



SEPTEMBER 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

SEPTEMBER 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	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	58	73	-1	59	64	0	8	BR	0		0.0	0.00	29.07	30.10	1.0	04	2.6	15	36	11	03	01			
02	91	58	75	1	59	65	0	10	BR	0		0.0	0.00	29.00	30.02	1.5	02	2.6	15	02	11	05	02			
03	91	63	77	4	60	66	0	12		0		0.0	0.00	28.95	29.96	0.7	31	2.3	14	30	10	30	03			
04	92	60	76	3	60	66	0	11		0		0.0	0.00	28.92	29.93	0.9	02	2.8	13	36	10	02	04			
05	92	60	76	3	62	67	0	11	HZ	0		0.0	0.00	28.82	29.83	2.9	01	5.0	25	02	20	02	05			
06	91	66	79	6	65	70	0	14		0		0.0	0.00	28.82	29.82	1.8	30	3.6	14	31	10	30	06			
07	94	66	80*	8	60	67	0	15	BR HZ	0		0.0	0.00	28.84	29.85	1.8	33	3.0	18	28	11	32	07			
08	94*	59	77	5	57	65	0	12		0		0.0	0.00	28.82	29.83	0.5	01	2.4	14	28	11	28	08			
09	79	67	73	1	62	66	0	8	RA BR	0		0.0	0.01	28.83	29.84	4.2	25	5.8	17	23	14	29	09			
10	85	53	69	-3	47	58	0	4		0		0.0	0.00	28.90	29.91	1.4	33	4.6	20	28	15	28	10			
11	87	51	69	-3	51	59	0	4		0		0.0	0.00	29.00	30.02	2.3	03	3.7	16	32	13	04	11			
12	90	61	76	5	54	63	0	11		0		0.0	0.00	29.05	30.07	0.9	33	3.4	13	31	10	34	12			
13	85	60	73	2	58	63	0	8	RA	0		0.0	0.01	29.05	30.07	2.8	33	4.6	18	26	15	26	13			
14	82	64	73	2	58	63	0	8	BR HZ	0		0.0	0.00	29.01	30.03	5.4	01	6.2	17	34	14	06	14			
15	85	58	72	1	46	57	0	7		0		0.0	0.00	28.91	29.93	11.9	04	12.2	29	03	24	04	15			
16	78	54	66	-4	43	54	0	1		0		0.0	0.00	28.92	29.94	8.1	36	8.8	28	01	22	02	16			
17	78	50	64	-6	44	54	1	0		0		0.0	0.00	29.07	30.10	6.4	04	7.2	22	04	17	05	17			
18	80	50	65	-5	51	57	0	0		0		0.0	0.00	29.03	30.06	1.3	35	3.8	16	22	13	25	18			
19	85	56	71	1	56	62	0	6	BR	0		0.0	0.00	28.99	30.01	1.2	32	3.0	15	33	11	01	19			
20	81	58	70	0	60	64	0	5	BR HZ	0		0.0	0.00	28.92	29.94	1.7	35	3.5	15	30	11	33	20			
21	70	53	62	-7	57	59	3	0	RA BR HZ	0		0.0	0.22	28.86	29.88	5.8	02	6.5	22	01	17	02	21			
22	68	48	58	-10	43	50	7	0		0		0.0	0.00	28.95	29.98	7.8	02	8.5	23	36	16	03	22			
23	76	40*	58	-10	41	50	7	0		0		0.0	0.00	28.98	30.01	2.1	28	3.4	22	24	14	26	23			
24	81	46	64	-4	47	55	1	0		0		0.0	0.00	28.93	29.96	2.6	25	3.5	18	24	14	23	24			
25	83	49	66	-1	50	57	0	1		0		0.0	0.00	28.98	30.00	1.1	35	2.5	13	24	9	24	25			
26	85	51	68	1	53	60	0	3	BR	0		0.0	0.00	29.04	30.06	1.3	36	3.4	13	31	10	35	26			
27	87	65	76	10	63	67	0	11	RA	0		0.0	0.01	29.04	30.06	0.9	13	4.9	16	22	15	22	27			
28	82	69	76	10	69	71	0	11	RA DZ BR	0		0.0	0.25	29.08	30.10	2.1	08	3.7	11	08	9	08	28			
29	73	55	64	-1	65	65	1	0	RA BR	0		0.0	0.32	28.96	29.98	5.6	25	8.3	32*	29	24*	28	29			
30	68	46	57*	-8	44	50	8	0		0		0.0	0.00	29.04	30.08	5.4	04	6.1	21	02	16	02	30			
< MONTHLY AVERAGES											TOTALS-->		0.0	0.82	28.96	29.98	2.1	01	4.7	<- MONTHLY AVERAGES						
2.1											-2.5		->				-2.25				SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3					
DEGREE DAYS											GREATEST 24-HR PRECIPITATION: 0.32 DATE: 29				SEA LEVEL PRESSURE DATE TIME											
MONTHLY TOTAL DEPARTURE											GREATEST 24-HR SNOWFALL: 0.0 DATE:				MAXIMUM : 30.18 17 0953											
SEASON TO DATE TOTAL DEPARTURE											GREATEST SNOW DEPTH: 0 DATE:				MINIMUM : 29.76 08 1753											
HEATING: 28 10 28 10											NUMBER OF DAYS WITH =>				MAXIMUM TEMP ≥ 90: 8				MINIMUM TEMP ≤ 32: 0				PRECIPITATION ≥ 0.01 INCH: 6			
COOLING: 181 10 1425 192															MAXIMUM TEMP ≤ 32: 0				MINIMUM TEMP ≤ 0: 0				PRECIPITATION ≥ 0.10 INCH: 3			
															THUNDERSTORMS: 0				HEAVY FOG: 0				SNOWFALL ≥ 1.0 INCH: 0			

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

KNOXVILLE, TN

SEPTEMBER 1999 TYS WBAN # 13891

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												03		0.00		
04													04												04		0.00		
05													05												05		0.00		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.00		
09													09												09		0.01		
10													10												10		0.00		
11													11												11		0.00		
12													12												12		0.00		
13													13												13		0.01		
14													14												14		0.00		
15													15												15		0.00		
16													16												16		0.00		
17													17												17		0.00		
18													18												18		0.00		
19													19												19		0.00		
20													20												20		0.00		
21													21												21		0.22		
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		0.01		
28													28												28		0.25		
29													29												29	0.33	0.32		
30													30												30		0.00		

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

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

KNOXVILLE, TN SEPTEMBER 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							4.00	10.00	
02							4.00	10.00	
03							8.00	10.00	
04							9.00	10.00	
05							6.00	10.00	
06							10.00	10.00	
07							5.00	10.00	
08							7.00	10.00	
09							5.00	10.00	
10							10.00	10.00	
11							10.00	10.00	
12							10.00	10.00	
13							8.00	10.00	
14							3.00	10.00	
15							10.00	10.00	
16							10.00	10.00	
17							10.00	10.00	
18							10.00	10.00	
19							4.00	10.00	
20							5.00	10.00	
21							3.00	10.00	
22							10.00	10.00	
23							10.00	10.00	
24							10.00	10.00	
25							7.00	10.00	
26							5.00	10.00	
27							7.00	10.00	
28							1.50	10.00	
29							1.75	10.00	
30							10.00	10.00	
MONTHLY AVGS							7.11	10.00	
SUNSHINE (MINUTES)									
Total:					Possible:				
					Percent Possible:				
NUMBER OF DAYS WITH:									
SKY CONDITION									
CLR		PTLY CLDY		CLOUDY		MISSING		30	
MINIMUM VISIBILITY (MILES)									
<=0.25			<=3.0			>=7.0			
0			4			18			

OBSERVATIONS AT 3-HOURLY INTERVALS

KNOXVILLE, TN

SEPTEMBER 1999

TYS

WBAN # 13891

Table with columns for HOUR (LST), SKY COVER, CEILING, SATELLITE, WEATHER, TEMPERATURE (F), WIND, PRESSURE (INCHES, HG), and their respective sub-categories for two consecutive 24-hour periods in September 1999.

OBSERVATIONS AT 3-HOURLY INTERVALS

Table with columns: HOUR (LST), SKY COVER, CEILING 100'S OF FT, SATELLITE (OBSERVATION TIME, EFF CLD AMT), VISIBILITY (MILES), WEATHER, TEMPERATURE (DRY BULB, DEW POINT, WET BULB, RELATIVE HUMIDITY), WIND (SPEED, DIRECTION), PRESSURE (STATION, SEA LEVEL). Rows are grouped by date: SEP 25, 26, 27, 28, 29, 30.

Table with columns: HOUR (LST), SKY COVER, CEILING 100'S OF FT, SATELLITE (OBSERVATION TIME, EFF CLD AMT), VISIBILITY (MILES), WEATHER, TEMPERATURE (DRY BULB, DEW POINT, WET BULB, RELATIVE HUMIDITY), WIND (SPEED, DIRECTION), PRESSURE (STATION, SEA LEVEL). Rows are grouped by date: SEP 31.

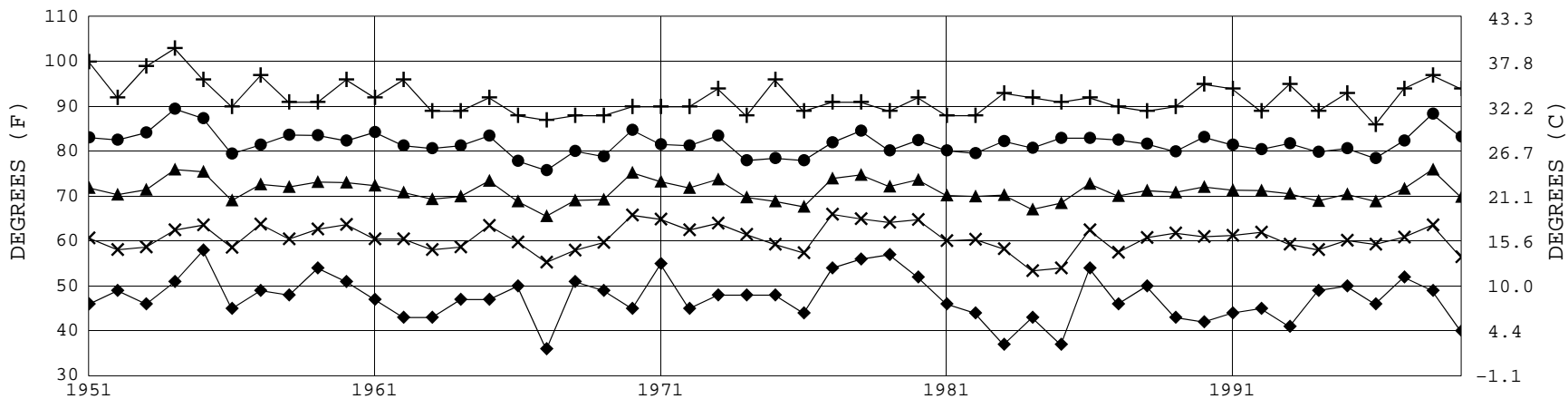
3-HOURLY OBSERVATION NOTES

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. Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet. NC= No ceiling detected. & = Original observation contained additional weather elements. See page 3 for additional notes.

SUMMARY BY HOUR

Table with columns: HOUR (LST), CEILOMETER, EFF CLD AMT, DRY BULB, DEW POINT, WET BULB, RELATIVE HUMIDITY, PRESSURE (STATION, SEA LEVEL), VISIBILITY (MILES), WIND SPEED (MPH), WIND DIRECTION. Rows represent hourly summaries from 01 to 24.

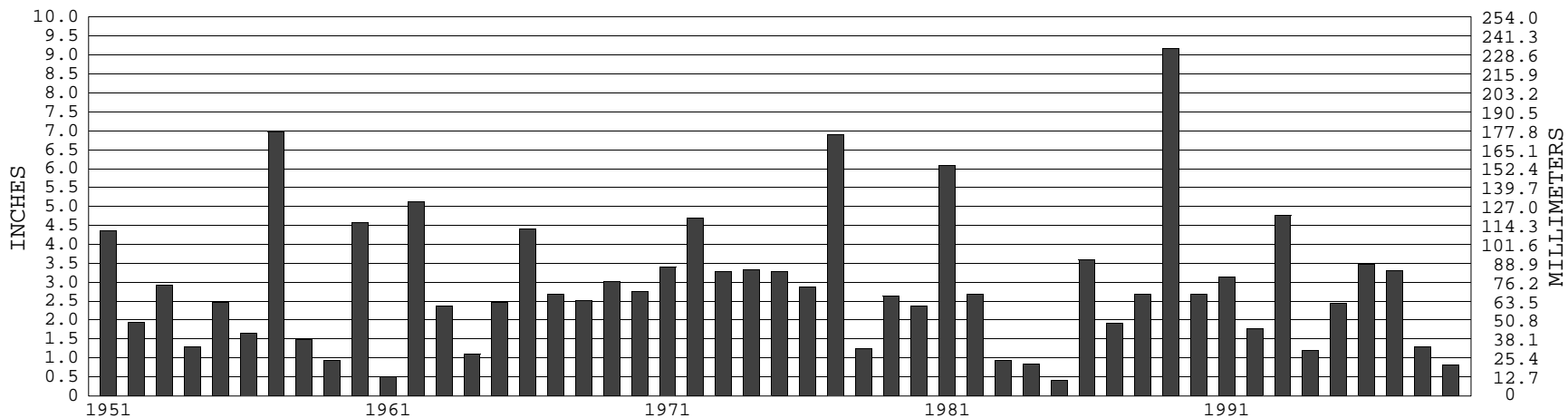
KNOXVILLE, TN SEPTEMBER TEMPERATURES



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

Long-Term (1951-1999) Mean: 71.3 1961-1990 Normal: 70.1

KNOXVILLE, TN SEPTEMBER PRECIPITATION



Long-Term (1951-1999) Mean Monthly Total: 2.92

1961-1990 Normal: 3.07



**SEPTEMBER 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
828–271–4800 (voice), 828–271–4876 (fax),
828–271–4010(TDD)
or orders@ncdc.noaa.gov
Local Climatological Data is available at www.ncdc.noaa.gov

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER
151 PATTON AVE RM 120
ASHEVILLE, NC 28801 –5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS
POSTAGE AND FEES PAID
NOAA
PERMIT G–19