Technical Report 2000-01

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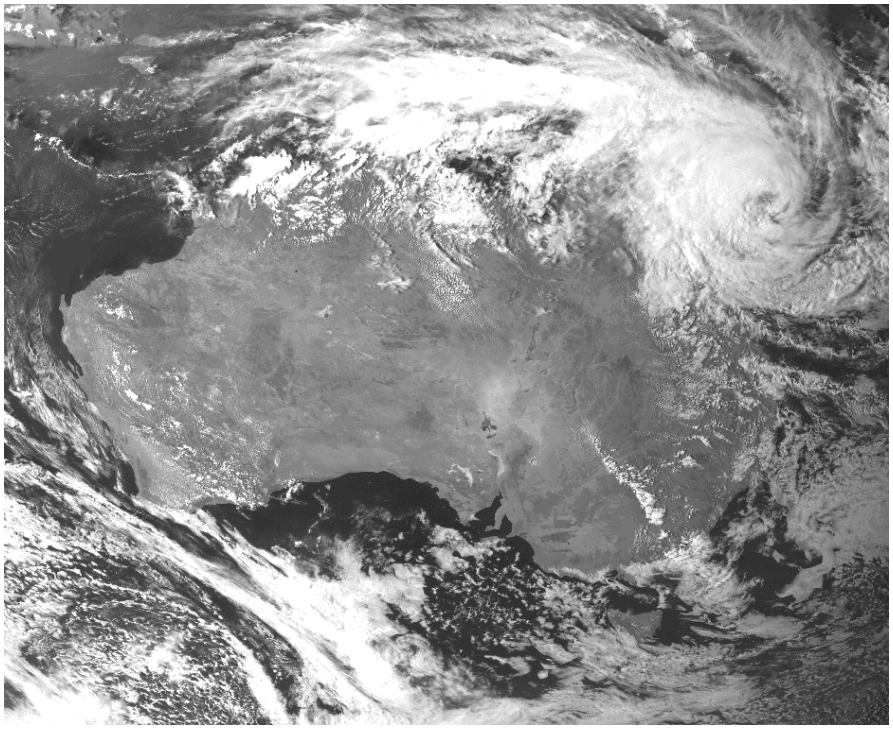
National Climatic Data Center

The 2000 Olympic Games–A Climatology For Sydney, Australia



US Department of Commerce
NOAA/ NESDIS
National Climatic Data Center
Asheville, NC 28801-5696
August, 2000

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The 2000 Olympic Games–
A Climatology for Sydney, Australia

Neal Lott, Tom Ross

August 2000

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National Environmental Satellite Data and Information Service
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INTRODUCTION

This report provides climatological summaries for Sydney, Australia, site of this year's Olympic Games from September 13 - October 1, 2000. Sydney has a rather mild climate, with usually favorable weather conditions for athletic events during September–which is early climatological spring in Australia. The statistics provided in this report are based on a 1939-1991 period of climatological record. Values presented are in English units, with temperatures in Fahrenheit (F) and precipitation in inches unless otherwise noted (e.g., C = Celsius, mm = millimeters).

CLIMATOLOGICAL REVIEW

In September, Sydney's average maximum temperature is 68 degrees F (20 C), with an average minimum of 50 F (10 C). Temperatures during September have ranged from as high as 95 F (35 C) to as low as 36 F (2 C). However, the maximum temperature reaches or exceeds 80 F (27 C) only 7% of the time, while the minimum temperature is 45 F (7 C) or higher 84% of the time. So, extreme temperatures are not common.

Rainfall averages 2.2 inches (56 mm), making September the driest month (on average), with 10 days typically having measurable precipitation. The maximum rainfall observed for the month is 7.4 inches (188 mm), with a minimum of .1 inch (3 mm). The 24-hour maximum is 3.2 inches (81 mm). Thunderstorms are observed on an average of 2 days during the month.

Obstructions to vision (e.g., rain, drizzle, fog, haze) occur approximately 18% of the time during September, but this is usually in the form of haze, as fog occurs less than 1% of the time. Dew points average in the 40's, with humidities in the 50-80% range and an average relative humidity of 65%. The average wind speed is 7 knots (4 m/sec), with a maximum gust of 60 knots (31 m/sec) for the period of record. The winds exceed 17 knots (9 m/sec) 10% of the time.

On an annual basis, the average maximum temperature is 72 F (22 C), with an average minimum of 55 F (13 C), and extremes ranging from a lowest of 32 F (0 C) to a highest of 110 F (43 C). Rainfall averages 44.5 inches/year (1130 mm/year), ranging from a minimum of 20.5 inches (521 mm) to a maximum of 79.7 inches (2024 mm).

TABLES/SUMMARIES

The tables which follow are derived from 1939-1991 data provided by the Australian Bureau of Meteorology. The data were used in production of the International Station Meteorological Climate Summary CDROM (see http://www.ncdc.noaa.gov/ol/climate/climateproducts.html for details on this and other CD products), from which these tables were selected. Additional tables are available on the CD.

The NCDC web site (http://www.ncdc.noaa.gov) has numerous other climatic datasets and products online, and the Australian Bureau of Meteorology (http://www.bom.gov.au/olympic/zclimate.htm and http://www.bom.gov.au/climate/how/newproducts/IDCstoc.shtml) has additional climatic information for the area.

There are fifteen tables included below, with an overall station climate summary, followed by several percent frequency tables (e.g., for precipitation, weather, and temperature) and daily averages and extremes. Where shown, times are always local standard time (LST). Explanations and examples are provided with each table.

FIGURES

Figures 1 through 6, courtesy of the Australian Bureau of Meteorology, provide a climatic map overview of Australia and for the Sydney area in particular. These are helpful in gaining a geographical picture of how Sydney's climatology relates to its surrounding area and to Australia as a whole. The average precipitation, maximum temperature, and minimum temperature for September are presented in the six figures.

STA 947670 | ASSY | SYDNEY APT, AU
LAT 33 56S LONG 151 10E ELEV 20(ft) 6(m)

STATION CLIMATIC SUMMARY POR (HOURLY): 1939-1991

	TEMPERATURE (DEG F)					PRECIPITATION (INCHES) (^)						REL HUM		VAP	DEW	PR	WIND (KTS)				MEAN NO. OF DAYS WITH (&)									
	MEANS			EXTREME		PRECIP.			SNOWFALL			PERCENT		PR	PT.	ALT					PRECIP.	SNOW-				TEMP (DEG F)			
												(LST)		IN.	(F)	FT.	PREVAIL	MAX		SKY	INCHES	FALL(")	TH	FOG	MAX	MAX	MIN	MIN
	MAX	MIN	AVG	MAX	MIN	MEAN	MAX	MIN	24H MAX	MEAN	MAX	24H MAX	AM 06	PM 15	HG.		DIR	SPD	GST	CVR	>= .01	>= .50	>= .10	>= 1.5	STM	*	>= 90	>= 70	<= 32	<= 10
JAN	79	65	72	109	49	4.0	15.8	.2	6.2	****	***	***	83	62	.54	61	50	NE	12	82	BRK	11	2	0	0	3	1	3	30	0	0
FEB	79	66	73	109	52	4.5	23.3	.3	8.5	****	***	***	85	64	.57	62	50	S	14	58	BRK	12	2	0	0	2	#	2	27	0	0
MAR	77	63	70	106	45	5.2	15.5	.3	7.9	****	***	***	85	61	.53	60	45	S	13	69	BRK	13	3	0	0	2	1	1	29	0	0
APR	73	57	65	96	43	4.2	18.8	.5	6.8	****	***	***	84	59	.44	55	40	S	12	66	SCT	11	2	0	0	1	2	#	22	0	0
MAY	68	51	60	86	37	3.9	16.7	.1	6.5	****	***	***	83	57	.35	49	50	NW	5	70	SCT	12	2	0	0	1	3	0	10	0	0
JUN	63	47	55	80	34	5.2	18.3	.1	5.9	****	***	***	83	58	.30	45	55	W	8	70	BRK	11	3	0	0	1	2	0	2	0	0
JUL	62	44	53	80	32	2.5	10.0	0	5.2	****	***	***	80	52	.27	42	55	NW	6	59	SCT	9	1	0	0	#	1	0	2	#	0
AUG	64	46	55	88	34	3.2	15.3	.2	8.1	****	***	***	79	50	.27	43	55	W	9	62	SCT	10	2	0	0	1	1	0	5	0	0
SEP	68	50	59	95	36	2.2	7.4	.1	3.2	****	***	***	79	52	.31	46	55	NW	7	60	SCT	10	1	0	0	2	2	#	11	0	0
OCT	72	55	64	101	41	3.1	10.7	0	4.4	****	***	***	79	55	.37	51	60	S	13	68	BRK	11	2	0	0	2	1	1	18	0	0
NOV	75	59	67	110	43	3.4	15.6	.2	5.6	****	***	***	78	56	.41	54	60	NE	13	82	BRK	11	2	0	0	4	1	2	22	0	0
DEC	78	63	71	110	47	3.1	14.1	.2	7.2	****	***	***	82	61	.49	58	60	NE	13	68	BRK	11	2	0	0	4	#	3	28	0	0
ANN	72	55	64	110	32	44.5	79.7	20.5	8.5	****	***	***	82	57	.37	51	55	S	10	82	SCT	132	24	0	0	23	15	12	205	#	0
POR	53	53	53	53	53	53	53	53	53	0	0	0	33	34	34	34	34	38	38	53	45	53	53	0	0	53	53	53	53	53	53

F = FAHRENHEIT.
T = TRACE AMOUNTS (PRECIP < .005", SNOWFALL < .05", OR SNOW DEPTH < .5").
KTS = KNOTS FOR WIND SPEED.
REL HUM = RELATIVE HUMIDITY IN PERCENT.
VAP PR = VAPOR PRESSURE IN INCHES OF MERCURY.
DEW PT = DEW POINT IN DEGREES FAHRENHEIT.
PR ALT = PRESSURE ALTITUDE IN TENS OF FEET (E.G., 50 = 500 FEET).
SKY CVR = THE PREDOMINANT SKY CONDITION, BRK = BROKEN, SCT = SCATTERED CLOUDS.
TH STM = THUNDERSTORM.
TEMP = TEMPERATURE.
# = MEAN NO. DAYS < .5 DAYS.
" = INCHES.
* = VISIBILITY IS NOT CONSIDERED, MIST INCLUDED WHEN REPORTED.
& = ANN TOTALS MAY NOT EQUAL SUM OF MONTHLY VALUES DUE TO ROUNDING.
^ = 24 HR MAX PRECIP AND SNOWFALL ARE DAILY TOTALS (MID-NIGHT TO MID-NIGHT).
I = MISSING DATA - VALUE NOT COMPUTED.
***... = DATA NOT AVAILABLE.
POR = NUMBER OF YEARS USED FOR THE SUMMARY.

EXAMPLE – THE AVERAGE MAXIMUM TEMPERATURE IN SEPTEMBER IS 68 DEGREES F.

STATION CLIMATIC SUMMARY (CONTINUED)

	MEAN NO. OF DAYS WITH (&)								
	PRECIPITATION					OBSTR TO VISION			
	R/DZ	FRZ R/DZ	SNOW	HAIL /SLT	PRCP	SMOK HAZE	BLOW SNOW	DUST SAND	OBS VIS
JAN	16	0	0	#	16	17	0	#	17
FEB	16	0	0	#	16	16	0	#	16
MAR	16	0	0	#	16	17	0	#	18
APR	14	0	0	#	14	15	0	#	16
MAY	14	0	0	0	14	16	0	#	17
JUN	14	0	0	#	14	15	0	0	15
JUL	12	0	0	#	12	16	0	#	16
AUG	13	0	0	#	13	15	0	#	15
SEP	13	0	0	#	13	15	0	#	15
OCT	15	0	0	#	15	16	0	#	16
NOV	16	0	0	#	16	16	0	1	17
DEC	15	0	0	#	15	17	0	1	17
ANN	174	0	0	1	174	191	0	2	195
POR	53	53	53	53	53	53	53	53	53

FRZ = FREEZING.
R/DZ = RAIN OR DRIZZLE.
SLT = SLEET.
PRCP = PRECIPITATION.
OBSTR TO VISION = OBSTRUCTION TO VISION.
SMOK = SMOKE.
BLOW SNOW = BLOWING SNOW.
OBS VIS = OBSTRUCTION TO VISION.
& = ANN TOTALS MAY NOT EQUAL SUM OF MONTHLY VALUES DUE TO ROUNDING.
I = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
# = MEAN NO. DAYS < .5 DAYS.
POR = NUMBER OF YEARS USED FOR THE SUMMARY.

EXAMPLE – IN SEPTEMBER, AN AVERAGE OF 13 DAYS HAVE RAIN OR DRIZZLE.

Percent Frequency Daily PRECIPITATION AMOUNTS

	NONE	TRACE	.01	<=.05	<=.10	<=.25	INCHES <=.50	<=1.0	<=2.5	<=5.0	<=10.0	<=20.0	>20.0	PERCENT OF DAYS WITH AMOUNTS >=.01	TOTAL NO. OF OBS	MEAN	TOTAL PRECIP (INCHES) HI	LOW
JAN	63.4	0	5.0	7.2	4.1	8.1	4.7	4.3	2.6	.4	.1	0	0	36.6	1608	4.04	15.76	.21
FEB	57.3	0	4.1	9.7	7.1	8.0	5.6	4.1	3.2	.6	.3	0	0	42.7	1456	4.54	23.35	.30
MAR	59.5	0	4.0	9.8	5.0	7.6	5.1	4.7	3.2	.9	.2	0	0	40.5	1612	5.21	15.48	.25
APR	62.2	0	4.5	8.9	4.4	7.5	4.7	3.3	3.9	.6	.1	0	0	37.8	1589	4.24	18.76	.47
MAY	62.7	0	4.0	8.4	5.2	7.1	5.2	4.3	2.7	.5	.1	0	0	37.3	1640	3.90	16.71	.11
JUN	61.6	0	4.7	6.9	3.1	6.6	6.8	5.0	4.5	.8	.1	0	0	38.4	1588	5.16	18.30	.10
JUL	71.0	.1	3.7	7.3	4.3	5.1	3.8	3.2	1.3	.2	.1	0	0	28.9	1642	2.49	9.98	0
AUG	68.1	0	4.5	5.8	5.0	7.1	4.3	2.9	1.8	.5	.1	0	0	31.9	1642	3.20	15.28	.19
SEP	67.6	0	5.2	6.7	6.2	6.6	3.6	2.6	1.2	.3	0	0	0	32.4	1588	2.18	7.45	.06
OCT	64.5	0	5.5	7.9	5.1	7.6	4.0	3.2	1.8	.5	0	0	0	35.5	1641	3.08	10.68	0
NOV	62.0	0	4.5	9.1	4.6	8.6	5.0	4.3	1.4	.3	.2	0	0	38.0	1589	3.36	15.59	.21
DEC	66.1	0	4.1	8.2	4.6	6.8	4.3	4.0	1.8	.1	.1	0	0	33.9	1641	3.06	14.14	.19
ANN	63.9	*	4.5	8.0	4.9	7.2	4.7	3.8	2.4	.5	.1	0	0	36.1	19236	44.47	79.68	20.54

* = PERCENT < .05
T = ZERO PRECIP, SNOWFALL OR SNOW DEPTH MEASURED BUT A TRACE WAS NOTED
+ = ANNUAL HI AND LOW VALUES ARE DERIVED FROM ANNUAL TOTALS
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED

EXAMPLE – IN SEPTEMBER, 6.7% OF THE DAYS HAVE BETWEEN .02 AND .05 INCHES RAINFALL;
3.6% OF THE DAYS HAVE BETWEEN .25 AND .50 INCHES RAINFALL.

Percent Frequency of Hourly Observations of WEATHER CONDITIONS

SEPTEMBER

HOURS (LST)	TSTM	RAIN &/OR DRIZZLE	FREEZE RAIN & FREEZE DRIZZLE	SNOW, SLEET &/OR HAIL	HAIL	PERCENT OBS WITH PRECIP	FOG	SMOKE &/OR HAZE	BLOWING SNOW	DUST &/OR SAND	PERCENT W/OBST VISION	TOTAL NO. OF OBS.
00	#	#	#	#	#	#	#	#	#	#	#	#
03	.1	7.7	0	0	0	7.7	.6	15.9	0	.1	16.6	1379
06	.4	6.5	0	0	0	6.5	3.4	25.3	0	.3	29.0	1560
09	.1	7.1	0	0	0	7.1	.5	28.5	0	.3	29.3	1570
12	.1	6.3	0	0	0	6.3	.1	16.3	0	.2	16.6	1570
15	.4	6.8	0	0	0	6.8	0	11.8	0	.4	12.2	1569
18	.5	8.1	0	0	0	8.1	0	14.1	0	.3	14.4	1491
21	.2	7.8	0	0	0	7.8	0	8.5	0	.3	8.8	1493
ALL	.2	7.2	0	0	0	7.2	.7	17.3	0	.3	18.2	10632

TSTM = THUNDERSTORM.
OBS = OBSERVATIONS.
OBST VISION = OBSTRUCTIONS TO VISION.
* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.

EXAMPLE – AT 12 NOON LOCAL TIME IN SEPTEMBER, THUNDERSTORMS OCCUR AN AVERAGE OF .1% OF THE TIME;
RAIN OR DRIZZLE OCCURS AN AVERAGE OF 6.3% OF THE TIME.

ATMOSPHERIC PHENOMENON – PERCENT OF DAYS WITH EACH TYPE OF WEATHER SOMETIME DURING THE DAY

MONTH	HOURS (LST)	TSTM	RAIN &/OR DRIZZLE	FREEZE RAIN & FREEZE DRIZZLE	SNOW, SLEET, &/OR HAIL	HAIL	PERCENT OBS WITH PRECIP	FOG	SMOKE &/OR HAZE	BLOWING SNOW	DUST &/OR SAND	PERCENT W/OBST VISION	TOTAL NO.OF OBS.
JAN	DAILY	9.3	51.4	0	0	.2	51.4	1.7	54.0	0	1.2	55.2	1610
FEB	DAILY	8.8	56.2	0	0	.1	56.2	1.5	56.0	0	.7	56.7	1456
MAR	DAILY	5.3	52.9	0	0	.2	53.0	4.2	55.7	0	.4	56.9	1612
APR	DAILY	3.9	47.4	0	0	.3	47.5	7.1	50.9	0	.2	53.0	1590
MAY	DAILY	2.7	46.7	0	0	0	46.7	8.6	52.8	0	.4	54.7	1641
JUN	DAILY	2.4	47.5	0	0	.1	47.5	6.1	49.1	0	0	50.2	1589
JUL	DAILY	1.6	38.6	0	0	.1	38.6	4.6	50.3	0	.3	51.4	1643
AUG	DAILY	3.5	42.8	0	0	.5	42.9	3.3	48.0	0	.2	48.6	1643
SEP	DAILY	5.1	44.3	0	0	.4	44.5	5.2	49.1	0	1.2	50.7	1588
OCT	DAILY	7.2	48.7	0	0	.1	48.7	3.0	50.7	0	1.5	51.4	1642
NOV	DAILY	11.7	52.0	0	0	.5	52.2	2.2	54.9	0	2.0	55.7	1589
DEC	DAILY	11.4	49.0	0	0	.7	49.1	1.5	53.6	0	2.1	55.1	1643
ANN	DAILY	6.0	48.0	0	0	.3	48.1	4.1	52.1	0	.8	53.3	19246

TSTM = THUNDERSTORM.
OBS = OBSERVATIONS.
OBST VISION = OBSTRUCTIONS TO VISION.
* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED

EXAMPLE – IN SEPTEMBER, 44.3% OF THE DAYS HAVE RAIN OR DRIZZLE SOMETIME DURING THE DAY (INCLUDES DRIZZLE WITH NO MEASURABLE RAIN).

Percent Frequency of Hourly WIND DIRECTION vs WEATHER CONDITIONS

SEPTEMBER

WIND DIR.	RAIN	RAIN SHOWRS	DRIZZLE	FREEZE RAIN FREEZE	SLEET " SHOWRS ICE	SNOW " GRAINS " PELLET	HAIL SMALL HAIL	THUNDER TORNADO SQUALLS	FOG	ICE FOG GROUND FOG	SMOKE HAZE	BLOWING SNOW	BLOWING SAND DUST	NO WEATHER
N	5.9	.2	.2	0	0	0	0	.5	0	0	7.1	0	.2	67.5
NNE	5.1	0	0	0	0	0	0	.2	.2	0	7.3	0	.2	64.3
NE	3.2	.5	.5	0	0	0	0	.4	0	0	6.0	0	0	67.2
ENE	4.0	.7	0	0	0	0	0	.4	0	0	1.8	0	0	79.4
E	3.7	4.4	.7	0	0	0	0	.3	0	0	1.3	0	0	80.8
ESE	4.7	3.5	.6	0	0	0	0	0	0	0	1.2	0	0	84.3
SE	4.1	4.1	1.3	0	0	0	0	0	0	0	1.3	0	0	83.8
SSE	4.5	2.7	1.1	0	0	0	0	.2	0	0	1.3	0	0	84.8
S	6.7	7.7	.9	0	0	0	0	.4	0	0	1.1	0	.2	76.4
SSW	11.4	10.1	1.0	0	0	0	0	0	0	0	.2	0	0	74.2
SW	9.9	6.4	.7	0	0	0	0	.2	0	0	1.5	0	0	77.8
WSW	3.5	2.9	.2	0	0	0	0	.4	0	0	.8	0	.4	90.2
W	1.7	1.1	.4	0	0	0	0	0	.3	.1	2.9	0	0	89.1
WNW	2.1	.6	.2	0	0	0	0	.4	.7	0	7.4	0	.1	78.7
NW	2.7	.5	.2	0	0	0	0	.2	1.7	.2	15.2	0	.4	63.5
NNW	3.3	.9	0	0	0	0	0	.4	.7	0	12.0	0	.2	67.9
VAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLM	3.5	.9	.7	0	0	0	0	.1	1.6	.5	12.1	0	.1	63.0
%TOTAL	4.2	2.4	.5	0	0	0	0	.2	.5	.1	6.1	0	.1	74.4

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
CLM = CALM.

EXAMPLE – IN SEPTEMBER, WHEN WINDS ARE FROM THE S (SOUTH), RAIN OCCURS 6.7% OF THE TIME, WHILE NO SIGNIFICANT WEATHER OCCURS 76.4% OF THE TIME.

Cumulative Percent Frequency Daily MAXIMUM TEMPERATURES

Temp(F)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
>=110	0	0	0	0	0	0	0	0	0	0	.1	.1	*
>=105	1.1	.3	.1	0	0	0	0	0	0	0	.3	.6	.2
>=100	2.0	1.4	.4	0	0	0	0	0	0	.2	1.1	1.8	.6
>=95	4.1	3.3	1.2	.1	0	0	0	0	.1	1.1	3.1	4.6	1.5
>=90	8.4	7.4	4.0	.5	0	0	0	0	.5	3.6	6.2	9.9	3.4
>=85	17.7	15.5	10.7	3.9	.1	0	0	.2	2.6	8.1	12.1	18.2	7.4
>=80	41.0	42.9	31.0	12.1	1.9	.1	.1	.8	7.3	17.1	23.7	35.3	17.6
>=75	72.3	76.0	65.2	36.5	8.8	.4	.7	4.3	16.7	32.0	43.1	63.9	34.6
>=70	96.1	97.0	93.0	72.8	33.4	6.2	5.9	15.3	37.2	57.5	74.8	88.9	56.1
>=65	99.9	99.9	99.8	95.4	75.6	34.8	27.2	45.7	67.7	84.2	95.8	99.3	76.8
>=60	100	100	100	99.9	97.2	84.8	75.2	84.1	94.2	98.5	99.9	100	94.4
>=55	100	100	100	100	100	99.5	98.5	99.5	100	100	100	100	99.8
>=50	100	100	100	100	100	100	99.9	99.9	100	100	100	100	100
>=45	100	100	100	100	100	100	100	100	100	100	100	100	100
MEAN	79.1	79.1	77.3	73.1	67.8	63.3	62.3	64.4	68.3	72.1	75.1	78.1	71.6
STDV	7.2	6.6	5.9	5.6	4.7	3.8	4.1	5.1	6.7	7.8	7.9	7.9	8.7
#OBS	1608	1456	1611	1589	1640	1588	1642	1637	1588	1641	1588	164119229	

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
STDV = STANDARD DEVIATION.
#OBS = NUMBER OF OBSERVATIONS.

EXAMPLE – IN SEPTEMBER, THE DAILY MAXIMUM TEMPERATURE REACHES 80 DEGREES F
OR HIGHER 7.3% OF THE TIME (I.E., AN AVERAGE OF 7.3% OF THE DAYS).

Cumulative Percent Frequency Daily MINIMUM TEMPERATURES

Temp(F)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
>=75	.2	.6	0	0	0	0	0	0	0	.1	0	.2	.1
>=70	13.2	15.9	5.2	.1	0	0	0	0	.1	.2	.1	4.3	3.2
>=65	59.9	63.7	39.2	7.0	.2	0	0	.2	.6	3.0	12.5	38.3	18.4
>=60	91.2	93.9	78.5	34.6	6.2	.7	.1	.4	3.5	21.1	49.4	78.4	37.7
>=55	98.9	99.7	96.2	68.0	25.0	8.8	2.4	5.0	17.2	53.5	80.9	96.8	53.9
>=50	99.9	100	99.6	90.7	56.8	29.3	12.9	21.1	49.5	84.3	96.7	99.9	69.7
>=45	100	100	100	99.4	88.0	63.3	40.9	57.2	83.8	98.8	99.9	100	85.7
>=40	100	100	100	100	99.6	93.7	82.4	92.4	99.2	100	100	100	97.2
>=35	100	100	100	100	100	99.9	99.4	99.9	100	100	100	100	99.9
>=30	100	100	100	100	100	100	100	100	100	100	100	100	100
MEAN	65.2	65.7	62.9	56.9	50.9	46.8	43.9	45.8	49.7	55.0	59.0	62.9	55.3
STDV	4.0	3.8	4.4	5.2	5.2	5.1	4.7	4.8	5.0	5.1	4.7	4.3	8.9
#OBS	1608	1454	1611	1588	1640	1588	1639	1638	1569	1622	1589	163819184	

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
STDV = STANDARD DEVIATION.
#OBS = NUMBER OF OBSERVATIONS.

EXAMPLE – IN SEPTEMBER, THE DAILY MINIMUM TEMPERATURE IS 50 DEGREES F OR HIGHER 49.5% OF THE TIME (I.E., 49.5% OF THE DAYS).

Daily Average and Extreme Temperatures by Day of Year

SEPTEMBER

	MEAN TEMP		MAXIMUM TEMPERATURE					MINIMUM TEMPERATURE				
			AVERAGE		EXTREME			AVERAGE		EXTREME		
DAY	DEG F	DEG C	DEG F	DEG C	DEG F	DEG C	DATE	DEG F	DEG C	DEG F	DEG C	DATE
1	56.7	13.7	66.0	18.9	76.0	24.4	1969.	47.3	8.5	36.0	2.2	1967.
2	57.3	14.1	67.0	19.4	87.0	30.6	1982.	47.7	8.7	38.0	3.3	1945.
3	57.9	14.4	66.9	19.4	79.0	26.1	1982.	48.9	9.4	41.0	5.0	1963.+
4	56.9	13.8	66.4	19.1	80.0	26.7	1962.	47.3	8.5	41.0	5.0	1957.+
5	57.2	14.0	66.5	19.2	83.0	28.3	1986.+	47.9	8.8	40.0	4.4	1940.
6	57.7	14.3	67.9	19.9	82.0	27.8	1972.+	47.4	8.6	40.0	4.4	1960.+
7	57.8	14.4	67.5	19.7	85.0	29.4	1972.	48.2	9.0	39.0	3.9	1955.
8	58.5	14.7	69.3	20.7	89.0	31.7	1953.	47.6	8.7	38.0	3.3	1946.
9	58.8	14.9	68.1	20.1	85.0	29.4	1981.	49.5	9.7	40.0	4.4	1962.
10	58.0	14.5	67.2	19.6	85.0	29.4	1989.	48.8	9.3	40.0	4.4	1947.
11	59.3	15.1	68.3	20.2	89.0	31.7	1981.	50.2	10.1	42.0	5.6	1952.
12	58.6	14.8	68.2	20.1	92.0	33.3	1946.	49.0	9.5	40.0	4.4	1970.+
13	58.0	14.4	67.0	19.4	88.0	31.1	1946.	49.0	9.5	38.0	3.3	1969.+
14	58.4	14.7	67.5	19.7	83.0	28.3	1947.	49.3	9.6	41.0	5.0	1962.
15	59.0	15.0	68.7	20.4	87.0	30.6	1942.	49.2	9.6	41.0	5.0	1943.
16	58.7	14.9	67.9	19.9	82.0	27.8	1963.	49.6	9.8	44.0	6.7	1977.+
17	59.3	15.2	68.6	20.3	87.0	30.6	1979.+	49.9	10.0	39.0	3.9	1944.
18	59.0	15.0	68.3	20.2	86.0	30.0	1951.	49.6	9.8	39.0	3.9	1943.
19	59.7	15.4	68.8	20.4	86.0	30.0	1951.	50.6	10.3	42.0	5.6	1972.+
20	59.1	15.1	68.6	20.3	84.0	28.9	1971.	49.7	9.8	40.0	4.4	1969.
21	59.5	15.3	68.7	20.4	90.0	32.2	1941.	50.3	10.2	36.0	2.2	1943.
22	60.6	15.9	70.1	21.2	90.0	32.2	1952.	51.1	10.6	42.0	5.6	1963.
23	59.7	15.4	68.8	20.4	89.0	31.7	1983.	50.7	10.4	42.0	5.6	1962.
24	59.5	15.3	68.1	20.1	85.0	29.4	1988.	51.0	10.6	41.0	5.0	1946.
25	60.0	15.5	69.1	20.6	94.0	34.4	1980.	50.8	10.4	41.0	5.0	1969.
26	59.7	15.4	68.2	20.1	95.0	35.0	1965.	51.2	10.7	43.0	6.1	1974.+
27	60.3	15.7	69.3	20.7	89.0	31.7	1987.	51.3	10.7	42.0	5.6	1968.+
28	61.1	16.2	70.3	21.3	91.0	32.8	1987.	52.0	11.1	43.0	6.1	1968.+
29	61.7	16.5	71.3	21.8	86.0	30.0	1987.	52.2	11.2	45.0	7.2	1948.
30	61.6	16.4	70.1	21.2	93.0	33.9	1980.	53.1	11.7	43.0	6.1	1982.+
MONTH	59.0	15.0	68.3	20.2	95.0	35.0	1965.	49.7	9.8	36.0	2.2	1967.+

T = TRACE AMOUNTS (<.01 OR <.5 OR < 1.0 INCHES).
+ = SAME AMOUNT OCCURRED IN PREVIOUS YEAR(S) (EXCEPT FOR 0.0).
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.

EXAMPLE – THE DAILY MEAN TEMPERATURE ON SEPTEMBER 20 IS 59.1 DEGREES F.

Hourly DRY-BULB TEMPERATURE (F) Means and Standard Deviations

HOURS (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
-MEAN	0	0	0	0	0	0	0	0	0	0	0	0	0
00-STDV	0	0	0	0	0	0	0	0	0	0	0	0	0
-#OBS	#	#	#	#	#	#	#	#	#	#	#	#	#
-MEAN	67.0	68.0	65.8	60.3	54.2	50.3	47.8	49.5	53.3	58.0	61.3	64.7	57.1
03-STDV	4.0	3.6	4.1	5.1	5.3	5.4	5.1	5.1	5.2	5.3	4.7	4.2	8.3
-#OBS	835	762	1288	1376	1423	1380	1425	1424	1379	1367	810	835	14304
-MEAN	66.4	66.8	64.4	58.7	52.9	49.1	46.3	48.0	51.6	56.8	61.1	64.5	55.8
06-STDV	4.0	3.9	4.6	5.5	5.6	5.7	5.4	5.3	5.6	5.6	5.0	4.2	8.7
-#OBS	941	849	1410	1557	1619	1581	1636	1631	1559	1459	905	907	16054
-MEAN	72.2	72.3	70.1	64.4	57.6	52.7	50.6	53.9	59.5	64.8	68.4	70.8	61.8
09-STDV	4.9	4.4	4.0	4.5	4.6	4.7	4.5	4.4	4.9	5.5	6.0	5.5	8.9
-#OBS	1007	910	1455	1572	1618	1566	1625	1628	1570	1505	942	981	16379
-MEAN	75.5	75.7	74.6	70.4	64.9	60.3	59.0	61.4	65.4	69.2	72.0	74.1	67.5
12-STDV	6.9	6.0	5.7	5.3	4.4	3.7	3.8	4.7	6.3	7.5	7.6	7.2	8.1
-#OBS	948	863	1413	1566	1621	1576	1636	1634	1570	1479	910	912	16128
-MEAN	75.2	75.7	74.7	70.9	66.0	61.7	60.7	62.5	65.7	68.9	71.2	73.4	68.0
15-STDV	6.6	5.7	5.5	5.5	4.7	4.0	4.2	5.2	6.5	7.3	7.5	7.0	7.7
-#OBS	1011	923	1458	1570	1628	1580	1636	1631	1569	1512	941	976	16435
-MEAN	72.6	72.9	71.7	67.3	62.0	57.7	56.4	58.3	61.8	65.3	68.1	70.9	64.4
18-STDV	5.4	4.2	4.1	4.4	4.2	3.4	3.6	4.2	5.4	5.9	5.9	5.7	7.3
-#OBS	897	814	1355	1495	1545	1493	1543	1543	1491	1398	835	890	15299
-MEAN	70.3	70.9	69.7	65.0	58.9	54.5	52.7	55.2	59.1	62.8	65.4	68.4	61.6
21-STDV	4.3	3.5	3.6	4.4	4.7	4.2	4.2	4.4	4.9	4.9	4.7	4.6	7.6
-#OBS	897	819	1329	1464	1518	1467	1516	1546	1493	1397	840	892	15178
-MEAN	71.4	71.9	70.2	65.4	59.6	55.3	53.4	55.6	59.6	63.8	66.9	69.7	62.4
ALL-STDV	6.3	5.6	5.9	6.6	6.7	6.4	6.8	7.0	7.5	7.6	7.3	6.6	9.2
-#OBS	6536	5940	9708	10600	10972	10643	11017	11037	10631	10117	6183	6393	109777

# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
STDV = STANDARD DEVIATION.
#OBS = NUMBER OF OBSERVATIONS.

EXAMPLE – IN SEPTEMBER, THE TEMPERATURE AVERAGES 65.7 DEGREES F AT 1500 (3 PM) LOCAL STANDARD TIME, WITH A STANDARD DEVIATION OF 6.5 DEGREES F.

Percent Frequency TEMPERATURE vs WIND DIRECTION (from HOURLY DATA)

SEPTEMBER

TEMP. (Deg F)	WIND DIRECTION NNW & N	NNE &NE	ENE & E	ESE &SE	SSE & S	SSW &SW	WSW & W	WNW &NW	CALM	TOTAL FREQ.	PERCENT TOTAL
>=92	0	0	0	0	0	0	0	100	0	3	*
>=87	0	5.3	5.3	0	0	0	26.3	57.9	5.3	19	.2
>=82	26.6	4.7	1.6	0	0	0	20.3	43.8	3.1	64	.6
>=77	27.7	15.0	4.0	.6	.6	0	12.1	38.2	1.7	173	1.6
>=72	20.4	21.3	6.1	1.1	1.4	2.3	13.8	30.6	2.9	441	4.1
>=67	14.1	27.9	9.2	3.8	3.5	2.8	15.6	19.9	3.2	1016	9.5
>=62	8.8	23.4	9.0	9.8	15.4	3.7	11.9	11.3	6.6	2324	21.8
>=57	5.2	7.1	6.4	9.3	27.0	9.9	11.7	10.8	12.6	3080	28.9
>=52	4.3	1.5	1.6	3.7	13.8	15.1	17.9	17.3	24.6	2030	19.1
>=47	6.5	.3	.1	.2	1.3	7.2	22.7	29.1	32.7	1062	10.0
>=42	8.9	0	0	0	0	1.6	18.8	45.3	25.4	426	4.0
>=37	0	0	0	0	0	0	23.1	69.2	7.7	13	.1
TOTALS	8.0	11.3	5.3	6.0	14.3	7.7	14.9	17.9	14.6	10651	100

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.

EXAMPLE – IN SEPTEMBER, WHEN THE TEMPERATURE IS 87 DEGREES F OR HIGHER, THE WINDS ARE FROM THE WNW-NW 57.9% OF THE TIME.

Hourly DEW POINT TEMPERATURE (F) Means and Standard Deviations

HOURS (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
-MEAN	0	0	0	0	0	0	0	0	0	0	0	0	0
00-STDV	0	0	0	0	0	0	0	0	0	0	0	0	0
-#OBS	#	#	#	#	#	#	#	#	#	#	#	#	#
-MEAN	61.2	62.6	60.5	54.9	48.6	44.4	41.0	42.2	46.0	50.7	54.0	58.8	50.6
03-STDV	5.7	5.4	5.7	6.7	7.0	6.5	5.9	6.4	6.5	6.9	7.6	6.1	9.6
-#OBS	682	621	1102	1197	1240	1200	1271	1270	1259	1184	630	651	12307
-MEAN	61.0	62.1	59.7	54.1	47.8	43.8	40.2	41.5	45.0	50.0	53.7	58.6	49.9
06-STDV	5.5	5.3	5.9	6.7	7.0	6.6	5.9	6.4	6.4	7.1	7.8	6.2	9.7
-#OBS	682	622	1103	1197	1240	1200	1270	1270	1259	1184	630	651	12308
-MEAN	60.7	62.3	60.6	55.2	49.2	44.9	41.5	42.6	46.0	50.3	52.9	57.7	50.6
09-STDV	6.3	5.7	6.4	6.9	7.1	6.5	6.0	6.8	7.0	7.7	8.6	7.4	9.7
-#OBS	682	621	1103	1196	1238	1200	1271	1271	1260	1184	630	651	12307
-MEAN	60.5	61.9	59.9	55.0	49.7	45.7	42.2	42.4	45.4	49.6	52.6	57.8	50.6
12-STDV	6.5	5.8	6.6	7.2	7.6	7.0	6.9	7.3	7.7	8.6	9.2	7.3	9.9
-#OBS	682	622	1100	1196	1239	1200	1271	1270	1259	1183	630	651	12303
-MEAN	60.8	62.0	59.9	55.1	49.4	45.5	41.7	42.1	45.7	50.0	53.0	57.8	50.5
15-STDV	6.1	5.7	6.8	7.5	8.1	7.6	7.5	8.1	8.0	8.6	9.3	7.5	10.2
-#OBS	682	622	1102	1197	1239	1200	1271	1270	1260	1184	630	650	12307
-MEAN	61.4	62.6	60.9	56.2	50.7	46.7	43.3	44.0	47.3	51.4	54.1	58.5	51.8
18-STDV	5.9	5.5	6.1	6.9	7.4	7.0	6.7	7.5	7.5	8.0	8.7	7.0	9.6
-#OBS	682	621	1102	1195	1239	1200	1270	1270	1260	1184	630	651	12304
-MEAN	62.0	63.4	61.4	56.5	50.4	46.2	42.9	44.0	47.9	52.1	54.9	59.4	52.1
21-STDV	5.6	5.4	5.7	6.7	7.3	6.7	6.5	6.9	6.9	7.3	7.9	6.3	9.5
-#OBS	682	622	1102	1197	1240	1200	1270	1269	1257	1183	630	651	12303
-MEAN	61.1	62.4	60.4	55.3	49.4	45.3	41.8	42.7	46.2	50.6	53.6	58.4	50.9
ALL-STDV	6.0	5.6	6.2	7.0	7.4	6.9	6.6	7.1	7.2	7.8	8.5	6.9	9.8
-#OBS	4774	4351	7714	8375	8675	8400	8894	8890	8814	8286	4410	4556	86139

# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
STDV = STANDARD DEVIATION.
#OBS = NUMBER OF OBSERVATIONS.

EXAMPLE – IN SEPTEMBER, THE DEW POINT AVERAGES 45.7 DEGREES F AT 1500 (3 PM) LOCAL STANDARD TIME, WITH A STANDARD DEVIATION OF 8.0 DEGREES F.

Cumulative Percent Frequency of Hourly RELATIVE HUMIDITY (IN %)

SEPTEMBER

HOURS (LST)	PERCENTAGE FREQUENCY OF RELATIVE HUMIDITY GREATER THAN 10%	20%	30%	40%	50%	60%	70%	80%	90%	MEAN RELATIVE HUMIDITY	TOTAL NO. OF OBS.
00	#	#	#	#	#	#	#	#	#	#	#
03	100	99.9	99.9	98.6	94.9	86.2	71.3	50.4	19.3	77.9	1253
06	100	100	100	98.6	95.6	88.4	75.6	53.3	23.7	79.4	1251
09	100	99.9	98.6	90.3	77.1	56.7	34.2	15.1	3.1	63.1	1260
12	99.9	98.1	88.6	70.2	49.4	28.6	13.4	7.9	1.4	51.4	1259
15	99.8	96.8	85.8	72.2	55.4	31.3	14.0	6.8	1.0	51.8	1259
18	99.9	99.0	94.9	85.9	76.3	57.8	30.2	12.6	1.8	61.5	1260
21	100	99.8	98.6	95.2	85.8	72.0	47.5	24.0	3.4	68.2	1256
ALL	100	99.1	95.2	87.3	76.3	60.1	40.8	24.3	7.7	64.8	8798

= EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.

EXAMPLE – IN SEPTEMBER AT 12 NOON LOCAL TIME, THE RELATIVE HUMIDITY EXCEEDS 60% ONLY 28.6% OF THE TIME.

Frequency Surface WIND DIRECTION vs SPEED (from HOURLY DATA)

SEPTEMBER LST

	SPEED (KNOTS)										TOTAL	MEAN
16 PT. DIR.	1 - 3	4 - 6	7-10	11-16	17-21	22-27	28-33	34-40	41-47	48-55	>=56	PERCNT	WIND SPEED
N	.8	.9	1.0	.9	.2	*	0	0	0	0	0	3.8	7.8
NNE	.4	.8	1.4	1.4	.3	*	0	0	0	0	0	4.3	9.8
NE	.5	1.0	2.3	2.5	.6	.1	*	0	0	0	0	7.0	10.4
ENE	.6	.6	.8	.5	*	0	0	0	0	0	0	2.5	7.2
E	.8	1.0	.7	.3	*	*	0	0	0	0	0	2.8	5.9
ESE	.4	.7	.4	.1	0	0	0	0	0	0	0	1.6	5.7
SE	.5	1.3	1.6	.8	.1	0	*	0	0	0	0	4.4	8.1
SSE	.5	.9	1.7	1.7	.3	.1	*	0	0	0	0	5.2	10.0
S	.6	.9	2.0	3.4	1.5	.7	.1	0	0	0	0	9.2	12.7
SSW	.4	.5	.7	1.3	.6	.5	*	*	0	0	0	3.9	12.7
SW	.7	.8	.8	1.0	.4	.1	*	0	0	0	0	3.8	9.4
WSW	.6	1.0	1.2	1.3	.5	.2	*	*	0	0	0	4.8	10.1
W	1.8	2.2	2.6	2.1	.9	.5	.1	*	*	0	0	10.1	9.5
WNW	2.3	1.8	1.4	1.0	.5	.4	.1	0	0	0	0	7.6	8.0
NW	3.9	2.8	1.8	1.1	.6	.2	*	0	0	0	0	10.3	6.5
NNW	1.1	1.2	.8	.8	.2	.1	*	0	0	0	0	4.2	7.8
VAR	0	0	0	0	0	0	0	0	0	0	0	0	0
CLM	0	0	0	0	0	0	0	0	0	0	0	14.6	0
ALL	15.8	18.5	21.0	20.2	6.6	2.8	.5	.1	*	0	0	100	7.8

* = PERCENT < .05
# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED.
CLM = CALM.

EXAMPLE – IN SEPTEMBER, THE WIND SPEED IS IN A RANGE OF 11-16 KNOTS 20.2% OF THE TIME OVERALL, WITH 11-16 KNOTS FROM THE SOUTH OCCURRING 3.4% OF THE TIME.

Hourly SEA LEVEL PRESSURE (MB) Means and Standard Deviations

HOURS (LST)		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
00	-MEAN	0	0	0	0	0	0	0	0	0	0	0	0	0
	-STDV	0	0	0	0	0	0	0	0	0	0	0	0	0
	-#OBS	#	#	#	#	#	#	#	#	#	#	#	#	#
03	-MEAN	1013.5	1013.8	1016.3	1018.4	1018.9	1019.3	1018.9	1017.6	1017.1	1015.3	1012.9	1012.1	1016.8
	-STDV	5.5	5.5	5.5	5.9	7.0	7.8	7.4	7.3	7.3	6.8	6.2	5.8	7.1
	-#OBS	651	593	1102	1197	1240	1200	1271	1270	1230	1184	630	651	12219
06	-MEAN	1014.3	1014.3	1016.8	1018.8	1019.1	1019.4	1019.0	1017.9	1017.6	1016.0	1013.6	1012.9	1017.2
	-STDV	5.6	5.5	5.5	5.9	7.1	7.9	7.4	7.4	7.3	6.8	6.2	5.8	7.1
	-#OBS	651	594	1103	1197	1240	1200	1270	1270	1229	1184	630	651	12219
09	-MEAN	1014.9	1015.3	1017.9	1020.0	1020.2	1020.5	1020.1	1018.9	1018.6	1016.7	1014.1	1013.4	1018.2
	-STDV	5.7	5.5	5.6	6.0	7.2	8.0	7.5	7.6	7.5	7.1	6.5	5.9	7.2
	-#OBS	651	593	1103	1196	1238	1200	1271	1271	1230	1183	630	651	12217
12	-MEAN	1014.3	1014.7	1017.1	1019.0	1019.1	1019.6	1019.1	1017.8	1017.4	1015.4	1013.0	1012.4	1017.2
	-STDV	5.9	5.6	5.7	6.2	7.3	7.9	7.6	7.6	7.5	7.2	6.5	6.1	7.3
	-#OBS	651	594	1101	1196	1239	1200	1271	1270	1230	1183	630	651	12216
15	-MEAN	1013.1	1013.4	1015.6	1017.5	1017.8	1018.2	1017.7	1016.2	1015.8	1013.9	1011.8	1011.2	1015.7
	-STDV	6.0	5.6	5.8	6.2	7.3	7.8	7.5	7.5	7.5	7.1	6.4	6.2	7.3
	-#OBS	651	594	1102	1197	1239	1200	1271	1270	1230	1184	630	650	12218
18	-MEAN	1013.0	1013.5	1015.9	1018.0	1018.5	1019.0	1018.4	1017.0	1016.5	1014.7	1012.3	1011.4	1016.3
	-STDV	5.9	5.5	5.7	6.1	7.1	7.7	7.3	7.3	7.3	6.9	6.3	6.1	7.2
	-#OBS	651	593	1102	1197	1239	1200	1270	1270	1230	1184	630	651	12217
21	-MEAN	1014.6	1015.1	1017.4	1019.3	1019.6	1019.9	1019.4	1018.2	1017.9	1016.3	1014.1	1013.0	1017.6
	-STDV	5.8	5.4	5.6	6.0	7.0	7.7	7.2	7.2	7.1	6.8	6.2	5.9	7.0
	-#OBS	651	594	1102	1197	1240	1200	1271	1269	1228	1183	630	651	12216
ALL	-MEAN	1014.0	1014.3	1016.7	1018.7	1019.0	1019.4	1018.9	1017.7	1017.3	1015.5	1013.1	1012.4	1017.0
	-STDV	5.8	5.5	5.7	6.1	7.2	7.9	7.5	7.5	7.4	7.0	6.4	6.0	7.2
	-#OBS	4557	4155	7715	8377	8675	8400	8895	8890	8607	8285	4410	4556	85522

# = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED
STDV = STANDARD DEVIATION.
#OBS = NUMBER OF OBSERVATIONS.

EXAMPLE – IN SEPTEMBER, THE MEAN SEA LEVEL PRESSURE IS 1017.3 MILLIBARS, FOR ALL HOURS COMBINED.

Figure 1

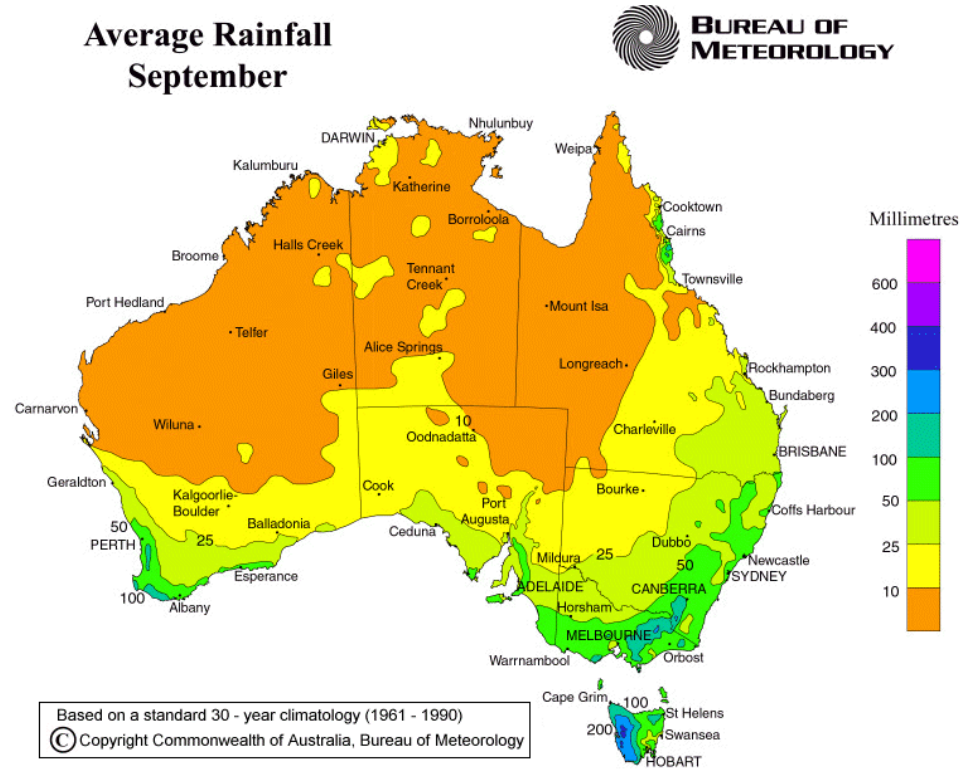

Figure 2

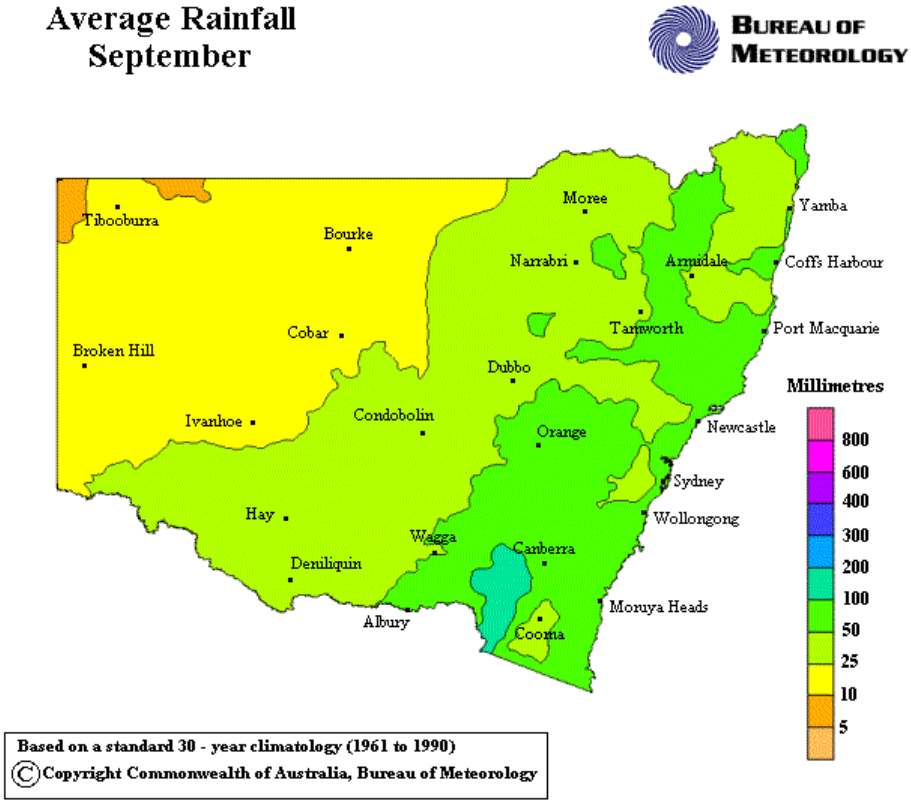

Figure 3

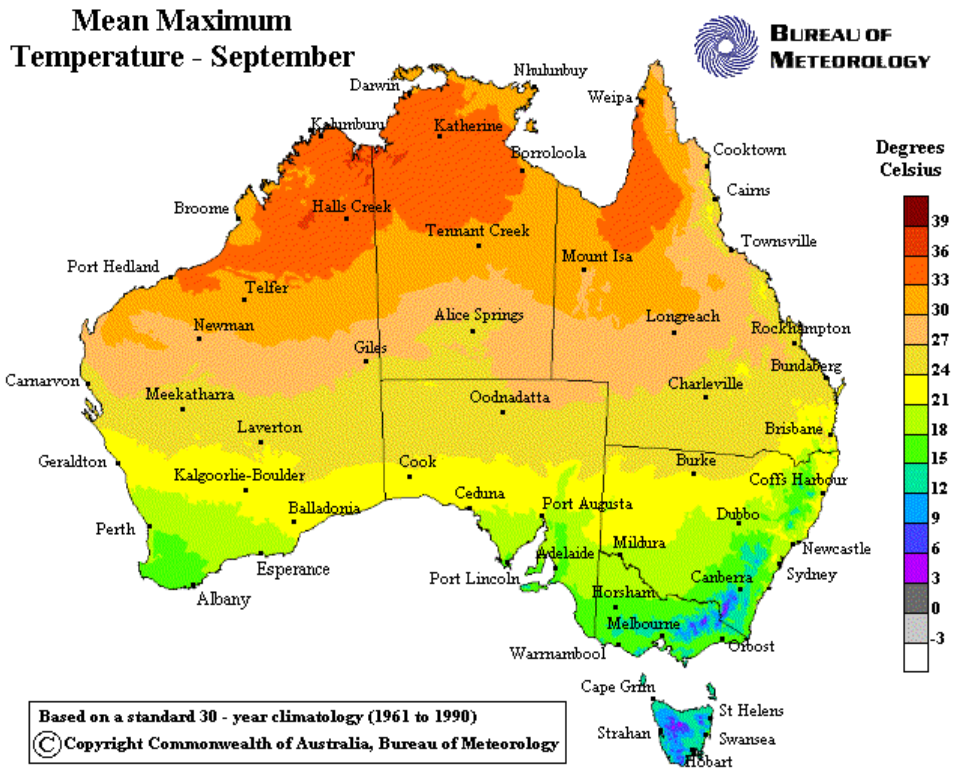

Figure 4

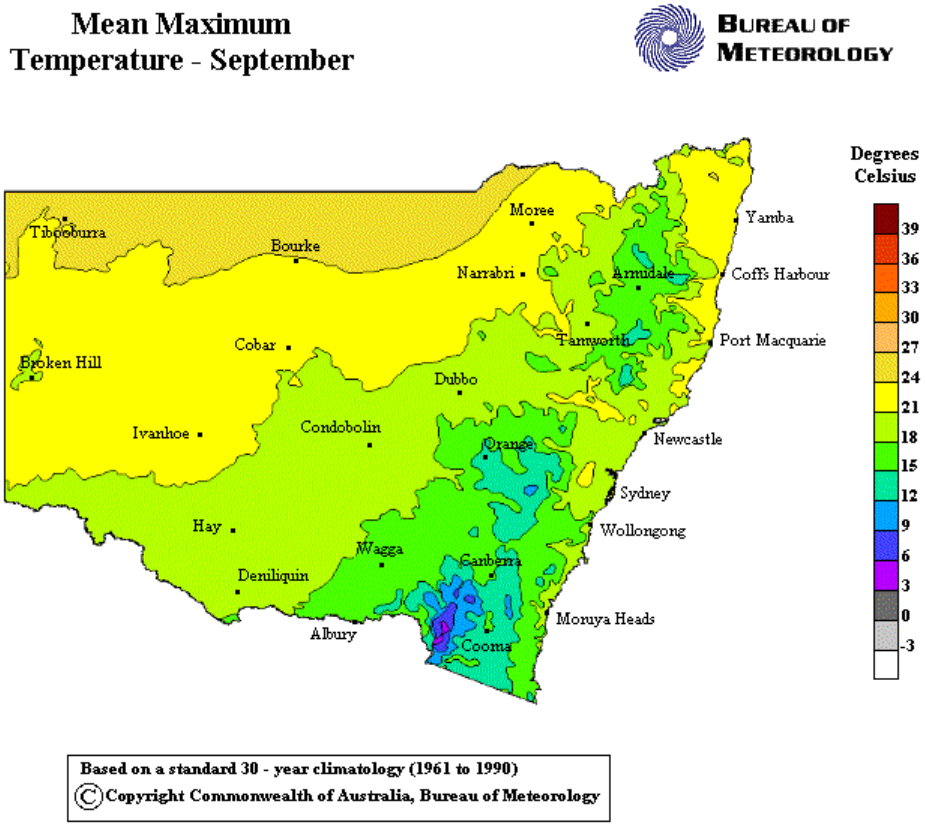

Figure 5

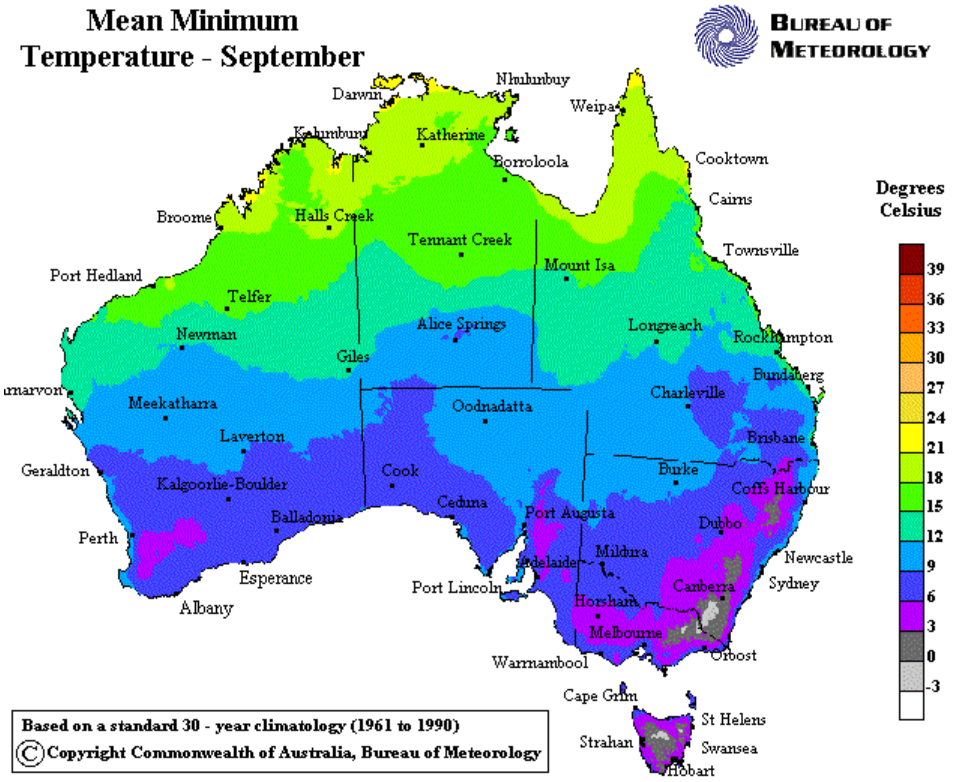

Figure 6