TING'S College IONDON





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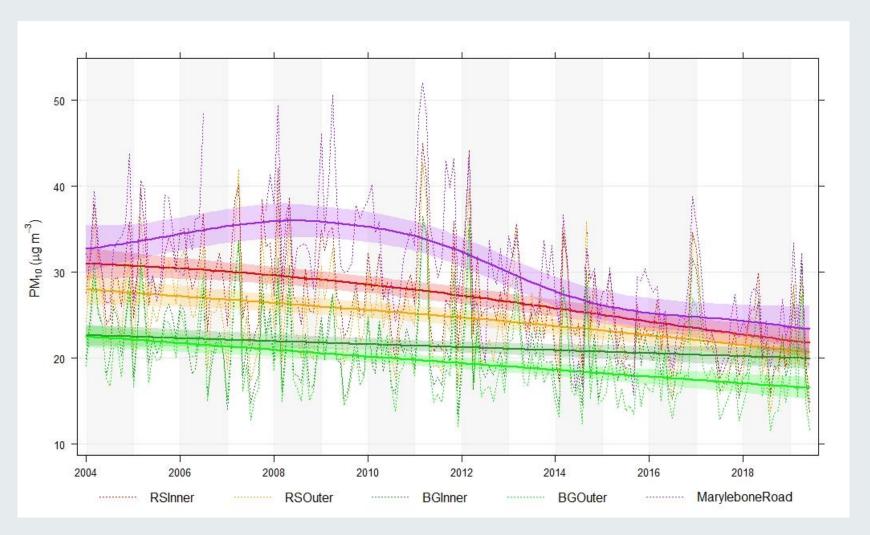
- Trends
- AQ objectives in 2018
- Hourly NO₂
- Episodes in 2018
- New Londonair feature

Trends

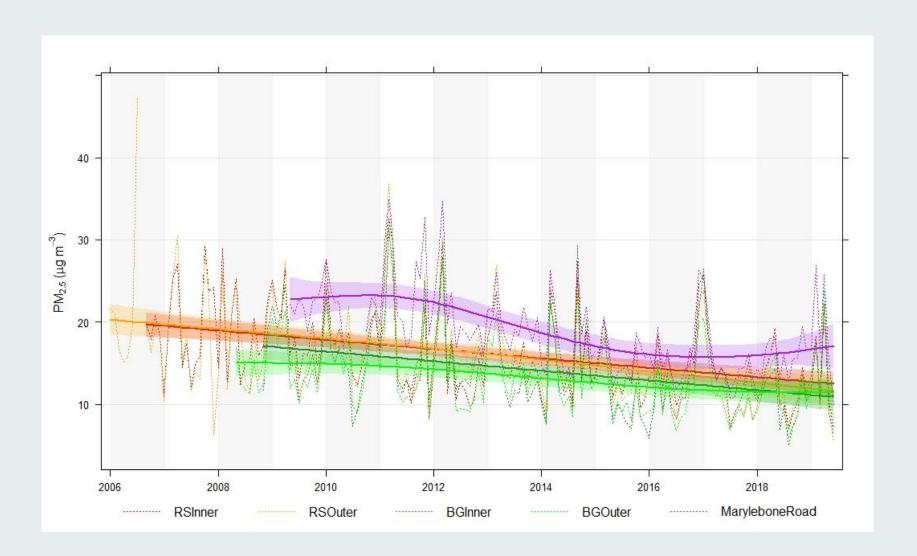
Includes LAQN and London AURN sites

PM₁₀

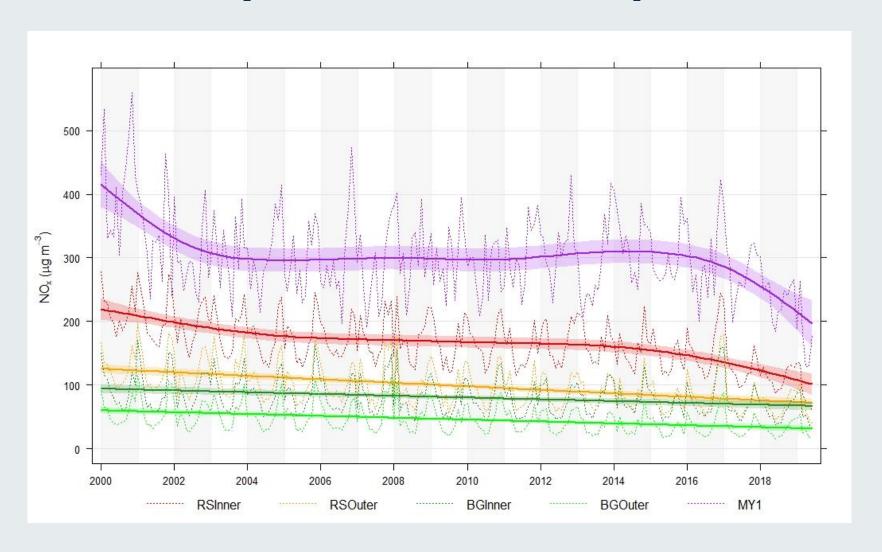
Trends only possible since 2004 – first date that the VCM could be operated. Probable that changes in the regional background are driving the apparent decrease in PM across site types.

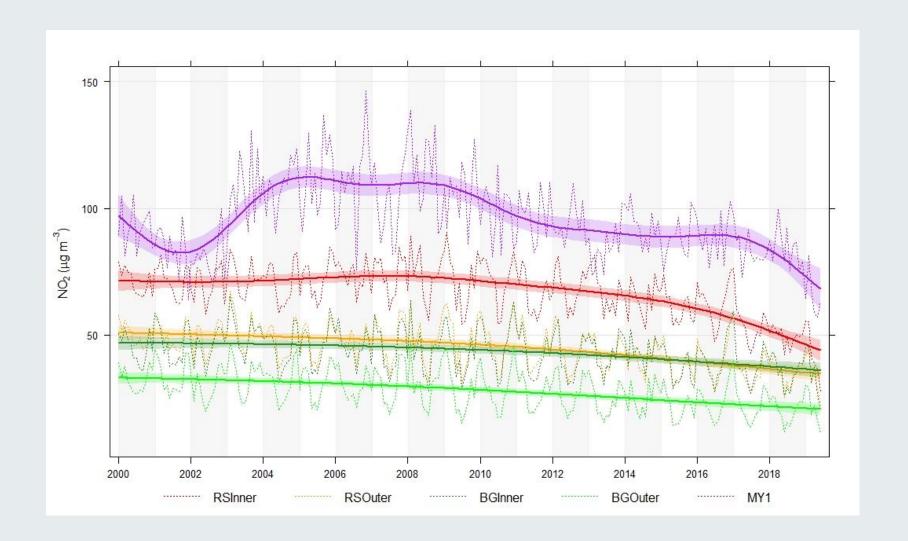


$\begin{array}{c} \textbf{PM}_{\textbf{2.5}} \\ \textbf{Changes in measurement methods and historic small numbers of monitoring sites make long} \end{array}$ term trends difficult.



NO_X Primary pollutant (NO+NO₂) tells us about emissions related to NO₂.





Ozone

$$NO + O_3 \leftarrow \rightarrow NO_2 + O_2$$

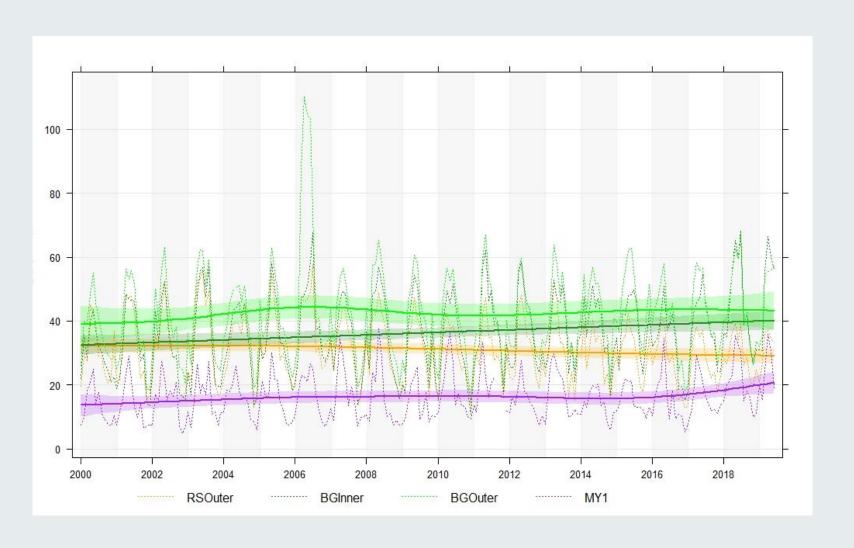
Happening all the time but which side dominates is a Day/night cycle driven by sunlight

But NO scavenges/reduces O_3 near roads.

 NO_X is what comes out of exhausts $(NO_X = NO + NO_2)$

0_3

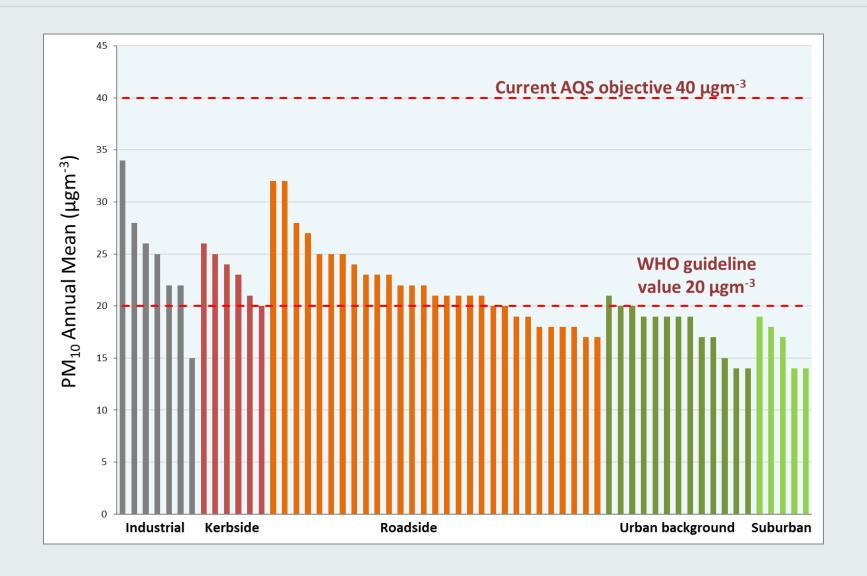
Decrease in London decrement as observed by AQEG (2009)



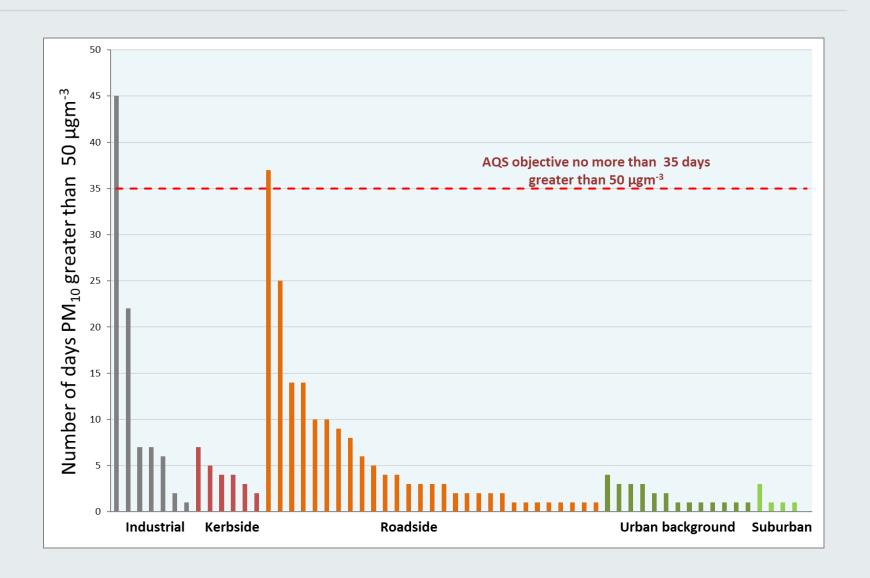
AQ objectives in 2018

Only showing sites that achieved 90% data capture. Includes LAQN and London AURN sites

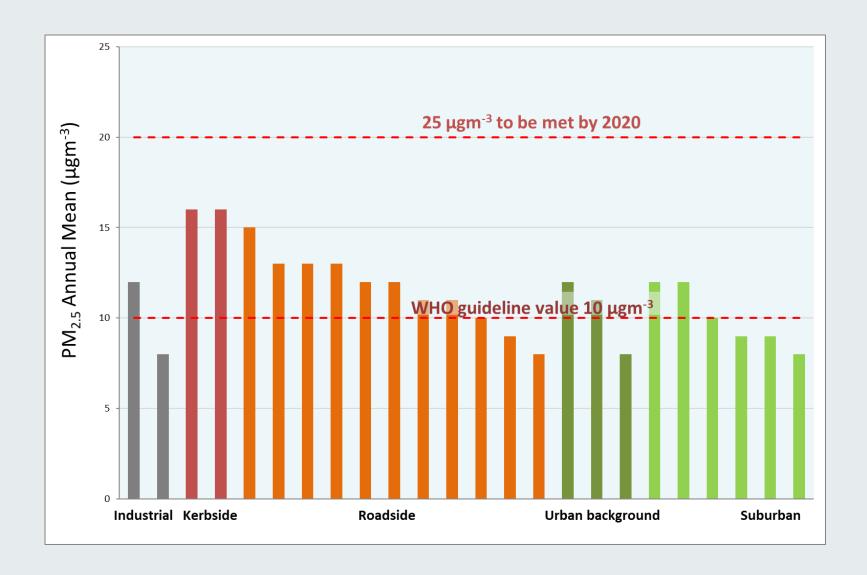
PM₁₀ Annual Means



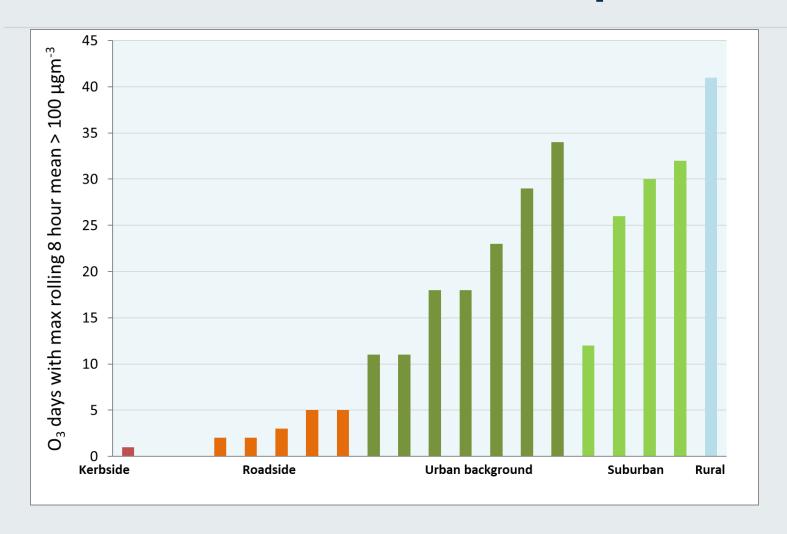
PM_{10} Days > 50 μ gm⁻³



PM_{2.5} Annual Means

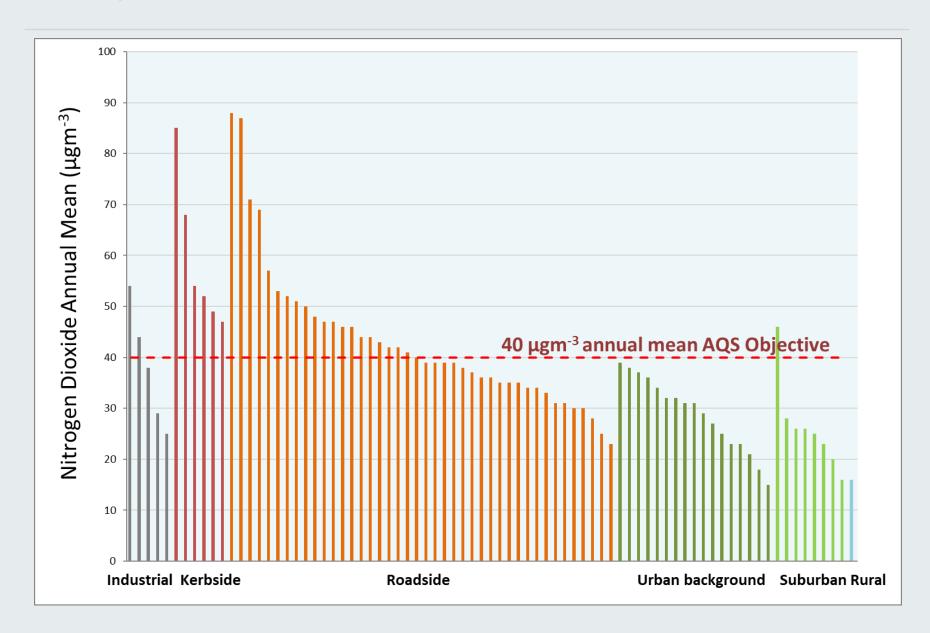


Ozone days Max 8 hour mean >100µgm

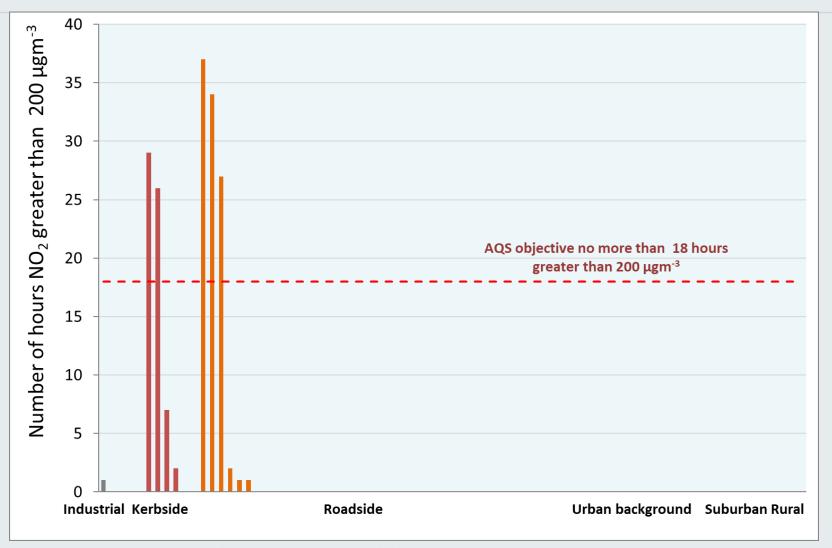


Much worse than 2017 (maximum 13 days):- we had a summer! Sevenoaks, the highest ranking position (52 days), fell below 90% data capture this year so not shown.

Nitrogen Dioxide Annual Means



Nitrogen Dioxide Hours > 200µgm⁻³



Kept in same order as previous annual mean side.

NO₂ Hourly Exceedances

Includes LAQN and London AURN sites

LondonAir Data visualisations

Our visualisation pages allow you to look at

 both annual mean and peak exceedances simultaneously.

http://www.londonair.org.uk/LondonAir/Data-

Visualisations/meanVSpeak.aspx

Or either over time

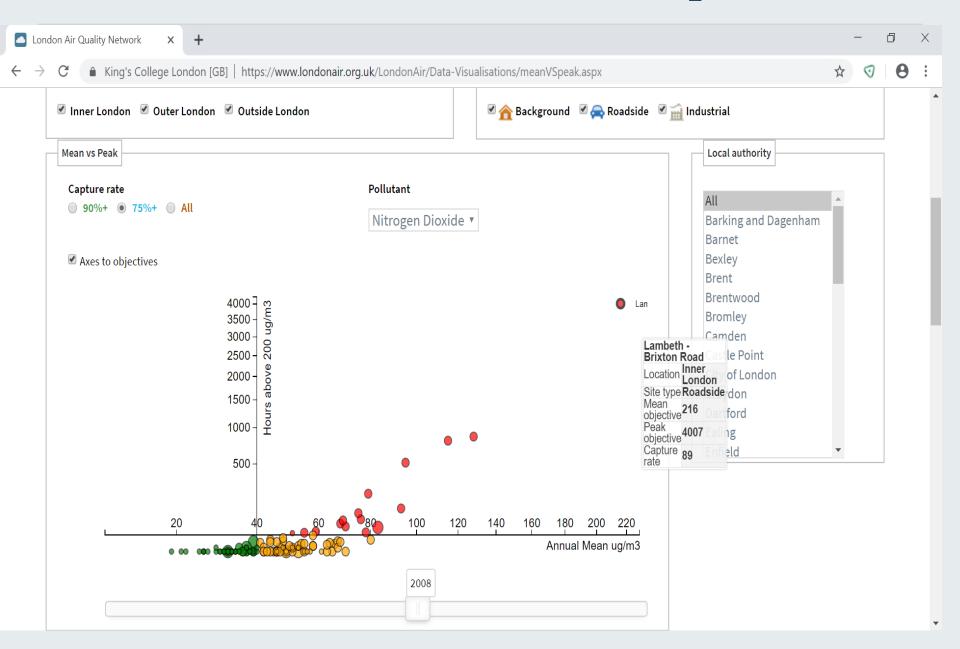
http://www.londonair.org.uk/LondonAir/ /Data-

Visualisations/objectiveVStime.aspx

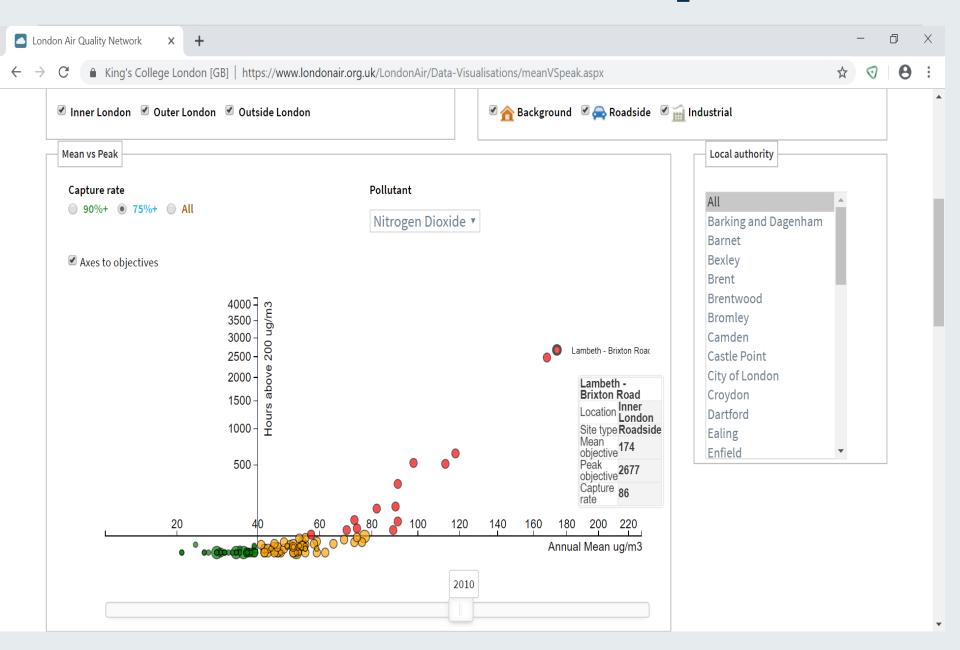
This is a prototy pervisualisation of the annual abjectives for maniforing sites, enables you to explore the relationship between the pollution around as across the year and the short peaks we cometimes get. It is only quited to examining the relationship between short term exceedances and annual mean exceedances of NO2 and PM 10. This visualisation starts by showing information for allicites in the LAGN but it is likely you'll want to filter down to a smaller set. You can find more information on how to use this visualisation under Controls, below the proph. Any data recorded since the start of the previous year may be provisional and subject to change. The information is calculated twice daily, so may not reflect the latest data. There is also a nother visualisation showing Objective Vs Time Graph. Many thanks to Mehdi Khoury, who created this visualisation. Data visualistion Site type ■ Inner Landon ■ Outer Landon ■ Outside Landon Mean vo Peak Local authority @ 90%+ 0 75%+ 0 All Nitrogen Dioxide ▼ Barking and Dagenham Barnet Bestlev Axes to a bjective Brent Brentwaard Bramley Camden Castle Point City of Landon Cravdan 2500 -Dartford Ealing 2000 -Enfield Greenwich 1500 Hackney Haringay Harrow Havering 1000 Hillingdon Hounslaw Islington Kingston Lembeth Lewishem Mertan Newhem 120 140 160 180 2017 Controls Slider Bar Graph Local Authority Location

Monitoring Sites Visualisation: Mean Vs Peak

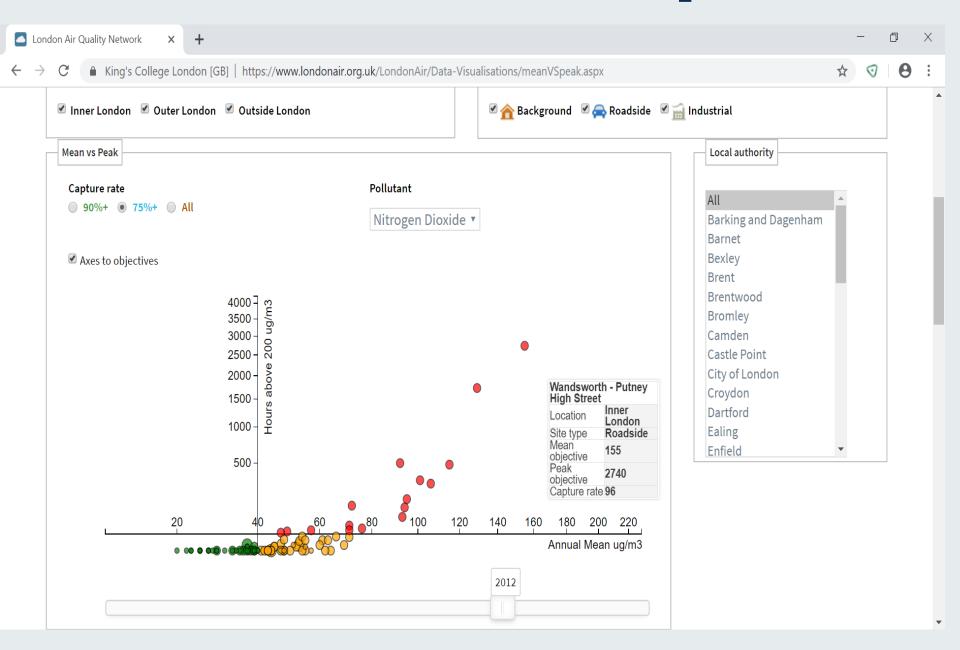
2008 - 4007 hours of exceedance (NO₂)



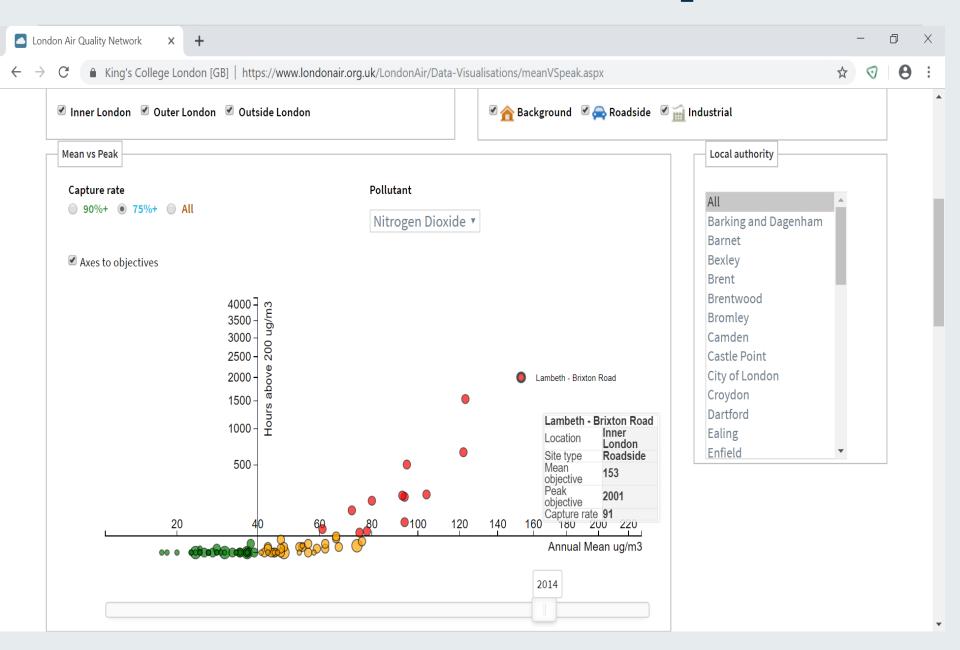
2010 - 2677 hours of exceedance (NO₂)



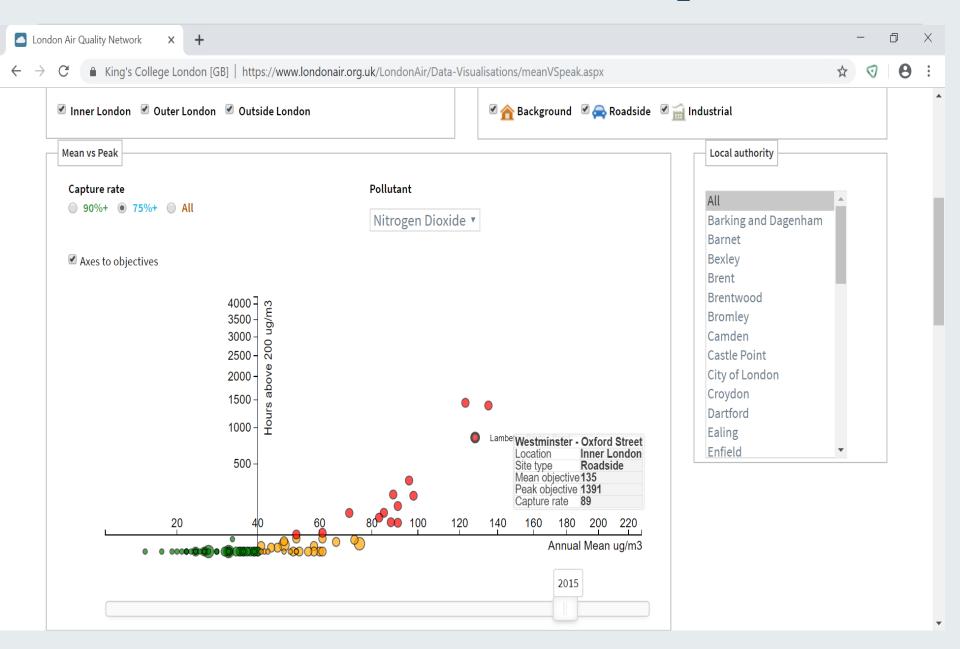
2012 - 2740 hours of exceedance (NO₂)



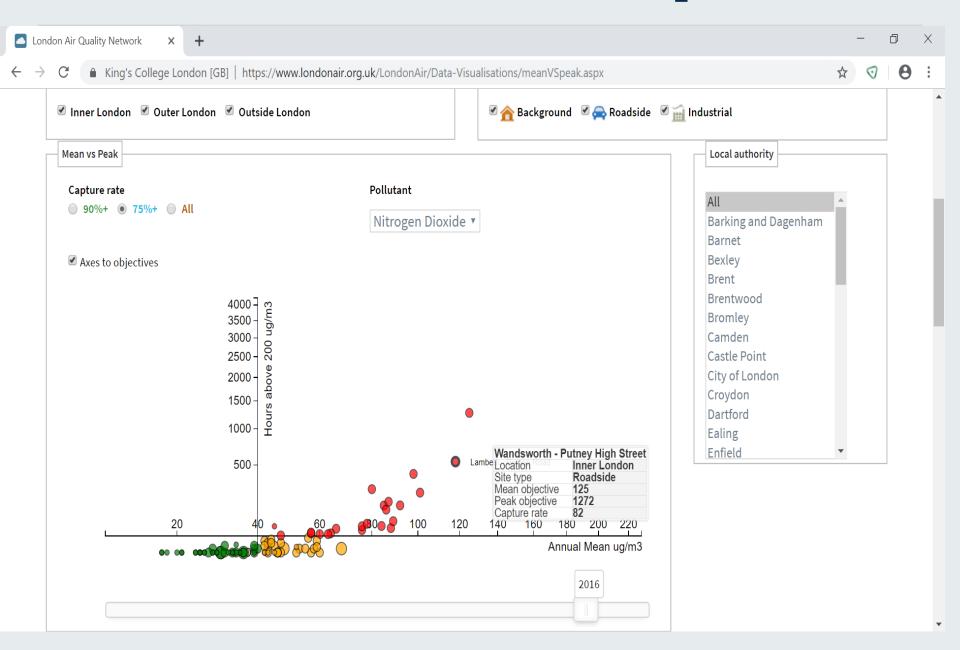
2014 - 2001 hours of exceedance (NO₂)



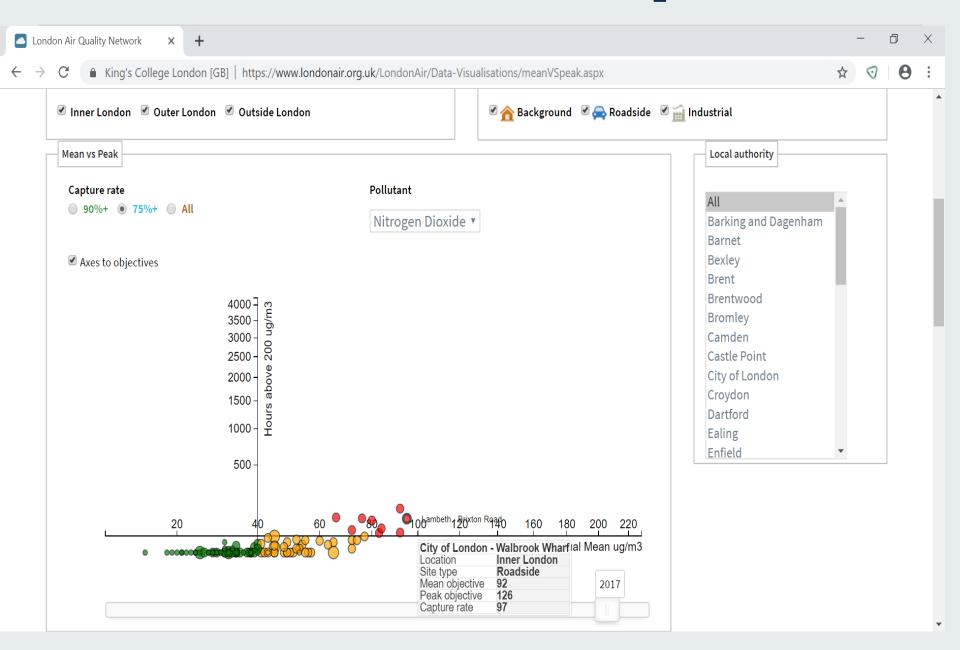
2015 - 1391 hours of exceedance (NO₂)



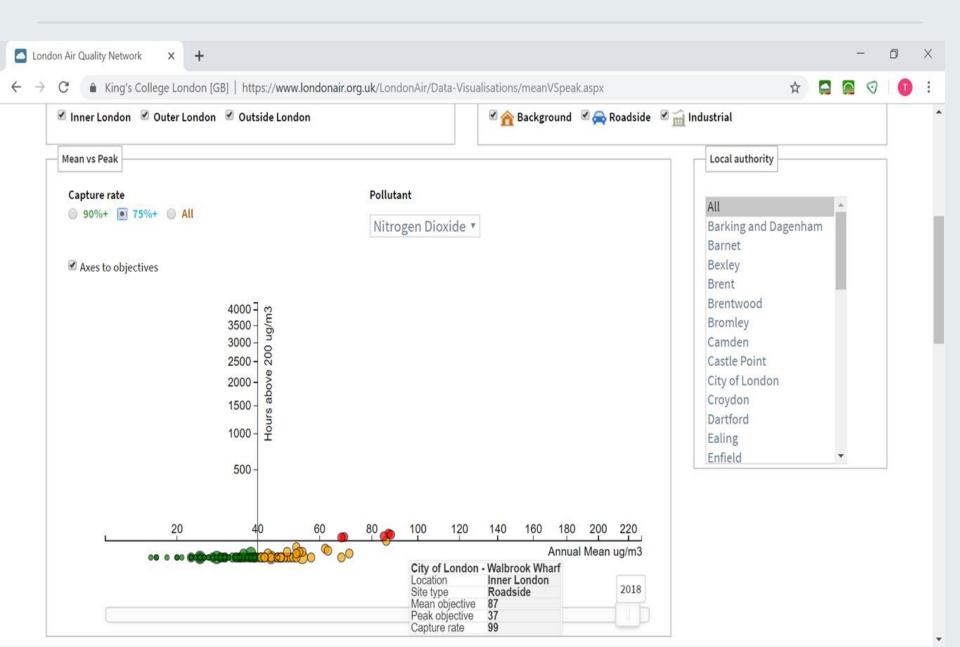
2016 - 1272 hours of exceedance (NO₂)



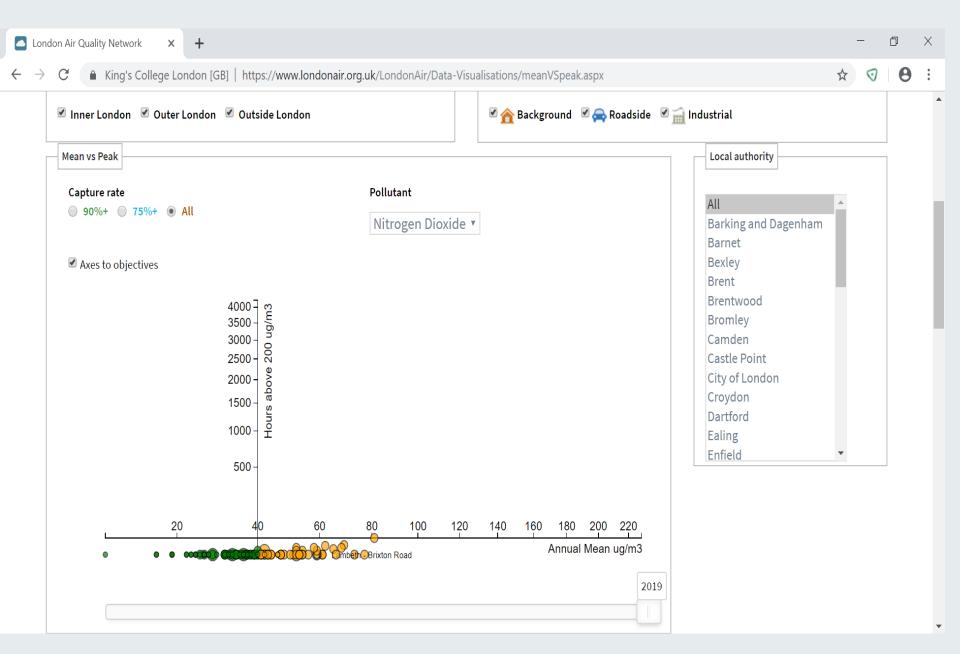
2017 - 126 hours of exceedance (NO₂)



2018 - 34 hours of exceedance (NO₂)



2019 – year to date



Episodes in 2018

Episodes 2018

```
21<sup>st</sup> Feb –PM (Mixed)
2 - 4<sup>th</sup> March — High PM (secondary + local, significant wood burning)
24 - 25<sup>th</sup> March – PM (secondary + local)
11<sup>th</sup> April – PM (secondary + local)
19<sup>th</sup> April –PM,0<sub>3</sub>,NO2 ( started import ,including agricultural, then local)
21^{st}-22^{nd} April – High PM, 0_3 (recirculation of local emissions + import)
5-8th May – PM, O_3^*
23th Jun-25th Jul – 0_3^*
10<sup>th</sup> Oct — PM (mixed)
5<sup>th</sup> Nov – PM (local)
22-23<sup>rd</sup> Nov – PM (secondary)- local took one site Very High
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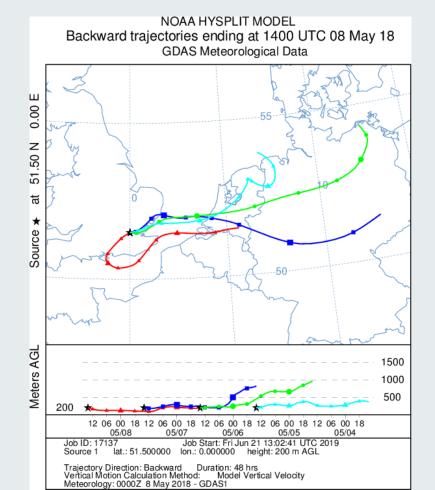
$5-8^{th}$ May (PM & 0_3)

Ozone Sevenoaks almost reached High $\mathbf{0}_3$

Several roadside sites reached moderate

 Not normal for a secondary pollutant not directly emitted

PM Lower than expected Only 10 sites reached Moderate



$5-8^{th}$ May (PM & 0_3)

Monday 7th – Bank Holiday

Hottest for 40 years

Poor Spring led to late application of fertiliser to agricultural land

Higher than normal temperatures evaporated this into airborne pollutants (a lot nitrate)

And then drove some of the particle into the gas phase during the day, reducing particles and increasing ozone



New "supersite" at King's sports ground -Honor Oak Park

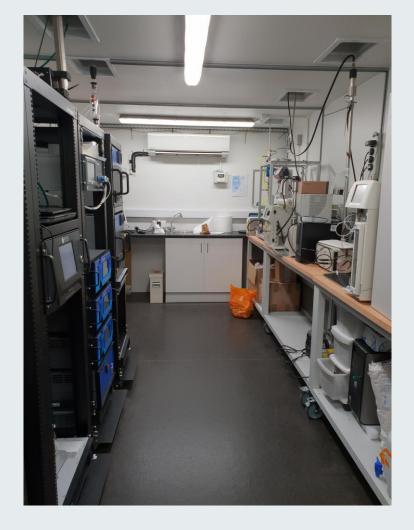












June/July 2018 Ozone episode

The episode started on 23rd June and ran until July 27th

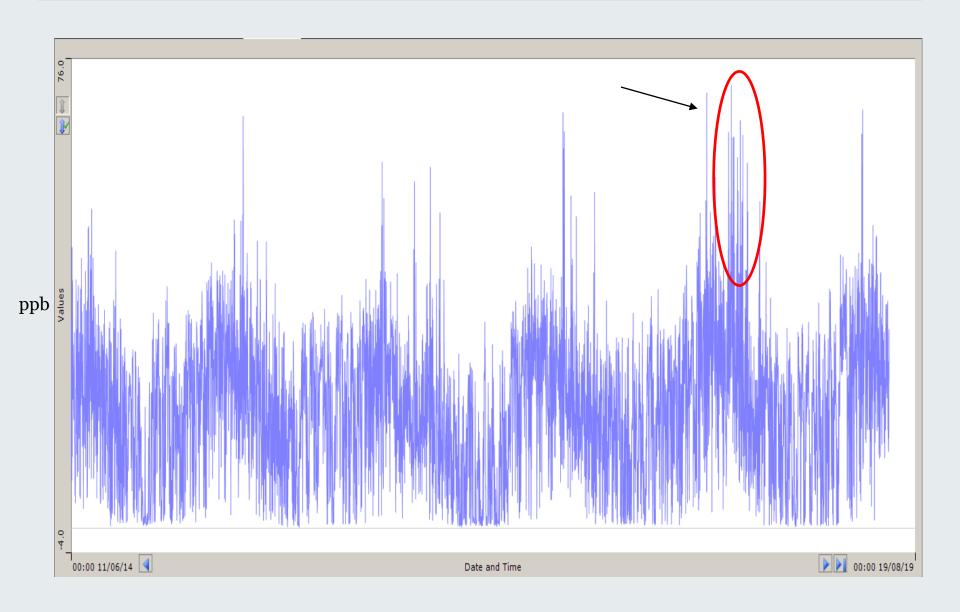
Only four days 'low' air pollution during the 35 day period in London and south east England.

The episode included 17 consecutive days of 'moderate' ozone, the greatest number of consecutive days for 10 years.

High (>160μg/m³ as 8 hour running average) recorded on 5 days

EU information limit (180μg /m³ hourly) exceeded on 4 days

Last 5 years Mean Ozone (running 8 hour mean)

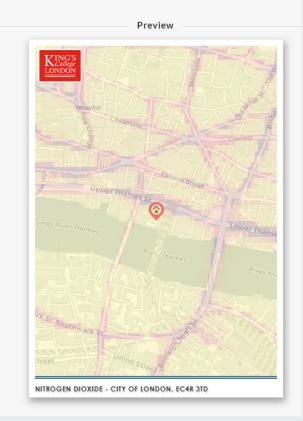


Website developments – poster maker

London Air

Customico vovu mon	
Customise your map	
Postcode	
EC4R 3TD	
Orientation	
Portrait	•
Caption Text	
Nitrogen Dioxide - City of London, EC4R 3TD	
Pollutant	
Nitrogen Dioxide (NO2)	
PM10 Particulates	
PM2.5 Particulates	
Download	
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Conclusion

- Many of the "worst places" are getting better for NO2 and PM
- The improvement is not uniform across all locations
 - More work needs to be done to identify the reasons
- Ozone is increasing and will be more of a problem in coming years
 - Impacts the whole population
- New super site will enable us to bring even more understanding to air pollution in and around London.



Thanks to

All the members who support the London Air Quality Network.

The network and the information it provides only exists through your support.

The team behind me ensuring the quality of the data on a daily basis - for more than 25 years.

And special thanks to Louise Mittal who produced all my graphs!