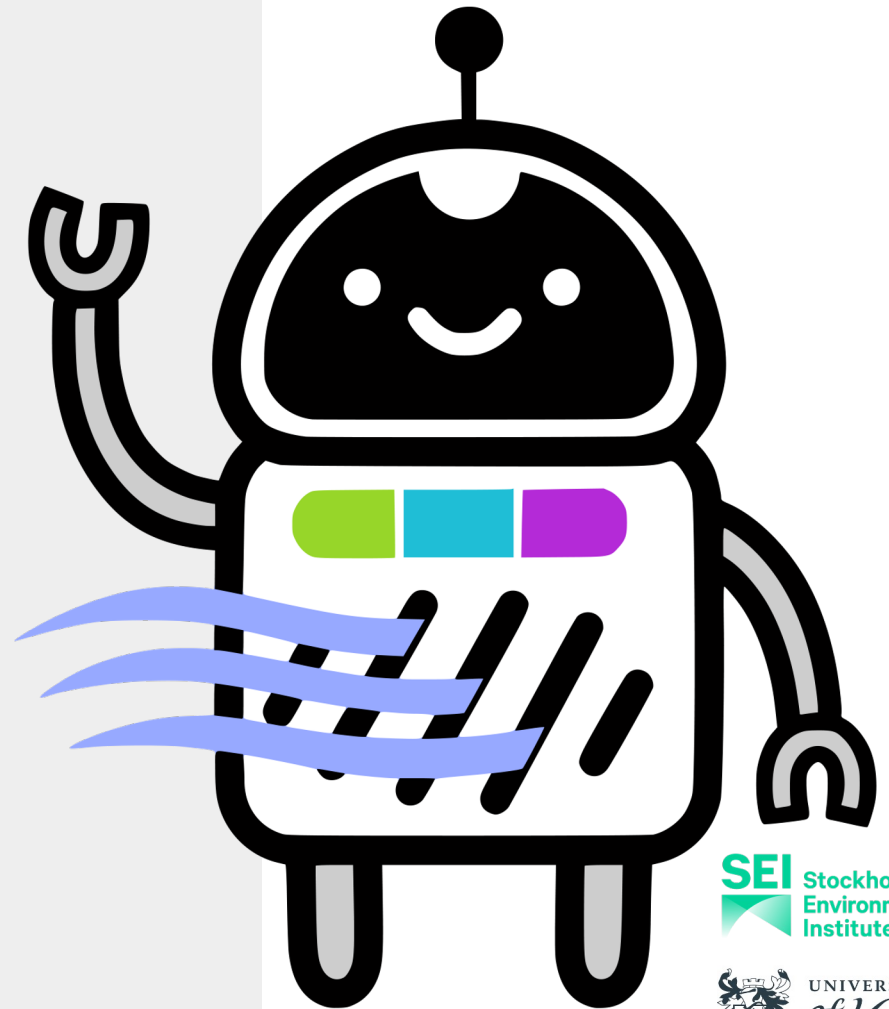


# Schools' Air quality Monitoring for Health and Education

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SEI York / University of York



# What is Citizen science?

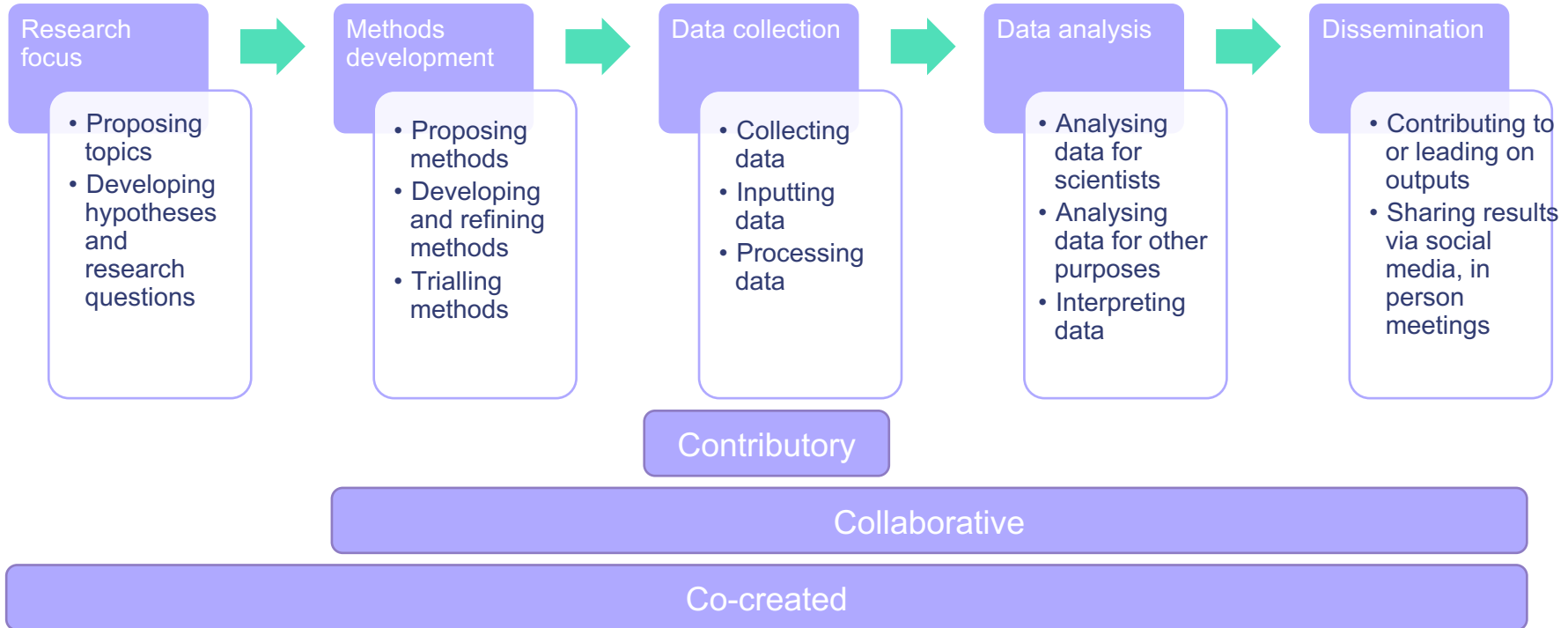
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- The involvement of members of the public in meaningful scientific research
- BUT defining citizen science is difficult! There are contested definitions of the term, what should and should not be classed as citizen science, and even debate about whether it should be defined or not!

It is difficult to define because:

- It covers a huge range of approaches
- It spans a wide range of disciplines, including natural sciences and increasingly social sciences and humanities
- It has a diversity of purposes
- It takes places in a variety of cultural contexts
- It also overlaps with a range of other participatory research approaches

# Citizen science and SAMHE





# Citizen science

Benefits for science and for participants

- Pupils (and teachers) gain knowledge and understanding of air quality
- Skills
- Knowledge of what action to take
- New data about air quality in schools (PM, TVOCs, temp, humidity, CO<sub>2</sub>)





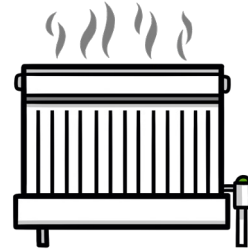
**123**

**Schools in our  
Co-Design and  
Pioneer  
phases**



**800**

**Schools  
signed up so  
far**



**2,000**

**Target  
schools  
across the  
UK**

**The SAMHE monitor and app have provided our Y4/5 science group with a wealth of data to interrogate and analyse. The children's enthusiasm has been infectious and there is tangible excitement at being able to access the data in real time...We are now determined to continue, working towards earning all the achievement badges**

**Teacher, SAMHE Co-Design school**

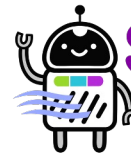


# Challenges for improving IAQ

- Air quality is largely invisible
- Children are particularly vulnerable
- Ventilation is very important - but challenges with rising energy costs
- Raising awareness is critical
- Tailored advice about actions is needed



UNIVERSITY  
*of York*

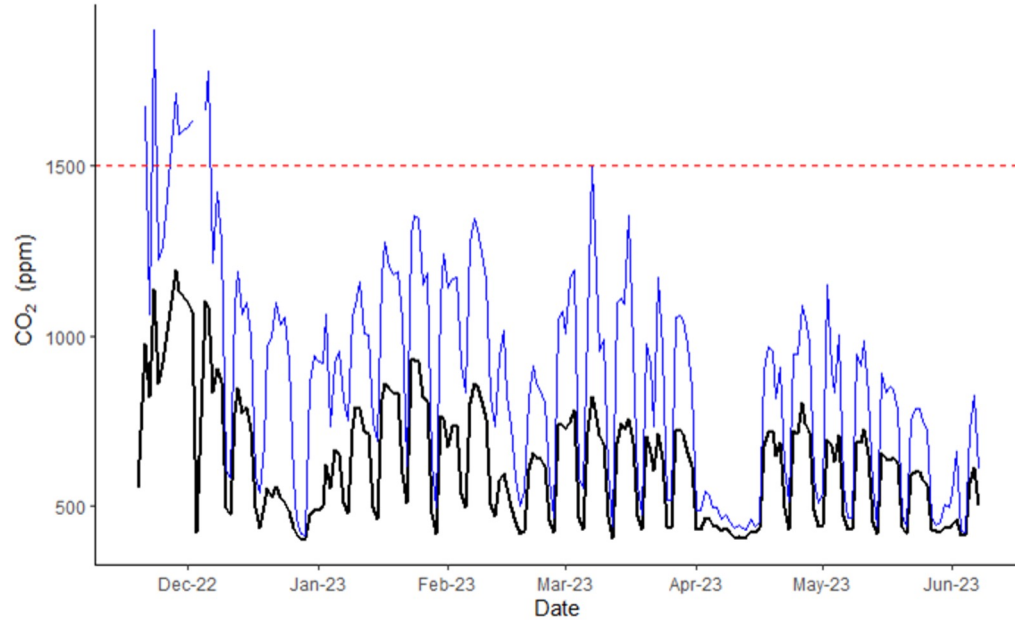


**SAMHE**  
SCHOOLS' AIR QUALITY MONITORING  
FOR HEALTH AND EDUCATION



# CO<sub>2</sub> data from 43 monitors

- CO<sub>2</sub> daily means are largely below BB101 threshold of 1500 ppm for naturally ventilated classrooms.
- Daily mean CO<sub>2</sub> exceeds 1500 ppm on ~2.5% of sensor-days

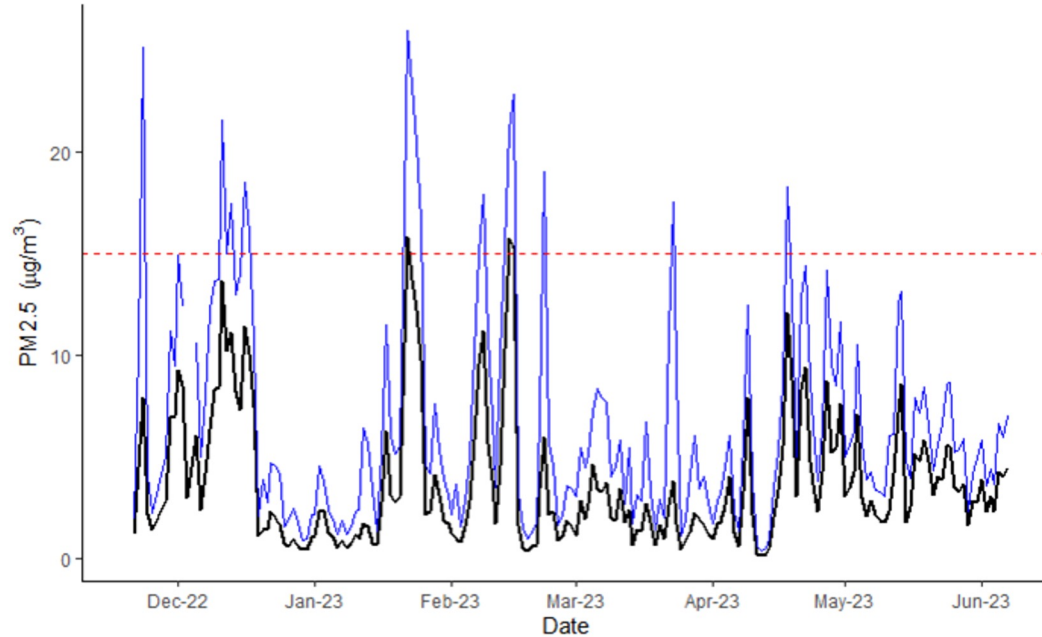


*Figure shows daily mean CO<sub>2</sub> averaged across all in school sensors in black, the mean plus the standard deviation is in blue, and the red dashed line highlight 1500 ppm.*



# PM<sub>2.5</sub> data from 43 monitors

- PM<sub>2.5</sub> daily means generally below 15  $\mu\text{g}/\text{m}^3$  guideline recommended by WHO
- Daily mean PM<sub>2.5</sub> exceeds 15  $\mu\text{g}/\text{m}^3$  on ~4% of sensor-days.



*Figure shows daily mean PM<sub>2.5</sub> across all in school sensors in black, the mean plus the standard deviation in blue, and the WHO guideline threshold of 15  $\mu\text{g}/\text{m}^3$  in red dashed line.*



# Get in touch!

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