NOAA Technical Memorandum NWS WR-224

CLIMATE OF WENATCHEE, WASHINGTON

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U.S. DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Weather Service

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and is approved for publication by
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TABLE OF CONTENTS

LIST OF TABLES, MAPS, AND GRAPHS

CLIMATE OF WENATCHEE, WASHINGTON

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I. INTRODUCTION

The purpose of this publication is to consolidate weather records of the Tree Fruit Research Center and the Wenatchee Weather Office. The intent is to publish a climate summary of interest to the general public as well as those involved in the agricultural community.

The Weather Service Office, on the grounds of the Tree Fruit Research Center, is about two miles from downtown Wenatchee. Observations began at the Research Center in the late 1930s. They were initially taken by agricultural observers until the Weather Bureau Office was established and began taking observations in the 1950s. Although the official site has been moved a couple of times since the 1930s, it has always been within 150 yards of the present site. Data are incomplete for some months during the late 1930s and early 1940s.

II. AREA GEOGRAPHY

Wenatchee is located in the Columbia River Valley along the eastern slopes of the Cascade Mountains, just south of the confluence of the Wenatchee and Columbia Rivers. The Columbia River flows through the city from the north as it turns toward the Columbia Basin. The Wenatchee River flows from a northwest direction to the confluence. The observation site is in west Wenatchee at an elevation of 806 feet Mean Sea Level (MSL).

The terrain rises rapidly to elevations of 5,000 to 7,000 feet MSL within 5 to 10 miles southwest of the city. The Wenatchee Mountains lie to the south and the Entiat Mountains to the north. The Columbia Plateau stretches east of the city at an elevation of about 3,000 feet MSL.

The valleys along the Columbia and Wenatchee Rivers comprise an important fruit tree producing area of Washington. Orchards are located on almost all of the level terrain along the rivers and in the foothills, where irrigation is possible.

The Cascade Mountains form a north-south climatic and topographic barrier across the state approximately 50 miles west of the city.

III. CLIMATE OVERVIEW

The topographic barrier of the Cascades blocks some of the moderating effects of the Pacific Ocean, resulting in four distinct seasons. The prevailing

westerly flow of air over the Cascade Mountains results in a dry and somewhat milder climate than is usually experienced at this latitude. Annual precipitation amounts decrease significantly from the crest of the Cascades to the Wenatchee area. Annual precipitation averages about 10 inches at the Weather Service Office, with an average of about 37 inches of snow each winter.

Most precipitation is associated with storms passing over the region from the Pacific Ocean. These storms are more intense and frequent from late October through early May. Summertime precipitation generally occurs with thunderstorms and is frequently quite light and widely scattered. Intense summertime showers can occur, however, resulting in local flash flooding.

Dry spells of a month or more with no measurable rain occasionally occur from mid-summer to early fall. These periods usually lead to an increase in fire danger in nearby forests and rangeland.

Average daytime highs normally reach the 70s°F during the spring and fall. Temperatures during the summer normally range from the mid-80s°F to near 90°F, although highs commonly soar into the 90s°F and occasionally top 100°F.

Daytime temperatures during the winter are normally in the 30s°F with overnight lows in the low 20s°F. Interestingly, January has the greatest year-to-year variance in mean temperature. Some Januarys have been mild and wet (e.g., 1990), while others have been extremely cold and dry (e.g., 1957).

The Wenatchee area often experiences cold arctic outbreaks originating in southern British Columbia and the Yukon. These outbreaks can produce several days of below zero temperatures. Outbreaks with temperatures below 0°F lasting a week or more are rare, but have occurred every 20 years or so.

IV. SUMMARY TABLE

Specific climatological data are compiled in the Summary Table on page 7.

V. PRESENTATION OVERVIEW
(a) TEMPERATURE DATA

Temperature tables and graphs have been generated from 52 years of records for Wenatchee. Temperature departure charts for each month provide a quick reference for significant hot and cold spells. For example, use the charts on page 39 to find the coldest winter on record, or find the coldest January this past century on page 8. Opposite the chart for each month is a table of the record and normal temperatures for each date of each month.

The graph of July temperatures on page 21 shows normal highs are near 90°F and the graph on page 9 shows normal lows in January are near 20°F. For example, one could refer to the tables of temperatures to find the

warmest week of the year. Page 21 shows the warmest period of the year is the week of July 20 through the 27, when the high temperature averages 90 degrees.

The graph on page 34 shows some more subtle features of the climate in Wenatchee. Note, for example, that the standard deviation lines diverge in the winter months. This demonstrates that a larger range of temperatures from year to year is considered normal (within one standard deviation). Depending on the prevailing weather pattern in January, the mean temperature can range from the lower 20s°F, to the mid 30s°F. The least deviation in temperatures occurs in the summer months when the weather pattern is much less likely to vary from year to year.

The graph on page 35 shows the deviations of the high and low temperatures (instead of the mean). This graph shows that during the winter months, the low temperatures vary more than the high temperatures. In the summer, high temperatures vary more from year to year. We can say that high temperatures are more sensitive to different summer weather regimes, and low temperatures are more sensitive to different winter weather regimes. Intuitively, we might say that unusually rainy summers have a greater effect on high temperatures, while unusually stormy and windy winters have a greater effect on low temperatures. This may be a gross oversimplification, but the rainy summer/windy winter idea may account for at least some of the effect described.

Pages 36 through 39 total the monthly temperature departures by season. It is important to refer to the individual months included in a season before one concludes that, for example, if spring 1955 was the coldest on record, then surely May 1955 was also the coldest on record. Turning back to page 16 (May temperature departure), one can see that May 1984 was actually colder than May 1955. A remarkable example of consistent cold weather was 1955, with temperatures not recovering until August (the first month without a significant negative departure). Other unusual seasons include autumn 1985, which was the coldest on record due mainly to the outstandingly cold November of that year. 1985 was also the second coldest year on record.

One might use the chart on page 37 to find that the warmest summer on record was 1958 (also the warmest year on record). The table on page 40 shows that there was indeed a remarkable hot spell in August, with six consecutive days over 100 degrees. The table of hot and cold spells includes the November 1985 and January 1950 cold snaps.

Frost and Freeze data are given on page 41. One can see that the average last frost falls on April 24, while the first frost averages October 6. Dates of the average first and last freeze are also given. Arbitrarily, anything less that 29°F was used to define a "freeze." Wenatchee averages 165 frost-free days, with 193 freeze-free days.

(b) PRECIPITATION DATA

Monthly precipitation data follow on pages 42 and 43.

Snowfall data are on pages 44 through 47. Wenatchee averages 37.5 inches of snow each winter season, with a standard deviation of 21 inches. One could say a snowfall between 17 and 59 inches per season is normal. The greatest snowfall total occurred in 1971-72, followed closely by the season 1992-93, both with about 76 inches of snow. Wenatchee averages just over 23 days with measurable snow, but again note the large standard deviation of nine days (snowfall from year to year in Wenatchee is rather variable). Heavy snowfalls only occur about five times per season (heavy being arbitrarily defined as more than three inches). The large standard deviation gives a normal range of two to eight days of "heavy snow." The maximum 24-hour snowfall in Wenatchee (for the period of record) is 16.5 inches falling on December 9, 1971. Heavier snowfalls have likely occurred in the past, however, the data before 1964 are incomplete.

A table of extended dry spells is located on page 48. Wenatchee has a desert climate with extended dry spells being typical. The longest period with no precipitation was 103 days in the late-summer, early-fall of 1987.

(c) OTHER DATA

Thunderstorm data are shown on page 49. Thunderstorms are infrequent in the Wenatchee area compared to much of the rest of the country. Even during the peak months of July and August, just two thunderstorms are observed, on average, each month. The average number of thunderstorms in a year is just eight. Though gusty winds can and do accompany thunderstorms, rarely do wind gusts exceed 35 mph. In addition, hail is not observed with the majority of thunderstorms. When hail does accompany thunderstorms, it is rarely larger than pea size.

Pan evaporation data follow on pages 50 and 51. The greatest rate of evaporation peaks in late July, which is the warmest part of the summer. On a normal summer day, it is not uncommon to loose about .40 inches of water from the pan through evaporation. A table of historical monthly evaporation data are shown on page 51.

Soil temperatures on page 52 show that readings increase rapidly in early spring, with a maximum occurring in the first ten days of August. Soil temperatures decrease steadily through the autumn months, reaching freezing in December. It has been said that 43°F at the 6-inch depth is a critical temperature when trees begin to become active in the spring. This is the time when buds first begin swelling on the trees.

Full bloom dates for Red Delicious apples are on page 53. Full bloom is reached when at least 60 percent of the blossoms have bloomed on the north side of the Red Delicious trees in the orchard behind the Tree Fruit Research Center. The earliest full

bloom occurred on April 11, 1934. The latest full bloom occurred on May 16, 1922. Recent years have seen the full bloom occur earlier than average--until 1993, which was the 8th latest year in the 61 years of records.

The last graph in this climatological summary on page 54 shows the number of nights of frost protection. Frost protection occurs during a night when it is determined that at least one grower in the Wenatchee district initiated protection (e.g. turned on wind machines) for the trees. The average number of nights per season when frost protection occurs is 17.

VI. ACKNOWLEDGMENTS

We would like to thank Mr. Bob Robinson, former Meteorologist in Charge, Wenatchee Weather Service Office, for his encouragement and assistance toward the completion of this project. Additionally, our appreciation is extended to Mr. Jim Holcomb, former Meteorologist in Charge (retired) of the Wenatchee Weather Service Office for his review and advice in helping us with this summary.

We are grateful to Dr. Brad Colman, Science and Operations Officer, Seattle Weather Service Forecast Office, for his reviews, expertise, and suggestions in completing this Technical Memorandum.

Finally, our thanks to all the individuals who painstakingly took and recorded observations over the many years.

CLIMATOLOGICAL SUMMARY TABLE

(1940 - 1993)

TREE FRUIT RESEARCH CENTER, WENATCHEE

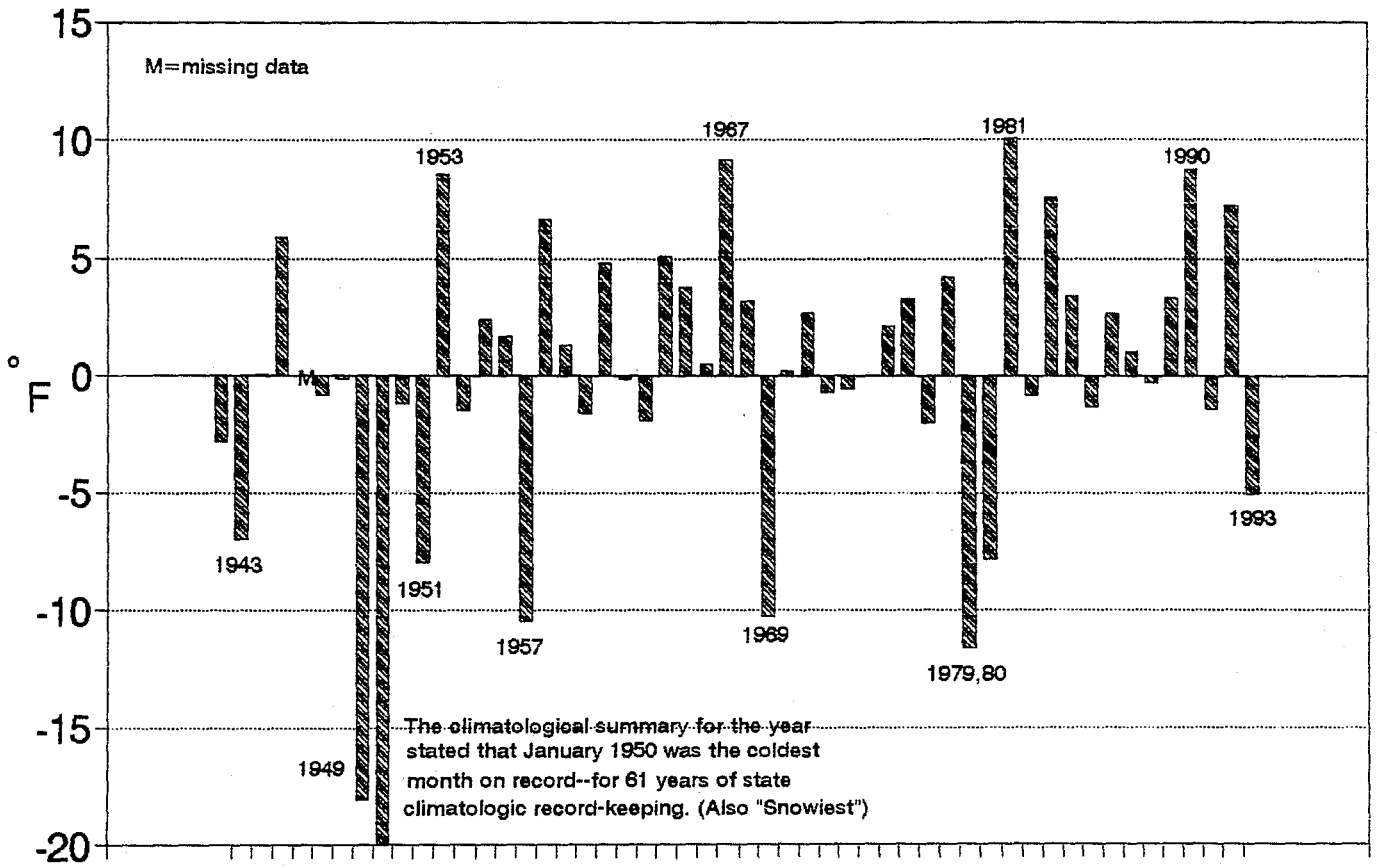
MONTH	AVERAGE MAXIMUM TEMP.	AVERAGE MINIMUM TEMP.	AVG. MEAN TEMP.	STANDARD DEV. MEAN TEMP.	AVG. PRECIP (see note)	AVG. SNOW (see note)	AVERAGE HEATING DEGREES (see note)
JANUARY	34.9	19.9	27.4	6.2	1.59	12.7	1125
FEBRUARY	43.8	25.3	34.6	4.2	1.01	5.2	842
MARCH	54.7	30.9	42.8	2.7	.72	1.3	675
APRIL	64.6	37.6	51.1	2.5	.64	T	429
MAY	73.2	45.3	59.3	2.8	.53		203
JUNE	79.6	52.4	66.0	2.8	.60		59
JULY	87.6	56.9	72.3	2.5	.24		11
AUGUST	86.6	55.1	70.9	2.5	.48		14
SEPTEMBER	77.9	46.5	62.2	2.9	.42		133
OCTOBER	63.2	36.6	50.0	2.2	.58	.1	472
NOVEMBER	45.8	29.3	37.6	3.4	1.41	3.8	815
DECEMBER	36.2	23.0	29.6	4.3	1.70	14.3	1111
ANNUAL	**62.3**	**38.2**	**50.3**	**1.6**	**9.92**	**37.5**	**5889**

NOTES:
Precipitation recorded from 1952-1992.
Snowfall recorded from 1964 through snow year 1992/1993.
Heating degrees recorded from 1964-1992.

SOURCE: National Weather Service at TFRC.

January Temperature Departure

From Normal



JANUARY

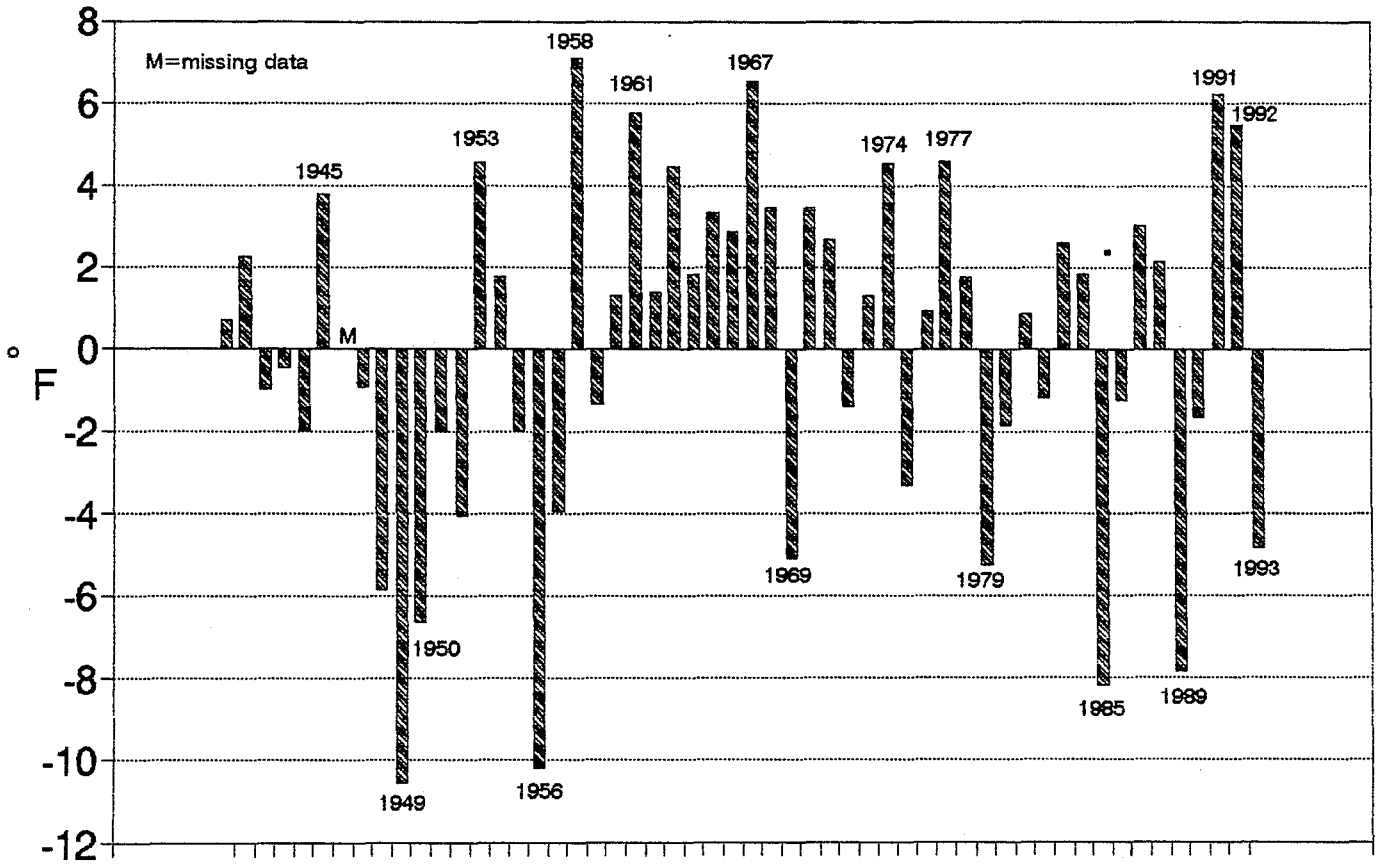
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	52	1972	33	-12	1979	22
2	56	1972	33	-8	1952	22
3	56	1989	33	-10	1949	22
4	53	1990	33	-6	1993*	22
5	56	1962	33	-6	1982*	22
6	53	1956	33	-10	1982	22
7	60	1983	33	-7	1979	22
8	53	1990	34	-6	1937	22
9	57	1983	34	-9	1949	22
10	62	1983	34	-11	1949	21
11	51	1983	34	-2	1937	21
12	52	1980*	35	-2	1949	21
13	57	1991	35	-13	1950	21
14	57	1974	35	-16	1950	21
15	54	1967	35	-9	1950	21
16	51	1989	36	-18	1950	21
17	55	1989	36	-16	1950	21
18	57	1989	36	-17	1950	21
19	52	1945	36	-3	1954	21
20	54	1967	37	-8	1937	22
21	51	1972	37	-4	1962	22
22	51	1972	37	-6	1969	22
23	54	1982	37	-12	1969	22
24	53	1981	38	-11	1957	22
25	53	1984	38	-22	1950	22
26	56	1992	38	-9	1957	22
27	55	1962	38	-11	1980	22
28	60	1984	39	-14	1980	22
29	57	1953	39	-18	1950	22
30	64	1989	39	-22	1950	23
31	63	1971	40	-23	1950	23

* LAST OF MORE THAN ONE OCCURRENCE

February Temperature Departure

From Normal



FEBRUARY

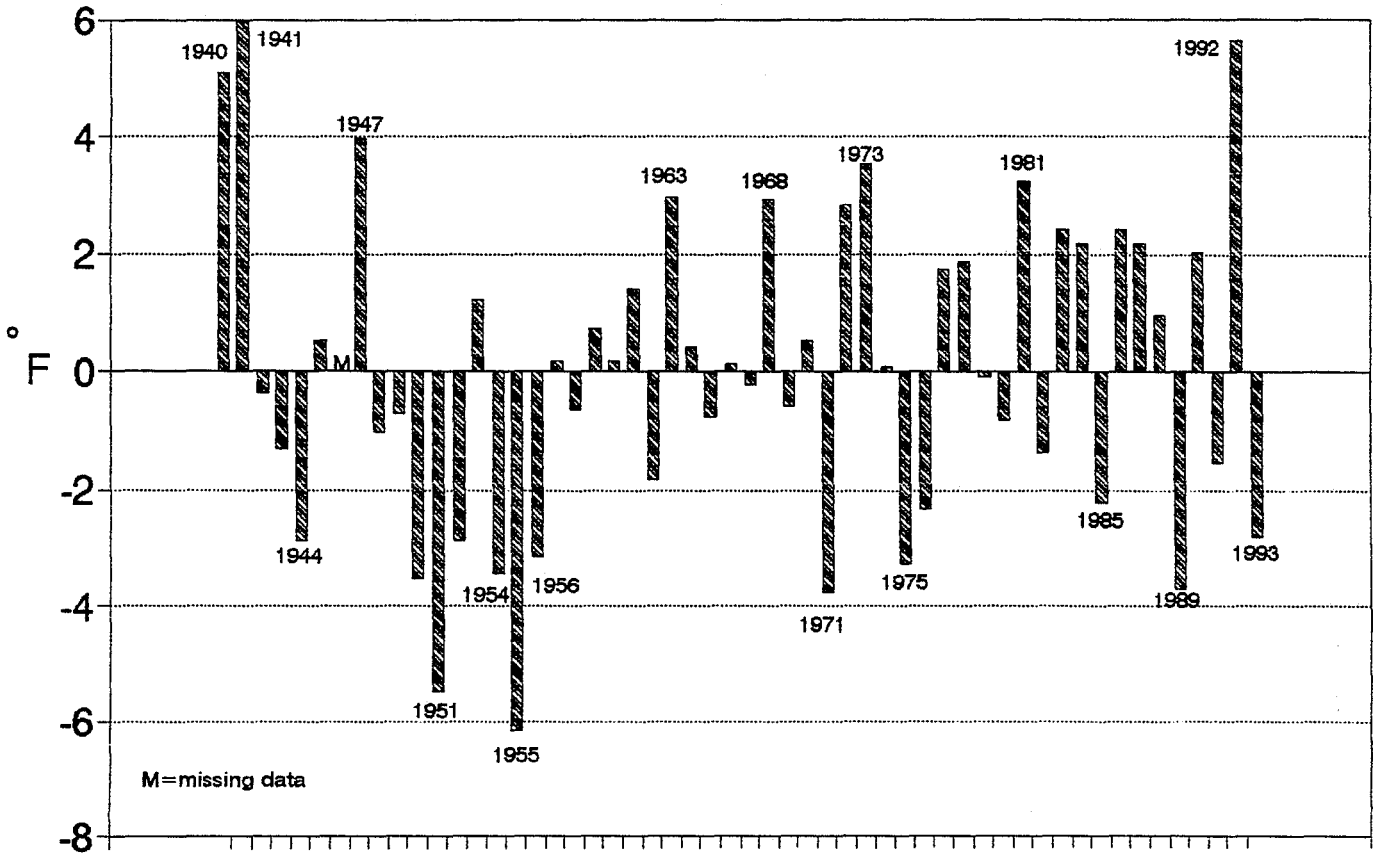
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	56	1971	40	**-24**	**1950****	23
2	51	1967*	40	-21	1950	23
3	58	1962	40	-20	1950	23
4	59	1967	41	-8	1989	23
5	54	1967	41	-5	1949	23
6	57	1967	42	-10	1948	24
7	55	1953	42	-5	1936	24
8	55	1945	42	-3	1936	24
9	57	1967	43	2	1936	25
10	63	1990	43	-2	1939	25
11	58	1967	43	-1	1948	25
12	60	1977	44	-4	1949	25
13	61	1977	45	-8	1949	26
14	56	1977*	45	-9	1936	26
15	55	1977*	45	-5	1936	26
16	64	1977	45	-10	1936	27
17	60	1977	45	-7	1936	27
18	61	1977	46	5	1956	27
19	63	1965	46	0	1936	27
20	65	1961	46	4	1936	27
21	66	1968	47	2	1952	27
22	65	1947	47	3	1957	28
23	65	1947	47	8	1936	28
24	60	1991	48	1	1936	28
25	58	1986	48	0	1936	28
26	65	1957	48	4	1993	28
27	64	1988*	48	10	1993	28
28	64	1963	49	11	1993	28
29	63	1968	49	11	1960	28

* LAST OF MORE THAN ONE OCCURRENCE
** RECORD ALL TIME LOW FOR STATION

March Temperature Departure

From Normal



MARCH

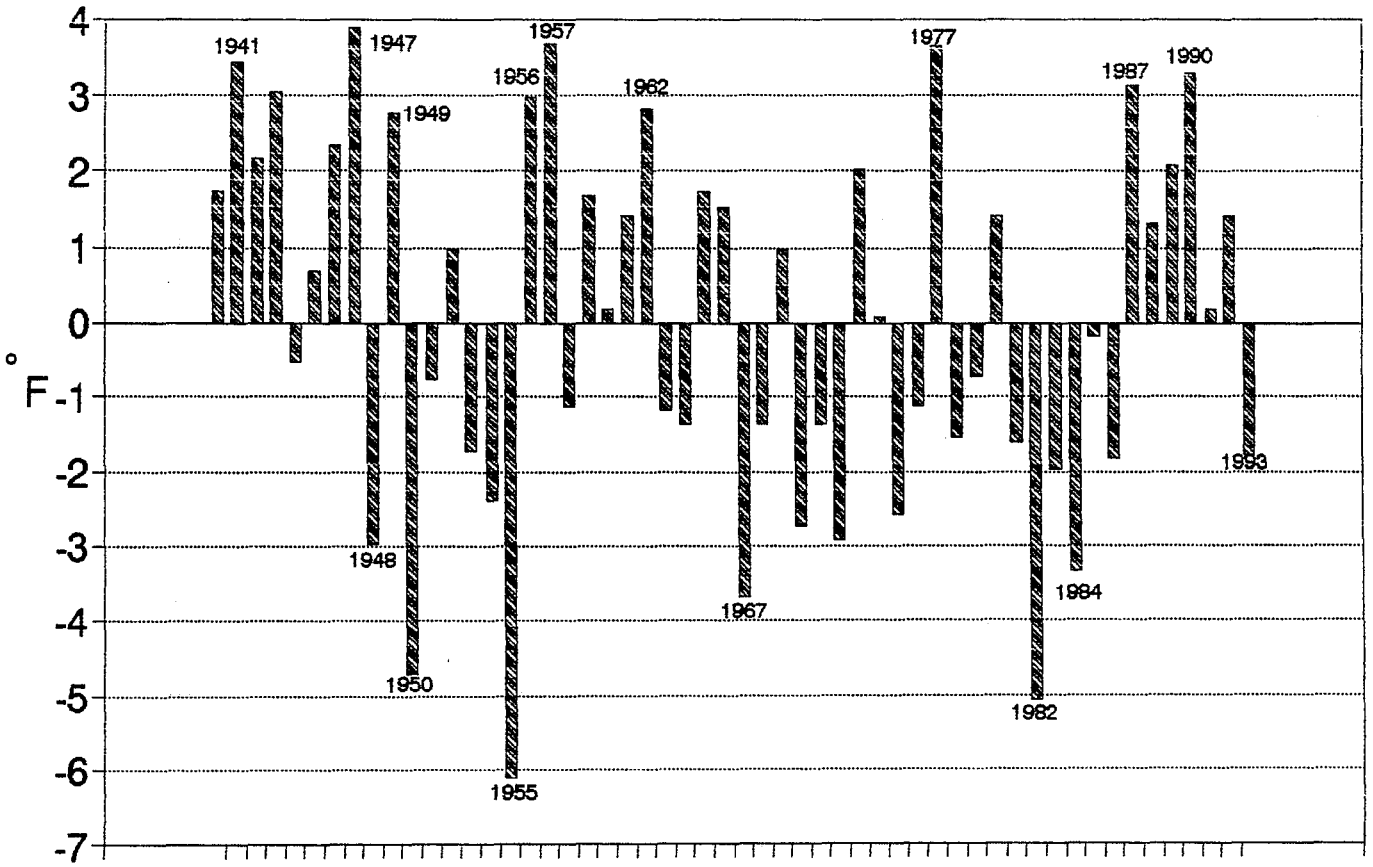
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	62	1968	49	12	1962	28
2	60	1968	50	15	1960	29
3	62	1968	50	9	1989	29
4	60	1986*	50	3	1960	29
5	64	1991	50	8	1955	29
6	64	1965	51	18	1956	30
7	67	1953	51	10	1951	30
8	66	1953	51	12	1951	30
9	68	1965*	52	8	1951	30
10	69	1965	52	13	1951	30
11	67	1965	52	13	1956	30
12	67	1992	52	16	1956	30
13	70	1992	53	20	1969*	30
14	70	1992	53	20	1944	31
15	68	1947	54	21	1943	31
16	74	1972	54	21	1982	31
17	72	1972*	54	23	1982*	31
18	73	1947	55	18	1965*	32
19	78	1947	55	16	1965	32
20	78	1947	55	20	1943	32
21	74	1960	56	24	1952	32
22	76	1940	56	21	1952	33
23	74	1960	56	23	1948	33
24	77	1960	57	16	1965	33
25	76	1960	57	22	1965	33
26	73	1941	57	22	1985	33
27	74	1966	58	19	1975	34
28	73	1966	58	20	1954	34
29	74	1966	58	17	1954	34
30	73	1990	59	22	1954	35
31	78	1992	59	28	1963	35

* LAST OF MORE THAN ONE OCCURRENCE

April Temperature Departure

From Normal



APRIL

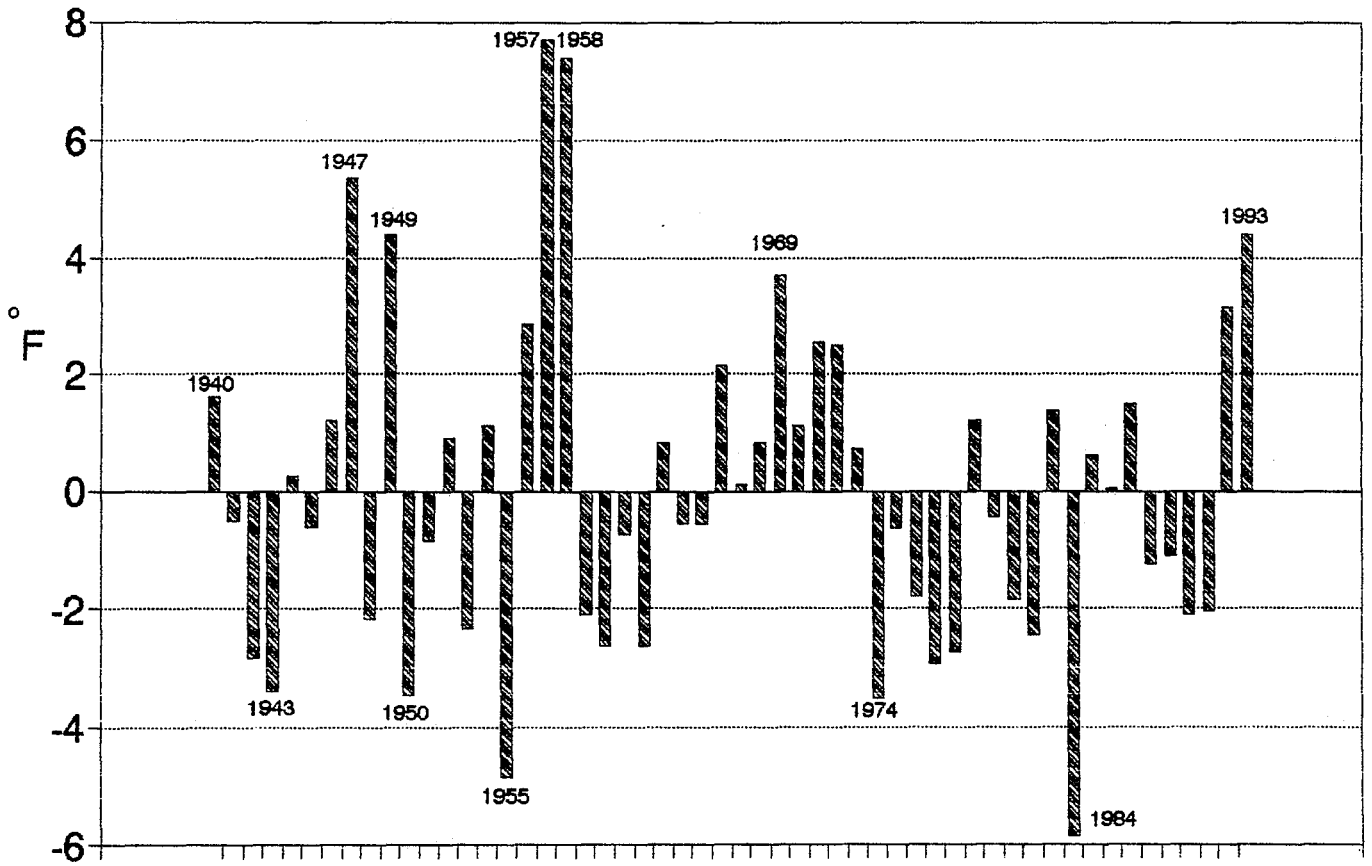
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	80	1992	59	24	1982	35
2	80	1992	59	23	1953	35
3	75	1977	60	23	1975	36
4	81	1977	60	24	1950*	36
5	79	1977	60	28	1948	36
6	82	1977	61	25	1956	36
7	82	1977*	61	26	1980*	37
8	76	1985	61	22	1952	37
9	79	1985	62	23	1952	37
10	80	1949	62	28	1984*	37
11	81	1943	62	27	1954	37
12	83	1943	63	27	1983*	38
13	88	1947	63	27	1983*	38
14	85	1988	63	26	1981	38
15	83	1943	64	25	1982	38
16	82	1947	64	27	1982	38
17	80	1962	64	28	1970*	39
18	84	1962	65	27	1964*	39
19	82	1956	65	25	1982	39
20	85	1956	65	20	1951	40
21	84	1956	66	26	1985*	40
22	81	1977	66	30	1949	40
23	89	1977	66	28	1972	41
24	94	1977	67	26	1986*	41
25	86	1952	67	28	1982	41
26	88	1946	68	28	1948	42
27	88	1987*	68	29	1984*	42
28	84	1957	68	28	1955	42
29	86	1957	69	27	1952	43
30	88	1957	69	28	1986*	35

* LAST OF MORE THAN ONE OCCURRENCE

May Temperature Departure

From Normal



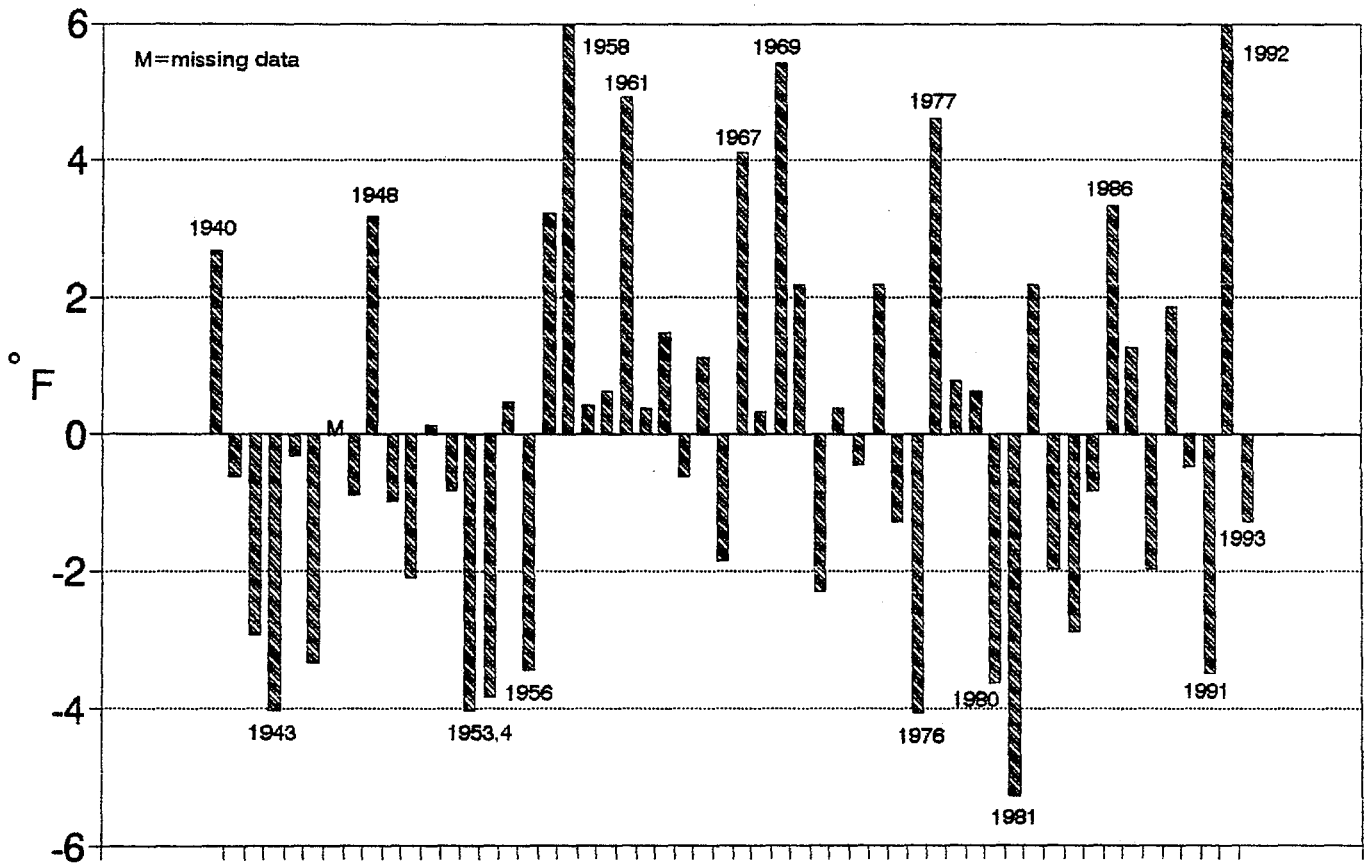
MAY

(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	85	1947	69	24	1954	43
2	86	1971	70	31	1942	43
3	89	1966	70	30	1963	43
4	91	1966	70	29	1984*	44
5	92	1992*	71	29	1981*	44
6	95	1992	71	32	1981*	44
7	93	1984*	71	33	1984*	44
8	96	1987	71	33	1983*	45
9	98	1949	72	32	1985*	45
10	97	1949	72	30	1944	45
11	95	1949	72	31	1978	45
12	98	1949	73	30	1985*	46
13	97	1949	73	34	1970*	46
14	95	1973	73	31	1986*	46
15	92	1973	74	33	1986*	46
16	91	1954	74	33	1974	47
17	94	1956	74	35	1966*	47
18	96	1956	75	34	1950*	47
19	85	1963	75	33	1987*	48
20	93	1958	75	36	1987	48
21	95	1958	75	34	1960	48
22	98	1958	76	**32**	**1960****	48
23	90	1983	76	36	1978	48
24	95	1958	76	34	1950	49
25	**100**	**1958****	76	33	1984	49
26	99	1958	76	39	1967*	49
27	97	1958	77	35	1973	49
28	97	1983	77	36	1955*	49
29	99	1983	77	36	1951	50
30	101	1986	78	36	1951	50
31	102	1986	78	38	1984	50

* LAST OF MORE THAN ONE OCCURRENCE
** LAST DAY IN SPRING OF 32 OR BELOW.
** FIRST DAY IN SPRING OF 100 OR ABOVE.

June Temperature Departure
From Normal



JUNE

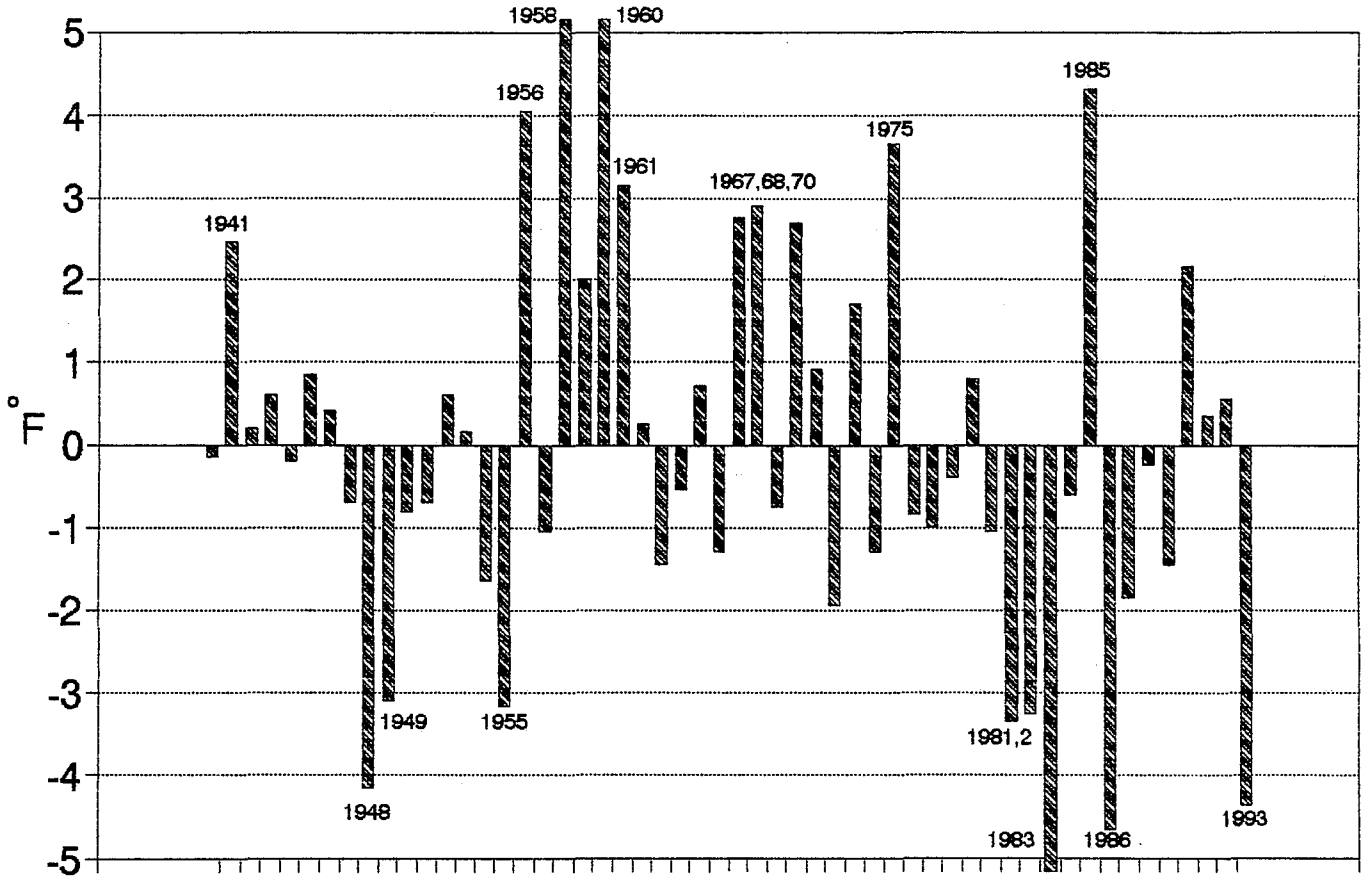
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	99	1957	78	37	1976	50
2	96	1970	78	36	1954	50
3	97	1961	79	36	1976	50
4	100	1969	79	42	1976	51
5	97	1949	79	36	1976	51
6	96	1970	79	41	1956	51
7	97	1977	80	39	1982	52
8	91	1965	80	43	1960*	52
9	94	1952	80	41	1985*	52
10	95	1965	80	38	1942	52
11	99	1955	80	39	1981	53
12	96	1940	80	40	1942	53
13	95	1974	80	36	1952	53
14	98	1974	80	40	1979	53
15	101	1963	81	40	1978	54
16	104	1961	81	45	1978	54
17	102	1961	81	39	1973	54
18	101	1961	82	38	1954	54
19	100	1982*	82	41	1955	55
20	98	1982*	82	42	1943	55
21	102	1958	83	43	1986	55
22	103	1992	83	42	1945*	55
23	102	1992	83	41	1943	55
24	102	1992	83	40	1983	55
25	101	1992	83	43	1985*	56
26	98	1970	83	42	1976	56
27	99	1992	84	43	1976	56
28	99	1987	84	41	1964	56
29	100	1948	84	43	1964	56
30	98	1987*	85	42	1975	56

* LAST OF MORE THAN ONE OCCURRENCE

July Temperature Departure

From Normal



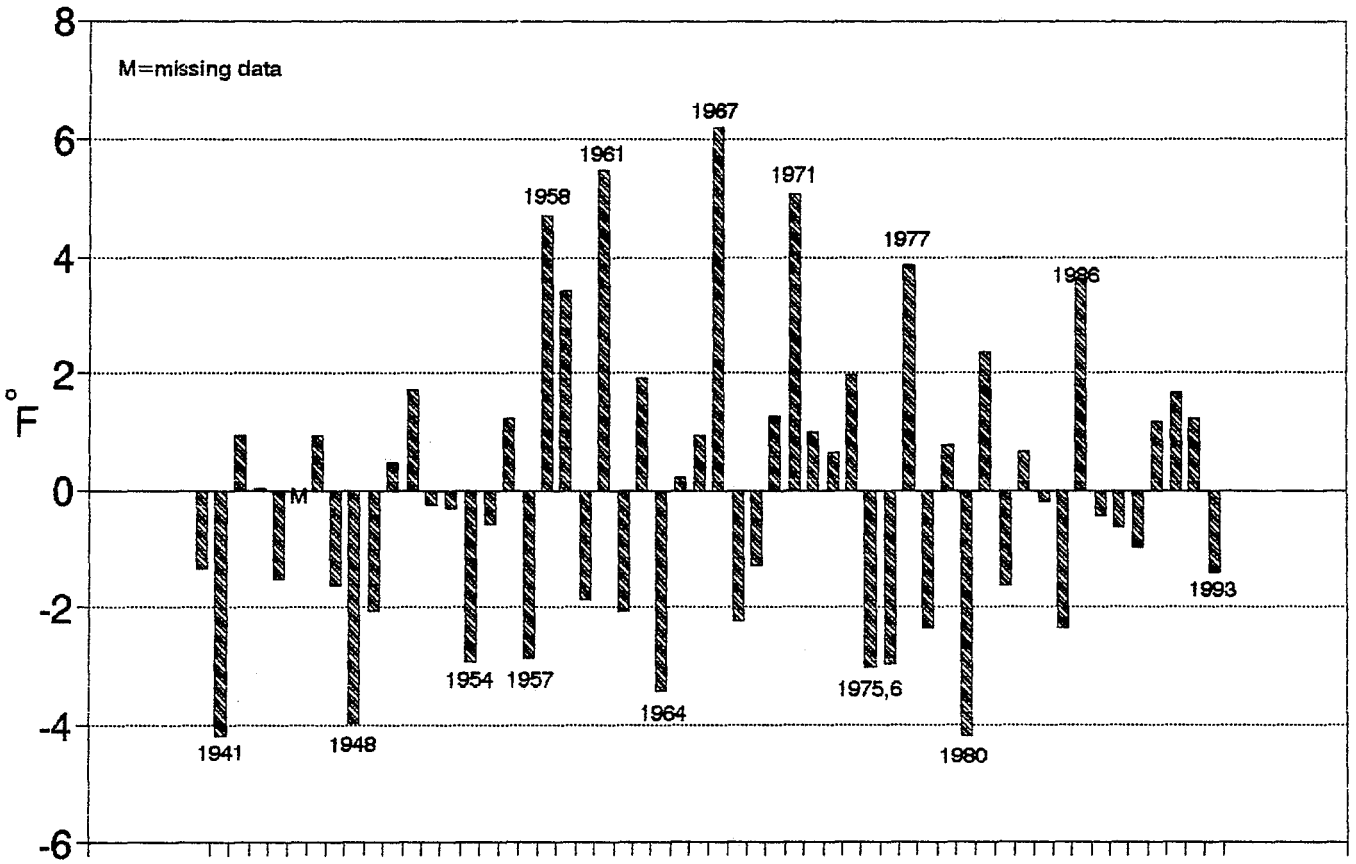
JULY

(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	99	1987	85	45	1963	57
2	101	1967	85	38	1979	57
3	99	1970	85	39	1979	57
4	103	1975	86	43	1980	57
5	104	1975*	86	40	1980	57
6	105	1968	86	40	1952	57
7	103	1953	86	39	1971	57
8	104	1968	87	38	1981	57
9	107	1952	87	43	1983	58
10	105	1952	87	44	1981	58
11	105	1990	87	45	1981*	58
12	103	1964	87	45	1974	58
13	104	1964	87	46	1950	58
14	102	1973	88	47	1982	58
15	101	1961	88	45	1986	58
16	103	1941	89	41	1986	58
17	107	1960	89	47	1986	58
18	107	1960	89	44	1986	58
19	106	1959	89	49	1972*	58
20	104	1961	90	47	1972	58
21	102	1985*	90	46	1949	58
22	106	1959	90	43	1984	58
23	104	1986	90	46	1963	58
24	101	1962	90	46	1982	58
25	105	1962	90	47	1982	58
26	104	1962	90	48	1983	59
27	103	1971*	90	49	1976	59
28	106	1958	89	45	1959	59
29	103	1973*	89	46	1959*	59
30	104	1971	89	47	1986	59
31	104	1971*	89	48	1964	59

* LAST OF MORE THAN ONE OCCURRENCE

August Temperature Departure
From Normal



AUGUST

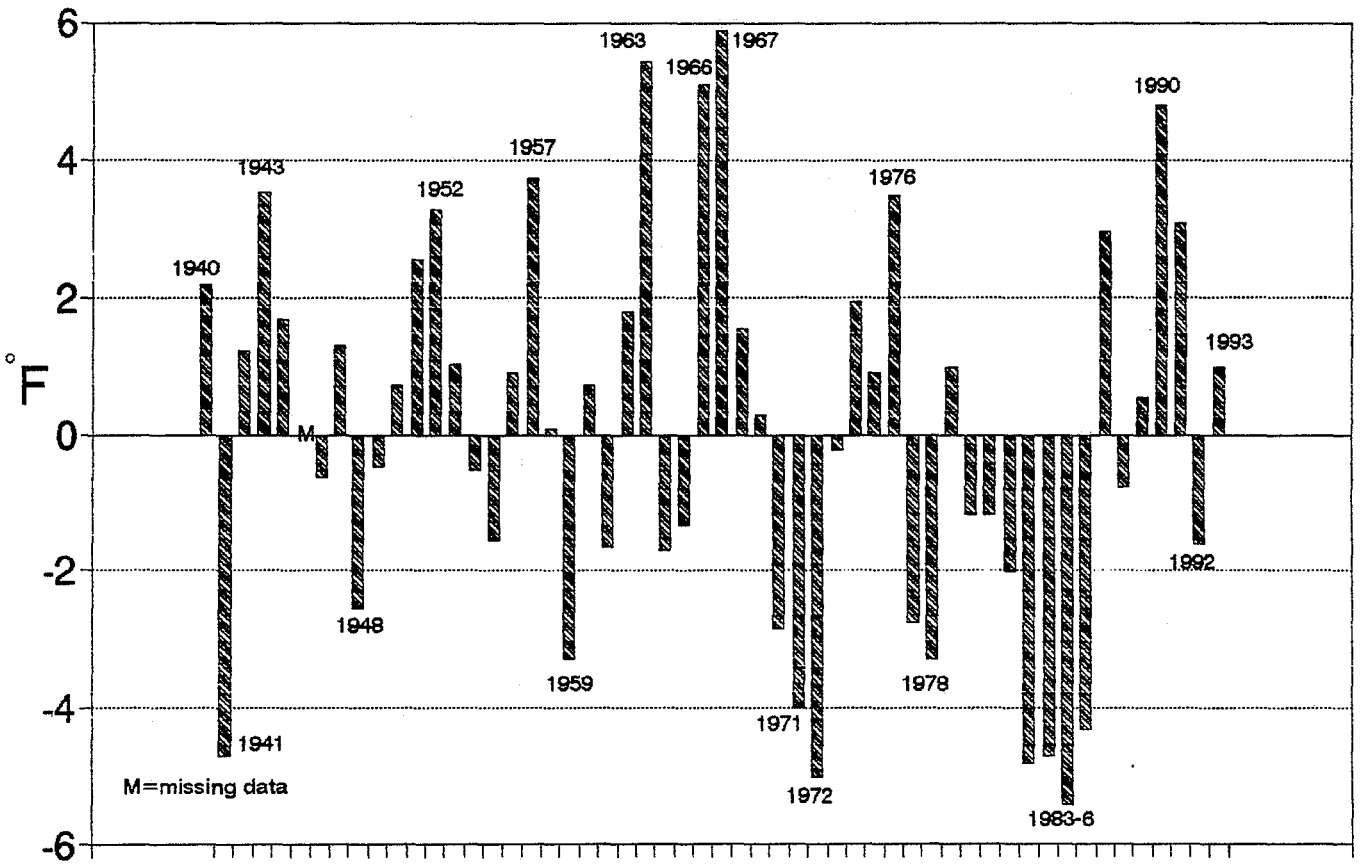
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	104	1992*	89	46	1953	59
2	103	1961	89	45	1954	59
3	**108**	**1961****	89	48	1982	58
4	107	1961	89	45	1956	58
5	103	1990	88	46	1969	58
6	103	1972	88	45	1964	58
7	105	1972	88	45	1939	58
8	105	1972	88	44	1938	58
9	103	1971	88	45	1938	58
10	104	1958	88	46	1964	57
11	102	1971	88	48	1964*	57
12	102	1961	88	48	1938	57
13	104	1977*	87	48	1984*	57
14	105	1967*	87	45	1982	56
15	102	1967	87	45	1982	56
16	104	1967	87	45	1948	56
17	104	1967	87	45	1985*	56
18	106	1967	86	45	1940	55
19	103	1977*	86	38	1973	55
20	104	1958	86	42	1939	55
21	106	1958	86	43	1987*	55
22	104	1958	85	40	1992*	55
23	104	1958	85	38	1938	54
24	106	1958	85	39	1992	54
25	105	1958	85	40	1992	54
26	96	1972	85	42	1982	54
27	98	1972	85	44	1960	53
28	103	1972	84	44	1952	53
29	100	1967	84	42	1965	53
30	99	1974	84	39	1965	53
31	100	1967	84	42	1965	53

* LAST OF MORE THAN ONE OCCURRENCE
** RECORD ALL TIME STATION HIGH

September Temperature Departure

From Normal



SEPTEMBER

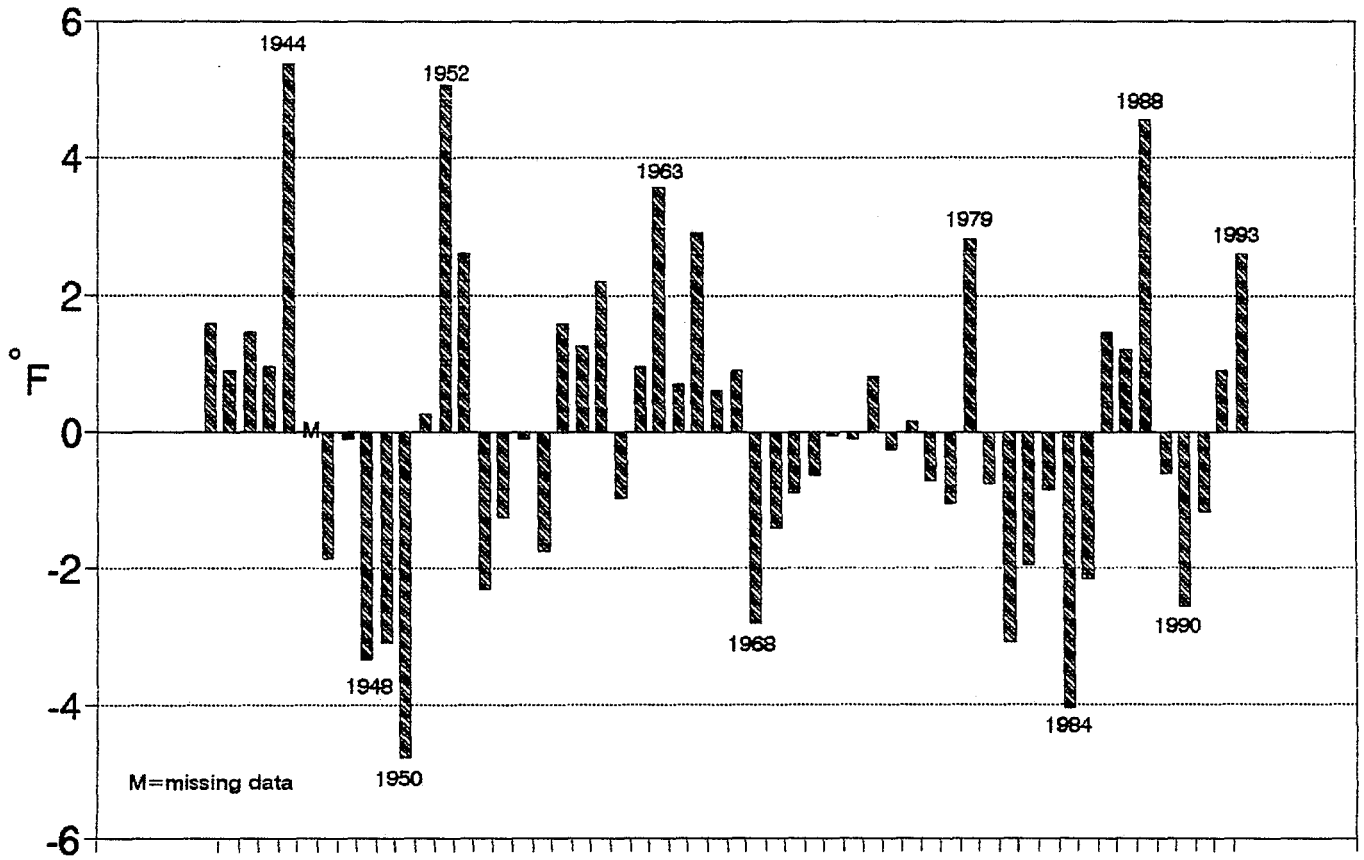
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	100	1950	83	41	1973	53
2	**100**	**1950****	83	38	1984	52
3	96	1955	83	39	1980*	52
4	96	1955	82	40	1980*	51
5	99	1955	82	40	1956	51
6	95	1990*	81	36	1992	51
7	97	1958	81	34	1992	50
8	95	1993*	81	38	1976*	50
9	97	1963	80	34	1959	50
10	95	1987*	80	36	1989	49
11	96	1990	80	36	1964	49
12	93	1943	80	34	1949	49
13	96	1960	79	**29**	**1970*****	49
14	92	1960*	79	36	1986*	48
15	95	1957	79	33	1982	48
16	94	1967	78	32	1973	48
17	97	1952	78	33	1971	47
18	96	1952	77	34	1942	47
19	90	1967*	77	32	1983	47
20	92	1967	76	29	1983	46
21	91	1967*	76	33	1983	46
22	91	1966	75	33	1993*	46
23	91	1990	75	33	1981	46
24	92	1952	74	29	1958	45
25	93	1952	74	30	1972	45
26	89	1967*	73	32	1972	45
27	88	1991	73	30	1972	44
28	90	1991	72	28	1985*	44
29	89	1976	72	24	1985*	44
30	86	1988*	72	27	1985*	43

* LAST OF MORE THAN ONE OCCURRENCE
** LAST DAY IN SUMMER OF 100 DEGREES OR HIGHER
*** FIRST DAY IN FALL OF 32 OR LOWER

October Temperature Departure

From Normal



OCTOBER

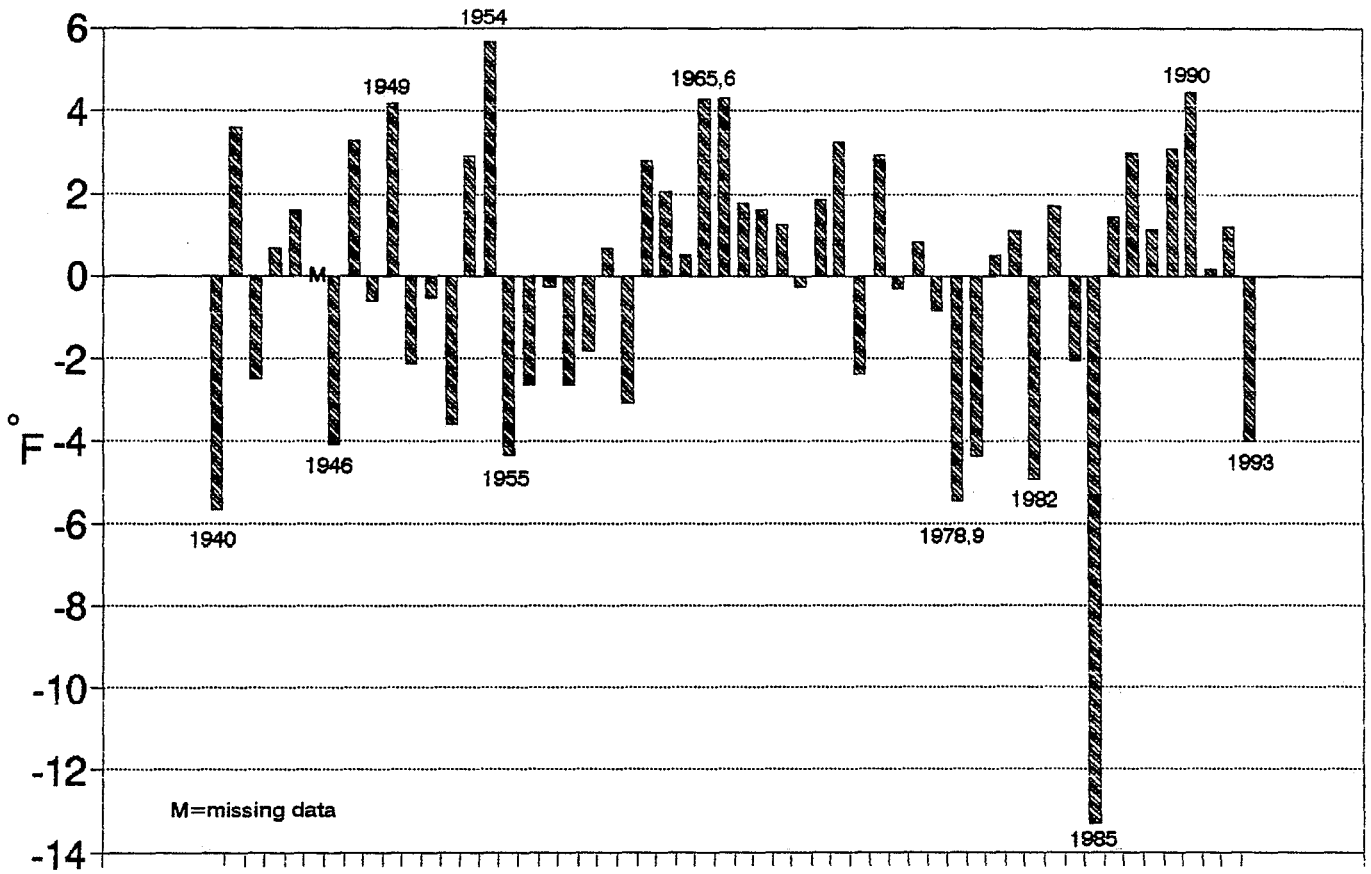
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	87	1992	72	24	1950	43
2	85	1993*	71	30	1954	43
3	84	1988*	70	29	1989	43
4	82	1993*	69	29	1981*	42
5	82	1980*	69	40	1956*	42
6	83	1980	68	28	1974	42
7	85	1988	68	27	1990	42
8	84	1988	67	25	1985*	41
9	82	1988	67	25	1985*	41
10	80	1986	66	26	1987*	40
11	81	1988	65	27	1990	40
12	80	1979*	65	26	1986	39
13	76	1961	64	23	1969	39
14	78	1961	63	23	1969	38
15	80	1963	63	22	1992	38
16	78	1963	62	25	1989	38
17	76	1960	62	23	1971	37
18	76	1940	61	24	1982	37
19	75	1981	61	20	1949	37
20	71	1962	60	21	1982	37
21	72	1952	60	20	1984	36
22	73	1962	59	21	1984	36
23	71	1988	58	23	1980	36
24	70	1936	58	24	1954	35
25	72	1987	57	22	1978	35
26	67	1987*	56	21	1978	35
27	69	1983	55	22	1970	35
28	68	1953	55	18	1971	35
29	67	1953	54	19	1991*	34
30	67	1965*	54	17	1991	34
31	75	1967	54	20	1984*	34

* LAST OF MORE THAN ONE OCCURRENCE

November Temperature Departure

From Normal



NOVEMBER

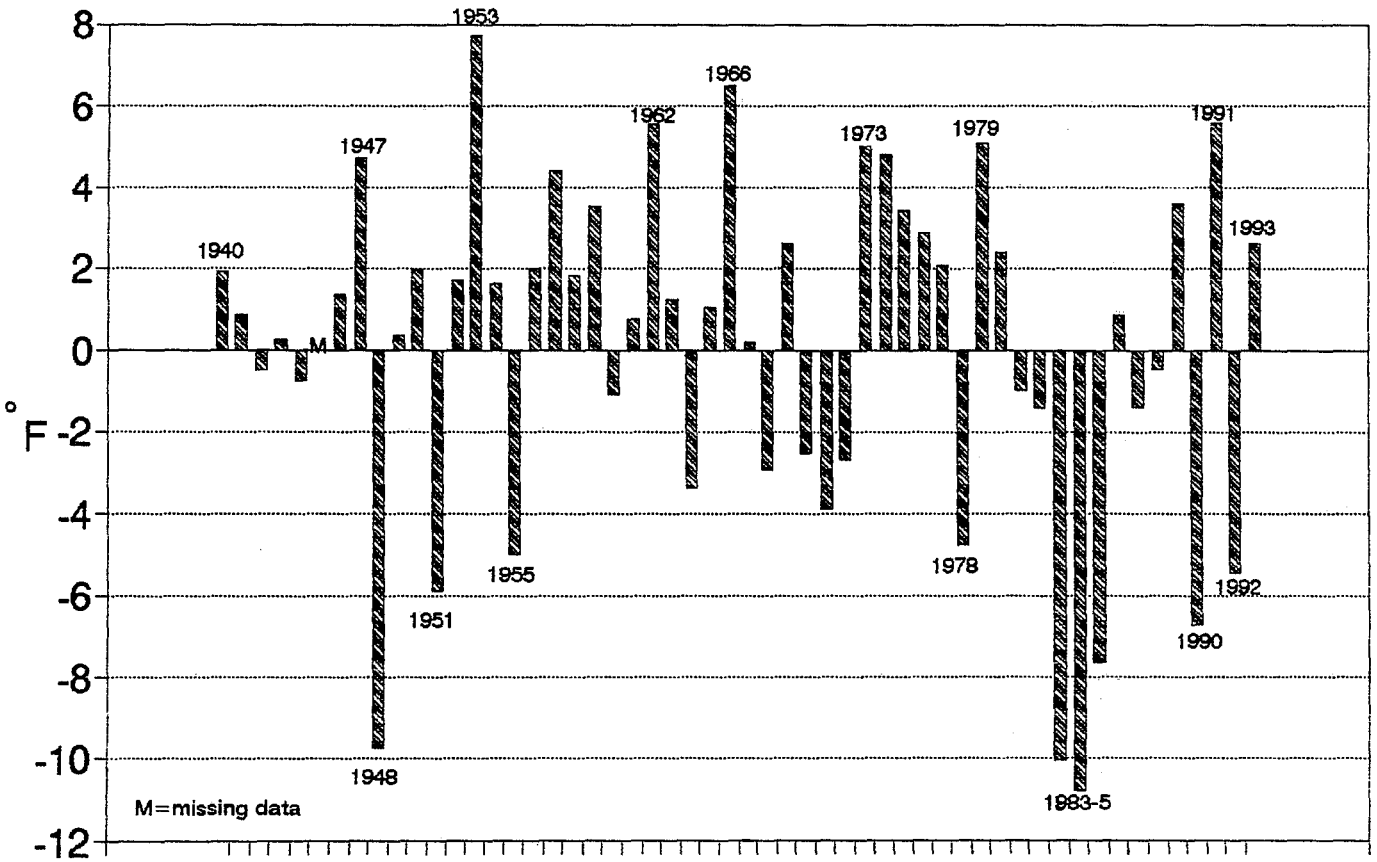
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	65	1988	53	20	1951	34
2	67	1987	52	14	1936	34
3	70	1975	52	20	1953	33
4	66	1975	51	21	1973	33
5	60	1986*	51	19	1971	32
6	61	1962	50	20	1971	32
7	60	1965	50	19	1936	32
8	60	1990	50	20	1993	32
9	73	1989	49	19	1952	31
10	70	1989	49	15	1940	31
11	63	1990	48	12	1985	31
12	58	1991	47	9	1985*	31
13	59	1957	47	7	1955	30
14	58	1953	46	4	1955	30
15	59	1975	46	1	1955	30
16	58	1960	46	0	1959**	29
17	61	1976	46	13	1955	29
18	57	1960	45	6	1985	29
19	66	1962	45	8	1985	29
20	58	1971	44	7	1985	28
21	58	1965	44	6	1977	28
22	64	1959	44	-2	1985	28
23	68	1959	43	-6	1985	28
24	68	1959	43	-7	1985	27
25	60	1949	43	0	1993	27
26	58	1949	42	-6	1985	27
27	53	1953*	42	5	1985	27
28	53	1991	42	5	1985	27
29	54	1977	41	7	1985	26
30	51	1953	41	-3	1985	26

* LAST OF MORE THAN ONE OCCURRENCE
** FIRST DAY IN WINTER OF ZERO DEGREES OR BELOW.

December Temperature Departure

From Normal



DECEMBER

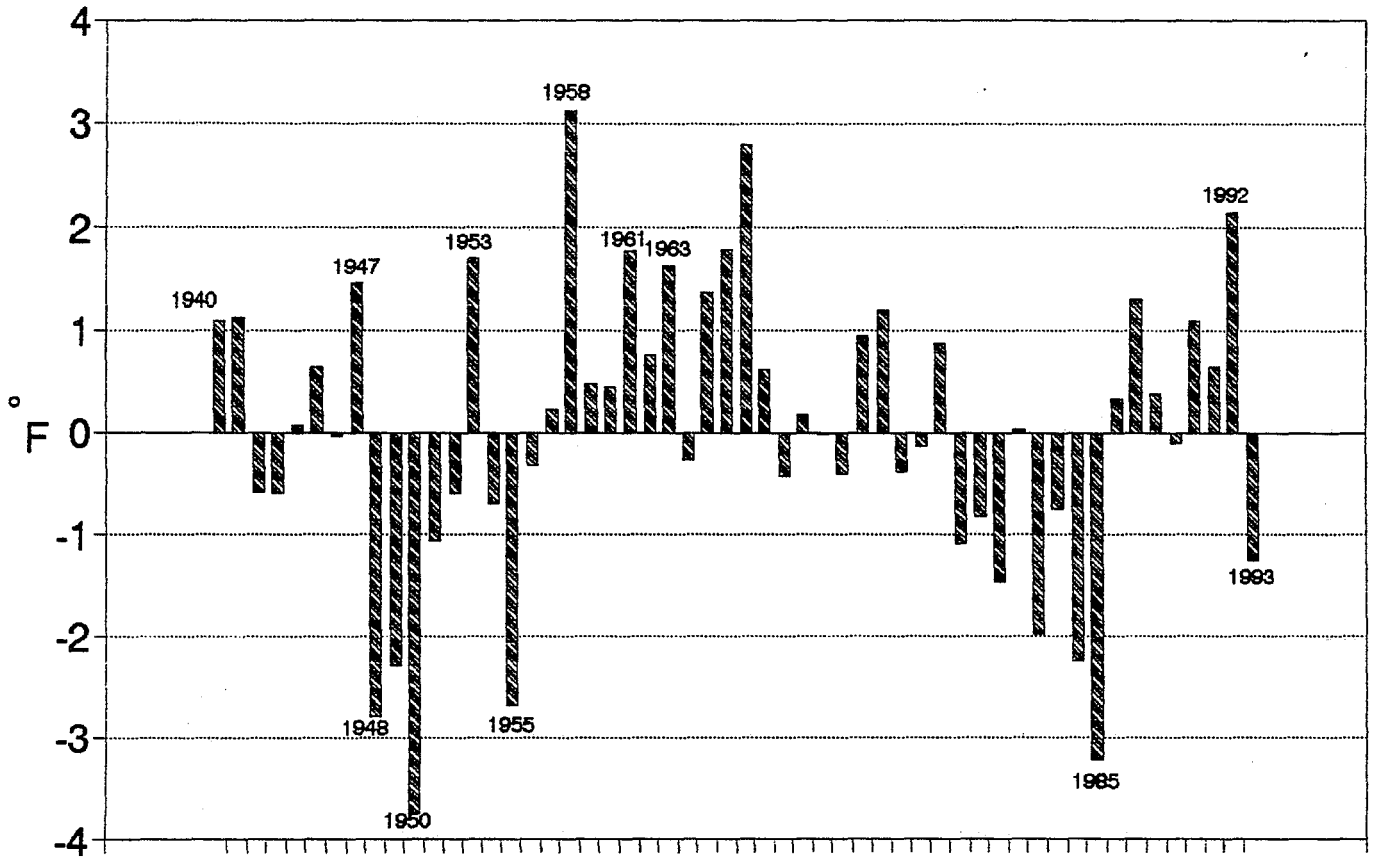
(Records for period 1936-1993)
(Climatological Daily Normals from 1951-1970)

DAY	RECORD HIGH		NORMAL HIGH	RECORD LOW		NORMAL LOW
1	65	1972	41	-5	1985	26
2	60	1975	40	10	1985	26
3	56	1978*	40	6	1984	26
4	52	1975*	40	2	1972	26
5	55	1953	40	5	1984	26
6	62	1936	39	-1	1956	25
7	54	1943	39	-5	1972	25
8	54	1940	39	-7	1972	25
9	56	1956	38	3	1972	25
10	61	1946	38	4	1972	25
11	54	1939	38	3	1972	25
12	51	1953	38	6	1972	25
13	57	1956	37	5	1972	25
14	59	1979	37	0	1955	25
15	56	1956	37	-1	1964	25
16	52	1982*	37	-12	1964	25
17	56	1939	36	-13	1964	24
18	63	1936	36	-4	1984	24
19	50	1957*	36	-2	1984	24
20	50	1966*	35	-3	1984	24
21	53	1962	35	-10	1990	24
22	52	1949	35	-13	1983	24
23	50	1957	34	-14	1983	24
24	53	1978	34	-11	1983	23
25	52	1963	34	-3	1948	23
26	52	1953	34	-5	1948	23
27	59	1980	33	-8	1948	23
28	50	1980*	33	-7	1968	22
29	52	1949	33	-13	1968	22
30	53	1966	33	-22	1968	22
31	52	1954	33	-14	1978	22

* LAST OF MORE THAN ONE OCCURRENCE

Yearly Mean Temperature Departure

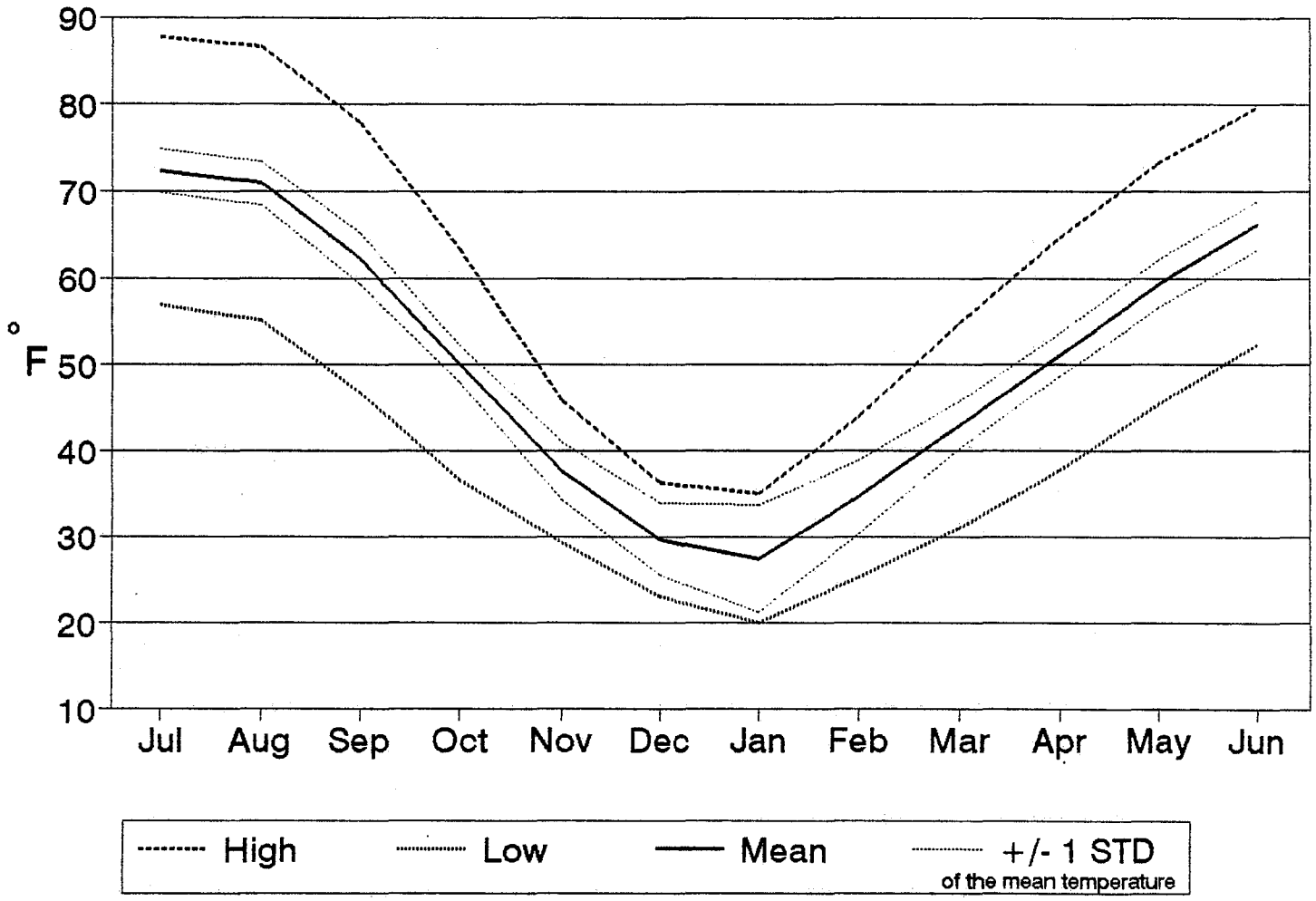
From Normal



Heating Degree Days

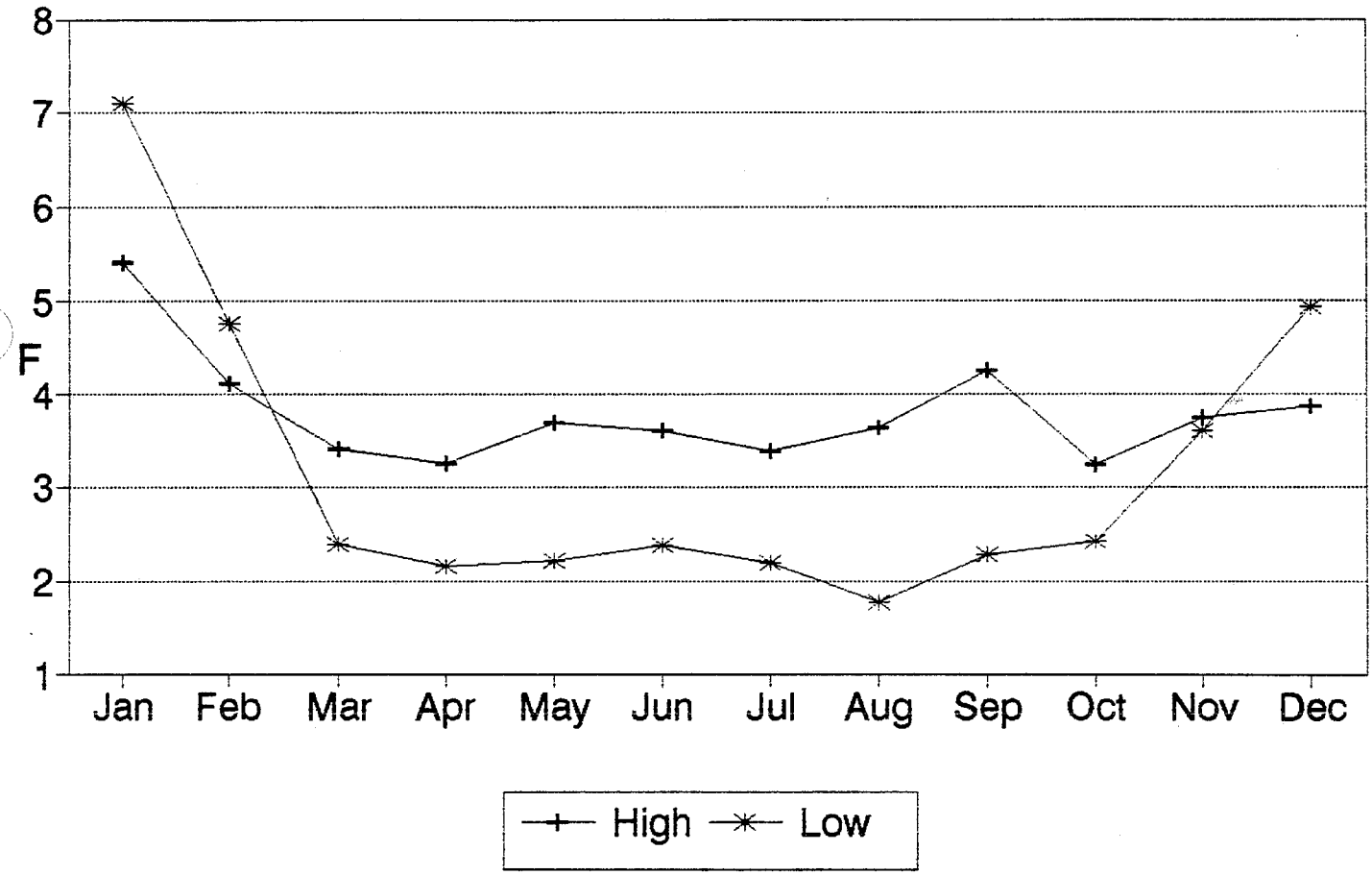
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Means:	1125	842	675	429	203	59	11	14	133	472	815	1111	5889
Std. Dev:	158	108	72	67	58	34	11	13	69	59	110	143	415
Year													
1964	997	822	667	444	207	47	2	24	135	436	794	1172	5747
1965	1032	749	699	353	207	21	5	27	118	370	678	1044	5303
1966	1155	756	679	365	138	72	15	6	24	441	681	881	5213
1967	878	660	685	522	190	8	0	0	28	428	744	1065	5208
1968	1054	781	590	448	162	26	0	35	88	541	763	1170	5658
1969	1463	986	700	403	97	14	4	14	113	499	775	1003	6071
1970	1145	755	664	489	157	30	2	1	171	487	822	1169	5892
1971	1058	778	805	459	129	65	23	2	207	481	765	1218	5990
1972	1181	923	601	506	145	39	14	7	220	469	723	1181	6009
1973	1183	815	581	348	177	65	1	19	137	461	887	933	5607
1974	1166	728	685	414	288	56	8	0	69	435	733	959	5541
1975	1105	945	791	505	218	50	0	37	85	476	828	992	6032
1976	1063	855	759	452	236	123	11	26	50	474	794	1009	5852
1977	1225	723	635	313	273	26	8	17	182	489	844	1034	5769
1978	1038	803	632	465	276	46	0	41	184	499	984	1245	6213
1979	1528	1000	682	443	160	58	23	0	74	383	952	941	6244
1980	1400	943	715	375	196	98	20	42	137	516	805	1024	6271
1981	854	829	590	467	239	145	30	2	167	565	788	1128	5804
1982	1192	877	731	570	257	50	35	14	168	529	961	1142	6526
1983	931	782	613	475	195	74	40	3	229	494	770	1408	6014
1984	1060	830	625	528	364	105	1	10	235	599	898	1443	6698
1985	1208	1071	756	423	198	56	0	11	252	534	1220	1335	7064
1986	1082	888	615	473	246	23	34	0	250	423	777	1071	5882
1987	1134	769	622	331	163	47	10	5	78	432	731	1142	5464
1988	1175	821	659	380	226	114	10	3	152	328	786	1111	5765
1989	1063	1073	803	358	222	30	15	8	73	486	727	988	5846
1990	896	899	626	299	246	88	9	14	16	539	686	1304	5622
1991	1210	679	738	414	244	103	0	5	41	503	815	924	5676
1992	944	724	512	377	132	23	6	27	171	444	784	1268	5412
1993	1323	989	776	469	115	74	13	28	131	387	940	1019	6264

Mean Temperatures 1940-1993

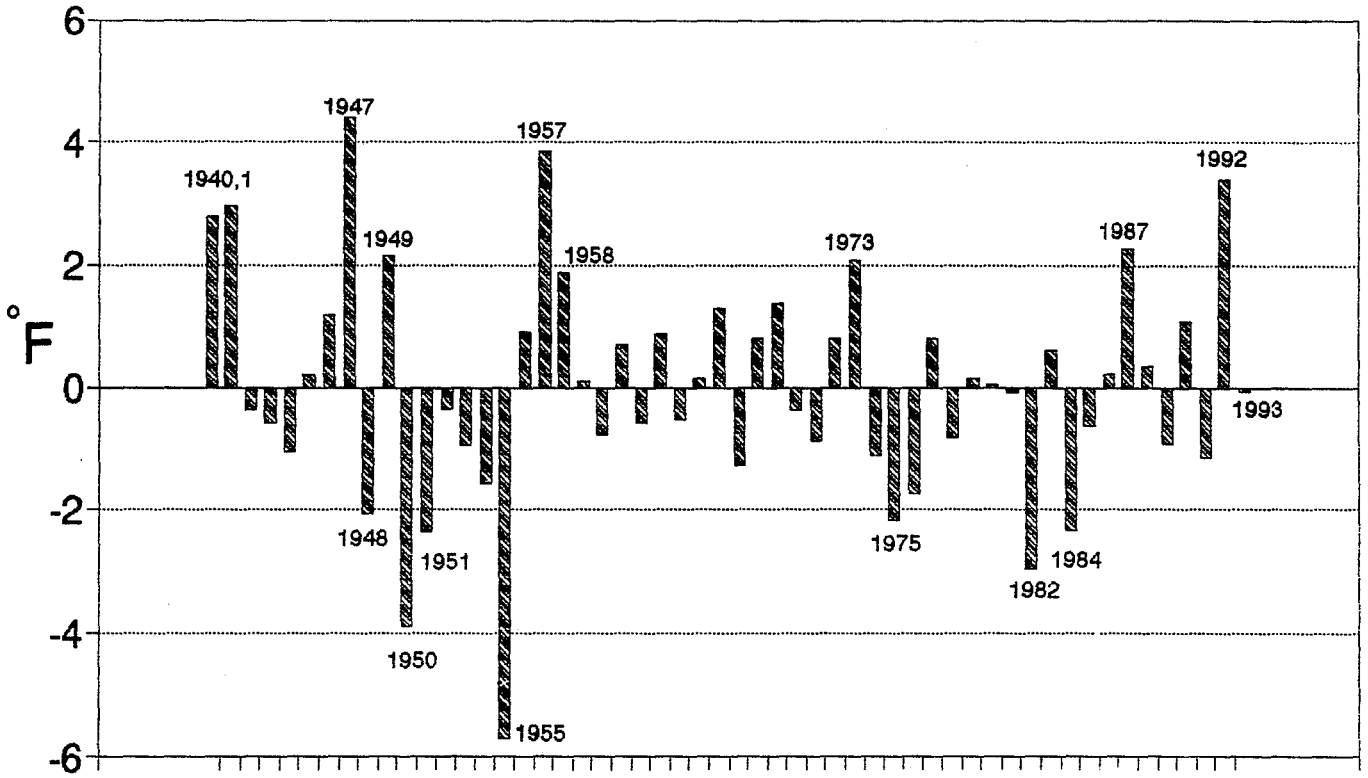


Standard Deviations
of High and Low Temperatures

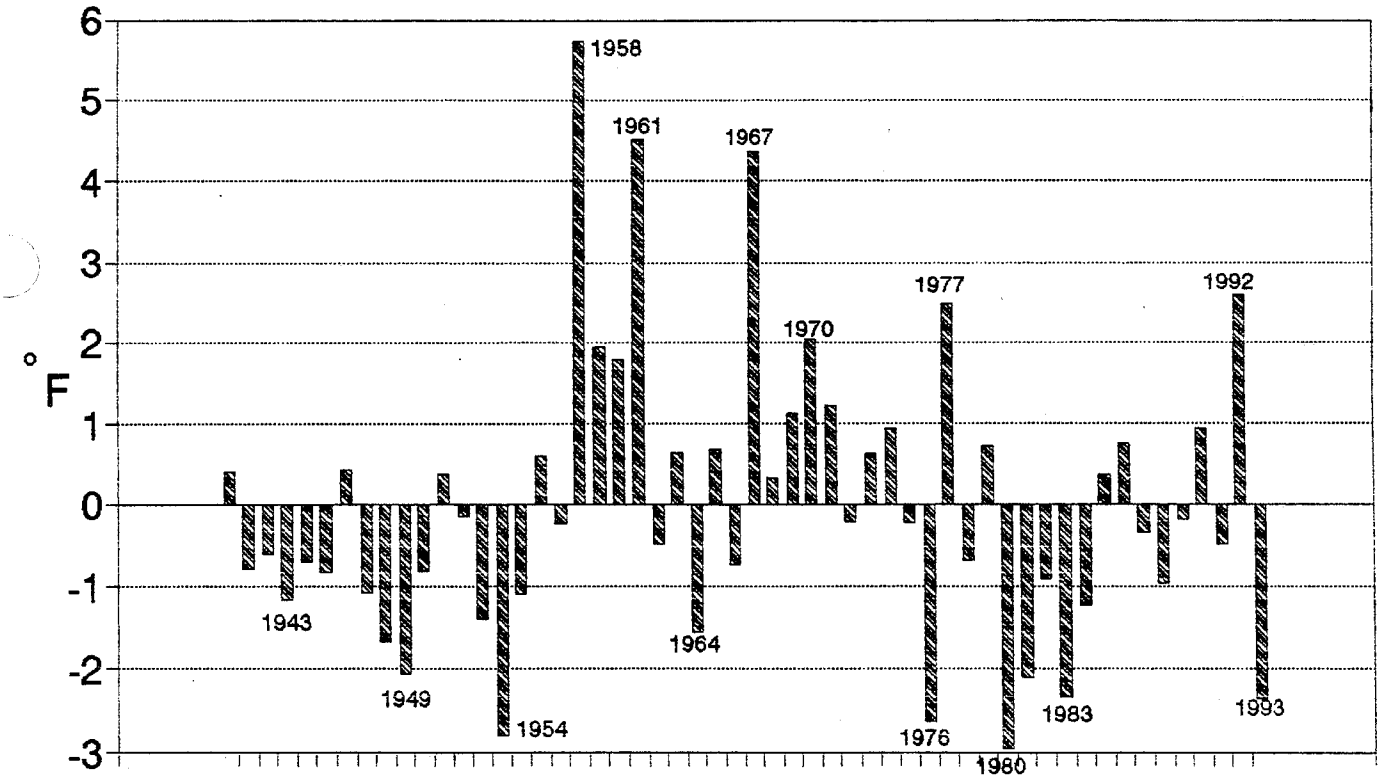
1940-1993



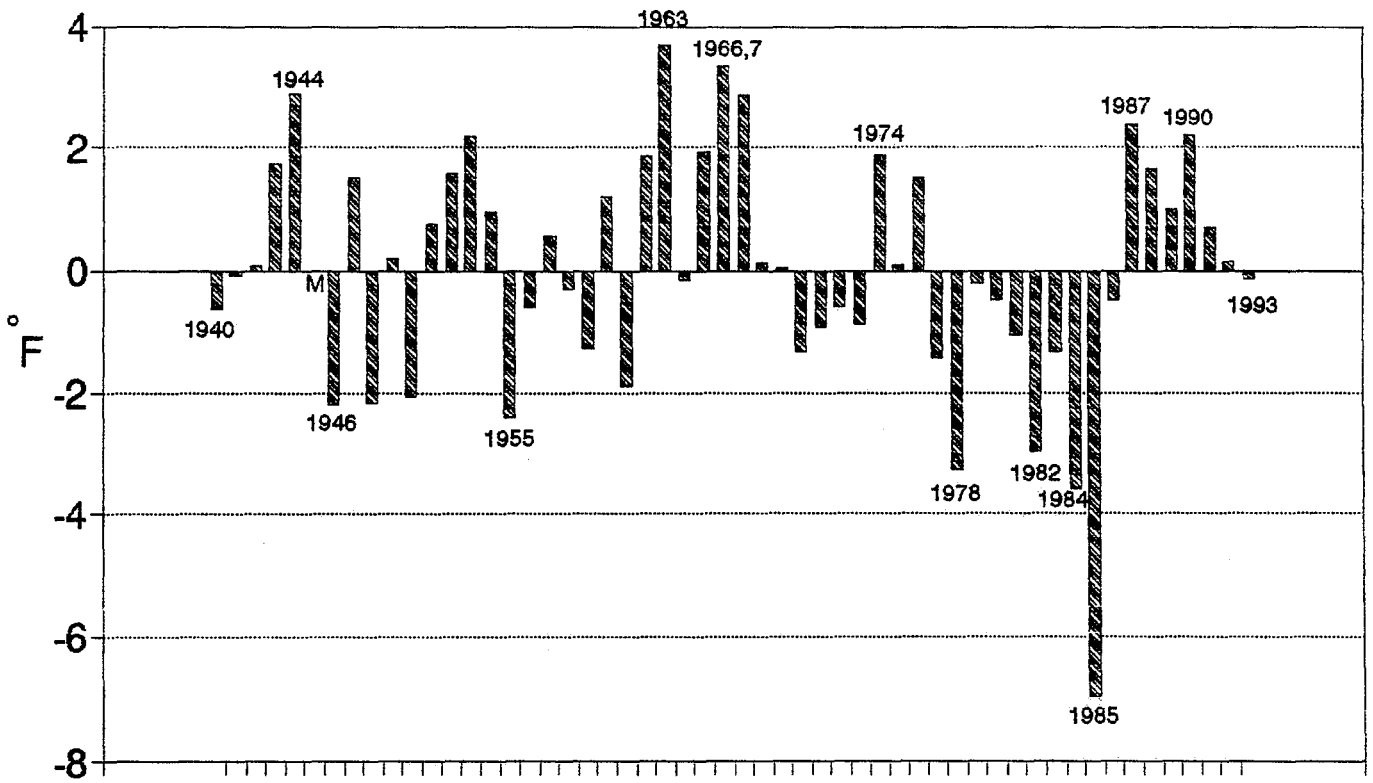
Spring Months Temperature Departure
(March through May)



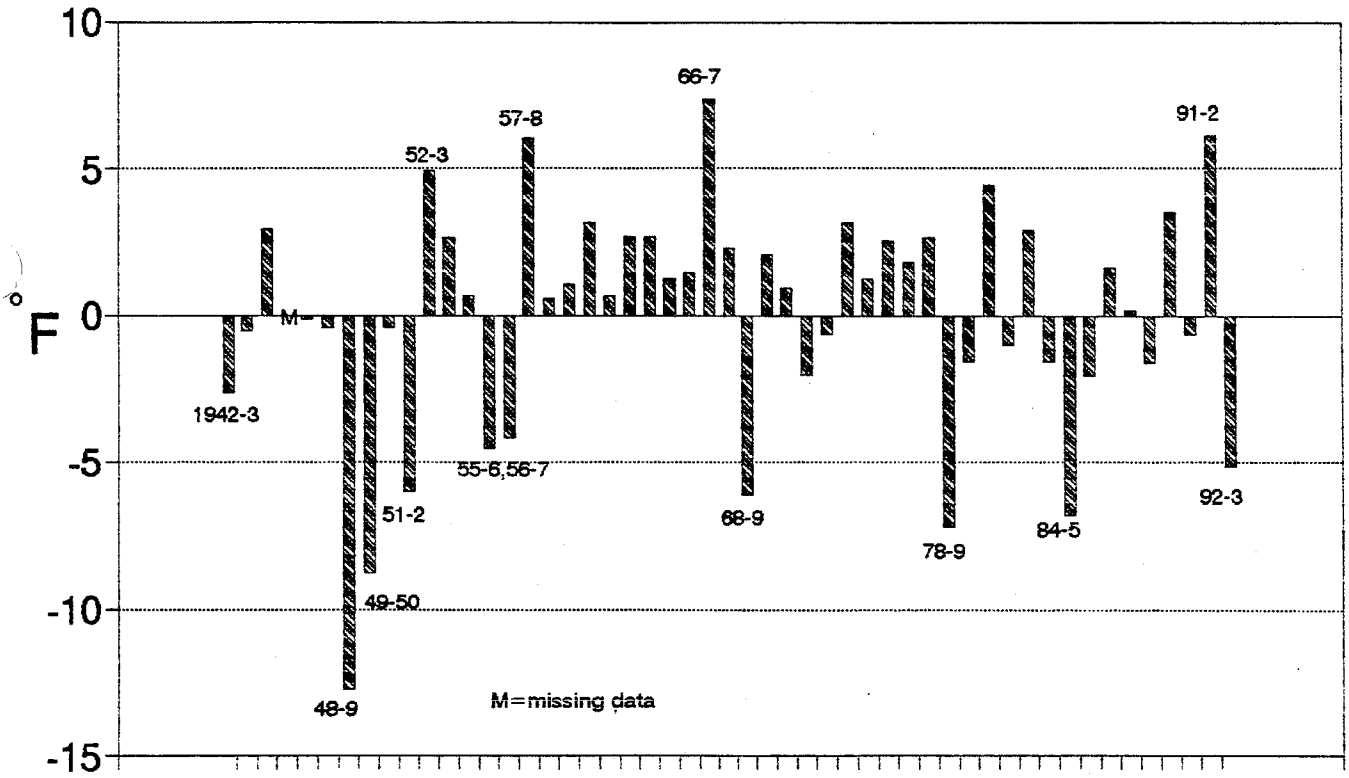
Summer Months Temperature Departure
(June through August)



Autumn Months Temperature Departure
(September through November)



Winter Months Temperature Departure
(Dec`42-Feb`43 through Dec`92-Feb`93)



RECORD-SETTING

HOT AND COLD SPELLS

FOUR CONSECUTIVE DAYS OR MORE

HOT SPELLS
JUNE - AUGUST

JUNE 1992		
June	22	103
	23	102
	24	102
	25	101
AUGUST 1967		
August	14	105
	15	102
	16	104
	17	104
	18	106
	19	103
AUGUST 1958		
August	20	104
	21	106
	22	104
	23	104
	24	106
	25	105

COLD SPELLS
NOVEMBER - FEBRUARY

NOVEMBER 1985		
November	26	-6
	27	5
	28	5
	29	7
	30	-3
December	1	-5
	2	10
DECEMBER 1972		
December	7	-5
	8	-7
	9	3
	10	4
	11	3
	12	6
	13	5
JANUARY 1950		
January	13	-13
	14	-16
	15	-9
	16	-18
	17	-16
	18	-17
January	29	-18
	30	-22
	31	-23
February	1	-24*
	2	-21
	3	-20
FEBRUARY 1936		
February	14	-9
	15	-5
	16	-10
	17	-7

* RECORD ALL TIME LOW FOR STATION

Frost and Freeze Data

	Date of last Freeze		Date of last Frost		Date of first Frost		Date of first Freeze		Days Frost Free	Days Freeze Free
Means>>	11-Apr	27	24-Apr	31	06-Oct	31	22-Oct	27	165	194
Year	<29		<33		<33		<29			
1950	30-Apr	28	04-May	32	27-Sep	31	01-Oct	25	146	154
1951	24-Apr	28	25-Apr	32	15-Oct	31	30-Oct	26	173	189
1952	29-Apr	27	05-May	29	14-Oct	28	14-Oct	28	162	168
1953	14-Apr	28	29-Apr	32	02-Oct	31	22-Oct	28	156	191
1954	01-May	24	01-May	24	01-Oct	32	24-Oct	24	153	176
1955	28-Apr	28	30-Apr	32	06-Oct	30	31-Oct	26	159	186
1956	06-Apr	25	09-Apr	32	19-Oct	32	31-Oct	28	193	208
1957	13-Mar	25	28-Mar	32	16-Oct	32	02-Nov	24	202	234
1958	27-Mar	28	18-Apr	32	24-Sep	29	25-Oct	28	159	212
1959	27-Apr	27	06-May	32	10-Oct	31	30-Oct	27	157	186
1960	21-Apr	28	22-Apr	32	09-Oct	30	27-Oct	27	170	189
1961	20-Apr	25	04-May	31	18-Oct	30	28-Oct	28	167	191
1962	29-Mar	26	04-May	29	07-Oct	32	16-Nov	28	156	232
1963	31-Mar	28	02-Apr	29	19-Oct	29	03-Nov	28	200	217
1964	18-Apr	25	19-Apr	30	04-Oct	30	19-Oct	28	168	184
1965	27-Mar	28	07-Apr	30	16-Oct	29	26-Nov	26	192	244
1966	19-Apr	28	19-Apr	28	09-Oct	32	10-Nov	24	173	205
1967	26-Mar	28	26-Apr	32	19-Oct	32	02-Nov	27	176	221
1968	13-Apr	28	22-Apr	31	02-Oct	32	04-Nov	27	163	205
1969	25-Apr	28	26-Apr	31	12-Oct	31	13-Oct	23	169	171
1970	17-Apr	28	27-Apr	29	13-Oct	29	15-Oct	26	169	181
1971	12-Apr	27	16-Apr	31	16-Oct	27	16-Oct	27	183	187
1972	23-Apr	28	01-May	32	25-Sep	30	27-Oct	27	147	187
1973	08-Apr	26	11-May	31	16-Sep	32	04-Nov	21	128	210
1974	13-Apr	28	14-Apr	31	05-Oct	29	06-Oct	28	174	176
1975	03-Apr	23	30-Apr	32	07-Oct	32	23-Oct	27	160	203
1976	02-Apr	28	23-Apr	31	15-Oct	29	18-Oct	26	175	199
1977	19-Apr	28	20-Apr	30	03-Oct	31	27-Oct	28	166	191
1978	17-Mar	28	23-Apr	32	05-Oct	32	14-Oct	28	165	211
1979	20-Apr	28	21-Apr	30	20-Oct	32	31-Oct	27	182	194
1980	07-Apr	26	25-Apr	32	09-Oct	31	10-Oct	28	167	186
1981	14-Apr	26	06-May	32	03-Oct	32	13-Oct	27	150	182
1982	29-Apr	28	04-May	30	07-Oct	32	18-Oct	24	156	172
1983	13-Apr	27	09-May	32	19-Sep	32	29-Sep	26	133	169
1984	11-Apr	28	10-May	32	24-Sep	32	14-Oct	28	137	186
1985	21-Apr	26	12-May	30	28-Sep	28	28-Sep	28	139	160
1986	24-Apr	26	14-May	31	25-Sep	32	11-Oct	28	134	170
1987	30-Mar	23	20-Apr	30	09-Oct	29	10-Oct	26	172	194
1988	10-Apr	28	01-May	32	17-Oct	30	27-Oct	23	169	200
1989	30-Mar	27	09-Apr	30	03-Oct	29	15-Oct	25	177	199
1990	27-Mar	28	30-Mar	32	06-Oct	29	07-Oct	27	190	194
1991	27-Mar	26	30-Apr	32	04-Oct	32	23-Oct	27	157	210
1992	08-Apr	28	24-Apr	31	06-Oct	30	14-Oct	28	165	189
1993	30-Mar	28	20-Apr	30	09-Oct	32	26-Oct	28	172	210

Precipitation

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
Mean:	1.59	1.01	0.72	0.64	0.53	0.60	0.24	0.48	0.42	0.58	1.41	1.70	9.92
Std.Dv:	0.95	0.59	0.61	0.54	0.49	0.53	0.30	0.65	0.53	0.58	0.90	0.96	2.22
1952	1.40	1.14	0.00	0.00	0.36	1.16	0.00	1.40	0.18	0.04	0.33	1.31	7.32
1953	3.54	0.38	0.05	1.11	1.86	0.49	0.00	0.75	0.00	0.00	1.09	1.30	10.57
1954	2.39	0.60	0.28	0.06	0.23	0.38	0.14	0.74	0.67	0.17	1.13	0.24	7.03
1955	0.88	0.91	0.66	1.09	0.45	0.06	0.11	0.00	0.31	0.90	3.01	3.15	11.53
1956	2.53	0.53	0.29	0.11	0.81	1.20	0.12	2.21	0.51	1.85	0.71	1.27	12.14
1957	0.72	0.83	2.60	0.87	1.81	0.30	0.00	0.25	0.34	2.06	0.11	1.84	11.73
1958	1.09	1.85	1.73	1.20	0.28	1.05	0.00	0.00	0.06	0.35	3.09	1.47	12.17
1959	1.20	1.29	0.54	0.19	0.51	0.23	0.00	0.00	1.95	1.30	1.34	0.54	9.09
1960	0.55	2.01	0.62	1.66	0.76	0.00	0.05	0.50	0.05	0.03	1.61	1.00	8.84
1961	1.08	1.32	1.40	0.54	0.88	0.42	0.46	0.59	0.10	0.14	1.49	1.52	9.94
1962	0.42	1.49	0.77	0.69	1.13	0.86	0.16	0.49	0.34	1.68	1.28	0.52	9.83
1963	0.11	1.68	0.55	1.54	0.37	0.28	0.28	0.04	0.08	0.09	1.06	1.43	7.51
1964	1.75	0.18	0.48	0.66	0.13	0.82	0.04	0.17	0.02	0.19	1.08	3.05	8.57
1965	1.69	0.52	0.24	0.75	0.31	0.18	0.61	1.75	0.09	0.03	1.86	1.50	9.53
1966	1.63	0.32	1.35	0.00	0.07	0.76	0.92	0.01	0.31	0.61	1.57	1.58	9.13
1967	0.90	0.19	0.38	2.80	0.26	0.13	0.00	0.03	0.04	1.85	0.41	1.16	8.15
1968	2.48	1.28	0.10	0.50	0.23	0.31	0.01	1.34	0.04	0.72	1.58	3.20	11.79
1969	2.23	1.86	0.03	0.83	0.05	0.28	0.00	0.00	0.41	0.27	0.23	2.64	8.83
1970	3.52	0.75	0.58	0.35	0.10	0.05	0.00	0.03	0.07	0.26	1.60	2.35	9.66
1971	2.11	0.29	1.30	0.41	0.06	0.85	0.11	0.07	0.93	0.57	1.25	3.70	11.65
1972	3.00	2.02	1.66	0.28	0.83	2.16	0.10	0.95	0.36	0.02	1.20	1.62	14.20
1973	1.05	0.16	0.08	0.01	0.23	0.07	0.06	0.03	1.03	1.43	3.42	2.40	9.97
1974	3.52	0.64	1.52	0.67	0.33	0.26	0.27	0.00	0.00	0.41	0.72	1.70	10.04
1975	2.10	1.41	0.70	0.61	1.00	0.29	0.20	2.64	T	1.05	1.99	1.39	13.38
1976	1.14	1.46	0.24	0.31	0.14	0.13	0.19	1.58	0.01	0.13	0.07	0.13	5.53
1977	0.10	0.60	0.63	0.12	0.66	0.78	0.03	0.53	1.19	0.13	1.63	2.97	9.37
1978	2.60	1.27	0.70	1.41	0.15	0.21	0.51	0.15	0.63	0.02	0.99	0.70	9.34
1979	0.78	1.55	0.28	0.23	0.11	0.10	0.20	0.09	0.07	1.12	1.55	2.42	8.50
1980	2.29	2.12	0.25	0.62	1.06	0.64	0.07	0.29	0.95	0.37	1.61	3.26	13.53
1981	1.36	1.51	0.08	0.71	1.57	0.40	0.79	0.14	0.54	0.76	1.80	2.61	12.27
1982	1.90	1.47	0.88	0.13	0.59	0.55	1.03	0.11	0.55	0.96	1.22	2.25	11.64
1983	2.62	1.68	2.19	0.75	0.12	0.40	0.53	0.35	0.82	0.02	4.65	1.91	16.04
1984	0.71	0.67	1.57	0.78	0.19	1.87	0.10	0.01	1.42	0.10	2.70	0.43	10.55
1985	0.12	0.91	0.78	0.14	0.34	0.60	0.06	0.01	0.81	1.13	1.02	1.08	7.00
1986	2.49	1.44	0.38	0.18	0.05	0.06	0.39	0.04	2.23	0.23	0.95	0.83	9.27
1987	1.79	0.62	0.61	0.36	0.50	0.82	1.10	0.00	T	0.01	0.60	3.21	9.62
1988	0.92	0.08	0.20	0.88	0.21	0.92	T	0.15	0.13	0.04	1.86	0.91	6.30
1989	0.52	1.53	1.07	1.00	0.43	0.05	0.05	0.33	T	0.86	0.86	0.22	6.92
1990	2.73	0.27	0.34	0.51	1.61	0.70	0.16	1.55	T	1.07	1.24	0.88	11.06
1991	0.40	0.26	1.43	0.31	1.14	1.47	0.10	0.62	0.10	0.67	1.50	0.67	8.67
1992	1.25	0.90	0.32	0.82	T	1.88	0.81	0.19	0.16	0.57	1.34	2.90	11.14
1993	1.07	0.46	0.42	0.86	0.65	0.99	0.50	T	0.02	0.11	0.26	1.95	7.29

PART 1
AVERAGE AND GREATEST NUMBER OF DAYS PER MONTH WITH AT LEAST 0.01 AND 0.10 INCH OF PRECIPITATION

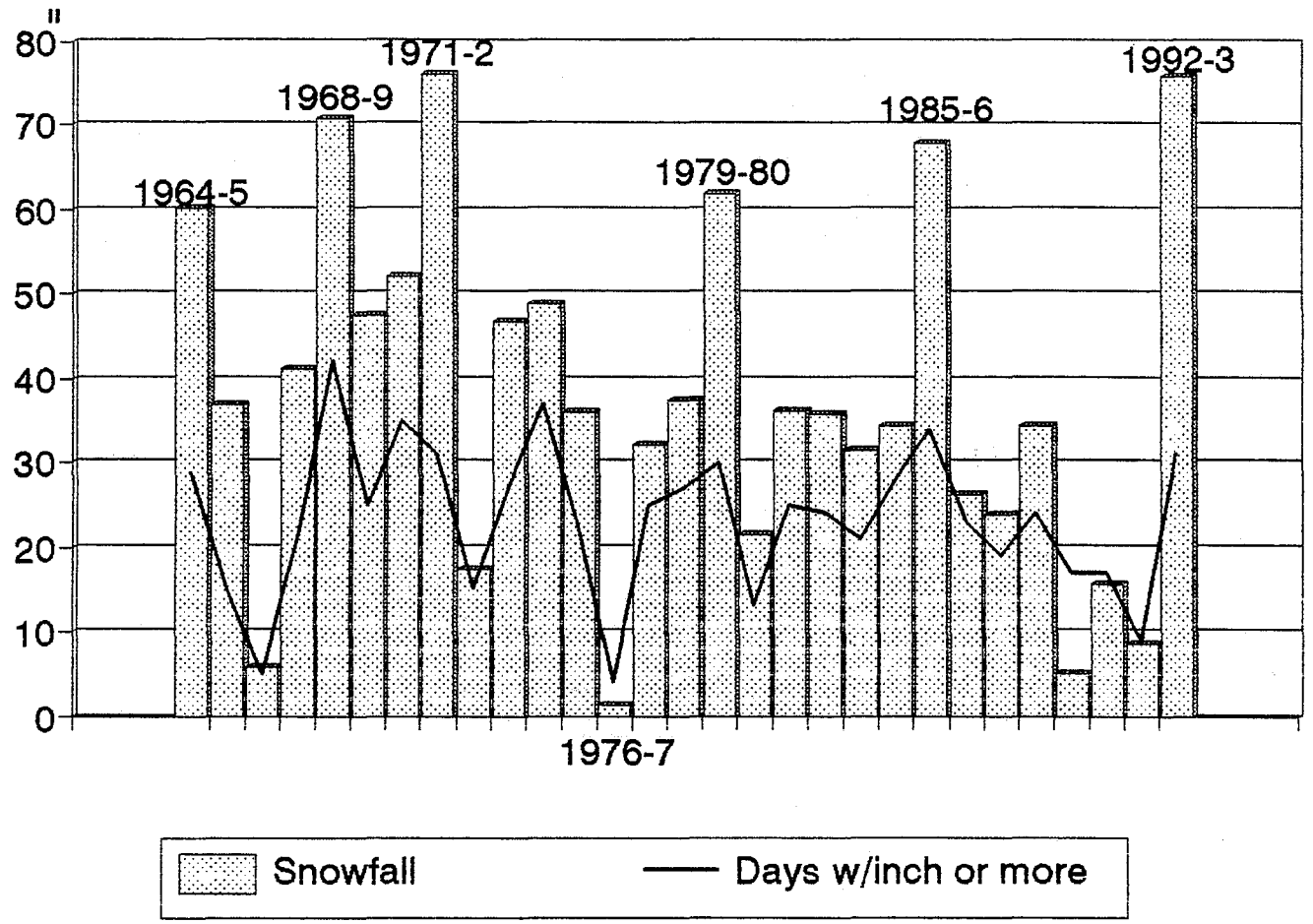
PART 2
TOTAL AND MOST NUMBER OF DAYS RECORDED WITH AT LEAST 0.50 AND 1.00 INCH OF PRECIPITATION

(1952-1993)

MONTH	PART 1						PART 2					
	0.01 Inch or more			0.10 Inch or more			0.50 Inch or more			1.00 Inch or more		
	Avg. Days	Most Days	Year	Avg. Days	Most Days	Year	Total Days	Most Days	Year	Total Days	Most Days	Year
JAN	11	23	1953	5	11	1953	19	2	'70*	2	1	'90*
FEB	8	16	1983	4	8	'83*	10	2	1972	2	1	'63*
MAR	7	14	1971	2	10	1957	7	1	'91*	0	-	-
APR	7	11	1993	2	6	'78*	9	2	'67*	0	-	-
MAY	5	10	1960	2	6	1953	4	1	'81*	1	1	1957
JUN	4	9	1993	2	5	1966	8	2	1992	1	1	1992
JUL	2	10	1993	1	3	'83*	4	1	'92*	0	-	-
AUG	3	11	1968	1	6	1968	10	1	'91*	5	1	'90*
SEP	3	9	1978	1	5	'86*	7	2	'86*	1	1	1984
OCT	5	14	1967	2	6	'73*	11	2	'62*	2	1	'57*
NOV	10	20	1973	4	13	1983	18	2	'83*	2	1	'83*
DEC	11	19	'77*	5	11	1977	25	2	'92*	5	1	'87*
ANN.	76			31		---	+	---	---	Nil	---	---

* LAST OF MORE THAN ONE OCCURRENCE.
\+ LESS THAN 1/2 DAY ANNUALLY.

Season Snowfall



October through March Snowfall:

Mean snowfall: 37.6 inches. Standard deviation: 20.7

Mean number of days with measurable: 23.3 days. Standard deviation: 8.9

	October		November		December		January		February		March			
	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days		
Monthly Means:	0.1	0.1	3.8	2.9	14.4	7.5	12.7	7.9	5.2	3.5	1.3	1.4		
Snowfall year beginning in:													Total	Days
1964	0.0	0.0	2.3	3.0	32.5	14.0	18.8	8.0	1.0	2.0	5.5	2.0	60.1	29.0
1965	0.0	0.0	2.5	3.0	14.9	4.0	14.4	6.0	0.0	0.0	5.0	2.0	36.8	15.0
1966	0.0	0.0	0.2	1.0	3.2	1.0	2.5	3.0	0.0	0.0	0.0	0.0	5.9	5.0
1967	0.0	0.0	0.7	1.0	11.4	10.0	27.8	9.0	1.2	1.0	0.0	0.0	41.1	21.0
1968	0.0	0.0	0.0	0.0	22.2	15.0	27.8	18.0	20.7	9.0	0.0	0.0	70.7	42.0
1969	0.0	0.0	0.0	0.0	13.8	9.0	32.9	13.0	0.3	2.0	0.4	1.0	47.4	25.0
1970	0.0	0.0	7.7	4.0	28.4	15.0	11.8	7.0	0.2	2.0	4.1	7.0	52.2	35.0
1971	0.3	1.0	1.5	4.0	44.3	13.0	20.6	9.0	3.5	2.0	6.0	2.0	76.2	31.0
1972	0.0	0.0	0.0	0.0	12.4	6.0	4.8	8.0	0.1	1.0	0.0	0.0	17.3	15.0
1973	0.5	1.0	18.6	11.0	12.5	6.0	13.6	6.0	0.0	0.0	1.5	3.0	46.7	27.0
1974	0.0	0.0	0.0	0.0	4.8	6.0	26.2	15.0	15.9	15.0	2.1	1.0	49.0	37.0
1975	0.0	0.0	13.2	6.0	2.0	4.0	13.5	7.0	7.1	4.0	0.2	1.0	36.0	22.0
1976	0.0	0.0	0.0	0.0	0.7	2.0	0.7	2.0	0.0	0.0	0.0	0.0	1.4	4.0
1977	0.0	0.0	2.8	2.0	13.1	8.0	10.2	10.0	6.0	5.0	0.0	0.0	32.1	25.0
1978	0.0	0.0	9.7	7.0	7.5	4.0	10.3	8.0	9.8	8.0	0.0	0.0	37.3	27.0
1979	0.0	0.0	4.2	2.0	17.1	6.0	25.4	13.0	15.2	9.0	0.0	0.0	61.9	30.0
1980	0.0	0.0	1.1	2.0	9.0	5.0	2.9	4.0	8.5	2.0	0.0	0.0	21.5	13.0
1981	0.0	0.0	0.2	1.0	15.4	10.0	20.2	11.0	0.1	1.0	0.2	2.0	36.1	25.0
1982	0.0	0.0	8.2	7.0	19.4	9.0	5.0	5.0	3.2	3.0	0.0	0.0	35.8	24.0
1983	0.0	0.0	2.4	2.0	25.1	13.0	3.0	2.0	1.0	4.0	0.0	0.0	31.5	21.0
1984	0.0	0.0	12.8	6.0	4.6	5.0	0.4	4.0	13.3	8.0	3.2	5.0	34.3	28.0
1985	0.0	0.0	14.5	13.0	16.3	5.0	21.0	10.0	16.0	6.0	0.0	0.0	67.8	34.0
1986	0.0	0.0	0.0	0.0	6.7	12.0	18.5	10.0	1.0	1.0	0.0	0.0	26.2	23.0
1987	0.0	0.0	3.0	1.0	11.7	7.0	9.1	11.0	0.0	0.0	0.0	0.0	23.8	19.0
1988	0.0	0.0	0.3	2.0	9.4	7.0	4.3	4.0	16.2	7.0	4.2	4.0	34.4	24.0
1989	0.0	0.0	0.6	1.0	0.1	1.0	1.1	5.0	3.4	6.0	0.0	4.0	5.2	17.0
1990	0.0	0.0	0.2	1.0	10.8	8.0	2.9	5.0	0.0	0.0	1.7	3.0	15.6	17.0
1991	2.7	2.0	0.8	2.0	1.8	1.0	3.3	4.0	0.0	0.0	0.0	0.0	8.6	9.0
1992	0.0	0.0	2.6	1.0	45.3	12.0	16.3	11.0	8.0	3.0	3.7	4.0	75.9	31.0

October through March maximum 24-hour snowfalls and dates:

	October		November		December		January		February		March	
Average Heaviest	Amt	Date	Amt	Date	Amt	Date	Amt	Date	Amt	Date	Amt	Date
Snowfall>>	0.0		2.2		5.7		4.6		2.2		0.7	
Snowfall year beginning in:												
1964	0		1.5	29	13.0	22	6.0	24	0.5	4		
1965	0		1.0	25	8.0	27	7.0	6	0.0	M	3.0	21
1966	0		0.2	12	3.2	10	1.0	26	0.0	M	0.0	M
1967	0		0.7	29	4.5	22	8.0	26	1.2	18	0	
1968	0		0.0	M	7.8	23	6.0	1	6.0	11	0.0	7
1969	0		0		7.0	11	10.0	27	0.2	4	0.4	M
1970	0		4.0	23	6.0	16	8.0	15	0.1	27	1.9	7
1971	0.3	31	0.7	26	16.5	9	8.5	19	2.5	18	4.7	2
1972	0		0		6.0	3	1.6	12	0.1	13	0	
1973	0.5	31	4.2	8	6.0	27	6.4	31	0.0	26	1.0	1
1974	0		0		2.6	27	7.0	8	3.1	1	2.1	21
1975	0		12.4	30	0.7	23	6.5	14	4.2	27	0.2	7
1976	0		0.0	21	0.6	22	0.5	11	0		0	
1977	0		2.5	23	6.0	6	2.7	14	4.3	1	0.0	4
1978	0		6.0	19	3.1	11	7.0	10	3.7	6	0	
1979	0		2.7	22	8.0	2	9.0	12	6.5	15	0.0	5
1980	0		1.0	29	5.7	2	1.7	28	5.5	9	0	
1981	0		0.2	30	7.4	15	9.0	23	0.1	22	0.1	11
1982	0		3.5	16	6.5	14	2.0	4	1.7	6	0	
1983	0		2.4	24	5.4	29	2.7	22	0.5	24	0	
1984	0.0	23	7.4	27	2.0	29	0.2	20	3.8	11	2.0	27
1985	0		4.8	27	8.2	7	5.4	22	5.8	23	0	
1986	0		0.0	18	2.0	25	4.0	26	1.0	1	0	
1987	0		3.0	30	3.7	16	2.2	10	0.0	8	0.0	26
1988	0		0.3	25	4.8	24	3.5	9	6.0	15	2.5	5
1989	0		0.6	26	0.0	27	1.1	31	1.0	15	0.0	22
1990	0		0.2	30	4.2	27	1.3	7	0		1.0	2
1991	0		0.5	1	1.8	18	1.8	5	0		0	
1992	0.5	28	2.6	27	13.2	31	4.0	8	4.8	19	1.8	3

Amounts of "0.0" equal a trace, "0" means none.
Dates are the ending date of the 24-hour period.
If more than one occurrence, then last date is given.

Days with snowfall of 1" or more and 3" or more:

Mean number of days with an inch or more: 11.3 Standard deviation: 5.9
Means number of days three inches or more: 4.6 Standard deviation: 3.1

	November Days		December Days		January Days		February Days		March Days			
	1"	3"	1"	3"	1"	3"	1"	3"	1"	3"		
Monthly Means:	1	0	4	2	4	2	2	1	1	0		
Snowfall season beginning in:											1" Total	3" Total
1964	1	0	7	4	6	3	0	0	2	1	16	8
1965	2	0	3	2	2	2	0	0	2	1	9	5
1966	0	0	1	1	2	0	0	0	0	0	3	1
1967	0	0	4	1	6	5	1	0	0	0	11	6
1968	0	0	9	1	7	8	7	3	0	0	23	12
1969	0	0	3	2	8	5	0	0	0	0	11	7
1970	3	1	9	3	2	1	0	0	3	0	17	5
1971	0	0	8	4	5	3	2	0	2	1	17	8
1972	0	0	2	2	1	0	0	0	0	0	3	2
1973	7	2	4	2	3	2	0	0	1	0	15	6
1974	0	0	2	0	10	5	6	2	1	0	19	7
1975	1	1	0	0	4	2	3	1	0	0	8	4
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	1	0	5	1	5	0	1	1	0	0	12	2
1978	3	1	3	2	1	1	4	1	0	0	11	5
1979	2	0	3	3	6	5	5	2	0	0	16	10
1980	1	0	2	1	1	0	2	2	0	0	6	3
1981	0	0	6	2	5	2	0	0	0	0	11	4
1982	3	1	6	3	3	0	1	0	0	0	13	4
1983	1	0	8	3	1	0	0	0	0	0	10	3
1984	4	1	2	0	0	0	6	2	1	0	13	3
1985	3	2	3	3	9	2	4	3	0	0	19	10
1986	0	0	3	0	7	2	1	0	0	0	11	2
1987	1	1	5	2	4	0	0	0	0	0	10	3
1988	0	0	4	1	1	1	4	2	2	0	11	4
1989	0	0	0	0	1	0	1	0	0	0	2	0
1990	0	0	5	1	1	0	0	0	1	0	7	1
1991	0	0	1	0	1	0	0	0	0	0	2	0
1992	1	0	8	6	8	1	3	1	2	0	22	8

EXTENDED DRY SPELLS
WENATCHEE WEATHER SERVICE OFFICE
(1952-1993)

DATE INCLUSIVE OF NO MEASURABLE[1] PRECIPITATION	NUMBER OF DAYS
JULY 20, 1987 - OCTOBER 30, 1987	103
JULY 18, 1974 - OCTOBER 27, 1974	101
JUNE 28, 1969 - SEPTEMBER 17, 1969	82
JUNE 29, 1959 - SEPTEMBER 12, 1959	76
FEBRUARY 26, 1952 - MAY 10, 1952	75
AUGUST 27, 1953 - NOVEMBER 9, 1953	75
JULY 17, 1966 - SEPTEMBER 10, 1966	56
JUNE 23, 1988 - AUGUST 15, 1988	54
JUNE 11, 1970 - AUGUST 1, 1970	53
JULY 12, 1971 - AUGUST 30, 1971	50
AUGUST 3, 1964 - SEPTEMBER 19, 1964	48
JUNE 25, 1967 - AUGUST 11, 1967	48
JULY 29, 1993 - SEPTEMBER 13, 1993	47
MARCH 22, 1966 - MAY 6, 1966	46
JUNE 6, 1960 - JULY 29, 1960	45
JUNE 14, 1977 - JULY 28, 1977	45
SEPTEMBER 3, 1979 - OCTOBER 17, 1979	45
JUNE 28, 1958 - AUGUST 10, 1958	44
JULY 10, 1963 - AUGUST 22, 1963	44
SEPTEMBER 9, 1991 - OCTOBER 21, 1991	44

[1] Measurable amounts = .01 inches or more.

NUMBER OF THUNDERSTORMS

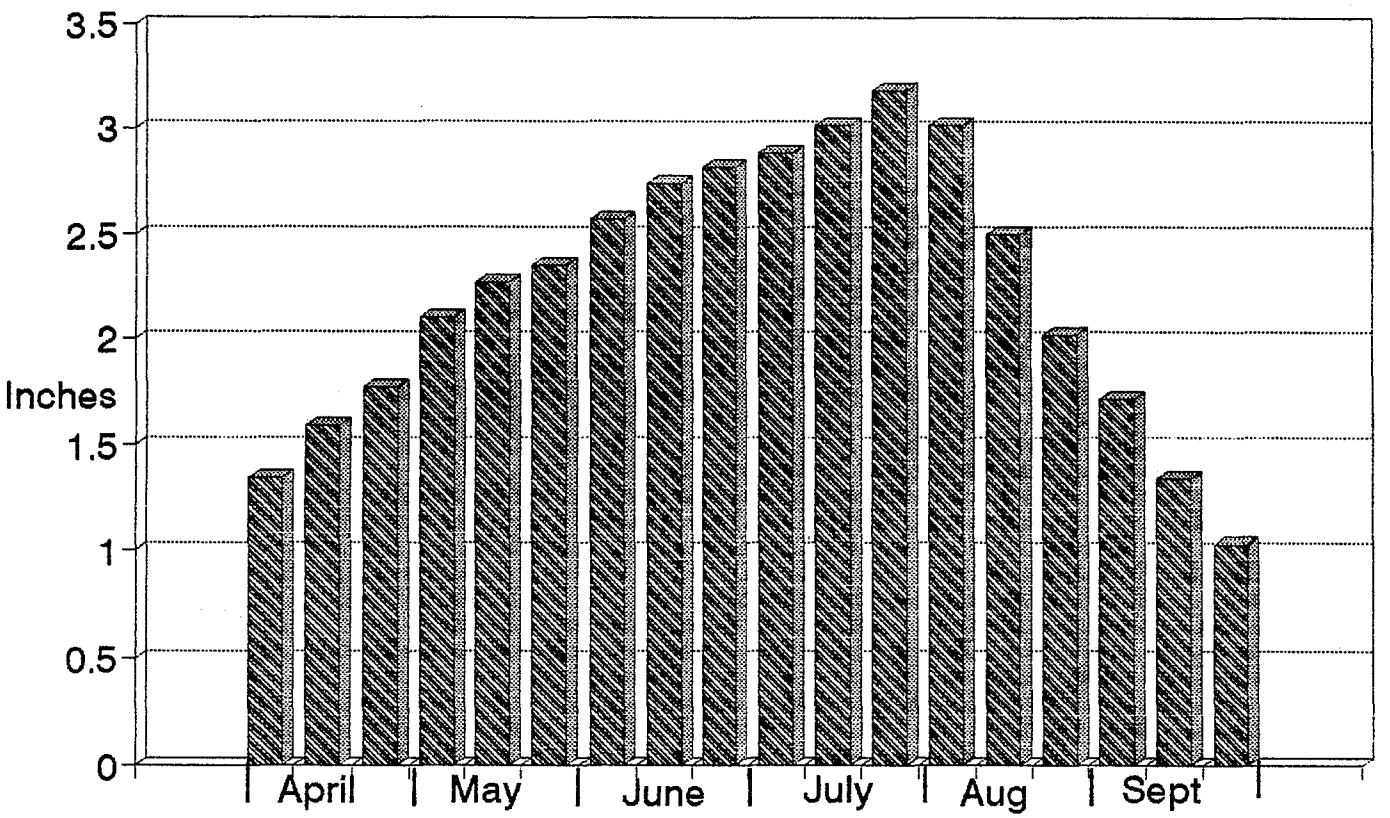
(1964 - 1993)

MONTH	AVERAGE NUMBER OF DAYS WITH THUNDERSTORMS	HIGHEST NUMBER OF DAYS WITH THUNDERSTORMS
JANUARY	0	0
FEBRUARY	0	0
MARCH	0	1 - 1982
APRIL	.6	3 - 1983
MAY	.9	4 - 1993
JUNE	1.8	4 - 1990*
JULY	2.1	5 - 1978*
AUGUST	2.2	6 - 1983*
SEPTEMBER	.5	4 - 1966
OCTOBER	0	1 - 1975
NOVEMBER	0	0
DECEMBER	0	0
ANNUAL AVERAGE	8	15 - 1983

THUNDERSTORMS ARE RECORDED WHEN THUNDER IS HEARD AT THE WEATHER SERVICE OFFICE.

* LAST OF MORE THAN ONE OCCURRENCE

Ten-Day Period Pan Evaporation
(1968-1993)



April data is for the period 1972-1993.

PAN EVAPORATION DATA

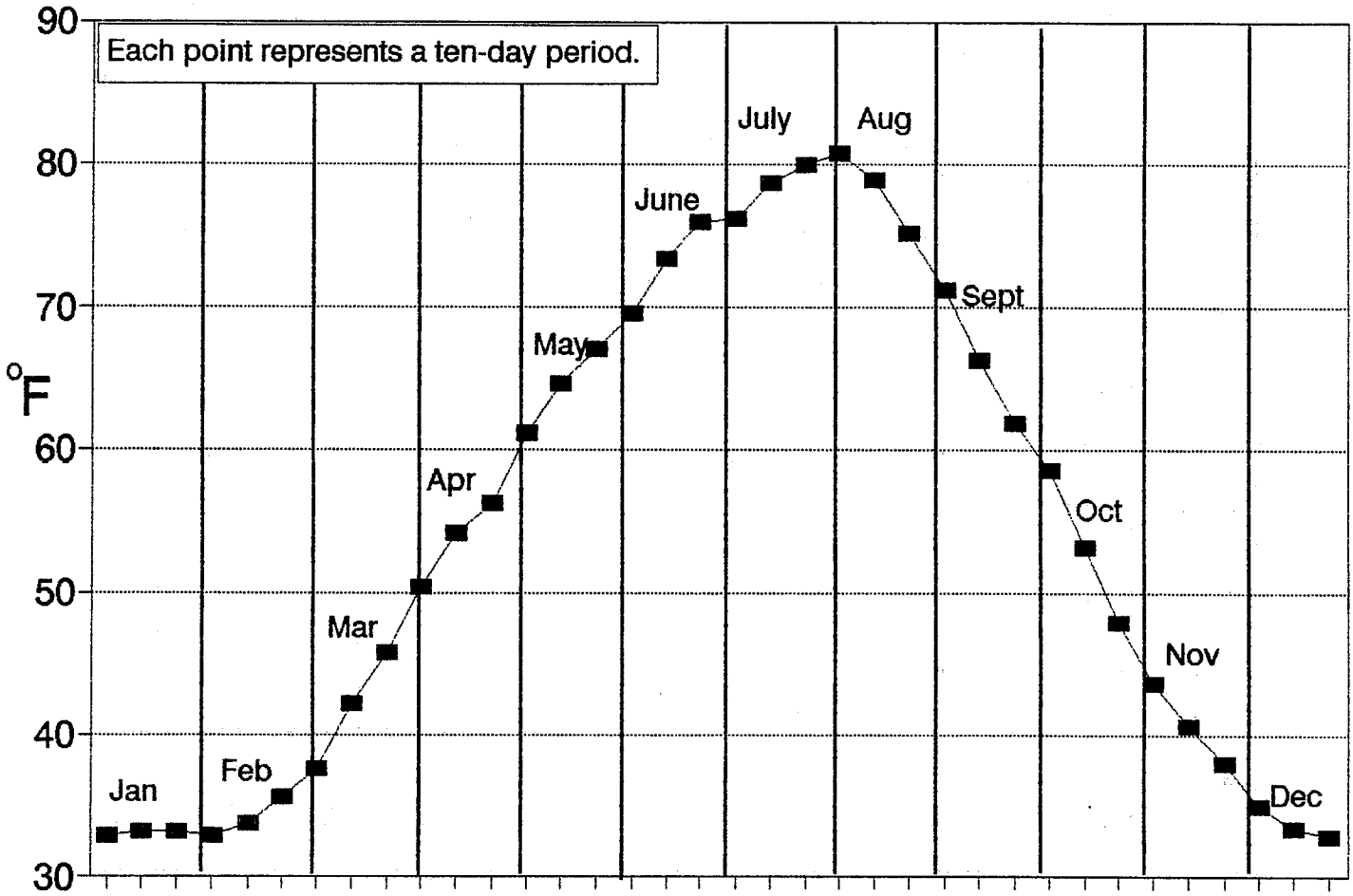
Growing Season

(Inches)

YEAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL
1968		7.48	8.23	11.10	6.24		
1969		7.65	8.67	10.79	9.38	4.17	
1970		8.40	10.22	11.92	9.56	5.24	
1971		7.93	7.14	10.42	10.60	4.80	
1972	5.50	7.33	8.15	9.05	8.46	4.62	43.11
1973	6.33	7.94	10.02	11.48	9.80	4.79	50.36
1974	4.84	6.72	9.78	9.21	8.95	5.43	44.93
1975	5.10	7.84	8.54	10.04	6.71	5.04	43.27
1976	4.69	6.60	7.25	8.38	5.43	4.40	36.75
1977	5.83	5.56	8.82	9.45	8.31	3.42	41.39
1978	3.59	6.27	8.01	8.60	6.58	3.35	36.40
1979	4.80	7.69	8.81	9.58	7.51	4.09	42.48
1980	4.60	6.04	6.79	9.72	7.06	3.76	37.97
1981	4.48	6.26	6.73	8.53	7.63	3.92	37.55
1982	4.49	6.77	7.80	8.06	6.74	3.55	37.21
1983	4.01	7.65	7.24	7.18	6.53	4.05	36.66
1984	4.07	5.77	6.98	9.86	7.89	3.39	37.96
1985	4.79	7.62	9.06	10.77	7.93	3.26	43.43
1986	4.83	6.84	8.36	8.56	7.97	3.28	39.84
1987	5.22	6.98	7.93	8.28	8.09	4.65	41.15
1988	4.30	6.21	6.93	10.06	7.57	4.33	39.40
1989	4.98	6.57	8.32	9.39	7.13	4.43	40.82
1990	4.95	5.75	7.26	9.39	6.83	4.74	38.92
1991	5.19	6.19	6.97	10.04	7.42	4.67	40.48
1992	4.00	7.89	8.94	7.94	7.65	4.41	40.83
1993	3.14	6.94	7.02	7.47	7.22	4.32	36.11
AVG	4.72	6.96	8.08	9.43	7.74	4.24	41.17

Averages include all months.

Average 6" Soil Temperatures (1983-93)



DATES OF FULL BLOOM--RED DELICIOUS
WENATCHEE

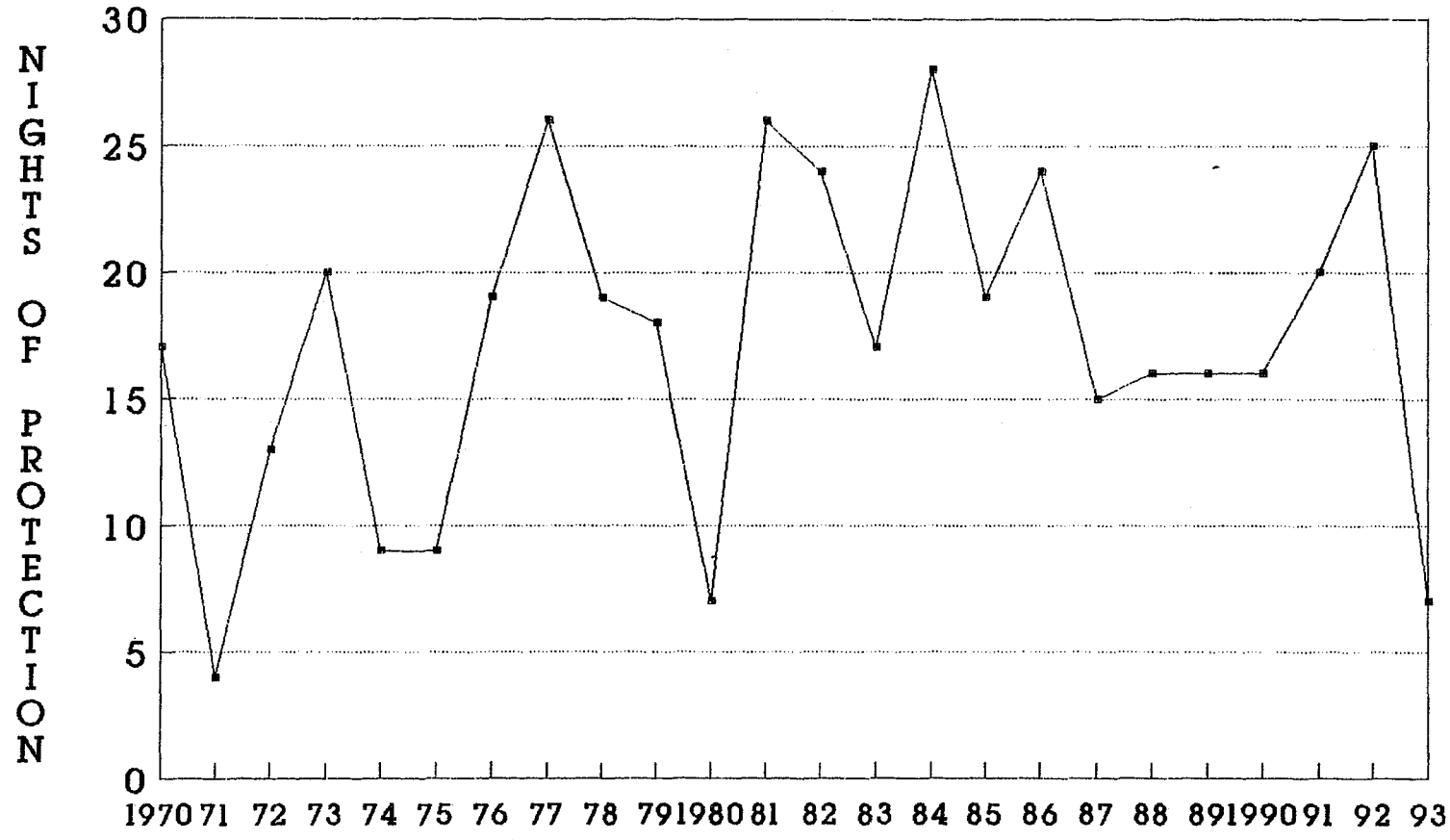
(1922-1993)

YEAR	DATE	YEAR	DATE	YEAR	DATE	YEAR	DATE
1922	**5-16**	1940	4-19	1960	4-29	1980	4-26
1923	5-8	1941	4-18	1961	4-27	1981	4-23
1924	4-30	1942	4-24	1962	4-24	1982	5-5
1925	5-1	1943	4-28	1963	5-1	1983	4-24
1926	4-28	1944	4-29	1964	4-30	1984	4-30
1927	5-1	1945	5-1	1965	4-27	1985	4-30
1928	4-28	1946	4-28	1966	4-24	1986	4-25
1929	5-2	1947	4-18	1967	5-4	1987	4-22
1930	4-19	1948	5-12	1968	4-28	1988	4-19
1931	4-27	1949	4-27	1969	5-4	1989	4-25
1932	4-28	1950	5-10	1970	5-1	1990	4-15
1933	5-1	1951	4-28	1971	5-5	1991	4-24
1934	**4-11**	1952	4-27	1972	5-5	1992	4-14
1935	5-1	1953	4-25	1973	4-23	1993	5-7
1936	4-27	1954	5-6	1974	5-1		
1937	5-8	1955	5-14	1975	5-9		
1938	4-28	1956	5-1	1976	5-2		
1939	4-24	1957	4-30	1977	4-23		
		1958	4-30	1978	4-28		
		1959	4-29	1979	4-28		

Average Full Bloom day - 4-29.
Highlighted dates represent earliest and latest dates on record.
Data from George Sisler and Del Ketchie. Full bloom is the date when at least 60% of the blossoms have reached full bloom on the north side of the trees in the red delicious orchard on the TFRC grounds as determined in recent years by Del Ketchie.

WENATCHEE FROST PROTECTION HISTORY

Protection includes use of smudge pots, wind machines, and/or overhead sprinking



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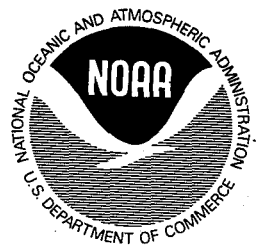

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