

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 49° 00'
LONGITUDE 122° 44'
ELEV. (GROUND) 45 ft.

CLIMATOLOGICAL SUMMARY

STATION BLAINE, WASHINGTON

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					
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year	Mean					Maximum monthly	Year	Greatest daily		Year	85° and above	Max.		Min.	
																			32° and below	32° and below	0° and below	0° and below
Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year					
(a)	30	30	30	30	1940	30	1950+	877	30	30	1931	30	30	1950	30	1954	30	30	30	30	30	JAN
JAN	42.9	30.5	36.7	64	1940	-1	1950+	877	5.72	2.31	1931	4.6	30.5	1950	7.0	1954	12	0	4	16	*	JAN
FEB	46.3	32.0	39.2	62	1943	-9	1936	725	4.30	2.12	1932	1.9	14.0	1949	8.0	1949	10	0	1	15	*	FEB
MAR	51.2	34.9	43.1	72	1960	11	1951	679	3.68	1.39	1950	1.6	39.0	1951	12.0	1951	10	0	*	10	0	MAR
APR	58.0	38.8	48.4	78	1947	21	1936	507	2.52	1.38	1959						7	0	0	4	0	APR
MAY	64.7	43.8	54.3	85	1959	26	1954	338	2.03	1.49	1951						5	*	0	*	0	MAY
JUN	69.5	48.4	59.0	92	1955	34	1939+	189	1.97	1.46	1942						5	*	0	0	0	JUN
JUL	74.1	50.6	62.4	94	1942	37	1949	99	1.16	1.64	1932						3	1	0	0	0	JUL
AUG	73.0	49.9	61.5	92	1960	38	1947	118	1.22	1.42	1948						4	0	0	0	0	AUG
SEP	67.7	46.1	56.9	86	1949	30	1950+	243	2.24	1.40	1933						6	*	0	*	0	SEP
OCT	58.1	41.6	50.1	77	1932	20	1935	450	4.54	3.50	1944						10	0	*	3	0	OCT
NOV	49.8	35.6	42.7	64	1950+	17	1959+	660	5.33	3.37	1955	.6	8.0	1937	5.0	1937	11	0	*	10	0	NOV
DEC	45.6	33.2	39.4	62	1939	6	1951	800	6.17	2.11	1937	1.7	10.0	1951	6.0	1951	14	0	1	13	0	DEC
Year	58.4	40.5	49.5	94	JUL 1942	-9	FEB 1936	5685	40.88	3.50	OCT 1944	10.4	39.0	MAR 1951	12.0	1951	97	1	6	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

Blaine is located at the United States-Canadian border in the north-western corner of Whatcom County and on the eastern shore of Boundary Bay. The city is a port for ocean-going vessels, commercial fishing fleets, and private boats. A major port of entry for highway travel between the United States and Canada is located at the northern edge of the city. A wide and rather level valley extends 20 to 30 miles in an easterly and northerly direction. Beyond this agricultural area, the Cascade Mountains and ranges north of the Fraser River rise to elevations of 5000 to 7000 feet with peaks in excess of 10,000 feet. Mount Baker (elevation 10,778 ft.), the highest snowcapped peak in the northern Cascades, is 45 miles east-southeast of the city. In a westerly and southwesterly direction and across the Strait of Georgia and Strait of Juan de Fuca, ranges of mountains on Vancouver Island and the Olympic Peninsula rise to elevations of 4000 to 7000 feet. These ranges are very effective in shielding this section of the State from the more intense winter storms moving eastward from over the north Pacific.

The climate is predominantly a mid-latitude, west-coast marine type with cool summers, rather mild winters, moist air, a small daily and annual range in temperature. Some of the factors influencing the climate are: terrain, distance and direction from the ocean, location along the Strait of Georgia and the position and intensity of the high and low pressure centers located over the north Pacific Ocean. During the late spring and summer, the large high pressure area over the north Pacific spreads northward into the Gulf of Alaska. A clockwise circulation of air around the "high" brings a prevailing flow of air from a westerly and northwesterly direction into the State. This air from over the ocean is relatively dry and cooler than the surface of the land and becomes warmer and drier as it moves inland resulting in a dry season and pleasant temperatures during the summer. The driest weather usually occurs between the middle of July and the middle of August. During the late summer and fall, low clouds or fog frequently form at night and disappear before the following noon. The average afternoon temperature in the warmest summer months is in the mid-70's and the nighttime readings are near 50°. Maximum temperatures exceed 80° on a few afternoons and reach 85° in about one out of two summers. Slightly higher maximum temperatures can be expected in the agricultural areas some distance from the bay. Occasionally, hot dry air from east of the Cascades will reach the lowlands of western Washington for brief periods and the highest temperatures and lowest relative humidity are observed under these conditions.

During the fall and winter, the low pressure area near the Aleutian Islands intensifies and moves southward and the high pressure area becomes smaller and also moves southward. A circulation of air around these two pressure centers in the north Pacific brings a prevailing flow of warm moist air from a southwesterly direction into the State. This air is warmer than the surface of the land thus cooling and condensation occur as it moves inland. The heaviest precipitation occurs on the windward slopes of the Coastal and Cascade ranges. The area near Blaine, located in the "rain shadow" of the coastal ranges, receives about 41 inches of precipitation each year. Precipitation increases in October, reaching a peak in mid-winter, then decreasing in the spring with a rather sharp drop in July and August. Most of the winter precipitation occurs as rain, however, snow has fallen as early as November and as late as March. A snow cover seldom remains on the ground longer than a few days or reaches a depth in excess of 4 to 8 inches. The greatest depth of snow on the ground was 16 inches on February 8, 1916.

The average afternoon temperature in the winter ranges from 35° to 45° and the nighttime readings are from 20° to 35°. Maximum temperatures fail to rise above freezing on a few days in three out of four winters. During one of the coldest winters in recent years (1949-50), maximum temperatures remained below freezing on 25 days and minimum temperatures were below zero on three nights. Temperatures are generally above freezing during cloudy and rainy weather, and there is very little change from day to night or from day to day. The coldest weather and strong northeasterly winds occur when cold air from Canada or eastern Washington reaches this area through the Fraser River canyon or by crossing the Cascades. Clear skies often accompany these outbreaks of cold air thus additional heat is lost by radiation at night. A return of warmer air from over the ocean brings relief from low temperatures within a few days. Minimum temperatures are slightly lower and the length of the growing season decreases in an easterly direction from the bay.

Earl L. Phillips
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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	43.2	40.8	45.0	50.4	54.8	57.6	61.4	60.0	56.4	48.9	39.5	38.8	49.7
1932	34.9	38.4	41.8	48.2	53.4	58.4	59.4	62.0	54.5	50.4	41.8	39.8	49.0
1933	35.8	38.6	40.8	44.2	48.8	58.4	62.2	62.1	51.5	50.4	38.5	38.8	47.6
1934	42.2	41.6	45.1	52.6	55.2	59.0	60.9	60.9	56.0	48.2	40.8	38.8	51.0
1935	36.5	42.6	41.3	45.6	52.1	58.4	60.1	61.5	58.0	48.2	42.0	42.0	49.0
1936	40.8	28.6	41.0	48.8	55.4	60.8	62.7	61.8	55.4	51.3	41.9	41.9	49.1
1937	39.0	36.8	49.2	49.2	54.0	60.8	63.6	60.6	58.4	52.6	44.8	39.8	49.5
1938	39.2	39.2	43.8	49.2	54.0	60.2	63.0	60.6	58.4	52.6	44.8	39.8	49.7
1939	41.0	35.8	42.6	48.2	56.6	56.3	61.2	61.0	56.1	48.9	45.4	44.7	52.0
1940	41.8	43.7	46.8	50.6	56.6	61.0	63.3	64.2	61.4	53.4	45.4	41.4	52.0
1941	42.2	43.6	48.6	51.2	54.6	59.0	65.7	62.8	57.4	51.2	45.4	46.2	51.8
1942	41.0	40.4	43.0	49.6	54.6	59.0	66.2	65.4	57.5	53.5	42.6	41.8	51.0
1943	41.6	43.4	43.8	52.0	54.6	59.1	62.1	61.6	58.8	53.5	45.8	39.3	50.2
1944	39.6	40.7	43.0	49.7	54.8	59.1	62.6	62.6	59.1	52.8	45.8	38.2	50.5
1945	40.6	42.4	43.4	48.6	55.6	58.0	62.2	60.9	53.2	48.0	40.4	38.2	49.1
1946	41.0	46.3	42.6	46.0	55.4	57.8	64.0	61.7	46.0	46.0	37.2	37.2	48.9
1947	33.0	46.8	43.4	50.3	56.9	61.0	62.4	60.5	55.5	49.6	41.5	39.5	48.4
1948	37.4	36.4	42.7	46.7	53.7	62.2	62.8	61.1	54.8	47.8	41.5	38.0	48.2
1949	28.4	34.0	43.5	48.2	55.2	58.5	61.0	61.4	57.8	48.5	47.9	43.0	47.8
1950	20.4	38.5	41.8	46.9	51.2	58.5	62.7	62.2	56.3	48.5	41.4	43.0	47.8
1951	36.2	38.0	38.3	47.7	54.5	61.3	63.2	61.3	57.6	49.6	34.5	34.5	48.8
1952	42.8	40.6	42.3	47.6	53.4	61.7	62.1	62.1	57.7	51.2	40.7	41.0	49.0
1953	32.2	41.7	40.3	48.1	54.7	62.0	62.3	62.0	56.9	51.3	47.0	41.5	50.6
1954	32.2	41.7	40.3	48.1	54.7	62.0	62.3	62.0	56.9	51.3	47.0	41.5	50.6
1955	38.4	37.4	38.1	48.1	50.6	57.4	59.2	59.2	55.4	49.4	37.0	35.9	46.9
1956	37.0	34.8	40.9	48.7	55.3	56.9	62.6	61.6	56.4	48.5	38.6	38.6	48.5
1957	28.3	35.7	43.6	49.2	57.0	59.6	62.6	60.4	59.0	49.5	42.8	41.6	49.1
1958	43.1	46.1	44.1	44.1	57.6	63.6	63.4	63.9	58.2	51.0	41.8	41.1	52.2
1959	38.2	38.9	43.8	49.3	53.5	59.3	60.3	60.3	59.3	49.7	40.8	39.7	47.7
1960	36.7	40.8	43.0	49.0	52.9	57.4	63.1	61.3	55.4	49.7	38.4	38.4	49.3

PROBABILITY OF 32°, 28° AND 24° OCCURENCE AS TABLE IN THE SPRING OR AS EARLY IN THE FALL AS THE DATES LISTED IN THE FOLLOWING TABLE

Year	PROBABILITY - SPRING					PROBABILITY - FALL				
	75%	50%	25%	10%	5%	75%	50%	25%	10%	5%
32°	Apr 7	Apr 21	May 4	May 16	Sep 25	Oct 6	Oct 18	Nov 8	Nov 20	Nov 30
28°	Mar 11	Mar 24	Apr 7	Apr 18	Oct 16	Oct 27	Nov 8	Nov 29	Nov 20	Nov 30
24°	Feb 2	Feb 18	Mar 4	Mar 17	Nov 6	Nov 17	Nov 29	Nov 29	Dec 12	Dec 12

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 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	6.29	4.20	6.84	2.63	2.35	5.97	6.60	7.15	5.79	2.85	6.05	7.18	52.90
1932	5.95	6.93	4.55	4.46	3.42	1.91	3.38	1.02	1.71	4.82	9.02	6.12	52.16
1933	3.86	3.35	4.35	4.42	3.70	1.55	1.00	1.88	1.18	12.97	6.42	6.42	52.78
1934	11.45	2.38	4.43	1.94	2.28	.88	1.17	1.18	2.17	3.70	2.80	4.00	41.45
1935	16.09	2.66	4.87	1.55	.80	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1936	7.30	4.33	3.27	2.75	2.78	2.04	1.53	1.30	2.88	2.05	1.25	6.12	37.62
1937	3.91	5.21	3.25	3.07	2.20	4.10	1.10	.89	1.56	5.18	5.22	8.50	35.65
1938	3.91	4.03	1.61	3.86	2.16	2.08	1.78	2.03	1.27	5.88	2.00	6.61	31.73
1939	7.40	4.14	1.30	2.80	1.22	2.08	1.19	2.03	2.03	5.58	4.95	34.00	30.74
1940	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1941	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1942	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1943	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1944	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1945	3.42	7.19	4.31	1.65	2.35	.32	.75	.56	1.09	5.08	3.17	6.70	36.59
1946	6.42	5.41	4.76	3.60	4.11	2.94	1.88	.61	.31	3.54	3.47	4.15	37.44
1947	6.42	5.41	4.76	3.60	4.11	2.94	1.88	.61	.31	3.54	3.47	4.15	37.44
1948	6.42	5.41	4.76	3.60	4.11	2.94	1.88	.61	.31	3.54	3.47	4.15	37.44
1949	6.42	5.41	4.76	3.60	4.11	2.94	1.88	.61	.31	3.54	3.47	4.15	37.44
1950	3.45	7.15	7.98	4.09	1.71	.90	1.78	2.41	.77	6.39	4.63	7.85	49.51
1951	9.36	7.10	4.71	1.17	2.39	.36	.71	.71	1.02	5.02	4.15	5.26	42.76
1952	2.89	2.57	4.20	2.13	1.65	2.59	.64	.46	1.02	1.92	.91	5.28	42.76
1953	11.69	2.40	2.63	2.45	1.27	1.53	.68	.31	3.10	3.23	7.90	7.93	47.52
1954	2.89	3.96	2.50	2.51	1.56	1.77	1.60	2.59	2.46	1.29	10.00	3.64	38.77
1955	2.97	3.56	2.83	2.66	2.11	1.92	1.75	.39	1.46	4.96	9.35	5.30	39.30
1956	5.42	3.01	3.37	.37	.84	3.90	.32	1.61	4.37	6.65	2.69	7.22	39.97
1957	2.78	3.59	4.53	2.53	1.04	2.14	1.17	1.17	.79	2.68	5.57	32.91	39.97
1958	5.47	3.95	1.15	2.03	2.11	1.99	.00	.93	1.41	3.95	6.68	33.77	39.97
1959	6.92	4.18	3.49	4.02	2.40	2.12	.52	.51	1.26	3.47	6.28	4.43	42.89
1960	6.41	3.52	3.38	2.50	3.73	.87	.71	3.33	1.41	4.90	4.44	4.55	39.05

STATION HISTORY

The first weather records in Elkhart began in August 1893. Weather records have been continuous since 1893, other than the following brief periods: June 1899-August 1902; December 1906-August 1907; and 1918-August 1917 and July 1924-February 1925. The station has remained within one mile of the city and the elevation has ranged from 40 to 67 feet above sea level. The following have served as cooperative weather observers since the station was established:

Joseph P. Dorr & family	Aug. 1893-May 1899	J.C. O'Neill	Aug. 1917-Aug. 1922
Merrill S. Hill	Sep. 1899-Oct 1905	Harry W. Balch	Sep. 1922-Jul 1924
Rev. Francis W. Mowand	Nov. 1905-Dec. 1906	Oliver L. Stevenson	Feb. 1924-Nov 1924
E.L. Bond	Nov. 1906	J.W. Rietz	Dec. 1924-Feb 1925
W.L. Bond	Nov. 1907	Mrs. C.C. Bond	Mar. 1925-Feb 1925
Wm. Ruting	Nov. 1907-July 1909	W.L. Rietz	Mar. 1925-Jul 1925
Wm. Stearns	Aug. 1909-Aug 1912	V.L. Kewell	Aug. 1925-Dec 1927
L.H. Scott	Sep. 1912-Apr 1916	Albee W. Kewell	Jan. 1928-Oct 1927
J.W. Stearns	May 1916-June 1916	Mrs. L.M. Hootston	Nov. 1927-June