

DUPLICATE

# *Numerical* Weather Prediction



Forecasting Research  
Technical Report No. 254

## Verification of aviation TREND forecasts

by

E Woodfield

October 1998

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## 1 INTRODUCTION

TRENDS<sup>1</sup> are 2-hour forecasts appended to Meteorological Actuarial Reports (METARs<sup>1</sup>). METARs are produced at all airports every half an hour. Not all airports add on a TREND to the METARs as this requires the knowledge and resources of a forecasting centre. This means that TRENDS are generally written by people who are not on site at the airport concerned.

TRENDS are an additional, short-term source of information for airports and pilots etc. on top of the 9 or 18-hour terminal aerodrome forecasts (TAFs). This information is used to make decisions about diverting aircraft or holding them at departure during bad weather etc. Such diversions and delays are costly to the airline in terms of increased fuel load, transportation of passengers arriving at the wrong airport, having aircraft in the wrong place at the wrong time, and conversely if diversions and delays are not made the plane and passengers may be put into danger.

The work in this report was undertaken to assess the reliability of TRENDS. There is currently a decline in the number of airports producing TRENDS and it therefore seems especially suitable to carry out a verification of them at this time, to see if this decline is deserved. Six months worth of data has been used from each of four airports - Heathrow, Manchester, Glasgow and Belfast - to verify the TRENDS produced for them. Verification is achieved by comparison of the forecast with the actual data as supplied in the METARs.

Two major factors for concern have been tested, namely visibility and cloud base height. The programs used to test the data were written in FORTRAN 77, outputting the results as contingency tables. The data was obtained from the observational database of the UK Meteorological Office (MetDB).

## 2 METHOD.

There are three kinds of change reported in a TREND: NOSIG, TEMPO and BECMG:

- ◆ NOSIG states that the forecast element will stay within certain specified boundaries<sup>1</sup> (i.e. the persistence forecast).
- ◆ TEMPO indicates a change that will happen for only part of the duration of the TREND.
- ◆ BECMG indicates a gradual change in the conditions.

Certain assumptions were used to model these kinds of changes based on the work done by Neil Gordon on verification of TAFs (Gordon, 1989). TEMPO has been assumed to mean that the change will occur throughout the specified time<sup>2</sup> (this is somewhat pessimistic, but for aviation purposes the worst case must be assumed). BECMG is taken to mean a linear change over the specified time (as in Neil Gordon's scheme).

The Cloud Base Height has been taken as the height of the lowest reported/forecast layer of cloud to cover more than 2 oktas of sky. This is reasonable since below 3 OKTAS cloud cover is insignificant to airports and pilots. (Note that both METARs and TRENDS allow for 3 layers of cloud to be reported, and these are given in ascending height order).

Further assumptions were made to deal with the presence of the three TREND and METAR reporting categories: Ceiling And Visibility OK (CAVOK), Sky Clear (SKC) and Nil Significant Cloud (NSC). When these codes were found the values of visibility and cloud base height were replaced with a constant high value. For visibility this was taken as 10000m since no visibility about 9999m is ever reported. For cloud base height the value of 5015ft was used for similar reasons.

Note also that the 3 separate TREND groups allowed for in the coding for each TREND have been allowed for in the testing, however it was found that only the first group was used in all the data tested. This seems reasonable as the TREND only covers 2 hours and only rarely would one expect such rapid and varied change to require 3 TREND groups

If more than one TREND group were to be reported, all the TRENDS given would be tested regardless of whether they overlapped each other. This would lead to some conflict with the possibility of the forecaster being both correct and

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<sup>1</sup> For detailed information on TRENDS and METARs and their coding see: WMO - No 782 (Revised 1 January 1996) Aerodrome reports and Forecasts. A users' guide to the codes.

<sup>2</sup> TREND forecasts allow for a from/until/at time to be specified as limits to the change in conditions. Although these were not found to be used in the data tested, they have been allowed for in the testing programs, defaulting to the whole two-hour forecast period.



incorrect at the same time. If a second or third group were ever to be reported then an inspection of the whole TREND, to identify any such conflicts, would be necessary.

Since a TREND covers a period of two hours, one TREND is tested against the following four METARs. A full explanation of all the programs used is given in the documentation kept with them in the Aviation Group, Forecasting Products Branch, at the Met. Office.



### 3 RESULTS AND DISCUSSION.

The full set of contingency tables<sup>3</sup> produced are set out in Appendix I. Below are the results on the full six months data from Heathrow, both for visibility and cloud base height (CBH).

As a cursory glance will show, the diagonals (top left to bottom right) are well populated indicating generally good forecasting.

Note that the extreme bias to the bottom right corner is due both to the varying width of the test bands used (these values are used because these are deemed to be the significant changes in the WMO booklet on METARs) and also the infrequency of lower visibility conditions.

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	65	24	18	12	16	1	0	0	136
<b>b</b>	150-350	18	42	16	30	21	1	2	2	132
<b>s</b>	350-600	11	21	9	18	15	2	2	0	78
<b>e</b>	600-800	1	8	6	14	11	10	2	3	55
<b>r</b>	800-1500	7	5	3	13	65	41	7	1	142
<b>v</b>	1500-3000	3	3	15	32	200	479	206	62	1000
<b>e</b>	3000-5000	3	0	22	6	58	412	1167	433	2101
<b>d</b>	>5000	0	0	1	2	7	155	1555	24847	26567
Total		108	103	90	127	393	1101	2941	25348	30211

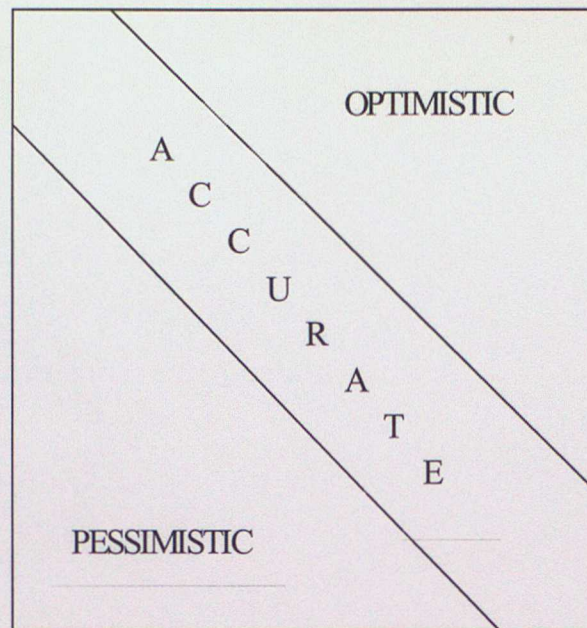
Fig.1: Visibility contingency table for Heathrow: October 1997 - March 1998

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	112	74	15	6	17	0	2	0	226
<b>b</b>	30-60	6	59	32	24	5	0	8	5	139
<b>s</b>	60-90	6	41	90	80	44	2	1	0	264
<b>e</b>	90-150	0	25	63	212	172	23	9	4	508
<b>r</b>	150-300	3	18	41	272	1166	318	145	49	2012
<b>v</b>	300-450	13	0	6	58	559	1017	432	109	2194
<b>e</b>	450-1500	6	7	12	63	485	1223	10586	1526	13908
<b>d</b>	>1500	17	11	13	17	83	251	1591	9882	11865
Total		163	235	272	732	2531	2834	12774	11575	31116

Fig.2: CBH contingency table for Heathrow: October 1997 - March 1998

<sup>3</sup> Contingency tables: These are a way of displaying frequency data in an easy to understand way. When a forecast value is given this determines the column in which the point will be placed, and similarly the actual value taken at the forecast time determines the row. Thus a correct forecast will add a point on the diagonal from top left to bottom right.





**Fig.3: Qualitative description of contingency table areas**

On further inspection, some rare but important forecasting errors can be spotted. Note that the lower left corner indicates pessimistic forecasting, i.e. predicting lower visibility or CBH than actually occurred, and the top right corner indicates optimistic forecasting. High numbers in the pessimistic corner indicate expensive forecasting errors and high numbers in the optimistic corner indicate dangerous forecasting errors. The forecast should be biased to always err on the side of safety, and we would want to see this reflected in the results.

For example note the excessively pessimistic forecasting indicated by the ringed numbers. These are both due to one particularly difficult forecasting day in December 1997, when the prediction of the arrival and dispersion of fog was involved. This is always difficult to predict correctly and on this occasion the dispersion was completely misjudged. There was freezing fog present, which changed to patchy fog, but with the temperature and dew point still below zero, the forecaster predicted that the freezing fog would return. In fact what actually happened was that the fog turned to mist with a visibility of around 3000m, as opposed to that predicted of 500m.

Similar tables are shown for the other three airports tested: Manchester, Glasgow and Belfast.

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	3	10	2	9	0	0	0	24
<b>b</b>	150-350	1	31	21	14	20	6	4	3	100
<b>s</b>	350-600	6	50	83	36	23	10	1	3	212
<b>e</b>	600-800	1	12	38	59	29	12	16	3	170
<b>r</b>	800-1500	0	11	38	19	82	79	28	15	272
<b>v</b>	1500-3000	0	9	17	21	152	867	317	136	1519
<b>e</b>	3000-5000	0	1	5	25	44	386	1839	656	2956
<b>d</b>	>5000	0	0	6	5	28	225	1510	23350	25124
Total		8	117	218	181	387	1585	3715	24166	30377

**Fig.4: Visibility contingency table for Manchester: October 1997 - March 1998**



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	295	35	25	11	8	5	0	21	400
<b>b</b>	30-60	31	48	42	37	27	14	5	11	215
<b>s</b>	60-90	20	29	50	62	24	15	29	2	231
<b>e</b>	90-150	7	42	50	434	163	46	62	3	807
<b>r</b>	150-300	6	20	46	280	1142	394	258	60	2206
<b>v</b>	300-450	6	12	11	106	532	1061	620	127	2475
<b>e</b>	450-1500	5	11	11	81	512	1263	12230	1745	15858
<b>d</b>	>1500	15	7	12	11	158	251	1693	7609	9756
Total		385	204	247	1022	2566	3049	14897	9578	31948

**Fig.5: CBH contingency table for Manchester: October 1997 - March 1998**

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	1	0	2	3	3	3	4	16
<b>b</b>	150-350	0	16	29	26	27	9	4	8	119
<b>s</b>	350-600	3	18	68	18	41	29	8	37	222
<b>e</b>	600-800	0	3	38	18	29	25	23	43	179
<b>r</b>	800-1500	1	1	22	7	24	16	12	21	104
<b>v</b>	1500-3000	0	1	13	30	78	72	101	73	368
<b>e</b>	3000-5000	0	0	11	29	59	85	322	321	827
<b>d</b>	>5000	0	0	7	68	56	143	809	28739	29822
Total		4	40	188	198	317	382	1282	29246	31657

**Fig.6: Visibility contingency table for Glasgow: October 1997 - March 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	10	10	4	2	3	0	16	0	45
<b>b</b>	30-60	3	9	18	15	12	1	13	0	71
<b>s</b>	60-90	2	7	17	60	16	1	3	1	107
<b>e</b>	90-150	1	15	51	198	97	30	33	0	425
<b>r</b>	150-300	2	11	10	130	1308	603	250	4	2318
<b>v</b>	300-450	0	0	0	29	528	1696	837	14	3104
<b>e</b>	450-1500	4	6	7	14	383	1374	17473	1415	20676
<b>d</b>	>1500	1	0	4	0	17	82	1332	4310	5746
Total		23	58	111	448	2364	3787	19957	5744	32492

**Fig.7: CBH contingency table for Glasgow: October 1997 - March 1998**

Note that the tables from Glasgow show a tendency to err towards the optimistic and more dangerous side - particularly with visibility. It can be seen from the monthly breakdown of the results (see Appendix I) that the majority of this optimistic forecasting occurred during October to December 1997.



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	20	14	35	16	6	6	0	1	98
<b>b</b>	150-350	2	5	39	20	8	5	3	0	82
<b>s</b>	350-600	3	4	24	27	8	10	3	4	83
<b>e</b>	600-800	8	11	21	22	15	8	2	5	92
<b>r</b>	800-1500	0	7	27	23	38	35	21	13	164
<b>v</b>	1500-3000	1	26	49	87	134	215	156	81	749
<b>e</b>	3000-5000	0	2	9	56	103	415	634	307	1526
<b>d</b>	>5000	11	6	14	53	138	432	2200	20047	22901
Total		45	75	218	304	450	1126	3019	20458	25695

**Fig.8: Visibility contingency table for Belfast: October 1997 - March 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	232	60	21	28	17	12	7	5	382
<b>b</b>	30-60	54	54	24	60	32	20	4	4	252
<b>s</b>	60-90	23	57	76	116	107	16	14	8	417
<b>e</b>	90-150	17	44	47	250	222	40	13	11	644
<b>r</b>	150-300	25	47	114	547	1526	541	231	32	3063
<b>v</b>	300-450	11	5	7	123	857	1529	557	64	3153
<b>e</b>	450-1500	25	18	34	136	1194	2499	12005	1206	17117
<b>d</b>	>1500	7	24	18	14	206	339	1160	4020	5788
Total		394	309	341	1274	4161	4996	13991	5350	30816

**Fig.9: CBH contingency table for Belfast: October 1997 - March 1998**

#### 4 CONCLUSIONS.

1. TRENDS are a good forecast on the whole, however there are certain difficult conditions under which they perform badly over a short timescale, such as predicting the onset and lifting of fog.
2. Generally the view is for the forecasters to err on the pessimistic and therefore safer side, though more expensive to the airlines. This is as to be expected, however the pessimism is not so very large as to cause concern.. Glasgow is the exception to this, erring on the optimistic side.

#### 5 FURTHER STUDY.

1. Some investigation into the effect on the results of the model used here for TEMPO would be beneficial. It is expected that the effect of a different model would not be large given the short time period of the forecast, because the forecast can only be checked against 4 observations. Any attempt to use a probabilistic model for TEMPO would need some kind of interpolation between the observations to be carried out before verification. As a good starting point it is suggested that observing the effect of using a persistence model for TEMPO (as used for NOSIG) would show the possible extent of the model's effect on the results.
2. It would be worthwhile to see if the first hour of the TREND forecast performs any better than the second hour.

#### 6 REFERENCES

Gordon N.D., Verification of Aerodrome Forecasts. International Conference on the aviation weather system (3<sup>rd</sup>, 1989, Anaheim, Cal)

WMO, Aerodrome Reports and Forecasts, (a users handbook to the codes), WMO No. 782, Jan.1996.

#### 7 CONTACTS

Any comments on this paper should be referred to Neil Halsey in the Aviation Group, Forecasting Products Branch of the UK Met. Office.



## **Appendix 1**

This appendix lists the contingency tables of visibility and cloud base height for Glasgow, Manchester, Belfast and Heathrow airports, over the period October 1997 to March 1998.



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	3	0	0	2	0	0	8	0	13
<b>b</b>	30-60	3	4	13	12	4	0	6	0	42
<b>s</b>	60-90	0	4	12	52	14	1	0	0	83
<b>e</b>	90-150	1	3	28	120	35	10	0	0	197
<b>r</b>	150-300	2	3	5	57	265	135	10	0	477
<b>v</b>	300-450	0	0	0	5	125	287	106	1	524
<b>e</b>	450-1500	3	6	3	0	33	134	2399	191	2769
<b>d</b>	>1500	0	0	0	0	1	11	163	992	1167
Total		12	20	61	248	477	578	2692	1184	5272

**Cloud Base Height (ft) for Glasgow Airport: October 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	6	1	0	0	0	3	0	10
<b>b</b>	30-60	0	5	4	3	6	1	7	0	26
<b>s</b>	60-90	0	1	3	0	0	0	0	0	4
<b>e</b>	90-150	0	12	13	9	1	0	10	0	45
<b>r</b>	150-300	0	8	1	22	139	102	14	0	286
<b>v</b>	300-450	0	0	0	0	48	223	163	0	434
<b>e</b>	450-1500	1	0	0	4	51	204	3448	228	3936
<b>d</b>	>1500	0	0	4	0	0	8	219	328	559
Total		1	32	26	38	245	538	3864	556	5300

**Cloud Base Height (ft) for Glasgow Airport: November 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	0	0	0	0	5	0	5
<b>b</b>	30-60	0	0	0	0	0	0	0	0	0
<b>s</b>	60-90	2	2	0	0	0	0	1	0	5
<b>e</b>	90-150	0	0	0	10	17	10	9	0	46
<b>r</b>	150-300	0	0	0	25	226	58	61	0	370
<b>v</b>	300-450	0	0	0	3	49	272	141	0	465
<b>e</b>	450-1500	0	0	4	2	72	281	3298	201	3858
<b>d</b>	>1500	0	0	0	0	13	14	171	693	891
Total		2	2	4	40	377	635	3686	894	5640

**Cloud Base Height (ft) for Glasgow Airport: December 1997**



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	8	4	3	0	3	0	0	0	18
<b>b</b>	30-60	0	0	1	0	2	0	0	0	3
<b>s</b>	60-90	0	0	1	7	2	0	0	1	11
<b>e</b>	90-150	0	0	7	56	14	4	3	0	84
<b>r</b>	150-300	0	0	0	4	212	65	40	3	324
<b>v</b>	300-450	0	0	0	9	49	160	118	2	338
<b>e</b>	450-1500	3	0	0	6	56	188	2932	324	3509
<b>d</b>	>1500	1	0	0	0	0	4	318	914	1237
Total		12	4	12	82	338	421	3411	1244	5524

Cloud Base Height (ft) for Glasgow Airport: January 1998

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	0	0	0	0	0	0	0
<b>b</b>	30-60	0	0	0	0	0	0	0	0	0
<b>s</b>	60-90	0	0	0	0	0	0	0	0	0
<b>e</b>	90-150	0	0	0	0	4	0	0	0	4
<b>r</b>	150-300	0	0	0	4	208	106	50	0	368
<b>v</b>	300-450	0	0	0	0	155	486	142	3	786
<b>e</b>	450-1500	0	0	0	0	74	324	2449	175	3022
<b>d</b>	>1500	0	0	0	0	1	16	169	606	792
Total		0	0	0	4	442	932	2810	784	4972

Cloud Base Height (ft) for Glasgow Airport: February 1998

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	0	0	0	0	0	0	0
<b>b</b>	30-60	0	0	0	0	0	0	0	0	0
<b>s</b>	60-90	0	0	1	1	0	0	2	0	4
<b>e</b>	90-150	0	0	3	3	26	6	11	0	49
<b>r</b>	150-300	0	0	4	18	250	129	75	1	477
<b>v</b>	300-450	0	0	0	12	102	256	166	8	544
<b>e</b>	450-1500	0	0	0	2	97	239	2882	296	3516
<b>d</b>	>1500	0	0	0	0	2	29	282	749	1062
Total		0	0	8	36	477	659	3418	1054	5652

Cloud Base Height (ft) for Glasgow Airport: March 1998



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	18	7	4	2	0	2	0	1	34
<b>b</b>	30-60	8	20	18	8	4	5	3	1	67
<b>s</b>	60-90	10	6	5	11	2	2	10	0	46
<b>e</b>	90-150	0	8	5	27	17	3	22	2	84
<b>r</b>	150-300	0	8	19	31	111	25	34	16	244
<b>v</b>	300-450	0	6	4	23	44	43	68	17	205
<b>e</b>	450-1500	0	4	0	17	40	110	2065	243	2479
<b>d</b>	>1500	0	2	1	2	29	21	254	1888	2197
Total		36	61	56	121	247	211	2456	2168	5356

**Cloud Base Height (ft) for Manchester Airport: October 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	46	3	3	3	0	0	0	2	57
<b>b</b>	30-60	5	8	14	13	8	3	2	7	60
<b>s</b>	60-90	2	8	12	15	9	3	5	0	54
<b>e</b>	90-150	0	8	10	53	25	10	16	1	123
<b>r</b>	150-300	0	6	2	33	213	100	41	9	404
<b>v</b>	300-450	0	2	1	32	146	309	114	43	647
<b>e</b>	450-1500	4	6	7	27	167	276	1595	375	2457
<b>d</b>	>1500	0	4	7	1	18	111	382	963	1486
Total		57	45	56	177	586	812	2155	1400	5288

**Cloud Base Height (ft) for Manchester Airport: November 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	220	23	14	3	0	2	0	11	273
<b>b</b>	30-60	15	8	0	0	7	0	0	3	33
<b>s</b>	60-90	4	1	6	5	0	6	7	2	31
<b>e</b>	90-150	7	6	1	122	39	9	3	0	187
<b>r</b>	150-300	6	0	0	75	227	102	38	8	456
<b>v</b>	300-450	6	1	5	16	118	200	103	19	468
<b>e</b>	450-1500	1	1	2	8	58	191	2076	316	2653
<b>d</b>	>1500	9	1	4	4	17	19	297	948	1299
Total		268	41	32	233	466	529	2524	1307	5400

**Cloud Base Height (ft) for Manchester Airport: December 1997**



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	2	1	1	1	0	6	11
<b>b</b>	30-60	0	1	1	1	1	0	0	0	4
<b>s</b>	60-90	0	0	0	1	0	0	0	0	1
<b>e</b>	90-150	0	0	2	7	21	2	1	0	33
<b>r</b>	150-300	0	0	0	32	249	59	32	15	387
<b>v</b>	300-450	0	1	1	12	68	142	83	22	329
<b>e</b>	450-1500	0	0	2	6	110	184	2251	276	2829
<b>d</b>	>1500	0	0	0	3	73	52	262	1336	1726
Total		0	2	8	63	523	440	2629	1655	5320

**Cloud Base Height (ft) for Manchester Airport: January 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	4	2	2	2	0	0	0	0	10
<b>b</b>	30-60	0	3	6	0	1	3	0	0	13
<b>s</b>	60-90	0	3	18	16	0	1	4	0	42
<b>e</b>	90-150	0	3	11	32	26	11	8	0	91
<b>r</b>	150-300	0	0	0	15	92	32	38	5	182
<b>v</b>	300-450	0	0	0	2	41	142	89	9	283
<b>e</b>	450-1500	0	0	0	1	43	219	2267	300	2830
<b>d</b>	>1500	0	0	0	0	13	32	258	1190	1493
Total		4	11	37	68	216	440	2664	1504	4944

**Cloud Base Height (ft) for Manchester Airport: February 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	7	0	0	0	7	0	0	7	21
<b>b</b>	30-60	3	8	3	15	6	3	0	0	38
<b>s</b>	60-90	4	11	9	14	13	3	3	0	57
<b>e</b>	90-150	0	17	21	193	35	11	12	0	289
<b>r</b>	150-300	0	6	25	94	250	76	69	7	527
<b>v</b>	300-450	0	2	0	21	115	225	158	15	536
<b>e</b>	450-1500	0	0	0	22	94	283	1955	230	2584
<b>d</b>	>1500	6	0	0	1	8	16	240	1209	1480
Total		20	44	58	360	528	617	2437	1468	5532

**Cloud Base Height (ft) for Manchester Airport: March 1998**



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	48	8	3	2	8	5	1	2	77
<b>b</b>	30-60	3	10	5	3	8	4	1	2	36
<b>s</b>	60-90	5	11	18	38	37	3	4	3	119
<b>e</b>	90-150	5	21	18	89	75	15	3	1	227
<b>r</b>	150-300	11	15	22	95	371	83	59	15	671
<b>v</b>	300-450	6	2	0	40	123	124	96	4	395
<b>e</b>	450-1500	10	5	14	51	165	248	2418	110	3021
<b>d</b>	>1500	4	1	2	5	25	16	128	505	686
Total		92	73	82	323	812	498	2710	642	5232

**Cloud Base Height (ft) for Belfast Airport: October 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	135	36	11	13	7	0	4	3	209
<b>b</b>	30-60	7	21	0	21	2	0	0	2	53
<b>s</b>	60-90	6	14	7	11	9	0	0	0	47
<b>e</b>	90-150	12	12	14	53	23	6	3	0	123
<b>r</b>	150-300	6	9	32	85	363	87	30	1	613
<b>v</b>	300-450	0	0	2	27	235	144	51	11	470
<b>e</b>	450-1500	0	6	9	9	316	349	1278	208	2175
<b>d</b>	>1500	3	14	0	3	62	56	230	722	1090
Total		169	112	75	222	1017	642	1596	947	4780

**Cloud Base Height (ft) for Belfast Airport: November 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	49	14	6	9	2	0	0	0	80
<b>b</b>	30-60	43	20	8	24	0	2	2	0	99
<b>s</b>	60-90	12	3	10	22	3	0	0	5	55
<b>e</b>	90-150	0	6	6	53	20	1	0	9	95
<b>r</b>	150-300	3	4	18	109	262	115	50	11	572
<b>v</b>	300-450	3	2	1	13	135	224	42	16	436
<b>e</b>	450-1500	14	0	0	17	237	395	1757	134	2554
<b>d</b>	>1500	0	9	4	4	42	49	149	784	1041
Total		124	58	53	251	701	786	2000	959	4932

**Cloud Base Height (ft) for Belfast Airport: December 1997**



		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	Total
<b>O</b>	<30	0	0	0	0	0	0	0	0	0
<b>b</b>	30-60	0	0	1	4	0	0	0	0	5
<b>s</b>	60-90	0	3	7	30	6	0	0	0	46
<b>e</b>	90-150	0	0	5	6	6	5	0	1	23
<b>r</b>	150-300	0	5	3	69	123	57	25	3	285
<b>v</b>	300-450	0	0	0	7	144	339	99	18	607
<b>e</b>	450-1500	0	0	0	6	123	486	2047	270	2932
<b>d</b>	>1500	0	0	0	2	43	75	233	1109	1462
Total		0	8	16	124	445	962	2404	1401	5360

Cloud Base Height (ft) for Belfast Airport: January 1998

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	1	1	2	0	0	0	0	4
<b>b</b>	30-60	1	3	1	5	9	7	0	0	26
<b>s</b>	60-90	0	26	30	7	18	8	6	0	95
<b>e</b>	90-150	0	0	1	3	8	3	3	0	18
<b>r</b>	150-300	0	9	11	17	128	107	33	1	306
<b>v</b>	300-450	0	1	0	9	85	457	147	6	705
<b>e</b>	450-1500	0	5	8	3	164	619	2085	250	3134
<b>d</b>	>1500	0	0	12	0	34	99	199	380	724
Total		1	45	64	46	446	1300	2473	637	5012

Cloud Base Height (ft) for Belfast Airport: February 1998

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	1	0	2	0	7	2	0	12
<b>b</b>	30-60	0	0	9	3	13	7	1	0	33
<b>s</b>	60-90	0	0	4	8	34	3	4	0	53
<b>e</b>	90-150	0	5	3	46	90	9	4	0	157
<b>r</b>	150-300	5	5	28	172	267	79	34	1	591
<b>v</b>	300-450	2	0	4	27	135	241	122	9	540
<b>e</b>	450-1500	1	2	3	50	189	402	2412	229	3288
<b>d</b>	>1500	0	0	0	0	0	44	221	501	766
Total		8	13	51	308	728	792	2800	740	5440

Cloud Base Height (ft) for Belfast Airport: March 1998



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	17	3	0	1	14	0	0	0	35
<b>b</b>	30-60	3	19	4	6	0	0	0	0	32
<b>s</b>	60-90	1	3	19	19	17	1	1	0	61
<b>e</b>	90-150	0	0	8	17	29	2	4	0	60
<b>r</b>	150-300	0	5	12	36	150	22	19	4	248
<b>v</b>	300-450	0	0	0	4	67	72	66	1	210
<b>e</b>	450-1500	1	0	1	10	124	146	1634	166	2082
<b>d</b>	>1500	6	10	0	0	30	16	197	2337	2596
Total		28	40	44	93	431	259	1921	2508	5324

**Cloud Base Height (ft) for Heathrow Airport: October 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	49	34	6	0	3	0	1	1	94
<b>b</b>	30-60	1	32	4	4	3	0	4	4	52
<b>s</b>	60-90	5	15	29	21	21	1	0	0	92
<b>e</b>	90-150	0	15	17	46	62	4	1	0	145
<b>r</b>	150-300	2	12	5	31	191	43	29	9	322
<b>v</b>	300-450	0	0	3	9	85	286	100	49	532
<b>e</b>	450-1500	2	3	9	8	75	306	1097	303	1803
<b>d</b>	>1500	0	0	12	0	13	98	355	1250	1728
Total		59	111	85	119	453	738	1587	1616	4768

**Cloud Base Height (ft) for Heathrow Airport: November 1997**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	46	34	9	5	0	0	1	0	95
<b>b</b>	30-60	2	6	20	10	1	0	0	0	39
<b>s</b>	60-90	0	18	40	28	5	0	0	0	91
<b>e</b>	90-150	0	6	26	105	54	14	4	0	209
<b>r</b>	150-300	1	0	17	96	363	127	46	16	666
<b>v</b>	300-450	13	0	3	30	92	176	88	19	421
<b>e</b>	450-1500	3	0	2	40	88	183	1601	248	2165
<b>d</b>	>1500	11	1	0	7	6	35	259	1343	1662
Total		76	65	117	321	609	535	1999	1626	5348

**Cloud Base Height (ft) for Heathrow Airport: December 1997**



		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	0	0	0	0	0	0	0
<b>b</b>	30-60	0	0	0	0	0	0	4	0	4
<b>s</b>	60-90	0	0	0	0	0	0	0	0	0
<b>e</b>	90-150	0	0	2	15	7	2	0	2	28
<b>r</b>	150-300	0	0	2	24	117	44	28	3	218
<b>v</b>	300-450	0	0	0	3	80	162	78	30	353
<b>e</b>	450-1500	0	4	0	2	75	212	2159	305	2757
<b>d</b>	>1500	0	0	0	1	12	38	333	1548	1932
Total		0	4	4	45	291	458	2602	1888	5292

**Cloud Base Height (ft) for Heathrow Airport: January 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	0	0	0	0	0	0	0	0
<b>b</b>	30-60	0	0	0	0	0	0	0	1	1
<b>s</b>	60-90	0	5	2	9	1	0	0	0	17
<b>e</b>	90-150	0	3	4	4	1	1	0	2	15
<b>r</b>	150-300	0	0	3	15	86	31	11	12	158
<b>v</b>	300-450	0	0	0	6	51	114	62	9	242
<b>e</b>	450-1500	0	0	0	3	12	131	1902	228	2276
<b>d</b>	>1500	0	0	1	9	20	43	189	1789	2051
Total		0	8	10	46	171	320	2164	2041	4760

**Cloud Base Height (ft) for Heathrow Airport: February 1998**

		Forecast								Total
		<30	30-60	60-90	90-150	150-300	300-450	450-1500	>1500	
<b>O</b>	<30	0	3	0	0	0	0	0	0	3
<b>b</b>	30-60	0	2	4	4	1	0	0	0	11
<b>s</b>	60-90	0	0	0	3	0	0	0	0	3
<b>e</b>	90-150	0	1	6	25	19	0	0	0	51
<b>r</b>	150-300	0	1	2	70	251	51	12	5	392
<b>v</b>	300-450	0	0	0	6	184	207	38	1	436
<b>e</b>	450-1500	0	0	0	0	107	245	2177	267	2796
<b>d</b>	>1500	0	0	0	0	2	21	254	1499	1776
Total		0	7	12	108	564	524	2481	1772	5468

**Cloud Base Height (ft) for Heathrow Airport: March 1998**



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	1	0	2	1	0	0	0	4
<b>b</b>	150-350	0	3	9	2	5	1	1	3	24
<b>s</b>	350-600	3	10	50	7	15	14	6	22	127
<b>e</b>	600-800	0	1	20	12	12	14	20	18	97
<b>r</b>	800-1500	1	1	15	4	12	7	5	11	56
<b>v</b>	1500-3000	0	0	5	16	33	20	42	39	155
<b>e</b>	3000-5000	0	0	7	24	24	28	120	75	278
<b>d</b>	>5000	0	0	0	12	11	35	218	4364	4640
Total		4	16	106	79	113	119	412	4532	5381

Visibility (m) for Glasgow Airport: October 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	2	3	3	4	12
<b>b</b>	150-350	0	8	20	2	9	4	3	5	51
<b>s</b>	350-600	0	6	18	4	21	3	0	11	63
<b>e</b>	600-800	0	2	15	5	15	1	1	11	50
<b>r</b>	800-1500	0	0	3	0	11	6	1	3	24
<b>v</b>	1500-3000	0	0	3	5	30	14	8	7	67
<b>e</b>	3000-5000	0	0	0	3	30	17	25	33	108
<b>d</b>	>5000	0	0	3	0	20	27	46	4876	4972
Total		0	16	62	19	138	75	87	4950	5347

Visibility (m) for Glasgow Airport: November 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	1	0	1	0	2	4
<b>e</b>	600-800	0	0	1	1	0	3	0	7	12
<b>r</b>	800-1500	0	0	2	2	1	2	0	1	8
<b>v</b>	1500-3000	0	0	1	0	1	5	7	10	24
<b>e</b>	3000-5000	0	0	0	0	0	10	50	70	130
<b>d</b>	>5000	0	0	0	0	8	8	140	5224	5380
Total		0	0	4	4	10	29	197	5314	5558

Visibility (m) for Glasgow Airport: December 1997



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	5	0	22	13	4	0	0	44
<b>s</b>	350-600	0	2	0	6	5	11	0	0	24
<b>e</b>	600-800	0	0	2	0	2	7	2	7	20
<b>r</b>	800-1500	0	0	2	1	0	1	6	6	16
<b>v</b>	1500-3000	0	1	4	8	7	20	17	7	64
<b>e</b>	3000-5000	0	0	4	0	0	9	44	22	79
<b>d</b>	>5000	0	0	4	51	9	10	49	5132	5255
Total		0	8	16	88	36	62	118	5174	5502

Visibility (m) for Glasgow Airport: January 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	2	2	4
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	0	0	0	0	0
<b>v</b>	1500-3000	0	0	0	1	4	5	4	3	17
<b>e</b>	3000-5000	0	0	0	2	2	14	64	64	146
<b>d</b>	>5000	0	0	0	5	2	33	247	4188	4475
Total		0	0	0	8	8	52	317	4257	4642

Visibility (m) for Glasgow Airport: February 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	0	0	0	0	0
<b>v</b>	1500-3000	0	0	0	0	3	8	23	7	41
<b>e</b>	3000-5000	0	0	0	0	3	7	19	57	86
<b>d</b>	>5000	0	0	0	0	6	30	109	4850	4995
Total		0	0	0	0	12	45	151	4914	5122

Visibility (m) for Glasgow Airport: March 1998



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	19	14	1	0	34
<b>v</b>	1500-3000	0	0	0	8	53	132	33	40	266
<b>e</b>	3000-5000	0	0	0	18	10	82	288	138	536
<b>d</b>	>5000	0	0	0	0	11	69	219	4295	4594
Total		0	0	0	26	93	297	541	4473	5430

Visibility (m) for Manchester Airport: October 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	1	5	2	8	0	0	0	16
<b>b</b>	150-350	0	0	4	1	9	4	2	0	20
<b>s</b>	350-600	3	3	10	6	10	1	0	3	36
<b>e</b>	600-800	1	4	14	31	18	9	15	0	92
<b>r</b>	800-1500	0	0	0	9	26	14	6	7	62
<b>v</b>	1500-3000	0	0	0	0	18	100	51	25	194
<b>e</b>	3000-5000	0	0	0	0	7	89	317	130	543
<b>d</b>	>5000	0	0	5	0	13	19	292	3582	3911
Total		4	8	38	49	109	236	683	3747	4874

Visibility (m) for Manchester Airport: November 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	1	2	0	1	0	0	0	4
<b>b</b>	150-350	1	30	14	13	9	0	2	3	72
<b>s</b>	350-600	3	43	70	27	9	4	0	0	156
<b>e</b>	600-800	0	8	24	28	7	3	1	3	74
<b>r</b>	800-1500	0	11	35	9	17	20	5	7	104
<b>v</b>	1500-3000	0	9	14	12	33	111	22	23	224
<b>e</b>	3000-5000	0	1	3	7	11	51	205	107	385
<b>d</b>	>5000	0	0	0	2	1	34	299	3942	4278
Total		4	103	162	98	88	223	534	4085	5297

Visibility (m) for Manchester Airport: December 1997



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	12	17	0	0	29
<b>v</b>	1500-3000	0	0	0	0	5	318	79	3	405
<b>e</b>	3000-5000	0	0	0	0	0	54	394	118	566
<b>d</b>	>5000	0	0	0	0	0	35	282	3672	3989
Total		0	0	0	0	17	424	755	3793	4989

Visibility (m) for Manchester Airport: January 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	2	2	0	0	4
<b>e</b>	600-800	0	0	0	0	3	0	0	0	3
<b>r</b>	800-1500	0	0	0	0	8	9	0	0	17
<b>v</b>	1500-3000	0	0	0	1	9	71	55	14	150
<b>e</b>	3000-5000	0	0	0	0	5	39	133	46	223
<b>d</b>	>5000	0	0	0	3	1	33	171	4051	4259
Total		0	0	0	4	28	154	359	4111	4656

Visibility (m) for Manchester Airport: February 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	1	3	0	0	0	0	0	4
<b>b</b>	150-350	0	1	3	0	2	2	0	0	8
<b>s</b>	350-600	0	4	3	3	2	3	1	0	16
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	3	1	0	5	16	1	26
<b>v</b>	1500-3000	0	0	3	0	27	127	77	25	259
<b>e</b>	3000-5000	0	0	2	0	11	71	474	114	672
<b>d</b>	>5000	0	0	1	0	2	35	231	3749	4018
Total		0	6	18	4	44	243	799	3889	5003

Visibility (m) for Manchester Airport: March 1998



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	12	5	0	5	1	2	0	1	26
<b>b</b>	150-350	0	0	0	9	1	1	3	0	14
<b>s</b>	350-600	0	0	9	10	1	1	2	3	26
<b>e</b>	600-800	0	1	1	7	2	4	1	4	20
<b>r</b>	800-1500	0	0	3	4	4	8	7	0	26
<b>v</b>	1500-3000	0	0	6	12	27	14	34	22	115
<b>e</b>	3000-5000	0	2	6	17	30	30	87	68	240
<b>d</b>	>5000	4	6	12	32	44	105	433	3436	4072
Total		16	14	37	96	110	165	567	3534	4539

**Visibility (m) for Belfast Airport: October 1997**

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	4	34	10	0	4	0	0	52
<b>b</b>	150-350	0	1	30	6	4	4	0	0	45
<b>s</b>	350-600	0	1	11	16	4	5	0	0	37
<b>e</b>	600-800	0	1	17	11	10	1	1	1	42
<b>r</b>	800-1500	0	0	15	13	19	5	7	5	64
<b>v</b>	1500-3000	0	5	29	35	48	28	24	17	186
<b>e</b>	3000-5000	0	0	3	21	39	90	107	62	322
<b>d</b>	>5000	0	0	2	14	14	133	448	2687	3298
Total		0	12	141	126	138	270	587	2772	4046

**Visibility (m) for Belfast Airport: November 1997**

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	8	5	1	1	5	0	0	0	20
<b>b</b>	150-350	2	2	9	0	3	0	0	0	16
<b>s</b>	350-600	3	2	4	0	3	4	1	1	18
<b>e</b>	600-800	8	8	3	0	3	3	0	0	25
<b>r</b>	800-1500	0	7	9	3	12	11	1	2	45
<b>v</b>	1500-3000	1	21	14	31	23	84	8	10	192
<b>e</b>	3000-5000	0	0	0	9	10	66	53	42	180
<b>d</b>	>5000	7	0	0	1	8	36	336	3089	3477
Total		29	45	40	45	67	204	399	3144	3973

**Visibility (m) for Belfast Airport: December 1997**



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	3	1	5	5	0	14
<b>v</b>	1500-3000	0	0	0	1	18	65	60	4	148
<b>e</b>	3000-5000	0	0	0	3	15	62	173	60	313
<b>d</b>	>5000	0	0	0	6	5	27	322	3659	4019
Total		0	0	0	13	39	159	560	3723	4494

Visibility (m) for Belfast Airport: January 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	2	4	0	0	6
<b>v</b>	1500-3000	0	0	0	0	4	4	7	1	16
<b>e</b>	3000-5000	0	0	0	0	0	77	71	18	166
<b>d</b>	>5000	0	0	0	0	58	60	267	3391	3776
Total		0	0	0	0	64	145	345	3410	3964

Visibility (m) for Belfast Airport: February 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	0	2	1	6	9
<b>v</b>	1500-3000	0	0	0	0	13	20	23	27	83
<b>e</b>	3000-5000	0	0	0	0	2	70	143	57	272
<b>d</b>	>5000	0	0	0	0	9	71	390	3757	4227
Total		0	0	0	0	24	163	557	3847	4591

Visibility (m) for Belfast Airport: March 1998



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	14	0	4	0	5	1	0	0	24
<b>b</b>	150-350	0	0	0	2	2	0	0	0	4
<b>s</b>	350-600	0	0	0	4	3	1	0	0	8
<b>e</b>	600-800	0	0	0	1	1	2	0	0	4
<b>r</b>	800-1500	4	0	0	0	12	7	1	0	24
<b>v</b>	1500-3000	3	0	0	1	31	109	37	11	192
<b>e</b>	3000-5000	0	0	0	0	7	104	251	106	468
<b>d</b>	>5000	0	0	0	0	0	32	207	4315	4554
Total		21	0	4	8	61	256	496	4432	5278

Visibility (m) for Heathrow Airport: October 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	41	14	11	8	8	0	0	0	82
<b>b</b>	150-350	10	24	13	20	10	0	0	0	77
<b>s</b>	350-600	7	19	8	9	9	0	0	0	52
<b>e</b>	600-800	1	2	5	5	5	8	1	1	28
<b>r</b>	800-1500	0	1	2	7	19	20	0	0	49
<b>v</b>	1500-3000	0	1	10	15	45	168	59	16	314
<b>e</b>	3000-5000	0	0	0	1	3	116	180	92	392
<b>d</b>	>5000	0	0	0	0	0	41	256	3264	3561
Total		59	61	49	65	99	353	496	3373	4555

Visibility (m) for Heathrow Airport: November 1997

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	6	3	3	4	0	0	0	0	16
<b>b</b>	150-350	0	7	3	7	4	0	0	0	21
<b>s</b>	350-600	4	2	1	5	2	0	0	0	14
<b>e</b>	600-800	0	6	1	8	5	0	1	2	23
<b>r</b>	800-1500	3	0	1	6	19	5	2	0	36
<b>v</b>	1500-3000	0	1	3	14	48	39	43	18	166
<b>e</b>	3000-5000	3	0	20	0	36	79	219	53	410
<b>d</b>	>5000	0	0	0	0	3	34	298	3977	4312
Total		16	19	32	44	117	157	563	4050	4998

Visibility (m) for Heathrow Airport: December 1997



		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	0	4	0	0	4
<b>v</b>	1500-3000	0	0	0	0	23	30	6	5	64
<b>e</b>	3000-5000	0	0	0	0	8	37	194	54	293
<b>d</b>	>5000	0	0	0	2	4	14	280	4509	4809
Total		0	0	0	2	35	85	480	4568	5170

Visibility (m) for Heathrow Airport: January 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	4	7	0	0	3	0	0	0	14
<b>b</b>	150-350	8	11	0	1	5	1	2	2	30
<b>s</b>	350-600	0	0	0	0	0	0	0	0	0
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	4	0	0	10	3	0	0	17
<b>v</b>	1500-3000	0	1	2	2	51	124	34	3	217
<b>e</b>	3000-5000	0	0	2	5	2	21	183	89	302
<b>d</b>	>5000	0	0	1	0	0	16	158	4128	4303
Total		12	23	5	8	71	165	377	4222	4883

Visibility (m) for Heathrow Airport: February 1998

		Forecast								Total
		<150	150-350	350-600	600-800	800-1500	1500-3000	3000-5000	>5000	
<b>O</b>	<150	0	0	0	0	0	0	0	0	0
<b>b</b>	150-350	0	0	0	0	0	0	0	0	0
<b>s</b>	350-600	0	0	0	0	1	1	2	0	4
<b>e</b>	600-800	0	0	0	0	0	0	0	0	0
<b>r</b>	800-1500	0	0	0	0	5	2	4	1	12
<b>v</b>	1500-3000	0	0	0	0	2	9	27	9	47
<b>e</b>	3000-5000	0	0	0	0	2	55	139	39	235
<b>d</b>	>5000	0	0	0	0	0	18	356	4517	4891
Total		0	0	0	0	10	85	528	4566	5189

Visibility (m) for Heathrow Airport: March 1998