

# 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

### DECEMBER 2016

Temperature (°C)	Anomaly	Rank in the past 135 years
Mean maximum	9.6	+1.6 18 <sup>th</sup> highest
Mean minimum	1.8	-0.3 61 <sup>st</sup> highest
Daily mean	5.7	+0.7 45 <sup>th</sup> highest
Highest maximum	14.4	on 9 <sup>th</sup> Lowest maximum 5.0 on 30 <sup>th</sup>
Highest minimum	11.5	on 9 <sup>th</sup> Lowest minimum -5.1 on 1 <sup>st</sup>
Mean grass minimum	-1.6	-1.0 Lowest grass minimum -9.0 on 4 <sup>th</sup>
Mean earth @30 cm	6.7	+0.1 Earth @100 cm 9.1
Frost duration (hrs)	105.0	Rain duration (hrs) 12.8
Rainfall total (mm)	12.3	20% 6 <sup>th</sup> lowest
Highest daily fall	4.9	on 10 <sup>th</sup>
Number of: Dry days (<0.2mm)	24	Wet days (>0.9mm) 4 days ≥5mm 0
Sunshine total (hrs) 70.3	Daily mean 2.27	127% Sunniest day 7.6 on 1 <sup>st</sup>
N° days with: Air frost 11	Ground frost 22	Snow falling 0 Snow lying 0
Thunder 0	Hail ≥5mm 0	Small hail/ice 0 Fog @09 7 Nil sun 12
Pressure MSL: Mean @09 GMT, mbar 1028.2	+12.5 Highest 1045.6	on 27 <sup>th</sup> Lowest 1016.8 on 10 <sup>th</sup>
Relative humidity: Mean (%) 92.6	Lowest 54 on 26 <sup>th</sup>	Water vapour (g/kg), mean at 09 and 15 GMT 5.3, 5.9
Overall mean wind speed (mph) 5.0	Windiest day 11.8	on 25 <sup>th</sup> Max gust 35 on 23 <sup>rd</sup>
Wind direction (days)	N 1 NE 5 E 2 SE 3 S 4 SW 14 W 1 NW 1	
Least windy day (mph) 1.5	on 29 <sup>th</sup>	Calm; less than 0.5 mph (minutes) 1448

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

Notes:

#### Very Dry and Sunny with Temperature Above Average

**Temperature:** The mean this December is a little above average. In this millennium, 10 Decembers have been colder and 6 milder, but the mean this month is much closer to average than the exceptionally mild 2015. The contrast in rankings for the mean max and min indicate a month with relatively mild days and cold nights. The highest max is 1.3° above the median and the lowest max is 3.4° above its median and 6<sup>th</sup> highest in 104 years. The highest min is 2.2° above the median and the lowest min is close to its median. The mean grass min is lowest since 2010. Earth temperatures at both 30 cm and 1 m depth are close to normal, and lowest since 2012. There was one more day with air frost and 6 more with ground frost, than average. The duration of air frost is 10.7 hours above average. Daily anomalies for max were below normal until the 5<sup>th</sup>, and after the 26<sup>th</sup>, but individual values did not exceed -3°. There was a mild spell from the 6<sup>th</sup> to the 16<sup>th</sup>, with daily anomalies for max up to +6° on the 9<sup>th</sup>, and over +5° on the 13<sup>th</sup> and 14<sup>th</sup>, also there were anomalies between +2° and +4° from the 20<sup>th</sup> to the 25<sup>th</sup>. Anomalies for daily min were also below normal up to the 6<sup>th</sup> and after the 26<sup>th</sup>, with daily anomalies over -7° on the 1<sup>st</sup> and 4<sup>th</sup>, and over -6° on the 2<sup>nd</sup>, 5<sup>th</sup>, 29<sup>th</sup> and 30<sup>th</sup>. During the warm spell anomalies were over +8° on the 8<sup>th</sup> and 10<sup>th</sup>. **Rainfall:** This is the driest December since 1988, and before that, 1933. The total of 12.3 mm is only 20% of average, and this is only the 6<sup>th</sup> December since before 1976 to have less than 20 mm total. There were 9 more dry days than average, and equal highest with 2008 since 1991. The number of wet days is 7 below average. The duration of measurable rain is 23% of normal. There were three dry spells, 13 days ending on the 9<sup>th</sup>, 6 days on the 18<sup>th</sup> and 5 days on the 30<sup>th</sup>. The 4.9 mm that fell on the month's wettest day is lowest since 1991. There was no snow, the last in this month was in 2012, but the last December with snow lying was in 2010. There was no thunder or hail. The highest rain rate was 31 mm/hr on the 23<sup>rd</sup>. **Sunshine:** This has been a sunny winter month, although the number of days with nil sun is 1 above average. In the past 20 Decembers, 8 have been sunnier and 12 less sunny, and this period contains both the sunniest and dullest Decembers on record, namely 2001 and 2010. The month started well, with an accumulated surplus of 12 hours by the 5<sup>th</sup> where it remained until the 14<sup>th</sup>, after which 2 dull episodes reduced the surplus to 3 hours by the 19<sup>th</sup> and 1 hour by the 25<sup>th</sup>, then several sunny days lifted the surplus to 19 hours by the 29<sup>th</sup>. Overall there were 20 days with <3 hours and 6 with =>6 hours. **Wind:** This has been a very low wind speed month, with the mean 2.4 mph below average, and lowest for the month since before 1987. The month's highest gust is also 12 mph below average and lowest in the same period. Daily mean winds were light or very light up to the 6<sup>th</sup>, light or moderate to the 16<sup>th</sup>, very light to the 19<sup>th</sup>, moderate or fresh to the 26<sup>th</sup>, then very light to the 30<sup>th</sup>. Directions were variable to the 6<sup>th</sup>, SW'ly to the 11<sup>th</sup>, backing SE'ly by the 15<sup>th</sup>, then variable to the 20<sup>th</sup>, SW'ly to the 26<sup>th</sup>, then variable, becoming SW'ly on the 30<sup>th</sup>. **Pressure:** Air pressure has been high throughout the month, the mean at 0900 GMT being highest for December since 1991. Both the absolute highest, 1045.6 mbar, and lowest, 1016.8 mbar, are new record highs for the past 41 years. The total pressure span of 28.8 mbar is just over half the average of 52.4 mbar. **Weather:** 7 days with fog at 0900 GMT, most for December since 1962.

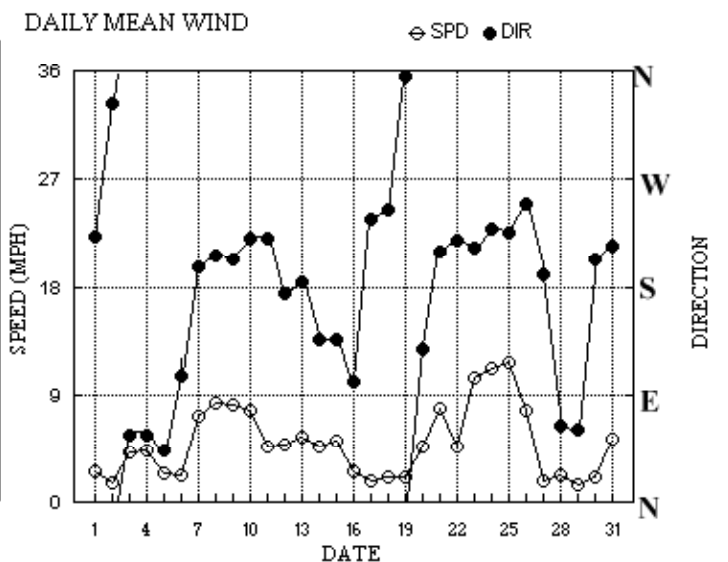
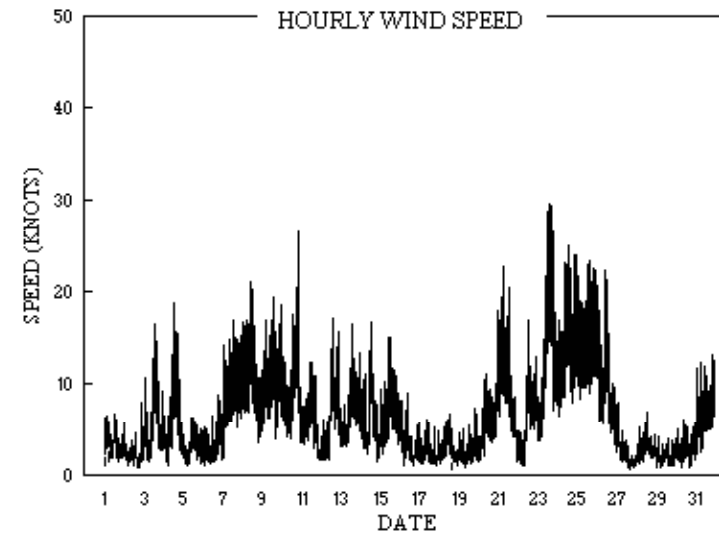
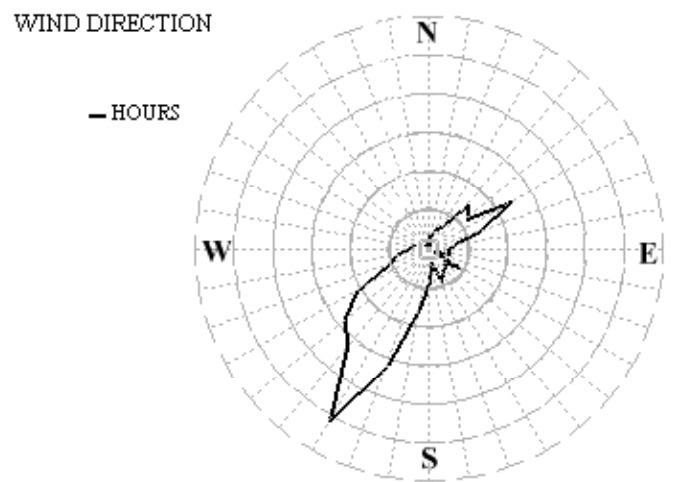
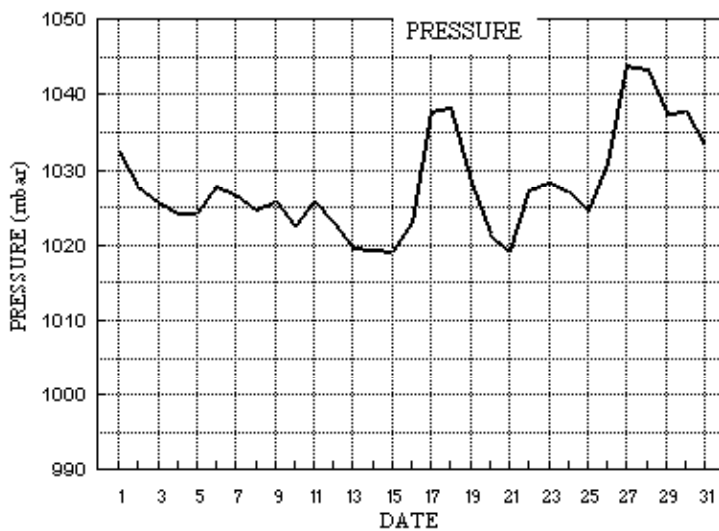
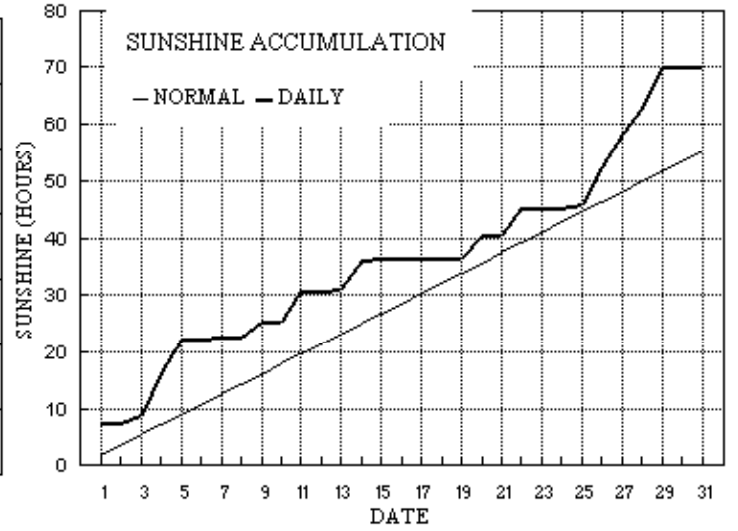
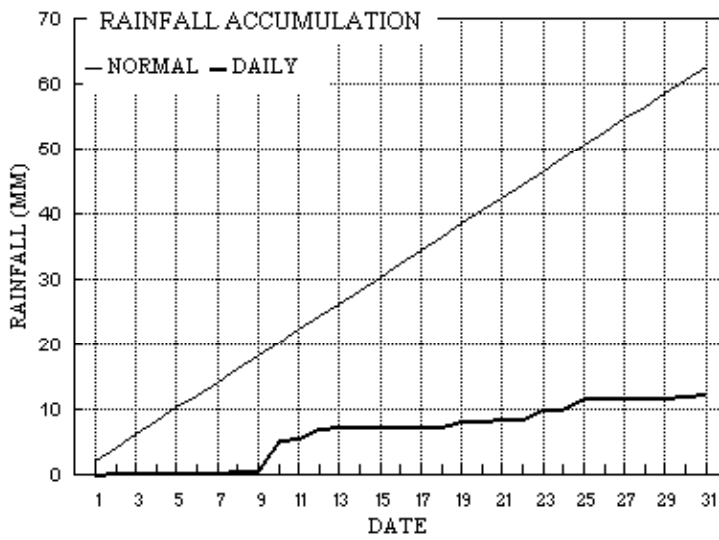
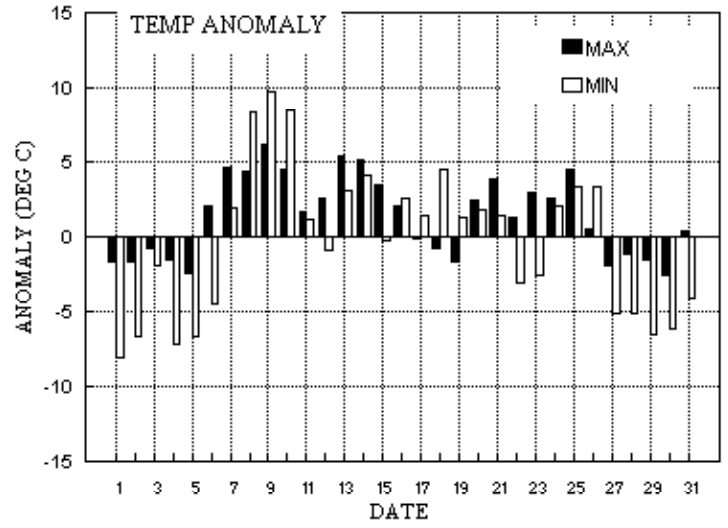
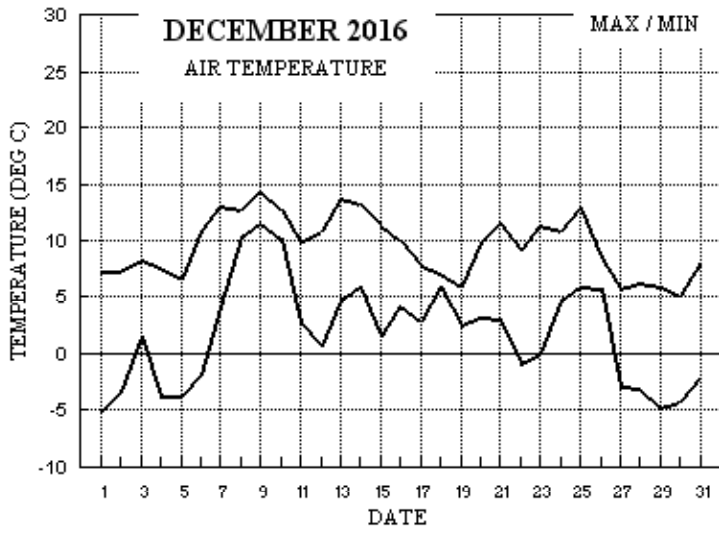
Table 1. Mean anomalies (max, min, rain, sun) for specified periods.

From the 1 <sup>st</sup> to the 10 <sup>th</sup>				From the 11 <sup>th</sup> to the 20 <sup>th</sup>				From the 21 <sup>st</sup> to the 31 <sup>st</sup>			
+1.4°	-0.6°	25%	140%	+2.0°	+1.9°	15%	84%	+0.8°	-2.0°	20%	152%

B J Burton FRMetS.

Hon. Met. Officer to Wokingham Town Council.

# Wokingham climatological graphs for December 2016



Daily meteorological data.

Emmbrook, WOKINGHAM, Berkshire.

Month: DECEMBER 2016

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	7.3	-5.1	0.0	-8.5	5.2	10.1	7.6	13.4	1032.4	1	1	0	0	0	0	222	2.0	2.3	258	7	1216	254	4	12	0.0	
2	7.3	-3.4	0.1	-6.0	4.8	9.8	0.0	0.0	1027.8	1	1	0	0	0	0	333	0.1	1.5	27	8	2130	34	3	21	0.3	
3	8.3	1.6	0.0	-2.6	5.4	9.5	1.3	3.7	1025.9	0	1	0	0	0	0	57	3.5	3.7	73	17	1208	79	7	14	0.0	
4	7.7	-3.8	0.0	-9.0	5.2	9.3	7.3	11.8	1024.4	1	1	0	0	0	0	57	3.7	3.9	64	19	1313	62	8	13	0.0	
5	6.6	-3.7	0.1	-7.7	4.6	9.1	6.3	12.6	1024.4	1	1	0	0	0	0	44	2.0	2.1	28	7	1146	36	3	11	0.2	
6	10.8	-1.9	0.1	-4.3	4.4	8.9	0.0	0.0	1027.8	1	1	0	0	0	1	106	0.6	2.0	200	9	1955	184	4	19	0.1	
7	13.0	4.0	0.0	4.4	5.2	8.7	0.1	0.0	1026.8	0	0	0	0	0	0	197	6.3	6.4	200	17	1223	190	9	16	0.0	
8	12.8	10.4	0.1	5.9	6.3	8.6	0.0	0.0	1024.9	0	0	0	0	0	0	207	7.1	7.2	200	21	1044	203	10	10	0.3	
9	14.4	11.5	tr	8.3	7.2	8.6	2.8	0.0	1025.9	0	0	0	0	0	0	204	7.1	7.1	212	20	1330	219	10	13	0.0	
10	12.7	10.2	4.9	6.9	7.9	8.7	0.0	0.0	1022.5	0	0	0	0	0	0	221	5.6	6.7	262	27	1941	318	11	20	4.7	
11	9.8	2.7	0.1	-2.0	8.1	8.9	5.3	0.0	1025.8	0	1	0	0	0	0	221	3.9	4.0	234	13	1123	230	7	11	0.1	
12	10.9	0.6	1.7	-2.8	7.5	9.0	0.0	0.0	1023.1	0	1	0	0	0	0	174	2.5	4.2	157	17	1328	219	8	20	2.5	
13	13.7	4.7	0.1	2.4	7.6	9.1	0.4	0.0	1019.7	0	0	0	0	0	0	184	4.6	4.8	200	17	1410	202	7	14	0.2	
14	13.3	5.9	0.0	1.3	8.1	9.1	5.1	0.0	1019.5	0	0	0	0	0	0	136	3.4	4.1	142	17	1207	149	8	12	0.0	
15	11.4	1.6	tr	-2.9	7.8	9.2	0.3	0.0	1019.2	0	1	0	0	0	0	136	4.4	4.5	159	15	1139	157	7	12	0.0	
16	10.0	4.3	0.1	-1.3	7.9	9.2	0.0	0.0	1023.1	0	1	0	0	0	1	102	1.5	2.3	80	9	0935	142	4	01	0.0	
17	7.8	2.9	0.1	-1.2	8.0	9.2	0.0	0.0	1037.9	0	1	0	0	0	1	236	0.3	1.6	182	6	0958	207	3	09	0.0	
18	7.1	5.9	tr	5.4	8.1	9.3	0.0	0.0	1038.3	0	0	0	0	0	1	244	1.2	1.8	254	7	1235	245	3	11	0.0	
19	5.9	2.6	0.7	-0.9	7.9	9.3	0.0	0.0	1028.4	0	1	0	0	0	0	355	0.8	1.8	38	7	1839	360	3	11	1.1	
20	9.9	3.2	0.1	-1.3	7.8	9.3	4.0	0.0	1021.6	0	1	0	0	0	0	129	3.0	4.1	199	18	2345	188	8	23	0.1	
21	11.5	3.1	0.2	-0.8	7.5	9.3	0.1	0.0	1019.1	0	1	0	0	0	0	209	6.6	6.8	201	23	0527	203	11	05	0.8	
22	9.2	-0.8	tr	-5.0	7.6	9.2	4.6	1.3	1027.4	1	1	0	0	0	0	219	3.9	4.1	218	17	1258	233	8	12	0.0	
23	11.3	0.0	1.5	-2.3	7.1	9.2	0.0	0.0	1028.4	0	1	0	0	0	0	212	8.8	9.1	203	30	1411	208	15	14	0.9	
24	10.9	4.8	tr	0.3	7.3	9.1	0.0	0.0	1027.2	0	0	0	0	0	0	229	9.7	9.7	236	25	1301	237	13	13	0.0	
25	12.9	5.9	1.8	4.9	7.3	9.1	0.7	0.0	1024.5	0	0	0	0	0	0	225	10.1	10.2	232	23	1516	219	12	20	0.8	
26	8.5	5.7	0.0	-0.3	8.0	9.1	6.4	0.0	1031.0	0	1	0	0	0	0	250	6.4	6.7	271	23	1129	222	11	00	0.0	
27	5.8	-2.9	0.0	-7.1	7.3	9.1	6.1	15.6	1044.0	1	1	0	0	0	0	191	1.1	1.6	195	8	0205	192	3	01	0.0	
28	6.3	-3.1	tr	-7.6	6.2	9.1	4.5	17.1	1043.4	1	1	0	0	0	1	65	1.6	2.0	133	7	1441	118	3	14	0.0	
29	6.0	-4.7	0.1	-8.8	5.4	8.9	7.3	17.7	1037.6	1	1	0	0	0	0	61	0.5	1.3	72	4	0429	63	3	14	0.0	
30	5.0	-4.2	0.1	-6.3	4.8	8.7	0.0	11.8	1037.7	1	1	0	0	0	1	203	1.1	1.9	264	6	1048	208	3	13	0.0	
31	8.1	-2.0	0.4	-2.2	5.0	8.5	0.1	0.0	1033.3	1	1	0	0	0	1	215	4.6	4.6	225	13	2227	211	7	22	0.7	
Total			12.3				70.3	105.0																		12.8
Mean	9.6	1.8		-1.6	6.7	9.1	2.27	3.4	1028.2							203	2.6	4.3								
Anom	+1.6	-0.3	20%	-1.0	+0.1	-0.2	127%																			+12.5
Daily mean		5.7																								
Anom		+0.7																								

Number of days with:

Air frost = 11      Ground frost = 22      Nil sun = 12  
 Snow falling = 0      Snow lying = 0      Thunder = 0  
 Hail=>5mm = 0      Hail<5mm or ice = 0      Fog at 09GMT = 7

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 DECEMBER 2016

Date	VV	N	dd	ff	gg	TT	Td	Td	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Ch	shs	NChs	NChs	NChs	Date	Remarks
1	65	3	20	02	04	-3.4	-4.2	94	2.8	1032.4	5	002	02	0	0	0	0	9	0	1						1	COTRA Hoar mod
2	56	8	19	01	04	3.9	3.0	94	4.7	1027.8	3	007	05	2	2	8	5	6	/	/						2	
3	82	7	03	02	05	4.5	3.5	93	4.8	1025.9	0	003	03	2	2	7	8	5	/	/						3	Cu med
4	67	1	05	03	09	0.2	-0.2	97	3.7	1024.4	4	000	02	0	0	0	0	9	0	1						4	COTRA Hoar thk
5	40	5	03	01	04	-1.9	-2.0	99	3.2	1024.4	3	003	10	2	2	1	0	9	3	1						5	COTRA Hoar mod
6	01	9	25	01	03	4.0	3.9	99	5.0	1027.8	2	018	50	4	4	9	/	/	/	/						6	
7	40	7	20	06	13	10.7	9.6	93	7.4	1026.8	3	008	05	2	2	7	6	3	/	1						7	/Ci75
8	59	8	21	10	17	12.3	10.0	86	7.6	1024.9	3	003	05	2	2	8	6	4	/	/						8	/Sc30
9	56	7	21	07	13	11.9	10.6	92	7.9	1025.9	3	003	05	2	2	2	6	3	7	8						9	2Ac65 /Cs75 COTRA
10	15	8	23	05	10	11.9	11.6	98	8.4	1022.5	2	007	50	5	2	8	6	1	/	/						10	
11	56	5	23	05	09	4.5	4.2	98	5.1	1025.8	1	010	10	1	1	0	0	9	0	1						11	Hoar slt
12	50	8	03	02	06	4.7	4.6	99	5.2	1023.1	7	004	50	6	5	8	5	3	/	/						12	
13	25	8	15	05	08	9.5	9.2	98	7.2	1019.7	0	001	20	5	2	8	6	2	/	/						13	
14	30	6	05	04	05	6.2	6.1	99	5.8	1019.5	2	007	10	2	2	3	0	9	7	2						14	COTRA
15	40	7	09	02	07	9.3	8.1	92	6.6	1019.2	5	000	05	2	2	7	5	3	7	/						15	/Ac59
16	09	7	07	03	06	7.0	6.7	98	6.0	1023.1	2	018	46	4	2	7	6	1	3	/						16	/Ac65
17	01	9	22	02	04	6.5	6.5	100	5.9	1037.9	1	016	45	4	4	9	/	/	/	/						17	VV 140m
18	06	8	25	02	06	6.1	6.1	100	5.7	1038.3	3	001	44	5	4	8	6	0	/	/						18	vv 1200m W
19	56	7	25	02	03	3.6	3.3	98	4.8	1028.4	5	007	10	2	2	6	5	2	3	1						19	3Ac62 COTRA
20	50	1	11	06	11	3.7	2.5	92	4.5	1021.6	7	001	05	1	1	1	5	6	0	0						20	
21	60	8	21	07	15	9.8	8.9	94	7.0	1019.1	3	014	21	6	5	8	5	3	/	/						21	jpNE VV 25k ex p
22	50	1	20	01	05	0.0	0.0	100	3.8	1027.4	2	020	11	0	0	1	5	6	0	1						22	1Ci75 Hoar slt.
23	61	8	21	08	15	9.2	8.1	93	6.7	1028.4	7	015	02	2	2	6	5	4	3	7						23	3Ac68 COTRA
24	62	8	23	08	16	5.9	3.2	83	4.7	1027.2	2	012	03	2	2	2	0	9	3	7						24	
25	63	7	22	09	18	10.9	9.2	89	7.1	1024.5	4	000	02	2	2	7	5	3	/	/						25	
26	80	5	25	06	12	6.8	3.8	81	4.9	1031.0	2	041	03	1	1	1	1	4	0	1						26	COTRA Cu fra U/a cont
27	65	6	13	01	03	-2.0	-2.3	98	3.2	1044.0	2	012	03	1	1	0	0	9	0	1						27	COTRA Hoar thk
28	02	3	06	02	03	-2.3	-2.3	100	3.2	1043.4	6	002	48	4	1	1	0	9	3	1						28	Hoar+rime thk
29	58	1	08	02	03	-4.1	-4.2	99	2.8	1037.6	5	002	10	0	0	1	0	9	3	0						29	Hoar Absent vv&cld est
30	01	9	19	03	04	-1.9	-1.9	100	3.3	1037.7	2	008	49	4	4	9	/	/	/	/						30	Hoar+rime Absent vv&cld est
31	05	9	22	03	06	5.0	5.0	100	5.4	1033.3	2	002	43	4	4	9	/	/	/	/						31	

Mean vis = 7.8 km

Mean cloud = 6.1 77%

Mean wind speed = 3.9 kn

Mean gust = 8 kn

Mean TT = 4.9 °C

Mean TdTd = 4.2 °C

Mean RH = 95.4 %

Mean r = 5.3 g/kg

Mean PPP = 1028.2 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 DECEMBER 2016

Date	VV	N	dd	ff	gg	TT	Td	Td	RH	r	PPP	a	ppp	ww	W1	W2	Nh	Cl	h	Cr	Cl	N	Ch	shs	N	Ch	shs	Date	Remarks	
1	68	1	26	02	06	7.0	2.5	73	4.5	1030.0	7	013	01	0	0	1	5	6	0	1	81635								1	1Ci80 Hoar in shade
2	56	8	02	02	05	7.0	4.8	86	5.3	1026.3	8	009	05	2	2	8	5	6	/	/	81640	88645						2		
3	77	2	08	07	15	5.7	0.9	71	4.0	1024.6	6	006	01	1	1	2	5	6	0	0	82630							3		
4	82	5	07	07	16	6.1	-0.2	64	3.7	1022.2	5	009	03	1	1	0	0	9	0	1	81075	85078						4	COTRA Halo 22° part Parhelion	
5	50	7	04	02	05	5.8	2.8	81	4.6	1024.3	3	001	05	2	2	1	5	6	3	1	81645	87077						5	1Ac68 COTRA Parhelion	
6	09	8	07	02	03	7.3	7.2	99	6.2	1026.5	8	008	42	5	4	8	6	2	/	/	87703	88705						6		
7	62	7	19	07	15	12.1	9.5	84	7.3	1025.6	2	001	01	2	2	5	0	9	7	8	82368	85372	87280				7	Ac str vir		
8	68	8	22	07	16	12.7	11.6	93	8.4	1024.7	3	002	02	6	5	8	5	3	/	/	83707	87709	88615				8			
9	60	7	20	09	14	13.1	10.1	82	7.6	1024.7	8	011	05	2	2	5	0	9	7	1	81365	85368	87075				9	COTRA		
10	57	8	21	09	18	12.4	11.3	93	8.2	1019.7	7	019	05	6	5	8	6	2	/	/	86705	88706						10		
11	67	7	21	05	11	8.2	6.8	91	6.1	1025.7	5	005	03	2	2	1	1	4	3	2	81815	84075						11	2Ci65 1Ac68 COTRA	
12	57	8	16	08	14	9.5	9.2	98	7.2	1020.2	6	016	21	6	5	8	7	2	/	/	87703	88705						12		
13	61	8	20	07	17	12.9	11.5	91	8.3	1018.8	6	005	03	5	2	8	5	3	/	/	82708	88620						13		
14	82	4	13	07	15	11.5	5.2	65	5.4	1018.6	5	004	02	1	1	1	0	9	4	1	81369	84080						14	COTRA	
15	59	5	15	06	12	11.2	8.6	84	6.9	1017.5	6	007	05	2	2	3	7	4	8	1	81815	83640						15	1Ac57 1Ac65 2Ci80 COTRA Cu fra Ac cas	
16	45	7	02	03	04	9.8	8.6	92	6.9	1026.4	2	013	05	2	2	7	6	4	/	/	83712	87715						16		
17	03	9	03	01	04	7.8	7.8	100	6.4	1039.1	3	004	47	4	4	9	/	/	/	/								17	vv 350m	
18	56	7	28	03	05	7.0	5.6	91	5.6	1034.8	7	019	05	6	2	3	6	2	7	1	83705	87358						18	/Ci75	
19	18	8	02	03	05	5.7	5.4	98	5.5	1025.5	6	018	51	6	5	8	5	2	/	/	83703	87705	88625				19			
20	60	5	11	04	07	6.0	3.3	83	4.8	1019.7	6	013	05	1	1	5	8	5	0	0	83820	84640						20		
21	62	7	23	05	13	10.5	7.0	79	6.2	1019.8	3	012	01	2	2	6	0	9	7	1	82360	86362	87073				21	COTRA		
22	77	6	21	05	12	8.5	3.6	71	4.9	1028.0	2	002	03	1	1	3	0	9	3	2	83368	85072						22	COTRA	
23	80	8	21	16	30	10.9	7.4	79	6.3	1021.0	7	041	02	5	2	7	5	4	/	/	84618	86630						23	/Ac65	
24	68	8	24	11	23	9.7	5.1	73	5.4	1026.9	5	003	02	2	2	7	5	5	/	7	83628	87635	88275				24			
25	68	7	23	09	19	12.6	10.8	89	8.0	1022.9	6	010	20	5	2	7	8	4	0	0	83812	85635						25	Cu fra jpNE Rainbow	
26	81	2	25	06	16	6.9	0.6	64	3.9	1035.2	3	015	01	1	1	0	0	9	0	1	82075							26		
27	62	7	27	01	03	4.4	1.9	84	4.3	1044.5	6	007	02	2	2	0	0	9	0	8	83077	87280						27	COTRA Hoar slt in shade Sun pillar	
28	62	1	13	03	07	6.1	4.6	90	5.2	1041.2	7	016	02	0	0	0	0	9	0	1	81075							28	Absent vv&cld est	
29	68	0	07	03	04	5.2	3.9	91	5.0	1035.9	6	012	02	0	0	0	0	9	0	0								29	Absent vv&cld est	
30	01	9	20	02	05	2.9	2.9	100	4.6	1036.0	6	012	45	4	4	9	/	/	/	/								30	Absent vv&cld est	
31	60	7	23	06	11	7.7	6.6	93	6.0	1029.6	7	020	21	6	2	7	8	4	/	/	81812	83630	87650				31	jpN		

Mean vis = 14.3 km

Mean cloud = 6.1 76%

Mean wind speed = 5.4 kn

Mean gust = 11 kn

Mean TT = 8.5 °C

Mean TdTd = 6.0 °C

Mean RH = 84.9 %

Mean r = 5.9 g/kg

Mean PPP = 1027.0 mbar

**See appendix 2 below for full code details**

VV = Visibility code (Code FM12-4377)

N = Total cloud amount, oktas

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

ff = 10 minute mean wind speed, knots

gg = Highest gust in past hour, knots

TT = Air temperature at 1.2 m, deg Celsius

TdTd = Dew point temperature at 1.2 m, deg Celsius

RH = Relative humidity at 1.2 m

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

PPP = Air pressure reduced to sea level, mbar

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

ppp = 3 hr pressure tendency, tenths of mbar

ww = Present weather code (Code FM12-4677)

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

Nh = Amount of low cloud present, oktas

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

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

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

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

8 groups. 8 = indicator for cloud detail

N = Amount of cloud, oktas

C = Type of cloud (FM12-0500)

hshs= Height of cloud (FM12-1677)

Remarks : COTRA = persistent condensation  
trails present.

Wokingham	Hour	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec
Sunshine	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
Hourly	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
analysis	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
2016	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8	0.80	0.00	0.00	0.65	0.56	0.00	0.00	0.00	0.02	0.00	0.45	0.00	0.00	0.06	0.00	0.00
	9	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
	10	1.00	0.00	0.00	1.00	1.00	0.00	0.02	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.06	0.00
	11	1.00	0.00	0.41	1.00	1.00	0.00	0.00	0.00	0.45	0.00	1.00	0.00	0.00	1.00	0.00	0.00
	12	1.00	0.00	0.15	1.00	0.66	0.00	0.00	0.00	0.98	0.00	1.00	0.00	0.35	1.00	0.00	0.00
	13	1.00	0.00	0.13	1.00	0.91	0.00	0.00	0.00	0.71	0.00	0.75	0.00	0.00	1.00	0.00	0.00
	14	1.00	0.00	0.15	1.00	1.00	0.00	0.00	0.00	0.51	0.00	0.08	0.00	0.00	1.00	0.11	0.00
	15	0.83	0.00	0.41	0.61	0.15	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.52	0.18	0.00
	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	0.00	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>7.64</b>	<b>0.00</b>	<b>1.25</b>	<b>7.27</b>	<b>6.27</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>2.80</b>	<b>0.00</b>	<b>5.28</b>	<b>0.00</b>	<b>0.35</b>	<b>5.08</b>	<b>0.34</b>	<b>0.00</b>

	Hour	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec	30-Dec	31-Dec	Mean
	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8	0.00	0.00	0.00	0.16	0.00	0.34	0.00	0.00	0.00	0.08	0.38	0.00	0.38	0.00	0.00	0.13
	9	0.00	0.00	0.00	0.96	0.00	0.95	0.00	0.00	0.00	0.86	1.00	0.00	1.00	0.00	0.00	0.28
	10	0.00	0.00	0.00	0.42	0.00	0.13	0.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.26
	11	0.00	0.00	0.00	0.94	0.00	0.75	0.00	0.00	0.00	1.00	1.00	0.65	1.00	0.00	0.02	0.36
	12	0.00	0.00	0.00	0.81	0.01	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.39
	13	0.00	0.00	0.00	0.68	0.00	0.84	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.02	0.36
	14	0.00	0.00	0.00	0.01	0.00	0.12	0.00	0.00	0.00	1.00	0.74	1.00	1.00	0.00	0.00	0.28
	15	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.65	0.49	0.00	0.85	0.89	0.00	0.00	0.20
	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	0.00	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>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>3.98</b>	<b>0.01</b>	<b>4.60</b>	<b>0.00</b>	<b>0.00</b>	<b>0.65</b>	<b>6.43</b>	<b>6.13</b>	<b>4.50</b>	<b>7.26</b>	<b>0.00</b>	<b>0.04</b>	<b>69.89</b>

DECEMBER 2016	T mn	Tx	Time	Tn	Time	RHmn	RH x	Time	RH n	Time	Tdmn	r mn	r x	Time	r n	Time	p mn	p x	Time	p n	Time
1	-0.313	7.41	1419	-5.141	752	89.3	98.7	2244	67.55	1256	-1.986	3.281	4.51	1450	2.37	650	1031.18	1034.0	7	1028.6	2358
2	4.624	7.41	1340	2.602	138	92.5	98.6	2348	82.8	1304	3.495	4.813	5.441	1413	4.193	10	1027.00	1028.6	1	1025.9	2355
3	3.359	8.44	1201	-1.595	2227	88.8	99.1	146	65.64	1414	1.599	4.242	5.32	201	3.164	2226	1025.35	1026.2	1004	1024.4	1509
4	1.052	7.82	1322	-3.86	539	86	100	700	57.45	1329	-1.22	3.456	4.788	1234	2.76	539	1023.76	1024.7	0	1021.9	1411
5	0.422	6.745	1356	-3.794	546	94.1	100	2234	76.5	1346	-0.466	3.669	4.842	1413	2.778	546	1024.53	1026.3	2255	1023.5	125
6	5.445	9.65	2001	0.241	0	99.2	100	1758	96.1	2233	5.32	5.547	7.23	1945	3.786	1	1027.03	1028.3	1010	1025.8	442
7	10.88	13.17	1217	7.34	4	90.2	99.9	118	80.7	1209	9.32	7.18	7.68	1138	6.202	5	1026.06	1027.1	152	1025.1	1414
8	11.95	12.91	1423	10.95	30	92.1	97.8	2255	85	916	10.72	7.9	8.52	1349	7.05	4	1025.46	1027.1	2318	1023.8	1356
9	12.00	14.4	1410	10.2	1800	92.8	97.0		79.0		10.90						1025.10	1026.5	215	1022.6	2359
10	11.27	12.81	1401	5.541	2356	94.3	97.9	902	88.2	2018	10.4	7.8	8.6	1256	5.296	2356	1020.87	1022.8	943	1016.8	1904
11	5.485	9.88	1321	1.382	2224	94.8	100	2229	80.7	1320	4.701	5.265	6.231	1315	4.112	2310	1025.12	1026.3	1034	1022.0	12
12	6.502	10.99	1826	0.458	423	98.4	100	40	93.4	2347	6.271	5.997	7.98	1823	3.875	423	1022.17	1025.7	0	1019.8	1701
13	10.62	13.78	1244	7.17	106	95.3	99.3	743	87.3	1244	9.89	7.54	8.67	1241	6.109	106	1019.67	1021.1	0	1018.5	1348
14	8.34	13.39	1258	1.448	2357	88.5	99.9	430	59.86	1404	6.384	5.978	7.71	2	4.118	2357	1019.44	1020.9	2235	1018.3	1419
15	8.79	11.47	1430	1.547	0	91.9	99.9	114	82.7	1455	7.52	6.425	7.18	1035	4.152	0	1018.55	1020.5	2	1016.9	1617
16	8.22	10.16	1324	4.156	352	95.2	99.3	2357	89	1405	7.5	6.367	7.02	1037	4.938	352	1025.22	1032.8	2359	1018.4	2
17	6.237	7.93	1411	2.754	127	99.7	100	1057	97.7	1	6.188	5.755	6.449	1411	4.481	125	1037.76	1040.1	2052	1032.8	0
18	5.701	7.21	1529	2.534	2135	98.6	100	0	88.5	1534	5.495	5.49	5.993	1139	4.439	2105	1036.15	1039.4	230	1032.0	2354
19	4.664	6.035	1826	2.984	500	98.3	99.9	434	94.3	1307	4.42	5.133	5.686	1826	4.603	506	1027.22	1032.1	0	1023.6	2337
20	4.635	7.44	1244	2.993	2107	91.7	99.9	109	77.1	1244	3.363	4.79	5.333	1	4.353	2117	1020.83	1023.9	23	1018.1	2357
21	9.03	11.61	1248	4.931	0	88.9	96.3	1121	71.3	1322	7.29	6.324	7.72	1154	4.584	2	1019.44	1023.1	2316	1016.9	502
22	4.834	9.14	1308	-0.915	824	90.2	100	331	68.34	1317	3.239	4.736	5.536	2245	3.496	824	1027.78	1032.1	2336	1022.9	2
23	8.48	11.41	1841	4.006	228	90.8	99	614	78	1910	7.02	6.174	7.87	1845	4.794	228	1025.69	1031.8	231	1018.7	1745
24	7.67	9.94	2357	4.666	530	80.6	90.9	12	72.1	1446	4.515	5.173	5.909	2354	4.463	739	1026.53	1027.9	1033	1024.4	1
25	11.35	12.97	1424	9.44	200	85.6	95.3	1225	77.9	30	9.03	7.08	8.14	1322	5.777	20	1023.66	1026.1	14	1022.0	2144
26	6.383	11.97	14	0.694	2305	77.6	95.6	310	54.38	1142	2.638	4.603	7.41	138	3.406	2339	1032.53	1041.6	2358	1022.0	103
27	0.121	5.904	1254	-3.068	809	93.8	99.9	2008	74	1327	-0.808	3.484	4.321	1234	2.864	809	1044.04	1045.6	2040	1041.4	14
28	-0.432	6.394	1450	-3.237	759	98.4	100	426	87.9	1511	-0.668	3.558	5.213	1427	2.867	800	1042.37	1045.2	17	1039.8	2351
29	-0.91	6.053	1342	-4.812	816	97.8	100	0	85.1	1343	-1.231	3.441	4.986	1415	2.54	816	1037.40	1040.0	1	1035.7	1505
30	0.147	2.984	1456	-2.687	618	100	100	0	99.9	254	0.147	3.77	4.591	1508	3.038	618	1036.67	1038.3	1046	1034.9	2354
31	5.945	8.2	1303	2.564	2	96.4	100	0	89.3	2107	5.409	5.493	6.359	1300	4.46	2	1030.63	1035.0	0	1023.7	2356
Total																					
Mean	5.89	9.54		1.98		92.6	98.85		80.25		4.72	5.35	6.44		4.17		1027.59	1030.37		1024.55	
Max	12.00	14.40		10.95		100.0	100.00		99.90		10.90	7.90	8.67		7.05		1044.04	1045.64		1041.43	
Min	-0.91	2.98		-5.14		77.6	90.90		54.38		-1.99	3.28	4.32		2.37		1018.55	1020.53		1016.80	

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

**Month:** Calendar month.

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

Summer, June to August

Autumn, September to November

Winter, December to February.

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

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

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

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

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

**Snow:** A day with snow falling is triggered if snow falls at any time in the 24 hours from midnight on that day. A day with snow lying is entered if there is at least 50% snow cover at the 0900 GMT observation. Snow depth is the depth of undrifted snow. Snow that collects in the raingauge funnel is melted and the amount recorded as rainfall.

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

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

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

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

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

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

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

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

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

## Appendix 2.

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

**VV** : Visibility.

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

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

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

Code figure 89 = visibility above 70 km.

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

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

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

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

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

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

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

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

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

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

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

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

1 = Increasing then steady or increasing more slowly

2 = Increasing steadily or unsteadily

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

4 = Steady, pressure the same as 3 hours ago

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

6 = Decreasing then steady or decreasing more slowly

7 = Decreasing steadily or unsteadily

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

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

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

Present weather decode:

00 = Cloud development not observed or not observable

01 = Clouds generally dissolving or becoming less developed

02 = State of sky on the whole unchanged

03 = Clouds generally increasing or becoming more developed

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Hail includes large hail, small hail and snow pellets.

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

Code figures:

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

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

**Cl :** Type of low cloud

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

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

**Cm :** Type of medium cloud.

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

**Ch :** Type of high cloud

0 = No high cloud

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

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

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

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

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

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

7 = Veil of Cirrostratus covering the celestial dome.

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

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

/ = Types of high cloud invisible owing to darkness, fog, blowing dust 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.