

# Recent UK Air Pollution Episodes

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UK National Air Quality Forecasting Seminar  
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# Today's Presentation

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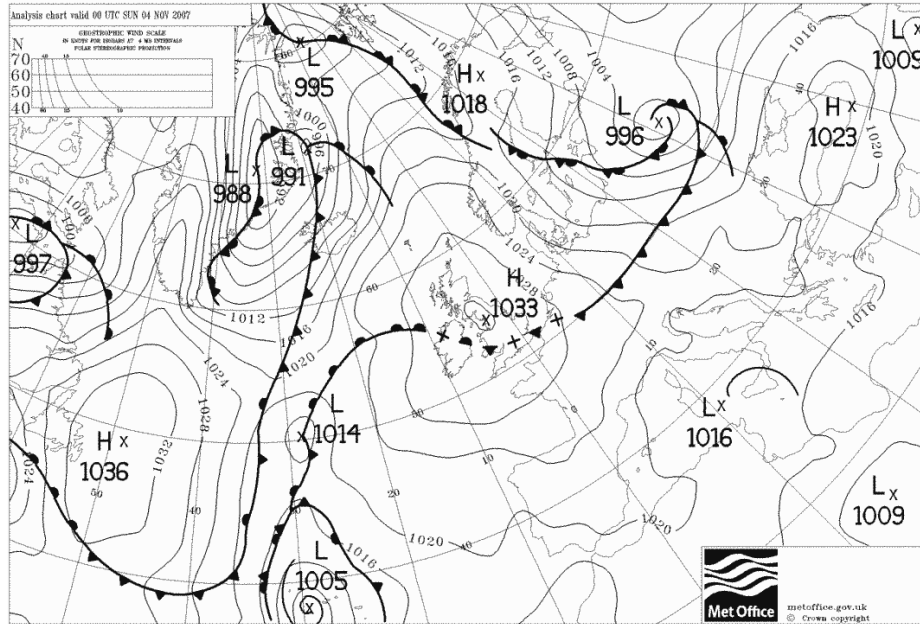
- **Some Examples.**
- **Some “non-episode” examples.**
- **Conclusions.**

# 1. Bonfire Night 2007

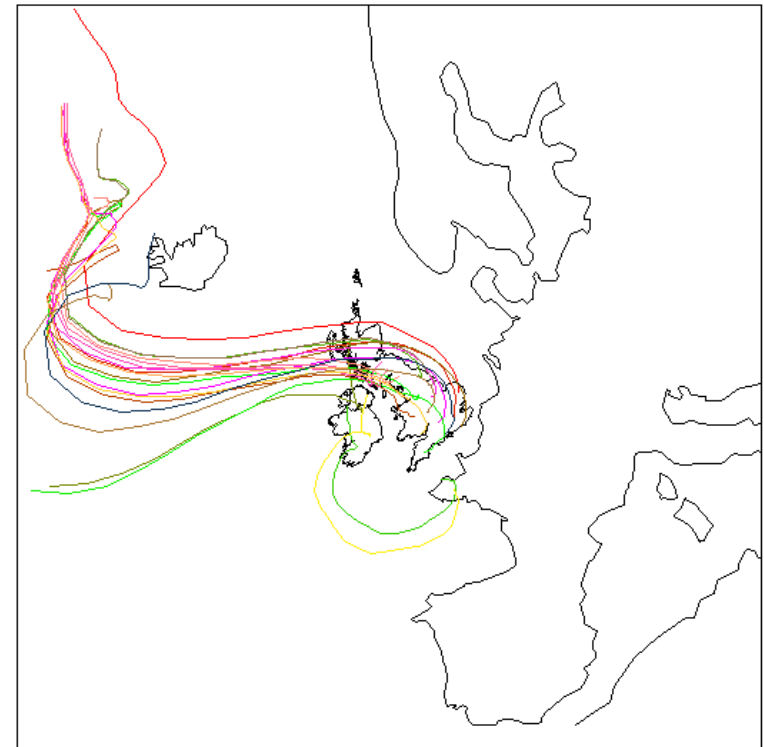
- **Bonfire Night fell on a Monday this year.**
- **High air pollution was predicted as the weekend coincided with poor dispersion conditions.**
- **First opportunity to analyse Bonfire Night volatile/non-volatile PM<sub>10</sub> measurements from the UK monitoring networks.**



# The Weather Situation



Airmass back trajectories for 96 hours  
upto 12:00 04-11-2007

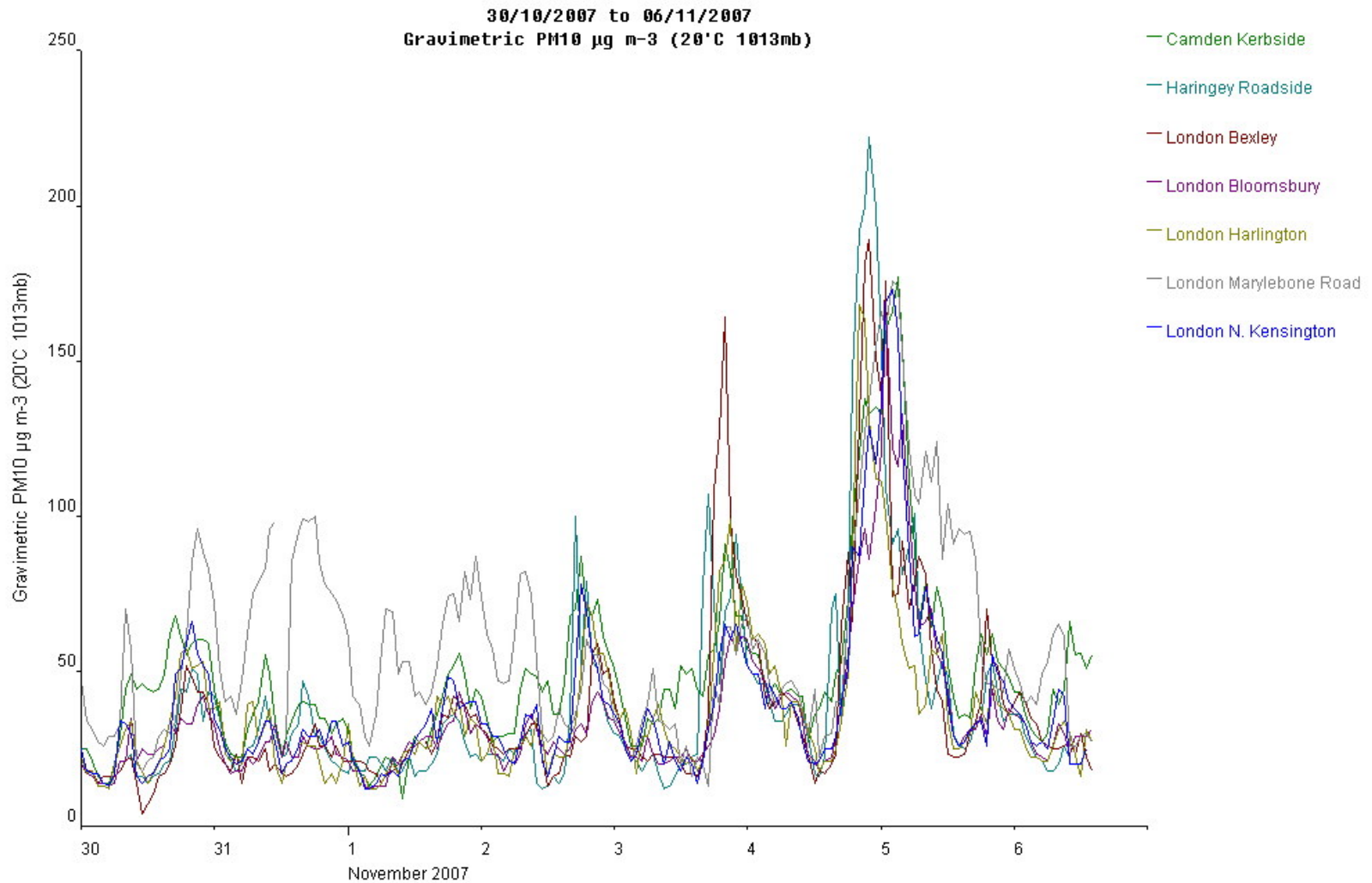








# London – Monday Night



# Bonfire Night PM<sub>10</sub> Summary

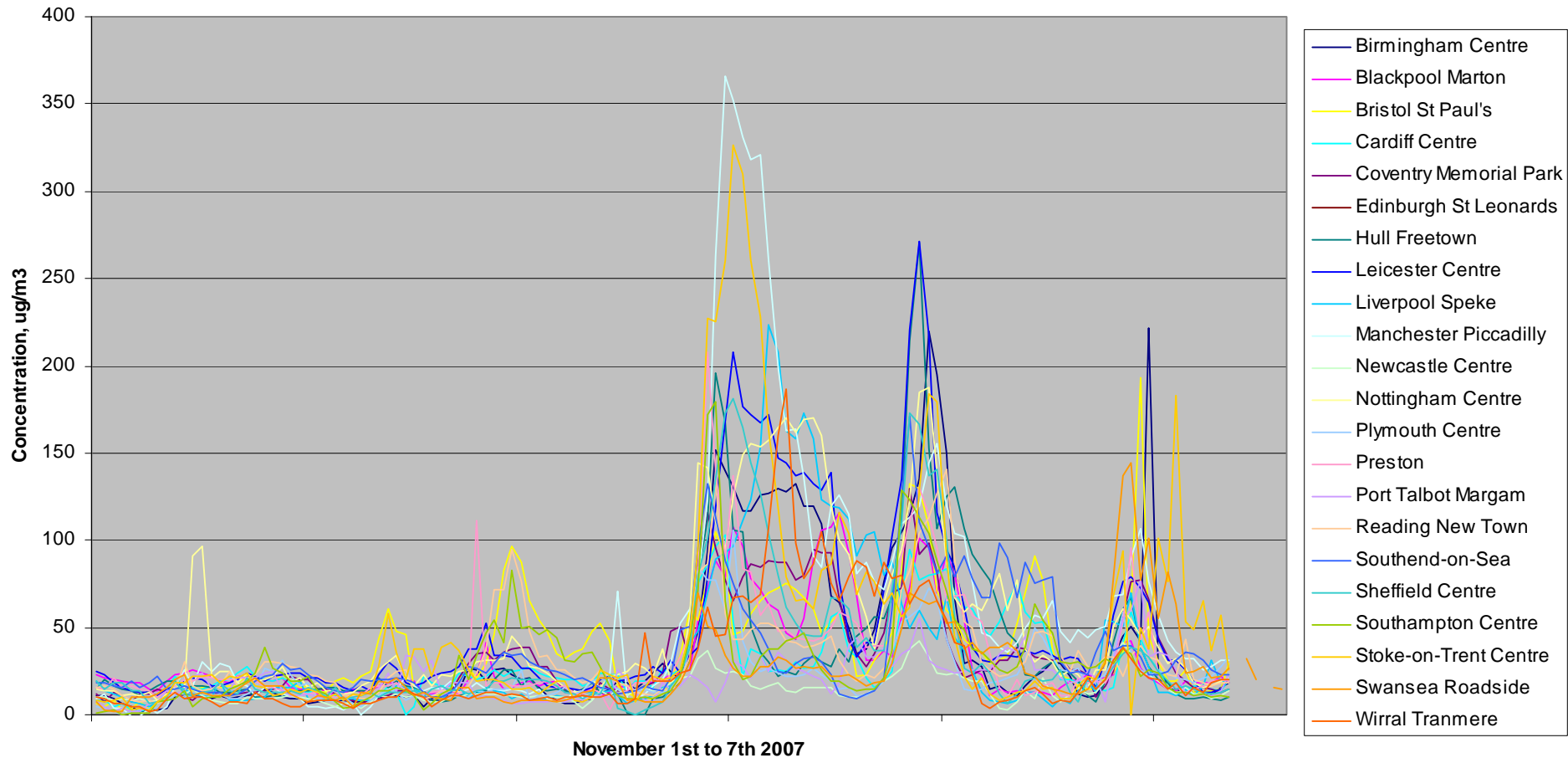
## AURN Network Summary

Date		Maximum daily mean	No of Sites Exceeding the AQS
01/11/2007	Thursday	55	1
02/11/2007	Friday	51	1
03/11/2007	Saturday	82	5
04/11/2007	Sunday	204	29
05/11/2007	Monday	103	14



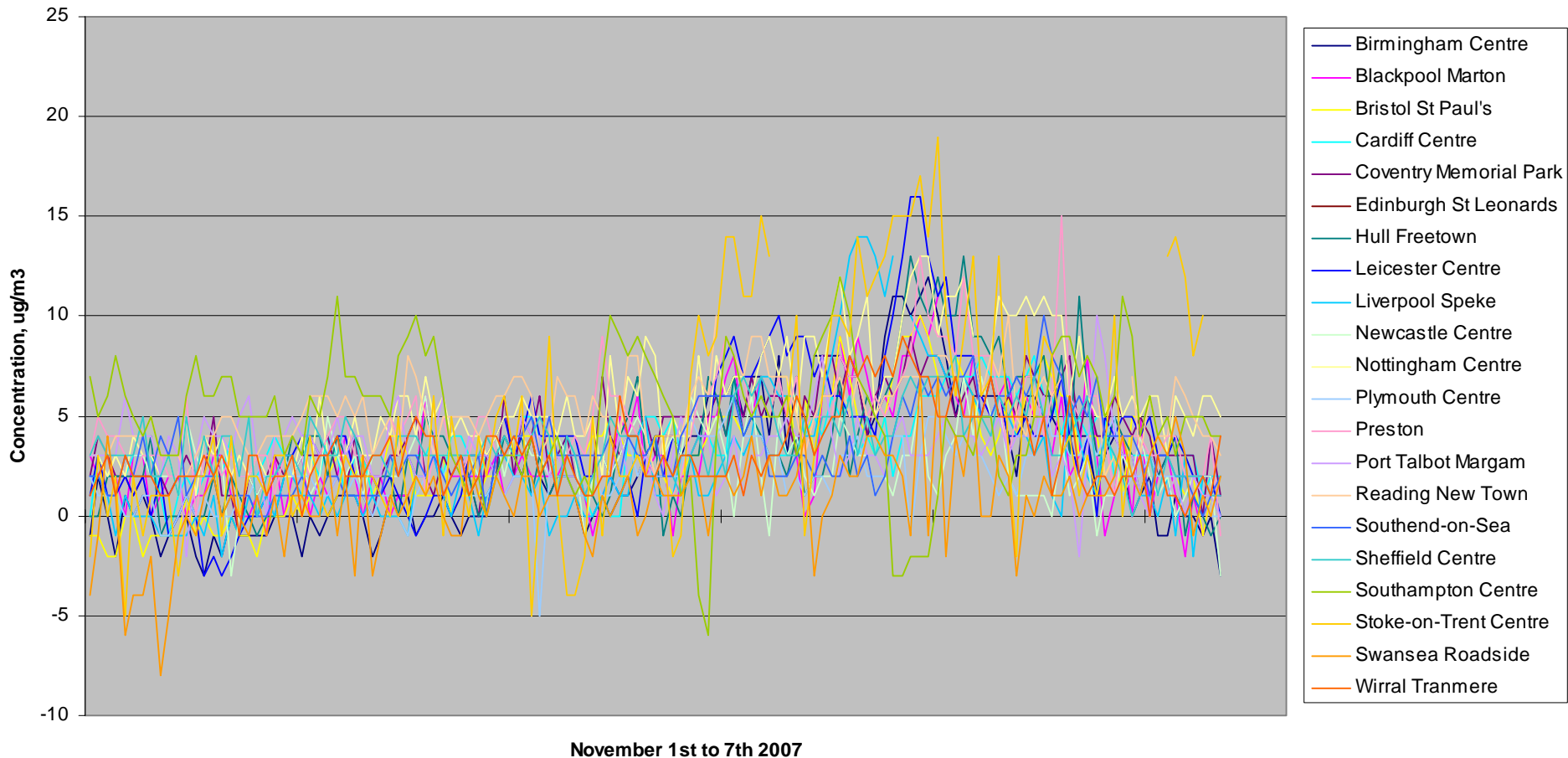
# Mainly Non-Volatile PM<sub>10</sub>

FDMS Non-Volatile PM10 over the Bonfire Night Weekend



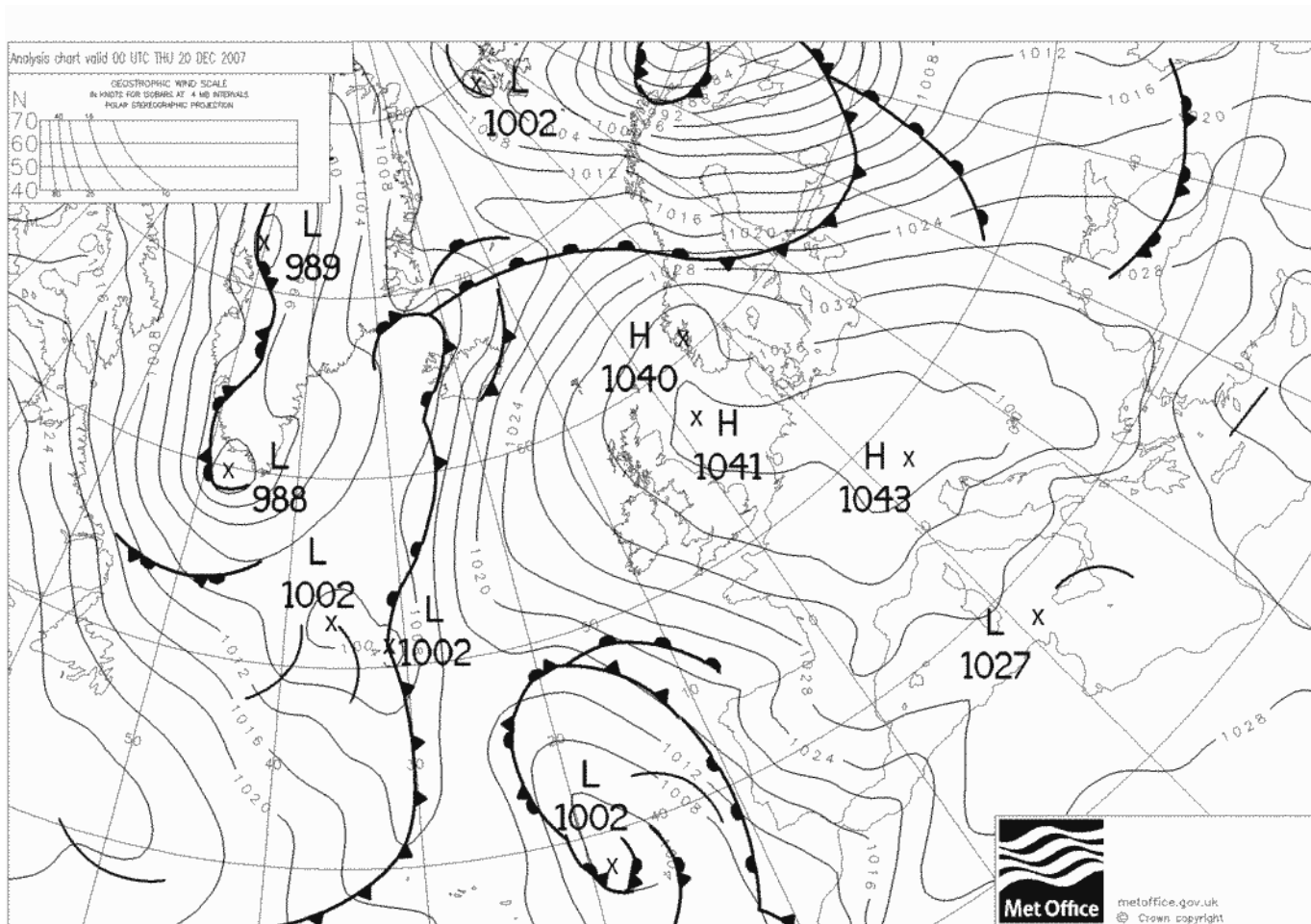
# Volatile PM<sub>10</sub> tracked well across Regions

Volatile PM10 from FDMS TEOMs over Bonfire Night Weekend

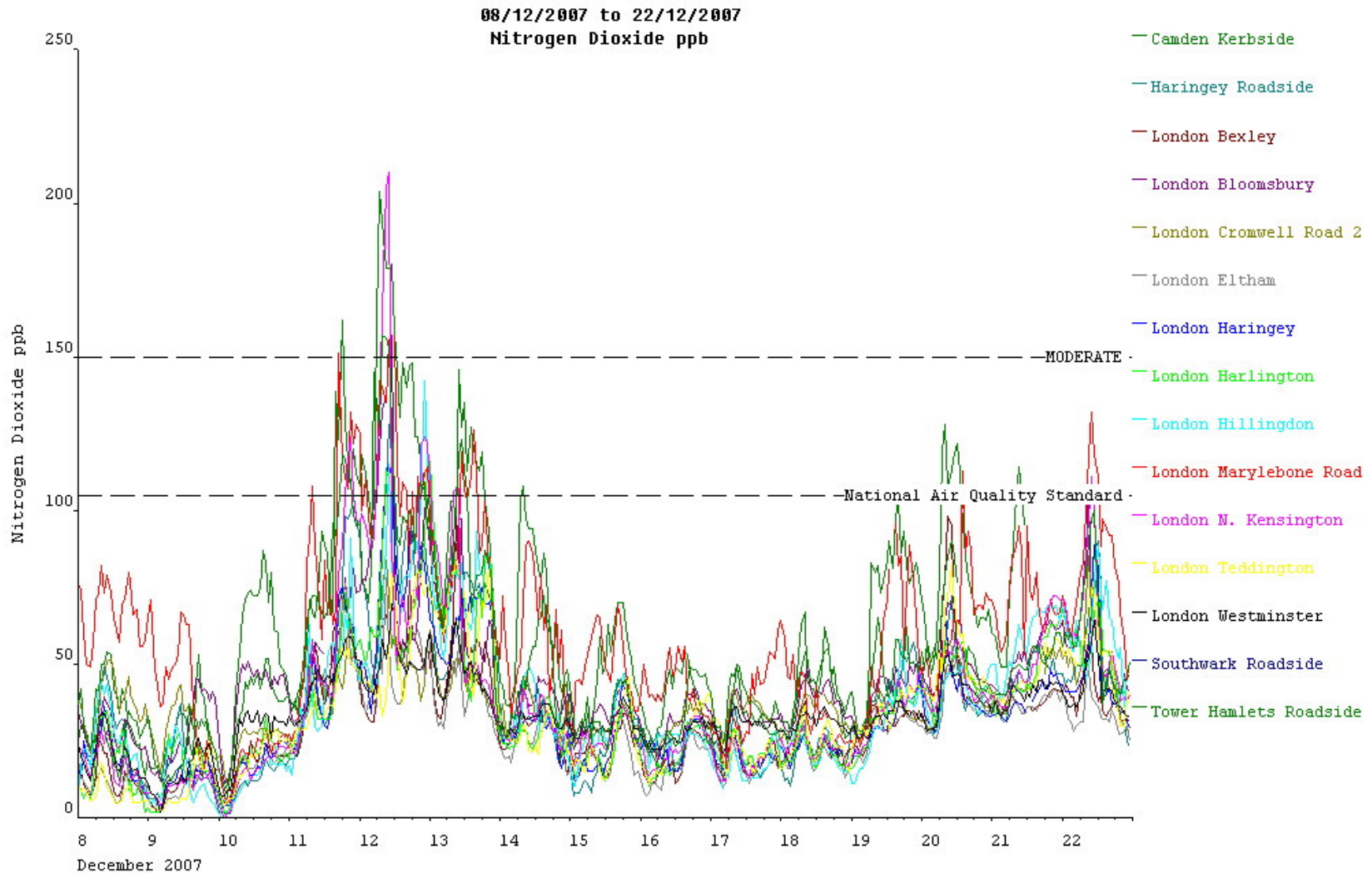


## 2. A Poor Dispersion Episode in December 2007

- During two periods – December 12<sup>th</sup> to 14<sup>th</sup> and 19<sup>th</sup> to 22<sup>nd</sup>.



# Increased PM<sub>10</sub> and NO<sub>2</sub> Concentrations

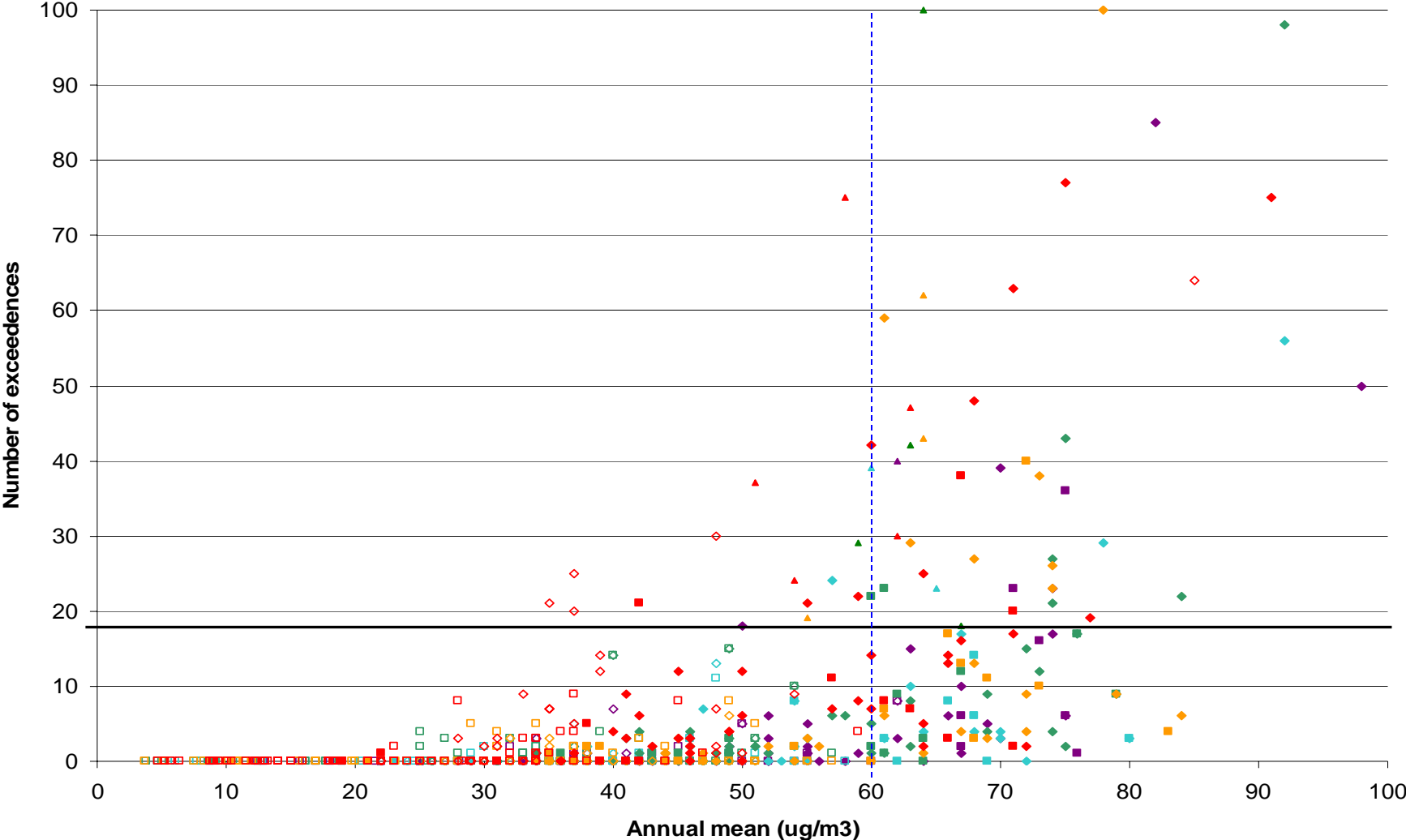


**It wasn't this bad though!**



# Impact on AQS Exceedence Figures

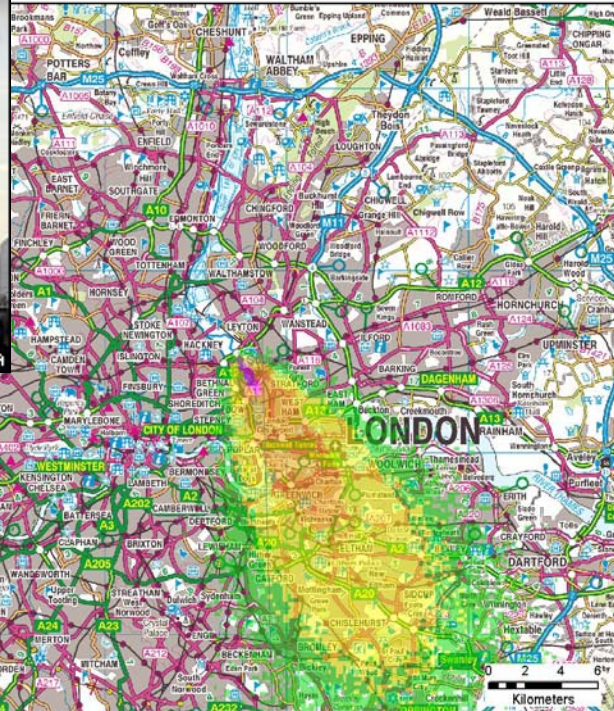
NO2 annual mean vs number of hourly exceedences in years 2003 to 2007.





# 3. London Olympic Site Fire

- Minimal Impact Despite the Impressive Smoke Plume!



**NAME Dispersion Model**

DEFRA Short Run name-a-test

Model Version : NAME III (version 4.2)  
Run Name : EMARCO1  
Run Time : 1348UTC 12/11/2007  
Met Data : NWP Flow.Mesoscale  
Release location : 0.0181W 51.5481N  
Start of release : 11/12/2007 12:00:20 PM  
End of release : 11/12/2007 6:00:20 PM  
Release rate : 2.7777778E-04units/s  
Release height : 125.000m agl

Species : INERT-TRACER  
Averaging Period : 001 hr time averaged  
Field : Air Concentration  
Vertical limits : Boundary layer  
Time ending : 11/12/2007 1:00:20 PM  
Units : units/m3

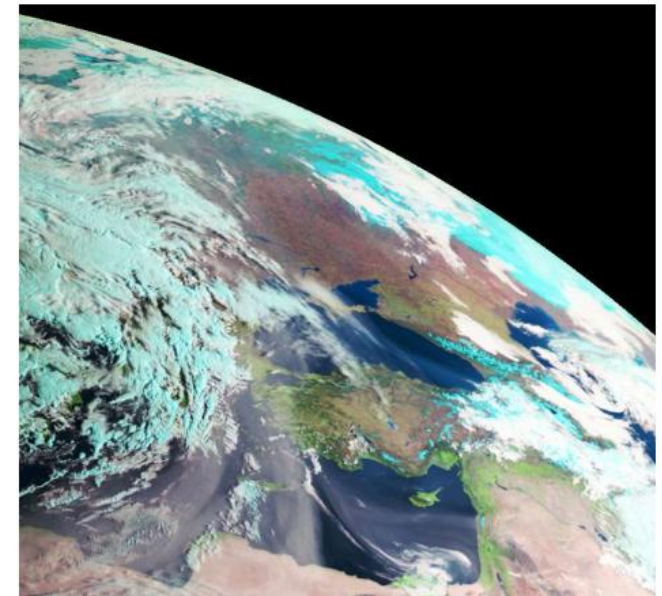
1.00E-17 to 1.00E-16 units/m3  
1.00E-16 to 1.00E-15 units/m3  
1.00E-15 to 1.00E-14 units/m3  
1.00E-14 to 1.00E-13 units/m3  
1.00E-13 to 1.00E-12 units/m3  
1.00E-12 to 1.00E-11 units/m3  
1.00E-11 to 1.00E-10 units/m3  
1.00E-10 to 1.00E-09 units/m3

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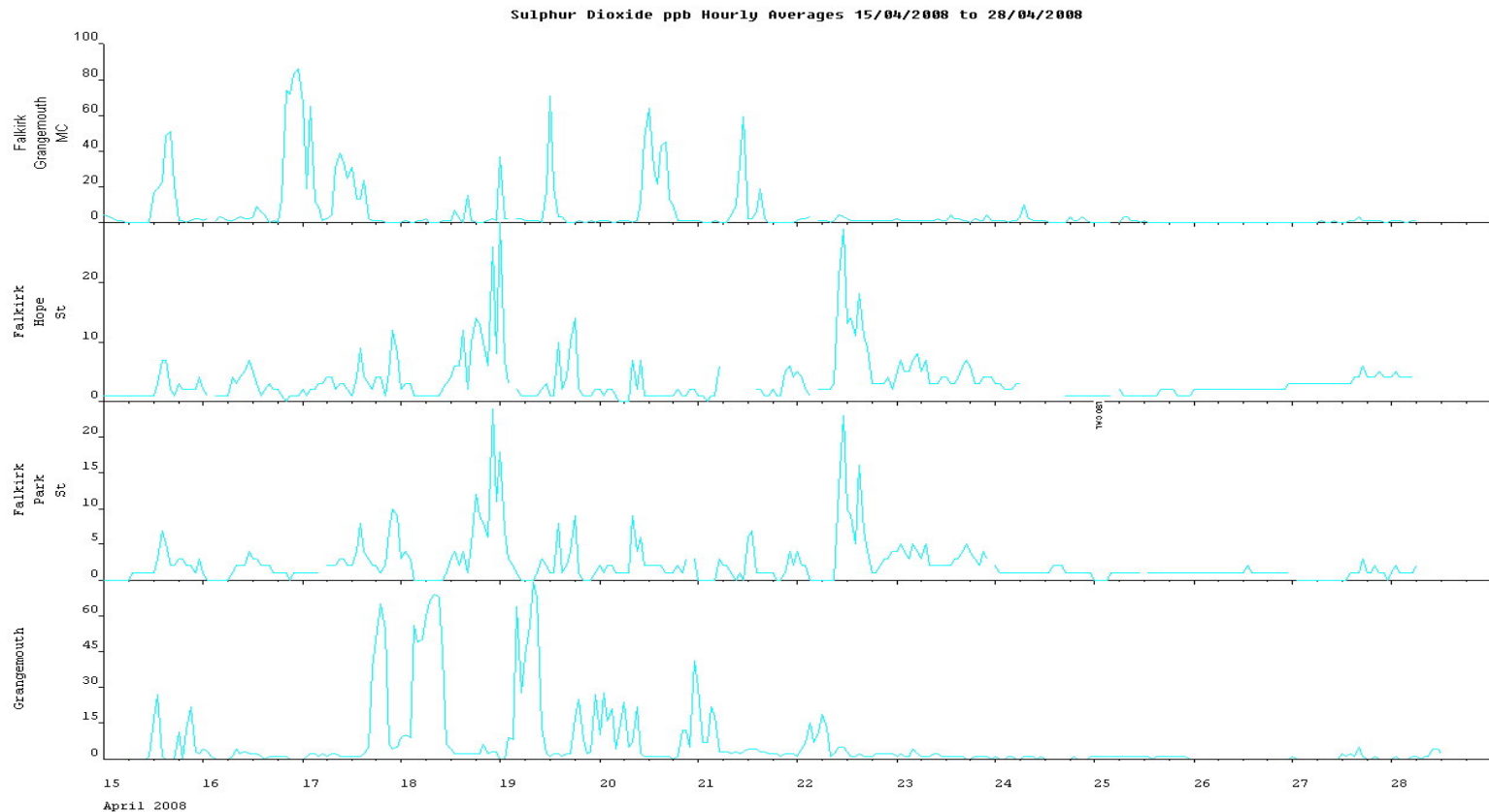
## 4. Dust Deposits Observed by the Public

- Reported by many across the UK on Sunday May 4<sup>th</sup>, but no increases in ground-level pollution measured.
- Grangemouth Oil Refinery and Rugby Cement immediately got the blame from local residents!
- The EA and SEPA were called out to test the dust, finding it to be a mixture of sand, road dust and plant matter.
- The Met Office suggested that the dust may have originated from Spain or the Sahara, been transported in the upper atmosphere to the UK and deposited through rainfall.



# 5. Grangemouth SO<sub>2</sub> Pollution

- What happened to local air quality when the refinery was shut down due to a strike?



# Conclusions

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- **Locally (UK) Driven Air Pollution Episodes can still happen and are important in PM<sub>10</sub> daily and NO<sub>2</sub> hourly exceedence counts.**
- **Seek guidance on how frequently they may occur before tackling with Actions!**
- **Not all visible pollution episodes may be measured at ground level, don't jump to conclusions!**
- **Periods where major local pollutant emissions are switched off may provide a useful insight into their impact.**



**Any Questions?**

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