

U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
 IN COOPERATION WITH THE WASHINGTON STATE DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 45

LATITUDE 46° 19'
 LONGITUDE 120° 00'
 ELEV. (GROUND) 747'

CLIMATOLOGICAL SUMMARY

STATION: SUNNYSIDE, WASH.

MEANS AND EXTREMES FOR PERIOD 1930 - 1959

Month	Temperature (°F)								** Mean degree days	Precipitation Totals (Inches)						Mean number of days					Month	
	Means			Extremes						Mean	Greatest daily	Year	Snow, Sleet				Precip. .10 inch or more	Temperatures				
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year	Mean					Maximum monthly	Year	Greatest daily	Year		90° and above	32° and below	32° and below		0° and below
(a)	30	30	30	30		30		30	30	30		30	30	30	30	30	30	30	30	30		
JAN	38.3	21.5	29.9	66	1953	-26	1930	1070	.89	1.21	1948	4.8	18.0	1950	4.8	1954	3	0	10	27	2	JAN
FEB	46.6	25.7	36.2	71	1932	-19	1950	815	.66	1.48	1940	2.4	7.5	1937	6.5	1943	2	0	3	23	1	FEB
MAR	57.5	31.1	44.3	82	1939	8	1955	645	.46	.56	1931	F	2.8	1951	2.3	1951	2	0	*	19	0	MAR
APR	67.6	37.8	52.7	93	1934	16	1935	372	.41	.59	1935	T	.8	1935	.8	1935	1	0	0	7	0	APR
MAY	75.8	45.4	60.6	101	1934	28	1938+	177	.50	.75	1951						2	0	0	1	0	MAY
JUN	81.5	50.7	66.1	103	1958	34	1943	48	.85	1.82	1947						2	6	0	0	0	JUN
JUL	90.0	54.0	72.0	112	1939	39	1955	3	.18	.60	1954						1	17	0	0	0	JUL
AUG	88.2	51.4	69.8	109	1933	38	1955+	0	.21	.71	1934						1	14	0	0	0	AUG
SEP	80.4	45.9	63.2	94	1950+	29	1955+	105	.36	.77	1937						1	5	0	1	0	SEP
OCT	67.1	37.7	52.4	88	1943+	14	1935	384	.71	.78	1947	T	.2	1946	.2	1946	2	0	*	7	0	OCT
NOV	50.0	29.3	39.7	75	1934	0	1955	762	.75	.80	1931	1.0	9.3	1955	4.0	1955+	3	0	1	20	*	NOV
DEC	44.5	26.3	33.9	67	1950	-5	1932	967	.87	.88	1933	2.6	13.7	1931	6.0	1942	3	0	6	26	*	DEC
Year	65.4	38.1	51.8	112	JUL 1939	-26	JAN 1930	5348	6.85	1.21	JAN 1948	10.8	18.0	JAN 1950	6.5	FEB 1943	23	44	20	131	3	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

** Base 65°F

+ Also on earlier dates, months, or years.

* Less than one half.

Estimated.

NARRATIVE CLIMATOLOGICAL SUMMARY

Sunnyside is located in the south-central section of the State, near the center of the irrigated area in the Yakima Valley. This irrigated valley lies between the Rattle Snake Hills on the north and the Horse Heaven Hills on the south. In a westerly direction, and at a distance of approximately 70 miles, the Cascade Mountains rise to elevations of 5000 to 7000 feet, with peaks in excess of 10,000 feet and form a north-south topographic and climatic barrier across the State.

The climate in this area is very dry, however, some of the characteristics of both marine and continental-type climates can be observed. Some of the factors which influence the climate are terrain, distance and direction from the Pacific Ocean and the prevailing direction of the surface and upper winds. Mountain ranges in southern British Columbia and in Idaho shield all of eastern Washington from the more severe storms moving southward out of the Arctic region during the winter. The prevailing direction of the wind above the summit of the Cascade range is westerly throughout the year. Moist air moving eastward from over the Pacific Ocean cools and condensation occurs as it rises along the windward slope of the Cascades. This results in heavy precipitation along the western slope and near the summit. The air becomes warmer and drier as it moves down the eastern slope of the Cascades, thus precipitation decreases and the rate of evaporation increases. The average annual precipitation decreases from between 75 and 90 inches near the summit to between 6 and 8 inches in the Yakima Valley. More than 50% of the annual precipitation occurs from the first of October through February. There is a noticeable increase in precipitation between May and June and a sharp decrease in July. It is not unusual for this area to receive only a trace of moisture in July and August. Most of the summertime precipitation occurs as showers with eight or ten thunderstorms reported each year. These thunderstorms tend to develop along the higher ridges, however, they will occasionally move across the valley and some hail damage may occur.

The average evaporation in inches measured at the Prosser Irrigation Experiment Station during the growing season is as follows:

April: 4.3	June: 6.6	September: 4.1
May: 5.6	July: 7.8	October: 2.3
	August: 6.3	

The relative humidity is rather low throughout the year, other than

during December and January, when warm and moist air moving eastward from over the Pacific Ocean frequently crosses the Cascades and mixes with the colder air in the lower valleys. This usually results in the formation of low clouds and fog which may last for several days. The average relative humidity for the month in this area of the State is approximately 80% in January, 55% in March, 35 to 45% in July and 60% in October. Warm and dry "Chinook" winds which are characteristic of this area of the State occur several times each year. These winds are most noticeable during the winter and may result in 20 to 30 degree rise in temperature within an hour. The percent of possible sunshine recorded at Yakima, which is rather representative of conditions in this area, ranges from 29% in December gradually increasing to 62% in March and 86% in July and August.

Afternoon temperatures exceed 90° on about one-half of the days in July and August and reach 100° on 3 to 10 days during the average summer. The temperature decreases rapidly after sunset and nighttime temperatures are usually in the 50's or lower 60's following the warmest days. Minimum temperatures of zero or below are only recorded about every other winter, however, during some of the colder winters, zero or below was recorded on 12 days in 1930, 11 days in 1937, 1949, 1957 and 14 days in 1950.

The annual snowfall during the past 30 years has ranged from less than 1 inch to 28 inches. The depth of snow on the ground seldom exceeds 4 to 6 inches.

Irrigation is necessary for the successful production of agricultural crops in the valley. Storage reservoirs located along the eastern slope of the Cascades provide a source of water for irrigation. The long hours of daylight experienced at this latitude and a rather large number of clear or only partly cloudy days during the growing season, provide adequate sunshine for the production of a variety of fruit, vegetable and field crops.

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 State Climatologist
 U.S. Weather Bureau
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Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1920	11.2	13.0	17.6	55.4	59.3	67.2	72.4	71.3	66.6	69.7	68.9	62.6	59.7
1921	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1922	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1923	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1924	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1925	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1926	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1927	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1928	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1929	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1930	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1931	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1932	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1933	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1934	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1935	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1936	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1937	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1938	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1939	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1940	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1941	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1942	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1943	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1944	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1945	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1946	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1947	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1948	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1949	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1950	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1951	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1952	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1953	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1954	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1955	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1956	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1957	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1958	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1959	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7
1960	10.2	14.0	17.0	52.8	59.2	67.0	72.6	70.6	66.0	69.0	67.5	62.6	59.7

STATION HISTORY

The first climatological station in the vicinity of Sunnyside was located at the residence of P. L. Young, from 1904 to 1908. This station was about one mile west of the Post Office and at an elevation of 744 feet. The station was located on the lawn of the U. S. Bureau of Reclamation Office, 2 blocks south of the Post Office, from 1908 to 1924. The elevation of the station at this location was 760 feet. The climatological records were kept by the following employees of the Bureau of Reclamation: G. L. Conall, U. S. Coalall, U. S. Remington, Charles S. Finkley, I. W. Bates, C. W. Edwards and David P. Hall. The station was moved to the lawn of the Post Office in 1924. The following employees of the U. S. Bureau of Reclamation have kept the climatological records since the station was moved to this location: N. H. Chambers 1924-1925; Van L. Jacobson 1925-1944; Elmer P. Farrow 1944; and Carl V. Harrison 1945 to date.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1920	.66	.03	.12	.10	.12	.14	T	.05	.75	.03	.07	.37	4.09
1921	.30	.17	1.17	.09	T	1.30	T	.00	.08	.16	1.22	2.17	7.22
1922	.30	.09	.60	.34	.69	1.10	T	.06	.09	.16	.79	1.12	7.22
1923	.57	.55	.85	.89	1.20	.32	.04	.06	.39	.20	1.47	1.47	6.93
1924	.28	.24	.40	.40	.14	.17	.71	.07	.30	.95	.92	.51	5.61
1925	.15	.02	.02	.05	.11	.15	.34	.05	.06	.81	.29	.44	5.15
1926	1.02	.07	.42	.24	T	1.25	.22	.11	.04	.04	.99	.64	5.46
1927	.60	.06	.75	.30	.15	2.10	.03	.11	.53	.48	1.61	1.36	7.66
1928	.60	.06	.75	.30	.15	2.10	.03	.11	.53	.48	1.61	1.36	7.66
1929	.59	.06	.40	.30	.11	2.17	.17	.09	.08	.13	.24	1.49	7.14
1930	1.21	2.65	.92	.25	.11	.02	.66	.04	.70	1.28	1.54	1.66	10.54
1931	1.40	.72	.13	.16	.57	1.20	.16	.70	.09	.17	.80	.21	6.20
1932	.95	.77	.10	.15	1.29	1.23	.14	.09	.00	.22	1.54	1.55	7.64
1933	.62	.72	.52	.80	.18	.22	.08	.00	T	1.32	1.16	1.08	5.30
1934	.28	.12	.23	1.26	.03	.24	.00	.00	.30	1.29	1.00	1.00	5.30
1935	.56	.95	.45	.42	1.76	.07	.00	.19	.45	.65	.21	1.10	7.84
1936	.31	.19	.63	.03	.27	1.37	.17	.53	.68	.71	.69	.04	6.02
1937	.07	.49	.18	.21	.04	2.17	.54	.16	.90	2.36	.49	.54	8.20
1938	1.34	.40	.26	.50	2.09	1.67	.23	.15	.16	.32	.91	1.26	9.59
1939	.18	.59	1.07	T	.25	.03	.00	.00	.21	.17	1.40	.00	4.15
1940	1.07	1.07	.71	.38	.06	2.70	.09	.00	.01	2.39	.72	1.31	10.54
1941	1.05	.62	.37	.18	.66	2.25	.25	.18	.33	1.20	.72	.15	8.35
1942	.76	.86	.10	.15	.55	.70	.00	.15	.10	.84	.29	.47	6.27
1943	1.42	.04	.22	.85	.53	.91	.00	.45	.72	.01	.47	.18	6.09
1944	1.27	.20	.37	.18	.36	.55	.60	.21	.72	.56	.82	.18	6.09
1945	1.21	.18	.12	.49	.35	.20	.79	.00	.91	.66	2.17	2.25	8.67
1946	2.06	.75	.66	.66	.36	.77	.04	.34	.04	1.10	.12	.65	6.15
1947	2.06	.75	.66	.66	.36	.77	.04	.34	.04	1.10	.12	.65	6.15
1948	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1949	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1950	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1951	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1952	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1953	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1954	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1955	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1956	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1957	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1958	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1959	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23
1960	1.40	.92	1.40	.15	1.24	.17	.07	.09	.85	.38	.98	.84	6.23

PROBABILITY OF 32°, 30°, 28° AND 24° OCCURRING AS LATE IN THE SPRING OR AS EARLY IN THE FALL AS THE DATES LISTED IN THE FOLLOWING TABLES

Year	PROBABILITY - SPRING					PROBABILITY - FALL				
	75%	50%	20%	10%	5%	75%	50%	20%	10%	5%
32°	Apr 27	May 6	May 13	May 22	Sep 18	Sep 27	Oct 3	Oct 11	Oct 11	Oct 11
30°	Apr 15	Apr 24	May 1	May 10	Sep 27	Oct 6	Oct 12	Oct 23	Oct 23	Oct 23
28°	Apr 7	Apr 16	Apr 23	May 2	Oct 6	Oct 15	Oct 21	Oct 29	Oct 29	Oct 29
24°	Mar 23	Apr 1	Apr 8	Apr 17	Oct 16	Oct 24	Oct 31	Nov 8	Nov 8	Nov 8

In the above table, the 50% point is the same as the average for each freeze category.

From a statistical viewpoint based on past data, the probabilities could be considered as follows when converted into the number of occurrences to expect in a 10-year period:

- 75% - 30 years in 10
- 50% - 20 years in 10
- 20% - 12 years in 10
- 10% - 4 years in 10