

A Case Study of December 18th 2003

From compiling the charts for the [number of contrails](#) observed on each day at each station it was possible to look for any days when there are significant numbers of contrails observed, and to see whether or not these days are individual to each station or if these peaks of contrail number occur around the UK. Although there are several days when the number of contrails observed seem to correlate between the stations the example of the 18th December 2003 has been taken as this is a day when there are a significant number of contrails and there is a significant amount of correlation between the stations (this peak in the number of contrails is also present over the few days before and after the 18th). The following charts (Figure 1 to 5) show the number of contrails observed at each station for December 2003.

Figure 1. North

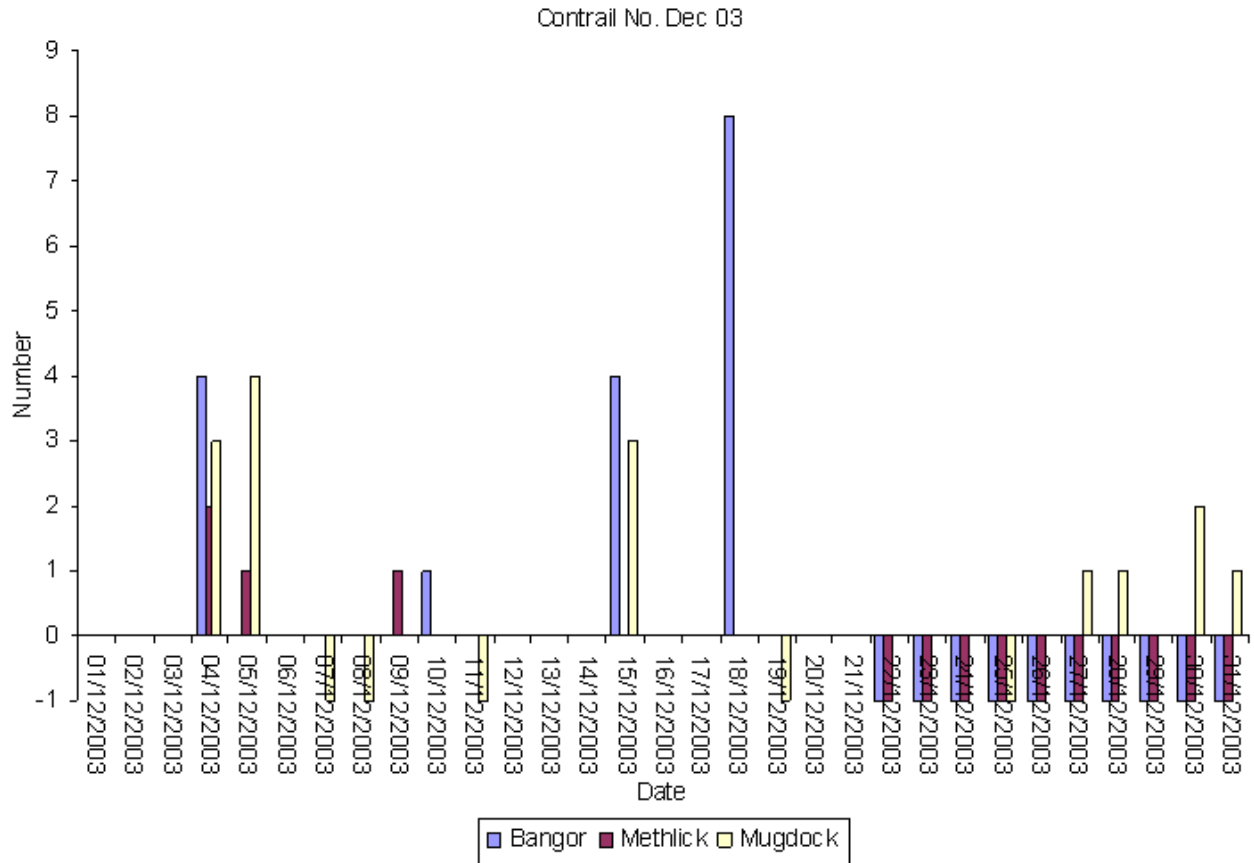


Figure 2. North East

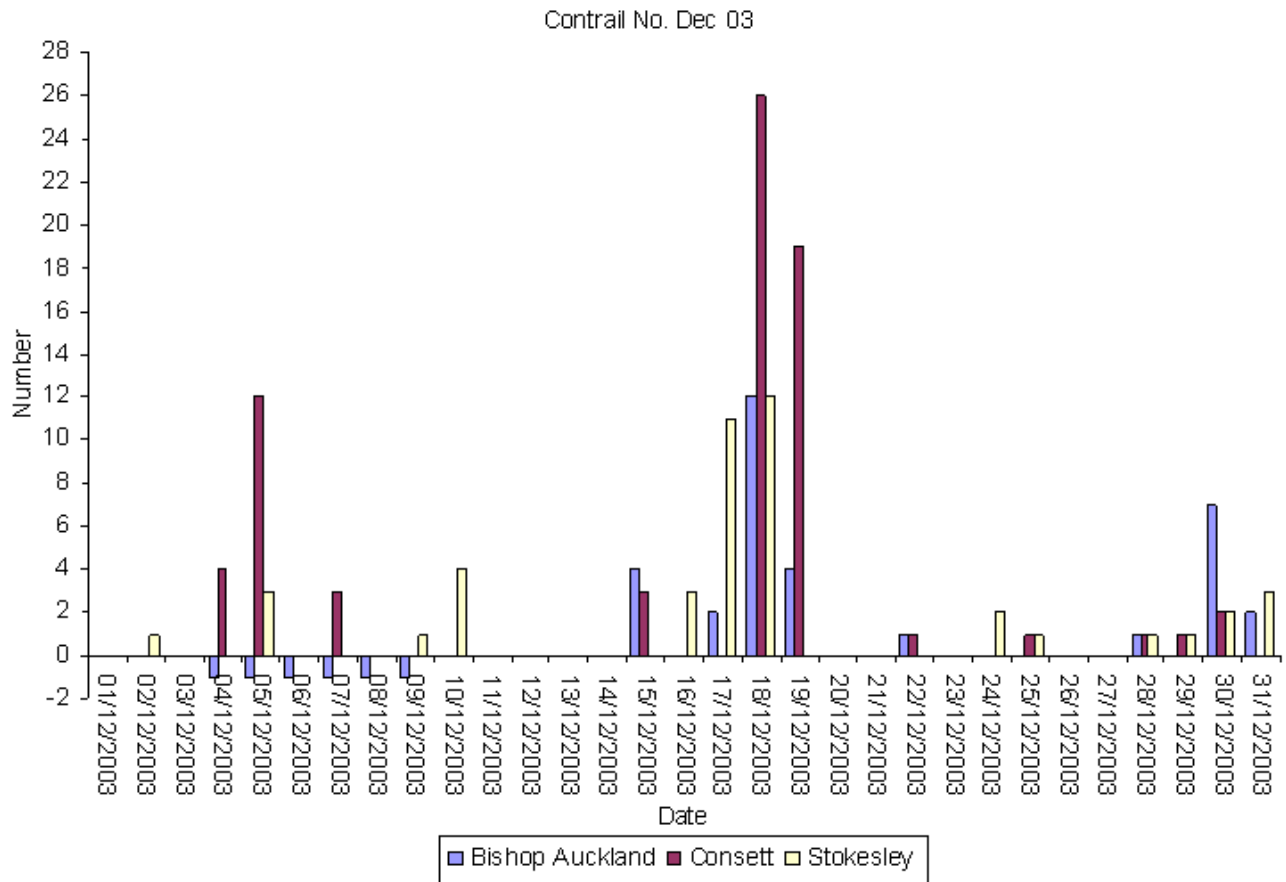


Figure 3. North West

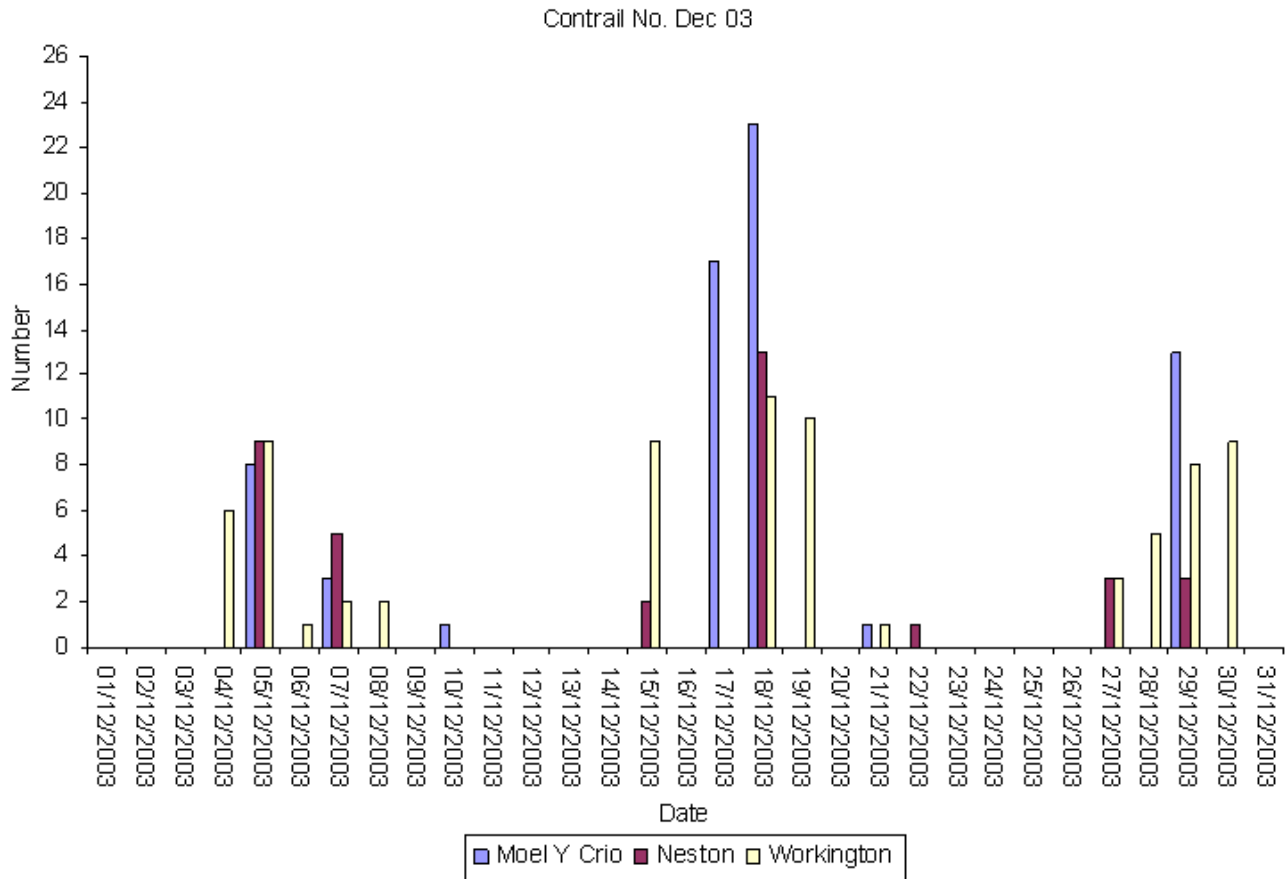


Figure 4. Lancaster

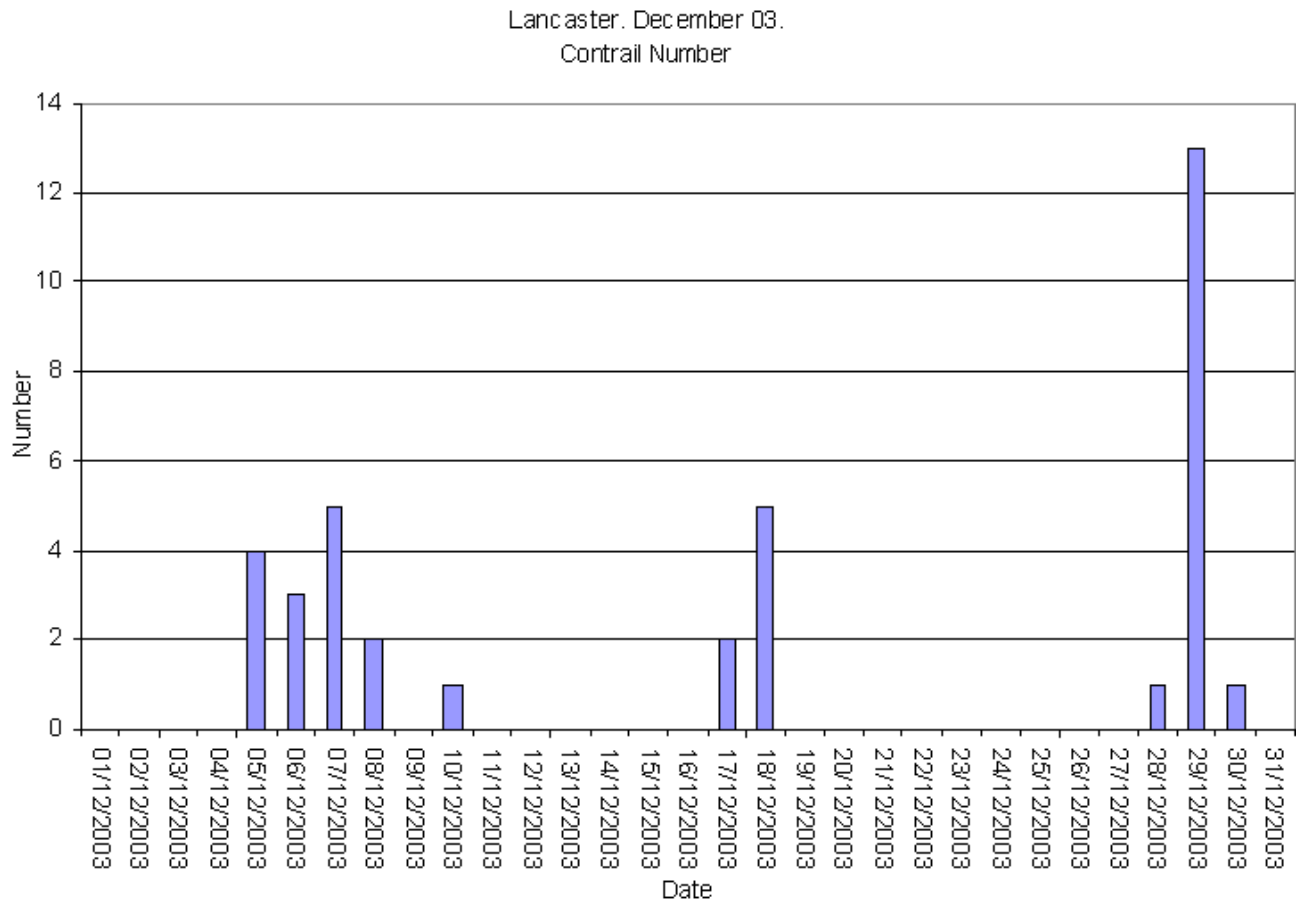
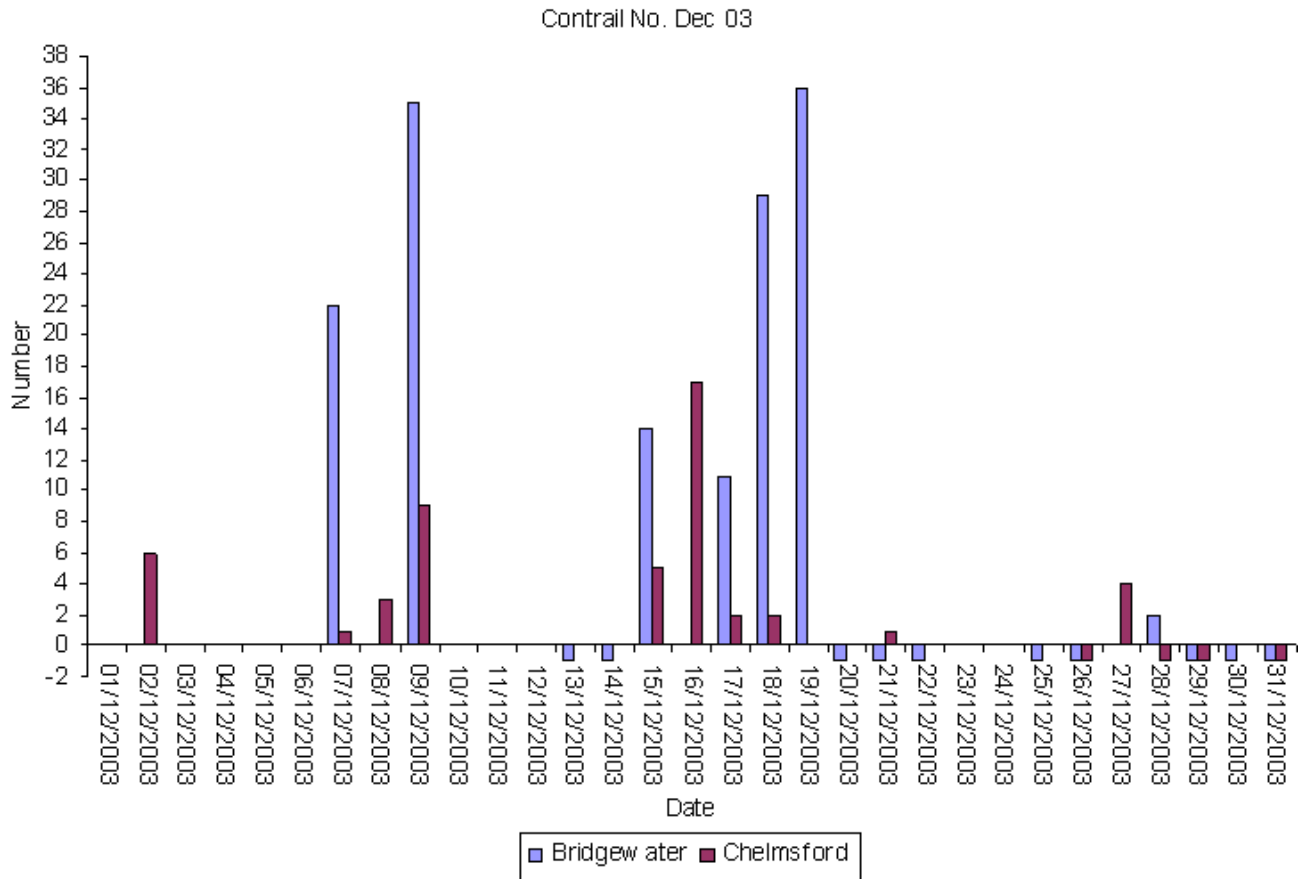
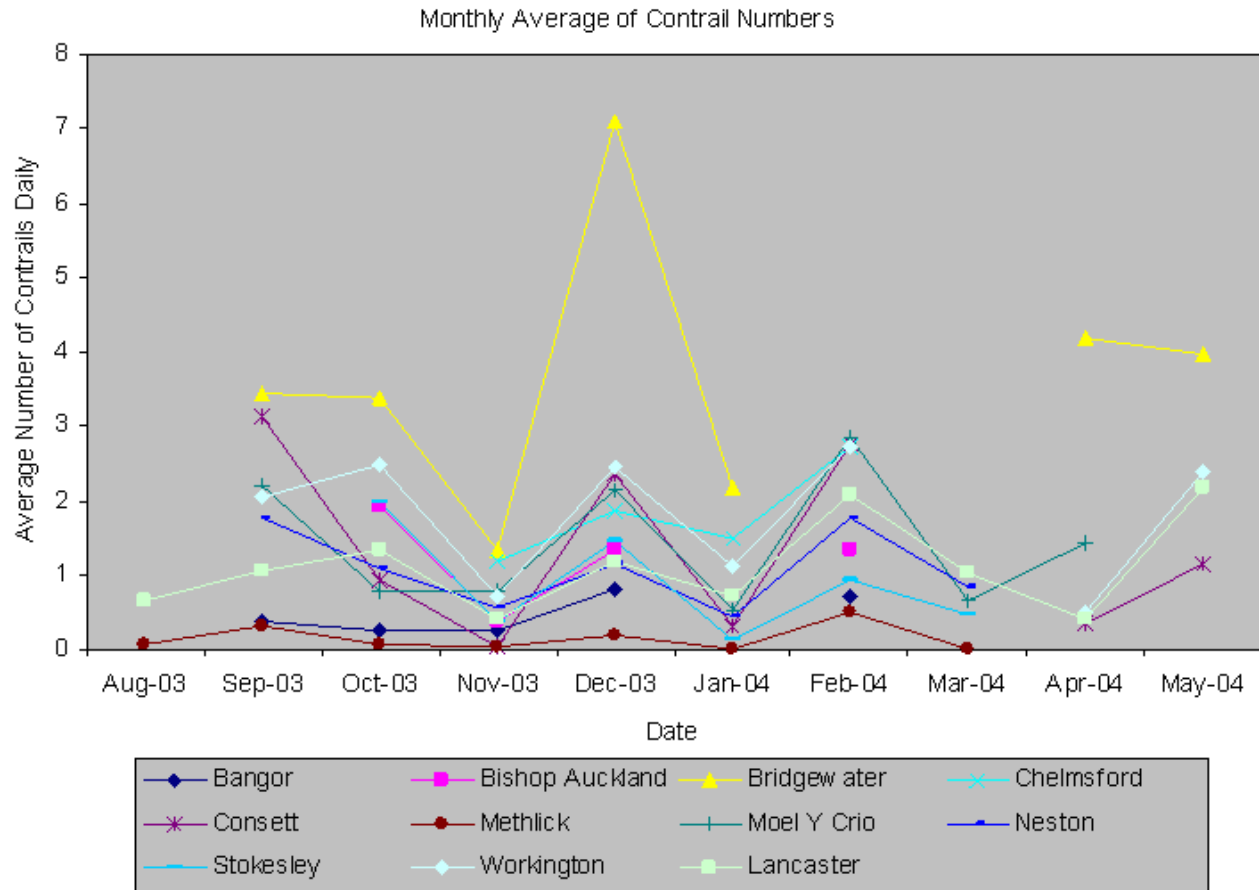


Figure 5. South



From Figure 6 it is also possible to see that there is a peak in the number of contrails during the whole month of December 2003, which will undoubtedly be due partly to the peak around the 18th.

Figure 6. Monthly Averages of the Number of Contrails



There are a number of possible explanations for the peak on this date, the main ones being:

There may be an increase in the number of flights around this date, possibly due to the fact that it is just before Christmas and there may be more people travelling around this date.

It may be caused by there being a particular weather system over the UK around this date which favours contrail formation.

Due to the fact that the peak in the number of contrails is present at nearly all of the stations around the UK it is unlikely that an increase in the number of flights around this date will be the sole cause of this peak and so it is therefore supposed that there will be an association with a certain weather system. Therefore in order to study the latter of these theories the five days surrounding the 18th (16th-20th December 2003) have had their weather types classified using the Lamb (1972) weather classification system. For the results of this click [here](#).

Contrails over Copenhagen.

Data on the occurrence of contrails has also been collected from [Copenhagen](#) (Pedersen, H). From this it was decided to see whether or not these observations correlate with the December 18th observations from the UK. The results from Copenhagen on the dates around this time are:

Dec 11, 1600. Cloudy.

Dec 12, 1400. Mixed clouds. Numerous contrails, some extremely wide.

Dec 14, 1030. Light cloud cover, various levels. No contrails. Dec 19, 1000. Cloudless, rather transparent. No contrails.

Dec 18 1500 Cloudy

Dec 20, 1300. Cloudy.

As can be seen from these observations (although observations are missing from December 13th, 15th, 16th and 17th) the same peak in the number of contrails that is seen in the UK is not seen in Copenhagen. This is likely to be because the weather patterns that caused the contrail peak in the UK was not experienced in Copenhagen due to its distance from the UK. This difference in the weather over the UK and Copenhagen will have caused either fewer contrails to form and persist over Copenhagen, or to simply increase the amount of cloud over Copenhagen, causing any contrails to be obscured. It seems that the results may be due to both of these factors as the observations show variations between cloudy and cloudless conditions over this period, with no contrails, even on cloudless days.

[The National Contrail Network. Discussion and Conclusions.](#)

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