



# MARCH 1999

## 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

MARCH 1999  
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	SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM													
																			5-SEC	2-MIN	SPEED	DIR	SPEED		DIR							
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24										
01	52	34	43	-1	31	37	22	0			0.0	0.00	28.80	29.85	7.9	25	8.9	20	28	16	27	01										
02	64	27	46	1	33	42	19	0	RA		0.0	0.03	28.78	29.83	4.3	22	5.8	46	21	33	26	02										
03	53	31	42	-3	36	38	23	0	RA SN FG+ BR		T	1.40	28.70	29.74	12.1	26	13.1	31	25	28	27	03										
04	44	25*	35*	-10	22	30	30	0	SN		T	T	29.09	30.16	1.4	22	4.3	15	28	11	28	04										
05	58	27	43	-3	30	37	22	0	RA		0.0	T	29.12	30.18	0.7	24	3.4	17	21	13	22	05										
06	61	39	50	4	41	46	15	0	TSRA RA		0.0	0.12	29.04	30.08	10.3	26	13.7	46*	24	34*	21	06										
07	46	31	39	-7	22	32	26	0			0.0	0.00	29.37	30.44	9.3	03	10.6	24	02	21	04	07										
08	45	28	37	-10	20	31	28	0			0.0	0.00	29.28	30.35	6.2	04	7.1	17	05	15	04	08										
09	44	35	40	-7	40	40	25	0	RA DZ BR		0.0	0.50	28.89	29.94	5.3	27	8.8	21	28	15	28	09										
10	42	33	38	-9	33	36	27	0			0.0	0.00	28.98	30.04	6.1	32	8.1	18	01	16	02	10										
11	45	32	39	-9	24	32	26	0			0.0	0.00	29.07	30.13	7.3	02	8.1	18	02	15	02	11										
12	49	27	38	-10	21	32	27	0			0.0	0.00	29.11	30.17	11.8	05	12.1	25	03	21	04	12										
13	40	31	36	-12	29	33	29	0	RA SN PL BR UP		T	0.84	29.01	30.07	8.0	05	9.1	22	05	18	05	13										
14	54	37	46	-2	43	43	19	0	RA BR		0.0	0.34	28.56	29.60	4.3	35	8.6	18	29	15	29	14										
15	45	31	38	-11	33	35	27	0	RA SN BR		2	0.27	28.89	29.95	4.0	01	6.1	21	33	16	01	15										
16	62	27	45	-4	32	39	20	0	BR		0.0	0.00	29.06	30.12	4.0	23	4.8	16	21	14	23	16										
17	71*	37	54	5	36	46	11	0			0.0	0.00	29.02	30.06	8.5	24	9.1	23	24	20	24	17										
18	68	46	57	7	36	48	8	0			0.0	0.00	29.05	30.09	7.5	27	9.9	25	27	21	27	18										
19	60	37	49	-1	34	42	16	0			0.0	0.00	29.18	30.23	6.0	03	6.8	16	05	15	06	19										
20	68	39	54	4	39	47	11	0	RA BR		0.0	0.07	29.03	30.07	3.2	02	5.9	21	29	18	29	20										
21	62	46	54	3	39	46	11	0	RA FG BR HZ		0.0	0.44	28.85	29.88	5.1	32	7.8	25	29	20	28	21										
22	58	32	45	-6	25	38	20	0			0.0	0.00	29.02	30.07	2.3	24	3.5	17	20	13	27	22										
23	68	40	54	3	34	45	11	0	RA		0.0	0.01	29.00	30.04	2.6	29	7.0	29	22	25	24	23										
24	66	49	58*	7	46	50	7	0	RA		0.0	0.09	28.95	29.99	5.9	27	9.4	26	26	21	25	24										
25	58	39	49	-3	36	43	16	0	BR		0.0	0.00	28.99	30.03	6.6	02	7.4	17	34	15	36	25										
26	44	34	39	-13	32	36	26	0	RA DZ SN		0	T	29.05	30.11	7.1	05	8.0	17	05	15	05	26										
27	56	31	44	-8	32	38	21	0	FG+ FZFG BR		0	0.00	29.11	30.17	3.2	05	4.6	14	11	11	05	27										
28	62	30	46	-7	32	41	19	0	BR		0	0.00	29.10	30.15	1.1	25	2.7	13	28	10	29	28										
29	59	44	52	-1	43	47	13	0	RA BR		0	0.05	29.18	30.22	0.1	36	3.4	9	06	8	06	29										
30	67	38	53	0	36	46	12	0	BR		0	0.00	29.23	30.28	7.0	05	7.5	29	05	24	05	30										
31	52	44	48	-5	45	48	17	0	RA BR		0	0.57	29.09	30.13	3.4	04	3.8	13	05	11	04	31										
55.6											34.9	45.3	■ ■	33.4	40.1	19.5	0.0	< MONTHLY AVERAGES		TOTALS-->		2.0	4.73	29.02	30.07	2.1	34	7.4	<-- MONTHLY AVERAGES			
-5.7											-1.7	-3.7	■ ■	<----- DEPARTURE FROM NORMAL ----->											- .36				SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3			
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 1.43 DATE :02-03				SEA LEVEL PRESSURE				DATE TIME															
MONTHLY TOTAL DEPARTURE 604 108									SEASON TO DATE TOTAL DEPARTURE 3042 -567				GREATEST 24-HR SNOWFALL: 2.0 DATE :15				MAXIMUM : 30.50 07 1201															
HEATING: 604 108									NUMBER OF DAYS WITH →				GREATEST SNOW DEPTH: 2 DATE :15				MINIMUM : 29.43 03 0624															
COOLING: 0 0									MAXIMUM TEMP ≥ 90: 0				MINIMUM TEMP ≤ 32: 14				PRECIPITATION ≥ 0.01 INCH : 13															
									MAXIMUM TEMP ≤ 32 : 0				MINIMUM TEMP ≤ 0 : 0				PRECIPITATION ≥ 0.10 INCH : 8															
									THUNDERSTORMS : 1				HEAVY FOG : 2				SNOWFALL ≥ 1.0 INCH : 1															

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

## KNOXVILLE, TN

MARCH 1999

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												02			0.03	
03	0.01	0.07	0.11	0.16	0.10	0.21	0.37	0.05	0.13	0.08	0.05	0.03	03	0.02	0.01	T	T	T	T	T	T	T	T	03			1.40		
04	T	T											04											04			T		
05													05											05			T		
06					0.05	0.06	0.01						06											06			0.12		
07													07											07			0.00		
08													08											08			0.00		
09	0.01	0.09	0.05	0.15	0.12	T	T						09	0.04	0.03	T	T	T		T	T	T	09			0.50			
10													10											10			0.00		
11													11											11			0.00		
12													12											12			0.00		
13									0.03	0.13	0.16	0.18	13	0.14		0.01			0.07	0.06	0.01	0.02	0.05	0.05	0.06	0.13	0.84		
14	0.01						T	T		0.01	T	0.02	14				0.06	0.10	0.04	0.01	0.01	0.01	0.02	0.06	14	0.97	0.34		
15	0.08		0.11	0.05	0.03	T							15											15			0.27		
16													16											16			0.00		
17													17											17			0.00		
18													18											18			0.00		
19													19											19			0.00		
20													20								T	T	0.04	0.03	20			0.07	
21	0.05	0.10	0.11	0.02	0.14	0.01	0.01	T					21											21			0.44		
22													22											22			0.00		
23							T	T					23											23			0.01		
24	T			0.01	0.01	0.03	T	0.02	0.02	T			24											24			0.09		
25													25											25			0.00		
26				T	T								26											26			T		
27													27											27			0.00		
28													28											28			0.00		
29					0.01	0.01	0.01				0.01	0.01	29											29			0.05		
30											0.02	0.01	30											30			0.00		
31											0.03	0.03	31	0.07	0.07	0.11	0.05	0.04	0.02	0.02	T	0.03	0.05	0.01	0.03	31	0.56	0.57	

### MAXIMUM SHORT DURATION PRECIPITATION (See Note)

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 : 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	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

# KNOXVILLE, TN MARCH 1999

Ceilometer (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:

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01	355	51					10.00	10.00	
02	515	75					7.00	10.00	
03	0						.25	10.00	
04	580						8.00	10.00	
05	467						9.00	10.00	
06	279						6.00	10.00	
07	530	76					10.00	10.00	
08	310	44					10.00	10.00	
09	0	0					1.50	10.00	
10	70	10					9.00	10.00	
11	443						10.00	10.00	
12	580						10.00	10.00	
13	0						1.25	10.00	
14	197						1.25	10.00	
15	454	63					1.00	10.00	
16	660	92					4.00	10.00	
17	630	87					10.00	10.00	
18	502	69					10.00	10.00	
19	483						10.00	10.00	
20	457						6.00	10.00	
21	267						1.50	10.00	
22	651						10.00	10.00	
23	384						10.00	10.00	
24	445	60					7.00	10.00	
25	310	42					4.00	10.00	
26	35	5					7.00	10.00	
27	585						<.25	10.00	
28	470						5.00	10.00	
29	309						5.00	10.00	
30	488						5.00	10.00	
31	0	0					1.50	10.00	
<b>MONTHLY AVGS</b>							6.14	10.00	
<b>SUNSHINE (MINUTES)</b>									
Total: 11456    Possible: 22295 Percent Possible: 51									
<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 2            8            16									





# OBSERVATIONS AT 3-HOURLY INTERVALS

# KNOXVILLE, TN

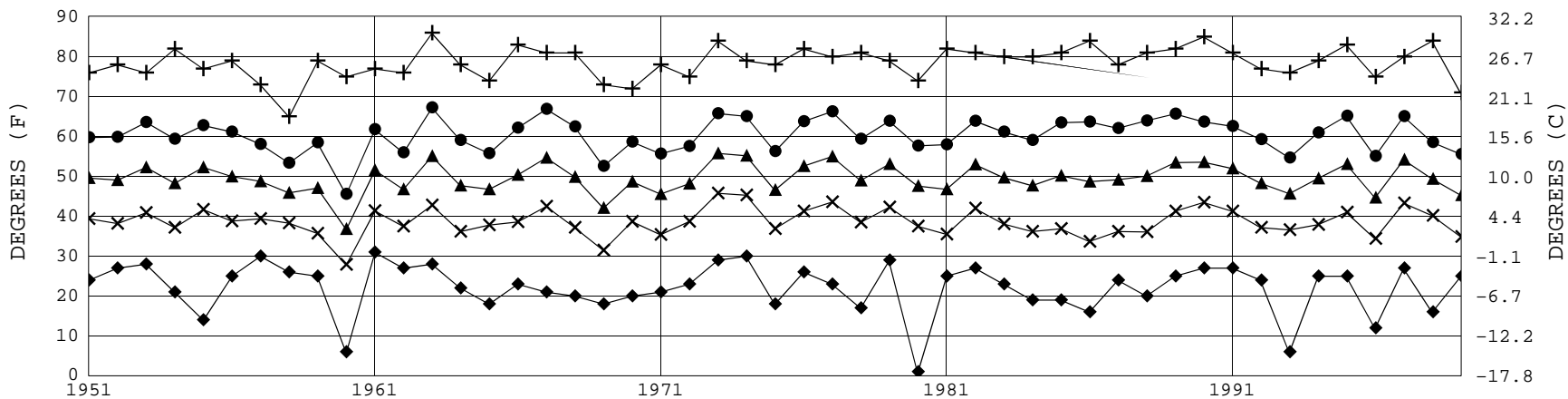
MARCH 1999

TYS

WBAN # 13891

HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)													
	DRY BULB	DEW POINT		WET BULB	RELATIVE HUMIDITY (PCT)		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)		SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL																					
SUNRISE: 0633							MAR 25							SUNSET: 1852							SUNRISE: 0624							MAR 31							SUNSET: 1857						
01	FEW	NC			10.00		46	41	44	83	5	36	29.00	30.04	01	CLR	NC			10.00		48	37	43	66	3	05	29.17	30.21												
04	CLR	NC			5.00	BR	41	39	40	93	7	01	28.97	30.02	04	OVC	090			10.00		47	40	44	77	0	00	29.14	30.17												
07	CLR	NC			5.00	BR	41	39	40	93	7	02	29.00	30.05	07	BKN	100			10.00		47	40	44	77	3	02	29.14	30.18												
10	SCT	NC			7.00		46	41	44	83	12	01	29.06	30.11	10	OVC	032			7.00	-RA	51	43	47	74	3	01	29.16	30.20												
13	SCT	NC			10.00		51	41	46	69	6	05	29.01	30.06	13	OVC	049			3.00	-RA BR	51	48	50	89	3	07	29.14	30.19												
16	FEW	NC			10.00		58	34	47	41	8	07	28.93	29.98	16	OVC	047			2.00	RA BR	50	50	50	100	5	08	29.07	30.11												
19	SCT	NC			10.00		53	30	43	41	12	36	28.94	29.99	19	BKN	045			4.00	BR	52	52	52	100	8	04	28.99	30.04												
22	FEW	NC			10.00		48	26	39	42	12	36	28.98	30.03	22	OVC	065			4.00	BR	52	51	52	97	7	02	28.98	30.02												
SUNRISE: 0631							MAR 26							SUNSET: 1852							3-HOURLY OBSERVATION NOTES																				
01	FEW	NC			10.00		43	23	35	45	7	35	28.97	30.02	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.																										
04	OVC	070			10.00		43	24	36	47	3	35	28.96	30.00	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.																										
07	BKN	080			10.00		40	32	37	73	12	02	28.99	30.04	NC = No ceiling detected.																										
10	OVC	017			10.00		38	35	37	89	13	04	29.06	30.11	& = Original observation contained additional weather elements.																										
13	OVC	018			10.00		40	34	37	79	10	06	29.09	30.15	See page 3 for additional notes.																										
16	OVC	018			10.00		39	34	37	82	9	06	29.06	30.12																											
19	OVC	050			10.00		39	34	37	82	7	07	29.09	30.15																											
22	BKN	015			8.00	DZ	37	35	36	93	6	08	29.12	30.18																											
SUNRISE: 0630							MAR 27							SUNSET: 1853																											
01	OVC	045			10.00		36	34	35	93	5	01	29.13	30.19																											
04	BKN	060			7.00		35	34	35	96	0	00	29.11	30.17																											
07	VV	001			< .25	FZFG	31	31	31	100	0	00	29.14	30.20																											
10	BKN	003			0.50	BR	38	36	37	93	3	VR	29.18	30.24																											
13	CLR	NC			10.00		52	30	42	43	9	02	29.15	30.21																											
16	FEW	NC			10.00		55	31	44	40	6	04	29.07	30.12																											
19	CLR	NC			10.00		50	31	42	48	7	13	29.06	30.12																											
22	CLR	NC			10.00		42	32	38	68	5	05	29.09	30.15																											
SUNRISE: 0629							MAR 28							SUNSET: 1854																											
01	CLR	NC			10.00		38	32	36	79	5	03	29.10	30.16																											
04	CLR	NC			9.00		35	30	33	82	0	00	29.08	30.14																											
07	CLR	NC			5.00	BR	31	29	30	92	0	00	29.15	30.21																											
10	CLR	NC			10.00		49	33	42	55	0	00	29.15	30.20																											
13	CLR	NC			10.00		60	34	48	38	9	29	29.12	30.17																											
16	FEW	NC			10.00		59	32	47	36	5	20	29.06	30.11																											
19	CLR	NC			10.00		57	33	46	41	5	26	29.06	30.12																											
22	OVC	070			10.00		54	37	46	53	0	00	29.10	30.14																											
SUNRISE: 0627							MAR 29							SUNSET: 1855																											
01	OVC	065			10.00		52	39	46	61	5	02	29.12	30.16																											
04	OVC	060			10.00		52	38	45	59	3	30	29.13	30.17																											
07	OVC	050			7.00		49	45	47	86	0	00	29.15	30.19																											
10	BKN	075			5.00	-RA BR	50	47	48	89	7	27	29.21	30.26																											
13	SCT	NC			9.00		53	44	49	72	6	10	29.20	30.24																											
16	SCT	NC			10.00		57	43	50	60	3	14	29.16	30.20																											
19	CLR	NC			10.00		55	42	49	62	5	16	29.18	30.23																											
22	CLR	NC			9.00		47	42	45	83	3	05	29.22	30.28																											
SUNRISE: 0626							MAR 30							SUNSET: 1856																											
01	CLR	NC			7.00		44	41	43	89	5	04	29.23	30.29																											
04	CLR	NC			6.00	BR	41	39	40	93	3	04	29.22	30.28																											
07	CLR	NC			7.00		42	40	41	92	8	04	29.27	30.33																											
10	CLR	NC			10.00		59	37	48	44	15	08	29.30	30.36																											
13	CLR	NC			10.00		64	36	50	35	14	04	29.26	30.31																											
16	CLR	NC			10.00		66	33	50	29	8	04	29.19	30.23																											
19	CLR	NC			10.00		60	34	48	38	8	03	29.19	30.23																											
22	CLR	NC			10.00		57	31	45	37	0	00	29.21	30.25																											

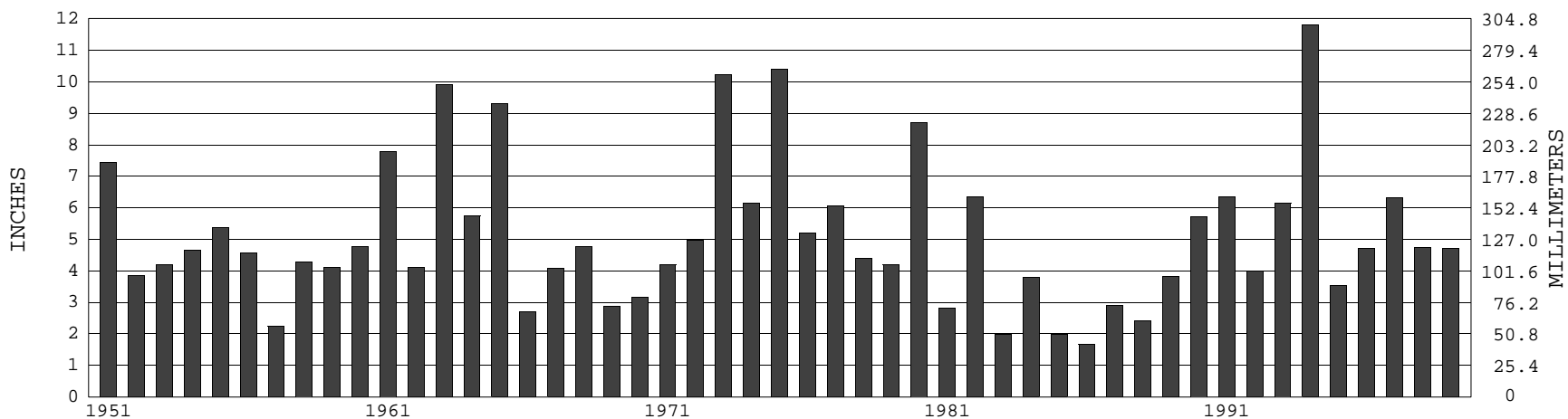
### KNOXVILLE, TN MARCH TEMPERATURES



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

Long-Term (1951-1999) Mean: 49.5      1961-1990 Normal: 49.0

### KNOXVILLE, TN MARCH PRECIPITATION



Long-Term (1951-1999) Mean Monthly Total: 5.12

1961-1990 Normal: 5.09



**MARCH 1999  
KNOXVILLE, TN**

# **LOCAL CLIMATOLOGICAL DATA**

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA – National Weather Service / Department Of Transportation – Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### **NOTICE**

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

We welcome your questions or comments, please contact us at  
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