

# 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

**AUGUST 2014**

Temperature (°C / °F)				Anomaly	Rank in the past 133 years				
Mean maximum	20.9	69.6	-1.7	49 <sup>th</sup> lowest					
Mean minimum	11.1	52.0	-1.3	53 <sup>rd</sup> lowest					
Daily mean	16.0	60.8	-1.5	52 <sup>nd</sup> lowest					
Highest maximum	25.5	77.9	on 7 <sup>th</sup>	Lowest maximum	16.8	62.2	on 26 <sup>th</sup>		
Highest minimum	16.5	61.7	on 6 <sup>th</sup>	Lowest minimum	4.1	39.4	on 24 <sup>th</sup>		
Mean grass minimum	8.0	46.4	-1.3	Lowest grass minimum	-0.5	31.1	on 20 <sup>th</sup>		
Mean earth @30 cm	18.8	65.8	+0.1	Earth @100 cm	18.1	64.6			
Frost duration (hrs)	0.0				Rain duration (hrs)	37.8			
Rainfall total (mm / in)	89.1	3.51	177 %	18 <sup>th</sup> highest					
Highest daily fall	16.8	0.66	on 8 <sup>th</sup>						
Number of: Dry days (<0.2mm)	12	Wet days (>0.9mm)	13	days ≥5mm	7				
Sunshine total (hrs)	163.3	Daily mean	5.27	84 %	Sunniest day	12.3	on 3 <sup>rd</sup>		
N° days with: Air frost	0	Ground frost	3	Snow falling	0	Snow lying	0		
Thunder	4	Hail ≥5mm	1	Small hail/ice	1	Fog @09	0	Nil sun	2
Pressure MSL : Mean @09 GMT, mbar	1011.6	-4.7	Highest	1022.2	on 16 <sup>th</sup>	Lowest	991.3	on 10 <sup>th</sup>	
Relative humidity : Mean (%)	74.8	Lowest	27	on 4 <sup>th</sup>		Water vapour (g/kg), mean at 09 and 15 GMT 8.7, 7.8			
Overall mean wind speed (mph)	6.6	Windiest day	10.7	on 10 <sup>th</sup>		Max gust	38 on 10 <sup>th</sup>		
Wind direction (days)	N 0	NE 1	E 0	SE 2	S 1	SW 16	W 10	NW 1	
Least windy day (mph)	3.2	on 7 <sup>th</sup>		Calm; less than 0.5 mph (minutes)			247		

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

Notes:

### Wet and Rather Dull with Temperatures Well Below Average

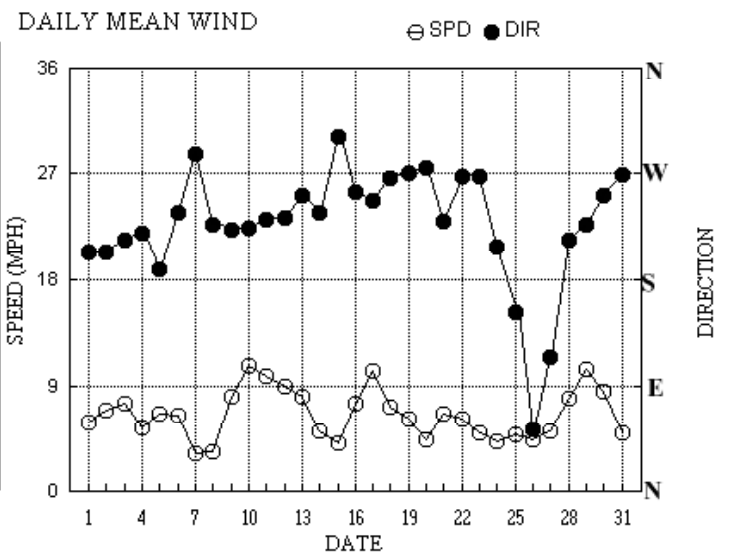
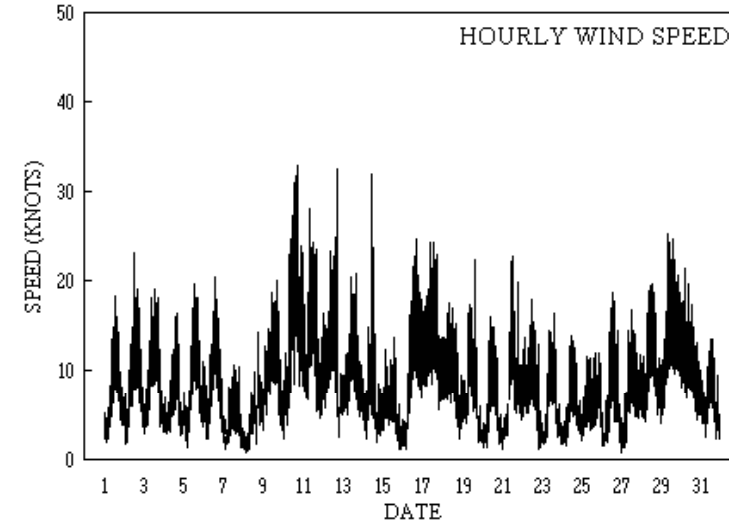
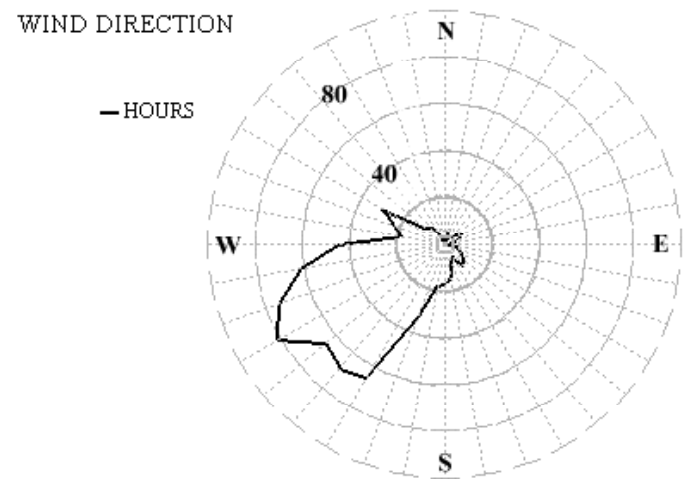
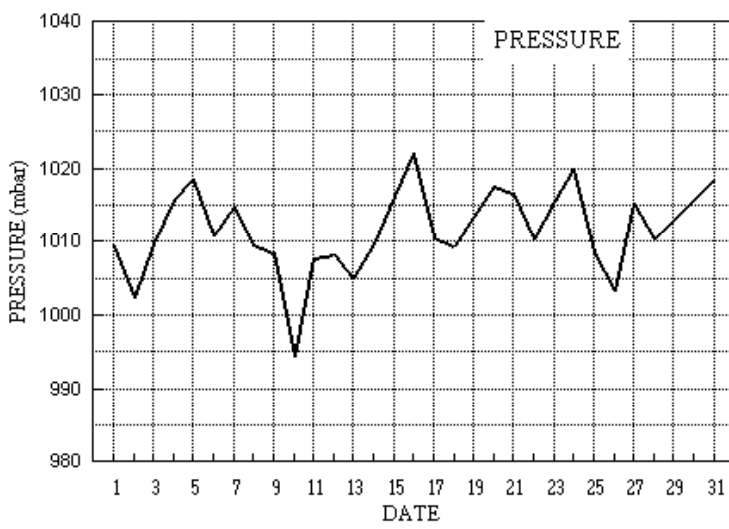
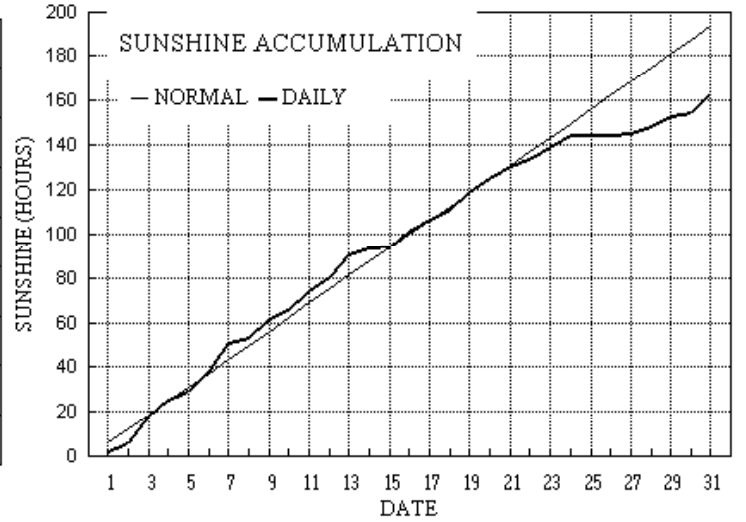
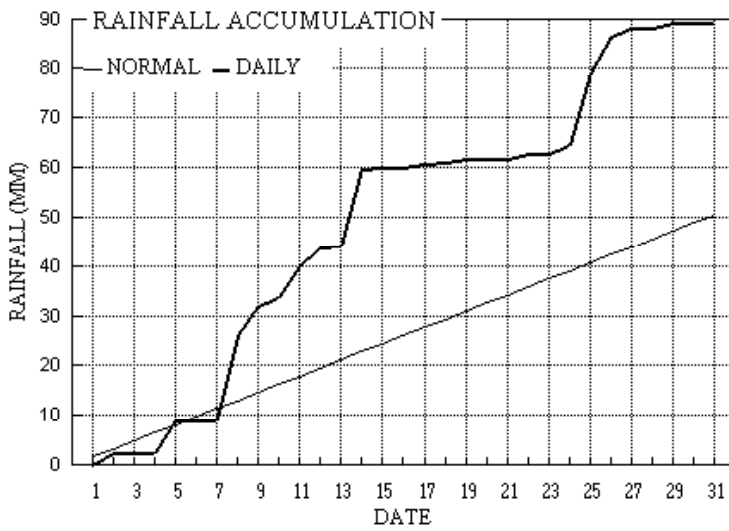
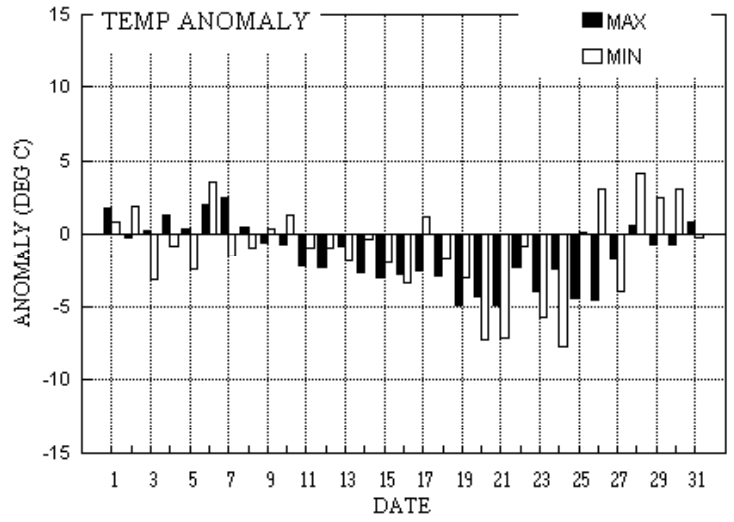
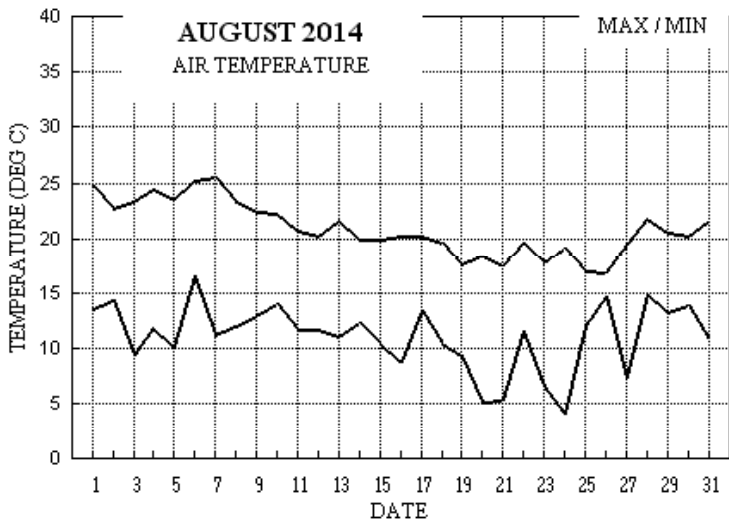
**Temperature:** In terms of the overall mean, this has been the coldest August since 1993, although the mean maximum is only lowest since 2010. It is also the first month since November last with a below average temperature. The mean minimum is also lowest since 1993, but 2007, 2005 and 1998 were only 0.1° higher than this August. Compared with the longer term, this has been a fairly normal month, just 0.3° below the median since 1882, and it is only by virtue of the increase in mean temperature over the past 40 years or so that we see this month's mean is 1.5° below the current 30 year climatological average. The month's highest max of 25.5° is 2.4° below the median, and there have been only 6 Augusts in the past 39 years with a lower value, the average in that period being 28.6°. It is worth noting here that Wokingham's highest temperature of 36.9° occurred on the 10<sup>th</sup> August in 2003. The lowest max and highest min are both close to their respective medians, while the lowest min is 2.2° below its median and the lowest August value since 1979. Daily temperatures were near normal up to the 13<sup>th</sup>, and again after the 27<sup>th</sup>, but were below normal otherwise. Daily anomalies for max were near -5° on the 19<sup>th</sup>, 21<sup>st</sup> and 26<sup>th</sup>, and for the min exceeded -7° on the 20<sup>th</sup>, 21<sup>st</sup> and 24<sup>th</sup>. Worthy of note, a slight ground frost occurred on each of those nights. The 20<sup>th</sup> of August is the earliest date for a ground frost since before 1981, and is 37 days earlier than average. In the past 35 years, only 2012 also had a ground frost in August. Earth temperatures at 30 cm depth are close to average, but are above average at 1 m depth. **Rainfall:** This has been a wet August overall, with the 4<sup>th</sup> highest August total in the past 39 years. The driest weather was between the 15<sup>th</sup> and 24<sup>th</sup> and again after the 26<sup>th</sup>. During the first 7 days rainfall accumulation was near average, but a wet period over the following week resulted in a surplus of 35 mm by the 14<sup>th</sup>. Below normal daily values then reduced this surplus to 24 mm by the 24<sup>th</sup>, then further wet days increased this to 45 mm by the 27<sup>th</sup>. There were sizable 2 day totals of 23 mm on the 8<sup>th</sup>/9<sup>th</sup>, and 22 mm on the 25<sup>th</sup>/26<sup>th</sup>. The number of days with 5 mm or more is equal highest in the past 39 years. Thunder was more frequent than average with storms on the 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> and 14<sup>th</sup>, and with small hail on the 11<sup>th</sup> and large, 6 mm diameter, hail on the 14<sup>th</sup>. **Sunshine:** Compared with average, sunshine this month fell short of expectations. However, from the 1<sup>st</sup> to the 21<sup>st</sup>, the daily accumulation was never more than 10 hours from normal, with both the 3<sup>rd</sup> and 7<sup>th</sup> having over 80 % of the maximum, and it was only in the final 10 days that a succession of dull days, including 2 sunless, the 25<sup>th</sup> and 26<sup>th</sup>, resulted in an accumulated deficit of around 30 hours. Overall there were 8 days with <3 hours, 12 with =>6 hours, 4 with =>9 hours and 2 with =>12 hours.

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 31 <sup>st</sup>			
+0.8°	-0.1°	209%	106%	-2.8°	-2.0°	172%	96%	-2.2°	-1.1°	153%	54%

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

# Wokingham climatological graphs for AUGUST 2014



Month: AUGUST 2014

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 HH	Rain hrs						
1	24.8	13.6	tr	10.3	21.0	19.0	2.7	0.0	1009.3	0 0 0 0	0 0 0 0	0 0 0 0	203	4.9	5.1	250	19	1414	219	9	14	0.0	
2	22.8	14.4	2.6	11.6	20.9	19.0	4.0	0.0	1002.4	0 0 0 0	0 0 0 0	0 0 0 0	203	4.9	6.0	195	23	1302	199	10	13	0.5	
3	23.3	9.4	0.0	5.0	20.3	19.0	12.3	0.0	1009.5	0 0 0 0	0 0 0 0	0 0 0 0	214	6.4	6.5	234	19	1303	218	10	13	0.0	
4	24.5	11.8	tr	8.0	20.1	18.9	7.0	0.0	1015.7	0 0 0 0	0 0 0 0	0 0 0 0	220	4.5	4.7	228	17	1730	229	9	17	0.0	
5	23.6	10.2	6.5	6.2	20.2	18.8	3.7	0.0	1018.4	0 0 0 0	0 0 0 0	0 0 0 0	189	5.6	5.7	187	20	1240	192	9	12	2.4	
6	25.2	16.5	tr	16.1	20.1	18.7	9.1	0.0	1010.7	0 0 0 0	0 0 0 0	0 0 0 0	237	4.8	5.6	254	21	1410	267	10	14	0.0	
7	25.5	11.3	0.0	7.7	20.3	18.7	12.3	0.0	1014.7	0 0 0 0	0 0 0 0	0 0 0 0	287	1.8	2.8	323	11	1247	208	4	19	0.0	
8	23.4	12.0	16.8	8.8	20.5	18.7	2.3	0.0	1009.6	0 0 0 0	0 0 0 0	0 0 0 0	227	1.5	2.9	258	14	1708	235	7	18	6.2	
9	22.4	13.0	6.2	10.3	20.2	18.7	8.8	0.0	1008.4	0 0 0 0	0 0 0 0	0 0 0 0	222	6.6	7.0	213	20	1607	217	11	16	3.1	
10	22.3	14.0	1.7	12.9	20.3	18.7	3.6	0.0	994.3	0 0 0 0	1 0 0 0	0 0 0 0	224	6.2	9.3	246	33	1718	254	16	15	0.4	
11	20.7	11.7	6.0	8.7	19.6	18.6	8.3	0.0	1007.8	0 0 0 0	1 0 1 0	0 0 0 0	231	8.3	8.5	223	28	0851	221	13	12	0.9	
12	20.3	11.7	4.0	9.4	19.2	18.6	6.4	0.0	1008.2	0 0 0 0	1 0 0 0	0 0 0 0	233	7.5	7.7	270	33	1751	243	11	15	0.8	
13	21.7	11.0	0.3	6.6	18.8	18.5	10.2	0.0	1005.0	0 0 0 0	0 0 0 0	0 0 0 0	252	6.6	6.9	262	21	1527	259	10	10	0.2	
14	20.0	12.3	15.5	9.0	19.1	18.4	2.7	0.0	1009.6	0 0 0 0	1 1 0 0	0 0 0 0	237	3.8	4.5	266	32	1122	201	9	13	2.3	
15	20.0	10.5	0.3	5.6	18.9	18.3	1.4	0.0	1016.2	0 0 0 0	0 0 0 0	0 0 0 0	302	3.0	3.6	274	14	1344	321	6	13	0.4	
16	20.3	8.8	tr	5.0	18.6	18.2	6.4	0.0	1022.0	0 0 0 0	0 0 0 0	0 0 0 0	255	6.4	6.5	255	25	1609	253	11	17	0.0	
17	20.2	13.4	0.8	13.0	18.6	18.1	5.6	0.0	1010.5	0 0 0 0	0 0 0 0	0 0 0 0	247	8.5	8.9	288	24	1434	267	11	14	0.8	
18	19.7	10.5	0.3	8.0	18.4	18.0	4.9	0.0	1009.3	0 0 0 0	0 0 0 0	0 0 0 0	267	5.8	6.2	303	18	0835	256	8	13	0.3	
19	17.6	9.3	0.6	6.9	18.4	17.9	7.2	0.0	1013.3	0 0 0 0	0 0 0 0	0 0 0 0	270	4.9	5.3	269	23	1514	261	9	15	0.6	
20	18.4	5.1	0.0	-0.5	17.8	17.8	6.8	0.0	1017.6	0 1 0 0	0 0 0 0	0 0 0 0	275	3.2	3.8	309	16	1157	297	7	12	0.0	
21	17.5	5.3	tr	-0.5	17.4	17.7	5.2	0.0	1016.6	0 1 0 0	0 0 0 0	0 0 0 0	230	5.5	5.7	246	23	1345	240	11	13	0.2	
22	19.7	11.5	1.1	8.6	17.3	17.6	3.2	0.0	1010.4	0 0 0 0	0 0 0 0	0 0 0 0	268	4.6	5.3	254	18	1326	283	7	12	0.5	
23	17.7	6.5	tr	1.2	17.4	17.4	5.5	0.0	1015.5	0 0 0 0	0 0 0 0	0 0 0 0	268	3.8	4.3	262	17	1536	262	8	15	0.0	
24	19.2	4.1	1.7	-0.4	17.0	17.3	5.1	0.0	1020.0	0 1 0 0	0 0 0 0	0 0 0 0	208	3.5	3.7	219	14	1224	210	6	17	2.3	
25	17.0	12.0	14.8	9.6	17.3	17.2	0.0	0.0	1008.4	0 0 0 0	0 0 0 0	0 0 0 0	152	2.8	4.1	163	12	1749	231	6	22	8.7	
26	16.8	14.6	7.2	11.7	17.3	17.1	0.0	0.0	1003.2	0 0 0 0	0 0 0 0	0 0 0 0	52	3.0	3.8	64	19	1446	53	7	13	4.5	
27	19.4	7.4	1.7	2.8	17.2	17.1	0.7	0.0	1015.1	0 0 0 0	0 0 0 0	0 0 0 0	114	3.6	4.4	86	17	1212	87	7	09	1.8	
28	21.8	14.9	tr	15.3	17.3	17.0	3.6	0.0	1010.3	0 0 0 0	0 0 0 0	0 0 0 0	213	6.2	6.9	234	20	1355	220	11	14	0.0	
29	20.5	13.2	0.9	10.7	17.6	17.0	4.3	0.0	1012.8	0 0 0 0	0 0 0 0	0 0 0 0	227	8.9	9.0	246	25	0959	232	12	15	0.3	
30	20.3	13.9	tr	12.1	17.8	17.0	1.2	0.0	1015.6	0 0 0 0	0 0 0 0	0 0 0 0	251	7.2	7.3	230	22	0415	231	9	03	0.0	
31	21.7	10.7	0.1	7.7	17.8	17.0	8.8	0.0	1018.6	0 0 0 0	0 0 0 0	0 0 0 0	269	4.0	4.4	262	14	1227	299	7	13	0.6	
Total			89.1				163.3	0.0															37.8
Mean	20.9	11.1		8.0	18.8	18.1	5.27	0.0	1011.6					235	4.2	5.7							
Anom	-1.7	-1.3	177%	-1.3	+0.1	+0.5	84%																
Daily mean		16.0																					
Anom		-1.5																					

Number of days with:

Air frost = 0      Ground frost = 3      Nil sun = 2  
 Snow falling = 0      Snow lying = 0      Thunder = 4  
 Hail=>5mm = 1      Hail<5mm or ice = 1      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 AUGUST 2014

Table with columns: Date, VV, N, dd, ff, gg, TT, Td, RH, r, PPP, a, ppp, ww, W1, W2, Nh, Cl, h, Cr, C, N, Ch, shs, NCh, shs, NCh, shs, Date, Remarks. Rows 1-31.

Mean vis = 31.4 km

Mean cloud = 5.7 71%

Mean wind speed = 6.7 kn

Mean gust = 14 kn

Mean TT = 16.8 °C

Mean Td = 11.7 °C

Mean RH = 72.7 %

Mean r = 8.7 g/kg

Mean PPP = 1011.6 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.

Weather observations. Emmbrook, Wokingham, Berkshire.

Observations at 1500 GMT for AUGUST 2014

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Cf	NChshs	NChshs	NChshs	Date	Remarks
1	77	7	19	09	19	22.7	11.5	49	8.5	1006.7	6	011	15	2	2	2	8	6	7	/	82840	87363	1	1Sc50 2Ac61 Cu med jpNW	
2	70	4	28	05	17	20.6	14.5	68	10.4	1001.5	7	001	15	8	1	3	9	5	0	3	81920	82825	2	2Sc50 1Ci70 jpN Absent, vv&cld est	
3	83	3	21	09	18	21.9	8.6	42	6.9	1009.5	0	002	02	0	0	3	4	7	0	1	83850		3	1Sc56 1Ci78 Cu med	
4	70	6	23	09	16	23.4	9.0	40	7.1	1015.7	3	002	15	2	2	2	2	7	6	/	82850	85359	4	1Ac57 Cu med. jpN&SW-S vv50k ex p	
5	80	7	19	10	18	22.4	15.0	63	10.5	1016.6	6	007	25	8	2	6	8	5	3	1	82828	85650	5	3Ac65 /Ci75 COTRA Cu med	
6	83	2	28	09	21	24.4	11.2	44	8.3	1010.4	5	003	01	8	1	2	8	6	0	0	82845		6	1Sc50 Cu med	
7	84	4	27	05	10	24.7	8.0	34	6.6	1013.9	6	005	02	1	1	2	2	7	0	1	82856	83075	7	COTRA Cu med	
8	80	8	27	04	10	22.3	13.6	58	9.7	1005.2	7	022	25	8	2	4	8	6	7	/	82835	83650	8	8465 Cu med	
9	82	7	21	09	17	22.0	10.6	48	7.9	1008.0	8	006	03	1	1	3	8	6	0	1	83845	87075	9	1Sc56 2Ci70 COTRA Cu med U/a cont	
10	86	4	25	14	31	20.0	9.9	52	7.7	997.7	2	057	01	9	1	3	8	6	0	3	83840		10	1Sc56 1Ci70 Cu med Cb top N	
11	80	6	23	13	23	18.2	11.4	64	8.4	1007.8	0	001	25	8	1	2	9	5	6	3	82925	83363	85072	11	Absent 11th to 21st. vv&cld est
12	80	7	24	09	23	20.0	8.5	47	6.9	1005.9	7	014	25	8	2	4	8	6	3	1	83845	83362	85075	12	2Sc56
13	82	4	28	07	16	20.8	9.0	47	7.0	1005.4	1	004	25	8	1	2	2	6	6	1	82845	83358		13	1Ci75
14	65	6	25	07	14	16.3	10.6	69	7.9	1009.2	2	002	15	8	2	3	9	5	6	3	82925	83358	85075	14	2Sc56
15	80	7	01	03	09	18.2	11.0	63	8.1	1017.7	1	005	15	6	2	2	2	5	6	/	82828	86359		15	2Sc57
16	84	6	26	09	23	19.5	7.8	47	6.5	1019.6	7	013	02	2	2	5	4	6	0	2	81845	85650		16	1Ci75
17	84	5	26	11	24	19.7	6.1	41	5.8	1008.0	6	010	02	2	2	5	8	7	0	0	81850	85650		17	
18	81	6	30	07	15	18.3	7.8	50	6.6	1010.6	1	005	25	8	2	4	8	6	7	/	83835	85358		18	2Sc56
19	65	7	31	07	13	14.4	7.1	61	6.3	1014.0	3	001	80	8	2	7	8	5	/	/	83825	86650		19	
20	84	6	27	08	15	18.1	4.3	40	5.1	1016.8	7	004	02	2	2	1	7	6	0	0	82850	85358		20	
21	81	8	26	07	18	15.2	8.0	62	6.6	1014.2	7	013	02	2	2	8	8	6	/	/	81830	88650		21	
22	84	6	32	05	16	17.9	5.6	44	5.7	1011.1	2	001	02	2	2	3	8	7	0	1	82850	85075		22	1Sc56 COTRA Cu med
23	82	5	26	06	14	16.7	6.0	49	5.8	1015.5	7	003	25	8	1	5	8	6	0	0	82845	84656		23	Cu med jpN&SE
24	88	7	23	06	14	18.8	5.2	41	5.4	1017.3	8	016	02	2	2	3	2	6	7	1	83845	83362	85365	24	2Ac57 /Ci75 Cu med
25	60	8	13	03	12	16.8	16.2	96	11.5	1003.6	7	028	63	6	6	7	5	2	2	/	81704	83706	87612	25	8Ns25
26	75	8	06	07	19	16.1	14.8	92	10.5	1007.2	2	018	20	5	6	8	8	4	/	/	82815	83640	88650	26	Cu med
27	75	8	14	06	13	18.1	12.5	69	9.0	1013.2	8	010	15	2	2	8	8	5	/	/	81825	85635	88645	27	Cu hum jpW
28	62	7	22	11	19	19.6	14.9	74	10.5	1010.8	2	002	15	2	2	4	8	4	7	1	81815	83825	85360	28	2Sc56 6Ci77 COTRA Cu med jpNW Halo22° part
29	72	7	23	08	23	18.9	12.7	67	9.1	1012.8	0	000	25	8	2	3	8	6	7	/	82830	87358		29	2Sc50 Cu hum
30	84	7	26	07	17	18.9	9.8	55	7.5	1015.6	2	001	02	2	2	4	8	6	1	/	82835	83656	87466	30	Cu med
31	84	3	30	06	14	20.0	8.5	47	6.9	1018.4	1	001	02	1	1	2	2	6	4	0	82845			31	2Ac62 Cu med

Mean vis = 35.5 km

Mean cloud = 6.0 75%

Mean wind speed = 7.6 kn

Mean gust = 17 kn

Mean TT = 19.5 °C

Mean TdTd = 10.0 °C

Mean RH = 55.6 %

Mean r = 7.8 g/kg

Mean PPP = 1011.0 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.

Wokingham Sunshine Hourly analysis  2014	Hour	01-Aug	02-Aug	03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug	09-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug
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	0.00	0.00	0.33	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	1.00	0.00	0.96	0.00	1.00	0.12	0.83	0.00	0.44	0.32	0.82	0.00	0.00	0.00	0.16
6	0.35	0.00	1.00	0.67	0.79	0.14	1.00	0.53	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.98
7	0.33	0.12	0.99	1.00	0.00	0.30	1.00	0.35	0.92	0.00	1.00	1.00	1.00	0.59	0.00	1.00	1.00
8	0.45	0.02	0.82	1.00	0.18	0.67	0.98	0.28	0.77	0.00	0.95	0.92	0.95	0.48	0.00	0.00	0.32
9	0.15	0.00	0.86	0.85	0.02	0.74	0.72	0.23	0.90	0.00	0.84	0.85	0.98	0.17	0.00	0.00	0.49
10	0.36	0.10	1.00	0.62	0.04	0.32	0.44	0.17	0.81	0.00	0.53	0.38	0.99	0.24	0.00	0.00	0.59
11	0.23	0.51	0.85	0.77	0.13	0.51	0.75	0.65	0.60	0.20	0.24	0.24	0.37	0.09	0.13	0.00	0.24
12	0.44	0.04	0.70	0.99	0.00	0.60	0.66	0.00	0.57	0.18	0.98	0.03	0.54	0.25	0.24	0.00	0.59
13	0.34	0.39	0.49	0.35	0.00	0.83	0.83	0.00	0.17	0.22	0.20	0.05	0.56	0.00	0.00	0.00	0.31
14	0.06	0.49	0.37	0.27	0.07	0.72	0.99	0.00	0.44	0.44	0.17	0.29	0.87	0.37	0.07	0.00	0.43
15	0.00	0.22	0.94	0.00	0.20	0.84	0.99	0.00	0.20	0.58	0.83	0.26	0.84	0.01	0.02	0.00	0.40
16	0.00	0.95	0.79	0.24	0.24	0.98	1.00	0.00	0.61	0.36	0.07	0.57	0.17	0.37	0.00	0.00	0.30
17	0.00	0.50	0.75	0.11	0.69	1.00	1.00	0.00	0.88	0.94	0.31	0.00	0.47	0.04	0.00	0.00	0.48
18	0.00	0.31	1.00	0.00	0.23	1.00	0.92	0.00	0.13	0.71	0.26	0.43	0.41	0.03	0.04	0.00	0.09
19	0.00	0.30	0.42	0.11	0.00	0.46	0.00	0.00	0.00	0.01	0.43	0.00	0.23	0.00	0.00	0.00	0.00
20	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
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	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	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	0.00
Tot	<b>2.71</b>	<b>3.96</b>	<b>12.30</b>	<b>7.00</b>	<b>3.72</b>	<b>9.10</b>	<b>12.29</b>	<b>2.33</b>	<b>8.83</b>	<b>3.64</b>	<b>8.25</b>	<b>6.37</b>	<b>10.19</b>	<b>2.65</b>	<b>1.43</b>	<b>6.38</b>	

	Hour	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	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	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	0.00	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	0.02
5	0.00	0.00	0.21	0.76	0.65	0.00	0.26	0.76	0.00	0.00	0.02	0.00	0.30	0.00	0.00	0.00	0.28
6	0.00	0.00	0.97	1.00	1.00	0.00	0.33	0.51	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.88	0.49
7	0.00	0.80	1.00	1.00	1.00	0.00	0.62	0.20	0.00	0.00	0.51	0.00	0.87	0.18	0.00	0.90	0.54
8	0.00	0.56	0.92	1.00	1.00	0.06	0.98	0.48	0.00	0.00	0.18	0.17	0.27	0.52	0.03	0.00	0.48
9	0.00	0.54	0.77	0.99	1.00	0.22	0.74	0.99	0.00	0.00	0.00	0.00	0.84	0.14	0.00	0.00	0.45
10	0.58	0.88	0.55	0.29	0.31	0.80	0.01	0.71	0.00	0.00	0.00	0.02	0.37	0.14	0.00	0.73	0.39
11	0.18	0.49	0.04	0.65	0.00	0.53	0.21	0.28	0.00	0.00	0.00	0.51	0.41	0.21	0.00	0.64	0.34
12	0.59	0.64	0.41	0.13	0.00	0.39	0.10	0.00	0.00	0.00	0.00	0.34	0.01	0.00	0.00	0.78	0.33
13	0.78	0.57	0.13	0.31	0.00	0.68	0.09	0.00	0.00	0.00	0.00	0.14	0.27	0.00	0.00	0.69	0.29
14	0.77	0.04	0.01	0.40	0.00	0.14	0.15	0.35	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.66	0.28
15	0.41	0.00	0.01	0.19	0.24	0.25	0.71	0.24	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.85	0.30
16	0.21	0.00	0.32	0.05	0.00	0.02	0.33	0.06	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.93	0.31
17	0.93	0.22	0.98	0.01	0.00	0.12	0.15	0.49	0.00	0.00	0.00	0.92	0.00	0.00	1.00	0.00	0.39
18	1.00	0.14	0.78	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0.66	0.31
19	0.12	0.00	0.04	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	0.07
20	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
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	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	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	0.00
Tot	<b>5.57</b>	<b>4.87</b>	<b>7.16</b>	<b>6.77</b>	<b>5.20</b>	<b>3.22</b>	<b>5.50</b>	<b>5.07</b>	<b>0.00</b>	<b>0.00</b>	<b>0.72</b>	<b>3.60</b>	<b>4.28</b>	<b>1.19</b>	<b>8.75</b>	<b>163.01</b>	

AUGUST 2014	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	
1	18.64	25.0	1353	13.6	209	73.3	95.2	448	44.2	1400	13.37	9.57	11.6	1146	8.2	1513	1008.32	1012.1	24	1005.7	2359	
2	17.93	22.9	1610	12.3	2359	75.9	95.8	407	54.2	1759	13.41	9.68	13.0	1104	7.3	2359	1003.40	1006.4	2359	1001.2	1540	
3	16.98	23.4	1354	9.6	227	64.5	94.5	237	34.2	1119	9.41	7.36	8.9	752	5.6	1120	1009.50	1013.3	2359	1006.3	11	
4	17.56	24.7	1313	11.8	446	66.5	93.6	532	26.9	1249	10.51	7.89	9.6	751	4.9	1252	1015.79	1018.8	2359	1013.2	0	
5	17.89	23.7	1148	10.4	447	75.3	97.8	540	46.5	1239	13.09	9.33	10.9	2357	7.5	446	1017.13	1019.1	613	1013.7	2347	
6	19.73	25.3	1412	14.9	2333	72.6	97.7	519	39.1	1412	14.04	10.03	12.4	831	7.6	1547	1011.29	1014.0	2	1009.1	904	
7	18.91	25.6	1547	11.5	505	67.8	98.0	612	31.2	1516	11.80	8.64	11.3	826	6.1	1526	1013.82	1015.0	904	1012.8	37	
8	17.42	23.5	1329	12.1	506	80.8	97.8	611	48.9	1329	13.72	9.80	11.7	1051	8.5	506	1007.74	1013.3	16	1003.3	2339	
9	17.41	22.5	1311	13.0	458	71.6	96.7	552	44.1	1313	11.68	8.60	10.8	833	7.0	1240	1007.23	1009.6	903	1003.4	19	
10	16.69	22.5	1237	13.3	2338	78.3	95.9	157	46.4	1732	12.55	9.31	14.5	1111	6.3	1801	999.35	1006.9	3	991.3	1225	
11	15.39	20.8	1245	11.7	506	72.5	88.4	2211	47.0	1333	10.20	7.76	9.6	1741	6.7	1622	1007.69	1009.2	2115	1005.5	0	
12	14.83	20.3	1356	11.5	2101	72.1	95.6	2046	41.8	1251	9.35	7.25	8.4	2014	5.9	1329	1007.79	1009.0	12	1005.3	2400	
13	16.11	21.7	1525	11.0	100	72.3	93.6	52	44.5	1518	10.72	7.93	10.0	1345	6.7	1516	1006.04	1009.8	2400	1004.5	244	
14	15.03	20.0	1025	12.1	2400	83.1	94.8	2139	57.9	1106	12.08	8.68	10.3	1150	7.8	1123	1009.80	1012.2	2357	1008.6	1411	
15	14.23	20.0	1334	10.5	305	81.6	96.6	2239	50.6	1444	10.91	8.06	10.6	1727	6.8	423	1016.88	1021.6	2334	1012.2	21	
16	15.03	20.3	1433	8.8	453	69.4	97.6	44	42.3	1552	8.84	7.00	8.1	816	5.8	1405	1020.17	1022.2	850	1015.8	2400	
17	15.45	20.2	1452	11.6	2400	68.7	89.7	1137	37.6	1813	9.25	7.27	10.0	1207	4.7	1813	1010.18	1015.7	1	1007.9	1901	
18	14.52	19.8	1321	10.5	429	70.1	88.3	117	47.6	1510	8.92	7.11	9.0	1650	5.9	2257	1009.91	1012.3	2353	1007.8	300	
19	12.53	17.7	1241	7.4	2354	67.6	93.1	2358	39.4	1315	6.33	5.94	7.3	1512	4.8	1316	1013.89	1017.0	2356	1011.8	158	
20	12.07	18.5	1503	5.1	517	69.9	98.1	606	35.8	1511	5.94	5.77	7.4	730	4.5	1511	1017.29	1018.4	2345	1016.4	1708	
21	12.16	17.6	1530	5.3	354	74.4	97.9	629	47.6	1530	7.36	6.37	7.3	745	5.3	354	1015.14	1018.3	6	1011.5	2358	
22	14.56	19.8	1517	9.7	2300	68.8	96.8	2349	35.6	1518	8.29	6.84	8.5	830	5.0	1435	1011.37	1014.5	2358	1009.3	538	
23	12.20	17.8	1535	6.7	440	72.6	97.4	505	38.5	1529	6.74	6.12	7.6	0	4.5	1221	1016.03	1019.4	2359	1014.3	40	
24	12.51	19.4	1458	4.2	459	71.3	98.2	630	37.9	1442	6.74	6.10	7.6	849	4.9	459	1018.30	1020.5	904	1015.1	2359	
25	15.06	17.1	1513	11.8	49	94.8	97.4	2124	76.3	0	14.23	10.22	11.8	1513	6.9	0	1006.39	1015.3	1	1000.5	1821	
26	14.74	16.9	1435	9.8	2348	95.6	98.7	531	87.2	1544	14.05	10.06	11.4	1430	7.2	2348	1005.83	1013.6	2358	1000.5	106	
27	14.35	19.5	1340	7.6	418	87.2	99.2	547	60.9	1346	12.09	8.85	10.8	2143	6.3	419	1013.44	1015.5	647	1010.2	2336	
28	17.47	21.9	1258	13.7	2352	80.7	97.3	413	56.3	1308	13.88	9.92	12.0	833	7.6	1851	1010.55	1012.8	2350	1008.3	336	
29	16.74	20.7	1315	13.2	241	77.2	94.2	116	53.5	1129	12.52	9.00	10.0	1746	7.5	1108	1012.82	1013.7	2155	1011.8	1317	
30	16.62	20.4	1259	13.7	2348	70.1	91.1	442	48.5	1311	10.96	8.13	10.0	438	6.8	1233	1015.36	1017.5	2238	1012.7	357	
31	15.84	21.8	1526	10.8	556	73.4	95.9	609	40.3	1601	10.54	7.87	9.3	713	6.2	1737	1018.41	1020.6	2343	1016.7	229	
Total																						
Mean	15.70	21.01		10.61		74.8	95.58		46.54		10.76	8.14	10.05		6.34		1011.51	1014.76		1008.60		
Max	19.73	25.59		14.88		95.6	99.20		87.20		14.23	10.22	14.48		8.48		1020.17	1022.20		1016.75		
Min	12.07	16.91		4.22		64.5	88.30		26.93		5.94	5.77	7.29		4.45		999.35	1006.42		991.30		

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

# WOKINGHAM METEOROLOGICAL DATA

Wokingham Climatological Station, Emmbrook, Berkshire.

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

## Seasonal Means and Totals

## SUMMER 2014

Temperature (°C)

Rank in the past 133 years

Mean maximum	22.4	(+0.4)	26 <sup>th</sup> highest
Mean minimum	11.6	(-0.2)	29 <sup>th</sup> highest
Daily mean	17.0	(+0.1)	25 <sup>th</sup> highest
Rainfall total (mm)	181.3	(125%)	48 <sup>th</sup> highest
Sunshine total (hours)	638.5	(109%)	
N <sup>o</sup> of: Dry days	55 (-3)	Wet days	27 (+3)
Days with: Air frost	0 (0)	Ground frost	3 (+2)
		Snow falling	0 (0)
		Snow lying	0 (0)
Thunder	12 (+5)	Hail ≥5mm	1 (0)
		Small hail/ice	2 (+2)
		Fog @09 GMT	0 (0)
		Nil sun	2 (-1)
Air pressure MSL : Mean @09 GMT (mbar)	1015.5		(-1.1)

Departure from 1981 to 2010 average shown in brackets.

Notes:

### Wetter and Sunnier than Average with Temperatures Close to Normal

**Temperature:** The mean temperature this summer is very close to the current climatological average. Since 2000, 7 summers have been warmer and 6 cooler with one the same as this year's. In the longer-term, as the rankings show, this summer is well above the median since 1882, in fact since 1989 only the summer of 2011 has been below the long-term median, one indication of the current change in climate. This summer's highest temperature was 29.2° on the 24<sup>th</sup> July, 1.1° below the median. The lowest temperature was 4.1° on the 24<sup>th</sup> August, 0.2° below the median. The lowest max was 15.9° on the 4<sup>th</sup> June, 1.4° above the median, while the highest min was 17.9° on the 19<sup>th</sup> July, 0.8° above its median. The mean grass minimum, 8.4°, is 0.5° below average, The lowest grass min, -0.5° occurred on the 20<sup>th</sup> and 21<sup>st</sup> August. This is the earliest date for a ground frost in over 35 years, the average date being around the 26<sup>th</sup> September. The mean earth temperature at 30 cm depth was 19.2°, 1.2° above average, and at 1 m depth the mean was 17.4°, also well above normal. The warmest month was July, mean 18.9°, while June and August were level pegging at 16.0°, although compared with average July was 1.2° above, and August 1.5° below. The longest spell of hot weather was in July, when the daily max was 25° or more continuously from the 15<sup>th</sup> to the 26<sup>th</sup>. Overall there were 18 days with 25° or more, 16 in July and 2 in August. **Rainfall:** This summer's total is 25 % above average, but was not enough to classify it in the wet category. Last summer was much drier, and in fact was in the very dry category, but the previous two were much wetter than this year's. In this millennium 10 summers have been drier and 4 wetter than this summer. This year July was the driest month with only 28.3 mm, around two thirds of average and 21 dry days, while June had 63.9 mm, 30% above average, although over half the total fell on one day, and 22 dry days. August was a wet month with 89.1 mm, 77% above average and only 12 dry days. Thunder was much more frequent than average, and the 12 days is most since 1999, and before that 1983. There was a notable storm on the 13<sup>th</sup>/14<sup>th</sup> June between 2308 and 0230 GMT giving 38.2 mm of rain, and a rain rate of 252 mm/hr at 2335 GMT, the highest of the season, and 15.7 mm fell in just one hour. Thunder also occurred on the 7<sup>th</sup> and 28<sup>th</sup> June, the 8<sup>th</sup>, 18<sup>th</sup>, 25<sup>th</sup> and 28<sup>th</sup> of July and the 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> and 14<sup>th</sup> of August. Small hail fell on the 25<sup>th</sup> July and 11<sup>th</sup> August, and large hail on the 14<sup>th</sup> August. There were 55 dry days, 3 fewer than average, and only 4 dry spells, although one of these was of 12 days ending on the 25<sup>th</sup> June, the others all of 5 days ended on the 12<sup>th</sup> June, 2<sup>nd</sup> July and 1<sup>st</sup> August. Estimated soil moisture deficit peaked at 127 mm on the 3<sup>rd</sup> August, a quite modest value. An index of plant stress for unirrigated shallow rooted plants gives a value of 369 for this summer, the 30 year average being 652. **Sunshine:** This has been a reasonably sunny summer, about 10% above normal, although the surplus was not evenly distributed throughout the season. Both June and July had above average amounts, but August had an excess of dull days which produced a deficit of 16%. The season's total of 638 hours is slightly less than last summers 641 hours, but higher than any other year back to 2006. The season's sunniest day was the 3<sup>rd</sup> July with 15.2 hours. Runs of consecutive sunny days were not frequent, but the 4 days to the 13<sup>th</sup> June gave an average of 12.5 hours per day, while the 4 days to the 4<sup>th</sup> July had an average of 11.9 hours per day. Overall there were 12 days with <3 hours, 51 with =>6 hours, 29 with =>9 hours, 12 with =>12 hours, and 1 with =>15 hours. **Wind:** The overall mean wind speed was 5.8 mph, 0.3 mph below average and lowest since 2006. The windiest day was the 10<sup>th</sup> August, mean 10.7 mph, and the season's highest gust of 38 mph was also on that day. The least windy day was the 12<sup>th</sup> June, 2.6 mph, and there were 1923 minutes (32.1 hours) of calm. Daily mean direction/number of days: N,11 NE,6 E,4 SE,5 S,2 SW,38 W,15 NW,11. Compared with average, winds from the SW were 7.0% more frequent, and from W, NW and N combined, 6.6% more frequent, at the expense of those from the S, down by 12.1%. **Humidity:** The overall mean relative humidity was 72.0%, and the lowest value was 27% on the 4<sup>th</sup> August. The mean water vapour content per kg of air was 8.8g at 0900 GMT and 8.0g at 1500 GMT.

**June:** Warm with above average sunshine and above average rainfall despite long dry episodes. Highest max lowest since 1991. Highest min lowest since 1995. Mean earth temp at 30 cm highest since before 1980. Notable thunderstorm on 13<sup>th</sup>/14<sup>th</sup> gave 78% of an average June's rainfall in under 6 hours, and the 38.2mm ranks 6<sup>th</sup> highest daily fall in the past 111 Junes.

**July:** Very warm, dry and sunny. Mean max 11<sup>th</sup> highest and mean temp 10<sup>th</sup> highest in the past 133 years. Rainfall 2<sup>nd</sup> lowest since 1998.

**August:** Wet and rather dull with well below average temperature. Coldest since 1993. Lowest min lowest since 1979. Ground frost on 20<sup>th</sup> earliest since before 1981, and 37 days earlier than average. Rainfall 4<sup>th</sup> highest in 39 years.

Month	Mean	Anom	Mean	Anom	Rain	Anom	Sun	Anom	Wind	Max	Mean	Anom
	Max		Min		mm		hrs		Mn mph	gust	pressure	
June	21.5°	+1.0°	10.6°	+0.1°	63.9	130%	224.9	117%	5.2	28	1019.3	+2.2
July	24.9°	+2.0°	13.0°	+0.4°	28.3	63%	250.3	126%	5.6	30	1015.7	-0.9
August	20.9°	-1.7°	11.1°	-1.3°	89.1	177%	163.3	84%	6.6	38	1011.6	-4.7



## Appendix 1.

### **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.