

# WOKINGHAM

# METEOROLOGICAL

# DATA

## Wokingham Climatological Station, Emmbrook, Berkshire.

Lat/Long 51°25'N 00°51'W NGR (SU)798701 Altitude 46m ASL.

### Monthly Means and Totals

### JUNE 2017

		Anomaly	Rank in the past 136 years				
Temperature (°C)							
Mean maximum	22.8	+2.3	4 <sup>th</sup> highest				
Mean minimum	12.4	+1.9	*new highest*				
Daily mean	17.6	+2.1	2 <sup>nd</sup> highest				
Highest maximum	33.4	on 21 <sup>st</sup>	Lowest maximum	16.7	on 6 <sup>th</sup>		
Highest minimum	16.9	on 22 <sup>nd</sup>	Lowest minimum	6.9	on 4 <sup>th</sup>		
Mean grass minimum	9.7	+2.1	Lowest grass minimum	1.5	on 4 <sup>th</sup>		
Mean earth @30 cm	18.7	+1.9	Earth @100 cm	15.9			
Frost duration (hrs)	0.0		Rain duration (hrs)	26.1			
Rainfall total (mm)	35.5	72 %	55 <sup>th</sup> lowest				
Highest daily fall	18.3	on 5 <sup>th</sup>					
Number of: Dry days (<0.2mm)	20	Wet days (>0.9mm)	4	days ≥5mm	2		
Sunshine total (hrs)	207.8	Daily mean	6.93	108 %	Sunniest day	14.2 on 14 <sup>th</sup>	
N° days with: Air frost	0	Ground frost	0	Snow falling	0	Snow lying	0
Thunder	0	Hail ≥5mm	0	Small hail/ice	0	Fog @09	0
						Nil sun	1
Pressure MSL: Mean @09 GMT, mbar	1013.7	-3.4	Highest	1027.9	on 17 <sup>th</sup>	Lowest	987.1 on 6 <sup>th</sup>
Relative humidity: Mean (%)	72.6	Lowest	30 on 21 <sup>st</sup>	Water vapour (g/kg), mean at 09 and 15 GMT 8.7, 8.6			
Overall mean wind speed (mph)	7.4	Windiest day	15.1 on 6 <sup>th</sup>	Max gust	51 on 6 <sup>th</sup>		
Wind direction (days)	N 1	NE 3	E 1	SE 2	S 4	SW 12	W 5
Least windy day (mph)	3.1 on 19 <sup>th</sup>	Calm; less than 0.5 mph (minutes)				502	

Anomaly = departure from 1981 to 2010 average (degrees C, percent and mbar).

Notes:

#### Near Record Warmth and a Heatwave. Sunshine Above and Rainfall Below Average.

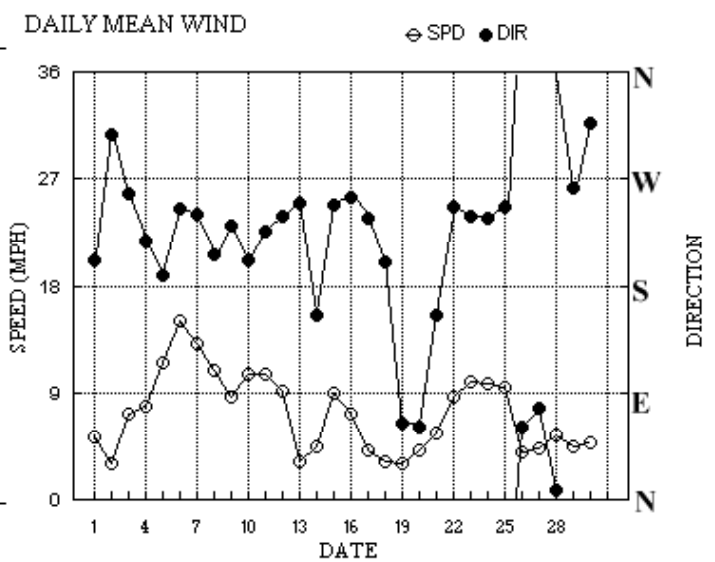
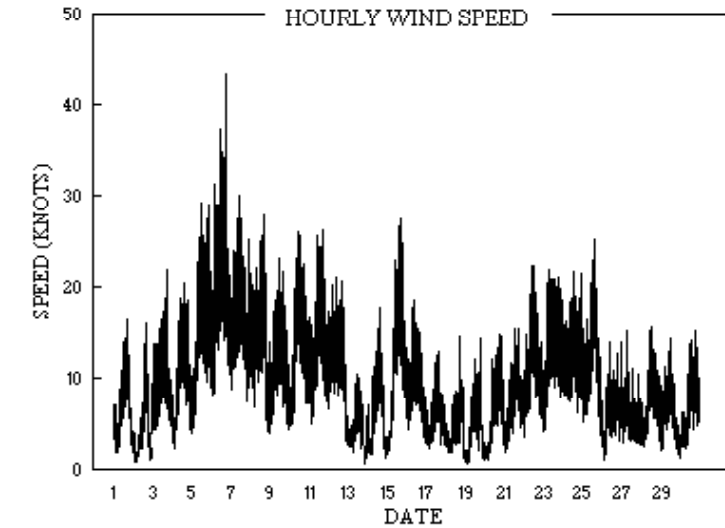
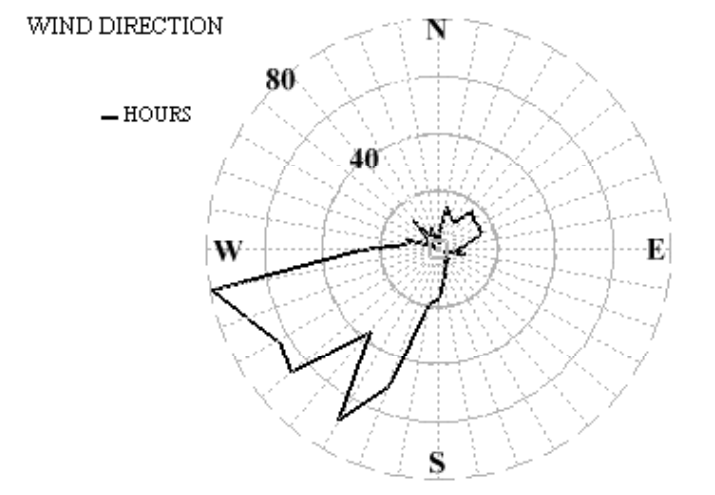
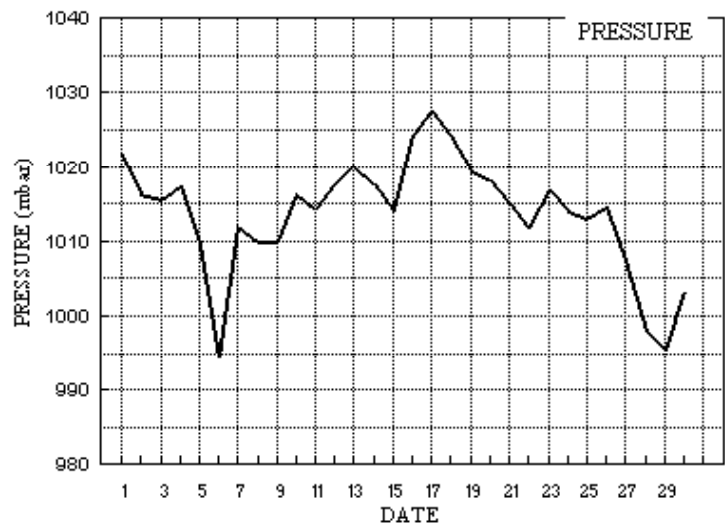
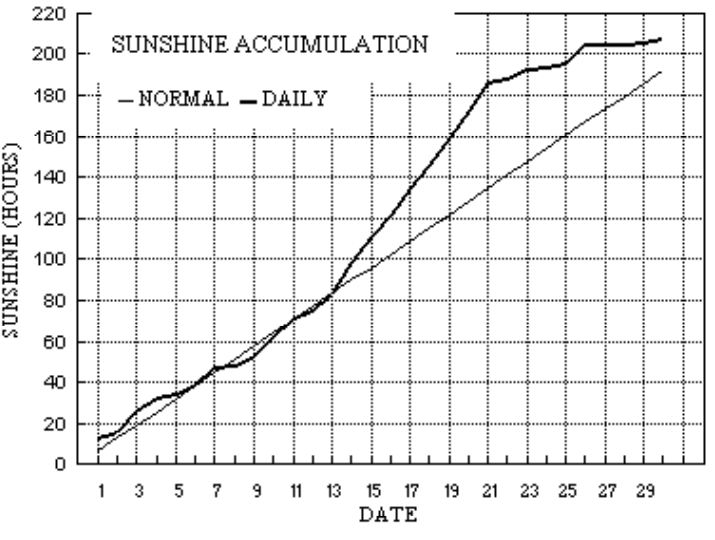
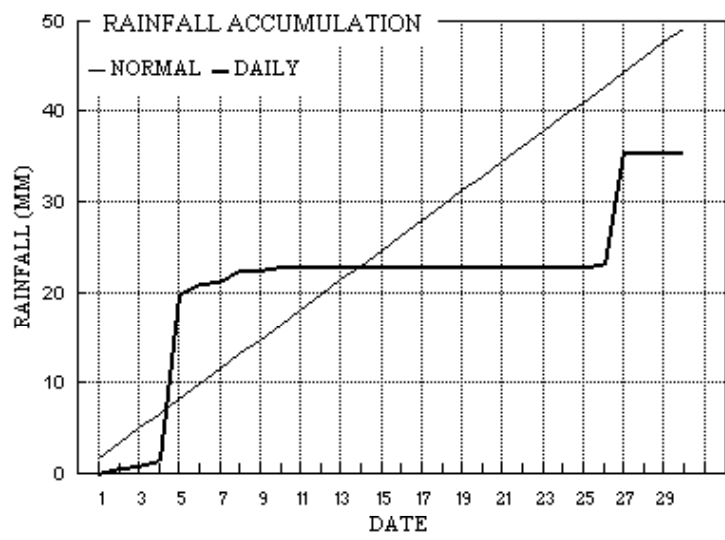
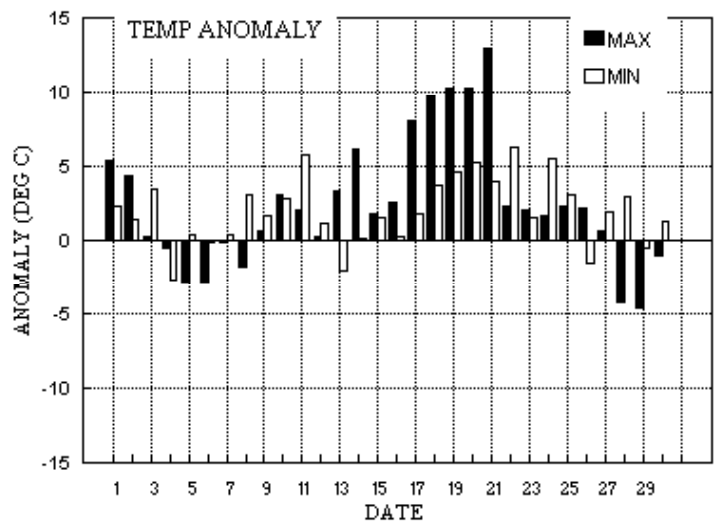
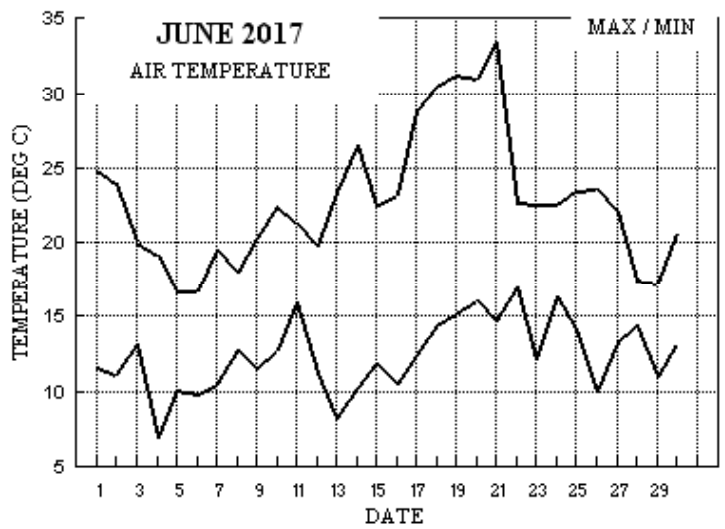
**Temperature:** In terms of the daily mean, this is the warmest June since 1976, and the 2<sup>nd</sup> warmest since before 1882. The mean minimum is a new June record, beating the previous highest set in 1976 by 0.3°. The mean maximum, however, ranks only 4<sup>th</sup> highest, and is 1.7° below the record set in 1976. The highest maximum is 2<sup>nd</sup> highest in 114 years and is 6.4° above the median. Attesting to our changing climate, 30° or more has been experienced in June in about 1 year in 6 between 1904 and 1999, but since then there have already been 7 occasions, a frequency of 1 in 2.4 years. The lowest max is 1.9° above the median and 8<sup>th</sup> highest in 105 years. The highest min is 2.1° above the median and is 6<sup>th</sup> highest in 105 years while the lowest min is 2.1° above its median and is 9<sup>th</sup> highest in 114 years. The mean grass min is highest since before 1980, as is the mean earth temperature at 30 cm depth, but at 1 m it is slightly lower than in 2014. The 30 cm temperature at 0900 GMT reached 21.5° on the 22<sup>nd</sup>, a new record for June. The month was dominated by the hot spell from the 17<sup>th</sup> to the 22<sup>nd</sup>, with anomalies for daily max exceeding +10° on 3 days, reaching +12.9° on the 21<sup>st</sup>. The month started mild with anomalies for daily max over +4° on the 1<sup>st</sup> and 2<sup>nd</sup>, but from then to the 12<sup>th</sup> it was cooler, with anomalies between +3° and -3°. Also after the 21<sup>st</sup> values were closer to normal, although both the 28<sup>th</sup> and 29<sup>th</sup> were cool with anomalies over -4°. For daily min, anomalies followed a similar but less extreme pattern, ranging from +6° on the 22<sup>nd</sup> to -3° on the 4<sup>th</sup>. **Rainfall:** This has been a predominantly dry June containing a 15 day dry spell ending on the 25<sup>th</sup>, and with 86% of the month's total falling on just 2 days, the 5<sup>th</sup> and 27<sup>th</sup>. In recent years, Junes in 2015, 2013, 2010 and 2009 have all been drier. Rainfall duration is 86% of normal. The highest rainfall rate was 15 mm/hr on the 6<sup>th</sup>. There was no thunder or hail recorded this month. **Sunshine:** This June has ended up with sunshine a little above average, though for a large part of the month daily values were near or below average, but the 8 day period ending on the 21<sup>st</sup> produced a total of 102.2 hours of sunshine, a mean of 12.8 hours per day. As a result, sunshine accumulation compared with normal, which remained within +/- 8 hours up to the 13<sup>th</sup> showed a surplus of 46 hours by the 21<sup>st</sup>, this subsequently dropping back to 15 hours by the 30<sup>th</sup>. Overall there were 10 days with <3 hours, 16 with =>6 hours, 12 with =>9 hours and 7 with =>12 hours. **Wind:** The mean speed this June is 1.1 mph above average. The month's highest gust of 51 mph is 14 mph above average and strongest for any June since before 1988. Daily mean directions were mainly SW'ly up to the 18<sup>th</sup>, then temporarily NE'ly for the 19<sup>th</sup> and 20<sup>th</sup>, veering S'ly on 21<sup>st</sup> and W'ly on 22<sup>nd</sup>, temporarily becoming NE'ly for the 26<sup>th</sup> to 28<sup>th</sup>. Speeds were light or moderate up to the 4<sup>th</sup>, then moderate or fresh to the 11<sup>th</sup>, but strong on the 6<sup>th</sup>. Light or moderate after the 11<sup>th</sup>, apart from fresh on the 15<sup>th</sup> and 25<sup>th</sup>.

Table 1. Mean anomalies (max, min, rain, sun) for specified periods.

From the 1 <sup>st</sup> to the 10 <sup>th</sup>				From the 11 <sup>th</sup> to the 20 <sup>th</sup>				From the 21 <sup>st</sup> to the 30 <sup>th</sup>			
+0.5°	+1.3°	140%	96%	+5.5°	+2.2°	0%	173%	+1.4°	+2.4°	79%	55%

B J Burton FRMetS. Hon. Met. Officer to Wokingham Town Council.

# Wokingham climatological graphs for June 2017



Month: JUNE 2017

Date	Max C	Min C	Rain mm	Grass Min	30cm C	100cm C	Sun hrs	Frost hrs	pp09 mbar	Af Gf	Sf Sl	Th Ha	Ic Fg	Vec mean ddd ff sp	Max gust ddd gg HHhh	High hr ddd ff	Rain HH hrs							
1	24.9	11.6	0.0	7.8	17.4	14.3	13.5	0.0	1021.6	0	0	0	0	202	4.5	4.6	159	17	1644	198	8	17	0.0	
2	23.9	11.1	0.5	7.2	17.8	14.4	2.2	0.0	1016.3	0	0	0	0	307	1.7	2.7	332	16	1538	313	8	15	0.3	
3	20.0	13.1	0.4	11.0	18.0	14.6	10.2	0.0	1015.5	0	0	0	0	257	6.1	6.3	257	22	1832	256	9	18	0.5	
4	19.1	6.9	0.5	1.5	18.1	14.8	6.8	0.0	1017.4	0	0	0	0	218	6.7	6.8	210	21	1418	213	10	13	0.4	
5	16.7	10.1	18.3	6.8	17.8	15.0	1.8	0.0	1009.7	0	0	0	0	189	9.7	10.0	214	29	1228	200	14	11	11.4	
6	16.7	9.8	1.2	9.5	17.0	15.1	4.8	0.0	994.5	0	0	0	0	244	12.3	13.1	246	44	1754	253	17	17	0.8	
7	19.5	10.4	0.3	7.2	16.4	15.1	8.7	0.0	1011.9	0	0	0	0	240	11.0	11.5	262	30	1129	257	15	10	1.2	
8	18.0	12.8	1.2	11.8	16.8	15.1	0.1	0.0	1009.9	0	0	0	0	206	9.5	9.5	219	28	1626	211	14	16	0.9	
9	20.3	11.5	tr	9.1	16.6	15.1	5.3	0.0	1009.9	0	0	0	0	230	7.5	7.6	248	23	1109	238	11	11	0.0	
10	22.4	12.8	0.5	9.9	16.9	15.1	8.5	0.0	1016.4	0	0	0	0	201	9.1	9.2	196	26	1143	203	14	10	0.7	
11	21.3	15.9	tr	14.9	17.7	15.1	9.6	0.0	1014.4	0	0	0	0	225	8.9	9.2	234	27	1621	231	13	13	0.0	
12	19.7	11.2	0.0	8.0	17.9	15.2	3.7	0.0	1017.7	0	0	0	0	239	7.8	8.0	269	21	0919	250	10	15	0.0	
13	23.3	8.2	0.0	4.9	17.5	15.3	8.9	0.0	1020.2	0	0	0	0	249	1.8	2.8	304	11	1219	226	5	14	0.0	
14	26.5	10.2	0.0	6.8	17.9	15.4	14.2	0.0	1017.6	0	0	0	0	156	3.3	4.0	139	18	1549	174	7	16	0.0	
15	22.4	11.8	0.0	8.0	18.4	15.5	13.1	0.0	1014.0	0	0	0	0	248	7.5	7.9	264	28	1626	251	13	15	0.0	
16	23.2	10.4	0.0	7.4	18.3	15.6	10.1	0.0	1024.3	0	0	0	0	254	5.9	6.3	249	19	0919	272	8	08	0.0	
17	28.8	12.4	0.0	9.0	18.5	15.8	13.5	0.0	1027.6	0	0	0	0	237	3.4	3.7	250	13	1523	253	5	11	0.0	
18	30.5	14.4	0.0	11.1	19.4	15.9	11.1	0.0	1024.3	0	0	0	0	200	1.7	2.9	182	15	1839	187	5	19	0.0	
19	31.2	15.2	0.0	11.4	20.1	16.1	13.5	0.0	1019.5	0	0	0	0	65	1.3	2.7	173	14	1828	195	5	19	0.0	
20	31.0	16.0	0.0	12.7	20.8	16.4	13.0	0.0	1018.2	0	0	0	0	61	3.5	3.7	85	15	1823	76	7	18	0.0	
21	33.4	14.6	0.0	10.9	21.2	16.7	13.7	0.0	1015.0	0	0	0	0	156	2.6	4.9	188	16	1751	199	8	17	0.0	
22	22.7	16.9	0.0	14.9	21.5	16.9	2.0	0.0	1011.8	0	0	0	0	246	7.4	7.6	263	22	1301	257	11	12	0.0	
23	22.5	12.1	tr	8.3	20.6	17.2	4.8	0.0	1016.8	0	0	0	0	238	8.5	8.6	244	22	0732	243	11	14	0.0	
24	22.5	16.3	tr	14.9	20.3	17.4	0.5	0.0	1014.1	0	0	0	0	236	8.4	8.5	253	22	1323	260	10	23	0.1	
25	23.4	14.1	tr	11.4	19.9	17.5	2.4	0.0	1012.9	0	0	0	0	246	7.8	8.2	251	25	1622	254	13	15	0.0	
26	23.6	9.9	0.2	6.5	19.7	17.5	9.2	0.0	1014.6	0	0	0	0	61	2.4	3.6	23	14	0913	177	6	19	0.1	
27	22.1	13.3	12.3	11.3	20.1	17.5	0.1	0.0	1007.3	0	0	0	0	77	3.3	3.8	76	15	0720	88	5	07	9.3	
28	17.4	14.4	tr	14.4	19.7	17.5	0.0	0.0	997.9	0	0	0	0	9	4.7	4.7	14	16	1332	8	7	13	0.0	
29	17.2	10.9	0.0	9.3	18.9	17.6	0.9	0.0	995.3	0	0	0	0	262	3.7	4.0	268	14	1233	255	6	12	0.0	
30	20.7	13.1	0.1	12.2	18.7	17.5	1.6	0.0	1003.2	0	0	0	0	316	3.9	4.2	330	15	1920	314	7	19	0.4	
Total			35.5				207.8	0.0																26.1
Mean	22.8	12.4		9.7	18.7	15.9	6.93	0.0	1013.7					231	4.3	6.4								
Anom	+2.3	+1.9	72%	+2.1	+1.9	+1.3	108%		-3.4															

Daily mean 17.6 Pressure, abs highest = 1027.9 on 17

Anom +2.1 Pressure, abs lowest = 987.1 on 6

Number of days with:

Air frost = 0 Ground frost = 0 Nil sun = 1  
 Snow falling = 0 Snow lying = 0 Thunder = 0  
 Hail=>5mm = 0 Hail<5mm or ice = 0 Fog at 09GMT = 0

Abbreviations.

Max/min = highest and lowest air temperature at 1.2m in 24 hour period ending at 09 GMT

Rain = total rainfall and melted snowfall in 24 hour period ending at 09 GMT, millimetres. (Tr = trace, <.05mm).

Grass min = Lowest overnight temperature at grass tip level.

Sun = hours of bright sunshine, measured electronically. Frost = Number of hours with air temp below 0 deg C.

pp09 = Air pressure corrected to mean sea level at 0900 GMT, millibars.

Af = Air frost. Gf = Ground frost. Sf = Snow falling. Sl = Snow lying at 09 GMT.

Th = Thunder. Ha = Hail =>5mm. Ic = Hail <5mm or ice. Fg = Fog at 09 GMT.

Vec mean = 24 hour mean wind vector, ddd = direction in degrees from true north, ff = speed in knots.

Sp = 24 hour mean wind speed in knots.

Max gust = Highest gust in 24 hours, gg = speed in knots, HHhh = Time, hours and minutes, GMT.

High hr = Highest hourly mean wind, HH = hour commencing. Rain Hrs = Duration of rain, 24 hours to 09 GMT. Excludes snow/hail.

30cm and 100 cm are earth temperatures at those depths, read at 09 GMT.

Anom = Departure from 1981-2010 climatological average.

All temperatures in degrees Celsius.

Weather observations. Emmbrook, Wokingham, Berkshire.

Observations at 0900 GMT for JUNE 2017

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Ci	NChs	hshs	NChs	Date	Remarks
1	82	4	19	05	09	20.2	11.7	58	8.5	1021.6	8	010	03	0	0	1	8	6	0	1	81830	84078	1	1Sc50 Cu hum	
2	78	7	31	03	06	19.8	13.3	66	9.4	1016.3	7	008	02	2	2	2	2	7	4	1	82856	87077	2	1Ac68 2Ci72 COTRA Cu med	
3	88	3	24	08	14	16.8	7.7	55	6.5	1015.5	2	005	03	1	1	1	1	6	0	1	81832	83075	3	COTRA Cu hum	
4	84	5	24	09	16	15.8	9.5	66	7.3	1017.4	0	001	03	1	1	2	8	5	0	1	82825	83078	4	1Sc56 COTRA Cu med	
5	80	8	19	12	23	15.6	10.2	70	7.6	1009.7	7	013	21	6	2	6	8	4	1	/	82818	85635	88465	5	Cu med
6	59	7	25	13	25	10.4	8.8	9.0	7.0	994.5	2	045	63	6	6	7	5	4	2	/	82712	86620	87540	6	Clearance W
7	86	4	26	14	28	15.5	6.5	55	6.0	1011.9	2	024	03	0	0	4	8	6	0	1	84833			7	1Sc50 1Ci75 COTRA Cu med
8	80	8	20	11	22	15.2	10.6	74	7.9	1009.9	5	006	03	2	2	8	8	4	/	/	86818	88625		8	
9	65	6	22	08	20	15.4	12.5	83	8.9	1009.9	1	009	25	8	2	7	8	4	/	/	82817	83635	85645	9	Cu med
10	86	1	21	12	23	20.3	10.1	52	7.6	1016.4	4	000	02	1	1	1	1	6	4	1	81835			10	1Ac59 1Ci75 Cu hum
11	83	6	22	10	19	19.7	12.9	65	9.2	1014.4	8	005	01	2	2	1	8	5	3	1	81827	83075		11	1Sc56 1Ac65 2Cc72 COTRA Cu hum
12	84	7	24	09	15	15.9	10.0	68	7.6	1017.7	1	015	03	6	2	7	8	5	/	1	83823	86645		12	2Sc30 /Ci75 COTRA Cu med
13	82	5	21	04	08	16.8	9.5	62	7.3	1020.2	8	002	03	1	1	1	1	5	0		81825	85359		13	Cu hum
14	81	6	12	04	09	22.4	13.5	57	9.5	1017.6	8	013	03	1	1	1	0	9	3	1	81365	86080		14	COTRA
15	84	1	22	09	16	20.7	11.3	55	8.3	1014.0	2	003	03	0	0	1	8	6	4	2	81835			15	1Sc50 1Ac58 1Ci75 Cu hum
16	82	7	27	08	17	17.5	9.7	60	7.4	1024.3	2	013	02	1	1	7	8	6	/	1	82832	86656		16	/Ci78 COTRA Cu hum
17	81	1	24	03	07	22.4	14.5	61	10.2	1027.6	0	001	02	0	0	0	0	9	0	1	81080			17	COTRA
18	84	2	19	04	06	25.5	15.2	53	10.7	1024.3	8	007	01	1	1	2	5	6	0	0	82645			18	
19	77	2	09	03	08	26.1	15.5	52	10.8	1019.5	8	010	03	0	0	0	0	9	0	1	82080			19	COTRA
20	61	5	06	03	09	22.5	16.8	70	11.8	1018.2	3	006	14	2	2	3	0	9	8	1	83365	85075		20	Ac cas vir
21	61	7	08	05	11	24.2	17.7	67	12.5	1015.0	8	018	02	2	2	0	0	9	0	1	87080			21	COTRA U/a cont
22	63	7	26	07	17	19.1	14.1	73	9.9	1011.8	2	005	01	2	2	7	8	4	8	1	85818	86630		22	/Ac62 /Ci75 Cu hum Ac cas
23	84	7	25	11	22	19.5	11.0	58	8.1	1016.8	1	007	03	1	1	3	5	6	0	1	83630	85075		23	COTRA
24	75	7	24	08	14	19.1	15.2	78	10.6	1014.1	8	002	80	8	2	7	8	4	/	/	86815	87630		24	Cu med
25	82	8	23	08	14	16.8	13.1	79	9.3	1012.9	0	001	50	5	2	8	5	4	/	/	81712	87615	88620	25	
26	88	5	03	05	11	17.6	7.6	52	6.4	1014.6	8	008	01	2	2	1	5	7	4	1	81656	85078		26	1Ac66 COTRA Parhelia U/a cont
27	80	7	09	05	11	17.6	11.2	66	8.2	1007.3	8	012	25	8	2	6	5	6	8	/	81645	86656		27	/Ac58 Sc cas
28	58	8	01	04	09	15.6	14.5	93	10.2	997.9	6	004	60	6	2	8	6	3	/	/	82706	86708	88710	28	
29	82	8	25	06	10	14.2	9.8	75	7.5	995.3	0	003	02	2	2	8	5	4	/	/	86615	88625		29	
30	84	7	34	02	05	16.7	12.0	74	8.7	1003.2	1	014	03	2	2	3	2	5	3	1	83820	85359		30	/Ci75 Cu med

Mean vis = 37.1 km  
 Mean cloud = 5.5 69%  
 Mean wind speed = 7.1 kn  
 Mean gust = 14 kn  
 Mean TT = 18.5 °C  
 Mean TdTd = 11.9 °C  
 Mean RH = 63.5 %  
 Mean r = 8.7 g/kg  
 Mean PPP = 1013.7 mbar

See appendix 2 below for full code details

VV = Visibility code (Code FM12-4377)  
 N = Total cloud amount, oktas  
 dd = Direction from which wind is blowing, tens of degrees true  
 ff = 10 minute mean wind speed, knots  
 gg = Highest gust in past hour, knots  
 TT = Air temperature at 1.2 m, deg Celsius  
 TdTd = Dew point temperature at 1.2 m, deg Celsius  
 RH = Relative humidity at 1.2 m  
 r = Humidity mixing ratio at 1.2 m, g/kg  
 PPP = Air pressure reduced to sea level, mbar  
 a = Characteristic of pressure tendency (Code FM12-0200)  
 ppp = 3 hr pressure tendency, tenths of mbar  
 ww = Present weather code (Code FM12-4677)  
 W1, W2 = Past weather code (Code FM12-4561)-  
 covers past 3 hours.  
 Nh = Amount of low cloud present, oktas  
 Cl = Type of low cloud (Code Fm12-0513)  
 h = Height of low cloud (Code FM12-1600)  
 Cm = Type of medium cloud (Code FM12-0515)  
 Ch = Type of high cloud (Code FM12-0509)  
 8 groups. 8 = indicator for cloud detail  
 N = Amount of cloud, oktas  
 C = Type of cloud (FM12-0500)  
 hshs= Height of cloud (FM12-1677)  
 Remarks : COTRA = persistent condensation trails present

Weather observations. Emmbrook, Wokingham, Berkshire.

Observations at 1500 GMT for JUNE 2017

Date	VV	N	dd	ff	gg	TT	Td	Td	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Ch	NCh	shs	NCh	shs	NCh	shs	Date	Remarks
1	86	4	21	06	13	24.2	11.5	45	8.4	1019.1	7	013	02	1	1	2	2	6	0	1	82848	83078					1	Cu med	
2	80	7	30	08	14	21.9	13.0	57	9.2	1014.7	6	010	02	2	2	2	8	6	7	8	81835	87272					2	1Sc40 1Ac61 2As68 Cu con SE U/a cont	
3	86	6	28	09	17	19.3	7.7	47	6.5	1014.3	6	010	03	1	1	3	4	6	0	1	81848	83650	85075				3	COTRA	
4	70	8	21	09	21	17.4	8.3	55	6.7	1015.6	7	008	15	8	2	8	8	6	/	/	85837	88650					4	Cu med jpSW vv50k ex SW	
5	75	8	19	14	26	15.9	10.4	70	7.8	1004.9	8	027	21	6	2	6	8	5	7	/	85823	84650	88462				5	/Ac57 Cu med jp SW	
6	80	4	25	18	32	16.0	8.0	59	6.6	1000.1	2	026	15	8	1	3	9	6	6	0	81930	83835					6	2Ac57 Cu con jp all quads	
7	84	5	25	11	24	19.1	6.6	44	6.0	1013.4	1	003	03	1	1	2	2	6	4	1	82845	83362					7	2Ci75 Cu med	
8	70	7	22	12	24	16.8	12.9	78	9.2	1008.7	8	007	01	5	2	7	5	4	/	/	86615	87625					8		
9	82	5	24	13	20	18.6	10.2	58	7.7	1012.7	2	014	02	8	2	2	2	6	6	4	82835	83075					9	2Ac57 Cu med Halo 22° part	
10	82	7	21	12	22	19.6	13.1	66	9.3	1016.4	3	007	03	1	1	7	5	5	/	/	87625						10		
11	83	3	22	15	25	20.3	9.8	51	7.5	1012.8	8	003	01	1	1	3	2	6	0	0	83837						11	Cu med	
12	82	7	26	09	18	18.8	9.3	54	7.2	1018.6	8	001	01	2	2	6	8	6	3	1	83838	85650					12	3Ac65 /Ci75 COTRA	
13	85	6	24	06	10	21.7	11.7	53	8.5	1019.0	6	007	03	1	1	5	8	6	0	1	85845						13	1Sc56 2Ci78 COTRA Cu med	
14	81	7	19	07	16	26.0	10.6	38	7.9	1014.9	7	015	03	1	1	2	2	7	0	1	82850	87080					14	COTRA Cu med	
15	88	2	26	11	25	21.7	7.9	41	6.6	1015.1	2	006	01	1	1	1	1	6	0	4	81848						15	2Ci75 COTRA Cu hum	
16	80	6	26	07	16	22.3	12.8	55	9.1	1024.9	1	002	02	1	1	5	8	6	0	1	82835	85635					16	2Ci80 COTRA Cu hum	
17	82	3	23	06	13	28.4	15.7	46	11.0	1025.5	6	012	02	0	0	3	2	6	0	1	83843						17	1Ci80 COTRA Cu med	
18	81	3	06	04	08	30.5	17.9	47	12.6	1021.4	7	017	02	0	0	3	2	7	0	0	83850						18	Cu med	
19	80	4	04	04	11	30.5	14.2	37	10.0	1016.8	6	015	02	0	0	1	1	7	0	1	81856	84080					19	COTRA Cu hum	
20	80	3	04	05	12	30.6	16.2	42	11.4	1016.3	8	009	03	0	0	1	1	7	0	1	81850	83080					20	Cu hum	
21	78	7	15	08	16	33.1	13.7	31	9.7	1011.4	7	020	02	2	2	0	0	9	0	1	87080						21	COTRA U/a cont	
22	80	8	25	09	20	21.6	14.3	63	10.0	1012.2	1	005	02	2	2	8	8	6	/	/	83830	88635					22	Cu hum	
23	80	7	24	10	21	20.4	12.1	59	8.7	1016.4	0	001	03	2	2	7	8	6	/	/	83833	87638					23	/Ci75 Cu hum	
24	86	7	24	10	19	20.8	14.7	68	10.3	1012.8	6	009	02	8	2	7	8	5	/	/	83822	87645					24	Cu med	
25	88	7	25	12	23	20.5	12.7	61	9.1	1011.8	5	001	25	8	2	7	8	6	/	/	83830	87645					25	Cu med	
26	86	7	05	04	11	22.8	8.1	39	6.7	1012.5	7	018	03	1	1	1	1	7	2		81856	83357					26	2Ac65 2Ci72 Cu hum	
27	62	8	06	04	11	19.7	15.8	78	11.0	1004.6	6	011	61	6	2	7	8	6	2	/	83830	86640	88557				27	Cu hum	
28	80	8	01	07	14	15.0	12.3	84	8.8	997.3	7	001	21	6	2	8	8	4	/	/	86813	88618					28	Cu hum	
29	84	8	25	05	11	16.0	10.1	68	7.6	997.1	2	008	02	2	2	8	8	5	/	/	82825	88630					29	Cu hum	
30	88	7	29	06	14	20.0	10.7	55	7.9	1006.0	2	013	03	2	2	3	8	6	0	8	82836	87272					30	2Sc50 COTRA Cu med U/a cont	

Mean vis = 40.8 km

Mean cloud = 6.0 75%

Mean wind speed = 8.7 kn

Mean gust = 18 kn

Mean TT = 21.7 °C

Mean Td = 11.7 °C

Mean RH = 55.0 %

Mean r = 8.6 g/kg

Mean PPP = 1012.9 mbar

See appendix 2 below for full code details

VV = Visibility code (Code FM12-4377)

N = Total cloud amount, oktas

dd = Direction from which wind is blowing, tens of degrees true

ff = 10 minute mean wind speed, knots

gg = Highest gust in past hour, knots

TT = Air temperature at 1.2 m, deg Celsius

Td = Dew point temperature at 1.2 m, deg Celsius

RH = Relative humidity at 1.2 m

r = Humidity mixing ratio at 1.2 m, g/kg

PPP = Air pressure reduced to sea level, mbar

a = Characteristic of pressure tendency (Code FM12-0200)

ppp = 3 hr pressure tendency, tenths of mbar

ww = Present weather code (Code FM12-4677)

W1, W2 = Past weather code (Code FM12-4561)- covers past 3 hours.

Nh = Amount of low cloud present, oktas

Cl = Type of low cloud (Code Fm12-0513)

h = Height of low cloud (Code FM12-1600)

Cm = Type of medium cloud (Code FM12-0515)

Ch = Type of high cloud (Code FM12-0509)

8 groups. 8 = indicator for cloud detail

N = Amount of cloud, oktas

C = Type of cloud (FM12-0500)

hshs = Height of cloud (FM12-1677)

Remarks : COTRA = persistent condensation trails present

Wokingham Sunshine Hourly analysis  2017	Hour	01-Jun	02-Jun	03-Jun	04-Jun	05-Jun	06-Jun	07-Jun	08-Jun	09-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun	16-Jun
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.67	0.00	0.00	0.52	0.22	0.00	0.38	0.00	0.50	0.00	0.00	0.08	0.51	0.32	0.42		
5	1.00	0.00	0.13	1.00	0.84	0.00	1.00	0.00	0.76	0.12	0.03	0.00	1.00	1.00	1.00	1.00	
6	1.00	0.15	1.00	1.00	0.53	0.00	1.00	0.00	0.20	1.00	0.83	0.00	1.00	1.00	1.00	1.00	
7	1.00	0.56	1.00	1.00	0.22	0.00	0.93	0.00	0.27	1.00	0.96	0.00	0.93	1.00	1.00	0.68	
8	1.00	0.60	1.00	0.96	0.00	0.00	0.79	0.00	0.06	1.00	0.92	0.10	0.58	1.00	1.00	0.60	
9	0.69	0.27	1.00	0.90	0.00	0.00	0.31	0.00	0.71	1.00	0.99	0.12	0.15	1.00	0.95	0.60	
10	1.00	0.03	1.00	0.83	0.00	0.01	0.74	0.00	0.35	1.00	0.97	0.06	1.00	0.87	0.43	0.49	
11	0.77	0.05	1.00	0.26	0.00	0.00	0.73	0.00	0.24	1.00	0.73	0.00	0.90	0.63	0.38	0.23	
12	0.81	0.00	0.97	0.11	0.00	0.23	0.85	0.00	0.01	1.00	0.11	0.06	0.61	0.66	0.51	0.41	
13	0.40	0.31	0.95	0.07	0.00	0.62	1.00	0.00	0.03	0.48	0.35	0.06	0.82	0.80	0.71	0.56	
14	0.69	0.01	0.33	0.08	0.00	0.80	0.57	0.01	0.35	0.11	0.75	0.23	0.34	0.98	0.97	0.39	
15	0.87	0.00	0.60	0.00	0.00	0.45	0.40	0.02	0.35	0.08	0.84	0.12	0.01	1.00	1.00	0.43	
16	0.78	0.00	0.87	0.00	0.00	0.82	0.00	0.00	0.31	0.32	0.73	0.88	0.00	1.00	1.00	0.77	
17	0.95	0.19	0.20	0.00	0.00	0.65	0.00	0.00	0.71	0.03	0.22	0.63	0.00	1.00	0.96	0.88	
18	1.00	0.07	0.00	0.00	0.00	0.28	0.00	0.00	0.41	0.31	0.13	0.65	0.55	1.00	0.99	0.60	
19	0.83	0.00	0.06	0.00	0.00	0.89	0.00	0.00	0.00	0.05	0.90	0.79	0.86	0.73	0.85	0.99	
20	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.08	0.00	0.00	0.05	
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Tot</b>	<b>13.47</b>	<b>2.23</b>	<b>10.22</b>	<b>6.75</b>	<b>1.80</b>	<b>4.76</b>	<b>8.71</b>	<b>0.02</b>	<b>5.25</b>	<b>8.50</b>	<b>9.60</b>	<b>3.69</b>	<b>8.91</b>	<b>14.18</b>	<b>13.06</b>	<b>10.10</b>	

Hour	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun	Mean
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.51	0.54	0.50	0.35	0.00	0.00	0.49	0.00	0.00	0.05	0.00	0.00	0.08	0.12	0.21
5	1.00	0.37	1.00	0.95	0.60	0.00	0.91	0.00	0.00	0.77	0.00	0.00	0.86	0.00	0.51
6	1.00	0.62	1.00	0.54	0.83	0.00	0.95	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.54
7	1.00	1.00	1.00	0.39	1.00	0.00	0.48	0.00	0.00	1.00	0.01	0.00	0.00	0.00	0.55
8	1.00	1.00	1.00	0.23	1.00	0.00	0.97	0.00	0.00	1.00	0.00	0.00	0.00	0.32	0.54
9	1.00	0.67	1.00	1.00	1.00	0.05	0.46	0.05	0.00	1.00	0.02	0.00	0.00	0.27	0.51
10	1.00	0.38	1.00	1.00	1.00	0.14	0.06	0.05	0.04	0.94	0.00	0.00	0.00	0.00	0.48
11	1.00	0.95	1.00	0.85	1.00	0.31	0.36	0.00	0.28	0.95	0.00	0.00	0.00	0.00	0.45
12	1.00	0.36	1.00	1.00	0.94	0.00	0.02	0.01	0.33	0.66	0.00	0.00	0.00	0.00	0.39
13	0.73	0.42	1.00	1.00	1.00	0.05	0.00	0.01	0.06	0.93	0.00	0.00	0.00	0.02	0.41
14	0.87	0.64	1.00	1.00	1.00	0.00	0.02	0.00	0.02	0.52	0.00	0.00	0.00	0.83	0.42
15	0.80	0.56	0.94	1.00	1.00	0.00	0.00	0.00	0.47	0.82	0.00	0.00	0.00	0.06	0.39
16	0.01	1.00	0.82	1.00	1.00	0.02	0.02	0.00	0.79	0.07	0.00	0.00	0.00	0.00	0.41
17	0.33	1.00	0.61	1.00	1.00	0.63	0.05	0.04	0.11	0.00	0.00	0.00	0.00	0.00	0.37
18	1.00	0.78	0.25	1.00	1.00	0.76	0.01	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.37
19	1.00	0.80	0.35	0.69	0.29	0.06	0.00	0.16	0.18	0.00	0.00	0.00	0.00	0.00	0.35
20	0.21	0.02	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.03
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Tot</b>	<b>13.45</b>	<b>11.13</b>	<b>13.48</b>	<b>13.01</b>	<b>13.67</b>	<b>2.02</b>	<b>4.79</b>	<b>0.51</b>	<b>2.42</b>	<b>9.18</b>	<b>0.02</b>	<b>0.00</b>	<b>0.94</b>	<b>1.64</b>	<b>207.52</b>

JUNE 2017	T mn	Tx	Time	Tn	Time	RHmn	RH x	Time	RH n	Time	Tdmn	r mn	r x	Time	r n	Time	p mn	p x	Time	p n	Time	R tot
1	18.38	25.0	1601	11.4	210	68.6	97	247	38	1306	11.8	8.5	10.6	1256	7.1	1158	1020.37	1022.6	507	1017.9	2330	0
2	17.49	23.9	1349	11.0	340	76.4	98	347	49	1350	13.0	9.2	12.0	850	7.9	339	1015.85	1018.1	16	1014.2	2223	0
3	15.92	20.1	1557	10.3	2359	68.7	96	509	35	1329	9.6	7.5	9.7	32	4.8	1014	1014.84	1016.4	2359	1013.7	240	0.9
4	13.59	19.3	1414	6.7	341	76.4	98	355	45	1051	9.2	7.2	9.3	1603	5.8	341	1016.13	1017.7	733	1014.1	2358	0.6
5	13.69	16.8	1414	10.0	404	82.7	95	2346	63	1425	10.7	8.1	9.1	2356	6.9	404	1005.86	1014.3	1	991.1	2359	5
6	12.56	16.8	1516	9.7	634	78.4	96	335	53	1353	8.7	7.1	9.3	117	5.6	1135	996.77	1005.8	2357	987.1	335	14.8
7	14.40	19.6	1406	10.4	201	67.9	89	2140	39	1524	8.2	6.8	8.5	2359	5.3	1313	1011.60	1014.5	1917	1005.6	3	0.4
8	14.95	18.1	1547	12.6	2310	83.0	97	2317	70	908	12.1	8.8	10.0	2016	7.5	908	1009.54	1012.9	2	1007.1	2240	1
9	15.54	19.9	1626	11.3	428	75.3	94	300	53	1540	11.0	8.1	10.0	906	7.1	1113	1011.57	1016.5	2354	1007.3	2	0.4
10	17.84	22.4	1149	12.6	43	71.9	89	428	46	1121	12.4	9.0	11.1	1600	7.2	1031	1016.07	1016.7	647	1015.2	1258	0
11	17.54	21.4	1031	11.5	2348	70.6	96	444	47	1445	11.8	8.7	11.0	216	6.3	2040	1014.09	1015.7	2359	1012.0	1547	0.5
12	14.96	19.8	1654	10.9	2354	70.2	88	2347	47	1656	9.4	7.3	9.1	1003	6.5	1621	1017.85	1020.3	2303	1015.0	211	0
13	16.08	23.5	1359	8.1	401	73.2	97	408	42	1334	10.8	8.0	10.4	1359	6.3	343	1019.57	1020.8	732	1018.1	1842	0
14	19.21	26.7	1447	10.1	414	66.8	99	455	34	1734	11.8	8.6	11.5	1133	6.8	1734	1016.36	1019.2	412	1013.5	1922	0
15	17.17	22.5	1359	11.7	428	67.4	97	427	37	1530	10.6	8.0	11.2	1004	5.7	1535	1015.35	1020.2	2359	1013.1	303	0
16	17.31	23.3	1707	10.3	401	70.9	93	407	49	1052	11.7	8.5	11.0	1352	6.7	904	1024.27	1027.3	2359	1020.1	0	0
17	21.31	29.0	1422	12.4	401	68.6	97	426	42	1848	14.7	10.3	14.0	1227	8.4	350	1026.38	1027.9	827	1024.5	1812	0
18	22.90	30.6	1459	14.3	409	66.8	97	427	35	1728	15.6	10.9	14.3	1458	9.1	1728	1023.01	1025.4	3	1020.2	1820	0
19	23.74	31.3	1445	15.0	417	66.7	98	508	32	1456	16.1	11.3	14.2	1129	8.5	1251	1018.64	1021.6	16	1015.9	1646	0
20	23.15	31.1	1540	15.8	357	67.9	98	421	32	1401	16.0	11.2	14.4	1045	8.3	1143	1017.20	1018.3	841	1015.4	1712	0
21	23.93	33.5	1505	14.5	409	67.4	97	156	30	1500	16.4	11.6	16.1	1124	9.3	1434	1013.83	1018.0	0	1010.7	1700	0
22	19.31	22.9	1141	13.8	2359	74.8	95	458	55	1142	14.6	10.3	12.4	3	8.1	2351	1012.37	1015.7	2357	1010.7	337	0.2
23	17.57	22.6	1400	11.9	431	70.4	91	230	50	1400	11.9	8.6	10.1	1729	7.5	414	1016.20	1017.0	949	1015.3	11	0
24	18.36	22.6	1338	15.3	2221	77.8	89	1912	61	1345	14.4	10.2	12.0	1343	8.3	2333	1013.61	1015.9	22	1011.8	1829	0
25	17.66	23.5	1253	14.0	214	71.5	87	327	50	1605	12.3	8.9	11.7	1141	7.9	1638	1012.69	1014.5	2359	1011.2	1319	0
26	17.57	23.7	1422	9.8	418	60.3	95	434	33	1423	9.0	7.1	8.8	1928	5.5	1144	1013.53	1015.7	646	1011.2	1854	0
27	16.97	22.2	1326	13.2	250	76.8	98	2236	55	1046	12.6	9.3	12.2	1643	6.4	545	1006.10	1012.0	11	1001.1	2359	12.5
28	14.73	17.6	1040	12.1	2304	88.6	98	36	77	1201	12.8	9.4	11.0	1005	7.4	2245	997.81	1001.3	0	995.9	2355	0.2
29	14.26	16.7	1404	10.9	258	77.4	90	300	64	1124	10.3	7.9	8.9	1825	7.2	532	996.66	1000.1	2338	994.6	351	0
30	16.71	20.8	1540	13.0	349	74.8	91	209	50	1448	12.0	8.8	10.2	2308	7.5	1427	1004.95	1011.8	2354	999.9	0	0
Total																						36.5
Mean	17.49	22.91		11.82		72.6	94.62		47.08		12.04	8.83	11.13		7.09		1013.30	1016.48		1010.11		
Max	23.93	33.48		15.82		88.6	98.60		76.50		16.43	11.62	16.12		9.29		1026.38	1027.92		1024.48		
Min	12.56	16.72		6.73		60.3	87.20		29.60		8.18	6.77	8.50		4.78		996.66	1000.13		987.09		

Wokingham Automatic Weather Station  
 AWS samples taken every 0.5 seconds  
 x and n refer to maximum and minimum respectively

**Readings taken at Wokingham Climatological Station, Emmbrook, Berkshire**  
**Lat 51.425 N, Long 0.853 W, NGR (SU) 798701**  
**Altitude 45 m ASL.**

Tmn = 00 to 24 GMT mean air temperature at 1.2 m, deg C  
 RHmn = 00-24 GMT mean relative humidity at 1.2 m, percent  
 Tdmn = 00-24 GMT mean dew point at 1.2 m, deg C  
 rmn = 00-24 GMT mean humidity mixing ratio, g/kg  
 pmn = 00-24 GMT mean air pressure reduced to mean sea level, mbar  
 Time = hours and minutes in GMT of extreme values

Temperature and humidity are from an aspirated Vaisala HMP45 unit  
 Pressure is from a Setra CS100 sensor  
 Data is logged on a Campbell Scientific CR10X measurement and control system

## **Explanation and definition of some of the terms used in the Wokingham Weather Reports.**

**Average:** Generally refers to the 30 year climatological average, currently 1981 to 2010. This will be next updated in 2020. For some parameters, notably wind, the climatological average is not available, and if the word average is used in the context of wind, it refers to the average for the period for which data is held, namely 1988 to present.

For sunshine, there was a change, in July 1999, in the type of instrument used to detect sunshine amount, making the climatological average based on the old instrument of little use. In general, the new instrument produces higher values in the winter half year, and lower ones in the summer half, than the old type, due to a combination of faster reaction and higher sensitivity than the old type. The average used in this case is based on a theoretical equivalent 1981 to 2010 average, drawn from comparison with the Met Office published tables of departure from climatological average sunshine in the months since 2000 for their area 'Southern England'. Users of the Wokingham Monthly Weather reports should be aware of this, and regard anomalies for sunshine published therein as a guide only, until such time has elapsed since the introduction of the new instrument that a genuine average becomes available.

**Mean:** The mean of the data under discussion, often the monthly mean of daily data. The mean is obtained by summation of the individual values and dividing by the number of values. The term 'daily mean' in respect of temperature is defined as '(max + min) / 2'. A true daily 24 hour (00 to 24 GMT) mean temperature is available from the Automatic Weather Station (AWS), and is currently published on page 7 of the Wokingham Monthly Weather report, on the Wokingham Weather web site, page 1. <http://www.woksat.info/wwp1.html>

**Anomaly:** When a value is given for anomaly, this will have one of the following meanings:

- a): The departure of a mean from the current climatological average.
- b): The departure of a value on a particular day from the average for that day, (this need not be a climatological average).

When the word anomaly is used in respect of temperature, any values given are in °C. In respect of rainfall or sunshine, percent. In respect of wind, mph. In respect of pressure, millibars (hpa).

**Categories:** Reference may be made in the reports to 'categories'. Each category has a strict statistical range, as outlined below.

**Temperature:** The terms cold/mild are used in the winter half year, and cool/warm in the summer half. The term 'normal' is used when the individual mean (monthly, seasonal or annual) value is within 20 % of the median of all ranked values for that month/season/year.

**Mild/warm:** The value lies between 10 % and 30 % below the highest value in the ranked series.

**Very mild/very warm:** The value lies within 10 % of the highest value in the ranked series.

**Cold/cool:** The value lies between 10 % and 30 % above the lowest value in the ranked series.

**Very cold/very cool:** The value lies within 10 % of the lowest value in the ranked series.

**Sunshine:** The terms for sunshine are very sunny, sunny, normal, dull and very dull.

The definition of these terms follow the same rules as for temperature.

**Rainfall:** The terms for rainfall are very dry, dry, normal, wet and very wet.

The definition of the term 'normal' follows the same rule as for temperature and sunshine.

**Wet:** The value lies between 10 % and 30% of the highest value in the ranked series.

**Very wet:** The value lies within 10 % of the highest value in the ranked series.

**Dry:** The value lies between 10 % and 30 % above the lowest value in the ranked series.

**Very dry:** The value lies within 10 % of the lowest value in the ranked series.

**Long-term:** Mention may be made in the reports to the 'long-term'. The long-term record comprises a temperature/rainfall/sunshine data series compiled from records of various weather stations in the Wokingham area in the years prior to the establishment of the weather station at Emmbrook in 1976 together with data from this station.

In the case of monthly max, min and mean temperature and of rainfall total the series starts in 1882. For temperature extremes, the highest max and lowest min go back to 1904, and lowest max and highest min to 1913.



**Rank:** The word rank refers to the position of a value for a particular month/season/year in the ranked series, and may be expressed relative to either the highest or lowest value in the series. The central value in the ranked series is known as the **median**. This value may be different from the average of the whole series if the population is skewed. It can also be different from the climatological average which only refers to a 30 year period.

**Month:** Calendar month.

**Season:** Spring, March to May.

Summer, June to August

Autumn, September to November

Winter, December to February.

When discussing 'winter', if a single year is given this refers to the year in which the January/February fall.

**Annual or Year:** The calendar year, 1<sup>st</sup> January to 31<sup>st</sup> December.

**The climatological day:** runs from 0900 to 0900 GMT. The max temperature and rainfall read at 0900 hours are attributed to the previous day (thrown back), as is the duration of measurable rain. The min temperature and grass min read at 0900 hours are attributed to the day of reading. Pressure read at 0900 GMT, and the monthly mean pressure is the mean of the 0900 GMT readings. Sunshine data, wind data, rainfall rate data and 24 hour data from the AWS use the normal 00-24 GMT day.

**Frost:** An air frost day is recorded when the minimum temperature read at 0900 GMT on that day is  $-0.1^{\circ}\text{C}$  or below. A ground frost day is recorded when the grass minimum temperature read at 0900 GMT on that day is  $-0.1^{\circ}\text{C}$  or lower.

Duration of air frost is defined as the number of minutes that the AWS one minute average temperature is below  $0.0^{\circ}\text{C}$ , and the day runs from midnight to midnight.

**Snow:** A day with snow falling is triggered if snow falls at any time in the 24 hours from midnight on that day. A day with snow lying is entered if there is at least 50% snow cover at the 0900 GMT observation.

Snow depth is the depth of undrifted snow. Snow that collects in the raingauge funnel is melted and the amount recorded as rainfall.

**Hail:** A day of hail is recorded if hailstones 5 mm or more in diameter are observed or recorded on the hail pad in a 24 hour period starting at midnight.

A day of small hail is recorded if hailstones less than 5 mm diameter are observed or recorded in a 24 hour period starting at midnight. The term small hail also includes various other types of ice meteor such as ice pellets, snow grains and some types of snow pellets.

**Fog:** A day with fog is recorded if the horizontal visibility at 0900 GMT is below 1000 m.

**Thunder:** A day of thunder is recorded if thunder is heard in the 24 hour period from midnight on that day. The appearance of lightning without thunder being heard does not qualify as a thunder day.

**Trace of rainfall:** A trace of rain, entered as 'tr' in the daily log, is recorded if rain is observed to fall but is of insufficient quantity to collect in the raingauge, or if the amount of rain in the gauge is less than 0.05 mm.

**Dry spell:** A dry spell is defined as a period of 5 or more consecutive dry days.

**Dry day:** A dry day is one with less than 0.2 mm of rainfall.

**Rain day:** A rain day is one with 0.2 mm or more of rainfall.

**Wet day:** A wet day is one having 1.0 mm or more of rainfall.

## Appendix 2.

Explanation and decode for code figures used in the Wokingham 0900 and 1500 GMT observations

**VV** : Visibility.

Code figures 00 to 50 are in km and tenths e.g. 01 = 0.1 km = 100 m, 33 = 3.3 km, 50 = 5.0 km

Code figures 60 to 80. Subtract 50 to obtain visibility in km. e.g. 56 = 6 km, 65 = 15 km, 77 = 27 km.

Code figures 81 to 89. Subtract 50 and add 5 for every one above 80. e.g. 83 = 45 km, 86 = 60 km.

Code figure 89 = visibility above 70 km.

**N** : Total cloud amount in okta (eighths of sky covered). 9 = sky obscured (e.g. by fog or snow)

**dd** : Wind direction in tens of degrees from true north. Wind is measured at a height of 10 m, and the direction is the mean over a period of 10 minutes ending at the observation time.

**ff** : Wind speed in knots, measured at 10 m, and is the mean over a period of 10 minutes ending at observation time.

**gg** : Wind gust in knots at 10 m. The highest gust in the 60 minutes up to observation time.

**TT** : Air temperature at 1.2m, degrees C and tenths.

**TdTd** : Dew point temperature at 1.2m, degrees C and tenths.

**RH** : Relative humidity at 1.2m, %.

**r** : Humidity mixing ratio (amount of water vapour per kg of air), grams and tenths.

**PPP** : Air pressure reduced to MSL, millibars and tenths.

**a** : Characteristic of pressure tendency during the past 3 hours.

Code figures 0 to 3, pressure higher than 3 hours ago, 5 to 8, pressure lower than 3 hours ago

Code figure 0 = Increasing then decreasing, pressure the same as or higher than 3 hours ago

1 = Increasing then steady or increasing more slowly

2 = Increasing steadily or unsteadily

3 = Decreasing or steady then increasing, or increasing then increasing more rapidly

4 = Steady, pressure the same as 3 hours ago

5 = Decreasing then increasing, pressure lower than 3 hours ago

6 = Decreasing then steady or decreasing more slowly

7 = Decreasing steadily or unsteadily

8 = Steady or increasing then decreasing, or decreasing then decreasing more rapidly

**ppp** : 3 hour pressure tendency in tenths of a millibar

**ww** : Present weather code figures, 00 to 99.

Present weather decode:

00 = Cloud development not observed or not observable

01 = Clouds generally dissolving or becoming less developed

02 = State of sky on the whole unchanged

03 = Clouds generally increasing or becoming more developed

04 = Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes.

05 = Haze, visibility reduced by extremely small dry particles (RH less than appx. 95 %)

06 = Widespread dust in suspension, not raised by the wind near the station at the time of the observation

07 = Dust or sand raised by the wind at or near the station at the time of the observation, but no well-developed dust whirls or sand whirls, and no duststorm or sandstorm seen: In marine environments, blowing spray at the station.

08 = Well-developed dust or sand whirls seen at or near the station during the preceding hour or at the time of the observation, but no duststorm or sandstorm.

09 = Duststorm or sandstorm within sight at the time of the observation, or at the station during the preceding hour

10 = Mist  
11 = Patches of shallow fog not deeper than 2 metres on land  
12 = More or less continuous shallow fog not deeper than 2 metres on land  
13 = Lightning visible, no thunder heard  
14 = Precipitation within sight, not reaching the ground  
15 = Precipitation within sight, reaching the ground more than 5 km from the station  
16 = Precipitation within sight, reaching the ground, near to but not at the station  
17 = Thunderstorm, but no precipitation at the time of the observation  
18 = Squalls at or within sight of the station at the time of the observation or during the preceding hour  
19 = Funnel cloud(s) at or within sight of the station at the time of the observation or during the preceding hour

20 = Drizzle (not freezing) at the station during the preceding hour but not at the time of the observation  
21 = Rain (not freezing) at the station during the preceding hour but not at the time of the observation  
22 = Snow at the station during the preceding hour but not at the time of the observation  
23 = Rain and snow or ice pellets at the station during the preceding hour but not at the time of the observation  
24 = Freezing drizzle or freezing rain at the station during the preceding hour but not at the time of the observation  
25 = Shower(s) of rain at the station during the preceding hour but not at the time of the observation  
26 = Shower(s) of snow or rain and snow at the station during the preceding hour but not at the time of the observation  
27 = Shower(s) of hail or rain and hail at the station during the preceding hour but not at the time of the observation  
28 = Fog or ice fog at the station during the preceding hour but not at the time of the observation  
29 = Thunderstorm, with or without precipitation at the station during the preceding hour but not at the time of the observation

30 = Slight or moderate duststorm or sandstorm has decreased during the preceding hour  
31 = Slight or moderate duststorm or sandstorm with no appreciable change during the past hour  
32 = Slight or moderate duststorm or sandstorm has begun or increased during the past hour  
33 = Severe duststorm or sandstorm has decreased during the preceding hour  
34 = Severe duststorm or sandstorm with no appreciable change during the past hour  
35 = Severe duststorm or sandstorm has begun or increased during the past hour  
36 = Slight or moderate drifting snow generally below eye level  
37 = Heavy drifting snow generally below eye level  
38 = Slight or moderate blowing snow generally above eye level  
39 = Heavy blowing snow generally above eye level

40 = Fog or ice fog at a distance at the time of the observation, but not at the station during the preceding hour, the fog extending to a level above that of the observer.  
41 = Fog or ice fog in patches  
42 = Fog or ice fog, sky visible has become thinner during the past hour  
43 = Fog or ice fog, sky invisible has become thinner during the past hour  
44 = Fog or ice fog, sky visible no appreciable change during the past hour  
45 = Fog or ice fog, sky invisible no appreciable change during the past hour  
46 = Fog or ice fog, sky visible has begun or become thicker during the past hour  
47 = Fog or ice fog, sky invisible has begun or become thicker during the past hour  
48 = Fog, depositing rime, sky visible  
49 = Fog depositing rime, sky invisible

50 = Drizzle, not freezing, intermittent slight at time of observation  
51 = Drizzle, not freezing, continuous slight at time of observation  
52 = Drizzle, not freezing, intermittent moderate at time of observation  
53 = Drizzle, not freezing, continuous moderate at time of observation  
54 = Drizzle, not freezing, intermittent heavy at time of observation  
55 = Drizzle, not freezing, continuous heavy at time of observation  
56 = Drizzle, freezing, slight  
57 = Drizzle, freezing, moderate or heavy (dense)  
58 = Drizzle and rain, slight  
59 = Drizzle and rain, moderate or heavy

60 = Rain, not freezing, intermittent slight at time of observation  
61 = Rain, not freezing, continuous slight at time of observation  
62 = Rain, not freezing, intermittent moderate at time of observation  
63 = Rain, not freezing, continuous moderate at time of observation  
64 = Rain, not freezing, intermittent heavy at time of observation  
65 = Rain, not freezing, continuous heavy at time of observation  
66 = Rain, freezing, slight  
67 = Rain, freezing, moderate or heavy  
68 = Rain or drizzle and snow, slight  
69 = Rain or drizzle and snow, moderate or heavy

70 = Intermittent fall of snowflakes slight at time of observation  
71 = Continuous fall of snowflakes slight at time of observation  
72 = Intermittent fall of snowflakes moderate at time of observation  
73 = Continuous fall of snowflakes moderate at time of observation  
74 = Intermittent fall of snowflakes heavy at time of observation  
75 = Continuous fall of snowflakes heavy at time of observation  
76 = Diamond dust (with or without fog)  
77 = Snow grains (with or without fog)  
78 = Isolated star-like snow crystals (with or without fog)  
79 = Ice pellets

80 = Rain shower(s), slight  
81 = Rain shower(s), moderate or heavy  
82 = Rain shower(s), violent  
83 = Shower(s) of rain and snow mixed, slight  
84 = Shower(s) of rain and snow mixed, moderate or heavy  
85 = Snow shower(s), slight  
86 = Snow shower(s), moderate or heavy  
87 = Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, slight  
88 = Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, moderate or heavy  
89 = Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder, slight  
90 = Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder, moderate or heavy

91 = Slight rain at time of observation, thunderstorm during the past hour but not at time of observation  
92 = Moderate or heavy rain at time of observation, thunderstorm during the past hour but not at time of observation  
93 = Slight snow, or rain and snow mixed, or hail at time of observation, thunderstorm during the past hour but not at time of observation  
94 = Moderate or heavy snow, or rain and snow mixed, or hail at time of observation, thunderstorm during the past hour but not at time of observation  
95 = Thunderstorm, slight or moderate, without hail but with rain and or snow at time of observation  
96 = Thunderstorm, slight or moderate, with hail at time of observation  
97 = Thunderstorm, heavy, without hail but with rain and or snow at time of observation  
98 = Thunderstorm combined with duststorm or sandstorm at time of observation  
99 = Thunderstorm, heavy, with hail at time of observation

Hail includes large hail, small hail and snow pellets.

**W1, W2 :** Past weather (for 0900 and 1500 GMT observations, the period covered is 3 hours)

Code figures:

- 0 = Cloud covering half or less of the sky throughout the period
- 1 = Cloud covering more than half the sky during only part of the period
- 2 = Cloud covering more than half the sky throughout the period
- 3 = Sandstorm, duststorm or blowing snow
- 4 = Fog or ice fog or thick haze (visibility less than 1000 m)
- 5 = Drizzle
- 6 = Rain
- 7 = Snow or rain and snow mixed
- 8 = Shower(s)
- 9 = Thunderstorm(s) with or without precipitation

**Nh :** Amount of low cloud, or medium cloud if no low cloud present, okta

**Cl :** Type of low cloud

- 0 = No low cloud
- 1 = Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than bad weather, or both
- 2 = Cumulus of moderate or strong vertical extent, either accompanied or not by other Cumulus or Stratocumulus all having their bases at the same level
- 3 = Cumulonimbus whose summits, at least partially, lack sharp outline, but are neither clearly fibrous (cirriform), nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present
- 4 = Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present
- 6 = Stratus in a more or less continuous sheet or layer, or ragged shreds, or both, but no Stratus fractus of bad weather
- 7 = Stratus fractus of bad weather or Cumulus fractus of bad weather or both (pannus), usually below Altostratus or Nimbostratus
- 8 = Cumulus and Stratocumulus other than that formed by the spreading out of Cumulus, the bases of the Cumulus and Stratocumulus are not at the same level.
- 9 = Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil, either accompanied or not by any other type(s) of low cloud
- / = Types of low cloud invisible due to darkness, fog, blowing dust or sand or other similar phenomena.

'Bad weather' denotes the conditions which generally exist during precipitation and a short time before and after.

**Cm :** Type of medium cloud.

- 0 = No medium cloud.
- 1 = Altostratus, the greater part of which is semi-transparent; through this part the sun or moon may be weakly visible, as through ground glass
- 2 = Altostratus, the greater part of which is sufficiently dense to hide the sun or moon, or Nimbostratus
- 3 = Altocumulus, the greater part of which is semi-transparent; the various elements of the cloud change only slowly and are all at a single level
- 4 = Altocumulus in patches (often in the form of almonds or fishes), the greater part of which is semi-transparent ; the clouds occur at one or more levels and the elements are continually changing in appearance
- 5 = Altocumulus in bands semi-transparent, of Altocumulus in one or more fairly continuous layers (semi-transparent or opaque), progressively invading the sky; these Altocumulus clouds generally thicken as a whole
- 6 = Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus)
- 7 = Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus
- 8 = Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts
- 9 = Altocumulus of a chaotic sky, generally at several levels
- / = Types of medium cloud invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

**Ch :** Type of high cloud

0 = No high cloud

1 = Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.

2 = Dense cirrus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts

3 = Dense Cirrus, often in the form of an anvil, being the remains of the upper part of Cumulonimbus, or where the rest of the Cumulonimbus is below the horizon

4 = Cirrus in the form of hooks or filaments, or both, progressively invading the sky; they generally become denser as a whole

5 = Cirrus (often in bands converging towards one or two opposite points on the horizon) and Cirrostratus, or Cirrostratus alone; in either case they are progressively invading the sky, and generally growing denser as a whole, but the continuous veil does not reach 45 degrees above the horizon.

6 = Cirrus (often in bands converging towards one or two opposite points on the horizon) and Cirrostratus, or Cirrostratus alone; in either case they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered

7 = Veil of Cirrostratus covering the celestial dome.

8 = Cirrostratus not progressively invading the sky and not completely covering the celestial dome

9 = Cirrocumulus alone, or accompanied by Cirrus or Cirrostratus, or both, but Cirrocumulus is predominant.

/ = Types of high cloud invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

**8 Groups**

**N** = Amount of cloud reported by C, okta.

**C** = Type of cloud

0 = Cirrus (Ci)

1 = Cirrocumulus (Cc)

2 = Cirrostratus (Cs)

3 = Altocumulus (Ac)

4 = Altostratus (As)

5 = Nimbostratus (Ns)

6 = Stratocumulus (Sc)

7 = Stratus (St)

8 = Cumulus (Cu)

9 = Cumulonimbus (Cb)

/ = Cloud type not visible owing to darkness, fog, duststorm, or other analogous phenomena.

**hshs** = Height of cloud above station level reported by type C

00 to 50 = Height in hundreds of feet

51 to 55 Not used

56 to 80 = Subtract 50 to obtain cloud height in thousands of feet

81 to 88 = Height of cloud between 35000 and 70000 ft in 5000 ft steps.