

U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU IN COOPERATION WITH
THE WASHINGTON STATE DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT
CLIMATOGRAPHY OF THE UNITED STATES 20-45

LATITUDE 47°12'
LONGITUDE 122°20'
ELEV. (GROUND) 50 ft.

CLIMATOLOGICAL SUMMARY

STATION PUYALLUP, WASH.

MEANS AND EXTREMES FOR PERIOD 1931-1960

Month	Temperature (°F)									** # Mean degree days	Precipitation Totals (Inches)						Mean number of days								
	Means			Extremes			Mean	Greatest daily	Year		Snow, Sleet			Precip. .10 inch or more	Temperatures				Month						
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest					Year	Mean	Maximum monthly		Year	Greatest daily	Year	90° and above		32° and below					
																		30° and above		32° and below	30° and below	32° and below			
(a)	30	30	30	30		30		30																	
JAN	45.9	31.3	38.6	66	1940	-3	1950	818	5.63	2.35	1935	3.2	30	1950	30	1950	13	30	30	30	30	30	*	JAN	
FEB	49.6	33.1	41.3	69	1941	1	1950	661	4.66	3.28	1951	1.1	7.9	1949	4.0	1957	11	0	*	13	0	0	0	FEB	
MAR	54.1	35.0	44.5	75	1956	12	1955	632	4.14	1.75	1931	.3	4.0	1960	4.0	1960	11	0	0	11	0	0	0	MAR	
APR	61.8	38.2	50.0	87	1951	23	1935	450	2.64	1.45	1938	T	T	1955+	T	1955	8	0	0	5	0	0	0	APR	
MAY	68.5	42.5	55.5	90	1953	25	1954	295	2.02	.92	1934						6	*	0	1	0	0	0	MAY	
JUN	72.4	47.1	59.8	101	1955	34	1952+	174	1.81	1.77	1936						5	*	0	0	0	0	0	JUN	
JUL	78.3	49.2	63.7	99	1958+	38	1949+	65	.81	1.07	1939						2	2	0	0	0	0	0	JUL	
AUG	77.6	48.7	63.1	99	1960	33	1959	81	.96	1.39	1933						3	1	0	0	0	0	0	AUG	
SEP	71.8	45.8	58.8	92	1953+	30	1954+	189	2.03	1.90	1936						5	*	0	*	0	0	0	0	SEP
OCT	62.2	41.7	51.9	82	1951+	22	1946	403	3.95	2.01	1934	T	T	1935+	T	1935+	9	0	0	3	0	0	0	0	OCT
NOV	52.1	35.6	43.8	72	1949	0	1955	633	5.45	2.38	1960	.3	4.5	1955	4.3	1959	12	0	*	10	*	0	0	0	NOV
DEC	48.0	33.7	40.8	66	1939	7	1932	744	6.40	2.87	1933	.5	5.5	1949	4.5	1949	14	0	*	12	0	0	0	0	DEC
Year	61.9	40.1	51.0	101	JUN 1955	-3	JAN 1950	5115	40.50	3.28	FEB 1951	5.4	25.5	JAN 1950	10.0	JAN 1950	99	3	1	71	*			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

The city of Puyallup is located in the Puyallup Valley about 10 miles from Puget Sound and the mouth of the Puyallup River. This valley is 3 to 5 miles wide in the vicinity of the city. Along the edges of the valley, hills rise to elevations of 200 to 500 feet. Most of the valley is a highly productive agricultural area devoted to the production of berries, fruit, flowers, bulbs, garden crops and dairying.

The climate in this area is predominantly a mid-latitude, west coast, marine type, with a dry season and pleasant temperatures in the summer, and rather mild but rainy winters. Some of the factors which influence the climate are terrain, distance and direction from the ocean, and the position and intensity of the semi-permanent high and low pressure areas located over the north Pacific Ocean. The Cascade Mountains are very effective in shielding the area from the higher summer and lower winter temperatures observed east of this range. The Coastal and Olympic Mountains offer protection from the more severe winter storms moving inland from over the ocean. Although the city is approximately 90 miles inland from the ocean, the Strait of Juan de Fuca, Strait of Georgia, and the wide valley between the Olympic Mountains and the Willapa Hills permits a rather free circulation of ocean air to enter the Puget Sound region. A clockwise circulation of air around the high pressure area over the north Pacific, which intensifies and spreads northward into the Gulf of Alaska in the summer, brings a flow of air from a northwesterly direction into western Washington. This air is relatively dry and cooler than the surface of the land. As it moves inland, the air becomes warmer and drier, resulting in dry weather in the summer. The dry season usually begins about May and reaches a peak in July and August. In the fall and winter, the high pressure area becomes smaller and moves southward and the low center near the Aleutian Islands becomes stronger and also moves southward. A counter-clockwise circulation of air around this center and a clockwise circulation around the high center brings a flow of rather warm moist air from a southwesterly direction into the State. This results in a cloudy and rainy season beginning about October, reaching a peak in December and January, then gradually decreasing in the early spring.

Precipitation in the rainy season is usually of light or moderate intensity and heavy downpours occur infrequently. Snowfall is light and seldom remains on the ground for more than a few days or accumulates to a depth in excess of 3 to 6 inches. Both precipitation and snowfall increase rapidly in an easterly direction. Snowfall in the higher elevations of the Cascades ranges from 300 to 600 inches and accumulates to a depth of 15 to 25 feet during an average winter. Several of the winter sports areas are located within 60 miles of the city.

The temperature on a typical summer day ranges from the mid 50's in the early morning hours to the mid 70's in the afternoon. Afternoon temperatures exceed 90° on about 3 days each summer. Occasionally, a westerly flow of warm dry air crossing the Cascades will result in a few days of hot weather with temperatures in the upper 90's. A return flow of air from over the ocean following a few hot days usually lowers maximum temperatures into the 70's. During the winter season, daytime temperatures are in the 40's and nighttime temperatures in the 30's. The coldest weather occurs when cold dry air from Canada or east of the Cascades moves into the Puget Sound region. The sky is usually clear under these conditions and maximum temperatures may remain below freezing with minimum temperatures ranging from 5° to 15° for a few days.

This area near Puget Sound receives about 45 percent of the possible sunshine each year. The average relative humidity at Seattle Tacoma Airport, which is fairly representative of conditions in the area, ranges from 86% at 4 a.m. to 81% at 4 p.m. in January, and from 89% at 4 a.m. to 48% at 4 p.m. in July. The strongest winds are usually from a southwesterly direction and occur during the winter season. The wind velocity is rather light during most of the summer.

Earl L. Phillips
State Climatologist
U. S. Weather Bureau
Seattle, Washington

Average Temperature (F°)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	43.0	42.6	46.1	51.2	57.8	59.0	64.0	62.7	58.9	50.6	41.0	39.6	51.4
1932	37.4	40.0	46.2	50.2	53.8	60.8	60.4	63.3	57.8	52.7	47.7	38.4	50.6
1933	39.2	36.9	44.9	48.9	51.4	58.8	61.8	60.0	58.2	51.8	44.8	43.8	50.2
1934	43.8	44.6	49.6	54.2	57.1	60.1	62.6	64.5	58.1	53.4	46.2	42.0	53.2
1935	39.8	42.2	42.0	47.6	53.8	59.8	62.8	63.1	59.8	49.2	40.9	40.9	50.1
1936	42.1	33.8	43.0	52.5	56.7	61.8	63.2	63.8	57.2	52.5	42.9	42.8	50.9
1937	28.6	39.2	41.1	47.9	54.2	61.0	63.0	61.8	59.6	51.2	42.2	41.2	50.5
1938	39.2	41.5	44.1	51.3	57.2	61.8	64.6	64.6	59.8	52.2	41.2	41.6	51.2
1939	42.4	38.0	42.0	50.8	54.1	57.9	62.2	64.6	57.6	52.2	41.6	40.8	51.2
1940	42.2	38.6	47.9	51.0	56.5	60.2	63.7	63.3	61.8	50.5	41.5	40.8	52.3
1941	40.9	43.9	44.9	53.6	54.8	59.4	66.4	63.6	56.8	51.8	41.8	41.8	52.2
1942	37.0	40.5	44.9	50.0	54.2	58.8	64.9	61.9	58.2	52.6	42.6	42.6	50.7
1943	31.0	41.5	43.3	51.6	54.4	58.8	63.9	63.2	60.2	52.6	43.8	41.8	50.3
1944	39.2	41.4	43.3	49.4	52.8	59.2	64.4	63.5	59.4	50.0	38.7	39.2	50.8
1945	41.3	42.6	43.8	47.2	50.8	58.0	64.4	63.0	56.3	50.0	41.5	39.8	50.8
1946	40.2	42.5	46.2	48.6	56.6	59.1	63.7	63.0	58.4	52.2	40.8	39.8	50.2
1947	36.6	43.5	46.0	52.2	59.4	59.8	-	60.6	58.0	52.2	42.4	42.4	-
1948	41.1	43.7	43.3	48.1	57.1	58.8	61.1	62.9	59.7	47.3	39.7	42.4	50.0
1949	30.3	38.0	45.1	50.6	57.1	58.8	61.1	62.9	58.6	47.3	39.7	42.4	50.0
1950	28.2	41.1	44.1	47.8	53.5	60.9	64.1	64.1	58.6	50.1	43.2	43.2	50.1
1951	38.5	41.8	44.7	51.0	55.7	62.6	64.6	62.5	58.5	53.1	40.3	38.0	51.0
1952	32.1	42.4	45.2	49.2	52.5	58.6	65.5	65.5	59.5	51.2	42.6	40.0	51.0
1953	37.2	42.9	45.2	49.2	52.5	58.6	64.4	62.6	59.5	52.1	43.8	40.0	51.0
1954	37.2	42.9	45.2	49.2	52.5	58.6	64.4	62.6	59.5	52.1	43.8	40.0	51.0
1955	40.6	39.4	40.3	45.1	52.9	58.7	61.7	61.1	57.0	51.1	39.2	38.9	48.7
1956	38.0	36.7	42.7	50.4	58.6	59.1	65.8	63.7	58.1	50.5	41.2	41.2	50.6
1957	32.6	40.7	45.3	50.6	58.3	61.3	61.9	61.5	62.1	51.2	42.6	41.2	51.0
1958	40.2	47.3	44.0	50.8	60.7	65.1	69.5	65.8	59.5	52.6	43.8	40.0	51.0
1959	40.2	47.3	44.0	50.8	60.7	65.1	69.5	65.8	59.5	52.6	43.8	40.0	51.0
1960	38.1	41.7	44.2	50.1	53.7	60.2	65.6	63.4	57.6	53.1	43.3	38.8	50.8

PROBABILITY OF 32°, 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%	25%	10%	5%	75%	50%	25%	10%	5%
32°	Apr 15	Apr 29	May 13	May 25	Apr 23	Sep 18	Sep 29	Oct 11	Oct 23	Oct 23
28°	Mar 14	Mar 28	Apr 10	Apr 23	Apr 23	Oct 13	Oct 24	Nov 5	Nov 17	Nov 17
24°	Feb 6	Feb 21	Mar 6	Mar 18	Mar 18	Nov 1	Nov 12	Nov 26	Dec 9	Dec 9

In the above table, the 50% point is the average date 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 40-year period:

- 75% - 30 years in 40
- 50% - 20 years in 40
- 25% - 10 years in 40
- 10% - 4 years in 40

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	6.31	3.51	5.47	3.35	.93	5.19	2.33	.81	6.22	4.17	6.97	42.62	
1932	5.20	4.56	6.37	3.76	1.46	1.18	2.33	.81	6.22	4.17	6.97	42.62	
1933	7.00	4.56	6.98	1.31	4.64	1.41	.97	1.81	4.29	3.11	3.25	19.74	
1934	9.20	1.92	3.71	1.85	1.18	1.45	1.45	.47	2.75	3.87	7.56	46.47	
1935	7.55	2.36	4.70	.91	.34	1.52	.80	.49	2.57	2.92	1.92	30.76	
1936	7.44	6.45	2.38	.67	1.64	4.93	1.12	.63	3.32	.62	10.96	7.86	
1937	3.74	5.81	4.75	4.75	1.64	4.34	.38	1.60	1.37	2.60	8.88	48.56	
1938	4.64	2.64	4.92	3.42	.95	.21	.30	.08	4.48	4.04	3.93	28.94	
1939	6.18	4.75	2.95	.56	1.88	1.18	1.52	.87	.64	2.76	2.86	33.71	
1940	1.90	7.86	4.58	3.52	2.21	.46	1.06	.53	2.80	5.65	3.89	38.55	
1941	4.11	2.20	2.11	2.35	3.75	1.48	.00	2.56	3.52	2.25	4.64	37.43	
1942	2.87	2.93	2.05	2.02	2.14	2.34	1.43	.24	.36	2.92	8.88	32.70	
1943	1.52	2.67	4.79	3.23	1.34	1.69	.62	.75	.52	4.70	2.10	26.88	
1944	4.44	3.32	1.36	3.20	2.12	.69	1.88	.44	1.88	4.35	2.05	25.91	
1945	5.33	5.68	4.20	3.72	3.52	.19	.35	.86	3.68	2.82	6.18	42.61	
1946	6.84	6.48	5.24	2.51	.58	4.25	1.01	.07	2.66	3.47	5.04	44.77	
1947	6.74	3.51	3.05	1.75	.42	2.35	.37	.37	1.60	6.75	5.25	-	
1948	1.80	6.85	4.62	2.90	1.18	1.60	.62	.59	1.29	3.85	6.98	34.96	
1949	4.45	6.56	3.15	1.61	1.18	1.25	.60	1.49	1.98	7.38	8.22	53.77	
1950	7.38	6.39	7.76	3.03	.94	1.25	.60	1.49	1.98	7.38	8.22	53.77	
1951	6.71	8.48	4.33	.55	1.30	.08	.51	.90	1.95	5.10	4.70	39.79	
1952	4.73	3.44	2.86	2.03	1.28	1.15	.38	.25	1.48	5.41	24.85	-	
1953	12.92	3.43	3.90	3.21	2.65	2.52	1.41	1.72	2.70	5.08	5.98	52.00	
1954	9.18	4.44	2.49	3.03	2.26	1.16	1.92	2.25	4.52	5.71	4.61	43.28	
1955	3.20	4.20	4.70	4.86	1.45	1.25	2.03	1.54	6.79	8.02	11.12	49.16	
1956	8.76	2.50	5.86	.45	.58	2.56	.71	1.01	1.20	5.80	5.70	37.38	
1957	2.61	5.41	6.72	2.63	1.31	2.51	.85	1.88	2.25	3.44	3.71	39.50	
1958	7.02	5.71	2.00	4.29	1.62	.96	.00	.30	1.25	3.10	7.67	52.50	
1959	8.21	3.19	3.42	3.23	1.86	1.98	.22	.54	4.21	3.04	9.10	43.28	
1960	4.92	4.46	4.20	4.43	4.16	.77	3.24	.87	4.75	10.18	5.53	43.10	
1960	4.92	4.46	4.20	4.43	4.16	.77	3.24	.87	4.75	10.18	5.53	43.10	

STATION HISTORY

The Weather Bureau climatological station was established at the Western Washington Experiment Station in 1911. The equipment was located over a sod-covered area near the building until 1948. In April 1948, the equipment was moved about 100 yards to the present location near the Experiment Station dairy barn. Observations have been made by Experiment Station personnel during the entire period of record.

PERIOD OF YEARS SINCE RECORDS BEGAN IN 1911 THAT MINIMUM TEMPERATURES HAVE DROPPED TO 20°, 15°, 10° AND 0° ON ONE OR MORE DAYS DURING EACH MONTH

Month	20°	15°	10°	0°
November	20	7	2	2
December	20	15	10	0
January	20	15	10	0
February	20	15	10	0
March	20	15	10	0