

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 2019

Temperature (°C)	Anomaly	Rank in the past 138 years
Mean maximum	9.6	-1.3 36 th lowest
Mean minimum	3.4	-0.7 67 th highest
Daily mean	6.5	-1.0 51 st lowest
Highest maximum	15.4	on 1 st Lowest maximum 6.3 on 30 th
Highest minimum	9.3	on 2 nd Lowest minimum -2.8 on 19 th
Mean grass minimum	-0.1	-1.2 Lowest grass minimum -5.4 on 19 th
Mean earth @30 cm	9.1	-0.3 Earth @100 cm 11.0
Frost duration (hrs)	31.1	Rain duration (hrs) 66.9
Rainfall total (mm)	91.6	133 % 26 th highest
Highest daily fall	20.4	on 13 th Highest rate mm/hr 65 on 22 nd
Number of: Dry days (<0.2mm)	9	Wet days (>0.9mm) 18 days ≥5mm 6
Sunshine total (hrs) 75.3	Daily mean 2.51	95 % Sunniest day 8.0 on 7 th
N° days with: Air frost 5	Ground frost 19	Snow falling 0 Snow lying 0
Thunder 1	Hail ≥5mm 0	Small hail/ice 1 Fog @09 2 Nil sun 7
Pressure MSL: Mean @09 GMT, mbar 1001.4	-13.0	Highest 1022.9 on 30 th Lowest 975.4 on 2 nd
Relative humidity: Mean (%) 91.6	Lowest 61	on 11 th Water vapour (g/kg), mean at 09 and 15 GMT 5.6, 6.1
Overall mean wind speed (mph) 5.5	Windiest day 12.9	on 2 nd Max gust 41 on 2 nd
Wind direction (days) N 5 NE 4 E 6 SE 3 S 4 SW 6 W 1 NW 1		
Least windy day (mph) 2.0	on 17 th	Calm; less than 0.5 mph (minutes) 709

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

Notes:

Wet with Below Average Temperature and Sunshine.

Temperature: In terms of the mean maximum, it is the coldest November since 2010 and before that 1998. However, for the mean minimum, despite being 0.7° below average, 4 Novembers have had the same or lower value since 2010, and 7 since 1998. The resulting daily mean is lowest since 2016 and is 1.0° below average. The coldest November in the past 44 years was in 1985 when the daily mean was 3.1° below the current climatological average. This month the highest max is 0.2° below the long-term median and the lowest max is 1.6° above its median. The highest min is 1.3° below the median while the lowest min is 0.8° above its median. The mean grass min is 1.2° below average, but the mean has been lower in 10 Novembers since 1979, also the month's lowest grass min is 2.5° above average. The number of air frosts is about average, but there were 6 more ground frosts than average. Mean earth temperatures are also a little below average. The duration of air frost is 9.5 hours below average. Daily anomalies for both max and min were below normal from the 3rd to the 22nd, with anomalies for max over -4° on the 8th and 9th, extreme value -5.2° on 9th, and for min over -4° on the 8th to 10th 19th 20th and 30th, extreme value -6.8° on the 8th. A short milder spell from the 23rd to 28th saw a peak anomaly for max of +3.6° on the 26th, and of +5.8° for the min on that date, with anomalies over +4° from 25th to 28th. **Rainfall:** This has been quite a wet November with 133% of average and wettest since 2014. It is interesting to note that in the 24 year period to 1999, only 2 Novembers were wetter than this year's, and none had over 100 mm, yet since 1999 there have been 6 wetter Novembers all having over 100 mm. The number of dry days is 6 fewer than average, but there was one dry spell of 5 days ending on the 20th. Rainfall duration is 111 % of average, which amounts to a surplus of 6.8 hours over the month. Thunder and ice pellets occurred on the 22nd, and the accompanying rain rate of 65 mm/hr is the highest for the month. Daily rainfall accumulation compared with normal was in surplus throughout the month, ranging from 4 mm on the 5th, increasing to 30 mm by the 13th, decreasing to 18 mm on the 20th, increasing again to 28 mm by the 28th. **Sunshine:** A rather poor showing overall, although there was a scattering of sunny days, especially before mid-month, the 7th, 10th, 11th, 13th, 14th, 18th and 29th all having over 50% of the maximum, with over 80% on the 7th and 29th. However, the period 19th to 28th was rather dull, only 2 days having over 1 hour of sun, and 6 having zero or 0.1 hours, and a 10 day mean of 0.48 hours per day. Overall there were 18 days with <3 hours and 4 with =>6 hours. Daily accumulation compared with normal was in deficit by 5 hours on the 5th, becoming a surplus of 12 hours by the 14th, decreasing to 11 hours by the 18th, becoming a deficit of 10 hours by the 28th, decreasing to 4 hours by the 30th. **Wind:** This has been the least windy November since 2014, with a mean speed 0.8 mph below average. Both the mean speed on the windiest day and the highest gust are close to average. Daily mean speed was light or moderate throughout, except for strong on the 2nd. Directions were S'ly to the 4th, and on the 6th, 13th, 24th to 26th, N'ly on the 5th, 15th to 18th and 29th, SW or W on 7th, 11th, 12th, 27th and 28th, NE or E on 9th, 10th 14th, 19th to 23rd and 30th, and NW'ly on the 8th. **Pressure:** The mean this month is lowest since 2000, although 2009 was only 0.1 mbar higher.

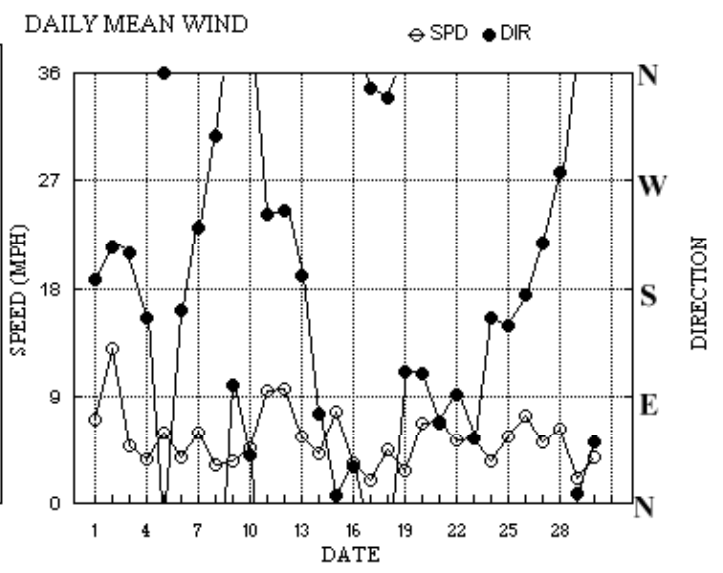
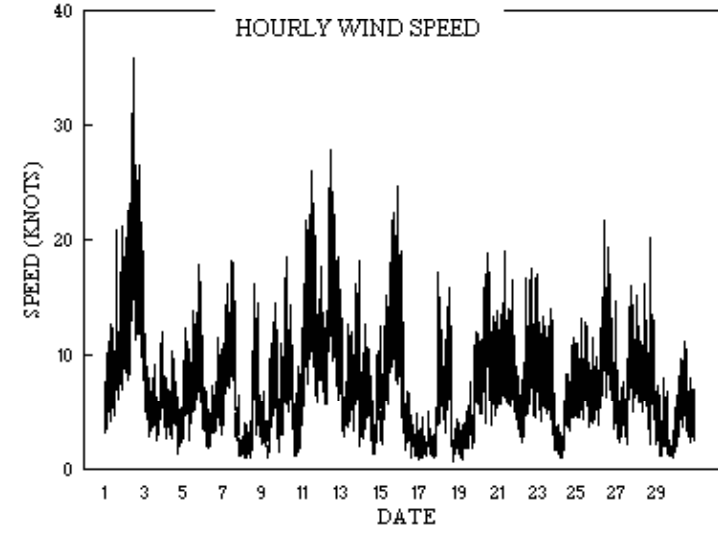
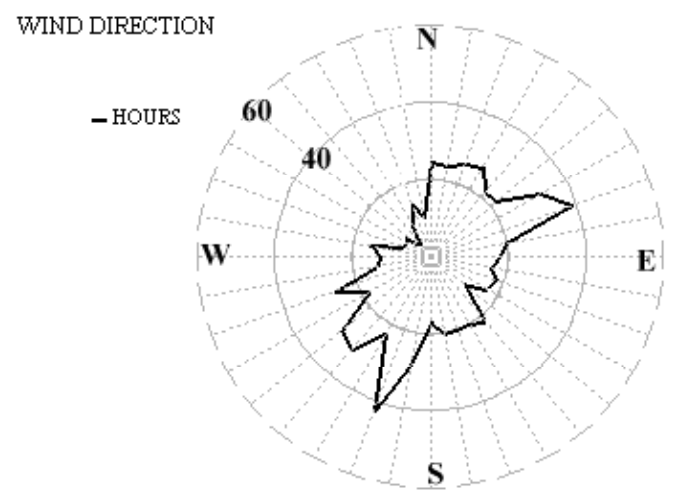
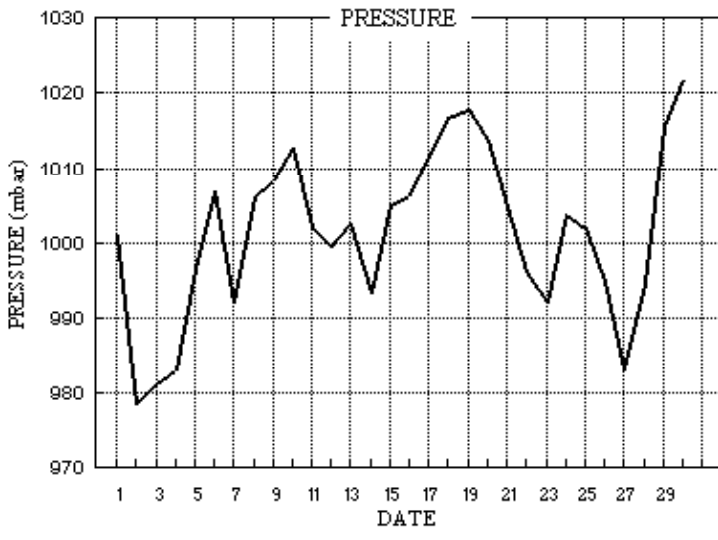
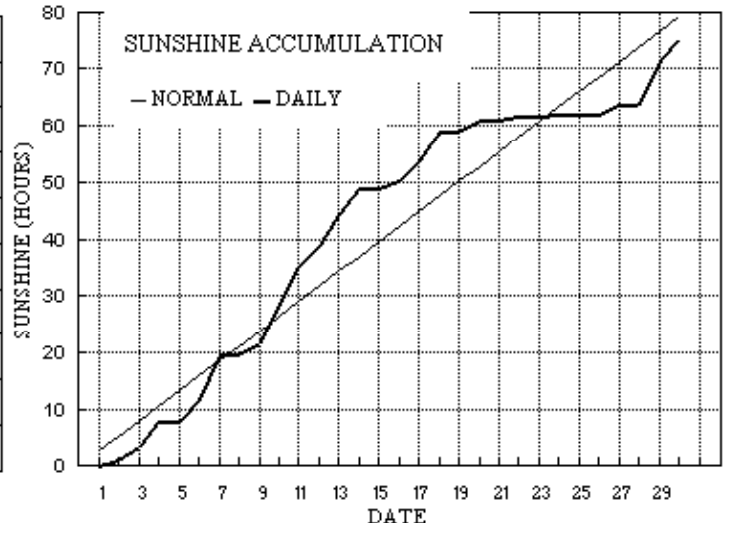
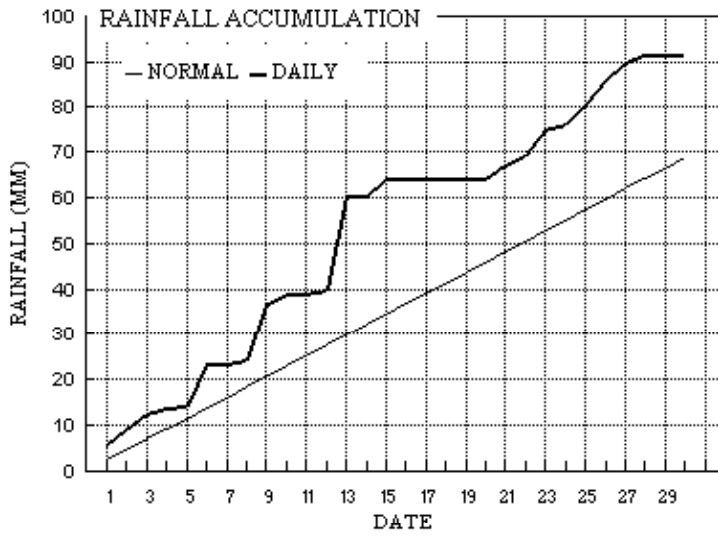
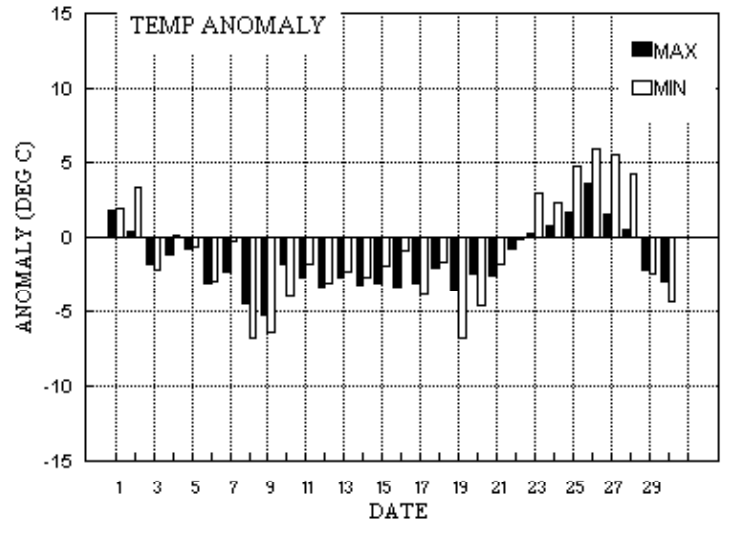
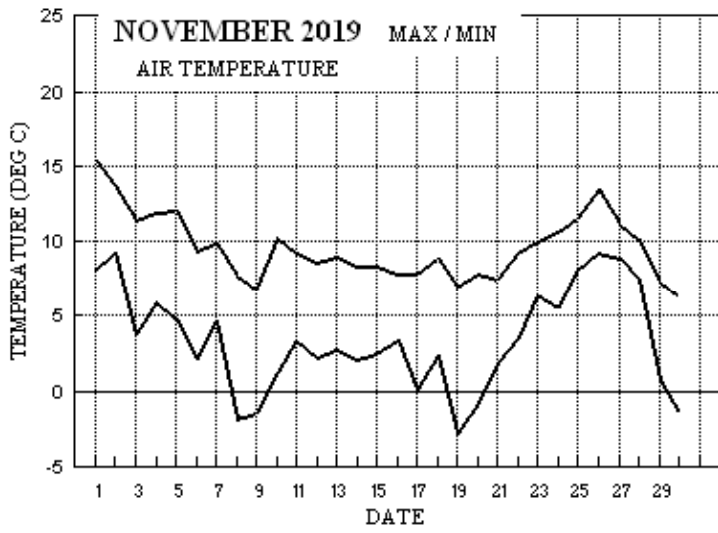
Table 1. Mean anomalies (max, min, rain, sun) for specified periods.

From the 1 st to the 10 th				From the 11 th to the 20 th				From the 21 st to the 30 th			
-1.9°	-1.8°	170%	109%	-2.9°	-3.0°	110%	123%	+0.0°	+1.7°	119%	54%

B J Burton FRMetS.

Hon. Met. Officer to Wokingham Town Council.

Wokingham climatological graphs for November 2019



Month: NOVEMBER 2019

Date	Max C	Min C	Rain mm	Grass Min	30cm C	100cm C	Sun hrs	Frost hrs	pp09 mbar	Af Gf	Sf Sl	Th Ha	Ic Fg	Vec mean ddd ff sp	Max gust ddd gg HHhh	High hr ddd ff	Rain HH hrs							
1	15.4	8.1	5.8	5.5	11.2	13.0	0.0	0.0	1000.9	0	0	0	0	187	5.2	6.1	229	21	2229	220	10	23	2.8	
2	13.7	9.3	3.2	6.5	11.9	12.8	1.1	0.0	978.6	0	0	0	0	215	10.9	11.2	227	36	1136	223	17	11	3.3	
3	11.4	3.8	3.4	-0.9	11.7	12.7	2.4	0.0	981.3	0	1	0	0	209	3.9	4.2	235	12	2149	205	7	00	3.2	
4	11.9	5.9	1.2	0.1	11.3	12.7	4.3	0.0	983.1	0	0	0	0	156	2.1	3.2	140	11	1145	166	5	11	0.6	
5	12.0	4.8	0.5	-0.3	11.0	12.6	0.2	0.0	996.3	0	1	0	0	359	5.0	5.2	13	18	1935	359	8	19	1.0	
6	9.4	2.1	9.3	-2.4	11.0	12.4	3.5	0.0	1006.9	0	1	0	0	162	1.6	3.3	149	12	1908	129	5	19	3.9	
7	9.9	4.7	0.0	2.5	10.6	12.4	8.0	0.0	992.1	0	0	0	0	231	3.9	5.2	237	18	1131	241	10	11	0.0	
8	7.7	-1.8	0.7	-4.1	9.9	12.2	0.0	7.0	1006.0	1	1	0	0	306	2.1	2.8	319	16	1531	332	6	15	0.9	
9	6.8	-1.4	12.3	-4.8	9.3	12.1	2.0	4.3	1008.3	1	1	0	0	99	1.9	3.1	73	15	1524	76	6	17	8.6	
10	10.2	1.2	2.6	3.2	9.1	11.9	7.2	0.0	1012.6	0	0	0	0	41	2.9	4.1	31	19	0513	25	8	05	3.0	
11	9.3	3.4	tr	-1.0	9.1	11.6	6.5	0.0	1002.0	0	1	0	0	241	7.0	8.2	259	26	1200	273	11	12	0.0	
12	8.6	2.2	1.0	-2.4	8.8	11.4	3.8	0.0	999.5	0	1	0	0	244	8.1	8.4	254	28	1117	244	13	11	0.8	
13	9.0	2.7	20.4	-1.9	8.6	11.3	5.3	0.0	1002.5	0	1	0	0	190	2.5	5.0	124	18	2203	91	7	20	9.2	
14	8.4	2.1	0.2	-0.8	8.4	11.1	4.6	0.0	993.2	0	1	0	0	76	0.3	3.6	265	13	0543	255	7	05	0.2	
15	8.4	2.5	3.7	-1.7	8.2	10.9	0.0	0.0	1005.1	0	1	0	0	7	6.7	6.8	11	25	2123	6	10	16	3.3	
16	7.9	3.4	0.0	-0.9	8.2	10.8	1.4	0.0	1006.4	0	1	0	0	31	2.0	2.9	28	19	0202	22	8	00	0.0	
17	7.8	0.1	tr	-2.3	8.1	10.5	3.3	0.0	1011.4	0	1	0	0	347	1.0	1.7	10	17	2355	8	6	23	0.0	
18	8.8	2.4	0.0	-1.9	8.0	10.4	5.3	1.3	1016.9	0	1	0	0	339	3.2	4.0	339	16	1211	354	7	12	0.0	
19	7.0	-2.8	0.0	-5.4	7.5	10.3	0.3	9.9	1017.8	1	1	0	0	110	1.6	2.5	134	12	2254	143	6	21	0.0	
20	7.9	-0.8	0.0	-1.3	7.2	10.1	1.9	0.0	1013.8	1	1	0	0	109	5.2	5.8	136	19	1137	134	9	12	0.0	
21	7.5	1.8	2.8	-2.3	7.1	9.9	0.0	0.0	1004.8	0	1	0	0	68	6.0	6.1	97	19	0946	64	8	18	3.8	
22	9.2	3.5	2.3	-1.9	7.3	9.7	0.8	0.0	996.1	0	1	0	1	91	4.3	4.6	88	18	1720	84	8	17	1.5	
23	10.0	6.4	5.7	2.4	7.6	9.6	0.0	0.0	992.1	0	0	0	0	55	4.7	4.7	57	17	0035	61	7	00	5.1	
24	10.6	5.6	1.2	0.9	8.0	9.6	0.1	0.0	1003.9	0	0	0	0	156	2.3	3.1	132	12	2157	134	6	20	2.7	
25	11.5	8.1	4.1	7.5	8.5	9.6	0.0	0.0	1001.9	0	0	0	0	149	4.4	5.0	119	13	0559	149	6	12	5.0	
26	13.4	9.2	5.5	4.5	9.0	9.7	0.1	0.0	994.9	0	0	0	0	175	6.1	6.4	171	22	1012	184	10	10	2.2	
27	11.2	8.8	3.9	5.2	9.2	9.8	1.6	0.0	983.2	0	0	0	0	217	2.0	4.5	239	16	1826	248	9	18	1.7	
28	10.1	7.4	1.8	2.7	9.2	9.9	0.0	0.0	994.5	0	0	0	0	276	3.7	5.5	30	20	1953	289	8	11	4.1	
29	7.3	0.7	0.0	-2.8	9.1	10.0	7.7	3.9	1015.4	0	1	0	0	8	1.2	1.8	14	8	1036	7	3	00	0.0	
30	6.3	-1.5	0.0	-5.1	8.0	10.0	3.9	4.7	1022.0	1	1	0	0	52	3.4	3.4	64	11	1304	59	6	13	0.0	
Total			91.6				75.3	31.1																66.9
Mean	9.6	3.4		-0.1	9.1	11.0	2.51	1.0	1001.4					179	0.7	4.8								
Anom	-1.3	-0.7	133%	-1.2	-0.3	-0.8	95%																	-13.0
Daily mean		6.5																						
Anom		-1.0																						

Number of days with:

Air frost = 5 Ground frost = 19 Nil sun = 7
Snow falling = 0 Snow lying = 0 Thunder = 1
Hail=>5mm = 0 Hail<5mm or ice = 1 Fog at 09GMT = 2

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 2019

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	pppww	W1W2	NhCl	hCrCl	NChshs	NChshs	NChshs	Date	Remarks						
1	60	7	19	06	13	13.1	12.6	97	9.2	1000.9	7	030	20	6	5	7	5	2	/ /	83705	86707	87625	1			
2	57	8	19	15	28	9.7	7.8	88	6.8	978.6	8	061	63	6	1	7	5	4	2	/	84618	85625	88545	2		
3	60	5	21	03	06	7.5	6.4	93	6.2	981.3	2	011	15	1	1	2	5	6	3	1	81630	83070		3	2Sc40 2Ac58 jpW Rainbow	
4	56	5	18	04	06	7.8	7.5	98	6.6	983.1	1	003	10	1	1	3	8	6	3	1	81835	83645		4	1Ac60 3Ci75 COTRA	
5	40	8	33	03	07	9.0	8.4	96	6.9	996.3	1	030	50	5	2	8	6	3	/ /	86706	88708		5			
6	50	4	23	01	05	4.7	4.3	97	5.2	1006.9	0	002	10	0	0	1	0	8	0	1	81357	84077		6	COTRA	
7	81	1	24	07	13	6.4	5.0	91	5.5	992.1	2	016	01	1	1	1	5	3	7	0	81708			7	1Sc50 1Ac65 Ac edge NE	
8	09	8	09	01	03	1.8	1.7	99	4.3	1005.9	2	029	42	4	1	8	6	2	/ /	88703			8			
9	25	7	07	01	04	1.3	1.2	99	4.1	1008.3	8	019	10	4	1	1	0	9	5	2	81365	85068	86075	9	COTRA Hoar slt Parhelia	
10	68	2	03	04	12	5.5	5.1	97	5.4	1012.6	2	039	01	6	1	2	5	4	0	0	81710			10	1Sc25 2Sc45	
11	84	2	26	09	21	6.8	3.6	80	4.9	1002.0	1	018	02	1	1	1	5	6	6	3	81645			11	1Ac63 1Ci68 Ac cugen vir	
12	81	1	22	09	14	5.0	1.5	78	4.3	999.5	7	007	02	0	0	0	0	9	0	1	81070			12		
13	70	6	20	04	07	4.5	3.3	92	4.9	1002.5	5	001	02	2	2	2	5	6	3	1	82648	85070		13	1Ac62	
14	62	5	19	05	09	3.7	3.1	96	4.8	993.2	2	035	02	2	2	2	5	2	7	8	81705	83365		14	2Sc12 4Cs70 Cb top S	
15	58	8	36	07	15	5.5	4.3	92	5.2	1005.1	3	006	60	6	2	7	5	3	2	/	82709	83625	87635	15	8As58	
16	59	7	35	01	05	4.6	4.0	96	5.1	1006.4	1	013	10	6	2	7	5	5	/ /	81620	86635	87645	16			
17	25	7	06	01	02	2.4	2.3	99	4.5	1011.4	2	014	10	2	2	6	5	6	7	/	82630	85645	87365	17		
18	63	1	31	04	11	5.5	4.0	90	5.0	1016.9	2	012	01	1	1	1	6	3	0	0	81709			18	1Sc40	
19	35	7	05	02	04	-0.8	-1.1	98	3.5	1017.8	2	006	10	2	2	7	5	5	/ 8	81625	87635		19	/Cs75		
20	82	7	08	04	09	5.9	2.9	81	4.7	1013.8	1	004	03	2	2	6	5	6	0	7	86635	88272		20		
21	50	8	08	07	14	4.3	2.8	90	4.7	1004.8	7	001	05	2	2	8	6	3	/ /	88708			21			
22	68	6	12	04	09	7.5	7.4	99	6.5	996.1	0	004	25	8	2	4	8	4	7	1	81710	83815		22	2Sc35 1Ac59 1Cc70 4Ci75 COTRA Cu med Rainbow	
23	56	8	06	05	12	8.6	8.0	96	6.8	992.1	3	011	20	5	6	8	6	3	/ /	87706	88708		23			
24	15	8	12	02	04	8.1	8.0	99	6.7	1003.9	2	016	10	5	2	8	6	2	/ /	88703			24			
25	18	8	13	04	09	10.4	9.9	97	7.7	1001.9	1	001	51	6	5	8	7	2	/ /	86703	88705		25			
26	35	8	15	08	14	10.2	9.6	96	7.5	994.9	7	024	51	6	5	8	7	2	/ /	87705	88710		26			
27	62	4	18	03	06	9.1	8.8	98	7.2	983.2	3	004	01	8	1	4	5	3	0	0	81706	84635		27	2Sc15 Vv25k ex NW	
28	67	7	25	06	10	8.1	6.2	88	6.0	994.5	2	029	03	2	2	6	5	5	7	1	86620			28	/Ac62 1Ci75	
29	63	1	23	01	02	1.8	1.7	99	4.3	1015.4	2	036	02	0	0	1	0	9	7	1	81358			29	1Ci75 COTRA Glaze on untreated surfaces	
30	03	9	06	05	10	1.7	1.7	100	4.2	1022.0	3	003	43	4	4	9	/ / / /								30	

Mean vis = 12.3 km

Mean cloud = 5.7 72%

Mean wind speed = 4.5 kn

Mean gust = 9 kn

Mean TT = 6.0 °C

Mean TdTd = 5.1 °C

Mean RH = 94.0 %

Mean r = 5.6 g/kg

Mean PPP = 1001.4 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 2019

Date	VV	N	dd	ff	gg	TT	TdTd	RH	r	PPP	a	pppww	W1W2	NhCl	hCrCl	NChshs	NChshs	NChshs	Date	Remarks	
1	82	7	22	09	21	14.6	12.5	87	9.1	994.9	7	028	02	5	2	7	5	4	3	1	/Ac60
2	65	8	22	12	26	12.4	9.6	83	7.7	977.4	1	007	60	6	2	7	8	4	2	2	
3	82	7	19	03	05	11.1	9.7	91	7.7	983.2	2	010	02	5	2	7	8	3	/	3	Cu med
4	63	7	16	04	07	10.9	9.0	88	7.3	983.6	2	006	80	8	1	3	8	4	7	4	/Ac65 Cu med
5	70	6	01	05	10	11.6	10.0	90	7.7	999.9	3	020	25	8	2	6	8	4	/	5	Cu med
6	65	8	17	04	07	8.9	5.3	78	5.6	1002.8	7	022	21	6	2	1	8	5	7	6	1Sc40 Cu hum
7	82	1	23	07	15	9.2	3.4	67	4.9	993.7	2	007	02	0	0	1	8	6	0	3	1Sc45 1Ci70 Cu med Cb tops S
8	81	7	33	06	13	7.6	3.8	77	5.0	1009.3	3	016	02	6	2	7	8	5	/	8	Cu hum
9	40	8	07	04	11	5.9	5.5	97	5.6	1001.9	7	026	63	6	6	6	5	2	2	9	
10	82	3	03	03	08	8.6	5.0	78	5.4	1014.5	2	007	01	0	0	1	8	6	0	1	10 1Sc35 Cu med
11	82	5	26	10	23	8.9	2.2	63	4.5	1001.7	8	005	02	1	1	4	8	5	6	3	11 1Ac62 3Ci68 Cu hum
12	63	8	25	12	24	7.3	3.5	77	5.0	997.3	5	006	21	6	2	8	5	5	/	12	
13	81	6	18	03	12	7.7	2.8	71	4.7	997.4	7	025	02	2	2	1	8	5	4	2	13 1Sc35 Cu hum
14	82	3	05	03	08	6.8	3.9	82	5.1	997.1	2	019	01	1	1	2	8	4	0	8	14 2Sc030 1Ci68 2Cs70 Cu med Cb tops S&SE Cs edge NW
15	75	8	01	11	21	8.1	4.9	80	5.4	1002.8	6	014	21	6	2	5	8	5	2	15	Cu hum
16	80	7	04	01	03	6.9	3.7	80	5.0	1007.6	3	008	02	2	2	7	8	4	/	16	Cu hum
17	58	7	36	02	04	7.6	4.7	82	5.3	1012.1	2	008	05	2	2	3	5	4	3	2	17 2Ac65 COTRA
18	84	2	34	06	13	7.2	2.7	73	4.6	1016.6	0	004	01	1	1	2	8	5	0	1	18 1Sc30 1Ci80 Cu med
19	58	8	10	03	08	6.5	4.7	88	5.3	1016.0	6	008	05	2	2	7	5	5	/	19	/Cs75
20	82	8	10	06	14	6.3	0.2	65	3.9	1009.8	6	022	02	2	2	1	5	6	3	7	20 2Ac69
21	35	8	05	06	13	4.9	3.7	92	5.0	1001.1	6	020	05	2	2	8	6	2	/	21	
22	70	8	10	06	17	8.5	7.6	94	6.6	994.3	6	007	21	6	8	6	8	4	2	22	Cu fra/hum
23	56	8	02	06	11	9.6	9.0	96	7.2	993.5	0	003	58	6	5	8	7	2	/	23	
24	61	8	17	04	07	10.6	9.2	91	7.3	1004.2	1	001	02	2	2	8	5	4	/	24	
25	56	7	16	05	10	11.4	10.9	97	8.2	1001.1	6	003	51	6	5	7	7	2	/	25	/Sc50
26	65	7	19	08	19	12.9	11.5	91	8.6	991.8	6	013	25	8	6	7	8	4	/	26	Cu med
27	65	7	32	04	07	10.3	9.8	97	7.8	981.6	5	002	25	8	6	7	8	2	/	27	Cu med
28	40	8	29	06	12	9.1	7.5	90	6.5	998.3	2	020	58	6	5	8	5	3	/	28	
29	70	1	36	02	07	6.5	2.9	78	4.7	1018.8	2	013	02	0	0	1	4	4	0	0	29 1Sc20 Cu hum
30	59	6	06	05	11	4.6	3.6	93	4.9	1020.4	6	009	05	1	1	1	8	4	4	2	30 1Sc45 1Ac70 COTRA Cu hum

Mean vis = 22.0 km

Mean cloud = 6.4 80%

Mean wind speed = 5.5 kn

Mean gust = 12 kn

Mean TT = 8.8 °C

Mean TdTd = 6.1 °C

Mean RH = 83.9 %

Mean r = 6.1 g/kg

Mean PPP = 1000.8 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 2019	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	0.07	0.42	0.00	0.34	0.31	0.00	0.17	0.00	0.01	0.34	0.16	0.06	0.00	0.00
	8	0.00	0.00	1.00	0.94	0.00	1.00	1.00	0.00	0.80	0.85	0.97	1.00	0.60	0.83	0.00	0.00
	9	0.00	0.00	0.82	0.22	0.00	1.00	1.00	0.00	0.88	1.00	1.00	1.00	1.00	0.93	0.00	0.00
	10	0.00	0.34	0.00	0.55	0.00	0.78	1.00	0.00	0.14	1.00	1.00	1.00	1.00	0.11	0.00	0.37
	11	0.00	0.43	0.00	0.09	0.00	0.38	1.00	0.00	0.00	1.00	0.99	0.48	1.00	0.21	0.00	0.52
	12	0.00	0.32	0.00	0.90	0.07	0.00	0.90	0.00	0.00	1.00	0.99	0.00	0.92	0.32	0.00	0.47
	13	0.00	0.00	0.00	0.93	0.04	0.00	0.71	0.00	0.00	0.47	0.40	0.00	0.01	0.54	0.00	0.00
	14	0.00	0.00	0.21	0.00	0.02	0.00	0.97	0.00	0.00	1.00	0.76	0.00	0.27	1.00	0.00	0.00
	15	0.00	0.00	0.19	0.26	0.00	0.00	1.00	0.00	0.00	0.86	0.34	0.00	0.28	0.65	0.00	0.00
	16	0.00	0.00	0.12	0.00	0.03	0.00	0.08	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		0.00	1.09	2.42	4.29	0.16	3.49	7.98	0.00	1.99	7.18	6.48	3.82	5.25	4.63	0.00	1.37

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
8	0.00	0.71	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.22	0.00	0.87	0.00	0.37
9	0.20	1.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.71	0.00	1.00	0.00	0.41
10	0.99	1.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00	1.00	0.72	0.39
11	0.90	1.00	0.24	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.35
12	0.45	0.54	0.03	0.54	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	1.00	1.00	0.32
13	0.41	0.36	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	1.00	0.86	0.22
14	0.37	0.32	0.00	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.27	0.22
15	0.01	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.16
16	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
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	3.34	5.31	0.29	1.89	0.00	0.82	0.00	0.09	0.00	0.02	1.55	0.00	7.69	3.85	74.98

NOVEMBER 2019	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	13.16	15.4	1326	9.2	134	94.6	97.5	653	86.5	1503	12.3	9.1	10.2	2216	6.7	0	998.17	1012.8	0	986.6	2322	4.9
2	11.11	13.9	0	8.9	2324	85.1	93.5	1026	71.0	1241	8.7	7.2	9.2	1	5.9	648	980.44	987.0	6	975.4	1059	5.6
3	8.35	11.4	1131	3.8	632	91.5	96.5	657	81.7	947	7.0	6.5	7.7	1445	4.9	636	981.91	984.4	1813	978.7	332	1.3
4	7.95	11.9	1234	4.8	2117	95.2	99.0	842	80.7	1250	7.2	6.5	8.0	1205	5.4	2117	984.13	988.7	0	982.4	508	3
5	9.30	12.0	1421	6.5	1	93.3	99.0	216	85.6	1602	8.3	6.9	7.9	1313	5.7	0	997.93	1006.3	2352	988.5	1	0.6
6	6.28	9.4	1254	2.1	654	89.0	97.9	656	71.0	1308	4.5	5.3	6.2	2357	4.3	647	1003.36	1007.2	743	993.8	2359	0.5
7	6.24	9.9	1232	0.2	2357	88.2	98.3	2359	65.1	1354	4.3	5.3	6.7	306	3.8	2357	993.56	999.2	2359	989.8	300	8
8	3.31	7.7	1444	-1.8	702	92.9	100.0	732	72.1	1536	2.2	4.5	5.9	1252	3.3	702	1007.04	1012.6	2312	999.1	0	0.8
9	3.77	6.8	2138	-1.4	624	97.5	99.6	745	91.0	1153	3.4	5.0	6.1	2138	3.4	624	1005.59	1012.7	43	999.9	2025	10.5
10	6.07	10.2	1251	3.4	2044	92.8	98.7	259	72.1	1413	4.9	5.4	6.1	348	4.7	2045	1010.87	1014.9	1534	1001.9	0	1.3
11	6.65	9.3	1154	3.8	2232	80.4	96.8	3	60.5	1542	3.4	4.9	6.4	516	4.2	1841	1002.51	1009.2	0	999.7	545	2.3
12	5.93	8.6	1118	2.2	747	80.9	89.6	754	61.2	1125	2.9	4.7	5.5	1812	4.0	728	999.51	1001.9	8	996.9	1438	1.1
13	5.70	9.0	1158	2.7	730	85.9	95.3	2353	66.4	1424	3.5	4.9	5.6	2201	4.4	727	997.96	1002.7	836	989.1	2255	9.1
14	4.44	8.4	1301	2.1	709	92.1	97.3	823	69.8	1303	3.2	4.9	5.4	1027	4.3	709	995.48	1004.3	2359	988.5	424	10.7
15	5.86	8.4	1214	2.5	211	91.0	98.4	240	77.4	1713	4.5	5.3	6.0	1206	4.5	211	1003.56	1005.3	940	1001.4	2108	3.7
16	4.99	7.9	1224	0.2	2358	90.8	98.8	2336	72.7	1229	3.6	4.9	5.5	1119	3.8	2358	1006.48	1009.4	2358	1002.1	5	0.1
17	3.84	7.8	1406	0.1	31	94.8	99.4	655	79.2	1300	3.0	4.7	6.0	2334	3.8	31	1011.57	1014.4	2357	1009.3	358	0
18	5.07	8.8	1213	-0.9	2359	87.6	98.2	2309	69.7	1355	3.1	4.7	5.8	0	3.5	2359	1016.57	1018.4	2115	1014.0	101	0
19	1.87	6.6	2350	-2.8	640	94.9	99.2	451	82.0	2353	1.1	4.2	5.4	1417	3.0	638	1016.70	1018.1	21	1014.9	2351	0
20	5.22	7.9	1207	1.8	2125	79.2	92.4	2145	61.3	1210	1.8	4.3	5.0	49	3.7	1546	1011.44	1015.0	0	1007.0	2359	0
21	4.68	6.1	2359	3.9	1145	91.2	97.3	2345	84.8	29	3.4	4.9	5.8	2359	4.5	8	1002.53	1007.2	0	996.7	2359	0.5
22	6.92	9.2	1336	3.5	610	96.3	99.3	654	92.7	2357	6.4	6.1	7.0	1149	4.9	610	994.77	996.8	1	991.4	2358	4
23	8.49	10.0	1832	6.1	2346	96.2	99.1	2354	91.5	139	7.9	6.8	7.5	1832	5.8	2347	993.80	999.9	2359	990.4	500	5.1
24	8.81	10.6	1440	5.6	124	97.3	99.4	1205	91.2	1445	8.4	6.9	7.7	1206	5.6	124	1003.10	1004.7	1003	999.7	0	0.6
25	10.43	11.5	1522	9.0	244	96.4	97.8	1700	94.2	58	9.9	7.6	8.2	1523	6.9	244	1001.72	1003.5	3	1000.6	2356	3.4
26	10.79	13.4	1423	9.2	409	94.0	97.9	2320	86.1	1759	9.9	7.7	8.8	1328	7.0	327	994.04	1000.8	35	987.0	2358	5.5
27	9.54	11.2	1027	8.1	2359	95.6	98.5	600	87.4	1028	8.9	7.3	8.1	1230	6.5	2359	984.20	988.8	2359	980.8	1402	3.7
28	8.18	10.1	1108	5.8	2354	91.2	96.5	1954	76.7	1122	6.8	6.2	6.7	1531	5.4	2354	996.56	1006.5	2359	988.6	0	1.3
29	3.19	7.3	1305	-1.5	2336	93.3	100.0	2338	72.5	1425	2.1	4.4	5.4	3	3.4	2336	1016.29	1022.9	2337	1006.4	3	0.6
30	2.07	6.3	1316	-1.4	0	98.2	100.0	440	92.4	1438	1.8	4.3	5.7	1253	3.4	7	1021.42	1022.9	2	1020.1	2013	0

Total																						88.2
Mean	6.61	9.56		3.19		91.6	97.71		78.22		5.28	5.71	6.72		4.68		1001.11	1005.95		996.02		
Max	13.16	15.42		9.24		98.2	100.00		94.20		12.31	9.05	10.24		7.04		1021.42	1022.94		1020.07		
Min	1.87	6.09		-2.82		79.2	89.60		60.52		1.10	4.15	5.01		3.01		980.44	984.40		975.36		

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 2019

				Rank in the past 138 years					
Temperature (°C)									
Mean maximum	15.0	(-0.2)		50 th highest					
Mean minimum	7.0	(-0.1)		33 rd highest					
Daily mean	11.0	(-0.1)		39 th highest					
Rainfall total (mm)	265.0	(136 %)		14 th highest					
Sunshine total (hours)	354.0	(102 %)							
N° of:	Dry days	33 (-17)	Wet days	46 (+16)					
Days with:	Air frost	6 (-2)	Ground frost	28 (+6)	Snow falling	0 (-1)	Snow lying	0 (0)	
Thunder	3 (0)	Hail ≥5mm	0 (0)	Small hail/ice	1 (0)	Fog @09 GMT	2 (-2)	Nil sun	15 (0)
Air pressure MSL : Mean @09 GMT (mbar)	1010.4	(-4.7)							

Departure from 1981 to 2010 average shown in brackets.

Notes: **Wet with Near Average Temperature and Sunshine.**

Temperature: The mean this season is lowest since 2012 and in this millennium it must count as a cold autumn, as 14 have been milder and 2 the same since 2000. However, it is considerably milder than several autumns in the longer-term, with 1919 the coldest in our records, 3.0° colder than this one, and more recently, 1993, 1.9° colder. Monthly mean temperatures followed the usual autumn trend, falling from a mean of 15.4° in September to 6.5° in November. Compared with average September was the mildest month, anomaly +0.7°, October next, -0.2°, and November coldest, anomaly -1.0°. The 21st September was the warmest day, max 26.4°, 1.9° above the long-term median, and 30th November had the lowest max, 6.3°, 1.6° above its median. The highest min was on the 26th September, 15.1°, 0.2° below the median while the lowest min was -2.8° on the 19th November, 1.1° above its median. The mean grass min of 3.6° is 0.4° below average, but the lowest grass min of -5.4° on the 19th November is 2.8° above average. Mean earth temperatures are close to average. There were 37.2 hours of air frost, 11.7 hours less than average. The first ground frost of the season was on the 8th September after 114 frost-free days, and the first air frost was on the 28th October after 196 days free of frost. **Rainfall:** This has been a wet autumn, the total being only 1.4 mm outside the very wet category. Ranking 14th highest since 1882, in this millennium only 2000 and 2006 have been wetter. Although there was some dry weather, for example only 2.1 mm of rain fell in the 17 days to the 20th September, the number of dry days is the lowest for an autumn season since before 1976. However, while there were 16 more wet days than average, the number of days with 10 mm or more is exactly average. Each month this season has had a surplus of rainfall, and by quite similar percentages, 134%, 141% and 133% for September to November. The highest monthly total was in October, 101.3 mm, and the lowest September, 72.1 mm. The 28 day period 21st September to 18th October was notable, having only 1 dry day, and a total fall of 148.9 mm. The season's wettest day was the 23rd September with 28.8 mm. The highest rainfall rate of 177 mm/hr occurred at 0500 GMT on the 22nd September. The duration of measurable rain is 129 % of average and the longest daily duration was 19.0 hours on the 12th October. There were 3 days with thunder, the 1st and 17th October and the 22nd November. Ice pellets also fell on this last date. Rainfall rate exceeded the violent category on the 22nd and 24th September, the 1st, 8th and 17th October and the 22nd November. Estimated soil moisture deficit reached its highest value of the year, 257 mm, on the 22nd September. **Sunshine:** In total just 6 hours above average this autumn, nevertheless 7 out of the past 10 autumns have been less sunny. September was the sunniest month, daily mean 5.92 hours, and with 117 % of the average was the only month this autumn to have a surplus. November with a mean of 2.51 hours was the least sunny, but compared with average, had 95 % as opposed to October which had 87% and a mean of 3.26 hours. The 13th September was the sunniest day with 12.3 hours, and the period 13th to 21st of that month was outstandingly sunny with 8 days having over 11 hours of sunshine, interrupted by one nil sun day on the 16th, the 9 day total being 94.1 hours, more than in the whole of November, and nearly as much as in October. At the other extreme, the 10 days to the 28th November were very dull, 8 of them having less than 1 hour, and 6 having zero or 0.1 hours only, the best being 1.9 hours on the 20th. Overall there were 45 days with <3 hours, 26 with =>6 hours, 11 with =>9 hours, and 2 with =>12 hours. **Wind:** The mean speed of 6.1 mph is exactly average. The season's windiest day was the 2nd November, mean 12.9 mph, and the highest gust of 44 mph was on the 25th October. The least windy day was the 17th November, mean 2.0 mph, and the duration of calm was 2759 minutes, slightly below normal. Daily mean direction/number of days: N,9 NE,9 E,12 SE,3 S,12 SW,35 W,6 NW,5. Compared with average, winds from the SW were 6.6% more frequent and from the E 5.6 % more frequent, at the expense of SE and S combined, 5.8 % less frequent and W, also 5.8% less frequent. **Humidity:** The overall mean relative humidity was 85.6%, and the lowest value of 26% was on the 14th September. The mean water vapour content per kg of air was 7.2g at 0900 GMT and 7.1g at 1500 GMT. **Pressure:** The extremes of MSL air pressure were 1036.5 mbar on the 13th September and 975.4 mbar on the 2nd November, a span of 61.1 mbar, 5.6 mbar above average. **September:** Mild, wet and sunny. Third wettest this millennium despite 85% of the total falling after the 20th. **October:** Wet with near average temperature and below average sunshine. Equal 2nd lowest number of dry days in past 44 years. Rainfall duration 2nd highest since 1993. **November:** Wet with temperature and sunshine below average. Mean max temperature 2nd lowest since 1998. 6 fewer dry days than average.

Month	Mean Max	Anom	Mean Min	Anom	Rain mm	Anom	Sun hrs	Anom	Mean Wind mph	Max gust	Mean pressure	Anom
Sep	20.6°	+1.2°	10.2°	+0.2°	72.1	134%	177.6	117%	6.5	41	1018.0	+1.3
Oct	14.8°	-0.4°	7.3°	+0.1°	101.3	141%	101.1	87%	6.2	44	1011.6	-2.7
Nov	9.6°	-1.3°	3.4°	-0.7°	91.6	133%	75.3	95%	5.5	41	1001.4	-13.0

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, 1st January to 31st 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°C or below. A ground frost day is recorded when the grass minimum temperature read at 0900 GMT on that day is -0.1°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°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 of 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.