



# JULY 1998

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

# KNOXVILLE, TN

MC GHEE TYSON AIRPORT (TYS)  
 Lat: 35° 49' N Long: 83° 59' W Elev (Ground): 979 Feet  
 Time Zone: EASTERN WBAN: 13891 ISSN #:0198-4810

JULY 1998  
KNOXVILLE, TN

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		0700 LST	1300 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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
01	87	67	77	1	66	70	0	12		0		0.0	0.00	28.90	29.92	5.6	27	7.0	23	29	20	29	01		
02	88	66	77	1	66	69	0	12	RA BR	0		0.0	0.05	29.03	30.04	0.5	26	3.2	18	02	16	02	02		
03	90	65	78	2	67	71	0	13	FG+ BR HZ	0		0.0	0.00	29.05	30.06	0.2	08	2.5	11	24	8	30	03		
04	91	72	82	6	70	73	0	17	TS RA BR HZ	0		0.0	0.01	28.96	29.97	7.2	24	8.1	23	24	20	24	04		
05	90	70	80	4	68	71	0	15	BR HZ	0		0.0	0.00	28.98	29.99	3.3	01	5.3	15	05	13	04	05		
06	91	68	80	4	68	71	0	15	BR HZ	0		0.0	0.00	28.99	30.00	3.1	27	6.0	17	28	14	29	06		
07	93	71	82	6	69	74	0	17	BR HZ	0		0.0	0.00	28.98	29.99	5.1	24	5.9	21	22	16	25	07		
08	86	76	81	5	73	75	0	16	RA BR HZ	0		0.0	0.06	28.92	29.93	6.6	25	7.1	22	25	13	26	08		
09	92	73	83	7	73	75	0	18	TSRA RA FG+ BR HZ	0		0.0	1.24	28.92	29.93	2.2	23	6.0	26	29	22	31	09		
10	88	70	79	3	69	72	0	14	FG+ BR HZ	0		0.0	0.00	28.93	29.94	2.3	01	2.8	18	02	13	02	10		
11	89	70	80	4	65	70	0	15	BR HZ	0		0.0	0.00	28.92	29.93	3.9	05	4.5	13	04	10	04	11		
12	90	69	80	4	67	71	0	15	RA BR HZ	0		0.0	T	28.89	29.90	1.8	06	5.3	18	21	16	21	12		
13	91	72	82	5	67	72	0	17	BR HZ	0		0.0	0.00	28.93	29.94	1.1	19	3.8	17	16	13	15	13		
14	85	70	78	1	67	70	0	13	RA BR HZ	0		0.0	T	28.97	29.98	2.5	07	3.3	14	05	10	07	14		
15	90	68	79	2	65	70	0	14	BR HZ	0		0.0	0.00	28.96	29.97	3.3	05	4.1	14	02	13	04	15		
16	87	71	79	2	70	73	0	14	BR HZ	0		0.0	0.00	28.94	29.95	3.6	02	4.5	16	02	14	02	16		
17	91	73	82	5	68	72	0	17	RA HZ	0		0.0	0.15	28.92	29.92	4.1	01	6.1	22	26	18	27	17		
18	90	65*	78	1	66	70	0	13	BR HZ	0		0.0	0.00	28.95	29.96	1.4	27	2.7	15	26	10	30	18		
19	96*	71	84*	7	69	73	0	19	TS TSRA HZ	0		0.0	0.36	28.99	30.00	2.6	23	5.7	26	19	22	19	19		
20	91	68	80	3	68	72	0	15	BR	0		0.0	0.00	29.05	30.06	3.1	09	4.1	23	03	21	04	20		
21	94	71	83	6	69	73	0	18	TS HZ	0		0.0	0.00	29.08	30.09	3.0	24	4.7	30	19	25	22	21		
22	90	70	80	3	70	73	0	15	TS RA	0		0.0	T	29.05	30.06	3.4	26	4.8	21	26	18	27	22		
23	86	71	79	2	72	73	0	14	TS TSRA RA BR HZ	0		0.0	1.04	29.00	30.01	5.0	24	6.4	40*	30	32*	29	23		
24	85	72	79	2	72	73	0	14	TS TSRA RA BR	0		0.0	0.08	29.00	30.02	4.1	25	6.3	20	36	17	01	24		
25	85	73	79	2	70	72	0	14	BR	0		0.0	0.00	29.05	30.06	1.7	35	2.6	10	02	9	03	25		
26	85	69	77	0	66	69	0	12	RA BR HZ	0		0.0	T	29.05	30.06	2.5	29	4.3	13	26	9	27	26		
27	82	69	76	-1	72	73	0	11	RA BR HZ	0		0.0	1.41	28.98	29.99	6.1	23	7.0	18	24	16	23	27		
28	87	72	80	3	72	74	0	15	RA BR	0		0.0	0.16	28.96	29.97	6.0	24	6.8	16	24	14	24	28		
29	87	72	80	3	72	74	0	15	BR HZ	0		0.0	0.00	28.95	29.96	5.2	24	5.8	14	24	11	24	29		
30	84	73	79	2	73	75	0	14	RA BR	0		0.0	0.07	28.96	29.97	6.8	24	7.2	20	24	17	22	30		
31	81	71	76*	-1	71	73	0	11	TS TSRA RA BR HZ	0		0.0	1.06	29.01	30.03	1.9	29	7.3	34	28	26	30	31		
MONTHLY AVERAGES										TOTALS-->		0.0	5.69	28.98	29.99	1.1	23	5.2	-- MONTHLY AVERAGES						
DEPARTURE FROM NORMAL												1.02		SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3											
DEGREE DAYS										GREATEST 24-HR PRECIPITATION: 1.57 DATE: 27-28				SEA LEVEL PRESSURE				DATE TIME							
MONTHLY TOTAL DEPARTURE										GREATEST 24-HR SNOWFALL: 0.0 DATE:				MAXIMUM : 30.15				DATE TIME : 22 0949							
SEASON TO DATE TOTAL DEPARTURE										GREATEST SNOW DEPTH: 0 DATE:				MINIMUM : 29.85				DATE TIME : 12 1856							
HEATING: 0 0 0 0										NUMBER OF DAYS WITH →				MAXIMUM TEMP ≥ 90: 15				MINIMUM TEMP ≤ 32: 0				PRECIPITATION ≥ 0.01 INCH : 12			
COOLING: 454 94 1044 323														MAXIMUM TEMP ≤ 32 : 0				MINIMUM TEMP ≤ 0 : 0				PRECIPITATION ≥ 0.10 INCH : 7			
														THUNDERSTORMS : 8				HEAVY FOG : 3				SNOWFALL ≥ 1.0 INCH : 0			

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

## KNOXVILLE, TN

JULY 1998

TYS

WBAN # 13891

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	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								0.05				02		0.05		
03													03												03		0.00		
04												T	04							0.01					04		0.01		
05												T	05												05		0.00		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.06		
09					0.01	0.04	0.02	0.01				T	09					1.13	0.03						09		1.24		
10													10												10		0.00		
11													11												11		0.00		
12													12												12		T		
13													13												13		0.00		
14													14												14		T		
15												T	15												15		0.00		
16													16												16		0.00		
17													17				0.05	0.10							17		0.15		
18													18						T	0.36					18		0.00		
19													19												19		0.36		
20													20												20		0.00		
21													21												21		0.00		
22													22												22		T		
23	T	0.17	0.08										23												23		1.04		
24													24												24		0.08		
25													25												25		0.00		
26													26												26		T		
27													27												27		1.41		
28	0.11	0.02	0.03	0.01	0.01								28												28		0.16		
29													29												29		0.00		
30													30												30		0.07		
31													31												31		1.06		

### MAXIMUM SHORT DURATION PRECIPITATION (See Note 1)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note 1: NCDC derives these data from one-minute ASOS values. The table is not printed when inconsistent with ASOS hourly totals.

Note 2: 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 1961 – 1990

## 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	PE Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		

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

# KNOXVILLE, TN JULY 1998

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 at constant pressure by evaporation of moisture into it, to 100% relative humidity.

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

ADDITIONAL NOTES AND CORRECTIONS:  
Sunrise and sunset times listed in the March and April 1998 LCD were incorrect and should not be used.

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01	686						8.00	10.00	
02	699						3.00	10.00	
03	664	76					< .25	10.00	
04	611	70					3.00	10.00	
05	639	77					2.50	10.00	
06	695	80					3.00	8.00	
07	682						2.00	8.00	
08	376						2.50	7.00	
09	524						1.25	8.00	
10	645						.50	10.00	
11	560	65					3.00	10.00	
12	590	68					4.00	8.00	
13	604	70					2.50	10.00	
14	476						5.00	8.00	
15	563						4.00	10.00	
16	587						5.00	9.00	
17	559	65					2.50	10.00	
18	738	86					4.00	10.00	
19	675	79					5.00	10.00	
20	733	86					3.00	10.00	
21	694						6.00	10.00	
22	611						7.00	10.00	
23	349						3.00	10.00	
24	517						3.00	10.00	
25	452	53					4.00	10.00	
26	681	80					3.00	10.00	
27	460	54					1.25	10.00	
28	641	80					4.00	10.00	
29	562						5.00	10.00	
30	455						4.00	10.00	
31	396						3.00	10.00	
<b>MONTHLY AVGS</b>							3.45	9.55	
<b>SUNSHINE (MINUTES)</b>									
Total: 18124 Possible: 26617 Percent Possible: 68									
<b>NUMBER OF DAYS WITH:</b>									
<b>SKY CONDITION</b>									
CLR PTLY CLDY CLOUDY MISSING 31									
<b>MINIMUM VISIBILITY (MILES)</b>									
<=0.25 <=3.0 >=7.0 1 18 2									





# OBSERVATIONS AT 3-HOURLY INTERVALS

# KNOXVILLE, TN

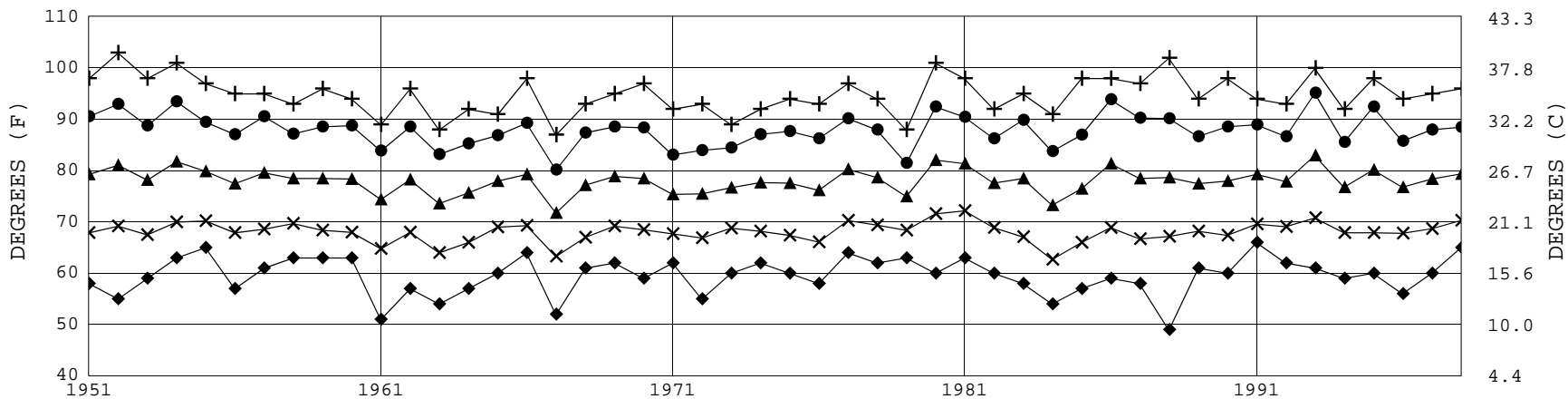
JULY 1998

TYS

WBAN # 13891

HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE ° F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE ° F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)			
	SKY COVER	CEILING		OBSERVATION TIME (LST)	EFF CLD AMT Okltas			DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL		SKY COVER	CEILING		OBSERVATION TIME (LST)	EFF CLD AMT Okltas			DRY BULB	DEW POINT	WET BULB		RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
SUNRISE: 0538								JUL 25								SUNSET: 1947																	
01	BKN	001				4.00	BR	74	73	73	97	0	00	29.02	30.03	01	CLR	NC				9.00				75	73	74	94	0	00	28.92	29.93
04	OVC	020				5.00	BR	74	72	73	94	0	00	29.02	30.03	04	BKN	031				10.00	-TSRA	73	70	71	90	7	32	28.93	29.94		
07	OVC	031				5.00	BR	73	71	72	94	5	33	29.06	30.07	07	OVC	027				9.00		73	72	72	96	6	23	28.98	30.00		
10	OVC	013				5.00	BR	74	70	71	88	3	VR	29.08	30.09	10	OVC	035				3.00	-RABR	74	73	73	97	14	24	29.02	30.03		
13	BKN	110				9.00		79	68	72	69	0	00	29.06	30.08	13	OVC	021				10.00		78	73	75	85	7	25	29.03	30.04		
16	SCT	NC				10.00		83	68	73	61	3	25	29.04	30.05	16	BKN	023				10.00		80	72	74	76	7	05	29.02	30.03		
19	FEW	NC				10.00		82	68	73	63	3	30	29.02	30.03	19	OVC	070				4.00	HZ	78	71	73	79	8	03	29.04	30.05		
22	FEW	NC				8.00		76	70	72	82	0	00	29.04	30.06	22	CLR	NC				5.00	BR	73	69	70	87	7	02	29.09	30.11		
SUNRISE: 0539								JUL 26								SUNSET: 1946																	
01	OVC	043				7.00		74	66	69	76	7	01	29.07	30.08	3-HOURLY OBSERVATION NOTES																	
04	SCT	NC				5.00	BR	71	67	68	87	0	00	29.08	30.09	Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8,																	
07	BKN	110				4.00	HZ	71	66	68	84	0	00	29.07	30.09	SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibility = 8/8.																	
10	CLR	NC				7.00		78	67	71	69	5	32	29.08	30.10	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.																	
13	SCT	NC				10.00		83	63	70	51	7	VR	29.06	30.08	NC= No ceiling detected.																	
16	BKN	060				10.00	-RA	82	64	70	55	7	29	29.04	30.05	& = Original observation contained additional weather elements.																	
19	FEW	NC				10.00		81	65	70	58	5	30	28.99	30.01	See page 3 for additional notes.																	
22	BKN	120				10.00		74	67	69	79	6	21	29.00	30.02																		
SUNRISE: 0540								JUL 27								SUNSET: 1945																	
01	OVC	039				8.00		75	68	70	79	3	25	29.01	30.02																		
04	OVC	045				2.50	BR	70	69	69	97	7	15	28.99	30.01																		
07	OVC	032				1.75	BR	71	70	70	96	8	26	29.00	30.01																		
10	BKN	031				2.50	BR	73	71	72	94	5	24	29.01	30.02																		
13	OVC	015				4.00	HZ	77	72	74	85	9	24	29.00	30.01																		
16	BKN	100				5.00	HZ	79	74	75	85	12	23	28.96	29.97																		
19	BKN	014				10.00		77	73	74	88	9	23	28.92	29.93																		
22	OVC	045				10.00	-RA	75	73	74	94	9	22	28.97	29.99																		
SUNRISE: 0540								JUL 28								SUNSET: 1945																	
01	OVC	019				5.00	-RA BR	73	73	73	100	7	24	28.96	29.98																		
04	BKN	045				7.00		73	73	73	100	8	25	28.95	29.96																		
07	OVC	038				7.00		73	72	72	96	6	21	28.98	30.00																		
10	SCT	NC				10.00		78	73	75	85	6	VR	29.00	30.01																		
13	SCT	NC				10.00		84	72	76	67	8	21	28.98	29.99																		
16	SCT	NC				10.00		86	71	76	61	7	VR	28.94	29.95																		
19	SCT	NC				10.00		83	72	75	70	6	23	28.90	29.92																		
22	FEW	NC				10.00		77	72	74	85	6	23	28.93	29.94																		
SUNRISE: 0541								JUL 29								SUNSET: 1944																	
01	BKN	030				10.00		76	73	74	91	8	25	28.94	29.95																		
04	BKN	021				10.00		73	70	71	90	8	25	28.94	29.95																		
07	OVC	010				8.00		73	71	72	94	6	23	28.97	29.98																		
10	BKN	015				6.00	HZ	77	72	74	85	5	27	28.98	30.00																		
13	FEW	NC				8.00		84	70	74	63	0	00	28.96	29.97																		
16	FEW	NC				5.00	HZ	86	71	76	61	9	22	28.93	29.94																		
19	CLR	NC				8.00		85	68	73	57	0	00	28.90	29.91																		
22	CLR	NC				6.00	BR	78	74	75	87	8	26	28.94	29.96																		
SUNRISE: 0542								JUL 30								SUNSET: 1943																	
01	CLR	NC				8.00		74	72	73	94	7	23	28.95	29.96																		
04	SCT	NC				6.00	BR	73	72	72	96	5	21	28.93	29.94																		
07	OVC	085				4.00	BR	74	73	73	97	6	24	28.98	29.99																		
10	BKN	037				6.00	BR	76	74	75	94	5	21	28.98	29.99																		
13	BKN	023				10.00		82	73	76	74	12	22	28.97	29.98																		
16	BKN	080				10.00		82	73	76	74	9	25	28.95	29.96																		
19	BKN	050				10.00		82	73	76	74	7	25	28.93	29.95																		
22	CLR	NC				10.00		77	73	74	88	7	24	28.95	29.96																		

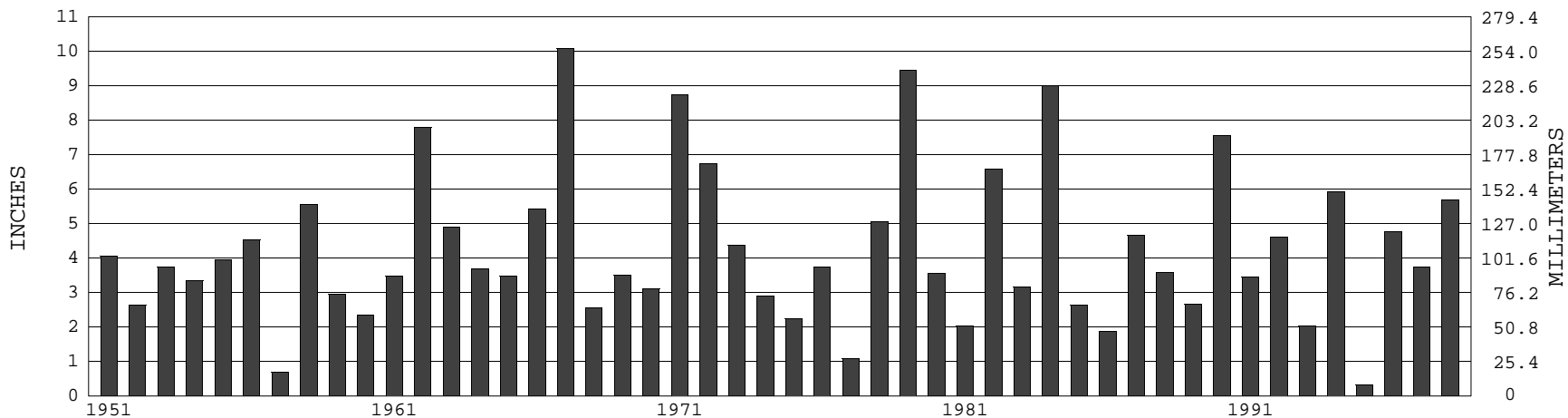
### KNOXVILLE, TN JULY TEMPERATURES



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

Long-Term (1951-1998) Mean: 78.1      1961-1990 Normal: 76.6

### KNOXVILLE, TN JULY PRECIPITATION



Long-Term (1951-1998) Mean Monthly Total: 4.26

1961-1990 Normal: 4.67



**JULY 1998**  
**KNOXVILLE, TN**

# LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

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DIRECTOR

## NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

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