



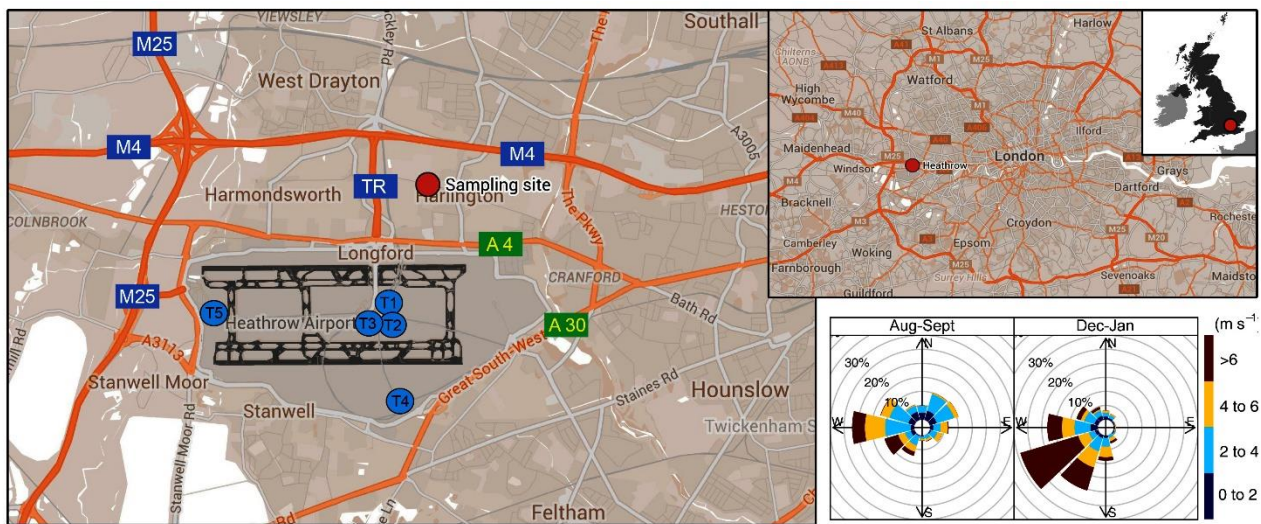
*Supplement of*

## **Sources of sub-micrometre particles near a major international airport**

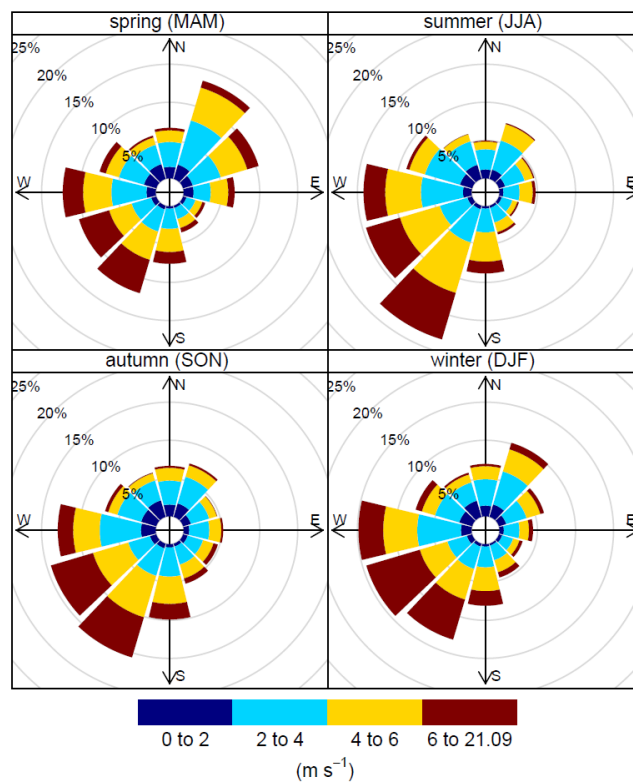
**Mauro Masiol et al.**

*Correspondence to:* Roy M. Harrison ([r.m.harrison@bham.ac.uk](mailto:r.m.harrison@bham.ac.uk))

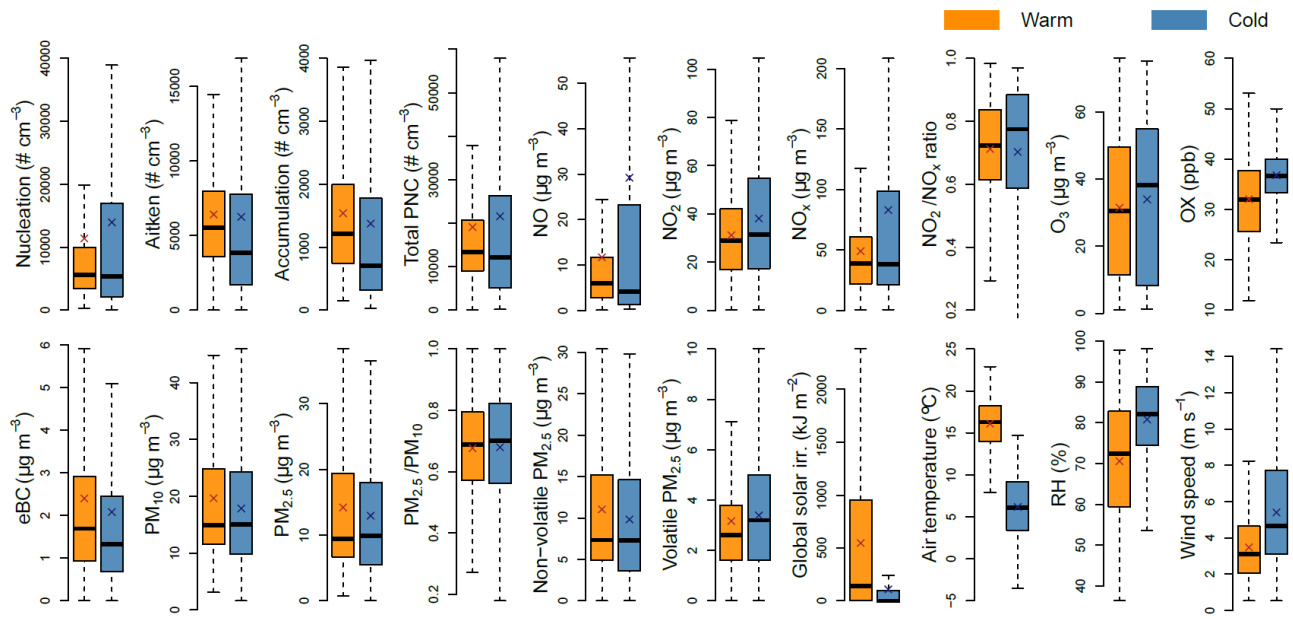
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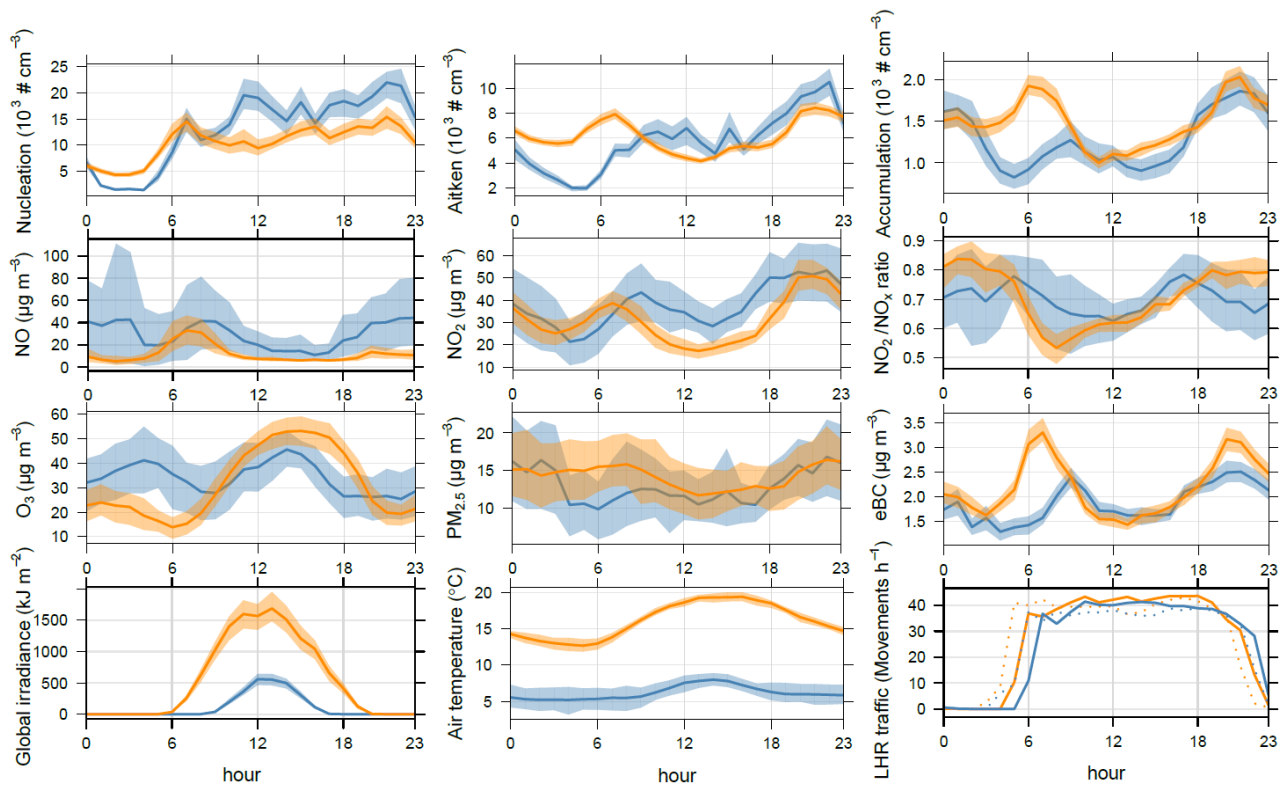
**Figure SI1.** Map of LHR and sampling site (left) and map of the Greater London area (upper right). Wind roses calculated over the two sampling periods are also provided (bottom right). The location of some main potential sources is also highlighted: T1, T2, T3, T4 and T5 are the Heathrow terminals; TR= Tunnel Rd.



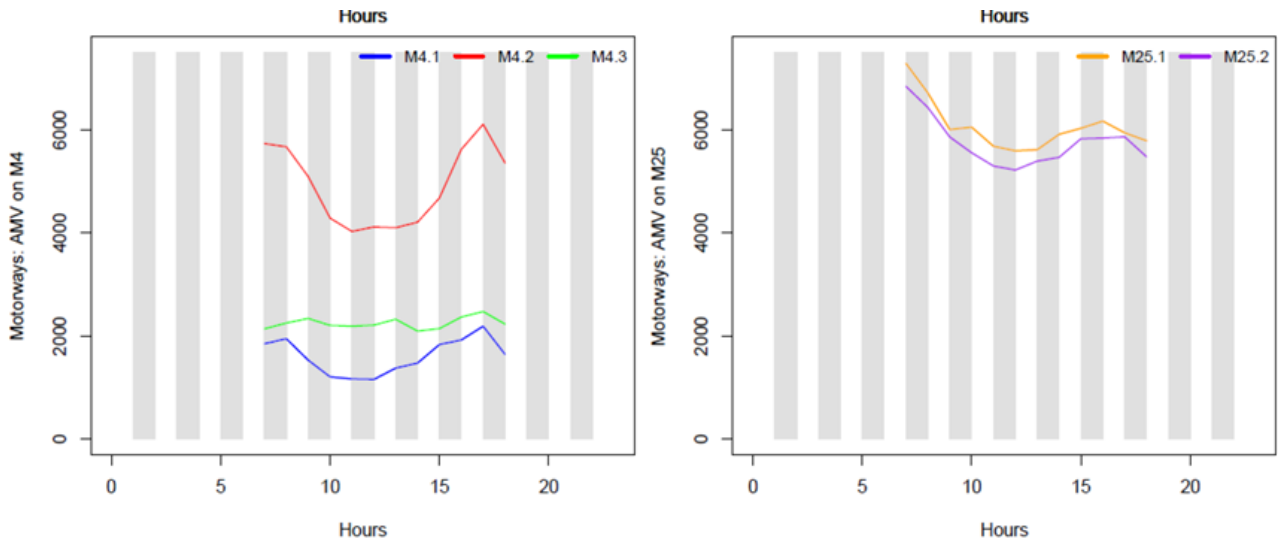
**Figure SI2.** Seasonal wind roses calculated from data collected at Heathrow (MetOffice station 708) over the 2005/2012 period.



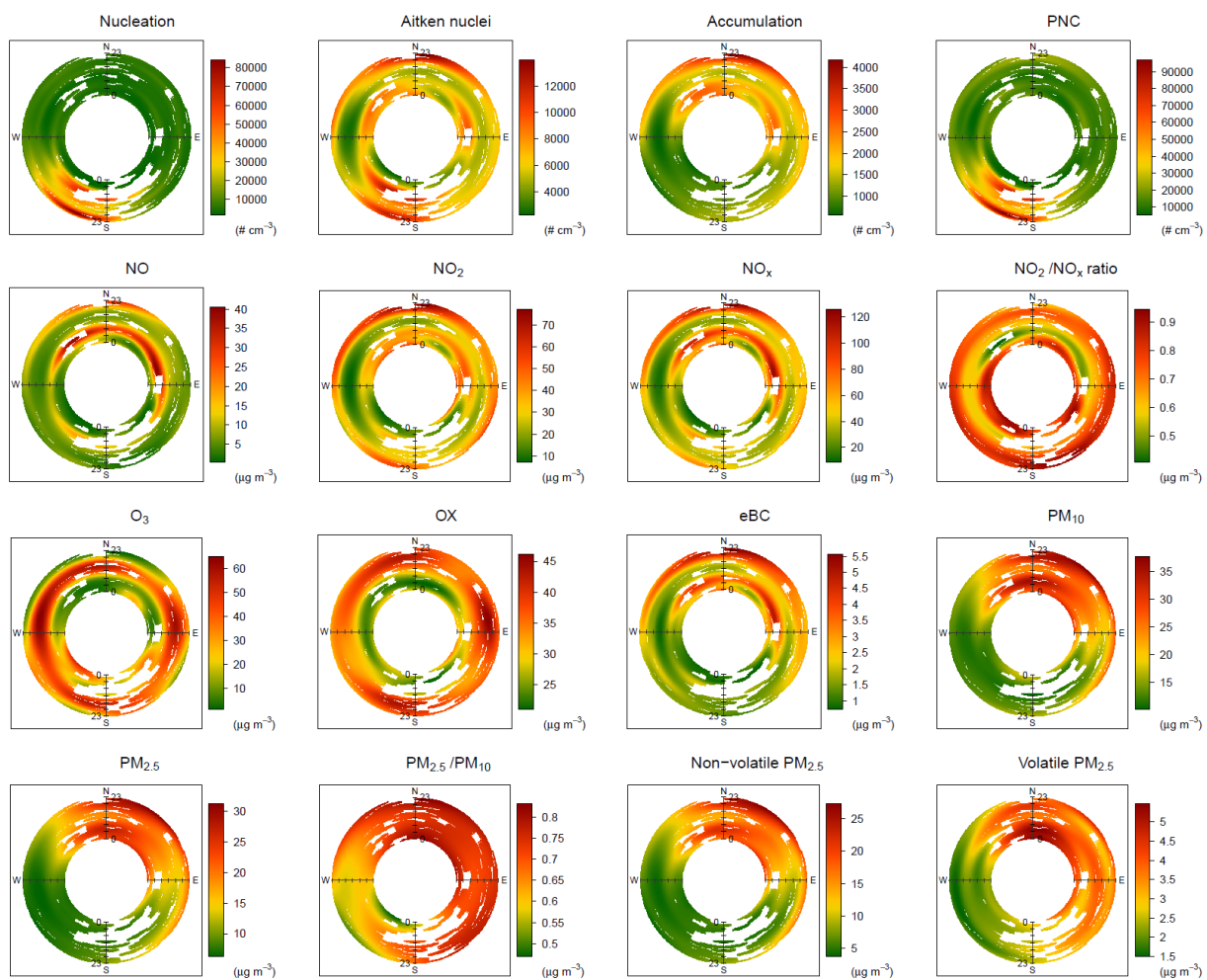
**Figure SI3.** Boxplots of the most important measured variables (and derived variables) during the two sampling periods. All valid data are used for computing boxplot statistics: Boxplot lines= medians, crosses= arithmetic means, boxes= 25th-75th percentile ranges, whiskers=  $\pm 1.5$  inter-quartile ranges.



**Figure SI4.** Diurnal patterns of the most important measured variables (and derived variables) during the two sampling periods. Diurnal variations report the average levels as a filled line and the associated 95th confidence interval calculated by bootstrapping the data ( $n=200$ ). Outliers (data  $>99.5$ th percentile) were removed for computing the diurnal patterns. Hours are given in UTC. LHR traffic movements (bottom right plot) are reported as arrivals (dotted lines) and departures (solid lines). The offset between the seasons is largely due to daylight saving time (BST = UTC + 1) in the summer data.

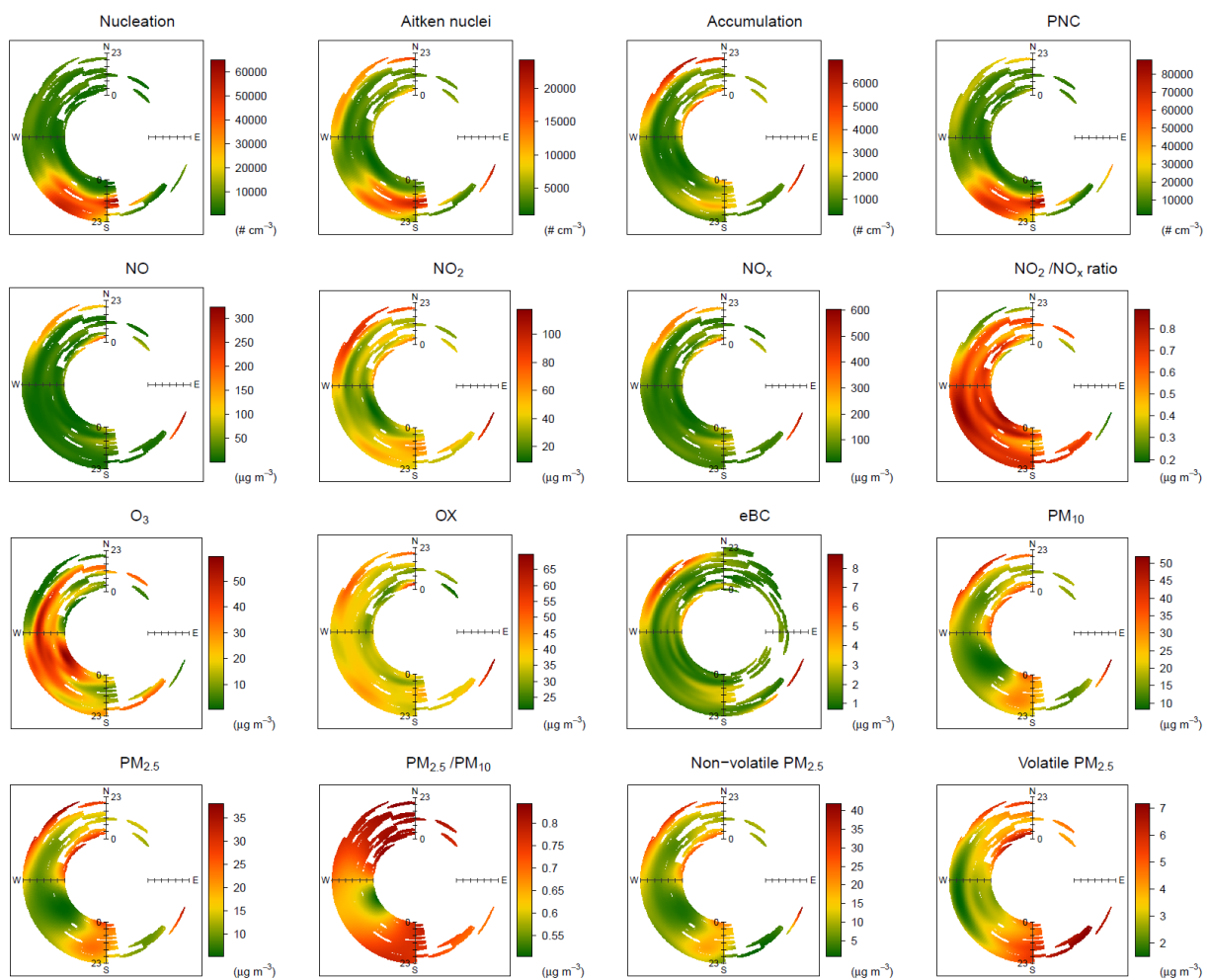


**Figure SI5.** Hourly traffic count data for the motorways close to LHR. Data are provided by the UK Department for Transport, which commissions manual counts of traffic for a number of count points every year. The counts take place between 7 am and 7 pm; each road link is counted a maximum of one day in a year (adapted from Masiol et al., 2015).



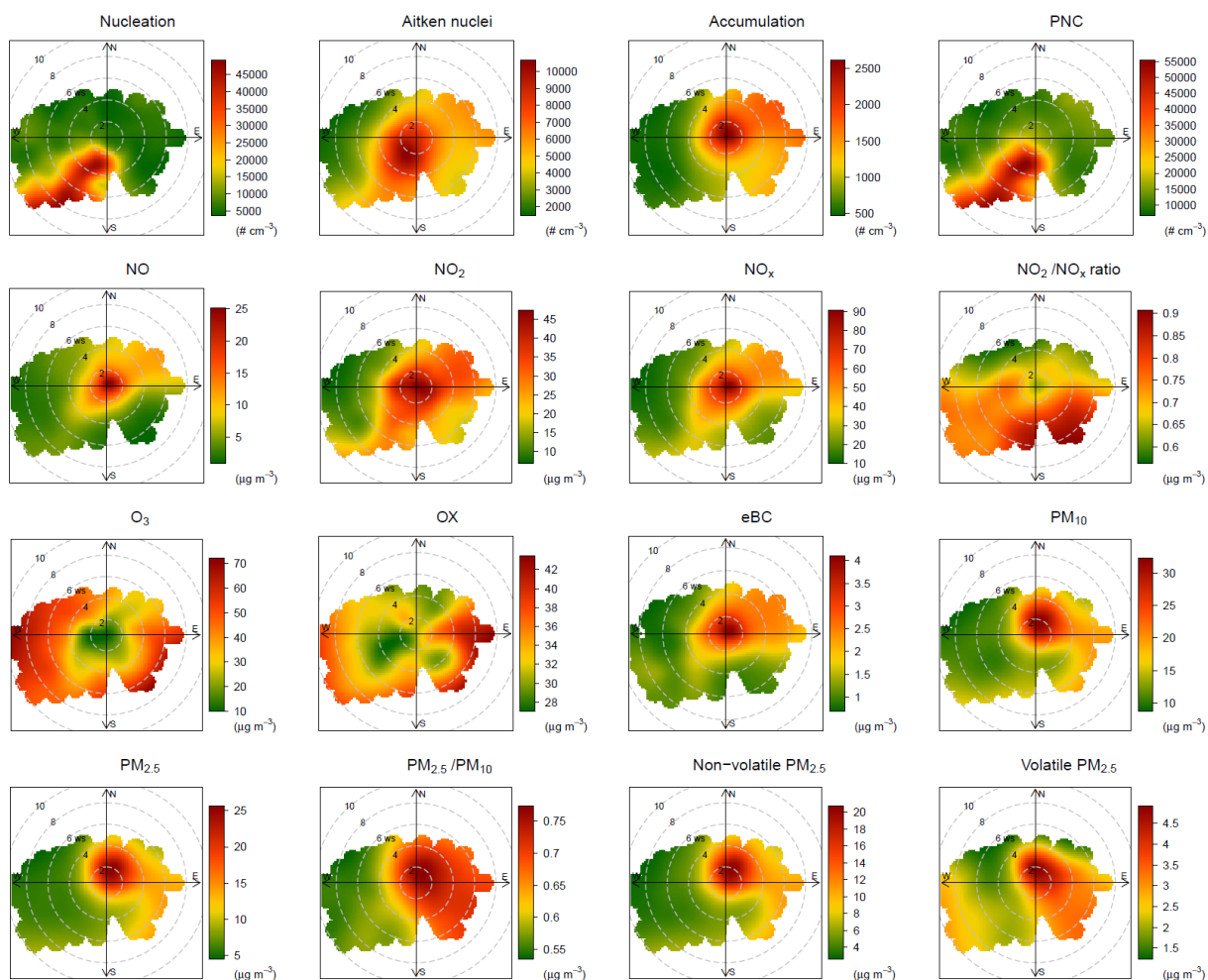
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72 **Figure SI6.** Polar Annuli calculated from data collected during the warm season.



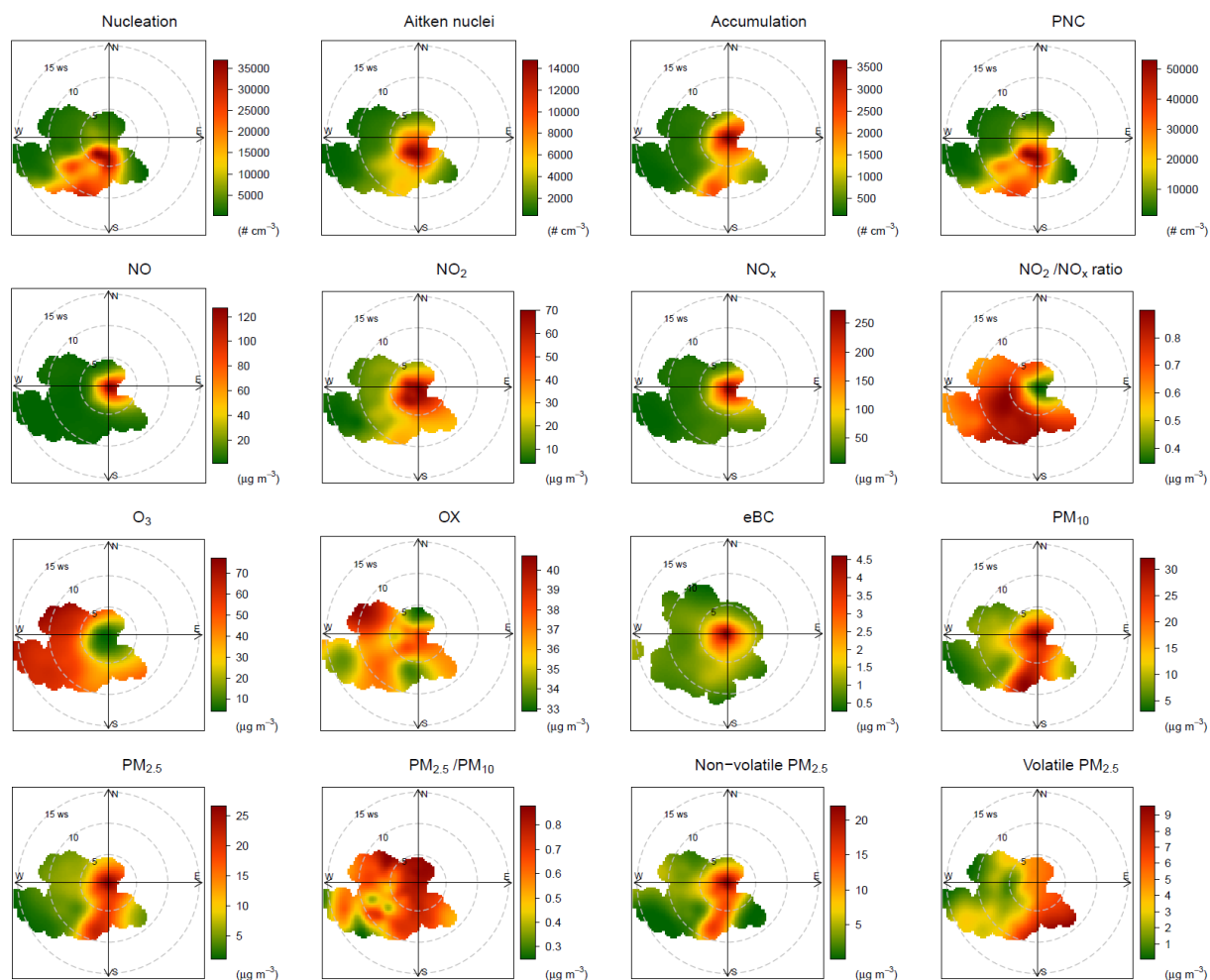
**Figure SI7.** Polar Annuli calculated from data collected during the cold season.



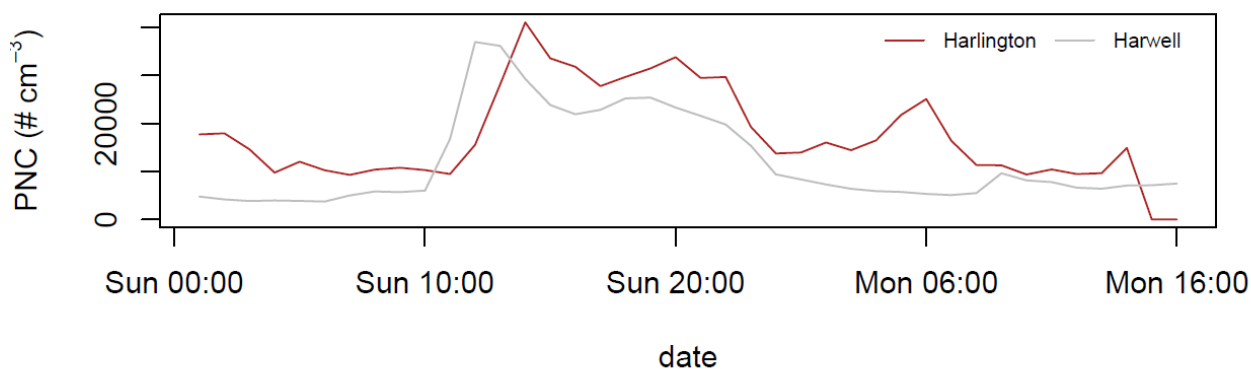


**Figure SI8.** Polar Plots calculated over from collected during the cold season.



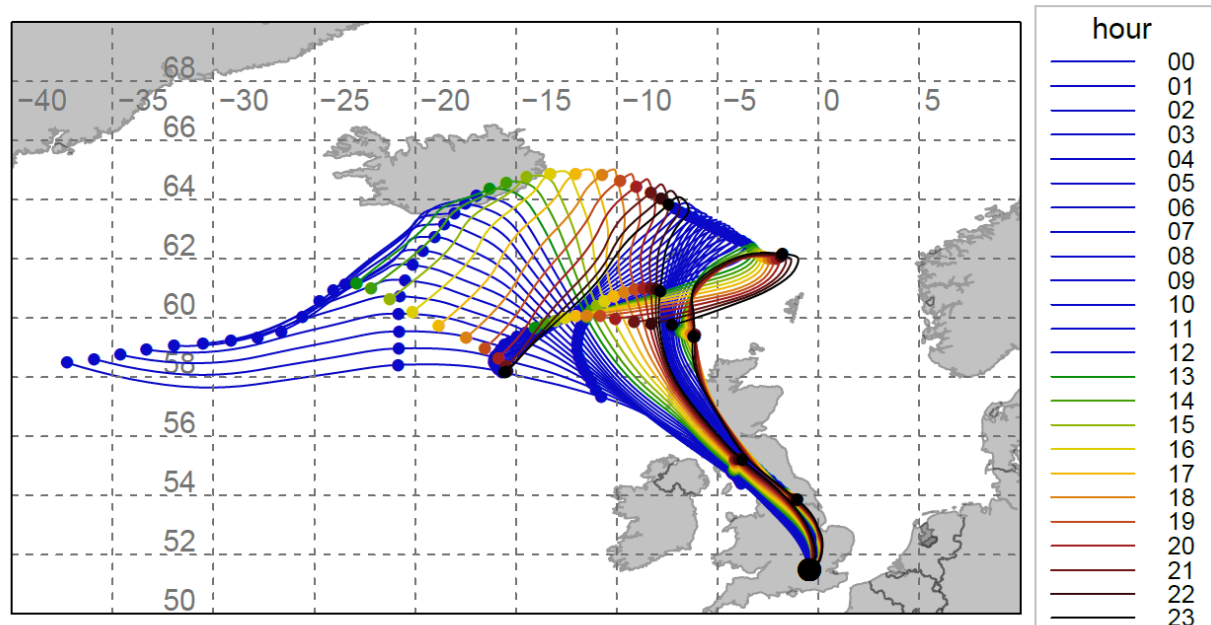


**Figure SI9.** Polar Plots calculated from data collected during the cold season.



**Figure SI10.** Time series of total PNC measured at Harwell and Harlington during the regional nucleation episode.

7 September 2014



**Figure SI11.** Backward air mass trajectories during the nucleation event. Dots indicate 24 h step times

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Cluster no.	Warm season	Cold season
C1	20%	24%
C2	19%	16%
C3	23%	20%
C4	25%	22%
C5	14%	17%

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