U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
IN COOPERATION WITH Milton-Freewater Chamber of Commerce
CLIMATOGRAPHY OF THE UNITED STATES NO. 20 — 35

CLIMATOLOGICAL SUMMARY

LATITUDE 45° 58' N
LONGITUDE 118° 26' W
ELEV. (GROUND) 962 Feet

STATION Milton-Freewater, Oregon

MEANS AND EXTREMES FOR PERIOD 1931 - 1964#

Month	Temperature (°F) Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	** Mean degree days	Precipitation Totals (Inches): Mean	Greatest daily	Year	Snow, Sleet: Mean	Maximum monthly	Year	Greatest daily	Year	Mean number of days: Precip. .10 inch or more	Temperatures: Max. 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Month
(a)	30	30	30	30		30		30	30	30		30	30		30		30	30	30	30	30	
Jan.	40.0	25.4	32.7	68	1946	-17	1957	986	1.29	.77	1948	5.1	19.2	1957	10.5	1950	5	0	8	22	2	Jan.
Feb.	46.3	30.1	38.2	73	1934	-17	1950	750	1.25	.89	1938	2.4	13.0	1936	7.5	1956	5	0	3	16	1	Feb.
Mar.	56.6	36.3	46.5	81	1960	14	1955+	583	1.39	.91	1947	1.0	7.5	1936	7.5	1936	5	0	*	8	0	Mar.
Apr.	65.8	41.9	53.9	90	1934	15	1936	333	1.24	1.70	1944	T	T	1955	T	1955+	4	*	0	2	0	Apr.
May	73.8	47.7	60.8	99	1947	25	1954	167	1.36	.99	1957	0.0	0.0		0.0		4	2	0	*	0	May
June	81.0	53.7	67.4	105	1961	38	1943	48	1.28	1.29	1942	0.0	0.0		0.0		4	6	0	0	0	June
July	89.9	58.8	74.4	109	1960	40	1943	0	.29	.90	1944	0.0	0.0		0.0		1	16	0	0	0	July
Aug.	87.0	56.9	72.0	111	1961	43	1964	0	.29	.95	1963	0.0	0.0		0.0		1	12	0	0	0	Aug.
Sep.	78.8	51.0	64.9	100	1955	30	1954	96	.69	.90	1955	0.0	0.0		0.0		2	3	0	*	0	Sep.
Oct.	65.7	42.6	54.2	88	1958	13	1935	335	1.25	.93	1962	T	1.0	1935	1.0	1935	4	0	*	3	0	Oct.
Nov.	50.2	33.7	42.0	76	1934	-2	1955	696	1.49	.80	1941	0.8	6.0	1961	4.0	1961	5	0	1	12	*	Nov.
Dec.	43.7	29.9	36.8	68	1941+	-9	1964	865	1.76	1.15	1958	2.9	11.0	1933	11.0	1933	6	0	6	18	*	Dec.
Year	64.9	42.3	53.6	111	Aug. 1961	-17	Jan. 1957+	4862	13.58	1.70	Apr. 1944	12.2	19.2	Jan. 1957	11.0	Dec. 1933	46	39	18	81	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.

See station history for years with insufficient record for use in this table.

CLIMATE OF MILTON-FREEWATER, OREGON

Milton-Freewater is in the relatively shallow valley of the Walla Walla River, at the extreme northeastern edge of the Oregon Columbia Basin. Actually, the Columbia River begins its great bend to the north about 25 miles west of the city. A range of low hills separate the Walla Walla River Valley from that of the larger river. Only a few miles to the east the foothills of the Blue Mountains begin their ascent to a crest of near 5,000 feet elevation, reached about 20 miles from Milton-Freewater.

The Columbia River Gorge is a natural duct through the Coast and Cascade Mountain Ranges for transporting the modified marine air from the Pacific Ocean eastward into this area. Here it meets and greatly moderates the dry continental air of the Intermountain Region. On occasion the latter will completely dominate the area to the exclusion, at least at ground levels, of the marine influence. It is during these brief periods that both the more extreme heat of summer and cold of winter are experienced. Also, the most severe winter weather occurs when the relatively warm, moist Pacific air slides up over the very cold continental air.

North central Oregon has a very definite winter-rainfall climate. Approximately 55% of the annual total occurs during the 5-month, November-March period; normally less than 10% falls in the June through August summer months. The summer rain that does occur is generally associated with thunderstorms. Occasionally these storms produce heavy bursts of precipitation. Table 1 contains computed short-period maximum rainfall intensities for selected recurrence intervals.

Table 1. Maximum Short-Period Rainfall Intensities of Given Return Periods[1/] (Amounts shown in inches and tenths; return periods in years)

Return Period	Length of Time of Maximum Intensities: 20 Min.	30 Min.	1 Hr.	2 Hr.	3 Hr.	6 Hr.	12 Hr.	18 Hr.	24 Hr.
2	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.3
5	0.3	0.4	0.5	0.7	0.8	1.0	1.2	1.4	1.6
10	0.3	0.5	0.6	0.8	0.9	1.2	1.4	1.6	1.8
25	0.4	0.6	0.7	0.9	1.1	1.3	1.6	1.9	2.1
50	0.5	0.7	0.9	1.1	1.2	1.4	1.8	2.1	2.3
100	0.6	0.8	1.0	1.2	1.3	1.5	1.9	2.2	2.5

At Milton-Freewater less than 10% of the total precipitation falls as snow. Seldom does more than a few inches fall at one time. This often melts in a matter of hours or at most is usually gone in 2 or 3 days.

The marine air moving in from the Pacific substantially lowers summer high temperatures and raises winter lows. The occasional hot spell or cold spell that does occur rarely persists more than a few days. During the nearly fifty years for which weather records are available at Milton-Freewater observed temperatures have ranged from 21° below zero to 111 above. In 75% of those years, however, it has not been colder than -7 or warmer than 104°. Figure 1 on the reverse presents graphically the distribution of annual high and low temperatures observed here. In Tables 2a and 2b, below, are shown the statistical likelihood for occurrence of specific low temperatures after indicated dates in spring and before indicated dates in fall:

Table 2a. Statistical Likelihood (In Percent) That Temperatures of 32°, 28° and 24° Will Occur In Spring After Dates Indicated

Tempt.	90%	80%	70%	60%	50%	40%	30%	20%	10%
32°	3/17	3/25	3/30	4/4	4/9	4/13	4/19	4/24	5/2
28°	3/3	3/9	3/14	3/18	3/22	3/26	3/30	4/4	4/10
24°	2/1	2/12	2/18	2/25	3/2	3/7	3/13	3/21	3/29

Table 2b. Statistical Likelihood (In Percent) That Temperatures of 32°, 28° and 24° Will Occur In Fall Before Dates Indicated

Tempt.	10%	20%	30%	40%	50%	60%	70%	80%	90%
32°	10/2	10/8	10/13	10/17	10/20	10/24	10/28	11/2	11/8
28°	10/16	10/22	10/27	10/31	11/4	11/7	11/11	11/16	11/22
24°	10/28	11/4	11/9	11/13	11/17	11/21	11/25	12/1	12/12

Relative humidity varies from a rather frequent 100%, during early morning hours of the later fall and winter months, to less than 10% under certain summer conditions. The tendency here for the relative humidity to drop very sharply with high temperatures greatly decreases the discomfort of the latter. While no relative humidity records have been obtained at Milton-Freewater, values contained in Table 3 computed from long term averages for Pendleton and Walla Walla are believed to closely approximate what may be expected at Milton-Freewater.

Table 3. Relative Humidity

Time	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
4 a.m.	80	78	72	69	67	64	52	53	61	72	80	80
10 a.m.	77	69	59	50	48	43	33	38	44	58	72	79
4 p.m.	77	67	49	40	36	32	22	25	33	50	70	78
10 p.m.	80	77	68	61	56	52	38	40	51	67	78	79

The more violent weather phenomena occur infrequently. There is an average of 10-12 days a year with thunderstorms, most of them between May and September. Seldom, however, is accompanying wind or precipitation severe enough to cause significant damage. Destructive hail is a rare occurrence and even then is usually confined to areas of less than a square mile. No true tornado has ever been reported in the immediate area of Milton-Freewater.

Streams fed by heavy snow packs in the Blue Mountains provide water for the irrigation of more than 25,000 acres of highly productive farm land. This, combined with relatively long growing seasons, has resulted in production of large acreages of fruits, vegetables, grain, alfalfa seed and hay.

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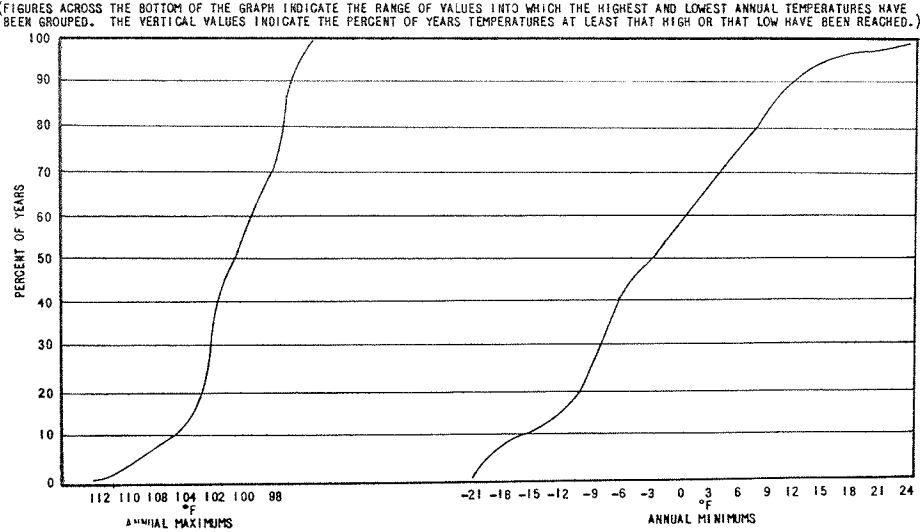
1/ Computed from nomograms contained in U. S. Department of Commerce, Weather Bureau Technical Paper No. 28, "Rainfall Intensities for Local Drainage Design in Western United States"

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	37.4	37.6	46.2	53.9	66.2	65.8	74.6	72.8	63.7	53.0	37.8	33.2	53.5
1932	33.5	37.0	45.6	54.4	59.3	70.0	68.7	71.0	64.4	54.2	46.6	31.4	63.6
1933	37.8	31.0	44.6	52.6	56.0	67.8	74.2	72.8	61.0	56.1	42.9	43.8	53.4
1934	43.8	43.4	52.4	60.4	63.6	68.1	74.0	73.8	62.8	55.3	48.0	38.8	57.0
1935	36.2	38.8	43.4	49.0	59.6	67.6	72.8	71.2	66.4	50.8	36.2	32.7	52.1
1936	37.0	20.7	45.1	56.4	65.0	68.7	75.3	73.4	63.0	57.2	35.8	40.4	53.2
1937	17.1	34.8	47.8	51.8	61.8	68.0	76.4	69.6	67.6	58.2	45.8	39.2	53.2
1938	36.9	37.2	47.0	55.2	61.5	70.0	79.6	69.8	68.4	54.0	38.0	37.2	54.6
1939	39.4	35.8	46.0	54.6	61.4	64.6	74.9	74.6	66.0	54.1	41.0	41.0	54.4
1940	32.0	41.0	54.6	55.5	65.4	72.0	75.0	74.2	67.0	57.7	37.4	36.0	55.4
1941	33.6	40.7	50.4	55.6	59.4	65.6	77.9	72.2	61.9	52.1	45.1	38.8	54.4
1942	22.9	38.3	47.6	56.4	58.7	64.6	75.7	74.5	67.0	56.0	40.9	38.6	53.4
1943	26.8	37.6	43.6	56.0	56.8	63.7	74.2	71.0	67.4	55.0	40.7	33.7	52.2
1944	34.2	39.2	46.6	53.8	61.1	66.6	74.8	71.6	68.3	57.5	41.3	32.6	54.0
1945	38.1	42.0	45.4	50.8	61.2	66.2	76.8	73.8	62.7	57.0	43.2	34.6	54.3
1946	39.1	42.9	46.8	53.9	61.2	65.2	73.8	72.9	62.8	51.1	40.4	38.9	54.1
1947	32.4	41.6	50.1	55.9	66.2	65.8	72.8	70.6	65.5	55.3	43.2	38.4	54.8
1948	34.3	37.2	43.6	50.2	56.9	69.5	70.3	69.6	60.0	51.4	43.1	31.5	51.7
1949	17.4	35.0	45.3	58.1	64.4	67.3	72.6	71.8	65.8	50.2	47.2	38.2	52.8
1950	17.3	35.1	44.8	51.6	59.7	65.7	74.6	73.7	66.5	53.6	43.3	41.4	62.7
1954	34.4	40.3	43.7	52.2	61.0	65.4	72.3	69.1	62.7	50.7	48.1	36.6	63.7
1955	34.9	37.7	42.0	48.7	57.5	68.4	71.6	72.3	64.6	54.6	35.0	35.2	62.3
1956	36.3	28.6	45.9	54.3	63.6	65.1	77.1	73.3	66.1	53.1	39.3	39.3	64.2
1957	21.3	38.7	46.2	54.4	63.5	68.7	71.9	70.0	67.9	50.9	42.6	42.4	63.9
1959	36.8	40.5	48.2	54.4	58.0	67.7	75.3	70.3	62.8	55.1	39.1	35.0	64.3
1960	26.5	40.5	46.2	53.7	58.4	68.7	78.6	70.0	65.1	55.1	44.5	31.4	53.2
1961	39.0	48.0	49.2	53.1	59.5	72.6	77.1	77.1	61.9	52.7	37.2	38.2	55.5
1962	33.2	40.0	44.4	56.6	56.0	66.7	74.0	70.6	65.3	53.7	47.1	40.5	54.0
1963	29.8	41.3	48.3	50.9	60.6	68.2	70.5	73.1	68.7	57.1	46.1	33.7	54.0
1964	42.2	43.2	45.7	51.8	58.8	66.0	72.0	68.6	62.5	52.1	42.1	33.4	53.2

FIGURE 1. PERCENT OF YEARS MAXIMUM TEMPERATURES (WITHIN RANGES OF 2°) AND MINIMUM TEMPERATURES (WITHIN RANGES OF 3°) HAVE BEEN REACHED DURING THE PERIOD 1914-1964

(FIGURES ACROSS THE BOTTOM OF THE GRAPH INDICATE THE RANGE OF VALUES INTO WHICH THE HIGHEST AND LOWEST ANNUAL TEMPERATURES HAVE BEEN GROUPED. THE VERTICAL VALUES INDICATE THE PERCENT OF YEARS TEMPERATURES AT LEAST THAT HIGH OR THAT LOW HAVE BEEN REACHED.)



Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	1.63	0.86	2.66	1.08	T	1.44	0.00	0.00	0.25	1.18	2.15	2.43	13.68
1932	1.12	1.11	2.11	0.97	1.57	0.23	0.35	T	T	0.83	2.81	0.99	12.09
1933	1.41	2.12	1.02	1.16	1.73	0.68	0.11	0.33	1.23	1.43	0.91	3.71	15.84
1934	0.53	0.36	1.71	0.44	0.41	1.22	0.10	0.34	0.63	1.53	1.96	1.58	10.81
1935	0.96	1.04	0.97	2.18	0.48	1.01	0.10	0.02	0.02	1.61	0.32	1.36	10.07
1936	2.49	1.75	0.79	0.40	0.07	1.38	0.31	0.05	0.80	0.00	0.12	0.94	9.10
1937	1.71	0.35	1.87	2.46	0.21	2.70	0.08	0.34	0.10	0.71	1.86	2.17	14.56
1938	1.01	2.18	2.24	1.40	1.33	1.27	0.04	0.06	0.33	0.29	1.66	0.63	12.44
1939	0.83	2.09	1.59	0.71	0.67	0.90	0.56	T	0.06	0.62	0.00	2.81	10.84
1940	2.21	2.98	1.07	1.58	0.35	0.07	0.68	T	2.06	1.74	1.98	1.37	16.09
1941	0.84	1.50	0.48	0.79	2.74	3.52	0.35	0.63	1.51	1.69	1.82	2.12	17.99
1942	1.64	0.96	0.43	1.20	3.64	2.68	0.71	0.22	T	1.03	3.57	3.41	19.49
1943	0.87	0.34	1.15	1.59	1.80	1.82	0.15	0.25	0.00	1.68	0.47	1.28	11.40
1944	1.26	2.07	0.82	2.96	0.34	0.65	0.90	0.17	1.08	0.50	1.17	1.11	13.03
1945	1.69	1.64	2.47	1.54	2.82	0.79	0.00	0.16	1.78	0.96	2.11	1.70	17.66
1946	1.38	0.78	1.73	0.58	1.61	1.51	0.12	0.52	1.58	1.25	1.57	0.86	13.49
1947	1.32	0.56	1.73	2.25	0.51	2.76	0.22	0.08	1.37	3.12	2.26	1.43	17.61
1948	2.05	1.44	0.89	1.93	3.57	1.58	1.15	0.16	0.29	0.92	1.40	2.18	17.56
1949	0.39	1.20	1.26	0.57	0.86	0.08	0.00	0.02	0.53	0.46	1.73	0.96	8.06
1950	2.07	1.14	1.90	1.01	0.46	2.43	0.12	0.20	0.07	4.38	1.86	1.97	17.61
1952	1.22	1.77	1.25	1.17	0.82	2.00	0.15	0.00	0.00	T	0.37	1.92	10.67
1954	1.65	0.48	1.25	0.88	0.84	1.36	0.00	1.19	0.30	0.81	1.27	0.91	10.94
1955	1.00	0.52	0.63	1.88	0.97	0.30	1.06	0.00	1.15	2.47	2.87	2.72	15.57
1957	1.29	1.12	2.75	0.87	4.44	1.20	0.03	0.03	0.71	1.91	0.69	1.83	16.87
1959	2.94	1.67	0.61	0.62	1.13	1.17	0.14	0.98	2.29	1.19	0.41	1.12	14.27
1960	0.91	0.88	1.58	1.34	1.75	0.90	0.01	1.14	0.68	0.98	1.40	0.65	12.22
1961	0.65	2.36	1.89	0.89	1.73	1.12	0.01	0.12	0.20	1.09	1.70	1.61	13.37
1962	0.68	0.65	1.69	1.15	3.34	0.48	0.00	0.44	0.77	2.22	0.96	2.04	14.42
1963	0.99	1.81	0.88	1.19	0.61	0.23	0.26	1.16	0.73	0.41	1.49	1.66	11.42
1964	0.77	0.02	0.29	0.64	0.12	1.14	1.23	0.26	0.13	0.71	2.07	3.34	10.72

STATION HISTORY

The first weather station for this area was established in December 1914 at the home of the observer, Mr. Bruce Shangle, in the part of the city then known as Milton. In April 1917 the station was transferred to Mr. C. D. Hobbs at his home 4 blocks from the Milton Post Office. He continued as the observer for the next 37 years. Upon his retirement in 1954 the station was moved only a short distance to the home of the succeeding observer, Mr. Henry Christy. In February 1958 Mrs. Lillie Wise became the observer, and the station was moved to her farm home approximately 4 miles northwest of the Milton-Freewater Post Office. It has remained there since that time. During the period 1951 through 1958 there were several periods of 2 to 3 months of missing records. Procedures followed in preparing these summaries require that in computing the "Means and Extremes" tables on the reverse side the latest 30 complete years be used in determining all long term averages presented. As a result of missing months (which were not always the same for precipitation as for temperature), it was necessary to go back to 1931 to get 30 complete years. Years not used in computing temperature and precipitation averages in the table on the reverse were: for temperature -- 1951, 1952, 1953 and 1958; for precipitation -- 1951, 1953, 1956 and 1958. Otherwise, the records appear fairly complete and quite accurate.