

# 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

### NOVEMBER 2020

Temperature (°C)		Anomaly	Rank in the past	139	years
Mean maximum	12.2	+1.3	9 <sup>th</sup> highest		
Mean minimum	5.6	+1.5	10 <sup>th</sup> highest		
Daily mean	8.9	+1.4	8 <sup>th</sup> highest		
Highest maximum	17.4	on 1 <sup>st</sup>	Lowest maximum	7.6	on 29 <sup>th</sup>
Highest minimum	12.5	on 2 <sup>nd</sup>	Lowest minimum	-1.5	on 27 <sup>th</sup>
Mean grass minimum	3.2	+2.1	Lowest grass minimum	-4.9	on 4 <sup>th</sup>
Mean earth @30 cm	10.6	+1.2	Earth @100 cm	11.8	
Frost duration (hrs)	15.8		Rain duration (hrs)	37.9	
Rainfall total (mm)	47.1	68 %	48 <sup>th</sup> lowest		
Highest daily fall	16.2	on 14 <sup>th</sup>	Highest rate mm/hr	25	on 3 <sup>rd</sup>
Number of: Dry days (<0.2mm)	14	Wet days (>0.9mm)	10	days ≥5mm	3
Sunshine total (hrs)	73.9	Daily mean	2.46	93 %	Sunniest day
N° days with: Air frost	5	Ground frost	8	Snow falling	0
Thunder	0	Hail ≥5mm	0	Small hail/ice	0
Pressure MSL: Mean @09 GMT, mbar	1019.6	+5.2	Highest	1041.0	on 5 <sup>th</sup>
Relative humidity: Mean (%)	88.9	Lowest	56	on 2 <sup>nd</sup>	Water vapour (g/kg), mean at 09 and 15 GMT
Overall mean wind speed (mph)	6.6	Windy day	14.3	on 2 <sup>nd</sup>	Max gust
Wind direction (days)	N 1	NE	4	E	0
Least windy day (mph)	1.4	on 5 <sup>th</sup>	Calm; less than 0.5 mph (minutes)	1039	S 5
					SW 14
					W 2
					NW 1

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

Notes: **Very Mild with Below Average Rainfall and Sunshine**

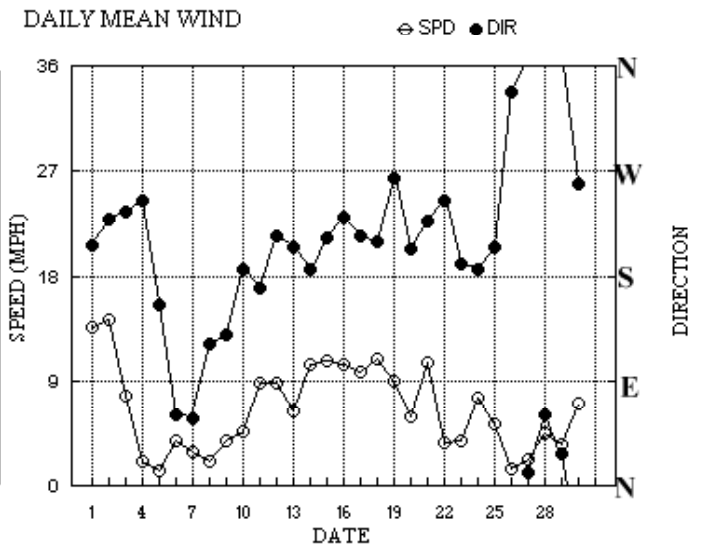
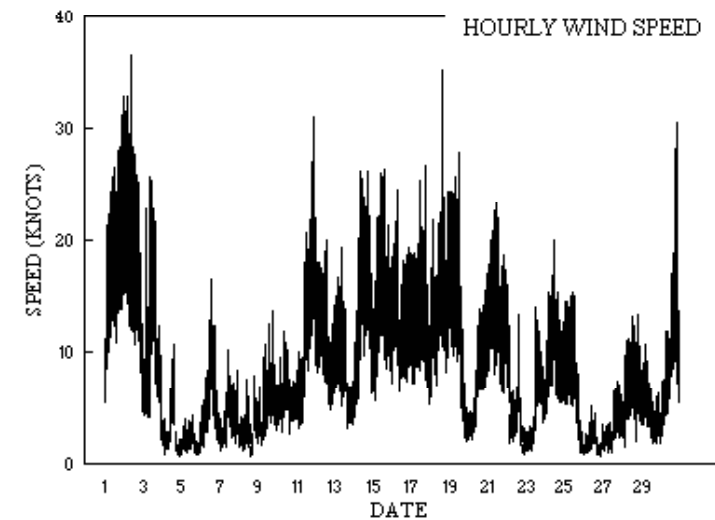
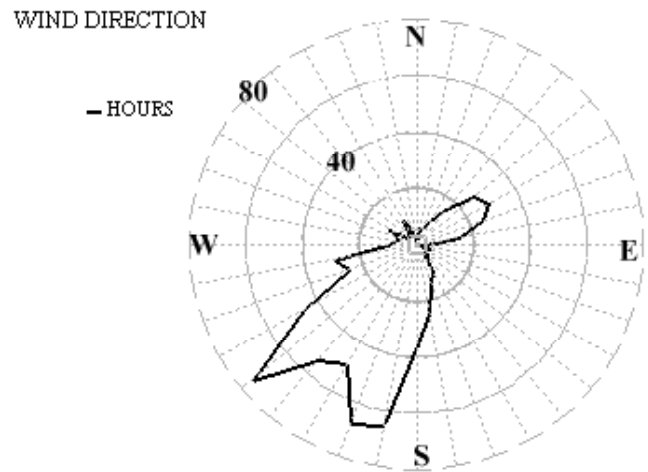
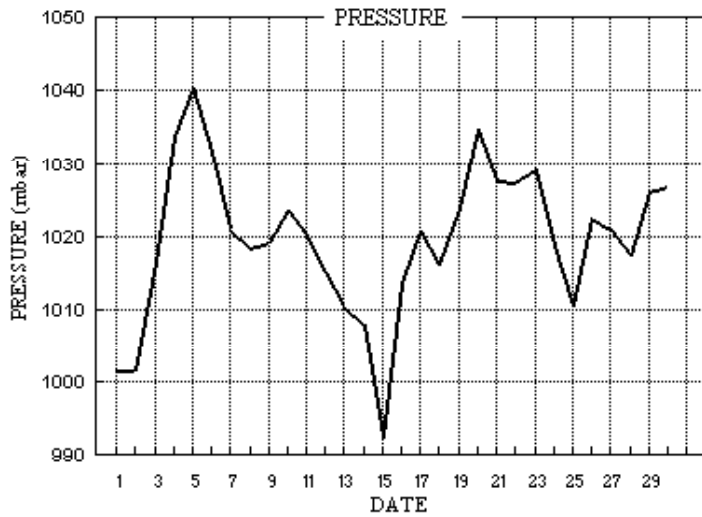
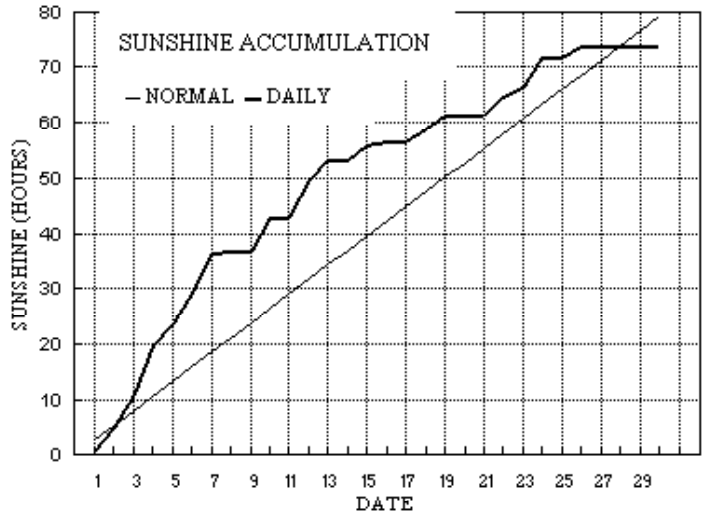
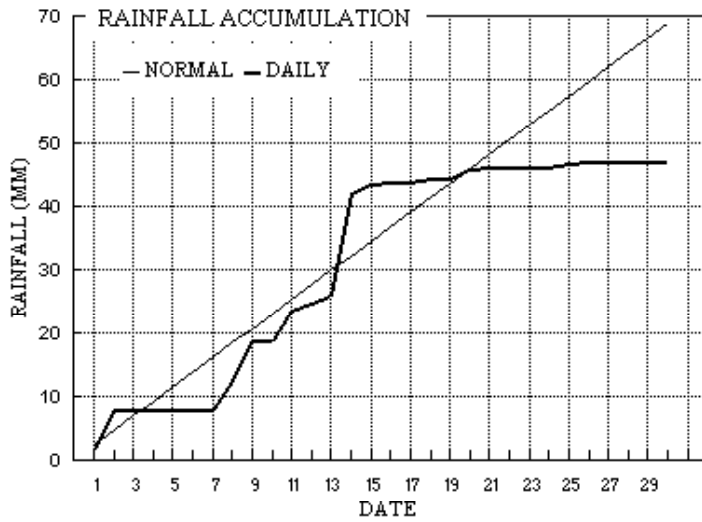
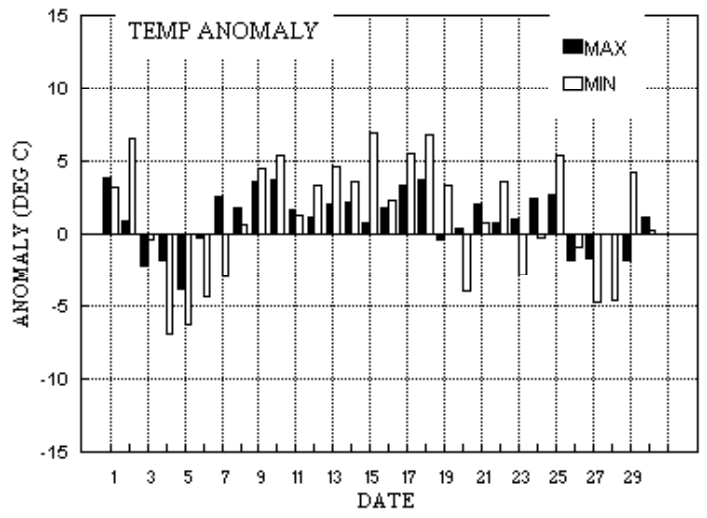
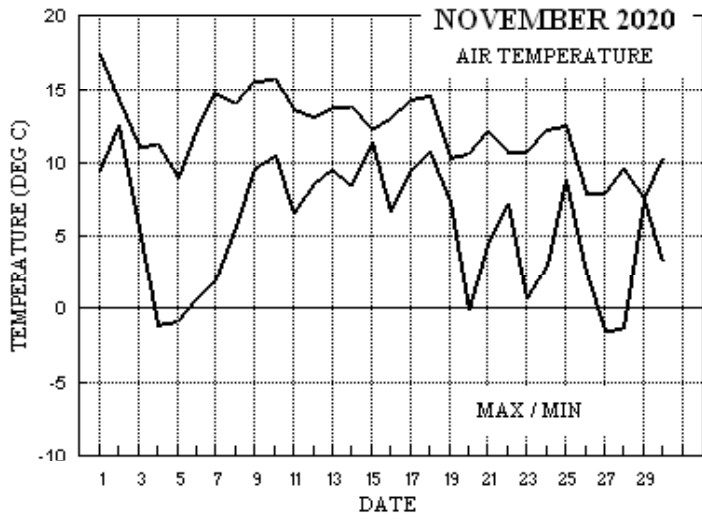
**Temperature:** This is the 5<sup>th</sup> mildest November this millennium, and there were only 3 other milder Novembers between 1882 and 2000, with 1994, mean 10.6°, the mildest on record. The last November to be colder than the current climatological average was in 2017, just 0.5° below average. The highest max is 1.8° above the median and the lowest max is 2.9° above its median, and is 7<sup>th</sup> highest in 108 years. The highest min is 1.9° above the median and the lowest min is 2.1° above its median. The mean grass min is highest since 2015 and the lowest grass min is highest since 2002. Earth temperature at 30 cm depth is about 1° above average, but is close to average at 1 m depth. There were 5 fewer ground frosts than average, and the duration of air frost is 24.2 hours below average, and lowest since 2011. Anomalies for daily max were all within +/- 4°, the extremes being +3.8° on the 1<sup>st</sup> and -3.8° on the 5<sup>th</sup>. Anomalies for daily min were more extreme, over -4° on the 4<sup>th</sup> to 6<sup>th</sup>, also 27<sup>th</sup> and 28<sup>th</sup>, and over +4° on the 2<sup>nd</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 13<sup>th</sup>, 15<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup>, with extreme values of -6.9° on the 4<sup>th</sup> and +6.9° on the 15<sup>th</sup>. There were no negative anomalies for either max or min between the 8<sup>th</sup> and 19<sup>th</sup>. **Rainfall:** The total this month is 32 % below average, making it the 6<sup>th</sup> driest November this millennium, quite a welcome change after an extremely wet October. Most of this month's rain fell between the 8<sup>th</sup> and 14<sup>th</sup> after a 5 day dry spell ending on the 7<sup>th</sup>, and 12 of the last 15 days had 0.2 mm or less. The month's highest fall is close to the long-term median. Daily accumulation compared with normal showed a surplus of 3 mm on the 2<sup>nd</sup> which became a deficit of 9 mm by the 7<sup>th</sup>, decreasing to 4 mm by the 13<sup>th</sup>, becoming a surplus of 10 mm on the 14<sup>th</sup>, decreasing to 1 mm by the 19<sup>th</sup> and ending the month with a deficit of 22 mm. The duration of measurable rain is 64 % of average. There was no thunder, hail or snow this month. **Sunshine:** On average, November is the 3<sup>rd</sup> dullest month of the year, after December and January, so even when it produces a sunshine total near average the impression may be that we have had less than our fair share of sun. However, this November did get off to quite a sunny start, with 4 days in the first week having over 50 % of the maximum, compared with 20 of the final 23 days having <50 %, of which 13 had <10 %. Daily accumulation compared with normal showed a surplus of 18 hours by the 7<sup>th</sup>, still at 18 hours on the 13<sup>th</sup>, decreasing to 6 hours by the 21<sup>st</sup>, and although there was still a small surplus on the 27<sup>th</sup>, the month ended with a deficit of 6 hours. **Wind:** The mean speed is 0.3 mph above average, but the month's highest gust is about average. The duration of calm is highest since 2007. Daily mean directions were mostly between S and W, except for N'ly on the 26<sup>th</sup> and 27<sup>th</sup>, NE'ly on the 6<sup>th</sup>, 7<sup>th</sup>, 28<sup>th</sup> and 29<sup>th</sup>, and SE'ly on the 5<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup>. Speeds were fresh on 1<sup>st</sup> increasing to strong on 2<sup>nd</sup>, falling light or very light for 4<sup>th</sup> to 10<sup>th</sup>, then moderate or fresh from 11<sup>th</sup> to 22<sup>nd</sup>, then light or moderate, falling very light for the 26<sup>th</sup> and 27<sup>th</sup>. **Pressure:** The MSL pressure reached a maximum value of 1041.0 mbar on the 5<sup>th</sup>, the highest for November since 2001.

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>			
+0.8°	-0.1°	82%	162%	+1.7°	+3.4°	118%	70%	+0.5°	+0.1°	6%	47%

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

# Wokingham climatological graphs for November 2020



Daily meteorological data.

Emmbrook, WOKINGHAM, Berkshire.

Month: NOVEMBER 2020

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 ddd	mean ff	sp	Max gust ddd	gg	HHhh	High hr ddd	ff	Rain HH	hrs
1	17.4	9.4	1.8	5.9	12.4	12.9	0.7	0.0	1001.5	0	0	0	0	207	11.5	11.8	222	33	2309	212	16	23	2.2
2	14.3	12.5	6.0	11.9	12.9	12.9	4.1	0.0	1001.6	0	0	0	0	228	12.0	12.4	265	37	0838	215	16	03	2.7
3	11.1	5.5	0.0	0.9	12.4	13.0	6.2	0.0	1016.5	0	0	0	0	235	5.5	6.8	272	26	0840	244	11	11	0.0
4	11.3	-1.1	tr	-4.9	11.5	13.0	8.5	4.5	1033.7	1	1	0	0	244	1.1	1.8	339	11	1509	311	5	14	0.0
5	8.9	-0.8	0.1	-3.9	10.4	12.8	4.1	2.7	1040.4	1	1	0	0	155	0.3	1.2	359	4	1532	9	2	15	0.0
6	12.2	0.7	0.0	-1.2	9.9	12.5	5.5	0.0	1031.7	0	1	0	0	62	3.3	3.3	70	17	1300	70	7	13	0.0
7	14.8	2.0	0.0	-1.0	9.7	12.2	7.5	0.0	1021.1	0	1	0	0	58	2.4	2.5	61	10	1044	60	5	10	0.0
8	14.0	5.7	4.3	2.8	9.8	11.9	0.2	0.0	1018.3	0	0	0	0	122	0.8	1.9	178	8	1855	192	4	19	3.8
9	15.6	9.6	6.6	6.7	10.5	11.8	0.1	0.0	1019.1	0	0	0	0	130	3.0	3.4	123	14	1822	131	5	18	4.0
10	15.7	10.5	tr	6.6	11.1	11.8	6.0	0.0	1023.4	0	0	0	0	186	3.8	4.1	187	12	0950	201	6	09	0.0
11	13.7	6.5	4.8	1.9	11.0	11.8	0.1	0.0	1020.1	0	0	0	0	170	7.3	7.7	156	31	2155	183	13	22	2.6
12	13.1	8.6	1.0	6.1	11.1	11.9	6.5	0.0	1015.1	0	0	0	0	215	7.3	7.7	241	21	0008	226	10	07	0.7
13	13.8	9.6	1.3	7.0	11.0	11.9	3.9	0.0	1010.6	0	0	0	0	205	4.9	5.7	289	19	0825	248	9	08	2.0
14	13.8	8.4	16.2	5.8	11.0	11.9	0.0	0.0	1007.9	0	0	0	0	185	8.7	9.0	185	26	0900	189	13	11	10.3
15	12.2	11.4	1.4	9.9	11.3	11.8	2.7	0.0	992.4	0	0	0	0	213	9.0	9.3	234	27	1420	227	12	09	0.9
16	13.0	6.6	0.2	3.1	11.0	11.9	0.5	0.0	1013.5	0	0	0	0	230	8.8	9.1	246	25	0621	247	12	06	1.4
17	14.3	9.5	tr	8.8	11.1	11.9	0.2	0.0	1020.7	0	0	0	0	215	8.5	8.5	231	27	1739	217	11	13	0.0
18	14.5	10.8	0.6	8.9	11.4	11.8	2.1	0.0	1016.0	0	0	0	0	210	8.8	9.5	265	35	1604	193	12	13	1.1
19	10.3	7.3	0.1	4.0	11.2	11.9	2.4	0.0	1023.7	0	0	0	0	264	6.7	7.9	303	28	1118	230	13	01	0.5
20	10.6	-0.1	1.4	-4.1	10.3	11.8	0.1	0.1	1034.8	1	1	0	0	204	5.1	5.2	223	17	2227	218	9	22	3.4
21	12.1	4.4	0.2	7.8	10.2	11.7	0.0	0.0	1027.6	0	0	0	0	227	9.1	9.2	254	23	1130	230	12	13	0.7
22	10.7	7.2	0.0	2.4	10.5	11.5	3.3	0.0	1027.4	0	0	0	0	244	3.1	3.3	234	16	0013	228	9	00	0.0
23	10.8	0.7	tr	-2.3	10.1	11.5	1.9	0.0	1029.1	0	1	0	0	191	3.0	3.4	194	14	1302	201	7	13	0.1
24	12.2	3.0	tr	0.7	9.8	11.4	5.1	0.0	1018.7	0	0	0	0	186	6.4	6.6	196	20	1126	190	10	11	0.1
25	12.5	8.8	0.7	7.5	10.0	11.3	0.0	0.0	1010.6	0	0	0	0	205	2.3	4.6	183	16	1004	273	7	12	0.8
26	7.9	2.4	0.2	-1.7	9.9	11.2	2.1	0.5	1022.4	0	1	0	0	337	0.7	1.3	350	5	1127	357	3	11	0.0
27	8.0	-1.5	0.2	-3.1	9.2	11.1	0.1	8.0	1021.0	1	1	0	0	12	1.1	2.0	64	7	1817	43	3	18	0.3
28	9.6	-1.4	0.0	1.0	8.9	10.9	0.0	0.0	1017.3	1	0	0	0	62	3.8	3.9	59	13	2039	58	6	14	0.0
29	7.6	7.4	tr	5.0	9.4	10.7	0.0	0.0	1026.1	0	0	0	0	28	2.2	3.1	55	11	0536	42	5	05	0.0
30	10.4	3.2	tr	4.2	9.5	10.7	0.0	0.0	1026.9	0	0	0	0	259	5.0	6.1	330	31	2106	327	12	21	0.3
Total			47.1				73.9	15.8															37.9
Mean	12.2	5.6		3.2	10.6	11.8	2.46	0.5	1019.6					211	3.9	5.7							
Anom	+1.3	+1.5	68%	+2.1	+1.2	+0.0	93%		+5.2														
Daily mean		8.9																					
Anom		+1.4																					

Number of days with:  
 Air frost = 5      Ground frost = 8      Nil sun = 6  
 Snow falling = 0      Snow lying = 0      Thunder = 0  
 Hail=>5mm = 0      Hail<5mm or ice = 0      Fog at 09GMT = 4

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 NOVEMBER 2020

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Ch	NCh	shs	NChshs	Date	Remarks
1	30	7	22	11	22	15.4	14.3	93	10.2	1001.5	5	021	51	6	5	7	5	3	3	/	86706	87620	1	/Ac65	
2	70	7	25	13	37	12.6	10.1	85	7.8	1001.6	3	038	25	8	2	7	3	4	/	82710	81915	83620	2	7Sc30 Hvy rash & CF 0838	
3	88	4	27	12	26	6.1	4.1	87	5.1	1016.5	3	037	21	6	1	3	1	4	3	0	83812		3	2Ac63 Cu fra/hum	
4	68	0	20	02	03	3.0	2.6	97	4.5	1033.7	2	030	02	0	0	0	0	9	0	0			4	Hoar slt	
5	02	3	17	01	03	2.5	2.4	99	4.4	1040.4	1	007	44	4	4	3	6	0	0	0	83701		5		
6	03	7	06	03	08	4.2	4.1	99	5.0	1031.7	7	008	42	4	4	7	0	9	3	/	87372		6	Ac str vir	
7	35	5	05	02	06	5.6	5.5	99	5.5	1021.1	2	005	10	2	2	0	0	9	0	1	85078		7	Parheliion	
8	11	6	07	02	05	10.6	10.4	99	7.8	1018.3	1	005	28	4	2	3	6	2	7	1	83703	85358	8	/Ci75	
9	30	8	13	05	11	12.6	12.4	99	8.9	1019.1	3	006	60	6	2	7	6	2	7	/	87703	85640	9	/Ac61	
10	60	2	19	04	07	12.1	11.8	98	8.5	1023.4	1	015	01	6	1	2	6	3	3	1	82708		10	1Sc35 1Ac65 1Ci75 COTRA	
11	60	8	15	05	10	10.8	10.6	99	7.9	1020.1	8	013	10	2	2	3	8	5	7	/	81825	83640	88467	11	3Ac65 Cu fra/hum
12	82	2	23	10	18	9.8	7.7	87	6.5	1015.1	2	030	02	1	1	1	8	4	0	1	81811		12	1Sc35 2Ci75 COTRA Cu fra	
13	58	7	26	08	19	9.6	8.5	93	6.9	1010.6	1	021	58	6	2	5	5	2	2	/	82706	85635	86545	13	CF 0825 Clearance to NW
14	62	8	19	11	26	13.6	12.3	92	8.9	1007.9	6	009	61	6	5	7	5	4	2	/	83612	87618	88558	14	
15	60	7	20	12	22	12.2	10.8	91	8.2	992.4	7	024	80	8	6	7	8	3	2	/	83709	85812	86650	15	/Ci70
16	80	8	24	08	17	9.5	5.5	76	5.6	1013.5	2	039	03	2	2	5	6	7	7	/	85640	85365	88275	16	
17	80	7	21	10	17	12.8	10.2	84	7.6	1020.7	1	021	02	2	2	7	5	4	3	1	83713	84618	86635	17	/Ac65 /Ci75
18	67	5	18	06	17	12.3	9.7	84	7.4	1016.0	7	019	03	1	1	5	5	4	0	0	81615	85650		18	
19	62	7	27	08	26	9.2	5.6	78	5.6	1023.7	3	036	60	6	2	7	5	5	/	/	83620	84630	86640	19	
20	68	8	20	04	07	4.4	3.4	93	4.7	1034.8	7	002	03	2	2	2	5	6	7	7	82635	83360	85463	20	8Cs70 COTRA
21	84	7	24	09	17	10.6	7.3	80	6.2	1027.6	4	000	02	2	2	7	5	5	/	/	87627			21	
22	25	8	25	03	05	8.4	8.1	98	6.6	1027.4	2	013	10	2	2	8	6	1	/	/	82702	88703		22	
23	45	7	35	02	03	3.0	2.9	99	4.6	1029.1	3	010	10	2	2	7	8	5	/	/	81825	87633		23	Cu fra/hum
24	68	7	19	07	14	10.2	7.4	83	6.4	1018.7	6	010	02	2	2	1	5	4	4	1	81615	83369	87073	24	COTRA
25	57	8	18	07	13	11.8	10.4	91	7.8	1010.6	1	008	60	6	2	8	6	3	/	/	87707	88709		25	
26	59	5	30	01	03	3.1	3.0	99	4.6	1022.4	2	013	10	2	2	5	0	8	7	0	81357	85359		26	
27	01	2	23	02	03	-1.4	-1.4	100	3.4	1021.0	4	000	48	4	4	2	5	7	0	0	82650			27	vv150m Rime slt
28	18	8	08	05	11	8.0	7.4	96	6.4	1017.3	1	013	10	5	2	8	6	2	/	/	88704			28	
29	11	8	03	03	07	7.4	6.8	96	6.0	1026.1	2	013	10	2	2	8	6	1	/	/	88702			29	
30	06	8	23	06	12	3.2	3.1	99	4.7	1026.9	7	001	42	4	4	8	6	1	/	/	88702			30	

Mean vis = 13.7 km

Mean cloud = 6.1 77%

Mean wind speed = 6.1 kn

Mean gust = 13 kn

Mean TT = 8.4 °C

Mean TdTd = 7.2 °C

Mean RH = 92.4 %

Mean r = 6.5 g/kg

Mean PPP = 1019.6 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

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 NOVEMBER 2020

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Ch	NCh	shs	NCh	shs	Date	Remarks
1	59	7	21	12	23	15.1	12.2	83	8.9	1002.3	8	006	60	6	2	7	5	4	7	/	83712	85618	87462	1	3Ac57	
2	80	2	23	09	22	12.6	6.2	65	5.9	1008.2	1	020	25	8	1	2	8	5	0	3	81828			2	1Sc35 1Sc50 1Ci68 Cu ned jp S&NW Cb top NW	
3	86	2	26	09	22	10.6	2.7	58	4.6	1020.6	2	019	02	0	0	2	8	6	3	3	82835			3	1Sc50 1Ac65 1Ci70 Cu med Dist Cb top W	
4	80	2	31	06	10	10.5	4.2	65	5.0	1035.5	3	007	02	0	0	2	8	5	0	0	82825			4	1Sc45 Cu med	
5	58	1	36	03	04	8.7	7.2	90	6.1	1037.6	6	023	05	1	1	1	8	4	4	0	81812			5	1Sc25 1Ac60 1Ac63 Cu fra	
6	72	2	07	07	15	10.3	3.6	63	4.8	1026.0	7	030	01	1	1	1	0	9	3	2	81366			6	2Ci70	
7	58	7	06	02	07	13.4	10.2	81	7.7	1019.3	5	008	05	1	1	2	0	9	4	1	82369	87075		7	COTRA Parhelion+U/a cont	
8	50	8	18	01	02	14.0	12.4	90	8.9	1017.4	6	007	05	6	2	8	5	3	/	/	83708	86615	88645	8		
9	65	7	16	04	13	14.8	12.8	88	9.1	1018.6	5	002	15	2	2	2	8	4	2	/	81815	87458		9	2Sc40 Cu fra jpS	
10	84	3	18	04	10	14.4	10.0	75	7.5	1023.4	4	000	02	1	1	3	8	5	0	0	81822	83656		10	Cu med	
11	82	8	18	09	19	12.7	9.9	83	7.5	1014.5	7	028	21	6	2	7	8	4	2	/	83815	85625	88463	11	3Sc50 Cu hum	
12	80	6	20	07	16	12.4	6.5	67	6.0	1015.4	7	003	03	1	1	6	8	5	0	1	81825	86645		12	/Ci80 COTRA	
13	81	7	23	06	12	10.9	6.3	73	5.9	1012.7	2	005	03	2	2	1	1	6	4	8	81832	87273		13	1Ac69 COTRA Cu hum	
14	40	8	18	11	21	13.0	11.9	93	8.7	1003.4	8	030	58	6	5	7	5	3	2	/	83708	85712	87618	14	8Ns50	
15	82	2	21	11	27	8.2	5.5	83	5.7	993.9	7	003	25	8	1	1	5	6	6	3	81630			15	1Ac62 2Ci68 jpE&SW	
16	82	8	23	07	16	11.2	7.5	78	6.4	1016.5	2	012	02	2	2	7	5	5	7	/	82622	87630		16	/Ac58	
17	62	8	22	10	20	13.8	10.6	81	7.9	1021.4	2	005	15	2	2	8	5	4	/	/	88615			17	jpW	
18	60	8	21	11	24	13.7	12.4	92	8.9	1011.9	7	020	20	5	6	8	5	3	/	/	87708	88612		18		
19	84	1	32	05	15	8.4	3.5	71	4.8	1030.1	0	022	02	6	1	1	8	5	0	1	81820			19	1Sc45 1Ci80 Cu hum	
20	40	8	19	07	12	9.3	8.4	94	6.7	1031.5	7	020	58	6	5	7	7	3	2	/	87706	88525		20		
21	88	7	23	10	19	11.9	7.6	75	6.4	1025.8	6	014	02	2	2	7	8	5	/	/	81825	87628		21	Cu hum	
22	84	6	26	05	11	10.0	4.6	69	5.2	1026.4	5	012	03	1	1	6	8	5	/	1	81828	86656		22	/Ci75 Cu hum	
23	82	5	20	06	13	10.0	6.2	77	5.8	1026.1	5	018	02	2	2	5	8	5	0	1	81820	84645		23	2Sc35 2Ci75 Cu med	
24	75	7	16	06	12	11.2	7.1	76	6.3	1013.8	7	031	02	2	2	4	0	9	7	1	82364	83368	87073	24		
25	84	7	33	04	13	9.0	6.6	85	6.0	1014.0	2	024	01	6	2	7	8	4	/	/	81812	85622	87635	25	Cu fra/hum	
26	72	3	01	03	05	7.5	5.1	85	5.4	1020.9	6	008	01	1	1	1	5	7	4	0	81650	83362		26		
27	61	8	02	03	07	4.1	3.8	98	5.0	1017.7	6	015	03	2	2	8	5	4	/	/	88618			27		
28	25	8	06	08	13	8.8	7.9	94	6.6	1019.2	2	010	05	2	2	8	6	2	/	/	88705			28		
29	18	8	01	03	06	6.8	6.1	95	5.7	1026.8	2	002	10	2	2	8	6	1	/	/	88702			29		
30	58	7	24	09	17	9.2	7.3	88	6.3	1021.8	6	028	21	6	2	6	5	4	7	/	81715	86650	87357	30		

Mean vis = 26.1 km

Mean cloud = 5.7 71%

Mean wind speed = 6.6 kn

Mean gust = 14 kn

Mean TT = 10.9 °C

Mean TdTd = 7.5 °C

Mean RH = 80.5 %

Mean r = 6.5 g/kg

Mean PPP = 1019.1 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  2020	Hour	01-Nov	02-Nov	03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov
	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
	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
	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
	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
	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
	5	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
	6	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
	7	0.00	0.00	0.00	0.34	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
	8	0.00	0.01	0.20	1.00	0.31	0.00	0.82	0.15	0.00	0.67	0.00	1.00	0.00	0.00	0.00	0.00
	9	0.69	0.01	1.00	1.00	0.00	0.45	1.00	0.03	0.00	1.00	0.00	1.00	0.22	0.00	0.01	0.00
	10	0.01	0.56	1.00	1.00	0.00	0.59	1.00	0.00	0.00	0.67	0.04	0.88	0.97	0.00	0.41	0.00
	11	0.00	0.64	0.84	1.00	0.00	0.47	1.00	0.00	0.00	0.52	0.10	0.95	0.85	0.00	1.00	0.00
	12	0.00	0.88	0.40	1.00	0.47	0.79	0.72	0.00	0.04	0.62	0.00	1.00	0.74	0.00	0.66	0.45
	13	0.00	0.15	0.78	0.99	1.00	1.00	1.00	0.00	0.06	0.87	0.00	1.00	0.76	0.00	0.27	0.00
	14	0.00	0.97	0.86	0.87	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.36	0.32	0.00	0.29	0.00
	15	0.00	0.83	0.94	1.00	1.00	0.90	0.69	0.00	0.00	0.69	0.00	0.05	0.00	0.00	0.06	0.00
	16	0.00	0.00	0.14	0.33	0.31	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	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	0.00	0.00	0.00	0.00
	18	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
	19	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
	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
	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
Tot		<b>0.70</b>	<b>4.05</b>	<b>6.16</b>	<b>8.53</b>	<b>4.09</b>	<b>5.48</b>	<b>7.45</b>	<b>0.18</b>	<b>0.10</b>	<b>6.04</b>	<b>0.14</b>	<b>6.49</b>	<b>3.86</b>	<b>0.00</b>	<b>2.70</b>	<b>0.45</b>

Hour	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	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	0.00	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
5	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
6	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
7	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
8	0.00	0.56	0.00	0.04	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.19
9	0.16	0.22	0.00	0.00	0.00	0.00	0.10	0.24	0.00	0.17	0.00	0.00	0.00	0.00	0.24
10	0.07	0.87	0.00	0.00	0.00	0.50	0.00	0.10	0.00	0.83	0.02	0.00	0.00	0.00	0.32
11	0.00	0.31	0.00	0.00	0.00	0.03	0.03	0.88	0.00	0.00	0.02	0.00	0.00	0.00	0.29
12	0.00	0.00	0.12	0.00	0.00	0.77	0.47	0.94	0.00	0.00	0.04	0.00	0.00	0.00	0.34
13	0.00	0.00	0.74	0.00	0.00	1.00	0.53	1.00	0.00	0.02	0.00	0.00	0.00	0.00	0.37
14	0.00	0.00	1.00	0.00	0.00	0.98	0.75	0.33	0.00	0.95	0.00	0.00	0.00	0.00	0.39
15	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.86	0.00	0.13	0.00	0.00	0.00	0.00	0.26
16	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	0.04
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	0.00	0.00	0.00
18	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
19	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
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
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
Tot	<b>0.23</b>	<b>2.08</b>	<b>2.41</b>	<b>0.04</b>	<b>0.00</b>	<b>3.29</b>	<b>1.89</b>	<b>5.14</b>	<b>0.00</b>	<b>2.13</b>	<b>0.08</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>73.68</b>

NOVEMBER 2020	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	14.39	17.4	948	10.1	15	85.4	94.2	820	69.5	414	11.9	8.9	10.7	1945	5.9	413	1002.67	1010.8	18	998.4	2322	0.6
2	12.64	16.3	709	5.9	2352	76.6	92.7	322	55.5	1540	8.5	7.2	10.6	331	4.8	1540	1005.83	1017.8	0	996.7	423	1.4
3	7.25	11.1	1428	2.4	2347	80.2	95.2	755	56.8	1429	3.9	5.0	6.0	615	4.1	2327	1019.42	1027.2	2359	1012.1	616	5.7
4	3.87	11.3	1312	-1.1	655	89.7	99.1	740	61.6	1314	2.1	4.4	5.3	1213	3.4	702	1034.21	1040.3	2359	1027.1	3	0
5	3.15	8.9	1408	-0.8	539	97.6	99.4	555	90.1	1432	2.8	4.6	6.3	1407	3.4	539	1038.69	1041.0	952	1035.3	2358	0
6	5.24	12.2	1258	0.7	418	90.7	100.0	1009	59.0	1410	3.7	4.9	6.7	1211	3.9	423	1028.67	1035.5	3	1021.8	2344	0
7	7.53	14.8	1250	1.9	635	91.2	97.3	2210	67.3	1242	6.1	5.9	7.7	1517	4.2	635	1020.06	1022.0	1	1018.0	2325	0
8	11.25	14.0	1457	8.3	115	97.1	99.6	858	88.9	1302	10.8	8.0	9.1	1429	6.7	115	1018.20	1019.0	2243	1017.2	1531	3.6
9	12.39	15.6	1359	9.6	404	97.5	100.0	642	86.2	1410	12.0	8.7	10.4	1247	7.3	5	1019.22	1021.0	2347	1018.2	1300	4
10	11.48	15.7	1207	7.5	2333	93.1	99.4	256	71.4	1207	10.3	7.7	8.7	34	6.2	2333	1023.17	1025.0	2139	1020.6	159	1.3
11	11.34	13.7	1243	6.5	41	90.7	99.7	100	77.7	1239	9.8	7.5	8.3	2241	5.8	41	1016.39	1024.6	1	1005.9	2214	4.6
12	10.58	13.1	1224	8.6	714	82.2	93.6	639	62.2	1333	7.6	6.5	7.1	2353	5.6	1334	1013.56	1016.3	1015	1008.4	2	0.2
13	10.46	12.4	803	8.4	2302	82.9	94.1	932	67.7	1401	7.6	6.5	7.5	821	5.7	1401	1011.96	1014.7	2151	1008.4	515	1.1
14	12.24	13.8	809	8.5	7	91.2	97.1	602	82.2	220	10.8	8.1	9.2	708	6.1	102	1006.09	1014.0	0	1000.8	2358	11.5
15	10.05	12.9	543	6.6	2137	85.4	97.2	253	61.7	1200	7.6	6.7	8.7	302	5.2	2126	996.28	1003.0	2355	992.3	859	5.1
16	10.70	13.0	2235	7.3	0	82.6	93.3	2005	71.2	1141	7.8	6.6	8.1	2056	5.3	658	1013.18	1018.0	2348	1002.9	0	0.5
17	12.76	14.3	1307	11.5	653	84.7	93.4	322	74.6	2243	10.2	7.7	8.1	1309	6.8	2230	1020.58	1022.4	1924	1017.7	26	0.1
18	11.38	14.5	1119	7.3	2321	82.2	95.4	1601	67.3	1812	8.4	6.9	9.5	1558	4.9	2350	1016.39	1021.0	0	1011.7	1443	0.6
19	7.34	10.3	1057	1.3	2359	78.6	96.6	2357	66.8	1104	3.8	4.9	5.8	1253	3.9	2359	1027.25	1037.0	2220	1017.3	119	0.2
20	6.04	10.6	2241	-0.1	244	94.5	99.1	455	85.6	1016	5.2	5.5	7.2	2113	3.6	244	1033.02	1036.5	18	1028.7	2357	1.3
21	10.76	12.1	1303	9.3	221	81.9	89.2	1	71.3	1251	7.8	6.5	7.0	2358	5.9	958	1026.75	1028.9	3	1024.7	2300	0.1
22	8.58	11.1	236	3.5	2358	88.6	99.1	839	65.1	1552	6.7	6.0	7.4	409	4.6	2358	1026.87	1028.5	2359	1024.7	24	0.2
23	5.87	10.8	1343	0.7	623	92.8	99.5	640	73.9	1425	4.7	5.3	6.6	2359	3.9	623	1026.92	1029.3	908	1023.3	2353	0
24	10.10	12.2	1311	8.7	6	85.1	95.3	0	69.9	1314	7.7	6.5	7.0	323	6.0	1343	1016.51	1023.4	1	1010.7	2349	0
25	8.82	12.5	1135	2.5	2234	91.4	98.7	2313	83.8	1557	7.5	6.5	8.4	1136	4.4	2234	1013.37	1020.2	2359	1009.4	337	0.7
26	3.79	7.9	1338	-0.3	2248	95.2	99.3	2257	82.5	1446	3.1	4.7	5.6	1338	3.6	2248	1021.46	1022.6	921	1020.0	23	0
27	1.88	5.0	2358	-1.5	713	97.7	100.0	602	92.5	1816	1.6	4.3	5.2	2358	3.4	852	1019.21	1021.9	23	1016.0	2350	0.1
28	8.06	9.6	1308	5.0	4	94.8	97.0	538	91.2	1314	7.3	6.3	6.8	1251	5.2	4	1018.61	1023.5	2359	1015.4	405	0.1
29	7.12	8.4	2	5.4	2352	95.3	98.0	2226	92.4	1257	6.4	5.9	6.3	343	5.3	2359	1026.21	1028.2	2253	1023.4	6	0
30	6.58	10.4	1715	3.2	902	91.1	98.9	1134	64.6	2117	5.1	5.4	6.5	1341	4.3	2355	1024.55	1027.9	223	1020.6	1937	0.1

Total																						43.1
Mean	8.79	12.19		4.91		88.9	97.05		73.68		6.97	6.32	7.59		4.98		1019.51	1024.04		1014.93		
Max	14.39	17.37		11.51		97.7	100.00		92.50		11.99	8.88	10.73		7.26		1038.69	1040.96		1035.33		
Min	1.88	4.96		-1.47		76.6	89.20		55.52		1.56	4.25	5.19		3.36		996.28	1003.04		992.28		

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

## AUTUMN 2020

Temperature (°C)		Rank in the past <b>139</b> years							
Mean maximum	16.0	(+0.8)	12 <sup>th</sup> highest						
Mean minimum	7.8	(+0.7)	11 <sup>th</sup> highest						
Daily mean	11.9	(+0.8)	7 <sup>th</sup> highest						
Rainfall total (mm)	244.4	(126%)	23 <sup>rd</sup> highest						
Sunshine total (hours)	352.2	(101%)							
N° of:	Dry days	44 (-6)	Wet days	31 (+1)					
Days with:	Air frost	5 (-3)	Ground frost	11 (-11)	Snow falling	0 (-1)	Snow lying	0 (0)	
Thunder	0 (-3)	Hail ≥5mm	0 (0)	Small hail/ice	1 (0)	Fog @09 GMT	4 (0)	Nil sun	14 (-1)
Air pressure MSL : Mean @09 GMT (mbar)		1015.1 (0.0)							

Departure from 1981 to 2010 average shown in brackets.

**Notes: Temperature:** Here we have another very mild autumn season, ranking 7<sup>th</sup> mildest in 139 years. As evidence of our changing climate, 6 of the 7 mildest autumns have occurred in the past 16 years. The mean minimum and daily mean this autumn are highest since 2014, but the mean maximum is highest only since 2018. This season's highest temperature was 28.6° on 14th September, 4.0° above the median, and the lowest max was 7.6° on 29<sup>th</sup> November, 2.9° above its median and 7<sup>th</sup> highest in 108 years. The highest min, 16.0° on 16<sup>th</sup> September is 0.7° above the median and the lowest min, -1.5° on 27<sup>th</sup> November is 2.3° above its median. The monthly mean temperature followed the usual autumnal trend from 15.4° in September to 8.9° in November, but the largest anomaly was +1.4° in November, then +0.7° in September and +0.2° in October. The mean grass min of 5.2°, anomaly +1.2° is highest since 2014, but the lowest grass min, -4.9° on 4<sup>th</sup> November, is highest since before 1980, (40 year average -8.1°). The mean earth temperature at 30 cm depth was 13.5°, anomaly +0.5°, and at 1m depth, 14.4°, anomaly -0.1°. The duration of air frost, 15.8 hours, is 32.8 hours below average. The first ground frost of the winter half year was on 9<sup>th</sup> October after 145 frost free days, and the first air frost was on 4<sup>th</sup> November after 173 days. **Rainfall:** The rainfall this autumn is 26 % above average, but the total of 244.4 mm has been exceeded 5 times in this millennium, the last time in 2019. October was the wettest month with 171.2 mm, 238% of average, while November with 47.1 mm, 68 % of average, then September with 26.1 mm, 49 % of average, were runners up. The wettest day was the 2<sup>nd</sup> October with 45.4 mm. The rainfall in October was quite unrelenting, with only 8 dry days, and a record 48 hour fall to 0900 GMT on the 3<sup>rd</sup> of 85.2 mm. As a result flooding occurred locally when the Emm over-topped its banks. There were 3 dry spells this season, the longest being 17 days to the 21<sup>st</sup> September, the others both of 5 days ending on the 18<sup>th</sup> October and 7<sup>th</sup> November. Also, only 1 day had more than 1 mm of rain after the 15<sup>th</sup> November. Rainfall rate exceeded the violent category on just one day, the 24<sup>th</sup> October, 97 mm/hr at 2014 GMT. There was no thunder this autumn, but ice pellets fell on the 28<sup>th</sup> October. Snow was also absent, the last autumn to have any being in 2018. Estimated soil moisture deficit of 269 mm at the start of the season increased to 303 mm during September, then fell to 103 mm by the end of November. **Sunshine:** The daily mean sunshine for this autumn, 3.87 hours, is close to average. Although September was a sunny month, mean 6.52 hours/day, 129 % of average, October was the opposite with 2.66 hr/day, 71 % of average, and only slightly more than November's 2.46 hr/day, 93 % of average. The season's sunniest day was 13<sup>th</sup> September with 12.1 hours. The period 12<sup>th</sup> to 22<sup>nd</sup> September was notable with a mean of 10.3 hr/day. At the other extreme, there was only 2.2 hours of sun in the final 6 days of November, 4 of which had zero. Overall there were 40 days with <3 hours, 25 with =>6 hours, 10 with =>9 hours and 1 with =>12 hours. **Wind:** The overall mean speed was 6.7 mph, 0.8 mph above average and highest since 2009. The 2<sup>nd</sup> November was the windiest day, mean 14.3 mph, and the highest gust of 43 mph was also on that day. The least windy day was the 5<sup>th</sup> November, mean 1.4 mph, and there were 2296 minutes of calm, 1.75% of the season. Daily mean direction/number of days: N,9 NE,11 E,1 SE,4 S,12 SW,41 W,9 NW,4 . Compared with average, winds from SW were 12.8% more frequent at the expense of E, down 6.3%, S down 2.9% and W&NW combined, down 5.3 %. **Humidity:** The mean relative humidity was 83.9% and the lowest value was 28 % in the 14<sup>th</sup> September. The mean amount of water vapour per kg of air was 7.4 g at 0900 GMT and 7.3 g at 1500 GMT. **Pressure:** The season's highest pressure was 1041.0 mbar on 5<sup>th</sup> November and the lowest was 980.5 mbar on 4<sup>th</sup> October, a span of 60.5 mbar, 4.9 mbar above average. **September:** Dry with mean temperature and sunshine well above average. Driest since 2014, only 1.9 mm before the 22<sup>nd</sup>. **October:** Dull and very wet with near average temperature. 4<sup>th</sup> wettest in 139 years, wettest since 1960. 2 day rainfall 85.2 mm on 2<sup>nd</sup>/3<sup>rd</sup>, a record since before 1976. Dullest since 1991. **November:** Very mild with below average rainfall and sunshine. Mean temperature 8<sup>th</sup> highest in 139 years. Lowest max 7<sup>th</sup> highest in 108 years. Lowest grass min highest since 2002. Month's maximum pressure highest since 2001.

Month	Mean Max	Anom	Mean Min	Anom	Rain mm	Anom	Sun hrs	Anom	Mean Wind mph	Max gust	Mean pressure	Anom
Sep	20.9°	+1.5°	9.8°	-0.2°	26.1	49%	195.7	129%	6.0	38	1017.8	+1.1
Oct	14.9°	-0.3°	8.0°	+0.8°	171.2	238%	82.6	71%	7.3	40	1008.1	-6.2
Nov	12.2°	+1.3°	5.6°	+1.5°	47.1	68%	73.9	93%	6.6	43	1019.6	+5.2

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

## 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 of 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.