



UNIVERSITY OF  
**LEICESTER**

The Earth Sense logo, consisting of the words "EARTH SENSE" in a bold, blue, sans-serif font. The text is centered within a square frame formed by four dark blue corner brackets.

**EARTH SENSE**

# Investigation of Exposure of School Children to Air Pollution

Twitter: @EarthSenseAQ

# The Air Pollution Challenge

**Globally costs \$3-5 trillion per year**

92% of people are affected

3 million premature deaths

WHO figures (2016)

**UK -costs £30-54 billion per year**

UK-40,000+ premature deaths per year, including 9000 Londoners

UK Government figures

**Public awareness & concern increasing,**  
e.g. VW, London Black Alerts, 800+ London schools, nurseries and colleges affected, legal challenges, media reports

**Air pollution Health & disease burden**

36% of Lung cancer deaths

34% of Stroke deaths

27% Heart disease Deaths

35% of COPD deaths

WHO figures

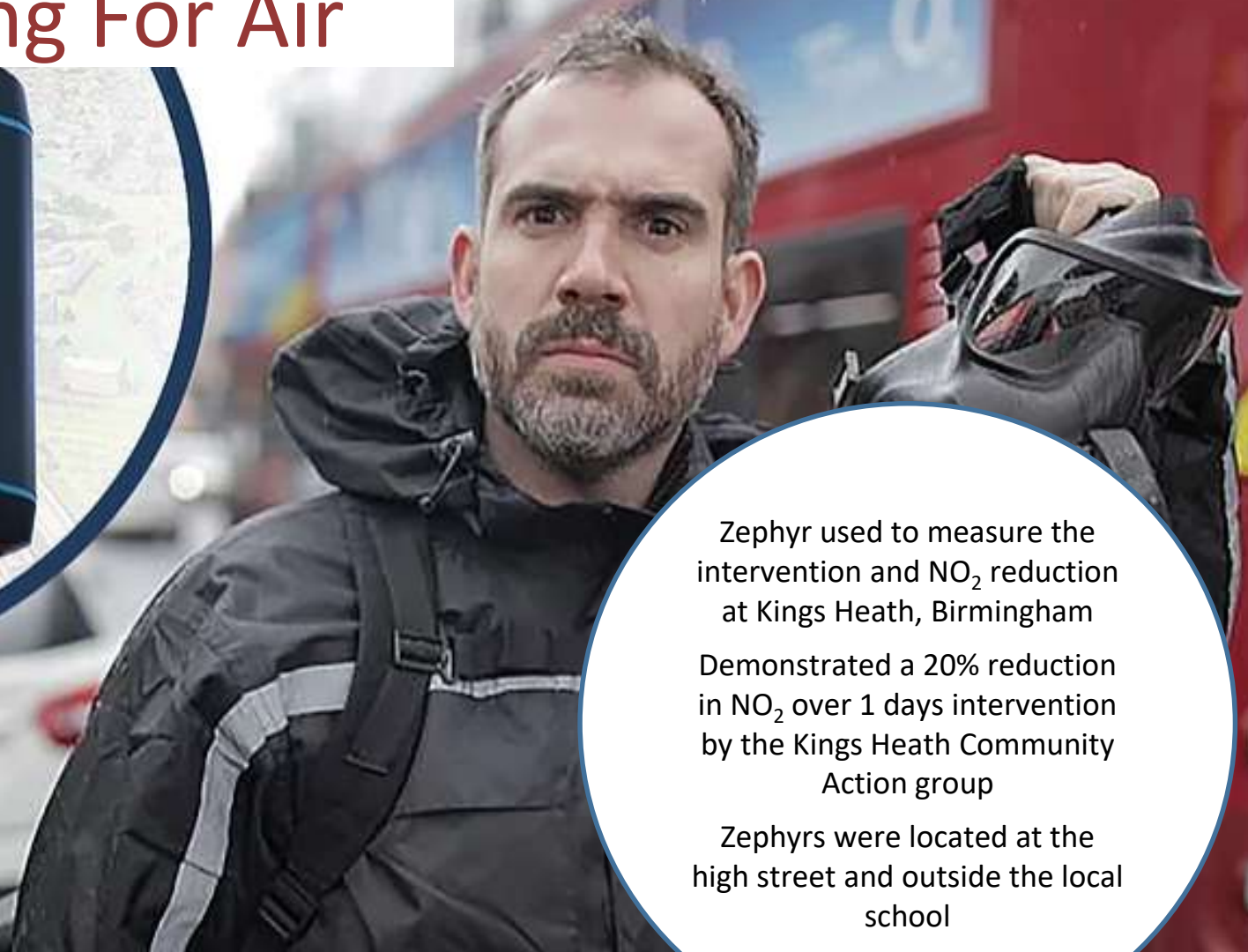
**Its invisible, complex and hard for people and leaders to act on.**

# Why focus on Schools?

- Approximately 30,000 schools in the UK.
- 4.69m (state-funded) primary school pupils.
- 3.22m (state-funded) secondary school pupils.
- Young lungs in various stages of development.
- The next generation..
- Children are influencers.
- Approximately 500,000 teachers.



# BBC Fighting For Air



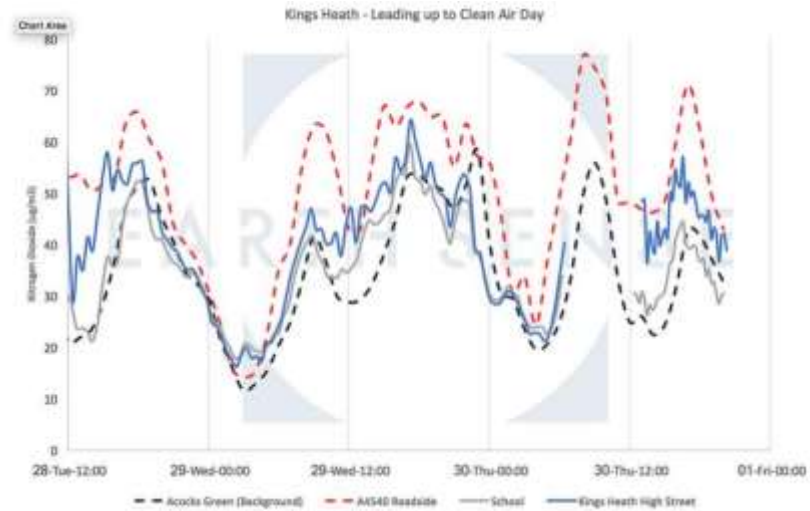
Zephyr used to measure the intervention and NO<sub>2</sub> reduction at Kings Heath, Birmingham

Demonstrated a 20% reduction in NO<sub>2</sub> over 1 days intervention by the Kings Heath Community Action group

Zephyrs were located at the high street and outside the local school



### TWO Fighting for Air



The image shows a screenshot of a BBC News article. The main headline is "Boy uses backpack to map pollution hotspots". Below it, there is a sub-headline "What does air pollution do to our bodies?". The article text mentions that scientists at the University of Leicester are testing a portable air monitor. A video player is visible at the top left of the article content. A "BREAKING" banner at the bottom of the screenshot reads: "French carmaker Peugeot Citroen offers aid to buy General Motors' European cars, including Vauxhall."







A6

A594

Wendell St

Glebe St

Commercial St

Wendell St

Wendell St

Wendell St

New Way

Wendell St

Wendell St





360°

A501

Beaumont St

Devonshire Mews-W

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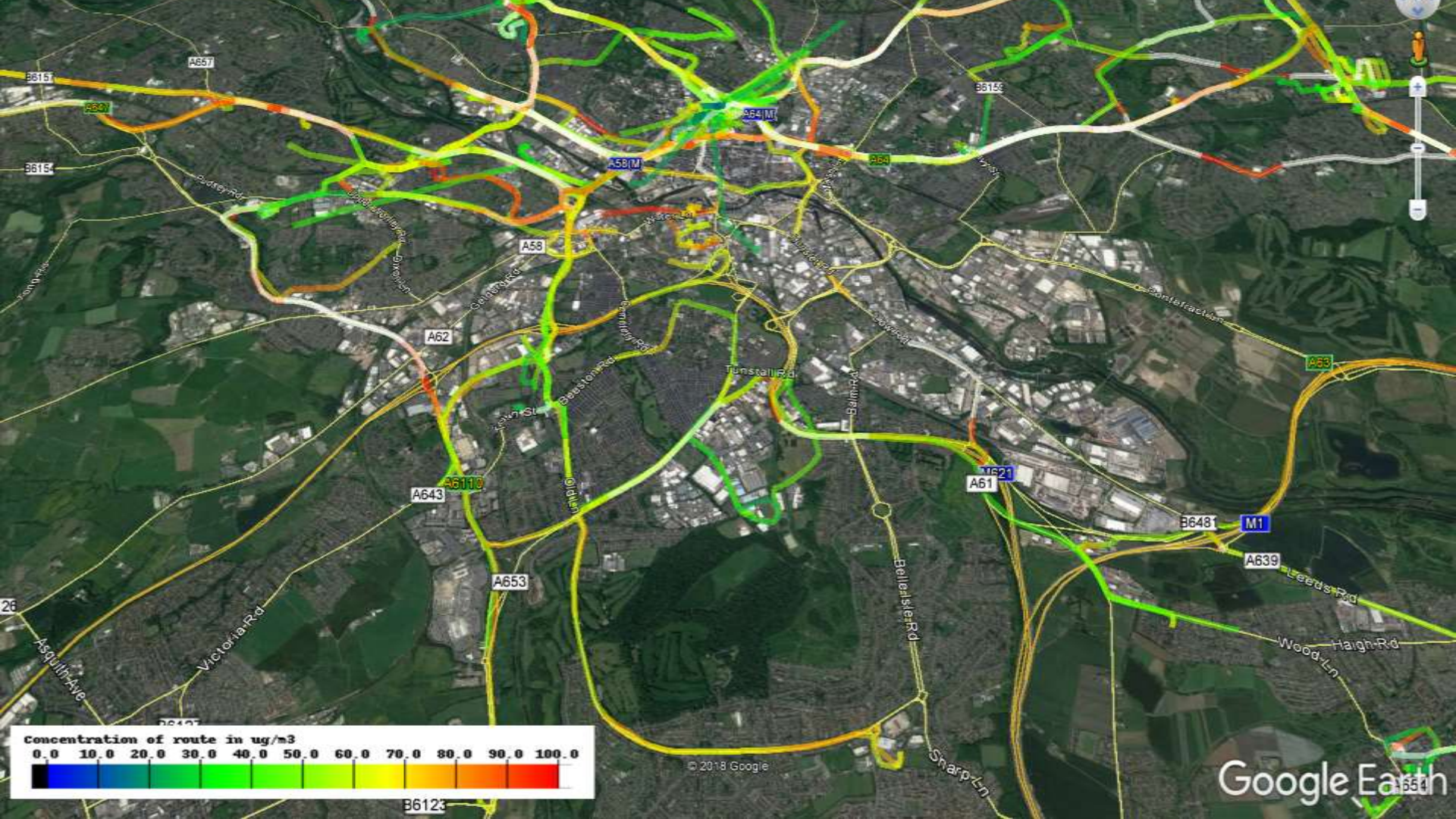
Ark Square-Mews

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© 2016 Google

Google earth





Concentration of route in  $\mu\text{g}/\text{m}^3$

0.0 10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100.0



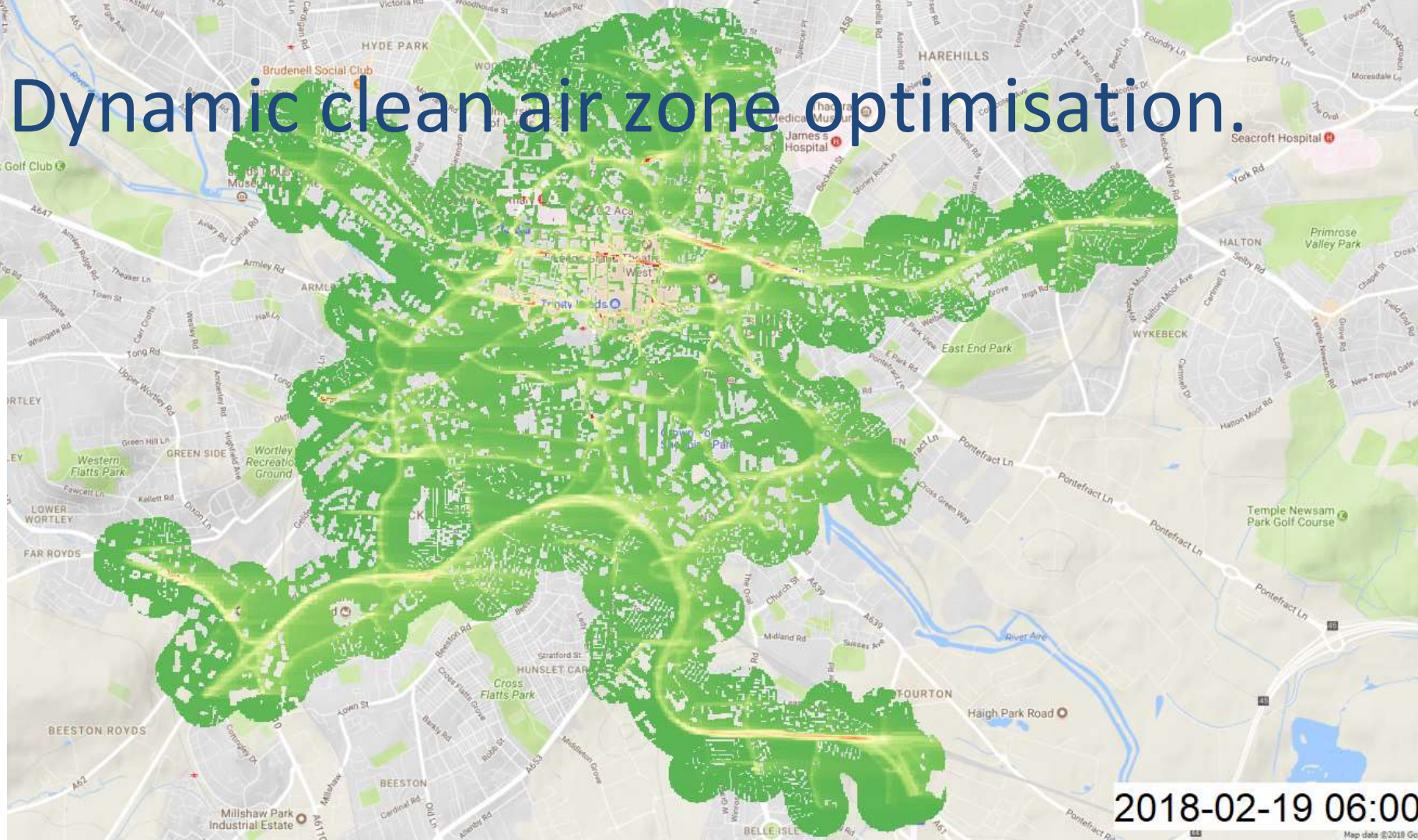
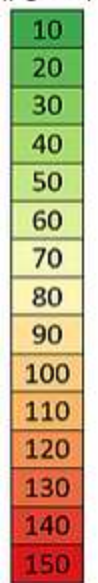
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Google Earth



# Dynamic clean air zone optimisation.

NO<sub>2</sub>  
( $\mu\text{g m}^{-3}$ )



2018-02-19 06:00







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# Air Quality around Schools



- Mobile monitoring opens up new options for understanding exposure of pupils during a typical school day.
- Small, lower-cost sensors offer the opportunity to monitor significantly more locations, and understand the need for, and efficacy of intervention measures.
- Interventions, such as vehicle exclusion zones, can make a significant impact.
- Higher-resolution understanding of our national air quality picture allows statistics on non-London schools to be more reliably derived.
- New optimized transport systems could now start to be capable of actively managing emissions around schools (and other high-priority locations such as hospitals).



Developing products that enable the world to visualise and solve its air quality issues.

**Measure. Model. Act**

Twitter: [@EarthSenseAQ](https://twitter.com/EarthSenseAQ)