



# APRIL 2003

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

# MINNEAPOLIS - ST. PAUL, MN

INTERNATIONAL AIRPORT (MSP)  
 Lat: 44° 52' N Long: 93° 13' W Elev (Ground): 871 Feet  
 Time Zone: CENTRAL WBAN: 14922 ISSN #: 0198-2745

DATE	TEMPERATURE °F							DEG DAYS BASE 65°		WEATHER	SNOW/ICE ON GND (IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES								DATE			
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING	0600 LST		1200 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM									
																			5-SEC		2-MIN							
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24						
01	63	39	51	11	38	45	14	0				0.00	28.76	29.66	8.5	05	8.8	21	05	18	06	01						
02	52	37	45	5	31	38	20	0				0.00	28.90	29.81	19.1	08	19.6	35	09	29	09	02						
03	38	29	34	-7	29	31	31	0				T	28.92	29.84	17.9	08	18.3	37	09	31	08	03						
04	29	23	26*	-15	22	25	39	0				0.01	29.03	29.95	12.5	04	13.0	24	04	18	03	04						
05	36	21*	29	-13	18	25	36	0				T	29.28	30.22	4.2	36	6.7	28	36	16	02	05						
06	41	22	32	-10	19	28	33	0				0.00	29.37	30.30	13.5	10	14.0	30	09	24	10	06						
07	42	30	36	-7	10	27	29	0				0.00	29.40	30.33	14.7	06	15.2	30	05	24	08	07						
08	49	22	36	-7	10	29	29	0				0.00	29.51	30.44	1.1	04	5.3	16	24	12	24	08						
09	56	29	43	-1	19	34	22	0				0.00	29.31	30.23	9.8	20	10.3	23	23	21	23	09						
10	69	35	52	8	32	44	13	0				0.00	29.10	30.00	9.6	22	11.3	29	23	23	23	10						
11	69	44	57	12	25	43	8	0				0.00	29.13	30.03	7.1	36	7.9	24	02	15	03	11						
12	64	39	52	7	29	42	13	0				0.00	29.21	30.12	5.0	09	7.2	22	04	12	14	12						
13	76	44	60	15	39	49	5	0				0.00	29.06	29.96	15.2	17	15.6	31	17	25	17	13						
14	89*	64	77*	31	50	61	0	12				0.00	28.81	29.69	13.3	21	13.9	33	24	26	23	14						
15	73	49	61	15	47	53	4	0				0.86	28.75	29.63	7.9	05	13.7	31	09	26	08	15						
16	50	33	42	-5	35	37	23	0				1.04	28.94	29.85	19.3	08	19.6	40*	09	31*	09	16						
17	40	32	36	-11	31	34	29	0				T	29.12	30.04	3.2	06	5.9	25	11	20	10	17						
18	45	34	40	-8	36	38	25	0				0.11	29.09	30.00	12.7	09	13.2	28	06	23	07	18						
19	53	43	48	0	47	48	17	0				0.24	28.88	29.79	7.3	11	9.6	26	10	22	11	19						
20	48	40	44	-5	42	43	21	0				0.10	28.85	29.75	10.1	32	10.6	24	32	18	36	20						
21	62	43	53	4	33	43	12	0				0.02	29.05	29.95	13.1	35	13.3	31	34	25	03	21						
22	62	38	50	0	26	41	15	0				0.00	29.21	30.12	2.6	08	4.7	16	03	12	09	22						
23	70	41	56	6	34	46	9	0				0.00	29.12	30.02	9.9	15	10.4	26	15	18	16	23						
24	67	48	58	7	29	45	7	0				0.00	29.02	29.92	9.3	12	10.0	25	09	21	09	24						
25	66	47	57	6	36	46	8	0				0.00	29.00	29.90	6.9	04	7.7	17	06	14	06	25						
26	73	42	58	7	36	48	7	0				0.00	28.94	29.83	5.5	15	7.4	18	17	15	17	26						
27	74	57	66	14	41	53	0	1				0.00	28.90	29.79	11.4	26	13.9	29	30	24	30	27						
28	61	43	52	0	36	45	13	0				0.00	29.11	30.02	11.1	32	11.5	23	30	20	33	28						
29	57	47	52	-1	34	44	13	0				T	29.18	30.08	3.2	05	4.7	16	01	12	05	29						
30	60	50	55	2	37	46	10	0				0.02	29.00	29.90	6.7	06	8.4	21	05	16	02	30						
< MONTHLY AVERAGES											TOTALS->						<- MONTHLY AVERAGES											
0.8											2.6		1.7		■■■		<-----DEPARTURE FROM NORMAL----->											
DEGREE DAYS																												
MONTHLY TOTAL DEPARTURE											505		-55		7428		-182		GREATEST 24-HR PRECIPITATION: 1.90		DATE: 15-16		SEA LEVEL PRESSURE		DATE		TIME	
SEASON TO DATE TOTAL DEPARTURE											13		9		13		9		GREATEST 24-HR SNOWFALL:		DATE:		MAXIMUM		08 0853			
HEATING: 505											-55		7428		-182		GREATEST SNOW DEPTH:		DATE:		MINIMUM		01 0053					
COOLING: 13											9		13		9		NUMBER OF DAYS WITH		MAXIMUM TEMP ≥ 90: 0		MINIMUM TEMP ≤ 32: 8		PRECIPITATION ≥ 0.01 INCH: 8					
											13		9		13		9		MAXIMUM TEMP ≤ 32: 1		MINIMUM TEMP ≤ 0: 0		PRECIPITATION ≥ 0.10 INCH: 5					
											13		9		13		9		THUNDERSTORMS: 2		HEAVY FOG: 0		SNOWFALL ≥ 1.0 INCH: :					

APRIL 2003  
MINNEAPOLIS - ST. PAUL, MN

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

# MINNEAPOLIS – ST. PAUL, MN

APRIL 2003 MSP WBAN # 14922

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	2400 LST	
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			Water	Equiv.
01													01												01		0.00		
02													02												02		0.00		
03													03	T											03		T		
04													04	T	T										04		0.01		
05	T	T	T	T	T	T	T	T	T	T	T		05	T	T				T		T	T	T		05		T		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.00		
09													09												09		0.00		
10													10												10		0.00		
11													11												11		0.00		
12													12												12		0.00		
13													13												13		0.00		
14													14												14		0.00		
15													15			T	T	T	0.34	T	0.02	0.01	0.44	0.05	15		0.86		
16	0.01	T	0.01	0.07	0.01	T	0.07	0.16	0.20	0.15	0.04	0.07	16	0.17	0.05	T	0.01	0.02	T					16		1.04			
17	T				T	T	T						17												17		T		
18													18		T		0.05	0.06	T	T					18		0.11		
19	T	T	T										19		T	T	0.05	0.02	0.08	0.06	0.02	0.01	T	19		0.24			
20	T	0.03	0.01				T	T	T	T			20			0.01	T	T	0.01	0.01	0.01	T	0.02	20		0.10			
21	0.01	T	0.01	T									21												21		0.02		
22													22												22		0.00		
23													23												23		0.00		
24													24												24		0.00		
25													25												25		0.00		
26													26												26		0.00		
27													27												27		0.00		
28													28												28		0.00		
29													29				T	T							29		T		
30													30			T	T	0.01	T		0.01	T		30		0.02			

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)	.20	.30	.31	.35	.39	.43	.45	.46	.48	.50	.50	.51
Ending Date	15	15	15	15	15	15	15	15	15	15	15	16
Ending Time (Hour/Min)	2231	2233	2233	2233	2233	2246	2246	2305	2337	2346	2346	0034

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1971–2000

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	SQ Squalls
PR Partial	RA Rain	PY Spray	SS Sandstorm
SH Shower(s)	SG Snow Grains	SA Sand	GL Glaze
TS Thunderstorm	SN Snow	VA Volcanic Ash	
VC In the Vicinity	UP Unknown Precipitation		

Intensity (as indicated on pages 4 to 6):  
'+' = Heavy    ' ' = Moderate    '-' = Light

## MINNEAPOLIS–ST.PAUL, MN APRIL 2003

Ceilorometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR–SS), or midnight to midnight (MN–MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0–2 oktas, Partly Cloudy = 3–6 oktas, Cloudy = 7–8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled to saturation at constant pressure by evaporation of water into it.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR–SS		MN–MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01							10.00	10.00	
02							10.00	10.00	
03							1.75	10.00	
04							1.50	10.00	
05							8.00	10.00	
06							9.00	10.00	
07							10.00	10.00	
08							10.00	10.00	
09							10.00	10.00	
10							7.00	10.00	
11							10.00	10.00	
12							10.00	10.00	
13							10.00	10.00	
14							9.00	10.00	
15							1.75	10.00	
16							1.75	10.00	
17							4.00	10.00	
18							4.00	10.00	
19							1.50	8.00	
20							5.00	10.00	
21							10.00	10.00	
22							10.00	10.00	
23							10.00	10.00	
24							10.00	10.00	
25							10.00	10.00	
26							10.00	10.00	
27							10.00	10.00	
28							10.00	10.00	
29							10.00	10.00	
30							10.00	10.00	
<b>MONTHLY AVGS</b>							8.04	9.93	
<b>SUNSHINE (MINUTES)</b>									
Total:                      Possible: Percent Possible:									
<b>NUMBER OF DAYS WITH:</b>									
<b>SKY CONDITION</b>									
CLR   PTLY CLDY   CLOUDY   MISSING 30									
<b>MINIMUM VISIBILITY (MILES)</b>									
<=0.25    <=3.0    >=7.0 0            5            22									



OBSERVATIONS AT 3-HOURLY INTERVALS

MINNEAPOLIS-ST. PAUL, MN

APRIL 2003

MSP

WBAN # 14922

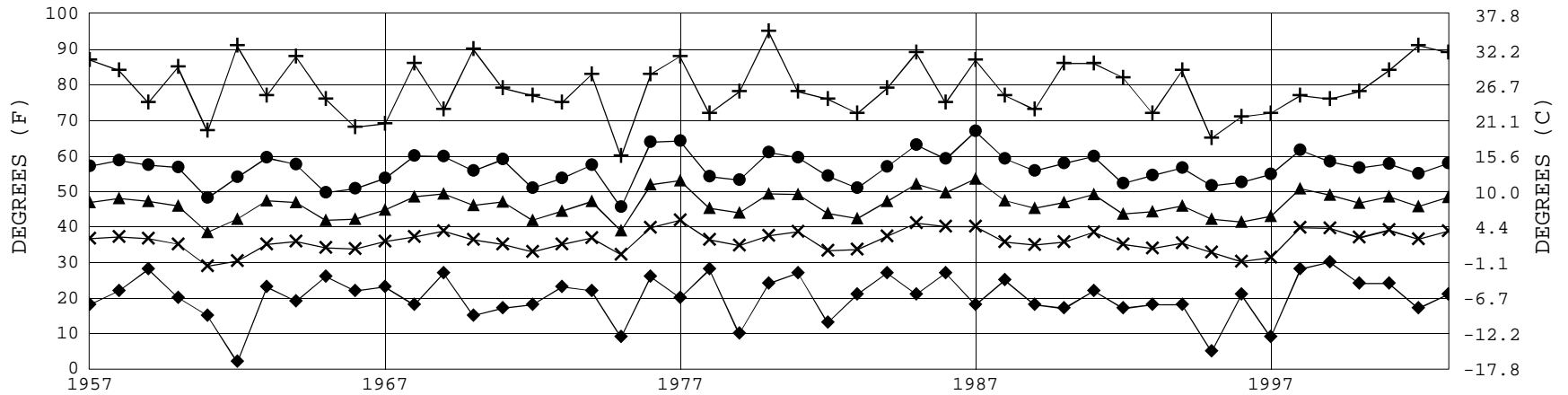
Table with columns for Hour (LST), Sky Cover, Ceiling, Observation Time (LST), Eff Cl'd Amt, Visibility (Miles), Weather, Temperature (F) (Dry Bulb, Dew Point, Wet Bulb), Relative Humidity (Pct), Wind (Speed, Direction, Tens of Deg), Pressure (Inches, Hg) (Station, Sea Level), and other meteorological parameters. Data is organized by date and time intervals.

# OBSERVATIONS AT 3-HOURLY INTERVALS

**MINNEAPOLIS-ST. PAUL, MN**  
 APRIL 2003 MSP WBAN # 14922

HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		
	SKY COVER	CEILING 100'S OF FT		OBSERVATION TIME (LST)	EFF CLD AMT	RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL		OBSERVATION TIME (LST)	EFF CLD AMT	RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION
SUNRISE: 0512 APR 25 SUNSET: 1909												SUNRISE: APR 31 SUNSET:												
03	SCT	NC		48	34	42	58	5	01	28.99	29.88													
06	OVC	085		48	35	42	61	7	02	29.01	29.91													
09	OVC	080		50	35	43	57	10	04	29.04	29.95													
12	BKN	200		59	42	50	53	7	06	29.02	29.93													
15	SCT	NC		65	37	51	36	7	05	28.98	29.87													
18	FEW	NC		64	38	51	38	8	05	28.96	29.85													
21	FEW	NC		57	35	47	44	10	05	28.99	29.88													
24	FEW	NC		49	30	41	48	7	08	29.00	29.91													
SUNRISE: 0511 APR 26 SUNSET: 1910												3-HOURLY OBSERVATION NOTES												
03	CLR	NC		44	28	37	53	7	08	29.00	29.91	Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8, SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibility = 8/8.												
06	FEW	NC		42	30	37	62	7	VR	29.01	29.91	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.												
09	SCT	NC		54	38	46	55	5	15	29.00	29.89	NC = No ceiling detected.												
12	SCT	NC		66	41	53	40	6	17	28.96	29.85	& = Original observation contained additional weather elements.												
15	BKN	250		71	39	54	31	7	14	28.91	29.80	See page 3 for additional notes.												
18	SCT	NC		72	39	55	30	8	15	28.86	29.75													
21	BKN	250		66	41	53	40	9	15	28.87	29.75													
24	BKN	250		64	40	52	41	10	21	28.87	29.75													
SUNRISE: 0509 APR 27 SUNSET: 1912												SUMMARY BY HOUR												
03	SCT	NC		61	43	52	52	13	22	28.89	29.78	HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)			
CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES, HG)		VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED	DIRECTION													
06	OVC	055		59	45	52	60	12	21	28.90	29.79	01			44	32	39	65	29.05	29.96	9.87	10	4	7
09	BKN	250		63	48	55	58	15	23	28.89	29.77	02			43	32	38	67	29.05	29.96	9.73	9	4	6
12	BKN	250		72	51	60	48	21	29	28.87	29.75	03			42	31	38	67	29.05	29.96	9.83	10	4	6
15	SCT	NC		72	39	55	30	18	28	28.89	29.77	04			42	31	37	69	29.06	29.97	9.83	9	4	7
18	FEW	NC		71	33	52	25	16	29	28.88	29.77	05			41	31	37	70	29.06	29.97	9.87	10	5	7
21	FEW	NC		63	33	49	33	10	31	28.94	29.83	06			41	31	37	71	29.07	29.98	9.67	10	4	8
24	SCT	NC		57	33	46	41	12	31	29.00	29.89	07			42	31	37	68	29.09	30.00	9.20	10	4	9
SUNRISE: 0508 APR 28 SUNSET: 1913												08			44	31	38	64	29.09	30.00	9.18	12	5	9
03	FEW	NC		50	35	43	57	13	32	29.04	29.94	09			46	31	40	60	29.09	30.00	9.22	11	4	9
06	FEW	NC		43	33	39	68	13	32	29.09	29.99	10			49	32	42	55	29.09	30.00	9.48	11	4	8
09	FEW	NC		48	35	42	61	8	30	29.13	30.03	11			51	32	43	51	29.09	30.00	9.52	13	5	9
12	SCT	NC		57	36	47	45	12	32	29.13	30.03	12			53	32	44	49	29.08	29.99	9.47	12	4	8
15	FEW	NC		60	36	48	41	13	32	29.11	30.02	13			55	31	44	46	29.07	29.97	9.27	12	3	8
18	FEW	NC		59	35	48	41	15	30	29.10	30.01	14			55	31	44	45	29.06	29.96	9.38	12	5	9
21	FEW	NC		53	35	45	51	14	32	29.15	30.06	15			56	31	45	45	29.05	29.95	9.40	12	4	9
24	SCT	NC		49	35	43	59	3	35	29.19	30.09	16			56	31	45	45	29.04	29.94	9.13	12	3	8
SUNRISE: 0506 APR 29 SUNSET: 1914												17			55	31	44	45	29.04	29.95	9.02	12	3	7
03	OVC	095		48	35	42	61	5	02	29.18	30.09	18			54	31	44	47	29.04	29.94	9.11	12	4	6
06	BKN	095		49	36	43	61	6	07	29.19	30.09	19			52	31	43	50	29.04	29.95	9.30	11	5	7
09	OVC	065		51	33	43	50	0	00	29.23	30.14	20			50	32	42	54	29.06	29.97	9.67	11	4	8
12	OVC	150		54	32	44	43	5	35	29.23	30.14	21			49	32	42	57	29.06	29.97	9.53	11	5	8
15	OVC	150		55	34	45	45	5	VR	29.17	30.08	22			48	33	41	59	29.06	29.97	9.47	10	4	8
18	OVC	060		54	34	45	47	0	00	29.14	30.05	23			47	33	40	62	29.06	29.97	9.43	10	4	7
21	OVC	100		53	34	44	49	6	08	29.13	30.04	24			45	32	40	64	29.07	29.97	9.50	10	4	7
24	OVC	080		52	31	43	45	6	04	29.09	30.00													
SUNRISE: 0505 APR 30 SUNSET: 1915																								
03	OVC	070		51	32	43	48	7	04	29.06	29.97													
06	OVC	070		50	31	42	48	9	07	29.06	29.96													
09	OVC	070		53	32	44	45	8	08	29.03	29.93													
12	OVC	150		58	34	47	41	9	07	28.98	29.88													
15	OVC	041		57	36	47	45	8	09	28.97	29.86													
18	OVC	065	—RA	54	44	49	69	6	01	28.94	29.84													
21	BKN	070		50	45	47	83	7	VR	28.94	29.83													
24	BKN	070		51	46	49	83	8	01	28.95	29.85													

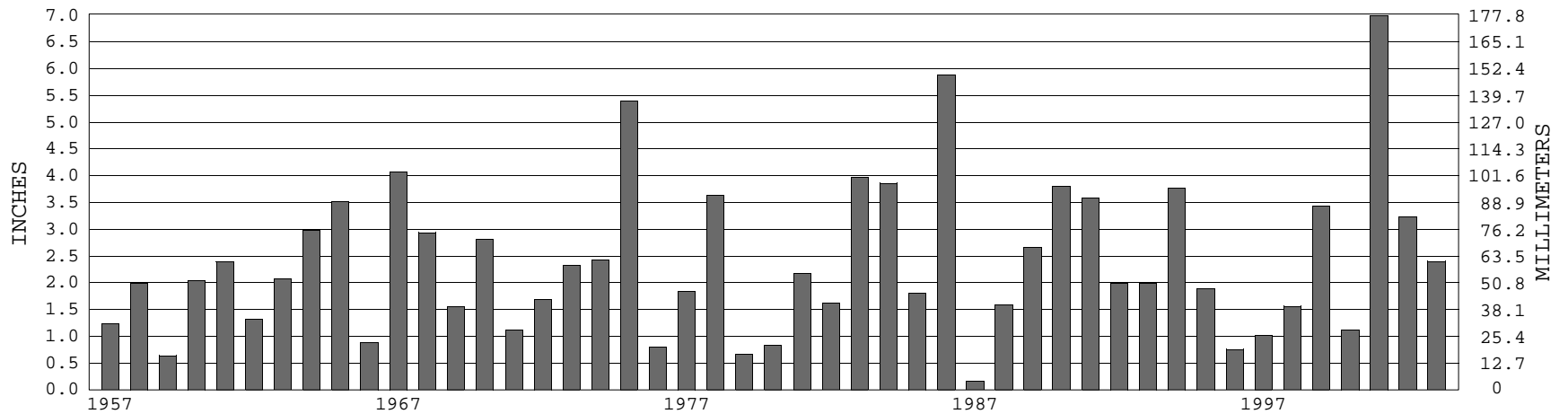
### MINNEAPOLIS-ST. PAUL, MN APRIL TEMPERATURES



+ Extreme Max.      ● Mean Max.      ▲ Mean      × Mean Min.      ◆ Extreme Min.

Long-Term (1957-2003) Mean: 46.2      1961-1990 Normal: 46.6

### MINNEAPOLIS-ST. PAUL, MN APRIL PRECIPITATION



Long-Term (1957-2003) Mean Monthly Total: 2.39

1961-1990 Normal: 2.31



APRIL 2003

MINNEAPOLIS—ST.PAUL, MN

# LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

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