	68

Appendix A-89. San Francisco Daily Rainfall, 1937-1938

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.38	0.66			
2				0.34			0.48	0.82	0.32			
3								0.53	0.24			
4								0.36		0.84		
5								0.33	0.03			
6								0.38	0.73			
7								0.06	0.18			
8								0.24				
9						1.21		0.53				
10					0.33	1.03		0.65	0.01			
11					0.32	0.54		0.99	0.60			
12						0.22		0.35	0.67			
13				0.37	0.56			1.48	0.19			
14				0.16	0.02		0.11	0.10				
15					0.04		0.02					
16					0.32		0.18		0.53			
17							0.18					
18							0.25	0.59	0.30			
19							0.52		0.25			
20					0.55				0.24			
21									0.04			
22					0.01	0.03			0.15			
23					0.31				0.56			
24						0.70			0.03	0.10		
25												
26												
27							0.02					
28							0.09	0.70		0.20		
29							0.15			0.03		
30				0.03			0.02			0.35		
31							0.63					
Monthly												
Total:	0.00	0.00	0.00	0.90	2.46	3.73	2.65	8.49	5.73	1.52	0.00	0.00
Days of												
Rain:	0	0	0	4	9	6	12	16	18	5	0	0
Season:										Total	25.48	
										Days	70	

Appendix A-90. San Francisco Daily Rainfall, 1938-1939

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.08					0.05		
2	0.01			0.74		0.42		0.51		0.22		
3						0.30		0.46	0.01			
4							0.62					
5							1.09					
6								0.18	0.12			
7								0.44	0.01			
8								0.03	1.83			
9					0.05			0.30	0.41			
10								0.02			0.28	
11												
12												
13									0.05	0.15		
14						0.08						
15												
16												
17												
18						0.10						
19						0.58						
20									0.07		0.33	
21											0.02	
22												
23				0.04								
24												
25									0.01			
26							0.01		0.11			
27			0.15				0.25					
28					0.20							
29				0.15	0.30		0.68					
30				0.32	0.25		0.19					
31				0.08			0.23					
Monthly												
Total:	0.01	0.00	0.15	1.33	0.88	1.48	3.07	1.94	2.62	0.42	0.63	0.00
Days of												
Rain:	1	0	1	5	5	5	7	7	9	3	3	0
Season:											Total	12.53
											Days	46

Appendix A-91. San Francisco Daily Rainfall, 1939-1940

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							1.21	0.06				0.01
2							0.90	0.01	0.01		0.07	
3							1.26	0.63		0.37	0.04	
4							0.03	0.09			0.16	
5				0.06			0.76	0.02				
6				0.03			0.01	0.21				
7							1.38			0.11		
8						0.07	0.11			0.13		
9						0.02	0.53					
10						0.22	0.88					
11							0.27					
12			0.14									
13			0.66					0.58				
14								0.40				
15									0.12			
16									0.02			
17						0.03		0.75				
18												
19						0.01						
20												
21												
22							0.02	0.02				
23						0.24	0.02	0.08				
24				0.08			0.16	0.09	0.06			
25			0.08		0.20		1.78	0.89	0.02	0.27		
26						0.04	0.20	1.57	0.80	0.06		
27								1.16				
28						0.14		1.18	0.32			
29						0.05		0.07	1.79		0.03	
30			0.18				0.13		2.18		0.33	
31						0.23	0.33					
Monthly												
Total:	0.00	0.00	1.06	0.17	0.20	1.05	9.98	7.81	5.32	0.94	0.63	0.01
Days of												
Rain:	0	0	4	3	1	10	18	17	9	5	5	1
Season:											Total	27.17
											Days	73

Appendix A-92. San Francisco Daily Rainfall, 1940-1941

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.42			0.03	0.26	0.48		
2					0.04				0.16	0.09	0.11	
3			0.42		0.21		0.35		0.38	0.02	0.03	
4							0.46		0.05	1.89	0.21	
5			0.08		0.85		0.03	0.42		0.10		
6			0.05		0.58		0.87	0.13				
7				0.15	0.07		0.11	0.34		0.07		
8							0.18	1.16				
9					0.01			0.79		0.25		
10								0.24		0.46		
11								0.25			0.16	
12											0.18	
13							1.16				0.47	
14							0.24	0.11				
15						0.20	0.60	0.34				
16			0.02			0.95		0.39				
17			0.01		0.04	0.22		0.12				
18						0.14						0.01
19							1.16					
20						0.23		0.23				
21						1.01	1.00	0.26				
22						0.73	0.16					
23						0.23	0.66	0.48				
24				0.68		0.60	0.26	0.05				
25						0.55	0.94				0.02	
26			0.01			0.88	0.06	0.64				
27						0.37		0.12				
28				0.09		0.06		0.61	1.11			
29				0.13		0.08			0.32	0.58		
30									1.95	0.11		
31									0.52			
Monthly												
Total:	0.00	0.00	0.59	1.05	2.22	6.25	8.24	6.71	4.75	4.05	1.18	0.01
Days of												
Rain:	0	0	6	4	8	14	16	19	8	10	7	1
Season:											Total	35.05
											Days	93

Appendix A-93. San Francisco Daily Rainfall, 1941-1942

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.61	0.03		0.35				
2					0.45	0.60		0.41				
3					0.17	0.01		0.01		0.47		
4								1.26		0.43		
5								1.06		0.58		
6							0.01	0.73				
7							0.67					
8							0.01					
9										0.37		
10									1.10	0.01	0.44	
11									0.01		0.11	
12						0.08						
13						0.55			0.18	0.45		
14						1.22			1.19	0.30	0.06	
15					0.03	0.19	0.02				0.08	
16		0.01			0.01	0.44	0.03			0.32		
17										0.30		
18						0.28		0.01				
19				0.02		0.07		0.03				
20		0.02				0.17						
21				0.02		0.12	0.15	0.13				
22						0.02	0.40					
23						0.30	0.58					
24							1.78	0.28				
25						0.56	0.15				0.39	
26				0.83			0.29					
27	0.01					0.61	0.42			0.10	0.02	
28				0.06	0.23	1.96					0.01	
29					0.40	0.03						
30					0.09	0.05	0.25			0.32		
31									0.14			
Monthly												
Total:	0.01	0.03	0.00	0.93	1.99	7.29	4.76	4.27	2.62	3.65	1.11	0.00
Days of												
Rain:	1	2	0	4	8	19	13	10	5	11	7	0
Season:											Total	26.66
											Days	80

Appendix A-94. San Francisco Daily Rainfall, 1942-1943

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												0.13
2					0.01	0.01						
3					0.15				0.34			
4	0.01							0.13	0.01	0.01		
5									0.38	0.19		
6						0.48			0.03			
7								0.21	0.02	0.06		
8			0.18		0.03	0.02		0.04	0.27	0.01		
9									0.31			
10				0.42					0.37			
11												
12												
13					0.01				0.14			
14				0.02	0.30				0.24			
15					0.02					0.01		
16					1.91			0.01				
17					1.18			0.02	0.68			
18					0.14							
19					0.13		0.01					
20						0.12	1.60					
21							1.41	0.34		0.03		
22						1.05	1.23					
23						0.59	0.12	0.25		0.02		
24						0.22	0.02					
25						0.01	0.14	0.50				
26					0.14		0.24	0.45				
27				0.10	0.43					1.54		
28				0.41		0.37	0.13			0.01		
29							1.20		0.39			
30							0.05				0.03	
31											0.10	
Monthly												
Total:	0.01	0.00	0.18	0.95	4.45	2.87	6.15	1.95	3.18	1.88	0.13	0.13
Days of												
Rain:	1	0	1	4	12	9	11	9	12	9	2	1
Season:											Total	21.88
											Days	71

Appendix A-95. San Francisco Daily Rainfall, 1943-1944

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							1.09	0.26	0.30			
2							0.22	1.14				0.02
3							0.03	0.87	0.21			
4							0.07		0.32	0.01		
5						0.02	0.49					
6												
7										0.02		
8			0.01					0.56		0.08		
9							0.23					
10										0.19		
11										0.75		
12												
13							0.12					
14								0.04			0.02	
15												0.01
16											0.03	
17				0.02	0.04						0.74	
18					0.11	0.04		0.05				
19				0.15	0.45	0.53		0.35		0.33		
20				0.32	0.17	0.54						
21				0.02				1.03				
22							0.02	0.22				
23							0.94					0.09
24						0.03						
25						0.02						
26			0.01	0.23			0.13			0.66		
27										0.03		
28						0.34		0.57				
29					0.03	0.62	0.82	0.25				
30						0.55	0.09					
31							0.06				0.15	
Monthly												
Total:	0.00	0.00	0.02	0.74	0.80	2.69	4.31	5.34	0.83	2.07	0.94	0.12
Days of												
Rain:	0	0	2	5	5	9	13	11	3	8	4	3
Season:											Total	17.86
											Days	63

Appendix A-96. San Francisco Daily Rainfall, 1944-1945

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.54		2.15				
2					0.04			0.52				
3					1.20			0.13	0.19			0.01
4								0.09				
5								0.15	0.22			
6					0.32							
7												
8								0.12		0.30		
9					1.37							
10					0.23							
11					0.98							
12					0.11						0.26	
13					0.03			0.01	0.01		0.17	
14							0.02	0.15	0.93		0.19	
15									0.02			
16									0.52		0.01	
17							0.12	0.11	0.16			
18					0.27	0.29					0.01	
19						0.23						
20				0.22		0.01			0.49			
21				0.39		0.02						
22						1.31			0.61			
23	0.01											
24												
25							0.01		0.89	0.02		
26					0.28				0.11			
27						0.46						
28						0.71						
29					1.32	0.40						
30				0.54	0.09		0.57					
31		0.02		0.55			0.61					
Monthly												
Total:	0.01	0.02	0.00	1.70	6.24	3.97	1.33	3.43	4.15	0.32	0.64	0.01
Days of												
Rain:	1	1	0	4	12	9	5	9	11	2	5	1
Season:											Total	21.82
											Days	60

Appendix A-97. San Francisco Daily Rainfall, 1945-1946

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1										0.03		0.02
2							0.29	0.67				
3						0.04	0.15	0.30				
4						1.24	1.12	0.03				
5						1.13						
6					0.03			0.14				
7					0.14	0.02	0.20					
8										0.02		
9					0.11							
10					0.26			0.03	0.01			
11				0.01								
12					0.77				0.02			
13									0.32			
14												
15					0.25	0.19		0.14				
16					0.18							
17					0.03							
18												
19					0.09			0.08	0.26			
20						0.19			0.29			
21			0.02			1.41		0.16			0.04	
22			0.02			0.64						
23					0.27	0.02						
24					0.67	0.79		0.13	0.06			
25						0.33					0.27	
26						0.11					0.06	
27						3.11		0.35				
28				0.10	0.42	0.53			0.72			
29				0.98	0.02	0.09			0.22			
30				0.60					0.06			
31				0.26					0.38			
Monthly												
Total:	0.00	0.00	0.04	1.95	3.24	9.84	1.76	2.03	2.34	0.05	0.37	0.02
Days of												
Rain:	0	0	2	5	13	15	4	10	10	2	3	1
									Season:		Total	21.64
											Days	65

Appendix A-98. San Francisco Daily Rainfall, 1946-1947

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.05					0.41			0.02
2				0.08						0.10		
3						0.12			0.63	0.01		
4						0.13						0.19
5						0.63				0.01		0.05
6						0.65						0.28
7						0.12			0.02			0.06
8								0.08	0.03	0.05		0.04
9								0.37	0.28			
10									0.35			
11								0.69				
12					0.01		0.08	1.22				
13					0.13							
14					0.01							
15												
16			0.06					0.28				
17												
18					0.42							
19					1.54							
20					0.22							
21												
22				0.02	0.38				0.04			
23					0.02	0.02						
24						0.78						
25	0.06					0.05	0.01					
26						0.10	0.01	0.01			0.32	
27							0.08		1.52		0.03	
28							0.63		0.12			
29						0.17			0.24			
30							0.54					
31											0.32	
Monthly												
Total:	0.06	0.00	0.06	0.15	2.73	2.77	1.35	2.65	3.64	0.17	0.67	0.64
Days of												
Rain:	1	0	1	3	8	10	6	6	10	4	3	6
Season:											Total	14.89
											Days	58

Appendix A-99. San Francisco Daily Rainfall, 1947-1948

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.35		0.14					
2							0.39	0.18		0.38		
3										0.01		0.01
4							0.06	0.50		0.24		
5								0.50		0.22		
6							0.06	0.16		0.22		
7				0.09		0.02	0.35					
8									0.28	0.22		
9				0.82				0.44		0.31		
10				0.16						0.08		
11										0.03		
12									0.67			
13									0.34			
14									0.11	0.01		
15				0.01	1.00				0.11	0.18		
16				0.44					0.08	0.09		
17						0.76			0.12			
18								0.07	0.21			
19						0.20					0.01	
20				0.03		0.86					0.15	
21										0.05		
22								0.09				
23									0.84			
24									0.22			
25												
26												
27								0.28				
28				0.37				0.10	0.38	0.52		
29				0.17						0.46	0.33	
30					0.04					0.02	0.05	
31												
Monthly												
Total:	0.00	0.00	0.00	2.09	1.39	1.84	1.00	2.32	3.36	3.04	0.54	0.01
Days of												
Rain:	0	0	0	8	3	4	5	9	11	16	4	1
Season:											Total	15.59
											Days	61

Appendix A-100. San Francisco Daily Rainfall, 1948-1949

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.30		0.19		0.38			
2					0.31	0.15		0.23	0.82		0.01	
3				0.03	0.24	0.19			0.38			
4								1.10				
5	0.02					0.29			0.15			
6								0.61				
7						0.16		0.03				
8						0.03					0.03	
9									0.55			
10								0.25	0.77			
11				0.15				0.04	0.76			
12				0.01		0.20						
13				0.01		0.41						
14					0.01	0.07			0.01		0.39	
15					0.02				0.08			
16					0.03	0.88						
17						0.06						
18			0.09				0.04				0.50	
19					0.26		1.51		1.31			
20								0.01	0.01			
21		0.01					0.22					
22		0.01					0.24	0.04	0.63			
23								0.01				
24								0.52				
25					0.01	0.62						
26						1.31		0.20				
27						0.30						
28												
29												
30												
31						0.08						
Monthly												
Total:	0.02	0.02	0.09	0.20	1.18	4.75	2.20	3.04	5.85	0.00	0.93	0.00
Days of												
Rain:	1	2	1	4	8	14	5	11	12	0	4	0
Season:										Total	18.28	
										Days	62	

Appendix A-101. San Francisco Daily Rainfall, 1949-1950

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1											0.16	
2							0.07				0.21	
3								0.81				
4						0.08		0.83				
5						0.05		0.35	0.08	0.14		
6					0.02					0.09		
7					0.07	0.97	0.09			0.48		
8					0.05	0.02	0.42		0.01	0.15		
9				0.01	0.92		0.03	0.12				
10				0.01	0.12		1.23	0.22				
11							0.33		0.02			0.03
12							0.22					
13							0.30			0.01		
14						0.49	0.39		0.01			
15						0.06						
16						0.02	1.52					
17						0.88	1.29		0.08			
18				0.06		0.19			0.02			
19						0.01			0.22			
20							0.01					
21							0.14					
22							0.01		0.17			
23							0.10		0.74			
24									0.28			
25									0.01			
26									0.01			
27		0.04					1.17					
28							0.08					
29												
30	0.03											
31	0.03											
Monthly												
Total:	0.06	0.04	0.00	0.08	1.18	2.77	7.40	2.33	1.65	0.87	0.37	0.03
Days of												
Rain:	2	1	0	3	5	10	17	5	12	5	2	1
Season:											Total	16.78
											Days	63

Appendix A-102. San Francisco Daily Rainfall, 1950-1951

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.02		0.08	
2						0.83	0.30				0.01	
3						1.75	0.24				0.56	
4				0.02				1.47	0.97			
5								0.27	0.02			
6						1.11			0.21			
7					0.02	0.48			0.02			
8						0.27	0.03		0.01			
9							0.07		0.07			
10							0.72	0.04				
11						0.04	0.31	0.27				
12												
13					0.30	0.56						
14					0.10	0.76						
15					0.06		0.63					
16				0.04	0.49	0.18	0.05					0.01
17				0.04	0.73		0.33	0.08				
18					1.89		1.04					
19					0.39		0.11					
20					0.46			0.01				0.01
21					0.14		0.35	0.01				0.02
22							0.21					
23				0.01								
24										0.03		
25				1.51				0.04				
26				0.53				0.23				
27				0.08	0.02							
28							0.02	0.58		0.86		
29				0.43								
30				0.06	0.36	0.03						
31												
Monthly												
Total:	0.00	0.00	0.00	2.72	4.96	6.01	4.41	3.00	1.32	0.89	0.65	0.04
Days of												
Rain:	0	0	0	9	12	10	14	10	7	2	3	3
Season:											Total	23.90
											Days	70

Appendix A-103. San Francisco Daily Rainfall, 1951-1952

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.20		1.59		0.49				
2				0.06		0.22						
3						1.58		0.01	0.35			
4						0.68						
5						0.07						
6							1.37		0.84	0.07		
7							0.36		0.21	0.56	0.28	
8									0.26		0.02	
9										0.11		0.03
10				0.03	0.10		0.29	0.09	0.02	0.16		
11					0.08		0.95	0.24				
12					0.35		1.41		0.28			
13						0.08	0.20			0.18		
14					0.01		1.73		1.68			
15	0.01						0.38		0.39			
16							0.90	0.29				
17			0.02					0.01				
18						0.50		0.37	0.30			
19					0.49	0.03		0.19	0.57			
20					0.39		0.34	0.62				
21		0.22			0.47		0.14					
22					0.01			0.20				
23				0.04		0.04	0.07	0.10				
24				0.47		0.01	1.52	0.01				
25				0.01		0.56	0.56					
26					0.99	0.21	0.43					
27			0.02		0.01	0.87						0.14
28		0.01	0.04			0.93						0.22
29		0.10				0.41						
30		0.10			0.43	0.14	0.03					
31							0.01					
Monthly												
Total:	0.01	0.43	0.08	0.81	3.33	7.92	10.69	2.62	4.90	1.08	0.30	0.39
Days of												
Rain:	1	4	3	6	11	16	17	12	10	5	2	3
Season:											Total	32.56
											Days	90

Appendix A-104. San Francisco Daily Rainfall, 1952-1953

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						1.56	0.21		0.02			
2						0.03	0.02					
3								0.01				
4												
5						1.18	0.42	0.01				0.01
6						1.10	0.16					0.58
7						0.82	0.41	0.02				0.02
8				0.06		0.23	0.27					
9						0.29	0.20		0.04	0.18		
10						0.03			0.45			
11						0.02			0.06			
12		0.01			0.19		0.14		0.24			
13					1.16		0.14					
14					0.50		0.13					
15					0.44							
16				0.01						0.01		
17							0.21					
18							0.39		0.37			
19						1.98	0.12		0.41	0.14	0.10	
20						0.12	0.44		0.21			
21											0.15	
22						0.03						
23											0.01	
24									0.03			
25						0.11					0.11	
26						0.50				0.53		
27						0.18				1.83		
28												
29					0.13	0.42				0.02	0.01	
30						0.46				0.71		
31												
Monthly												
Total:	0.00	0.01	0.00	0.07	2.42	9.06	3.26	0.04	1.83	3.42	0.38	0.61
Days of												
Rain:	0	1	0	2	5	17	14	3	9	7	5	3
Season:											Total	21.10
											Days	66

Appendix A-105. San Francisco Daily Rainfall, 1953-1954

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.02	0.01							
2												
3		0.01				0.58	0.16					
4										0.11		
5					0.17					0.06		
6						0.11	0.12			0.03		
7		0.01							0.01			
8									0.36	0.01		0.02
9									0.26		0.11	0.04
10				0.05	0.04		0.75		0.02			
11					0.08		0.04	0.02	0.01			
12					0.13			0.46				0.07
13				0.05	0.95			1.01				
14				0.02	0.14			0.34				
15							0.03		0.24			
16					0.02		0.60	0.08	1.03			
17					0.13	0.04	0.62	0.51	0.03			
18				0.20			0.07					
19					0.11	0.01			0.84			
20						0.07			0.51			
21					0.02				0.66			
22					0.05		0.21					
23					0.01		0.20					
24							0.27		0.14			
25							0.01					
26						0.01						0.01
27										0.56		
28					0.01					0.05		
29		0.05					0.02		0.44			
30					0.01				0.01			
31							0.01					
Monthly												
Total:	0.00	0.07	0.00	0.34	1.88	0.82	3.11	2.42	4.56	0.82	0.11	0.14
Days of												
Rain:	0	3	0	5	15	6	14	6	14	6	1	4
Season:											Total	14.27
											Days	74

Appendix A-106. San Francisco Daily Rainfall, 1954-1955

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.64	0.42					
2						1.37						
3						0.37						
4						0.13	0.05					
5						0.85	0.03					
6						0.07						
7											0.04	
8				0.08	0.88				0.04			
9					0.36	1.48	1.07	0.01	0.08			
10					0.02							
11					0.32							
12												
13						0.03						
14					0.18							
15					0.79		0.41					
16							0.11	0.14		0.02		
17							0.48	0.07		0.24		
18							0.29			0.04		
19				0.16			0.30			0.21		
20		0.03								0.16		
21										0.52		
22												
23												
24												
25	0.03							0.01		0.21		
26		0.10						0.88				
27		0.06						0.07				
28		0.01								0.09		
29							0.01		0.17			
30						0.10	0.82					
31						0.63	0.06					
Monthly												
Total:	0.03	0.20	0.00	0.24	2.55	5.67	4.05	1.18	0.29	1.49	0.04	0.00
Days of												
Rain:	1	4	0	2	6	10	12	6	3	8	1	0
Season:											Total	15.74
											Days	53

Appendix A-107. San Francisco Daily Rainfall, 1955-1956

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.75	0.13					
2						0.05						
3	0.02					0.18			0.02		0.25	
4							0.13		0.02		0.15	
5						1.35	0.05				0.02	
6						0.55					0.03	
7							0.57				0.11	
8						0.58					0.11	
9						0.03	0.21					
10							0.17			0.06	0.01	
11										0.81		
12												
13					0.96		0.30			0.10		
14			0.01				3.22			0.01		0.01
15						0.11	1.18					
16			0.01		0.82	0.13						
17						0.04		0.01				
18					0.24	0.51	0.23					0.01
19						0.87	0.07	0.67				
20					0.06	0.06	0.59	0.07				
21						1.12		0.10				
22						2.26	0.35	0.85				
23					0.27	0.83	0.03	0.01				
24						0.01	0.27			0.01		
25						0.04	0.41	0.22		0.09		
26				0.03		1.10	0.32	0.01		0.60		
27						0.23	0.49					
28								0.05				
29								0.04				
30					0.03	0.60			0.03			
31						0.07			0.05			
Monthly												
Total:	0.02	0.00	0.02	0.03	2.38	11.47	8.72	2.03	0.12	1.68	0.68	0.02
Days of												
Rain:	1	0	2	1	6	22	18	10	4	7	7	2
Season:											Total	27.17
											Days	80

Appendix A-108. San Francisco Daily Rainfall, 1956-1957

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.02			0.11			0.11	
2					0.02						0.05	
3									0.47			
4						0.10	0.02		0.41			
5						0.26			0.21			0.01
6									0.04			
7				0.02				0.48				
8							0.07	0.05	0.09		0.22	
9									0.29		0.10	0.05
10				0.08					0.02		0.03	
11							0.01		0.05		0.04	
12							1.27	0.02	0.13	0.07	0.01	
13						0.01	0.28	0.03	0.07	0.30	0.11	
14									0.02	0.09	0.08	
15							0.03		0.30			
16								0.01	0.01	0.07		
17										0.45	0.20	
18			0.15	0.01						0.02	1.26	
19			0.18				0.18				0.07	
20							0.75	0.27		0.09	0.91	
21		0.01						0.62				
22								0.40				
23				0.04				0.21				
24								0.30				
25							0.13	0.01				
26				0.11				0.64				
27				0.02				0.01				
28							0.10	0.42				
29				0.27					0.15			
30				0.59								
31									0.13			
Monthly												
Total:	0.00	0.01	0.33	1.14	0.04	0.37	2.84	3.58	2.39	1.09	3.19	0.06
Days of												
Rain:	0	1	2	8	2	3	10	15	15	7	13	2
Season:											Total	15.04
											Days	78

Appendix A-109. San Francisco Daily Rainfall, 1957-1958

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.66	0.26		1.05		
2							0.06	0.46		2.04		0.01
3								0.09	0.09	0.63		
4						0.48		0.62		0.21		
5				0.17		0.01				0.65		
6				0.01				0.50		0.76		
7					0.01			0.51	0.15	0.13		
8					0.03			0.36	0.04			0.08
9				0.55			0.50	0.43				
10				0.92	0.03		0.23	0.46				
11					0.02		0.01	0.15			0.13	
12				0.09	0.17		0.04	0.84	0.01			
13	0.01			1.06	0.37				0.29			
14					0.03	0.17		0.02	0.20			
15						1.21		0.01	0.73			
16						0.73			0.11			
17						0.46						
18					0.47	0.03	0.01	1.76				
19						0.06		0.39				
20				0.04		0.09	0.01		0.50			
21						0.28			1.05		0.01	
22									0.72		0.74	
23				0.61			0.85		1.90			
24				0.01			0.86	0.89	0.18			
25							0.27	0.03	0.01			
26						0.05	0.27					
27			1.24				0.01		0.50			
28			0.13			0.02			0.04			
29			0.09			0.01	0.58		0.65			
30							0.02		0.23			
31									0.82			
Monthly												
Total:	0.01	0.00	1.46	3.46	1.13	3.60	4.38	7.78	8.22	5.47	0.88	0.09
Days of												
Rain:	1	0	3	9	8	13	15	17	19	7	3	2
Season:											Total	36.48
											Days	97

Appendix A-110. San Francisco Daily Rainfall, 1958-1959

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2												
3							0.03					
4							1.45					
5							0.12					
6							0.03					
7							0.74					
8							0.68					
9					0.02		0.01	0.46				
10								1.05				
11							0.18	0.17				
12												
13					0.06							
14					0.01						0.02	
15								0.37				
16	0.01							0.76				
17	0.02							0.38	0.01			
18				0.12				0.23				
19												
20								0.48				
21						0.51		0.03				
22			0.04					0.10	0.03			
23	0.01							0.01	0.04			
24						0.03	0.45					
25						0.29	0.07		0.04	0.36		
26						0.61						
27							0.19					
28	0.01					0.04	0.01					
29												
30									0.18			
31												
Monthly												
Total:	0.05	0.00	0.04	0.12	0.09	1.48	3.96	4.04	0.30	0.36	0.02	0.00
Days of												
Rain:	4	0	1	1	3	5	12	11	5	1	1	0
Season:											Total	10.46
											Days	44

Appendix A-111. San Francisco Daily Rainfall, 1959-1960

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.56				
2												
3								0.23			0.15	
4								0.31				
5								0.97	0.11			
6									0.30	0.07		
7							0.13	0.09	0.24			
8							0.48	0.88				
9							1.01	0.34				
10							0.05	0.10				
11							0.65		0.30	0.05		
12						0.04			0.63			
13							0.13		0.03	0.02		
14							0.52					
15												
16												
17			0.05									
18			2.01				0.01	0.09				
19												
20												
21							0.21					
22										0.05		
23						1.49				0.19	0.25	
24		0.02				0.18	0.30				0.45	
25							0.44					
26							0.11		0.02	0.55		
27									0.21	0.23		
28												
29												
30									0.22			
31												
Monthly												
Total:	0.00	0.02	2.06	0.00	0.00	1.71	4.04	3.57	2.06	1.16	0.85	0.00
Days of												
Rain:	0	1	2	0	0	3	12	9	9	7	3	0
Season:											Total	15.47
											Days	46

Appendix A-112. San Francisco Daily Rainfall, 1960-1961

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						1.68		0.05			0.12	0.03
2						0.22		0.11				
3					0.11							
4					0.01				0.20			
5				0.33	0.02				0.11		0.04	
6				0.08	0.24			0.04	0.04		0.10	0.01
7				0.01	0.01			0.01				
8							0.02	0.14	0.42			
9								0.16			0.03	
10						0.29					0.07	
11					0.30	0.01		0.26				
12					0.63					0.10		
13					0.26							
14					0.04	0.08			0.66			
15						0.02		0.19	0.11			
16									0.20			
17												
18					0.14	0.01						
19									0.10		0.45	
20												
21										0.38		
22									0.10	0.22		
23							0.16		0.01	0.09		
24									0.15			
25					1.17		1.28		0.04			
26				0.06	0.17		0.48		0.04		0.07	
27									0.09			
28							0.01					
29					0.08		0.67					
30					0.17		0.01					
31							0.16					
Monthly												
Total:	0.00	0.00	0.00	0.48	3.35	2.31	2.79	0.96	2.27	0.79	0.88	0.04
Days of												
Rain:	0	0	0	4	14	7	8	8	14	4	7	2
Season:											Total	13.87
											Days	68

Appendix A-113. San Francisco Daily Rainfall, 1961-1962

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.97			0.29			
2						0.65			0.28			
3									0.01			
4												
5									1.01			
6								0.20	0.38			
7								0.42				
8								0.40				
9								1.19				
10				0.03				0.27	0.04			
11									0.02			
12							0.24	0.38				
13								0.67				
14								1.67	0.14			
15						0.04		0.53	0.01			
16			0.22					0.15				
17						0.31		0.01				
18						0.03	0.07	0.51				
19		0.02			0.77	0.06	0.77			0.17		
20					1.03	0.05			0.10			
21						0.02			0.02			
22					0.38				0.44			
23								0.09				
24								0.01				
25					0.76							
26				0.01	0.09							
27				0.05						0.19		
28								0.07				
29					0.75							
30					0.66							
31												
Monthly												
Total:	0.00	0.02	0.22	0.09	4.44	2.13	1.08	6.57	2.74	0.36	0.00	0.00
Days of												
Rain:	0	1	1	3	7	8	3	15	12	2	0	0
Season:										Total	17.65	
										Days	52	

Appendix A-114. San Francisco Daily Rainfall, 1962-1963

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.26				
2						0.08						
3		0.01		0.01		0.11						
4												
5										0.08		
6									0.12	0.92		
7											0.01	
8								0.08	0.03	0.27	0.38	
9		0.06			0.12			0.58		0.09		
10				0.28				0.15		0.11	0.05	
11				1.48								
12				1.92		0.14		0.79		0.16		
13				1.80		0.22		0.05		0.17		
14						0.01			0.11	0.46		
15						0.96			0.05	0.02		
16						0.95			1.17	0.04		
17					0.11	0.34		0.01				
18										0.51		
19										0.05		
20										0.22	0.01	
21				0.01						0.01		
22			0.01						0.57			
23				0.01					0.01			
24												
25										0.24		
26					0.37							
27									1.71			
28			0.20						0.03			
29			0.01				0.70		0.06			
30							1.54					
31							1.11		0.01			
Monthly												
Total:	0.00	0.07	0.22	5.51	0.60	2.81	3.35	1.92	3.87	3.35	0.45	0.00
Days of												
Rain:	0	2	3	7	3	8	3	7	11	15	4	0
Season:											Total	22.15
											Days	63

Appendix A-115. San Francisco Daily Rainfall, 1963-1964

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.02		0.24	0.01	0.02	
2					0.02						0.13	
3					0.01						0.06	
4					0.24							0.01
5					0.46							
6					0.13		0.06					
7					0.01							
8					0.12	0.31						0.54
9					0.01							
10				0.55	0.01							
11				0.19					0.36			
12			0.06						0.05			
13							0.09		0.02			
14					0.57							
15				0.56	0.01			0.14				0.02
16				0.02							0.01	
17							0.31					
18						0.09	0.15					
19					0.97	0.33	0.29					
20						0.09	1.65		0.02			
21							0.57		0.20			
22				0.07			0.15		0.63			
23					0.96		0.06		0.09			
24						0.05			0.11			
25												
26												
27												
28								0.05				
29							0.02					
30												
31									0.40			
Monthly												
Total:	0.00	0.00	0.06	1.39	3.52	0.87	3.37	0.19	2.12	0.01	0.22	0.57
Days of												
Rain:	0	0	1	5	13	5	11	2	10	1	4	3
Season:											Total	12.32
											Days	55

Appendix A-116. San Francisco Daily Rainfall, 1964-1965

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.24	0.11						
2					0.51		0.81					
3							0.80					
4						0.04	0.62	0.44	0.08			
5							0.38	0.20	0.36	0.01		
6							0.77		0.01			
7						0.03	0.06				0.35	
8					0.63						0.34	
9					0.39						0.94	
10					0.91	0.08			0.03	0.09		
11					0.48	0.04	0.06					
12					0.28				0.37			
13									0.57			
14						0.05					0.06	
15											0.45	
16											0.09	
17											0.05	
18						0.23					0.52	
19						0.18	0.12					
20						0.15					0.30	
21					0.28	0.65	0.04				0.01	
22						0.78						
23						0.46	0.29					
24					0.07	0.16	0.01					
25					0.01	0.10	0.01					
26					0.13	0.43		0.20	0.14			
27				0.06		0.31		0.10	0.42			
28				0.57	0.02	0.27						
29				1.27	0.01	0.61						
30					0.03	0.53			0.38			
31		0.01				0.14			0.56			
Monthly												
Total:	0.00	0.01	0.00	1.90	3.99	5.35	3.97	0.94	2.92	3.21	0.00	0.00
Days of												
Rain:	0	1	0	3	14	20	12	4	10	12	0	0
Season:											Total	22.29
											Days	76

Appendix A-117. San Francisco Daily Rainfall, 1965-1966

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.54	0.09			
2												
3								0.81				
4							0.93	0.20				
5							0.85	0.01				
6							0.01	0.03	0.03			0.17
7					0.34				0.14			
8					0.01							
9									0.31	0.18	0.19	
10												
11		0.49				0.51				0.15		
12					0.98	0.02				0.03		
13					1.18				0.07			
14				0.01	0.19							
15					0.13				0.05			
16					0.17				0.07			
17					0.44							
18					0.18			0.16				
19								0.28	0.04			
20												
21												
22					0.10		0.02	0.24				
23					0.28							
24	0.02				0.57	0.93		0.23				
25					0.22	0.02		0.22				
26												
27												
28						1.27						
29						0.32	0.97					
30						0.37	0.44					
31						0.07	0.05					
Monthly												
Total:	0.02	0.49	0.00	0.01	4.79	3.51	3.27	2.72	0.80	0.36	0.19	0.17
Days of												
Rain:	1	1	0	1	13	8	7	10	8	3	1	1
Season:											Total	16.33
											Days	54

Appendix A-118. San Francisco Daily Rainfall, 1966-1967

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.44						0.07
2				0.01		0.96						1.34
3						0.04			0.01			0.01
4						0.53						
5						0.80				0.48		
6					0.76	0.42				1.19		
7						0.10				0.04		
8						0.12						
9						0.44					0.07	
10						0.02			0.49	0.58	0.01	
11							0.01		0.45	0.09	0.01	
12	0.03								0.58			
13					0.01			0.01	0.50	0.07		
14					0.34				0.03	0.04		
15					1.08			0.02	0.43	0.23		
16					0.01				0.30			
17										0.43		
18			0.10						0.02	0.28		
19					0.84					0.06		
20					0.56		2.10		0.29	0.10		
21					0.17		2.45		0.01	0.46		
22									0.04	0.05		
23							0.28		0.13	0.53		
24							0.70	0.18				
25		0.01						0.01				
26							1.09					
27							0.03			0.18		
28					0.95		1.05		0.10	0.09		
29					0.08		0.64					
30	0.03	0.08					1.12		0.82			
31		0.01					0.02		0.15			
Monthly Total:	0.06	0.10	0.10	0.01	4.80	3.87	9.49	0.22	4.35	4.90	0.09	1.42
Days of Rain:	2	3	1	1	10	10	11	4	16	17	3	3
Season:											Total Days	29.41 81

Appendix A-119. San Francisco Daily Rainfall, 1967-1968

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.13		0.48		
2				0.50				0.10				
3						0.59						
4						0.51		0.01				
5				0.02	0.03	0.01			0.06			
6									0.15			
7						0.29			0.45			
8												
9							0.01					
10							1.15					
11												
12									1.42			
13					0.08		0.03		0.20		0.05	
14					0.19		0.60		0.29			
15							0.16					
16							0.03	0.56	0.45			
17						0.48		0.32				
18			0.04		0.02	0.24		0.07				
19					0.10			0.58				
20								0.02				
21								0.36				
22								0.11	0.10		0.01	
23								0.02				
24											0.16	
25									0.03			
26							0.06					
27					0.09		0.13					
28				0.01			0.09					
29					0.34		1.35					
30					0.25		0.91					
31							0.02					
Monthly												
Total:	0.00	0.00	0.04	0.53	1.10	2.12	4.54	2.28	3.15	0.48	0.22	0.00
Days of												
Rain:	0	0	1	3	8	6	12	11	9	1	3	0
Season:										Total	14.46	
										Days	54	

Appendix A-120. San Francisco Daily Rainfall, 1968-1969

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.04	0.15		0.11				
2					0.58				0.16	0.31		
3					0.30							
4					0.01			0.06		0.05		
5					0.01			0.89		0.64		
6					0.10			0.38		0.19		
7						0.13						
8						0.08		0.02				0.04
9						0.35		0.02		0.17		
10						0.39						0.01
11				0.06	0.26	0.01	0.39	1.13				
12				0.14	0.11		0.46		0.31	0.02		
13			0.05	0.13		0.35	0.62					
14			0.01	0.05	0.81	0.09		0.89				
15					0.01	0.36		0.47				
16									0.11			
17								0.11	0.15			
18					0.10	0.06	1.51	0.13	0.02			
19		0.03					1.33					
20							0.47		0.26			
21							0.50	0.29				
22						0.01	0.02	0.21		0.01		
23						0.02	0.12	0.40		0.34		
24					0.14	0.44	0.56	0.63		0.01		
25						0.59	0.67	0.27				
26						0.14	0.26	0.03				
27						0.15	0.28	0.42				
28						0.59	0.25	0.80				
29				0.23	0.15		0.25					
30				0.01	0.05		0.04					
31							0.01					
Monthly												
Total:	0.00	0.03	0.06	0.62	2.67	3.91	7.74	7.26	1.01	1.74	0.00	0.05
Days of												
Rain:	0	1	2	6	14	17	17	19	6	9	0	2
Season:											Total	25.09
											Days	93

Appendix A-121. San Francisco Daily Rainfall, 1969-1970

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.01	0.22			
2												
3									0.04			
4									1.17			
5					0.41							
6			0.01		0.03							
7					0.01		0.03		0.04			
8				0.07		0.56	0.18					0.48
9						0.01	0.57	0.04	0.06			0.09
10				0.13		0.70	0.14					
11						0.10	0.40					
12						0.08	0.04	0.20				
13						0.01	0.23	0.10		0.01	0.03	
14				0.07			1.19		0.02			
15				2.29			0.81					
16				0.05			0.63	0.59				
17							0.04	0.02				
18						0.23						
19						0.54	0.11			0.03		
20						2.49	1.41					
21						0.66	0.90					
22							0.02					
23						0.10	0.49					
24						0.46						
25						0.21						
26							0.08			0.02		
27							0.49	0.16				
28								0.44				
29							0.01					
30							0.02					
31							0.02					
Monthly												
Total:	0.00	0.00	0.01	2.61	0.45	6.15	7.81	1.56	1.55	0.06	0.03	0.57
Days of												
Rain:	0	0	1	5	3	13	21	8	6	3	1	2
Season:											Total	20.80
											Days	63

Appendix A-122. San Francisco Daily Rainfall, 1970-1971

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.69	0.19				0.04	
2						0.43					0.09	
3					0.95	0.56						
4					0.19	0.36						
5					0.29	0.03						
6					0.30	0.02						
7					0.02	0.11						
8						0.19						
9					0.05					0.14		
10							0.25			0.01		
11					0.13		0.42					
12							0.54		1.35			
13						0.27	0.18			0.31		
14							0.25		0.09			
15						0.68	0.01	0.01				
16						0.24	0.20	0.04		0.08		
17						0.18				0.14		
18				0.06		0.25		0.13				
19								0.01				
20				0.21		0.77				0.04		
21				0.26		0.10						
22				0.05								
23				0.23					0.23			
24					0.57							
25					0.47	0.02			0.59			
26						0.23			0.65			
27					1.20	0.05		0.07			0.06	
28					1.17	0.11						
29					0.87	0.10						
30				0.02	0.23							
31				0.01								
Monthly												
Total:	0.00	0.00	0.00	0.84	6.44	5.39	2.04	0.26	2.91	0.72	0.19	0.00
Days of												
Rain:	0	0	0	7	13	20	8	5	5	6	3	0
Season:											Total	18.79
											Days	67

Appendix A-123. San Francisco Daily Rainfall, 1971-1972

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.01			
2						0.57			0.02			
3						0.36		0.05	0.01			
4								0.46				
5								0.95		0.06		
6						0.04		0.01				
7												
8								0.01				
9						0.35		0.01				0.11
10						0.08						
11					0.31				0.01	0.30		
12					0.22	0.49				0.44		
13					0.53							
14						0.10						
15												
16												
17												
18												
19												
20							0.04	0.03				
21						0.20	0.05	0.11				
22						0.28	0.19	0.16	0.17			
23				0.02			0.02	0.03		0.16		
24						0.46		0.18	0.01	0.11		
25					0.01	0.77	0.24	0.02				
26			0.03		0.17	0.17	0.08					
27					0.05	0.01	0.70					
28					0.63			0.11				
29	0.01		0.19			0.05						
30		0.01		0.03								
31				0.06								
Monthly												
Total:	0.01	0.01	0.22	0.11	1.92	3.93	1.32	2.13	0.23	1.07	0.00	0.11
Days of												
Rain:	1	1	2	3	7	14	7	13	6	5	0	1
Season:											Total	11.06
											Days	60

Appendix A-124. San Francisco Daily Rainfall, 1972-1973

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2				0.02								
3					1.06	0.20		0.48	0.50			
4					0.03	0.03		0.35			0.03	
5						0.04		0.17				
6						0.54		1.13	0.38			
7		T			0.16	0.13		0.13	0.32			
8		T					1.73		0.01			
9				1.20	0.26		1.52	0.68				
10				0.01	1.37		0.09	0.40	0.10			
11				1.74			1.56	0.32				
12				0.18		0.02	0.29	0.50				
13				0.11	2.14		0.01	0.05		0.02		
14				1.29	0.42			0.54				
15				0.50	0.72	0.17	0.03					
16		T		0.36	0.01	0.45	1.32		0.05			
17						1.12	0.67					
18	T				0.06	0.52	1.13					
19	0.01	0.04			0.17	0.09	0.01		0.68			
20	T						0.04		0.04			
21							0.25		0.15			
22						0.11						
23						0.06						
24							0.14	0.22			0.05	
25			0.12				0.05	0.03				
26			0.40					0.50				
27			0.02			0.05		0.82				
28												
29							0.41					
30							0.13		0.40			
31												
Monthly												
Total:	0.01	0.04	0.54	5.41	6.40	3.53	9.38	6.32	2.63	0.02	0.08	0.00
Days of												
Rain:	3	4	3	9	11	14	17	15	10	1	2	0
Season:											Total	34.36
											Days	89

Appendix A-125. San Francisco Daily Rainfall, 1973-1974

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.20		0.14	0.95	1.29		
2									0.87			
3							1.39		0.16			
4							0.17					
5					2.45		0.11			0.03		
6				0.03	0.64		0.35					
7				0.67	0.02	0.01	0.05		0.49			
8				0.25								
9					0.44					0.25		
10					0.71							
11					0.79	0.43	0.24		0.16			
12					0.18		0.01	0.31	0.03			
13					0.43	0.19						
14							0.23					
15					0.01							
16					0.57		0.60	0.21				
17					0.60	0.15	0.02					
18					0.02		0.07	0.14		0.01		0.10
19							0.04	0.50				
20			0.17	0.02	0.19							
21				0.03		0.55		0.04				
22			0.09	0.81	0.49	0.02						
23			0.05		0.10					0.30		
24			0.02		0.01					0.44		
25					0.08				0.80			
26						1.58		0.02	0.09	0.08		
27						0.37			0.58			
28						0.42		0.18	0.19			
29					0.03	0.03			0.33			
30					0.88				0.11			
31						0.26	0.38		0.31			
Monthly												
Total:	0.00	0.00	0.33	1.81	8.64	4.21	3.66	1.54	5.07	2.40	0.00	0.10
Days of												
Rain:	0	0	4	6	19	12	13	8	13	7	0	1
Season:											Total	27.76
											Days	83

Appendix A-126. San Francisco Daily Rainfall, 1974-1975

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.03		0.27	0.03			
2				0.02		0.72		0.21	0.07			
3						0.28		0.21		0.10	0.02	
4						0.04	0.04	0.17	0.01	0.67		
5							0.05	0.04	0.11	0.25		
6							0.89	0.26	0.03			
7				0.01	0.21		0.27	0.83	1.10	0.09		
8	0.72			0.02			0.16	0.40	0.08			
9	0.01							0.17	0.10			
10							0.05	0.14	0.69			
11												
12						0.02		0.47				
13								0.40	1.02			
14										0.01		
15									0.45			
16									0.04			
17												
18					0.05			0.01				
19								0.69	0.08			0.01
20								0.03				
21					0.11	0.02			1.38			
22									0.12			
23									0.04			
24					0.03				0.48	0.13		0.03
25									0.04	0.05		
26												
27						0.72						
28				0.43			0.04					
29				0.20			0.13					
30				0.09								
31				0.15			1.22					
Monthly												
Total:	0.73	0.00	0.00	0.92	0.40	1.83	2.85	4.30	5.87	1.30	0.02	0.04
Days of												
Rain:	2	0	0	7	4	7	9	15	18	7	1	2
Season:											Total	18.26
											Days	72

Appendix A-127. San Francisco Daily Rainfall, 1975-1976

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.05			
2									0.73			
3										0.03		
4								0.32				
5							0.02	0.21				
6				0.02						0.03		
7					0.18			0.01		0.35		
8								0.03		0.02		
9				1.09	0.12		0.29					0.01
10				0.27	0.01	0.04				0.24		
11						0.03				0.02		0.02
12												
13								0.15				
14								0.13				
15	0.20				0.08			0.01				
16					0.01			0.07				
17									0.01			
18		0.02						0.01	0.23			
19								0.12				
20												
21						0.43						
22										0.01		
23												
24									0.01			
25												
26				0.37	0.03							
27				0.44								
28												
29				0.47				0.90				
30				0.11								
31									0.01		0.01	
Monthly												
Total:	0.20	0.02	0.00	2.77	0.43	0.50	0.31	1.96	1.04	0.70	0.01	0.03
Days of												
Rain:	1	1	0	7	6	3	2	11	6	7	1	2
Season:											Total	7.97
											Days	47

Appendix A-128. San Francisco Daily Rainfall, 1976-1977

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1				0.38			0.18				0.08	
2		0.01					1.26					
3							0.19				0.02	
4												
5												
6												
7											0.06	
8								0.21		0.01	0.19	
9									0.07			
10											0.01	
11			0.01		0.54							
12							0.22		0.02			
13					0.21				0.03			
14		0.21			0.41							
15		0.16			0.02				1.62			
16									0.15			
17		0.06										
18		0.34									0.08	
19												
20								0.11				
21								0.35				
22												
23								0.22	0.17			
24									0.25			
25										0.04		
26											0.13	
27			0.21									
28			0.21					0.01				
29						0.36						
30			0.08			2.17						
31												
Monthly												
Total:	0.00	0.78	0.51	0.38	1.18	2.53	1.85	0.90	2.31	0.05	0.57	0.00
Days of												
Rain:	0	5	4	1	4	2	4	5	7	2	7	0
Season:											Total	11.06
											Days	41

Appendix A-129. San Francisco Daily Rainfall, 1977-1978

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.08	0.02	0.33	0.11		
2							0.23		1.11	0.01		
3							0.10		0.43	0.69		
4					0.35		0.36	0.08	0.77	0.02		
5					0.04		0.76	0.54	0.46	0.06		
6							0.01	0.55		0.73		
7								0.81		0.11		
8							0.16	0.72	1.67			
9							0.61		0.17			
10												
11						0.13			0.02			
12							0.45	0.95				
13							0.78	0.41				
14						0.76						
15						0.03	0.59	0.01		1.15		
16			0.02			0.23	0.84	0.01		0.20		
17			0.01			0.74	0.21			0.02		
18						0.01	0.67					
19			0.83				0.09					
20					0.10					0.05		
21					1.73	0.27			0.30			
22						0.46						
23						0.01			0.02			
24		0.03								0.51		
25						0.10				0.52		
26						0.14		0.04		0.03		
27						0.17						
28			0.07	0.15		0.12						
29			0.03	0.01		0.09			0.02			
30				0.01		0.04			0.03			
31									0.57			
Monthly												
Total:	0.00	0.03	0.96	0.17	2.22	3.30	5.94	4.14	5.90	4.21	0.00	0.00
Days of												
Rain:	0	1	5	3	4	15	15	11	13	14	0	0
Season:											Total	26.87
											Days	81

Appendix A-130. San Francisco Daily Rainfall, 1978-1979

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.16						
2									0.04			
3							0.13		0.14			
4												
5							0.02			0.01	0.05	
6										0.04	0.06	
7							0.55				0.04	
8							1.03					
9			0.20				0.30			0.01		
10							0.82					
11							1.29					
12					0.26			0.01				
13					0.06			2.04				
14							1.15	0.03				
15							1.67	0.10	0.04			
16								0.09	0.41	0.02		
17						0.59	0.09					
18						0.14	0.01	0.39	0.04			
19					0.12			0.13				
20					0.39			0.75				
21					0.37			0.38	0.05			
22					0.47			0.53	0.10	0.14		
23								0.10		0.28		
24												
25								0.52		0.01		
26									0.62	0.36		
27									0.35			
28								0.51	0.16			
29												
30							0.37					
31												
Monthly												
Total:	0.00	0.00	0.20	0.00	1.67	0.89	7.43	5.58	1.95	0.87	0.15	0.00
Days of												
Rain:	0	0	1	0	6	3	12	13	10	8	3	0
Season:										Total	18.74	
										Days	56	

Appendix A-131. San Francisco Daily Rainfall, 1979-1980

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1												
2									0.55			
3					1.63				0.02			
4							0.02		0.39	0.50		0.02
5									0.61	0.58		
6					0.29				0.03	0.01		
7					0.04							
8							0.03					
9							0.55			0.05	0.23	
10							0.44					
11							1.65		0.01			
12							0.10					
13				0.01			1.04	0.01				
14							0.12	0.75	0.06			
15							0.39	0.97				
16					0.92		0.07	1.10				
17					0.01		0.22	0.35				
18				0.12		0.03		0.30				
19				0.42		0.44		1.48				
20				0.05		0.12		0.96		0.10		
21	0.07							0.14		0.01		
22					0.52					0.04		
23						0.98						
24				0.08	0.16	1.93		0.22				
25			0.01	1.25	0.10	0.24			0.06			
26												
27								0.50				
28												
29												
30				0.01		0.36						
31						0.02						
Monthly												
Total:	0.07	0.00	0.01	1.94	3.67	4.12	4.63	6.78	1.73	1.29	0.23	0.02
Days of												
Rain:	1	0	1	7	8	8	11	11	8	7	1	1
Season:										Total	24.49	
										Days	64	

Appendix A-132. San Francisco Daily Rainfall, 1980-1981

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.04	0.03		
2	0.04					0.01	0.08					
3						2.26	0.05					
4						0.03			0.35			
5												
6												
7					0.01							
8								0.35				
9								0.05				
10								0.02				
11								0.06				
12									0.25			
13								0.26	0.33			
14								0.19				
15									1.26			
16							0.05					
17							0.10				0.01	
18									0.58	0.05	0.10	
19							0.30	0.01	0.12	0.06	0.01	
20							0.04		0.74			
21					0.05	0.79			0.36			
22					0.20		0.82					
23					0.01		0.31	0.10				
24							0.02	0.24				
25								0.13	0.56	0.03		
26							0.90	0.19	0.03			
27							1.15					
28							0.94	0.49				
29							0.21		0.01			
30					0.01							
31												
Monthly												
Total:	0.04	0.00	0.00	0.00	0.28	3.09	4.97	2.09	4.63	0.17	0.12	0.00
Days of												
Rain:	1	0	0	0	5	4	13	12	12	4	3	0
Season:										Total	15.39	
										Days	54	

Appendix A-133. San Francisco Daily Rainfall, 1981-1982

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.26		0.60	0.44		
2							0.19		0.43	0.62		
3				0.22			0.49			0.29		
4							6.16			0.01		
5							0.13			0.07		
6												
7				0.37		0.01			0.07			
8									0.02			
9						0.05						
10				0.10					0.32	1.27		
11									0.24	0.23		
12					1.81	0.21				0.03		
13					1.43	0.17		0.55	0.06			
14						0.01		0.97	0.22	0.07		
15					0.03	0.05		2.17	0.08			
16					0.17			0.01	0.61			
17					0.01			0.02	0.47			
18						0.70	0.15		0.09			
19						1.45	0.53					
20						0.28	0.74					
21					0.32	0.03						
22												
23					0.16							
24			0.11		0.01							
25			0.11				0.03		0.11			
26					0.65	0.18	0.37	0.05	0.11			
27				0.59	0.47	0.06		0.05				
28				0.75		0.01	0.53		0.37			0.02
29				0.07		1.86			0.88			0.04
30						0.05			0.54			
31						0.30			2.59			
Monthly												
Total:	0.00	0.00	0.22	2.10	5.06	5.42	9.58	3.82	7.81	3.03	0.00	0.06
Days of												
Rain:	0	0	2	6	10	16	11	7	18	9	0	2
Season:											Total	37.10
											Days	81

Appendix A-134. San Francisco Daily Rainfall, 1982-1983

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.64	0.03		
2						0.02		0.22	0.77	0.01		
3									0.13			
4								0.05	0.24		0.10	
5								0.37	0.34		0.37	
6				0.02				1.18	0.30			
7					0.05			0.90	0.06			
8					0.11			0.12	0.01			
9					0.32			0.01				
10					0.01				0.20			
11								0.12	0.01			
12						0.06		0.61	1.38	0.01		
13								0.05	0.84			
14												
15							0.01	0.09				
16			0.05			0.07	0.09		0.96			
17			0.02		0.38	0.01		0.04	0.75			
18			0.07		1.88		1.34	0.60			0.24	
19					0.01		0.03				0.25	
20						0.31			0.39			
21				0.02		0.81	0.03		0.01			
22					0.64	0.91	1.20		0.43			
23			0.16	0.01	0.01	0.03	0.90	0.48	0.36	1.07		
24			0.23	0.38			0.24		0.49	0.69		
25			0.19	1.12				1.77		0.01		
26							0.87	0.34	0.19			
27					0.33		0.43	0.12	0.33	0.21		
28					0.63		0.42	0.99		0.24		
29				0.79	0.90		0.21			0.08		
30				0.45	0.35				0.21	0.64		
31												
Monthly												
Total:	0.00	0.00	0.72	2.79	5.62	2.22	5.77	8.06	9.04	3.48	0.47	0.00
Days of												
Rain:	0	0	6	7	13	8	12	18	22	12	2	0
Season:										Total	38.17	
										Days	100	

Appendix A-135. San Francisco Daily Rainfall, 1983-1984

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	0.01				0.59						0.16	
2												
3						0.42						
4												0.01
5						0.04						
6					0.01	0.07						0.29
7						0.02						
8						0.45		0.10		0.09		
9					0.61	0.68		0.32				
10					0.98	0.93				0.30		
11						0.27		0.06				
12					0.29			0.03	0.05			
13					0.78	0.07		0.73	0.55			
14								0.02	0.02			
15					0.09		0.26	0.79	0.27			
16					0.60	0.07	0.08	0.05	0.26			
17					1.11							
18		0.04								0.44		
19		0.02			0.74					0.09		
20					0.30			0.03				
21						0.02	0.16	0.16				
22					0.11	0.29						
23					0.69	0.40						
24					1.14	2.38		0.04				
25						0.85						
26						0.28						
27						0.06						
28								0.01				
29			0.05	0.11								
30			0.63	0.13	0.16	0.42			0.16			
31				0.02					0.01			
Monthly												
Total:	0.01	0.06	0.68	0.26	8.20	7.72	0.50	2.34	1.32	0.92	0.16	0.30
Days of												
Rain:	1	2	2	3	15	18	3	12	7	4	1	2
Season:											Total	22.47
											Days	70

Appendix A-136. San Francisco Daily Rainfall, 1984-1985

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.09				0.04
2					0.10	0.48			0.01			0.27
3												
4						0.03			0.11			
5				0.01	0.12	0.23			0.82			
6					0.18			0.01	0.69			
7					0.90		0.33	0.72	0.06			
8					0.19			1.16				
9						0.46	0.02					
10				0.37	1.07	0.15			0.48			
11					0.01				0.22			
12					1.47	0.01						
13					0.34							
14												
15					0.30	0.48						
16				1.73	0.86							
17					0.27				0.21			
18				0.01	0.01	0.03			0.07			
19			0.07	0.05								
20					0.17					0.14		
21										0.13		
22												
23					0.29							
24					0.47				0.04			
25											0.01	
26						0.23	0.07		1.10		0.02	
27					0.70				0.11		0.05	
28				0.40			0.17		0.02			
29				0.37								
30		0.24	0.03									
31											0.01	
Monthly												
Total:	0.00	0.24	0.10	2.94	7.45	2.10	0.59	1.98	3.94	0.27	0.09	0.31
Days of												
Rain:	0	1	2	7	17	9	4	4	13	2	4	2
Season:											Total	20.01
											Days	65

Appendix A-137. San Francisco Daily Rainfall, 1985-1986

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.72		0.03				
2						0.25		0.30			0.01	
3						0.02	0.27	0.21			0.09	
4						0.19	0.71				0.02	
5						0.02	0.18			0.03		
6			0.02	0.03		0.17				0.27	0.01	
7						0.29			1.13	0.08		
8			0.12						0.46			
9			0.23		0.12				0.67			
10					0.25				1.30			
11					0.10			0.03	0.46			
12								0.56				
13								0.29	0.60			
14			0.01				0.24	1.78	0.04			
15							0.85	0.73	1.36	0.16		
16							0.65	0.76	0.23	0.22		
17							0.10	1.63				
18								1.70				
19							0.03	0.20				
20				0.73	0.03			0.06				
21				0.03				0.01				
22				0.01			0.20					
23					0.12							
24					2.54							
25					0.42							
26												
27					0.06							
28					0.59							
29					0.60	0.45	0.72					
30						0.36	0.06					
31							0.76					
Monthly												
Total:	0.00	0.00	0.38	0.80	4.83	2.47	4.77	8.29	6.25	0.76	0.13	0.00
Days of												
Rain:	0	0	4	4	10	9	12	14	9	5	4	0
Season:										Total	28.68	
										Days	71	

Appendix A-138. San Francisco Daily Rainfall, 1986-1987

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.24				0.03	
2								0.89	0.01	0.05		
3							1.13					
4						0.34	0.16		0.06			
5						0.05			0.90			
6							0.42					
7												
8									0.08			
9												
10								0.07	0.05			
11								0.05	0.04			
12								1.41	0.17			
13						0.05		0.97				
14			0.02					0.09	0.24			
15						0.26		0.25				
16		0.01	0.19									
17			0.13	0.01					0.01			
18					0.03	0.45			0.06			
19					0.05	0.06						
20					0.07							
21								0.01	0.20			
22						0.29	0.56		0.02			
23	0.03		0.17	0.03			0.10	0.03	0.47			
24			0.59	0.01			0.65					
25							0.02					
26			0.22									
27				0.02			0.53					
28					0.05		0.14					
29				0.04			0.03			0.03		
30							0.28			0.06		0.01
31						0.14					0.03	
Monthly												
Total:	0.03	0.01	1.32	0.11	0.20	1.64	4.26	3.77	2.31	0.14	0.06	0.01
Days of												
Rain:	1	1	6	5	4	8	12	9	13	3	2	1
									Season:		Total	13.86
											Days	65

Appendix A-139. San Francisco Daily Rainfall, 1987-1988

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1						0.17			0.03			
2					0.08	0.17	0.19					
3							0.54					
4						0.55	1.02					
5						0.10						
6						0.58					0.13	0.70
7						0.20	0.05				0.24	
8					0.04	1.12	0.01					
9					0.01	0.13	0.18					
10						0.05	0.13					
11												
12											0.01	
13					0.51							
14							0.26			0.03		
15						0.14	0.24					
16						0.56	0.68				0.11	
17					0.86		0.85					
18							0.03					
19										1.11		
20					0.81					0.17		
21						0.05						
22				0.04		0.03				0.31		
23				0.07					0.04			
24												
25												
26												
27				0.78		0.51		0.24				
28				0.18		0.67	0.28	0.13			0.17	
29						0.06	0.47	0.03		0.11		
30					0.78							
31												
Monthly												
Total:	0.00	0.00	0.00	1.07	3.09	5.09	4.93	0.40	0.07	1.73	0.66	0.70
Days of												
Rain:	0	0	0	4	7	16	14	3	2	5	5	1
Season:											Total	17.74
											Days	57

Appendix A-140. San Francisco Daily Rainfall, 1988-1989

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1					0.03			0.03	0.23	0.01		
2					0.01			0.41	0.54	0.06		
3					0.39			0.27				
4								0.04	0.05			0.04
5					0.01		0.41		0.33			
6							0.08		0.06			
7							0.02		0.16			
8							0.07	0.54	0.16			
9					0.05		0.05	0.10	0.01			
10					0.06		0.10		0.51			
11									0.04			
12					0.22							
13				0.54	0.32							
14				0.10	0.01							
15					0.03							
16					0.34				0.67			
17									0.01			
18								0.08	1.57			
19						0.40			0.08			
20						1.30						
21					0.21	0.15				0.09		
22					0.26	0.73		0.02				
23					0.79	0.05	0.53		0.21	0.28	0.06	
24					0.95	1.17			0.17	0.14		
25					0.02				0.43	0.05		
26									0.02			
27						0.29						
28									0.03			
29												0.01
30						0.14				0.07		0.02
31												
Monthly												
Total:	0.00	0.00	0.00	0.64	3.70	4.23	1.26	1.49	5.28	0.70	0.06	0.07
Days of												
Rain:	0	0	0	2	16	8	7	8	19	7	1	3
Season:											Total	17.43
											Days	71

Appendix A-141. San Francisco Daily Rainfall, 1989-1990

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1							0.47					
2									0.64			
3								0.56	0.01			
4									0.23			
5												
6								0.14				
7							0.26		0.04			
8							0.02					
9												
10									0.35			
11												
12							1.03					
13							1.27					
14							0.20		0.04			
15								0.10				0.01
16			0.50				0.17	1.40		0.02		
17			0.15					0.25	0.03			
18			0.06									
19												
20										0.01	0.22	
21				0.08								
22										0.32	0.18	
23		0.05		0.82	0.04					0.23	0.06	
24				0.27	0.12							
25					1.17						0.03	
26							0.01				0.18	
27				0.01							1.42	
28			0.26								0.02	
29			0.01				0.04					
30							0.25				0.27	
31							0.30					
Monthly												
Total:	0.00	0.05	0.98	1.18	1.33	0.00	4.02	2.45	1.34	0.58	2.38	0.01
Days of												
Rain:	0	1	5	4	3	0	11	5	7	4	8	1
Season:											Total	14.32
											Days	49

Appendix A-142. San Francisco Daily Rainfall, 1990-1991

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1									0.43	0.01	0.08	
2								1.12	0.19			
3									0.35			
4								1.07	0.34			
5												
6							0.01			0.04		
7		0.03					0.15					
8											0.05	
9							0.42					
10						0.55			0.59			
11						0.03						
12							0.02		0.61			
13									0.08		0.12	
14						0.01						
15					0.06	1.17						
16						0.11			0.01		0.02	
17		0.01							0.72			
18				0.03		0.03						
19					0.03	0.04			0.33	0.11		
20					0.02				0.34	0.63		
21					0.13				0.03	0.17		
22			0.12									
23									0.48			
24									0.57	0.06		
25					0.28				0.29			
26									0.53	0.05		
27								0.83				
28								0.27				0.05
29											0.03	
30											0.06	
31				0.17								
Monthly												
Total:	0.00	0.04	0.12	0.20	0.52	1.94	0.60	3.29	5.89	1.07	0.36	0.05
Days of												
Rain:	0	2	1	2	5	7	4	4	19	7	12	1
Season:											Total	14.08
											Days	64

Appendix A-143. San Francisco Daily Rainfall, 1991-1992

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1								0.34	0.16			
2									0.04			
3												
4							0.76		0.02			
5							0.29		2.50			
6						0.03	0.30	0.12	0.29			
7						0.03	0.40	0.02				
8												
9								0.21				
10								0.70				
11								1.23		0.14		
12								0.44		0.19		
13		0.15						0.28				
14		0.26						1.30	0.40			
15								0.33	0.17	0.01		
16								0.12	0.08			
17					0.48	0.10	0.04	0.02		0.04		
18		0.01				0.09		0.29				
19								0.60				
20								0.05	0.02			
21								0.14				
22								0.01	0.62			
23									0.01			
24				0.08								0.01
25				0.92								
26				1.35								
27					0.02	0.73	0.16					
28						1.18						
29						0.16		0.14				0.38
30									0.10			
31							0.14					
Monthly												
Total:	0.00	0.42	0.00	2.35	0.50	2.32	2.09	6.34	4.41	0.38	0.00	0.39
Days of												
Rain:	0	3	0	3	3	7	7	18	12	4	0	2
Season:										Total	19.20	
										Days	59	

Appendix B-1. San Francisco Monthly Rainfall (1849 - 1893)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Season</u>
1849	0.00	0.00	0.00	3.14	8.66	6.20	8.34	1.77	4.53	0.46	0.00	0.00	33.10
1850	0.00	0.00	0.33	0.00	0.92	1.05	0.72	0.54	1.94	1.23	0.67	0.02	7.42
1851	0.00	0.02	1.03	0.21	2.21	7.10	0.58	0.14	6.68	0.26	0.32	0.00	18.55
1852	0.00	0.00	0.00	0.80	5.31	13.20	3.92	1.42	4.86	5.37	0.38	0.00	35.26
1853	0.00	0.04	0.46	0.12	2.28	2.32	3.88	8.04	3.51	3.12	0.02	0.08	23.87
1854	0.00	0.01	0.15	2.43	0.34	0.87	3.67	4.77	4.64	4.99	1.88	0.08	23.83
1855	0.00	0.00	0.00	0.00	0.67	5.76	9.40	0.50	1.60	2.94	0.76	0.03	21.66
1856	0.02	0.00	0.07	0.45	2.79	3.75	2.45	8.59	1.62	0.00	0.05	0.12	19.91
1857	0.00	0.05	0.00	0.93	3.01	4.14	4.36	1.83	5.55	1.55	0.34	0.05	21.81
1858	0.05	0.16	0.00	2.74	0.69	6.14	1.28	6.32	3.02	0.27	1.55	0.00	22.22
1859	0.00	0.02	0.03	0.05	7.28	1.57	1.64	1.60	3.99	3.14	2.86	0.09	22.27
1860	0.21	0.00	0.00	0.91	0.58	6.16	2.47	3.72	4.08	0.51	1.00	0.08	19.72
1861	0.00	0.00	0.02	0.00	4.10	9.54	24.36	7.53	2.20	0.73	0.74	0.05	49.27
1862	0.00	0.00	0.00	0.52	0.15	2.35	3.63	3.19	2.06	1.61	0.23	0.00	13.74
1863	0.00	0.00	0.03	0.00	2.55	1.80	1.83	0.00	1.52	1.57	0.78	0.00	10.08
1864	0.00	0.21	0.01	0.13	6.68	8.91	5.14	1.34	0.74	0.94	0.63	0.00	24.73
1865	0.00	0.00	0.24	0.26	4.19	0.58	10.88	2.12	3.04	0.12	1.46	0.04	22.93
1866	0.00	0.00	0.11	0.00	3.35	15.16	5.16	7.20	1.58	2.36	0.00	0.00	34.92
1867	0.00	0.00	0.04	0.20	3.41	10.69	9.50	6.13	6.30	2.31	0.03	0.23	38.84
1868	0.00	0.00	0.00	0.15	1.18	4.34	6.35	3.90	3.14	2.19	0.08	0.02	21.35
1869	0.00	0.00	0.12	1.29	1.19	4.31	3.89	4.78	2.00	1.53	0.20	0.00	19.31
1870	0.00	0.00	0.03	0.00	0.43	3.38	3.07	3.76	1.31	1.89	0.23	0.01	14.11
1871	0.00	0.02	0.00	0.07	2.81	14.36	4.00	6.90	1.59	0.81	0.18	0.04	30.78
1872	0.01	0.00	0.04	0.11	2.79	5.95	1.58	3.94	0.79	0.43	0.00	0.02	15.66
1873	0.01	0.08	0.00	0.83	1.16	9.72	5.66	2.21	3.36	0.90	0.66	0.14	24.73
1874	0.00	0.00	0.02	2.69	6.55	0.33	8.01	0.32	1.30	0.10	0.22	1.02	20.56
1875	0.00	0.00	0.00	0.24	7.27	4.15	7.55	4.92	5.49	1.29	0.24	0.04	31.19
1876	0.01	0.01	0.38	3.36	0.25	0.00	4.32	1.18	1.08	0.26	0.18	0.01	11.04
1877	0.02	0.00	0.00	0.65	1.57	2.66	11.97	12.52	4.56	1.06	0.16	0.01	35.18
1878	0.01	0.00	0.55	1.27	0.57	0.58	3.52	4.90	8.75	1.89	2.35	0.05	24.44
1879	0.01	0.02	0.00	0.78	4.03	4.46	2.23	1.87	2.08	10.06	1.12	0.00	26.66
1880	0.00	0.00	0.00	0.05	0.33	12.33	8.69	4.65	0.90	2.00	0.22	0.69	29.86
1881	0.00	0.00	0.25	0.54	1.94	3.85	1.68	2.96	3.45	1.22	0.21	0.04	16.14
1882	0.00	0.00	0.26	2.66	4.18	2.01	1.92	1.04	3.01	1.51	3.52	0.01	20.12
1883	0.00	0.00	0.42	1.42	1.60	0.92	3.94	6.65	8.24	6.33	0.23	2.57	32.32
1884	0.00	0.04	0.33	2.55	0.26	7.68	2.53	0.30	1.01	3.17	0.04	0.19	18.10
1885	0.06	0.00	0.11	0.72	11.78	4.99	7.42	0.24	2.07	5.28	0.37	0.01	33.05
1886	0.23	0.00	0.01	1.48	0.84	2.07	1.90	9.24	0.84	2.30	0.06	0.07	19.04
1887	0.00	0.01	0.29	0.00	0.99	3.34	6.81	0.94	3.60	0.11	0.38	0.27	16.74
1888	0.01	0.01	0.98	0.13	3.99	5.80	1.28	0.72	7.78	0.96	2.17	0.03	23.86
1889	0.01	0.00	0.00	7.28	2.90	13.81	9.61	5.16	4.73	1.18	1.07	0.10	45.85
1890	0.02	0.00	0.31	0.00	0.00	3.25	0.98	7.26	1.96	2.44	1.25	0.11	17.58
1891	0.10	0.02	0.77	0.04	0.56	5.62	2.42	2.90	2.85	1.39	1.86	0.00	18.53
1892	0.00	0.00	0.02	1.65	3.91	5.08	3.05	2.75	4.08	1.03	0.15	0.03	21.75
1893	0.02	0.00	0.21	0.16	4.18	2.25	5.99	2.69	0.60	0.50	1.31	0.56	18.47

Appendix B-1. San Francisco Monthly Rainfall (1894 - 1938)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Season</u>
1894	0.00	0.00	1.05	1.73	0.88	9.01	6.99	2.31	1.89	1.24	0.60	0.00	25.70
1895	0.01	0.00	0.77	0.11	1.78	1.43	8.14	0.28	2.85	5.16	0.72	0.00	21.25
1896	0.04	0.09	0.52	1.55	4.56	4.34	2.26	4.41	4.56	0.27	0.61	0.22	23.43
1897	0.00	0.00	0.10	1.70	1.05	1.22	1.12	2.13	0.24	0.19	1.44	0.19	9.38
1898	0.00	0.00	1.06	0.86	0.46	1.62	3.67	0.10	7.61	0.62	0.86	0.01	16.87
1899	0.00	0.00	0.00	3.92	3.79	2.65	4.11	0.64	1.91	1.08	0.32	0.05	18.47
1900	0.00	0.00	0.46	1.48	3.91	1.37	5.79	5.03	0.80	1.64	0.69	0.00	21.17
1901	0.00	0.00	0.78	0.64	3.48	0.90	1.23	7.27	2.65	0.98	1.05	0.00	18.98
1902	0.00	0.00	0.00	1.70	1.98	2.32	3.73	1.76	6.23	0.56	0.00	0.00	18.28
1903	0.00	0.00	0.00	0.17	4.25	1.63	1.05	5.89	6.01	1.29	0.30	0.00	20.59
1904	0.02	0.06	5.07	2.37	1.07	1.59	4.04	2.70	3.15	1.33	2.05	0.00	23.45
1905	0.00	0.00	0.00	0.00	0.92	2.05	3.90	4.30	5.02	0.92	2.75	0.56	20.42
1906	0.08	0.11	0.18	0.03	1.59	6.90	4.41	3.02	8.42	0.11	0.04	1.28	26.17
1907	0.00	0.02	0.11	1.36	0.04	3.66	4.88	5.39	0.90	0.22	0.76	0.01	17.35
1908	0.02	0.01	0.13	0.61	1.34	2.15	10.51	7.53	3.27	0.00	0.00	0.00	25.57
1909	0.00	0.00	0.80	1.23	2.43	5.59	3.24	2.09	3.78	0.31	0.03	0.02	19.52
1910	0.00	0.00	0.05	0.65	0.48	1.73	13.79	3.02	4.57	0.89	0.28	0.03	25.49
1911	0.00	0.00	0.00	0.28	0.60	2.54	2.47	0.41	4.10	1.38	1.47	0.81	14.06
1912	0.00	0.00	1.25	0.49	1.94	1.30	3.84	0.43	1.47	0.60	0.63	0.02	11.97
1913	0.07	0.01	0.00	0.35	6.22	5.41	9.76	5.04	1.09	0.99	0.37	0.29	29.60
1914	0.02	0.00	0.00	0.29	0.70	5.49	6.74	7.36	3.02	0.62	3.17	0.00	27.41
1915	0.01	0.00	0.00	0.01	0.92	6.42	14.59	3.77	1.33	0.00	0.07	0.00	27.12
1916	0.03	0.29	1.20	0.52	1.50	4.79	1.83	3.81	1.42	0.33	0.06	0.00	15.78
1917	0.00	0.00	0.02	0.00	0.81	0.72	0.81	5.79	2.73	0.60	0.00	0.00	11.48
1918	0.00	0.00	2.53	0.17	5.60	2.62	2.57	9.31	2.74	0.10	0.00	0.00	25.64
1919	0.01	0.00	0.39	0.27	0.44	3.21	0.26	1.23	3.25	1.36	0.00	0.04	10.46
1920	0.00	0.00	0.13	1.83	2.70	7.48	6.30	1.38	2.28	0.54	0.52	0.00	23.16
1921	0.00	0.00	0.35	0.52	1.43	6.39	2.41	5.15	2.38	0.47	0.55	0.26	19.91
1922	0.00	0.00	0.00	2.95	3.77	7.77	2.84	0.77	0.03	3.92	0.06	0.06	22.17
1923	0.00	0.01	0.44	0.46	0.49	1.91	2.75	3.30	1.96	0.30	0.00	0.00	11.62
1924	0.00	0.01	0.00	2.98	1.50	7.37	1.62	7.90	2.63	2.73	4.02	0.05	30.81
1925	0.06	0.00	0.45	0.31	2.32	1.01	5.48	5.40	0.25	5.26	0.15	0.00	20.69
1926	0.00	0.04	0.00	1.90	7.21	1.04	3.77	6.85	2.19	1.95	0.10	0.38	25.43
1927	0.00	0.00	0.00	1.93	3.18	3.94	2.40	1.97	4.65	1.31	0.26	0.00	19.64
1928	0.00	0.00	0.03	0.13	3.35	4.89	1.32	2.14	1.56	1.01	0.01	0.86	15.21
1929	0.00	0.00	0.00	0.01	0.00	3.09	4.99	2.94	3.53	1.56	0.16	0.00	16.28
1930	0.00	0.00	0.10	0.89	1.56	0.98	5.50	1.10	1.68	0.31	1.10	0.32	13.54
1931	0.00	0.00	0.00	0.68	2.93	9.24	3.23	3.00	0.86	0.47	0.65	0.03	21.09
1932	0.00	0.00	0.00	0.01	1.00	2.75	5.68	1.13	2.93	0.06	1.36	0.01	14.93
1933	0.00	0.00	0.14	1.49	0.00	4.19	1.03	4.68	0.07	0.51	0.12	0.68	12.91
1934	0.01	0.00	0.13	0.88	3.76	4.06	6.23	2.38	2.31	3.45	0.01	0.00	23.22
1935	0.00	0.25	0.08	1.44	1.24	3.25	5.77	10.06	1.01	1.09	0.49	0.28	24.96
1936	0.03	0.02	0.00	0.69	0.01	2.94	5.26	4.88	7.05	0.86	0.06	0.59	22.39
1937	0.00	0.00	0.00	0.90	2.46	3.73	2.65	8.49	5.73	1.52	0.00	0.00	25.48
1938	0.01	0.00	0.15	1.33	0.88	1.48	3.07	1.94	2.62	0.42	0.63	0.00	12.53

Appendix B-1. San Francisco Monthly Rainfall (1939 - 1983)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Season</u>
1939	0.00	0.00	1.06	0.17	0.20	1.05	9.98	7.81	5.32	0.94	0.63	0.01	27.17
1940	0.00	0.00	0.59	1.05	2.22	6.25	8.24	6.71	4.75	4.05	1.18	0.01	35.05
1941	0.01	0.03	0.00	0.93	1.99	7.29	4.76	4.27	2.62	3.65	1.11	0.00	26.66
1942	0.01	0.00	0.18	0.95	4.45	2.87	6.15	1.95	3.18	1.88	0.13	0.13	21.88
1943	0.00	0.00	0.02	0.74	0.80	2.69	4.31	5.34	0.83	2.07	0.94	0.12	17.86
1944	0.01	0.02	0.00	1.70	6.24	3.97	1.33	3.43	4.15	0.32	0.64	0.01	21.82
1945	0.00	0.00	0.04	1.95	3.24	9.84	1.76	2.03	2.34	0.05	0.37	0.02	21.64
1946	0.06	0.00	0.06	0.15	2.73	2.77	1.35	2.65	3.64	0.17	0.67	0.64	14.89
1947	0.00	0.00	0.00	2.09	1.39	1.84	1.00	2.32	3.36	3.04	0.54	0.01	15.59
1948	0.02	0.02	0.09	0.20	1.18	4.75	2.20	3.04	5.85	0.00	0.93	0.00	18.28
1949	0.06	0.04	0.00	0.08	1.18	2.77	7.40	2.33	1.65	0.87	0.37	0.03	16.78
1950	0.00	0.00	0.00	2.72	4.96	6.01	4.41	3.00	1.32	0.89	0.65	0.04	23.90
1951	0.01	0.43	0.08	0.81	3.33	7.92	10.69	2.62	4.90	1.08	0.30	0.39	32.56
1952	0.00	0.01	0.00	0.07	2.42	9.06	3.26	0.04	1.83	3.42	0.38	0.61	21.10
1953	0.00	0.07	0.00	0.34	1.88	0.82	3.11	2.42	4.56	0.82	0.11	0.14	14.27
1954	0.03	0.20	0.00	0.24	2.55	5.67	4.05	1.18	0.29	1.49	0.04	0.00	15.74
1955	0.02	0.00	0.02	0.03	2.38	11.47	8.72	2.03	0.12	1.68	0.68	0.02	27.17
1956	0.00	0.01	0.33	1.14	0.04	0.37	2.84	3.58	2.39	1.09	3.19	0.06	15.04
1957	0.01	0.00	1.46	3.46	1.13	3.60	4.38	7.78	8.22	5.47	0.88	0.09	36.48
1958	0.05	0.00	0.04	0.12	0.09	1.48	3.96	4.04	0.30	0.36	0.02	0.00	10.46
1959	0.00	0.02	2.06	0.00	0.00	1.71	4.04	3.57	2.06	1.16	0.85	0.00	15.47
1960	0.00	0.00	0.00	0.48	3.35	2.31	2.79	0.96	2.27	0.79	0.88	0.04	13.87
1961	0.00	0.02	0.22	0.09	4.44	2.13	1.08	6.57	2.74	0.36	0.00	0.00	17.65
1962	0.00	0.07	0.22	5.51	0.60	2.81	3.35	1.92	3.87	3.35	0.45	0.00	22.15
1963	0.00	0.00	0.06	1.39	3.52	0.87	3.37	0.19	2.12	0.01	0.22	0.57	12.32
1964	0.00	0.01	0.00	1.90	3.99	5.35	3.97	0.94	2.92	3.21	0.00	0.00	22.29
1965	0.02	0.49	0.00	0.01	4.79	3.51	3.27	2.72	0.80	0.36	0.19	0.17	16.33
1966	0.06	0.10	0.10	0.01	4.80	3.87	9.49	0.22	4.35	4.90	0.09	1.42	29.41
1967	0.00	0.00	0.04	0.53	1.10	2.12	4.54	2.28	3.15	0.48	0.22	0.00	14.46
1968	0.00	0.03	0.06	0.62	2.67	3.91	7.74	7.26	1.01	1.74	0.00	0.05	25.09
1969	0.00	0.00	0.01	2.61	0.45	6.15	7.81	1.56	1.55	0.06	0.03	0.57	20.80
1970	0.00	0.00	0.00	0.84	6.44	5.39	2.04	0.26	2.91	0.72	0.19	0.00	18.79
1971	0.01	0.01	0.22	0.11	1.92	3.93	1.32	2.13	0.23	1.07	0.00	0.11	11.06
1972	0.01	0.04	0.54	5.41	6.40	3.53	9.38	6.32	2.63	0.02	0.08	0.00	34.36
1973	0.00	0.00	0.33	1.81	8.64	4.21	3.66	1.54	5.07	2.40	0.00	0.10	27.76
1974	0.73	0.00	0.00	0.92	0.40	1.83	2.85	4.30	5.87	1.30	0.02	0.04	18.26
1975	0.20	0.02	0.00	2.77	0.43	0.50	0.31	1.96	1.04	0.70	0.01	0.03	7.97
1976	0.00	0.78	0.51	0.38	1.18	2.53	1.85	0.90	2.31	0.05	0.57	0.00	11.06
1977	0.00	0.03	0.96	0.17	2.22	3.30	5.94	4.14	5.90	4.21	0.00	0.00	26.87
1978	0.00	0.00	0.20	0.00	1.67	0.89	7.43	5.58	1.95	0.87	0.15	0.00	18.74
1979	0.07	0.00	0.01	1.94	3.67	4.12	4.63	6.78	1.73	1.29	0.23	0.02	24.49
1980	0.04	0.00	0.00	0.00	0.28	3.09	4.97	2.09	4.63	0.17	0.12	0.00	15.39
1981	0.00	0.00	0.22	2.10	5.16	5.42	9.58	3.88	7.81	3.03	0.00	0.06	37.10
1982	0.00	0.00	0.72	2.79	5.62	2.22	5.77	8.06	9.04	3.48	0.47	0.00	38.17
1983	0.01	0.06	0.68	0.26	8.20	7.72	0.50	2.34	1.32	0.92	0.16	0.30	22.47

Appendix B-1. San Francisco Monthly Rainfall (1984 - 1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Season</u>
1984	0.00	0.24	0.10	2.94	7.45	2.10	0.59	1.98	3.94	0.27	0.09	0.31	20.01
1985	0.00	0.00	0.38	0.80	4.83	2.47	4.77	8.29	6.25	0.76	0.13	0.00	28.68
1986	0.03	0.01	1.32	0.11	0.20	1.64	4.26	3.77	2.31	0.14	0.06	0.01	13.86
1987	0.00	0.00	0.00	1.07	3.09	5.09	4.93	0.40	0.07	1.73	0.66	0.70	17.74
1988	0.00	0.00	0.00	0.64	3.70	4.23	1.26	1.49	5.28	0.70	0.06	0.07	17.43
1989	0.00	0.05	0.98	1.18	1.33	0.00	4.02	2.45	1.34	0.58	2.38	0.01	14.32
1990	0.00	0.04	0.12	0.20	0.52	1.94	0.60	3.29	5.89	1.07	0.36	0.05	14.08
1991	0.00	0.42	0.00	2.35	0.50	2.32	2.09	6.34	4.41	0.38	0.00	0.39	19.20

Appendix B-2. San Francisco Running Averages (1849-1892)

	<u>Total</u>	<u>30 Year</u>		<u>15 Year</u>		<u>10 Year</u>		<u>5 Year</u>	
		<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>
1849	33.10								
1850	7.42								
1851	18.46								
1852	35.26								
1853	23.87							23.62	10.14
1854	23.83							21.77	9.03
1855	21.66							24.62	5.68
1856	19.91							24.91	5.38
1857	21.81							22.22	1.49
1858	22.22					22.75	7.28	21.89	1.25
1859	22.27					21.67	6.41	21.57	0.86
1860	19.72					22.90	4.44	21.19	1.13
1861	49.27					25.98	8.82	27.06	11.15
1862	13.74					23.83	8.92	25.44	12.31
1863	10.08			22.84	9.95	22.45	9.82	23.02	13.81
1864	24.73			22.28	9.58	22.54	9.84	23.51	13.82
1865	22.93			23.32	8.72	22.67	9.84	24.15	13.71
1866	34.92			24.41	9.07	24.17	10.43	21.28	8.75
1867	38.84			24.65	9.39	25.87	11.26	26.30	10.08
1868	21.35			24.49	9.43	25.79	11.29	28.55	6.99
1869	19.31			24.18	9.52	25.49	11.42	27.47	7.87
1870	14.11			23.68	9.83	24.93	11.82	25.71	9.51
1871	30.78			24.41	9.93	23.08	8.97	24.88	8.82
1872	15.66			24.00	10.15	23.27	8.79	20.24	5.86
1873	24.73			24.16	10.14	24.74	7.61	20.92	6.14
1874	20.56			24.05	10.17	24.32	7.71	21.17	6.09
1875	31.19			24.81	10.25	25.15	7.95	24.58	5.96
1876	11.04			22.26	8.44	22.76	8.24	20.64	7.00
1877	35.18			23.69	8.69	22.39	7.57	24.54	8.43
1878	24.44	23.75	9.02	24.65	7.89	22.70	7.59	24.48	8.43
1879	26.66	23.53	8.87	24.78	7.91	23.44	7.58	25.70	8.22
1880	29.86	24.28	8.42	25.24	7.99	25.01	7.10	25.44	8.05
1881	16.14	24.20	8.48	23.99	7.84	23.55	7.27	26.46	6.30
1882	20.12	23.70	8.26	22.74	6.80	23.99	6.90	23.44	4.84
1883	32.38	23.98	8.40	23.48	7.20	24.76	7.34	25.03	6.05
1884	18.10	23.79	8.47	23.40	7.25	24.51	7.52	23.32	6.54
1885	33.05	24.17	8.62	24.66	7.17	24.70	7.70	23.96	7.26
1886	19.04	24.14	8.63	23.88	7.10	25.50	6.58	24.54	6.71
1887	16.74	23.97	8.73	23.95	7.02	23.65	6.18	23.86	7.27
1888	23.86	24.03	8.72	23.89	7.02	23.60	6.17	22.16	5.95
1889	45.85	24.81	9.55	25.58	8.82	25.51	9.11	27.71	10.66
1890	17.58	24.74	9.60	24.67	8.90	24.29	9.27	24.61	10.90
1891	18.53	23.72	8.50	25.17	8.31	24.53	9.08	24.51	10.95
1892	21.75	23.98	8.31	24.27	7.90	24.69	9.02	25.51	10.41

Appendix B-2. San Francisco Running Averages (1893-1936)

	<u>Total</u>	<u>30 Year</u>		<u>15 Year</u>		<u>10 Year</u>		<u>5 Year</u>	
		<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>
1893	18.47	24.26	7.97	23.88	8.03	23.30	8.79	24.44	10.80
1894	25.70	24.30	7.97	23.81	8.01	24.06	8.64	20.41	3.00
1895	21.25	24.24	7.99	23.24	7.86	22.88	8.12	21.14	2.65
1896	23.43	23.86	7.74	23.72	7.63	23.32	8.02	22.12	2.40
1897	9.38	22.87	7.64	23.01	8.40	22.58	8.88	19.65	5.66
1898	16.87	22.73	7.72	21.97	8.13	21.88	9.03	19.33	5.76
1899	18.47	22.70	7.73	22.00	8.12	19.14	4.20	17.88	4.81
1900	21.17	22.93	7.57	21.21	7.56	19.50	4.21	17.86	4.80
1901	18.98	22.54	7.46	21.20	7.57	19.55	4.20	16.97	4.04
1902	18.28	22.63	7.39	21.30	7.51	19.20	4.15	18.75	1.40
1903	20.59	22.49	7.39	21.09	7.49	19.41	4.16	19.50	1.17
1904	23.45	22.59	7.38	19.59	3.65	19.19	3.86	20.49	1.81
1905	20.42	22.23	7.22	19.78	3.61	19.10	3.83	20.34	1.78
1906	26.17	22.73	6.94	20.29	3.92	19.38	4.21	21.78	2.74
1907	17.35	22.14	6.60	20.00	3.97	20.18	2.73	21.60	2.99
1908	25.57	22.17	6.62	20.47	4.17	21.05	2.92	22.59	3.30
1909	19.52	21.94	6.58	20.06	3.94	21.15	2.84	21.81	3.47
1910	25.49	21.79	6.45	20.34	4.16	21.58	3.13	22.82	3.65
1911	14.06	21.72	6.52	19.72	4.35	21.09	3.81	20.40	4.54
1912	11.97	21.45	6.75	19.89	3.97	20.46	4.65	19.32	5.64
1913	29.60	21.36	6.62	20.74	4.55	21.36	5.40	20.13	6.67
1914	27.41	21.67	6.68	21.34	4.79	21.76	5.68	21.71	7.24
1915	27.12	21.47	6.42	21.73	5.00	22.43	5.88	22.03	7.44
1916	15.78	21.36	6.49	21.52	5.18	21.39	6.04	22.38	7.10
1917	11.48	21.19	6.68	21.07	5.71	20.80	6.66	22.28	7.24
1918	25.64	21.24	6.71	21.40	5.82	20.81	6.66	21.49	6.58
1919	10.46	20.06	5.23	20.54	6.39	19.90	7.35	18.10	7.01
1920	23.16	20.25	5.23	20.72	6.43	19.67	7.21	17.30	6.11
1921	19.91	20.30	5.22	20.30	6.26	20.25	6.96	18.13	6.13
1922	22.17	20.31	5.23	20.62	6.22	21.27	6.40	20.27	5.24
1923	11.62	20.08	5.45	19.69	6.45	19.48	6.33	17.46	5.36
1924	30.81	20.25	5.70	20.45	7.02	19.82	6.82	21.53	6.16
1925	20.69	20.23	5.69	20.13	6.89	19.17	6.39	21.04	6.11
1926	25.43	20.30	5.74	20.88	6.81	20.14	6.53	22.14	6.31
1927	19.64	20.64	5.37	21.39	6.40	20.95	5.88	21.64	6.38
1928	15.30	20.59	5.42	20.44	6.16	19.92	5.87	22.37	5.31
1929	16.28	20.52	5.46	19.70	5.95	20.50	5.15	19.47	3.59
1930	13.54	20.26	5.60	18.79	5.78	19.54	5.45	18.04	4.20
1931	21.09	20.33	5.60	19.15	5.75	19.66	5.47	17.17	2.79
1932	14.93	20.22	5.67	19.38	5.50	18.93	5.57	16.23	2.59
1933	12.91	19.97	5.82	18.53	5.45	19.06	5.41	15.75	2.91
1934	23.22	19.96	5.81	19.38	5.11	18.30	4.08	17.14	4.20
1935	24.96	20.11	5.88	19.50	5.21	18.73	4.51	19.42	4.70
1936	22.39	19.98	5.79	19.67	5.26	18.43	4.13	19.68	4.82

Appendix B-2. San Francisco Running Averages (1937-1980)

		30 Year		15 Year		10 Year		5 Year	
	<u>Total</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>
1937	25.48	20.25	5.85	19.89	5.43	19.01	4.64	21.79	4.58
1938	12.53	19.82	5.93	19.95	5.34	18.73	4.93	21.72	4.73
1939	27.17	20.07	6.07	19.70	4.91	19.82	5.45	22.51	5.22
1940	35.05	20.39	6.58	20.66	6.23	21.97	6.65	24.52	7.31
1941	26.66	20.81	6.56	20.74	6.30	22.53	6.79	25.38	7.26
1942	21.88	21.14	6.35	20.89	6.30	23.23	6.31	24.66	7.39
1943	17.86	20.75	6.18	21.06	6.18	23.72	5.64	25.72	5.77
1944	21.82	20.57	6.06	21.43	6.05	23.58	5.67	24.65	5.90
1945	21.64	20.38	5.94	21.97	5.67	23.25	5.68	21.97	2.79
1946	14.89	20.35	5.96	21.56	5.94	22.50	6.21	19.62	2.81
1947	15.59	20.49	5.80	21.60	5.89	21.51	6.44	18.36	2.92
1948	18.28	20.25	5.74	21.96	5.50	22.08	5.84	18.44	2.91
1949	16.78	20.46	5.48	21.53	5.63	21.05	5.77	17.44	2.40
1950	23.90	20.48	5.50	21.46	5.60	19.93	3.64	17.89	3.22
1951	32.56	20.90	5.91	22.14	6.25	20.52	4.93	21.42	6.26
1952	21.10	20.87	5.90	21.85	6.19	20.44	4.92	22.52	5.58
1953	14.27	20.96	5.78	21.96	6.02	20.08	5.21	21.72	6.36
1954	15.74	20.45	5.55	21.20	6.04	19.48	5.33	21.51	6.54
1955	27.17	20.67	5.68	20.68	5.08	20.03	5.79	22.17	6.90
1956	15.04	20.32	5.70	19.90	4.99	20.04	5.78	18.66	4.88
1957	36.48	20.88	6.39	20.87	6.48	22.13	7.35	21.74	8.76
1958	10.46	20.72	6.59	20.38	6.96	21.35	8.10	20.98	9.51
1959	15.47	20.70	6.61	19.96	7.05	21.22	8.18	20.92	9.54
1960	13.87	20.71	6.60	19.44	7.19	20.22	8.40	18.26	9.28
1961	17.66	20.59	6.62	19.62	7.11	18.73	7.34	18.79	9.15
1962	22.15	20.83	6.54	20.06	7.05	18.83	7.38	15.92	3.90
1963	12.32	20.81	6.56	19.66	7.30	18.64	7.52	16.29	3.42
1964	22.29	20.78	6.56	20.03	7.29	19.29	7.52	17.66	4.11
1965	16.33	20.49	6.56	19.53	7.26	18.21	7.08	18.15	3.76
1966	29.41	20.73	6.74	19.32	6.92	19.64	7.72	20.50	5.82
1967	14.46	20.36	6.77	18.87	7.00	17.44	5.39	18.96	6.19
1968	25.09	20.78	6.66	19.60	7.05	18.91	5.28	21.52	5.52
1969	20.80	20.57	6.56	19.93	6.98	19.44	5.18	21.22	5.51
1970	18.79	20.03	5.98	19.37	6.71	19.93	4.85	21.71	5.15
1971	11.06	19.51	6.06	19.11	6.95	19.27	5.52	18.04	4.89
1972	34.36	19.92	6.61	18.97	6.60	20.49	7.13	22.02	7.66
1973	27.78	20.25	6.75	20.12	6.53	22.04	6.86	22.56	7.95
1974	18.35	20.14	6.75	20.31	6.43	21.64	6.95	22.07	8.12
1975	7.95	19.68	7.09	19.92	6.97	20.81	7.97	19.90	9.95
1976	11.06	19.55	7.21	19.48	7.30	18.97	7.89	19.90	9.95
1977	27.87	19.96	7.32	19.86	7.58	20.31	8.15	18.60	8.25
1978	18.74	19.98	7.32	20.29	7.32	19.68	7.99	16.79	5.93
1979	24.52	20.24	7.33	20.44	7.38	20.05	8.12	18.03	7.61
1980	15.48	19.95	7.35	20.38	7.41	19.72	8.23	19.53	6.05

Appendix B-2. San Francisco Running Averages (1981-1991)

	<u>Total</u>	<u>30 Year</u>		<u>15 Year</u>		<u>10 Year</u>		<u>5 Year</u>	
		<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>	<u>Avg</u>	<u>SD</u>
1981	37.09	20.11	7.65	20.89	8.24	22.32	9.15	24.74	7.54
1982	38.17	20.67	8.31	22.47	9.08	22.70	9.71	26.80	9.31
1983	22.47	20.95	8.23	22.30	9.06	22.17	9.56	27.55	8.77
1984	20.01	21.09	8.17	22.25	9.07	22.34	9.50	26.64	9.25
1985	28.68	21.14	8.21	22.91	9.15	24.41	8.33	29.28	7.39
1986	13.86	21.10	8.25	23.09	8.93	24.69	7.91	24.64	8.27
1987	17.74	20.48	7.75	21.98	8.49	23.68	8.09	20.55	4.95
1988	17.43	20.71	7.55	21.29	8.41	23.55	8.17	19.54	4.97
1989	14.32	20.67	7.58	21.03	8.56	22.53	8.61	18.41	5.37
1990	14.08	20.68	7.57	21.43	8.06	22.39	8.74	15.49	1.72
1991	19.20	20.73	7.56	21.98	7.60	20.60	7.25	16.55	2.01

Appendix B-3. Sorted Cumulative Seasonal Rainfall (1849-1991)

<u>1 Season</u>		<u>2 Seasons</u>		<u>3 Seasons</u>		<u>4 Seasons</u>		<u>5 Seasons</u>	
1850	7.42	1975-1976	19.01	1974-1976	37.36	1958-1961	57.46	1986-1990	77.38
1975	7.95	1862-1863	23.82	1958-1960	39.80	1930-1933	62.47	1929-1933	78.75
1897	9.38	1850-1851	25.88	1897-1899	44.72	1986-1989	63.35	1958-1962	79.61
1863	10.08	1958-1959	25.93	1928-1930	45.12	1916-1919	63.36	1928-1932	81.14
1919	10.46	1911-1912	26.03	1988-1990	45.78	1987-1990	63.52	1959-1963	81.47
1958	10.46	1897-1898	26.25	1975-1977	46.88	1927-1930	64.76	1987-1991	82.72
1876	11.04	1974-1975	26.30	1959-1961	47.00	1988-1991	64.98	1974-1978	83.97
1971	11.06	1916-1917	27.26	1989-1991	47.55	1973-1976	65.14	1897-1901	84.87
1976	11.06	1932-1933	27.84	1917-1919	47.58	1974-1977	65.23	1930-1934	85.69
1917	11.48	1989-1990	28.35	1862-1864	48.55	1946-1949	65.54	1927-1931	85.85
1923	11.62	1959-1960	29.34	1946-1948	48.76	1975-1978	65.62	1916-1920	86.52
1912	11.97	1929-1930	29.82	1931-1933	48.93	1929-1932	65.84	1945-1949	87.18
1963	12.32	1970-1971	29.85	1986-1988	49.03	1897-1900	65.89	1919-1923	87.32
1938	12.53	1953-1954	30.01	1987-1989	49.49	1960-1963	66.00	1960-1964	88.29
1933	12.91	1946-1947	30.48	1930-1932	49.56	1928-1931	66.21	1896-1900	89.32
1930	13.54	1960-1961	31.53	1896-1898	49.68	1896-1899	68.15	1895-1899	89.40
1862	13.74	1928-1929	31.58	1969-1971	50.65	1959-1962	69.15	1946-1950	89.44
1986	13.86	1986-1987	31.60	1947-1949	50.65	1945-1948	70.40	1975-1979	90.14
1960	13.87	1988-1989	31.75	1929-1931	50.91	1917-1920	70.74	1926-1930	90.19
1990	14.03	1896-1897	32.81	1963-1965	50.94	1895-1898	70.93	1967-1971	90.20
1911	14.06	1990-1991	33.23	1932-1934	51.06	1909-1912	71.04	1915-1919	90.48
1870	14.11	1869-1870	33.42	1952-1954	51.11	1862-1865	71.48	1917-1921	90.65
1953	14.27	1919-1920	33.62	1927-1929	51.22	1931-1934	72.15	1961-1965	90.75
1989	14.32	1922-1923	33.79	1910-1912	51.52	1953-1956	72.22	1956-1960	91.32
1967	14.46	1947-1948	33.87	1945-1947	52.12	1962-1965	73.09	1943-1947	91.80
1946	14.89	1962-1963	34.47	1961-1963	52.13	1944-1947	73.94	1985-1989	92.03
1932	14.93	1963-1964	34.61	1916-1918	52.90	1961-1964	74.42	1944-1948	92.22
1956	15.04	1930-1931	34.63	1919-1921	53.53	1947-1950	74.55	1973-1977	93.01
1928	15.30	1863-1864	34.81	1960-1962	53.68	1898-1901	75.49	1952-1956	93.32
1959	15.47	1927-1928	34.94	1921-1923	53.70	1919-1922	75.70	1898-1902	93.77
1980	15.48	1948-1949	35.06	1895-1897	54.06	1968-1971	75.74	1957-1961	93.94
1947	15.59	1987-1988	35.17	1973-1975	54.08	1932-1935	76.02	1963-1967	94.81
1872	15.66	1898-1899	35.34	1915-1917	54.38	1943-1946	76.21	1908-1912	96.61
1954	15.74	1952-1953	35.37	1868-1870	54.77	1957-1960	76.28	1894-1898	96.63
1916	15.78	1886-1887	35.78	1911-1913	55.63	1890-1893	76.33	1931-1935	97.11
1881	16.14	1931-1932	36.02	1898-1900	56.51	1926-1929	76.65	1925-1929	97.34
1929	16.28	1918-1919	36.10	1962-1964	56.76	1920-1923	76.86	1899-1903	97.49
1965	16.33	1890-1891	36.11	1953-1955	57.18	1899-1902	76.90	1976-1980	97.67
1887	16.74	1933-1934	36.13	1976-1978	57.67	1956-1959	77.45	1984-1988	97.72
1949	16.78	1881-1882	36.26	1863-1865	57.74	1985-1988	77.71	1942-1946	98.09
1898	16.87	1945-1946	36.53	1901-1903	57.85	1952-1955	78.28	1893-1897	98.23
1907	17.35	1917-1918	37.12	1890-1892	57.86	1900-1903	79.02	1932-1936	98.41
1988	17.43	1901-1902	37.26	1954-1956	57.95	1967-1970	79.14	1971-1975	99.50
1890	17.58	1937-1938	38.01	1944-1946	58.35	1918-1921	79.17	1972-1976	99.50
1961	17.66	1964-1965	38.62	1900-1902	58.43	1894-1897	79.76	1909-1913	100.64

Appendix B-3. Sorted Cumulative Seasonal Rainfall (1849-1991)

<u>1 Season</u>	<u>2 Seasons</u>	<u>3 Seasons</u>	<u>4 Seasons</u>	<u>5 Seasons</u>
1987 17.74	1902-1903 38.87	1899-1901 58.62	1869-1872 79.86	1868-1872 101.21
1943 17.86	1976-1977 38.93	1978-1980 58.74	1915-1918 80.02	1918-1922 101.34
1884 18.10	1967-1968 39.55	1891-1893 58.75	1984-1987 80.29	1901-1905 101.72
1902 18.28	1910-1911 39.55	1948-1950 58.96	1963-1966 80.35	1907-1911 101.99
1948 18.28	1969-1970 39.59	1849-1851 58.98	1925-1928 81.06	1890-1894 102.03
1974 18.35	1899-1900 39.64	1909-1911 59.07	1910-1913 81.12	1900-1904 102.47
1851 18.46	1943-1944 39.68	1918-1920 59.26	1901-1904 81.30	1962-1966 102.50
1893 18.47	1938-1939 39.70	1886-1888 59.64	1914-1917 81.79	1983-1987 102.76
1899 18.47	1942-1943 39.74	1965-1967 60.20	1976-1979 82.19	1872-1876 103.18
1891 18.53	1961-1962 39.81	1985-1987 60.28	1964-1967 82.49	1869-1873 104.59
1978 18.74	1979-1980 40.00	1967-1969 60.35	1902-1905 82.74	1955-1959 104.62
1970 18.79	1900-1901 40.15	1926-1928 60.37	1911-1914 83.04	1954-1958 104.89
1901 18.98	1892-1893 40.22	1936-1938 60.40	1942-1945 83.20	1921-1925 105.20
1886 19.04	1891-1892 40.28	1870-1872 60.55	1933-1936 83.48	1891-1895 105.70
1991 19.20	1872-1873 40.39	1872-1874 60.95	1951-1954 83.67	1870-1874 105.84
1869 19.31	1849-1850 40.52	1933-1935 61.09	1891-1894 84.45	1856-1860 105.93
1909 19.52	1887-1888 40.60	1850-1852 61.14	1921-1924 84.51	1965-1969 106.09
1927 19.64	1868-1869 40.66	1943-1945 61.32	1908-1911 84.64	1862-1866 106.40
1860 19.72	1949-1950 40.68	1942-1944 61.56	1850-1853 85.01	1947-1951 107.11
1921 19.91	1855-1856 41.57	1956-1958 61.98	1969-1972 85.01	1914-1918 107.43
1856 19.91	1912-1913 41.57	1902-1904 62.32	1983-1986 85.02	1950-1954 107.57
1984 20.01	1856-1857 41.72	1957-1959 62.41	1870-1873 85.28	1964-1968 107.58
1882 20.12	1859-1860 41.99	1907-1909 62.44	1965-1968 85.29	1920-1924 107.67
1905 20.42	1921-1922 42.08	1984-1986 62.55	1922-1925 85.29	1855-1859 107.87
1874 20.56	1955-1956 42.21	1874-1876 62.79	1935-1938 85.36	1903-1907 107.98
1903 20.59	1875-1876 42.23	1923-1925 63.12	1868-1871 85.55	1923-1927 108.19
1925 20.69	1923-1924 42.43	1855-1857 63.38	1855-1858 85.60	1910-1914 108.53
1969 20.80	1983-1984 42.48	1856-1858 63.94	1857-1860 86.02	1966-1970 108.55
1931 21.09	1985-1986 42.54	1905-1907 63.94	1856-1859 86.21	1934-1938 108.58
1952 21.10	1915-1916 42.90	1869-1871 64.20	1977-1980 86.61	1949-1953 108.61
1900 21.17	1954-1955 42.91	1858-1860 64.21	1881-1884 86.74	1953-1957 108.70
1895 21.25	1907-1908 42.92	1970-1972 64.21	1884-1887 86.93	1850-1854 108.84
1868 21.35	1920-1921 43.07	1903-1905 64.46	1892-1895 87.17	1902-1906 108.91
1945 21.64	1978-1979 43.26	1922-1924 64.60	1854-1857 87.21	1933-1937 108.96
1855 21.66	1944-1945 43.46	1968-1970 64.68	1904-1907 87.39	1905-1909 109.03
1892 21.75	1906-1907 43.52	1937-1939 65.18	1873-1876 87.52	1854-1858 109.43
1857 21.81	1904-1905 43.87	1920-1922 65.24	1936-1939 87.57	1941-1945 109.86
1944 21.82	1966-1967 43.87	1854-1856 65.40	1907-1910 87.93	1968-1972 110.10
1942 21.88	1857-1858 44.03	1893-1895 65.42	1941-1944 88.22	1911-1915 110.16
1962 22.15	1903-1904 44.04	1925-1927 65.76	1972-1975 88.44	1970-1974 110.34
1922 22.17	1893-1894 44.17	1892-1894 65.92	1923-1926 88.55	1892-1896 110.60
1858 22.22	1858-1859 44.49	1880-1882 66.12	1906-1909 88.61	1922-1926 110.72
1859 22.27	1895-1896 44.68	1857-1859 66.30	1893-1896 88.85	1884-1888 110.79
1964 22.29	1870-1871 44.89	1941-1943 66.40	1955-1958 89.15	1951-1955 110.84
1936 22.39	1909-1910 45.01	1951-1953 67.93	1853-1856 89.27	1853-1857 111.08

Appendix B-3. Sorted Cumulative Seasonal Rainfall (1849-1991)

<u>1 Season</u>	<u>2 Seasons</u>	<u>3 Seasons</u>	<u>4 Seasons</u>	<u>5 Seasons</u>
1983 22.47	1926-1927 45.07	1964-1966 68.03	1905-1908 89.51	1913-1917 111.39
1865 22.93	1908-1909 45.09	1881-1883 68.64	1966-1969 89.76	1924-1928 111.87
1920 23.16	1873-1874 45.29	1885-1887 68.83	1903-1906 90.63	1912-1916 111.88
1934 23.22	1971-1972 45.42	1966-1968 68.96	1948-1951 91.52	1935-1939 112.53
1896 23.43	1854-1855 45.49	1912-1914 68.98	1971-1974 91.55	1948-1952 112.62
1904 23.45	1965-1966 45.74	1906-1908 69.09	1871-1874 91.73	1969-1973 112.79
1854 23.83	1968-1969 45.89	1853-1855 69.36	1950-1953 91.83	1904-1908 112.96
1888 23.86	1880-1881 46.00	1904-1906 70.04	1970-1973 91.99	1906-1910 114.10
1853 23.87	1925-1926 46.12	1884-1886 70.19	1872-1875 92.14	1859-1863 115.08
1950 23.90	1973-1974 46.13	1914-1916 70.31	1863-1866 92.66	1880-1884 116.60
1878 24.44	1876-1877 46.22	1894-1896 70.38	1885-1888 92.69	1878-1882 117.22
1979 24.52	1871-1872 46.44	1934-1936 70.57	1879-1882 92.78	1860-1864 117.54
1864 24.73	1905-1906 46.59	1908-1910 70.58	1860-1863 92.81	1849-1853 118.11
1873 24.73	1977-1978 46.61	1882-1884 70.60	1867-1870 93.61	1883-1887 119.31
1935 24.96	1957-1958 46.94	1876-1878 70.66	1849-1852 94.24	1881-1885 119.79
1968 25.09	1894-1895 46.95	1977-1979 71.13	1949-1952 94.34	1861-1865 120.75
1926 25.43	1935-1936 47.35	1983-1985 71.16	1954-1957 94.43	1889-1893 122.18
1937 25.48	1864-1865 47.66	1871-1873 71.17	1978-1981 95.83	1874-1878 122.41
1910 25.49	1853-1854 47.70	1879-1881 72.66	1934-1937 96.05	1887-1891 122.56
1908 25.57	1936-1937 47.87	1935-1937 72.83	1912-1915 96.10	1936-1940 122.62
1918 25.64	1934-1935 48.18	1861-1863 73.09	1924-1927 96.57	1882-1886 122.69
1894 25.70	1941-1942 48.54	1971-1973 73.20	1878-1881 97.10	1873-1877 122.70
1906 26.17	1984-1985 48.69	1949-1951 73.24	1876-1879 97.32	1871-1875 122.92
1941 26.66	1883-1884 50.48	1938-1940 74.75	1861-1864 97.82	1886-1890 123.07
1879 26.66	1878-1879 51.10	1873-1875 76.48	1874-1877 97.97	1851-1855 123.08
1915 27.12	1884-1885 51.15	1924-1926 76.93	1880-1883 98.50	1982-1986 123.19
1955 27.17	1924-1925 51.50	1979-1981 77.09	1913-1916 99.91	1940-1944 123.27
1939 27.17	1956-1957 51.52	1875-1877 77.41	1937-1940 100.23	1938-1942 123.29
1914 27.41	1874-1875 51.75	1950-1952 77.56	1938-1941 101.41	1977-1981 123.70
1973 27.78	1885-1886 52.09	1851-1853 77.59	1851-1854 101.42	1867-1871 124.39
1977 27.87	1882-1883 52.50	1955-1957 78.69	1940-1943 101.45	1852-1856 124.53
1985 28.68	1980-1981 52.57	1867-1869 79.50	1875-1878 101.85	1879-1883 125.16
1966 29.41	1951-1952 53.66	1972-1974 80.49	1883-1886 102.57	1937-1941 126.89
1913 29.60	1851-1852 53.72	1982-1984 80.65	1882-1885 103.65	1876-1880 127.18
1880 29.86	1914-1915 54.53	1878-1880 80.96	1889-1892 103.71	1858-1862 127.22
1871 30.78	1950-1951 56.46	1889-1891 81.96	1887-1890 104.03	1888-1892 127.57
1924 30.81	1879-1880 56.52	1864-1866 82.58	1852-1855 104.62	1875-1879 128.51
1875 31.19	1913-1914 57.01	1860-1862 82.73	1859-1862 105.00	1866-1870 128.53
1883 32.38	1865-1866 57.85	1852-1854 82.96	1886-1889 105.49	1939-1943 128.62
1951 32.56	1852-1853 59.13	1883-1885 83.53	1888-1891 105.82	1863-1867 131.50
1885 33.05	1877-1878 59.62	1940-1942 83.59	1982-1985 109.33	1877-1881 132.28
1849 33.10	1867-1868 60.19	1913-1915 84.13	1939-1942 110.76	1980-1984 133.22
1972 34.36	1982-1983 60.64	1877-1879 86.28	1980-1983 113.21	1978-1982 134.00
1866 34.92	1940-1941 61.71	1887-1889 86.45	1858-1861 113.48	1857-1861 135.29
1940 35.05	1972-1973 62.14	1888-1890 87.29	1866-1869 114.42	1865-1869 137.35

Appendix B-3. Sorted Cumulative Seasonal Rainfall (1849-1991)

<u>1 Season</u>	<u>2 Seasons</u>	<u>3 Seasons</u>	<u>4 Seasons</u>	<u>5 Seasons</u>
1877 35.18	1939-1940 62.22	1939-1941 88.88	1979-1982 115.26	1979-1983 137.73
1852 35.26	1861-1862 63.01	1980-1982 90.74	1877-1880 116.14	1885-1889 138.54
1957 36.48	1889-1890 63.43	1859-1861 91.26	1981-1984 117.74	1864-1868 142.77
1981 37.09	1860-1861 68.99	1866-1868 95.11	1865-1868 118.04	1981-1985 146.42
1982 38.17	1888-1889 69.71	1865-1867 96.69	1864-1867 121.42	
1867 38.84	1866-1867 73.76	1981-1983 97.73		
1889 45.85	1981-1982 75.26			
1861 49.27				

Appendix C-1. Maximum Short-term Rainfall (1890-1937)

<u>Year</u>	<u>5 Min</u>	<u>10 Min</u>	<u>15 Min</u>	<u>30 Min</u>	<u>1 Hr</u>	<u>2 Hr</u>	<u>3 Hr</u>	<u>6 Hr</u>	<u>12 Hr</u>	<u>24 Hr</u>
1890							1.11	1.51	1.66	2.02
1891							0.60	0.82	1.62	3.10
1892							0.80	0.90	1.35	2.39
1893							0.65	1.14	1.35	1.80
1894							0.76	1.20	1.93	2.48
1895							0.56	0.86	1.58	1.93
1896							1.08	1.48	2.14	2.72
1897							0.70	1.11	1.39	1.66
1898							0.52	0.76	1.06	1.23
1899							0.89	1.37	1.91	2.16
1900							0.76	1.28	1.54	1.90
1901							1.19	1.61	1.94	1.95
1902							0.59	0.99	1.32	1.39
1903							0.80	1.01	1.44	2.39
1904							1.59	2.25	2.81	3.58
1905							0.72	0.94	1.02	1.27
1906							0.91	1.41	1.76	2.47
1907	0.15	0.19	0.23	0.32	0.41	0.57	0.70	0.99	1.33	1.82
1908	0.15	0.20	0.22	0.22	0.34	0.53	0.70	1.16	1.57	2.10
1909	0.17	0.20	0.22	0.27	0.39	0.61	0.73	1.02	1.37	1.87
1910	0.13	0.20	0.22	0.27	0.35	0.56	0.63	0.74	0.89	1.17
1911	0.11	0.20	0.28	0.45	0.68	0.93	1.03	1.10	1.57	2.48
1912	0.25	0.28	0.53	0.83	1.07	1.24	1.36	1.44	1.73	2.09
1913	0.21	0.21	0.26	0.41	0.62	0.79	0.90	1.18	1.64	2.21
1914	0.22	0.28	0.34	0.45	0.69	0.93	0.97	1.24	1.86	2.24
1915	0.23	0.36	0.47	0.54	0.57	0.81	0.83	1.52	1.86	3.40
1916						0.74	1.02	1.61	2.43	3.52
1917	0.08	0.11	0.14	0.18	0.26	0.41	0.47	0.76	1.24	1.36
1918	0.28	0.51	0.65	0.81	0.92	0.95	0.95	1.23	1.77	2.25
1919	0.16	0.20	0.26	0.41	0.54	0.82	1.09	1.48	2.15	3.36
1920	0.18	0.24	0.29	0.40	0.51	0.68	0.78	1.13	1.90	2.02
1921	0.18	0.27	0.33	0.40	0.63	0.72	0.91	1.46	2.27	2.65
1922	0.17	0.19	0.21	0.33	0.53	0.84	0.94	1.16	1.63	2.09
1923	0.07	0.09	0.11	0.21	0.38	0.64	0.70	1.00	1.70	2.05
1924	0.10	0.14	0.21	0.39	0.70	1.09	1.27	1.65	1.65	3.44
1925	0.12	0.20	0.28	0.37	0.61	0.80	0.90	1.06	1.37	1.77
1926	0.33	0.47	0.54	0.59	0.74	0.82	0.84	1.38	1.41	2.38
1927	0.22	0.28	0.29	0.43	0.55	0.91	1.05	1.25	1.39	1.76
1928	0.21	0.23	0.24	0.28	0.35	0.61	0.76	1.11	1.92	2.01
1929	0.17	0.22	0.31	0.31	0.38	0.61	0.66	0.93	1.15	1.29
1930	0.20	0.31	0.38	0.49	0.61	0.84	0.94	1.18	1.18	1.68
1931	0.17	0.28	0.38	0.43	0.70	0.79	0.85	1.35	2.08	2.69
1932	0.15	0.20	0.27	0.34	0.38	0.57	0.68	0.86	1.07	1.23
1933	0.11	0.20	0.27	0.34	0.45	0.64	0.72	0.89	1.06	1.39
1934	0.18	0.29	0.42	0.65	0.85	0.94	0.97	1.33	1.39	1.50

Appendix C-1. Maximum Short-term Rainfall (1938-1985)

<u>Year</u>	<u>5 Min</u>	<u>10 Min</u>	<u>15 Min</u>	<u>30 Min</u>	<u>1 Hr</u>	<u>2 Hr</u>	<u>3 Hr</u>	<u>6 Hr</u>	<u>12 Hr</u>	<u>24 Hr</u>
1935	0.14	0.17	0.20	0.25	0.48	0.70	0.73	0.99	1.30	1.76
1936	0.16	0.27	0.32	0.37	0.57	0.79	0.91	1.20	1.94	3.07
1937	0.13	0.16	0.18	0.23	0.39	0.56	0.69	1.04	1.25	1.93
1938	0.21	0.29	0.33	0.37	0.51	0.60	0.68	1.00	1.29	1.57
1939	0.11	0.16	0.20	0.29	0.64	0.77	0.91	1.25	1.68	1.83
1940	0.23	0.37	0.41	0.48	0.63	0.64	0.80	1.22	2.07	3.64
1941	0.26	0.38	0.46	0.67	0.72	0.92	0.96	1.47	1.79	2.22
1942	0.14	0.20	0.22	0.25	0.36	0.62	0.84	1.24	2.11	2.38
1943	0.21	0.21	0.23	0.31	0.40	0.51	0.76	0.97	1.27	1.85
1944	0.16	0.19	0.24	0.38	0.59	0.94	1.06	1.29	1.31	1.83
1945	0.12	0.15	0.17	0.32	0.51	0.77	0.97	1.76	2.50	3.14
1946	0.13	0.16	0.22	0.40	0.51	0.61	0.70	1.03	1.31	1.73
1947	0.22	0.44	0.51	0.76	1.01	1.15	1.21	1.45	1.47	1.91
1948	0.10	0.18	0.18	0.24	0.33	0.48	0.62	0.75	1.02	1.63
1949	0.15	0.27	0.32	0.38	0.47	0.78	0.80	1.13	1.44	1.55
1950	0.27	0.41	0.53	0.57	0.69	0.79	0.90	1.13	1.33	2.42
1951	0.16	0.28	0.36	0.47	0.76	1.05	1.24	1.44	1.53	1.78
1952	0.19	0.29	0.41	0.49	0.57	0.86	1.16	1.49	1.55	2.00
1953	0.09	0.17	0.23	0.31	0.41	0.67	0.84	1.47	2.01	2.36
1954	0.14	0.22	0.25	0.34	0.36	0.56	0.70	0.98	1.39	1.80
1955	0.13	0.17	0.23	0.33	0.46	0.73	0.86	1.30	1.54	2.57
1956	0.18	0.23	0.26	0.34	0.49	0.95	1.37	2.31	2.88	3.49
1957	0.14	0.21	0.23	0.37	0.52	0.71	0.87	1.17	1.32	1.47
1958	0.30	0.35	0.39	0.61	0.96	1.09	1.23	1.56	2.01	2.45
1959	0.11	0.15	0.19	0.34	0.49	0.78	1.00	1.51	1.93	2.06
1960	0.12	0.18	0.26	0.30	0.36	0.56	0.75	0.84	1.09	1.68
1961	0.11	0.13	0.15	0.22	0.37	0.55	0.78	1.07	1.23	1.80
1962	0.17	0.26	0.38	0.55	0.67	0.89	1.04	1.39	1.97	3.11
1963	0.13	0.18	0.23	0.28	0.34	0.51	0.74	0.88	1.34	1.95
1964	0.18	0.23	0.28	0.34	0.39	0.56	0.87	1.30	1.60	1.91
1965	0.17	0.21	0.29	0.34	0.37	0.55	0.68	1.06	1.27	1.34
1966	0.16	0.18	0.19	0.29	0.42	0.57	0.66	0.79	0.95	1.58
1967	0.29	0.31	0.32	0.37	0.42	0.57	0.64	1.11	1.74	2.88
1968	0.26	0.31	0.35	0.43	0.58	0.87	0.95	1.19	1.42	1.87
1969	0.38	0.48	0.51	0.60	0.74	1.29	1.89	2.45	2.51	2.99
1970	0.20	0.33	0.39	0.61	0.72	0.87	0.98	1.14	1.55	2.31
1971	0.26	0.44	0.57	0.63	0.70	0.86	0.98	1.15	1.28	1.35
1972	0.19	0.26	0.30	0.51	0.70	0.98	1.18	1.53	1.69	2.45
1973	0.23	0.31	0.32	0.36	0.48	0.79	1.09	1.64	2.16	2.80
1974	0.11	0.18	0.20	0.20	0.30	0.51	0.67	0.93	1.21	1.50
1975	0.10	0.16	0.19	0.29	0.43	0.55	0.81	1.10	1.24	1.29
1976	0.10	0.14	0.18	0.28	0.37	0.55	0.76	1.32	1.92	2.52
1977	0.19	0.32	0.36	0.51	0.65	0.70	0.74	0.89	1.49	2.02
1978	0.18	0.24	0.25	0.30	0.42	0.59	0.78	1.14	1.54	1.82
1979	0.15	0.30	0.33	0.41	0.69	0.91	1.20	1.42	1.78	2.47

Appendix C-1. Maximum Short-term Rainfall (1986-1990)

<u>Year</u>	<u>5 Min</u>	<u>10 Min</u>	<u>15 Min</u>	<u>30 Min</u>	<u>1 Hr</u>	<u>2 Hr</u>	<u>3 Hr</u>	<u>6 Hr</u>	<u>12 Hr</u>	<u>24 Hr</u>
1980	0.14	0.22	0.29	0.42	0.45	0.73	0.95	1.21	1.49	1.74
1981	0.12	0.20	0.26	0.37	0.49	0.60	0.80	1.33	1.84	1.98
1982	0.21	0.32	0.44	0.58	0.83	1.46	1.98	2.68	4.08	5.90
1983	0.22	0.34	0.37	0.48	0.68	0.91	1.03	1.49	1.86	2.41
1984	0.18	0.35	0.38	0.55	0.63	1.01	1.30	1.52	1.73	1.83
1985					0.49	0.60	0.69	1.31	1.95	2.79
1986	0.23	0.31	0.41	0.62	0.86	1.25	1.28	1.53	1.89	2.33
1987					0.85	0.95	1.02	1.53	1.89	2.33
1988					0.55	0.68	0.88	1.05	1.30	1.43
1989					0.36	0.53	0.67	1.05	1.40	1.63
1990					0.34	0.61	0.74	0.96	1.37	1.48

Appendix C-2. Short-term Frequency-Duration Analysis

<u>Year</u>	<u>5 Min</u>	<u>10 Min</u>	<u>15 Min</u>	<u>30 Min</u>	<u>1 Hr</u>	<u>2 Hr</u>	<u>3 Hr</u>	<u>6 Hr</u>	<u>12 Hr</u>	<u>24 Hr</u>
Average	0.18	0.25	0.31	0.41	0.55	0.76	0.90	1.25	1.64	2.16
Stdev	0.06	0.09	0.11	0.14	0.18	0.21	0.25	0.34	0.46	0.70
Rec Max	0.38	0.51	0.65	0.83	1.07	1.46	1.98	2.68	4.08	5.90
Rec Min	0.07	0.09	0.11	0.18	0.26	0.41	0.47	0.74	0.89	1.17
Z	2.90	2.57	2.79	2.56	2.34	2.27	2.97	2.84	3.69	4.28
Yrs Rec	78	78	78	78	82	83	100	100	100	100
Calc CV	0.341	0.354	0.360	0.348	0.320	0.270	0.282	0.271	0.280	0.325
Reg CV	0.404	0.404	0.404	0.404	0.404	0.404	0.404	0.404	0.404	0.404
Calc Skew	0.9	0.9	0.9	0.9	1.1	1.5	2.0	2.1	2.3	2.1
Reg Skew	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
FIC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Return Periods (RP)

<u>Year</u>	<u>5 Min</u>	<u>10 Min</u>	<u>15 Min</u>	<u>30 Min</u>	<u>1 Hr</u>	<u>2 Hr</u>	<u>3 Hr</u>	<u>6 Hr</u>	<u>12 Hr</u>	<u>24 Hr</u>
RP 2 years	0.16	0.23	0.28	0.37	0.50	0.70	0.82	1.14	1.50	1.98
RP 5	0.23	0.32	0.39	0.53	0.71	0.98	1.16	1.61	2.11	2.79
RP 10	0.28	0.39	0.48	0.64	0.87	1.20	1.42	1.97	2.58	3.41
RP 25	0.32	0.46	0.57	0.76	1.02	1.41	1.67	2.31	3.03	4.00
RP 50	0.36	0.52	0.63	0.85	1.14	1.58	1.87	2.59	3.40	4.49
RP 100	0.40	0.57	0.70	0.94	1.26	1.75	2.07	2.87	3.76	4.96
RP 200	0.44	0.63	0.77	1.02	1.38	1.91	2.26	3.13	4.11	5.42
RP 500	0.49	0.70	0.85	1.14	1.53	2.12	2.51	3.47	4.56	6.02
RP 1000	0.53	0.75	0.92	1.23	1.65	2.29	2.70	3.75	4.92	6.49
RP 10000	0.64	0.92	1.12	1.50	2.03	2.80	3.32	4.59	6.03	7.96

Appendix D-1. Number of Rain Days (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	2	2	2	16	22	51	50	59	52	36	24	15
2	3	1	3	16	23	50	51	47	56	36	22	8
3	1	3	6	10	25	50	48	43	54	37	17	7
4	3	1	1	10	29	49	51	59	56	35	19	12
5	3	2	3	11	34	47	51	53	50	43	14	10
6	1	1	9	20	34	40	46	53	49	37	19	14
7	0	4	6	17	34	47	49	51	48	31	17	8
8	4	2	6	13	27	40	45	52	56	41	18	10
9	3	2	3	19	40	44	44	49	44	38	12	13
10	2	1	4	26	37	45	43	49	45	37	20	5
11	3	1	7	17	33	44	44	53	41	31	20	11
12	2	1	7	12	35	39	46	56	52	28	11	7
13	1	3	5	17	45	38	54	51	47	32	16	7
14	0	4	9	15	40	38	49	48	51	27	17	6
15	3	1	10	11	47	43	58	50	55	25	8	11
16	5	3	10	18	42	45	56	57	48	34	13	6
17	2	5	8	11	34	48	48	48	42	26	15	5
18	1	7	9	19	37	52	52	57	43	18	16	4
19	1	5	6	14	45	53	55	49	40	31	23	4
20	2	2	2	16	38	49	43	48	45	23	18	4
21	2	3	5	21	38	55	46	55	35	25	18	1
22	2	3	12	17	33	55	57	47	47	22	12	4
23	4	2	10	26	40	56	56	50	43	20	9	8
24	1	4	10	18	36	57	53	51	43	22	17	4
25	3	3	10	19	36	51	55	47	41	23	12	1
26	1	4	9	24	32	56	56	42	39	26	15	2
27	4	3	6	25	29	51	50	45	43	22	17	5
28	2	5	10	27	34	53	48	43	42	16	14	6
29	1	2	15	32	49	53	52	14	46	21	11	4
30	2	8	17	33	45	53	56		43	21	11	2
31	1	3		18		45	47		38		20	

Appendix D-2. Number of Rain Days $\geq .10$ Inch (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0	0	1	7	12	30	41	31	40	21	13	2
2	0	0	0	4	10	35	34	32	37	18	6	2
3	0	0	1	5	19	41	36	27	37	18	9	2
4	0	0	0	3	18	28	37	38	30	17	8	4
5	0	0	1	5	18	29	42	37	40	18	8	3
6	0	0	3	3	22	25	23	32	32	21	10	7
7	0	0	4	8	15	24	32	34	27	18	7	3
8	1	0	2	2	18	24	26	37	35	18	12	4
9	0	0	2	15	29	23	27	35	28	24	7	4
10	1	0	0	19	25	23	23	32	27	19	4	1
11	0	1	2	10	21	25	31	38	23	18	11	3
12	0	0	5	5	31	17	30	42	34	16	4	1
13	0	1	1	12	26	25	38	31	25	16	7	1
14	0	3	1	6	27	22	36	33	38	14	6	0
15	1	1	4	6	25	29	33	35	34	16	4	5
16	1	0	4	5	27	35	37	36	25	21	2	3
17	0	0	4	2	27	33	36	24	18	13	9	0
18	0	1	3	9	26	33	35	31	27	10	10	1
19	0	0	2	6	30	39	42	30	28	13	8	0
20	0	0	1	8	26	37	25	27	24	17	7	1
21	0	1	1	12	27	44	31	44	18	13	5	0
22	0	1	4	7	22	39	42	36	28	11	6	0
23	0	0	7	11	28	40	43	33	22	12	2	3
24	0	0	7	10	28	45	32	36	20	16	5	2
25	0	0	5	13	20	44	33	24	22	11	8	0
26	0	2	6	16	25	44	35	35	20	14	6	0
27	0	0	2	12	16	39	34	29	33	11	6	1
28	0	0	5	16	22	44	27	24	28	6	4	1
29	0	1	5	15	32	43	35	7	27	9	5	1
30	0	2	6	17	31	43	35		29	11	3	0
31	0	0		9		33	25		29		9	

Appendix D-3. Number of Rain Days $\geq .25$ Inch (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0	0	0	3	9	24	27	25	24	16	5	0
2	0	0	0	4	7	23	23	25	22	10	1	2
3	0	0	1	3	12	28	20	23	23	10	5	1
4	0	0	0	1	12	19	20	29	23	13	3	2
5	0	0	0	3	14	21	28	25	22	13	3	0
6	0	0	2	4	14	18	14	16	21	14	4	4
7	0	0	1	8	5	19	24	24	15	11	3	2
8	1	0	0	2	8	16	21	25	21	10	3	4
9	0	0	0	8	18	17	21	23	22	14	1	0
10	0	0	0	10	15	21	21	17	25	14	4	0
11	0	1	0	4	16	22	26	28	16	12	5	2
12	0	0	3	2	16	9	19	30	20	8	2	1
13	0	0	2	8	22	14	29	28	17	8	3	2
14	0	1	1	6	17	16	24	21	23	6	4	0
15	0	0	0	7	16	17	29	25	17	7	3	2
16	0	0	1	6	21	23	25	27	17	11	0	0
17	0	0	0	3	16	22	26	21	12	6	6	0
18	0	1	1	4	16	23	23	26	15	7	6	0
19	0	0	1	1	21	30	26	25	21	9	5	0
20	0	0	0	6	19	22	28	22	18	3	5	0
21	0	0	1	9	12	33	20	28	15	6	3	0
22	0	0	3	4	14	31	26	21	18	4	4	0
23	0	0	1	6	17	27	29	16	18	8	2	1
24	0	0	1	6	17	35	30	30	14	5	2	1
25	0	0	3	7	15	31	30	16	10	4	7	0
26	0	1	1	10	14	29	29	21	14	10	1	0
27	0	0	1	7	12	26	26	19	25	5	5	0
28	0	0	1	9	16	25	20	20	21	1	3	0
29	0	0	3	8	22	26	27	4	18	6	1	1
30	0	0	5	13	24	33	26		11	6	2	0
31	0	0		4		23	18		18		2	

Appendix D-4. Number of Rain Days $\geq .50$ Inch (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0	0	0	1	4	16	16	10	11	4	0	0
2	0	0	0	2	5	14	13	13	10	4	1	1
3	0	0	0	2	7	15	11	9	10	3	3	0
4	0	0	0	0	6	10	16	17	12	9	1	0
5	0	0	0	1	8	15	12	15	10	7	2	0
6	0	0	1	1	8	11	9	11	13	9	2	1
7	0	0	1	3	3	10	12	10	6	8	1	0
8	1	0	0	0	5	10	15	15	10	3	0	2
9	0	0	0	6	7	8	16	12	9	5	0	0
10	0	0	0	2	10	14	13	11	10	8	0	0
11	0	0	0	2	5	11	11	19	6	7	2	0
12	0	0	2	2	10	5	12	17	15	2	1	1
13	0	0	2	4	11	9	18	13	14	2	1	1
14	0	0	1	4	8	9	18	15	12	3	1	0
15	0	0	0	5	10	9	14	12	8	4	3	2
16	0	0	0	4	11	12	13	12	12	2	0	0
17	0	0	0	1	10	11	15	9	8	1	4	0
18	0	0	1	2	9	13	14	10	7	4	4	0
19	0	0	1	0	10	19	17	12	8	1	2	0
20	0	0	0	1	7	10	20	15	9	3	2	0
21	0	0	0	4	7	21	15	12	8	3	0	0
22	0	0	1	2	6	15	19	11	11	0	1	0
23	0	0	1	4	6	17	20	8	11	4	0	0
24	0	0	0	2	8	24	17	15	4	3	1	0
25	0	0	2	7	8	19	17	11	5	1	4	0
26	0	0	0	6	9	19	10	15	10	4	0	0
27	0	0	1	4	5	13	14	13	10	4	2	0
28	0	0	0	5	9	12	10	13	9	2	0	0
29	0	0	1	4	8	13	18	2	7	2	0	0
30	0	0	2	7	8	14	18		9	4	0	0
31	0	0		2		11	12		8		1	

Appendix D-5. Probability of Daily Rain (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0.01	0.01	0.01	0.11	0.16	0.36	0.35	0.41	0.35	0.25	0.16	0.11
2	0.02	0.01	0.02	0.11	0.16	0.35	0.36	0.33	0.38	0.26	0.16	0.06
3	0.01	0.02	0.04	0.07	0.18	0.35	0.34	0.30	0.38	0.26	0.12	0.05
4	0.02	0.01	0.01	0.07	0.21	0.35	0.35	0.41	0.38	0.25	0.13	0.09
5	0.02	0.01	0.02	0.08	0.24	0.33	0.35	0.38	0.35	0.30	0.10	0.07
6	0.01	0.01	0.06	0.14	0.24	0.28	0.31	0.37	0.34	0.26	0.13	0.10
7	0.00	0.02	0.04	0.12	0.24	0.33	0.33	0.35	0.34	0.22	0.12	0.06
8	0.03	0.01	0.04	0.09	0.19	0.28	0.32	0.37	0.40	0.29	0.12	0.07
9	0.02	0.01	0.02	0.13	0.28	0.31	0.30	0.34	0.31	0.27	0.09	0.09
10	0.01	0.01	0.03	0.18	0.26	0.31	0.30	0.34	0.31	0.26	0.14	0.04
11	0.02	0.01	0.05	0.12	0.23	0.30	0.33	0.38	0.29	0.21	0.14	0.08
12	0.01	0.01	0.05	0.09	0.25	0.28	0.32	0.39	0.36	0.19	0.08	0.05
13	0.01	0.01	0.04	0.12	0.32	0.27	0.38	0.35	0.33	0.23	0.11	0.05
14	0.00	0.02	0.06	0.11	0.28	0.26	0.35	0.33	0.35	0.19	0.12	0.04
15	0.02	0.01	0.07	0.08	0.33	0.30	0.41	0.35	0.38	0.17	0.06	0.08
16	0.04	0.02	0.07	0.13	0.30	0.31	0.40	0.40	0.33	0.24	0.09	0.04
17	0.01	0.03	0.06	0.08	0.23	0.33	0.33	0.33	0.29	0.18	0.11	0.04
18	0.01	0.04	0.06	0.13	0.26	0.35	0.37	0.40	0.30	0.13	0.11	0.03
19	0.01	0.04	0.04	0.10	0.31	0.37	0.39	0.34	0.28	0.21	0.16	0.03
20	0.01	0.01	0.01	0.11	0.26	0.35	0.30	0.33	0.30	0.16	0.13	0.03
21	0.01	0.02	0.04	0.15	0.26	0.39	0.33	0.38	0.24	0.17	0.13	0.01
22	0.01	0.02	0.08	0.12	0.23	0.39	0.40	0.33	0.33	0.16	0.09	0.03
23	0.03	0.01	0.07	0.18	0.28	0.40	0.40	0.35	0.29	0.14	0.06	0.06
24	0.01	0.03	0.07	0.12	0.26	0.40	0.38	0.36	0.30	0.16	0.12	0.02
25	0.02	0.02	0.07	0.13	0.25	0.36	0.39	0.33	0.28	0.16	0.09	0.01
26	0.01	0.03	0.06	0.16	0.23	0.40	0.40	0.30	0.27	0.18	0.11	0.01
27	0.03	0.02	0.04	0.18	0.20	0.35	0.35	0.32	0.30	0.16	0.12	0.04
28	0.01	0.04	0.07	0.19	0.24	0.37	0.34	0.30	0.30	0.11	0.10	0.04
29	0.01	0.01	0.11	0.23	0.35	0.37	0.37	0.37	0.33	0.15	0.07	0.02
30	0.01	0.06	0.12	0.23	0.32	0.38	0.40		0.30	0.15	0.07	0.01
31	0.01	0.02		0.12		0.32	0.33		0.27		0.14	

Appendix D-6. Average Daily Rainfall (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0.00	0.00	0.00	0.02	0.04	0.13	0.14	0.12	0.10	0.08	0.02	0.00
2	0.00	0.00	0.00	0.02	0.05	0.13	0.13	0.13	0.11	0.07	0.02	0.01
3	0.00	0.00	0.00	0.03	0.08	0.18	0.14	0.11	0.11	0.05	0.02	0.00
4	0.00	0.00	0.00	0.01	0.06	0.10	0.18	0.17	0.12	0.10	0.02	0.01
5	0.00	0.00	0.00	0.01	0.09	0.13	0.14	0.14	0.12	0.07	0.02	0.00
6	0.00	0.00	0.01	0.02	0.08	0.10	0.09	0.10	0.12	0.08	0.02	0.02
7	0.00	0.00	0.01	0.03	0.04	0.09	0.12	0.11	0.09	0.07	0.02	0.01
8	0.01	0.00	0.00	0.01	0.07	0.10	0.15	0.14	0.12	0.06	0.01	0.01
9	0.00	0.00	0.00	0.05	0.09	0.09	0.14	0.12	0.10	0.08	0.01	0.01
10	0.00	0.00	0.00	0.04	0.08	0.14	0.12	0.12	0.11	0.08	0.02	0.00
11	0.00	0.00	0.00	0.03	0.06	0.10	0.13	0.17	0.07	0.06	0.03	0.01
12	0.00	0.00	0.02	0.02	0.10	0.07	0.12	0.17	0.12	0.03	0.02	0.01
13	0.00	0.00	0.01	0.06	0.11	0.10	0.16	0.13	0.12	0.04	0.01	0.01
14	0.00	0.00	0.01	0.04	0.08	0.08	0.16	0.13	0.11	0.04	0.02	0.00
15	0.00	0.00	0.00	0.04	0.10	0.09	0.15	0.14	0.10	0.05	0.02	0.01
16	0.00	0.00	0.01	0.04	0.11	0.12	0.17	0.14	0.10	0.07	0.00	0.00
17	0.00	0.00	0.00	0.01	0.11	0.12	0.16	0.09	0.06	0.03	0.03	0.00
18	0.00	0.00	0.02	0.02	0.12	0.12	0.14	0.13	0.09	0.03	0.04	0.00
19	0.00	0.00	0.01	0.01	0.10	0.21	0.16	0.11	0.09	0.04	0.03	0.00
20	0.00	0.00	0.00	0.03	0.09	0.15	0.20	0.12	0.08	0.04	0.02	0.00
21	0.00	0.00	0.00	0.05	0.09	0.20	0.13	0.14	0.09	0.04	0.01	0.00
22	0.00	0.00	0.01	0.02	0.06	0.17	0.15	0.10	0.10	0.02	0.02	0.00
23	0.00	0.00	0.01	0.04	0.11	0.18	0.18	0.10	0.12	0.04	0.01	0.01
24	0.00	0.00	0.01	0.03	0.12	0.21	0.17	0.13	0.06	0.04	0.02	0.00
25	0.00	0.00	0.02	0.06	0.09	0.18	0.16	0.09	0.06	0.02	0.03	0.00
26	0.00	0.00	0.01	0.05	0.11	0.18	0.12	0.13	0.09	0.04	0.01	0.00
27	0.00	0.00	0.01	0.04	0.06	0.15	0.14	0.12	0.13	0.04	0.03	0.00
28	0.00	0.00	0.01	0.04	0.08	0.12	0.10	0.11	0.10	0.02	0.01	0.00
29	0.00	0.00	0.02	0.05	0.10	0.15	0.19	0.05	0.10	0.02	0.01	0.00
30	0.00	0.00	0.02	0.06	0.10	0.15	0.14		0.11	0.03	0.01	0.00
31	0.00	0.00		0.02		0.12	0.11		0.09		0.02	

Appendix D-7. Rainy Day Average (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0.02	0.01	0.07	0.21	0.26	0.37	0.40	0.30	0.28	0.31	0.13	0.04
2	0.02	0.01	0.02	0.18	0.32	0.36	0.37	0.41	0.30	0.27	0.11	0.24
3	0.02	0.01	0.11	0.36	0.44	0.51	0.41	0.35	0.29	0.18	0.19	0.10
4	0.03	0.03	0.20	0.09	0.30	0.28	0.53	0.41	0.32	0.40	0.18	0.08
5	0.01	0.04	0.08	0.16	0.36	0.38	0.39	0.37	0.36	0.22	0.24	0.05
6	0.01	0.03	0.19	0.13	0.35	0.38	0.30	0.27	0.34	0.32	0.16	0.18
7	0.00	0.01	0.22	0.28	0.16	0.28	0.36	0.31	0.27	0.33	0.14	0.12
8	0.21	0.01	0.08	0.09	0.35	0.36	0.46	0.38	0.29	0.20	0.12	0.19
9	0.04	0.04	0.15	0.37	0.31	0.29	0.47	0.34	0.32	0.28	0.13	0.07
10	0.11	0.03	0.05	0.20	0.32	0.44	0.40	0.34	0.36	0.30	0.12	0.08
11	0.02	0.49	0.07	0.29	0.27	0.33	0.40	0.44	0.23	0.29	0.18	0.10
12	0.03	0.01	0.40	0.28	0.41	0.26	0.39	0.44	0.33	0.18	0.19	0.18
13	0.01	0.01	0.34	0.46	0.36	0.38	0.43	0.37	0.38	0.17	0.13	0.20
14	0.00	0.14	0.12	0.35	0.30	0.30	0.47	0.41	0.31	0.23	0.19	0.03
15	0.08	0.16	0.06	0.48	0.30	0.31	0.38	0.42	0.27	0.31	0.36	0.17
16	0.06	0.01	0.12	0.28	0.36	0.37	0.42	0.34	0.32	0.28	0.05	0.12
17	0.02	0.02	0.06	0.15	0.46	0.38	0.49	0.28	0.22	0.17	0.27	0.04
18	0.00	0.08	0.30	0.20	0.45	0.33	0.40	0.32	0.30	0.23	0.32	0.04
19	0.01	0.03	0.20	0.11	0.32	0.57	0.41	0.33	0.33	0.19	0.19	0.03
20	0.01	0.03	0.10	0.27	0.36	0.42	0.66	0.38	0.27	0.25	0.19	0.06
21	0.04	0.08	0.12	0.36	0.34	0.51	0.39	0.38	0.38	0.23	0.09	0.02
22	0.04	0.05	0.16	0.18	0.26	0.43	0.38	0.31	0.30	0.11	0.22	0.04
23	0.02	0.04	0.15	0.21	0.38	0.45	0.45	0.29	0.40	0.26	0.08	0.11
24	0.02	0.03	0.14	0.21	0.48	0.53	0.45	0.35	0.20	0.27	0.15	0.13
25	0.04	0.03	0.22	0.44	0.35	0.49	0.41	0.28	0.20	0.13	0.36	0.04
26	0.02	0.12	0.16	0.29	0.47	0.45	0.31	0.44	0.35	0.21	0.09	0.01
27	0.01	0.04	0.28	0.26	0.28	0.42	0.39	0.36	0.44	0.28	0.26	0.04
28	0.02	0.02	0.11	0.24	0.33	0.34	0.31	0.37	0.33	0.22	0.11	0.07
29	0.01	0.08	0.15	0.23	0.30	0.41	0.53	0.22	0.30	0.16	0.09	0.06
30	0.03	0.08	0.18	0.28	0.32	0.40	0.37		0.36	0.20	0.10	0.02
31	0.03	0.01		0.18		0.37	0.35		0.35		0.11	

Appendix D-8. Maximum Daily Rain (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0.03	0.01	0.12	1.31	1.08	1.68	1.28	2.15	0.95	1.46	0.38	0.18
2	0.04	0.01	0.02	0.74	1.85	1.50	2.01	1.33	1.11	2.04	1.07	1.34
3	0.02	0.02	0.42	1.41	1.63	3.28	1.66	1.43	1.55	0.69	0.62	0.41
4	0.06	0.03	0.20	0.32	1.38	1.24	6.16	2.22	1.57	2.03	1.21	0.49
5	0.02	0.05	0.12	0.50	2.45	1.44	2.67	2.92	2.73	0.91	1.29	0.15
6	0.01	0.03	1.09	0.85	2.04	1.49	1.75	1.62	1.64	1.28	0.60	0.70
7	0.00	0.03	1.03	1.06	0.90	1.15	2.06	1.13	1.13	1.54	0.75	0.38
8	0.72	0.02	0.18	0.32	1.94	1.65	2.36	1.80	1.83	1.37	0.38	0.54
9	0.09	0.06	0.23	1.20	1.37	1.48	3.50	1.66	1.94	1.43	0.39	0.24
10	0.21	0.03	0.09	0.92	1.37	2.44	2.46	2.86	1.30	1.27	0.45	0.20
11	0.04	0.49	0.14	1.74	0.98	1.68	1.65	2.02	0.98	1.41	1.05	0.40
12	0.03	0.01	1.51	1.92	1.81	2.56	1.86	2.28	1.42	0.70	1.34	0.96
13	0.01	0.01	0.86	1.80	2.14	2.21	1.73	2.04	2.54	1.14	0.56	0.73
14	0.00	0.21	0.92	1.29	1.98	1.81	3.22	1.92	1.68	1.65	1.15	0.06
15	0.20	0.16	0.15	2.29	1.36	1.21	1.94	3.38	1.62	1.33	1.15	0.53
16	0.23	0.01	0.50	1.73	1.91	1.65	2.46	1.40	1.17	3.45	0.21	0.40
17	0.02	0.06	0.15	0.70	2.30	3.00	2.64	1.63	1.05	0.69	0.93	0.05
18	0.00	0.34	2.01	1.33	2.24	2.83	1.87	1.76	1.57	0.68	1.26	0.10
19	0.01	0.04	0.83	0.42	1.54	4.28	1.92	1.48	1.31	1.11	1.24	0.04
20	0.02	0.03	0.17	1.25	2.39	3.62	2.61	2.22	1.02	1.81	0.91	0.16
21	0.07	0.22	0.47	2.06	1.73	2.85	2.45	2.22	1.90	1.39	0.33	0.02
22	0.06	0.11	0.63	0.81	1.12	2.26	1.42	1.10	2.15	0.32	0.74	0.09
23	0.03	0.05	0.67	1.41	3.98	2.48	2.35	1.95	1.90	1.07	0.28	0.47
24	0.02	0.07	0.59	0.68	2.58	2.38	1.78	1.28	0.87	1.90	1.08	0.25
25	0.06	0.04	0.73	1.58	1.73	2.54	1.83	1.49	1.00	0.52	1.05	0.04
26	0.02	0.25	0.40	1.19	3.98	2.03	1.09	1.61	2.53	0.66	0.32	0.01
27	0.02	0.06	1.24	1.06	1.20	3.11	1.35	1.26	2.85	1.83	1.42	0.14
28	0.03	0.07	0.26	0.80	1.43	1.96	1.40	1.85	1.33	1.72	0.41	0.22
29	0.01	0.10	0.68	1.27	1.44	2.21	4.67	0.90	1.79	0.72	0.33	0.38
30	0.03	0.24	0.72	1.69	1.38	2.17	1.63		2.18	0.71	0.33	0.02
31	0.03	0.02		0.69		1.70	1.50		2.59		0.76	

Appendix D-9. Cumulative Seasonal Rainfall (1849-1991)

	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
1	0.00	0.02	0.05	0.35	1.40	4.06	8.21	12.74	16.27	19.36	20.80	21.36
2	0.00	0.02	0.05	0.37	1.45	4.19	8.34	12.87	16.39	19.43	20.81	21.37
3	0.00	0.02	0.06	0.40	1.52	4.37	8.48	12.99	16.50	19.48	20.84	21.37
4	0.00	0.02	0.06	0.41	1.59	4.46	8.66	13.16	16.62	19.57	20.86	21.38
5	0.00	0.02	0.06	0.42	1.67	4.59	8.80	13.30	16.74	19.63	20.88	21.38
6	0.00	0.02	0.07	0.43	1.75	4.69	8.90	13.41	16.86	19.72	20.90	21.40
7	0.00	0.02	0.08	0.47	1.79	4.78	9.02	13.51	16.95	19.79	20.93	21.41
8	0.01	0.02	0.08	0.48	1.86	4.88	9.16	13.65	17.06	19.85	20.94	21.42
9	0.01	0.02	0.09	0.54	1.95	4.97	9.30	13.77	17.16	19.92	20.95	21.43
10	0.01	0.02	0.09	0.57	2.03	5.11	9.42	13.88	17.27	20.00	20.97	21.43
11	0.01	0.02	0.09	0.61	2.09	5.21	9.55	14.05	17.35	20.06	20.99	21.44
12	0.01	0.02	0.11	0.64	2.19	5.28	9.67	14.22	17.47	20.09	21.01	21.45
13	0.01	0.03	0.12	0.69	2.31	5.38	9.84	14.35	17.60	20.13	21.02	21.46
14	0.01	0.03	0.13	0.73	2.39	5.47	10.00	14.48	17.71	20.17	21.04	21.46
15	0.01	0.03	0.13	0.77	2.49	5.56	10.16	14.62	17.82	20.23	21.06	21.47
16	0.01	0.03	0.14	0.80	2.59	5.68	10.32	14.76	17.92	20.29	21.07	21.48
17	0.01	0.03	0.15	0.81	2.70	5.80	10.49	14.85	17.98	20.33	21.10	21.48
18	0.01	0.03	0.17	0.84	2.82	5.92	10.64	14.98	18.08	20.36	21.13	21.48
19	0.01	0.03	0.18	0.86	2.92	6.13	10.79	15.09	18.17	20.40	21.16	21.48
20	0.01	0.03	0.18	0.89	3.01	6.29	11.00	15.22	18.24	20.43	21.19	21.48
21	0.02	0.04	0.18	0.94	3.10	6.48	11.12	15.36	18.33	20.48	21.20	21.48
22	0.02	0.04	0.19	0.96	3.16	6.65	11.28	15.47	18.43	20.51	21.22	21.48
23	0.02	0.04	0.22	1.00	3.27	6.83	11.45	15.57	18.54	20.54	21.22	21.49
24	0.02	0.04	0.24	1.03	3.39	7.04	11.63	15.69	18.60	20.58	21.24	21.49
25	0.02	0.04	0.26	1.08	3.47	7.21	11.78	15.79	18.67	20.61	21.27	21.49
26	0.02	0.04	0.27	1.13	3.58	7.39	11.89	15.92	18.76	20.64	21.28	21.49
27	0.02	0.04	0.29	1.17	3.64	7.54	12.02	16.03	18.90	20.69	21.31	21.49
28	0.02	0.04	0.29	1.22	3.73	7.66	12.14	16.15	19.00	20.72	21.32	21.50
29	0.02	0.05	0.31	1.27	3.83	7.81	12.34	16.18	19.09	20.74	21.33	21.50
30	0.02	0.05	0.33	1.33	3.93	7.96	12.49		19.20	20.77	21.34	21.50
31	0.02	0.05		1.36		8.07	12.61		19.29		21.35	