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

CLIMATOLOGICAL SUMMARY

LATITUDE 47°09'
LONGITUDE 121°39'
ELEV. (GROUND) 1708 ft.

STATION GREENWATER
(18 (air) miles ESE)
Enumclaw, Wash.

MEANS AND EXTREMES FOR PERIOD 1939-1964

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)	25	25	25	25		25		25	25	25		25	25		25		25	25	25	25	25	
JAN	35.3	26.4	30.9	59	1940	-8	1950	1055	7.33	3.38	1945	24.7	98.6	1950	11.0	1954+	14	0	7	27	*	JAN
FEB	40.3	29.4	34.9	64	1963	-5	1950	845	6.45	2.60	1950	14.7	61.1	1949	18.0	1956	13	0	2	22	*	FEB
MAR	45.2	30.5	37.9	73	1942	3	1955	840	5.39	2.60	1957	14.8	48.4	1962	14.0	1943	13	0	*	23	0	MAR
APR	53.3	34.5	43.9	84	1957	26	1964+	635	4.46	1.53	1943	2.2	18.9	1945	7.0	1945	12	0	0	10	0	APR
MAY	61.1	40.2	50.7	91	1947	25	1954	445	3.36	1.33	1960	.1	2.0	1944	2.0	1944	9	*	0	2	0	MAY
JUN	65.1	45.0	55.1	92	1961+	30	1952	295	3.06	1.67	1948						8	*	0	*	0	JUN
JUL	72.5	47.8	60.2	102	1941	32	1952	150	1.12	1.32	1948						3	1	0	*	0	JUL
AUG	71.5	47.5	59.5	97	1942	33	1945	185	1.58	1.29	1950						5	1	0	0	0	AUG
SEP	66.6	43.1	54.9	91	1963+	29	1961+	305	3.57	3.24	1959						7	*	0	1	0	SEP
OCT	54.8	38.0	46.4	83	1952	24	1949	575	6.09	3.23	1959	.1	1.0	1957	1.0	1957	12	0	0	6	0	OCT
NOV	42.3	31.9	37.1	65	1962	3	1955	835	8.72	3.13	1946	6.1	23.7	1955	8.5	1955	15	0	1	17	0	NOV
DEC	37.2	29.4	33.3	64	1943	1	1964	985	9.16	3.59	1946	14.3	80.0	1948	11.5	1953	16	0	4	23	0	DEC
Year	53.8	37.0	45.4	102	1941	-8	1950	7150	60.29	3.59	1946	77.0	98.6	1950	18.0	1956	127	2	14	131	*	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.

NARRATIVE CLIMATOLOGICAL SUMMARY

The Greenwater area, located in the foothills along the western slope of the Cascade Mountains, is 18 (air) miles east-southeast of Enumclaw and near the western border of the Snoqualmie National Forest. It is on U.S. Highway 410 which follows the White River valley from the Puget Sound lowlands into the eastern section of Mt. Rainier National Park. The climatological station is located on the Greenwater River, one mile above the confluence of the Greenwater and White Rivers. This is a forested area where most of the original timber was cut many years ago and the second-growth trees are now good size. Numerous summer homes are located along the rivers. Bear, deer, elk and other animals roam the forest. Forest, streams and the mountains offer many opportunities for outdoor recreation.

The climate is influenced by terrain, prevailing winds from over the ocean, distance and direction from the Pacific Coast. In an easterly direction, the Cascade Range, elevation 5000 to 7000 feet with snowcapped peaks in excess of 10,000 feet, forms a barrier to the westerly movement of cold air from the interior of the State in winter and warm dry air in summer. Winters are cloudy and wet, summers are dry and cool.

During fall and winter, the prevailing flow of air into western Washington is from the southwest and west. This air from over the ocean is moist and near the temperature of the surface water. As the air moves inland and rises along the windward slopes of the foothills and mountains, cooling and condensation occur. This results in a wet season beginning in October, reaching a peak in winter, then decreasing in spring. Winter precipitation may fall as rain or snow. This area in the Greenwater River valley is near the lower edge of the snow line along the western slope of the Cascade Range. Winter season snowfall has ranged from 22 to 177 inches. In one of the lighter snowfall winters (1957-58), snow reached a depth of 14 inches and the ground was covered from mid-December until the last of January; while in one of the heavier snowfall seasons (1955-56), snow remained on the ground from November 11 until April 24, reaching a depth of 44 inches in February and a maximum depth of 54 inches on March 9. In the higher elevations, snow can be expected after mid-October and to remain on the ground until June. During the latter half of November and December, snowfall in the higher elevations is often followed by heavy rain. Runoff from melting snow and rain result in flooding along streams in the lower valleys.

In an average winter, afternoon temperatures range from 30° to 40° and nighttime readings from 20° to 30°. The coldest weather occurs when an outbreak of cold air from Canada or east of the Cascades reaches western Washington. When this happens, minimum temperatures may drop to 5° and maximums remain below 20°. Within a few days, the colder air is replaced by warmer air from over the ocean. Below freezing temperatures are recorded on most nights between the last of October and mid-April.

In late spring and summer, the prevailing flow of air into western Washington is from the west and northwest. As the air moves inland, it becomes warmer and drier, producing a dry season beginning in May and reaching a peak between mid-July and mid-August. Summer precipitation frequently occurs as showers and a few thunderstorms can be expected.

Afternoon temperatures in the warmest summer months are in the mid-70's and nighttime readings in upper 40's. Maximum temperatures reach 80° to 85° on several days and 90° or higher is recorded on 5 to 10 afternoons in the warmer summers. The temperature drops rapidly after sunset, therefore, the nights are always cool. The highest temperature and lowest relative humidity are recorded during periods of easterly winds. Warm dry easterly winds seldom continue longer than two to four days before cooler moist air from over the ocean moves inland.

The number of clear or only partly cloudy days each month increases from approximately five in winter to between ten and fifteen in spring and fall, and twenty or more in 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
1939	-	33.4	35.2	45.5	51.2	53.0	60.2	61.6	54.2	46.4	40.0	57.5	-
1940	35.1	37.2	43.0	45.9	54.0	57.4	60.0	60.4	58.0	49.0	35.0	35.0	47.5
1941	33.8	38.8	45.2	47.6	50.6	55.8	64.4	61.4	52.2	47.4	41.4	34.4	47.8
1942	32.4	35.6	39.3	-	48.6	-	61.4	62.7	56.0	-	-	33.6	-
1943	28.6	36.6	37.3	46.2	48.4	52.7	59.3	57.4	-	-	-	33.2	-
1944	29.6	33.7	36.3	44.4	50.2	55.4	61.0	58.8	55.6	47.8	35.2	30.9	44.9
1945	32.6	35.0	36.5	41.3	51.5	53.6	61.0	60.2	52.2	47.0	34.8	30.8	44.7
1946	32.0	33.2	37.6	43.6	54.0	54.9	61.2	60.4	54.0	42.3	33.8	32.2	44.9
1947	28.4	36.0	41.6	46.7	55.3	55.2	59.6	58.7	55.0	46.6	38.4	33.2	46.2
1948	30.6	31.6	36.2	40.8	48.4	58.2	58.2	58.8	52.6	44.8	35.9	28.1	43.7
1949	22.0	29.9	37.1	42.9	53.4	54.0	57.2	59.5	55.6	42.6	42.0	32.3	44.1
1950	21.4	30.6	35.5	40.3	47.8	-	-	-	-	-	-	-	-
1951	-	-	-	-	-	-	-	-	-	-	-	-	-
1952	-	-	-	-	51.4	52.7	61.0	59.8	56.6	50.0	33.1	-	-
1953	35.5	36.0	38.7	43.3	49.1	51.7	60.2	59.7	55.4	47.7	40.1	34.9	46.0
1954	30.4	33.4	35.5	41.0	50.3	52.1	56.3	56.3	53.8	44.5	41.7	33.0	44.0
1955	32.1	32.3	32.7	39.1	46.1	54.4	56.8	57.4	53.1	45.7	31.4	30.7	42.6
1956	29.9	29.5	34.2	43.8	53.5	52.9	61.1	59.4	53.8	43.7	36.3	34.2	44.4
1957	26.1	32.9	38.1	45.3	53.5	56.3	57.5	57.1	58.8	45.6	36.4	35.6	45.3
1958	34.3	41.7	39.3	44.4	56.7	60.2	65.4	62.6	54.6	48.2	37.6	37.8	48.6
1959	32.5	35.1	39.0	45.1	48.8	55.8	61.6	57.6	52.9	47.8	37.9	33.7	45.6
1960	31.0	35.3	39.2	44.9	47.8	55.7	62.4	57.9	54.8	47.9	36.8	32.9	45.6
1961	37.0	37.8	40.7	43.4	49.9	59.5	62.2	-	51.8	45.4	35.2	33.1	-
1962	31.4	36.7	37.2	46.4	47.0	54.2	58.7	58.6	56.1	46.1	39.9	35.1	45.6
1963	29.4	42.4	39.2	42.7	51.3	54.0	57.3	59.6	59.4	48.5	38.7	35.1	46.5
1964	33.7	35.1	38.4	41.8	47.9	54.6	59.3	57.5	52.6	49.1	35.9	29.9	44.7

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1939	-	10.04	6.27	2.25	2.50	3.02	2.17	.68	3.78	5.05	6.01	8.74	-
1940	2.64	10.88	5.01	5.95	2.09	1.47	2.02	1.15	3.24	5.33	7.59	5.13	52.50
1941	4.29	2.40	3.02	3.81	5.28	1.88	.32	2.62	7.14	6.76	6.37	11.82	55.73
1942	3.80	4.69	5.49	4.70	5.23	-	2.40	.72	.71	-	-	11.97	-
1943	5.02	5.85	8.10	4.99	4.85	4.13	.90	1.79	-	-	-	7.59	-
1944	4.22	5.05	3.63	3.02	3.87	1.73	.23	.73	5.45	1.51	5.09	4.31	38.84
1945	10.17	6.83	6.44	7.31	3.41	1.51	.16	.62	9.04	4.97	10.07	8.88	69.41
1946	9.79	8.56	6.80	4.88	1.44	4.08	1.08	.27	2.46	7.74	9.66	13.25	70.01
1947	9.89	3.57	4.46	4.74	1.37	6.26	1.15	1.10	3.66	10.33	12.14	7.15	65.82
1948	6.11	8.90	4.56	4.00	6.04	5.46	3.03	2.83	3.38	4.12	10.22	11.88	70.53
1949	3.35	10.57	2.70	3.26	2.11	2.07	1.49	1.22	1.46	7.56	11.88	10.41	58.08
1950	10.01	8.89	9.01	6.38	2.91	3.04	.88	2.76	2.97	8.07	11.46	10.91	77.29
1951	10.61	8.32	6.36	1.06	4.23	.50	.17	.91	5.78	7.64	6.66	6.13	56.37
1952	3.82	4.66	4.35	2.26	3.00	3.21	.38	.82	1.09	1.32	.93	4.95	30.79
1953	18.74	5.78	3.85	4.09	3.74	4.02	.71	1.76	3.12	4.29	8.79	18.09	76.98
1954	11.62	4.38	2.82	4.92	3.07	4.88	1.41	1.58	2.42	4.05	6.34	7.18	54.67
1955	4.96	6.78	6.47	5.66	2.69	2.30	2.54	.11	2.57	10.82	12.66	10.59	67.95
1956	8.57	5.60	8.91	1.44	2.32	3.86	.47	1.20	3.04	7.84	3.99	11.22	58.46
1957	3.84	4.93	7.29	4.04	2.42	3.19	.81	2.03	.88	5.00	5.79	9.79	50.01
1958	7.13	4.98	1.93	8.60	1.54	3.54	.01	.78	3.92	7.98	16.24	11.74	68.39
1959	12.61	4.75	6.27	5.43	3.15	3.81	1.45	1.57	10.30	10.52	11.35	7.00	78.21
1960	3.89	5.33	4.86	3.89	7.51	2.41	.06	3.36	1.89	6.92	12.99	4.41	57.52
1961	7.87	14.65	3.66	4.94	2.94	1.66	1.06	.47	3.88	5.74	5.68	10.45	63.00
1962	5.56	1.46	5.02	4.63	3.66	1.41	.91	4.24	2.95	3.12	10.47	7.48	50.91
1963	2.05	6.56	6.64	4.55	2.21	2.47	2.16	2.24	1.02	4.76	8.09	6.03	48.78
1964	12.57	3.30	6.32	5.22	3.65	4.62	1.41	3.44	4.98	4.66	8.90	10.98	70.05

MONTHLY AND SEASONAL SNOWFALL

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1942-43						22.0	32.0	7.0	23.5				84.5
1943-44						.6	5.6	9.4	4.6	.5	2.0		22.2
1944-45						4.7	1.2	10.5	7.7	18.9			43.0
1945-46					22.8	9.8	21.2	27.2	5.1	1.0			87.0
1946-47				.2	17.3	10.2	33.6	3.4	T	2.2			66.9
1947-48					2.4	8.2	13.3	23.2	14.9	1.4			63.4
1948-49					6.5	80.0	27.4	61.1	2.4	T			177.4
1949-50					T	32.7	98.6	16.3	12.6	3.6	1.0		161.2
1950-51					10.1	13.0	40.1	13.6	44.8				121.6
1951-52				T	2.5	23.9	31.1	7.0	10.2	T			74.7
1952-53						9.7	10.4	7.8	T	T			27.9
1953-54					1.5	19.6	73.7	6.3	6.6	1.8			109.5
1954-55					T	8.3	15.5	21.1	33.7	6.5			85.1
1955-56				T	23.7	15.4	37.2	41.0	36.9				154.2
1956-57				T	1.8	4.7	37.9	28.1	14.2	1.0			87.7
1957-58				1.0		22.4	.5		4.2	.5			28.6
1958-59					10.0	1.5	22.4	14.0	5.1		.5		54.0
1959-60					T	4.0	21.1	2.4	21.0	1.3			49.9
1960-61					15.4	3.7	T	19.3	8.3	.5			47.2
1961-62					3.5	27.6	13.6	4.3	48.4	.6			98.0
1962-63					2.7	2.2	8.8	2.0	12.2	2.5			30.4
1963-64				.5	.8	1.1	46.3	8.8	27.4	8.0			92.9
1964-65					18.5	37.3	32.8	13.3	8.0				109.9

SNOW DEPTH

ON GROUND 1ST MONTH

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1942-43						1	T	16				
1943-44							1	4	4			
1944-45						1		1	5	4		
1945-46						6	2	19	18			
1946-47						6	5	14	3			
1947-48							1	6	8	7		
1948-49							52	34	41	22		
1949-50							15	49	24	18		
1950-51							3	14	10	13		
1951-52							14	16	10	1		
1952-53						T	5					
1953-54							T	24	12	1		
1954-55							2	4	17	10		
1955-56						6	13	29	36	22		
1956-57								20	18			
1957-58							7		3			
1958-59							2					
1959-60							3	2				
1960-61						3	2		5			
1961-62							4	1	7			
1962-63						2		4	T	4		
1963-64								16	5			
1964-65						2	22	14	6			

ON GROUND 15th MONTH

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1942-43						6	4	8	6			
1943-44							3	4	2			
1944-45							T	3	5			
1945-46					5	8	9	28	9			
1946-47						3	22	7				
1947-48					2	2	6	10	10	T		
1948-49						29	35	64	32	8		
1949-50						5	38	29	22	9		
1950-51							7	11	26	T		
1951-52					3	2	19	12	6			
1952-53						2	3					
1953-54					2	6	11	20	8			
1954-55						1	4	3	17	3		
1955-56					5	7	19	27	44	13		
1956-57					T		7	23	14			
1957-58							3					
1958-59							1	3				
1959-60							10	T	4			
1960-61					T	T						
1961-62						8	5		8			
1962-63							2					
1963-64							10	12	4			
1964-65					2	7	17	12	2			

STATION HISTORY

The first climatological station in the Greenwater area was located at the residence of Clarence M. Stout from November 1, 1939 to August 31, 1943. This location was .3 of a mile east of the highway and at an elevation of 1675 feet. The weather equipment was moved a short distance to the residence of John E. Greiner who served as cooperative observer from November 23, 1943 until December 1965. This location was along the south bank of the Greenwater River and .4 of a mile east of highway 410.