

**CEOI 5<sup>th</sup> and 6<sup>th</sup> Open Calls  
Final Review**

***CompAQS Flight demonstrator***

***Roland Leigh, James Lawrence, Paul Monks***



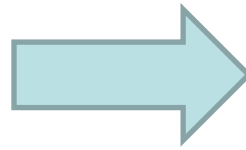
London

20 March 2013

# CompAQS – The NO<sub>2</sub> Imager

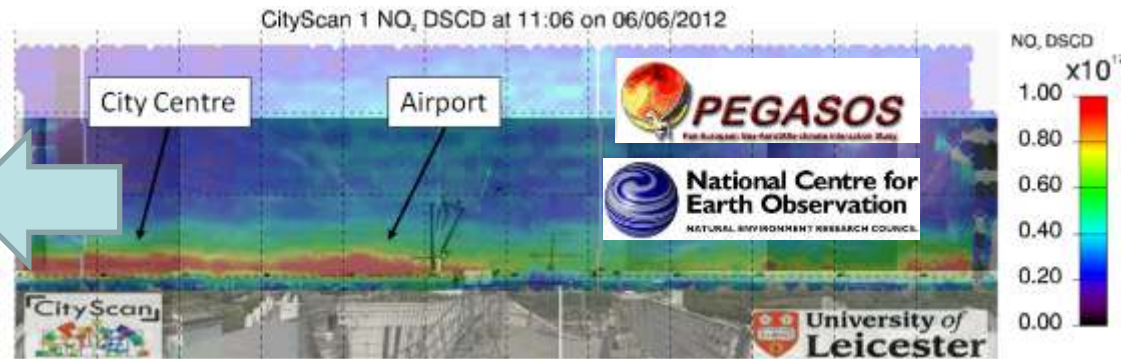
A novel imaging spectrometer  
Using scattered sunlight

Placed in a housing looking over a city for  
NO<sub>2</sub> retrievals



Multiple rotating instruments for  
tomography

Produces Panoramas of NO<sub>2</sub>



**2 seedcorn studies.**

**UCAM: The Ultra-Compact Air quality Mapper.**

**A discrete wavelength approach to NO<sub>2</sub> remote sensing.**

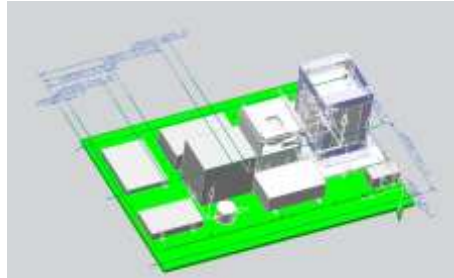
**“Revolution”**

**AAQM: The Airborne Air Quality Mapper.**

**A flight-demonstrator for novel air quality instrumentation.**

**“Evolution”**

# The Airborne AQ Mapper

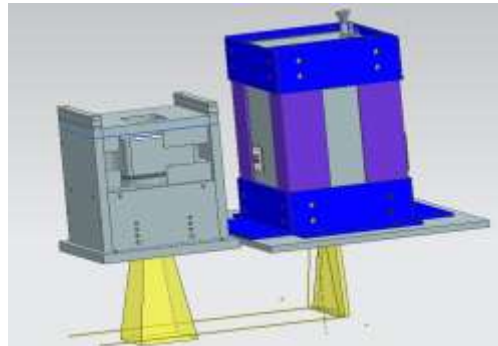


Optical Mount  
modifications



Power  
Supply

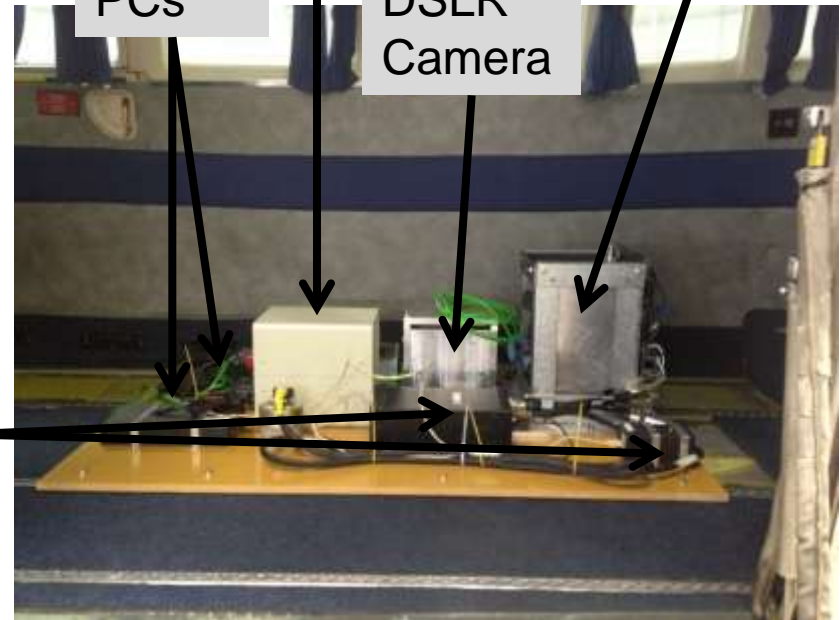
CompAQS  
Spectrometer



IMU/GPS

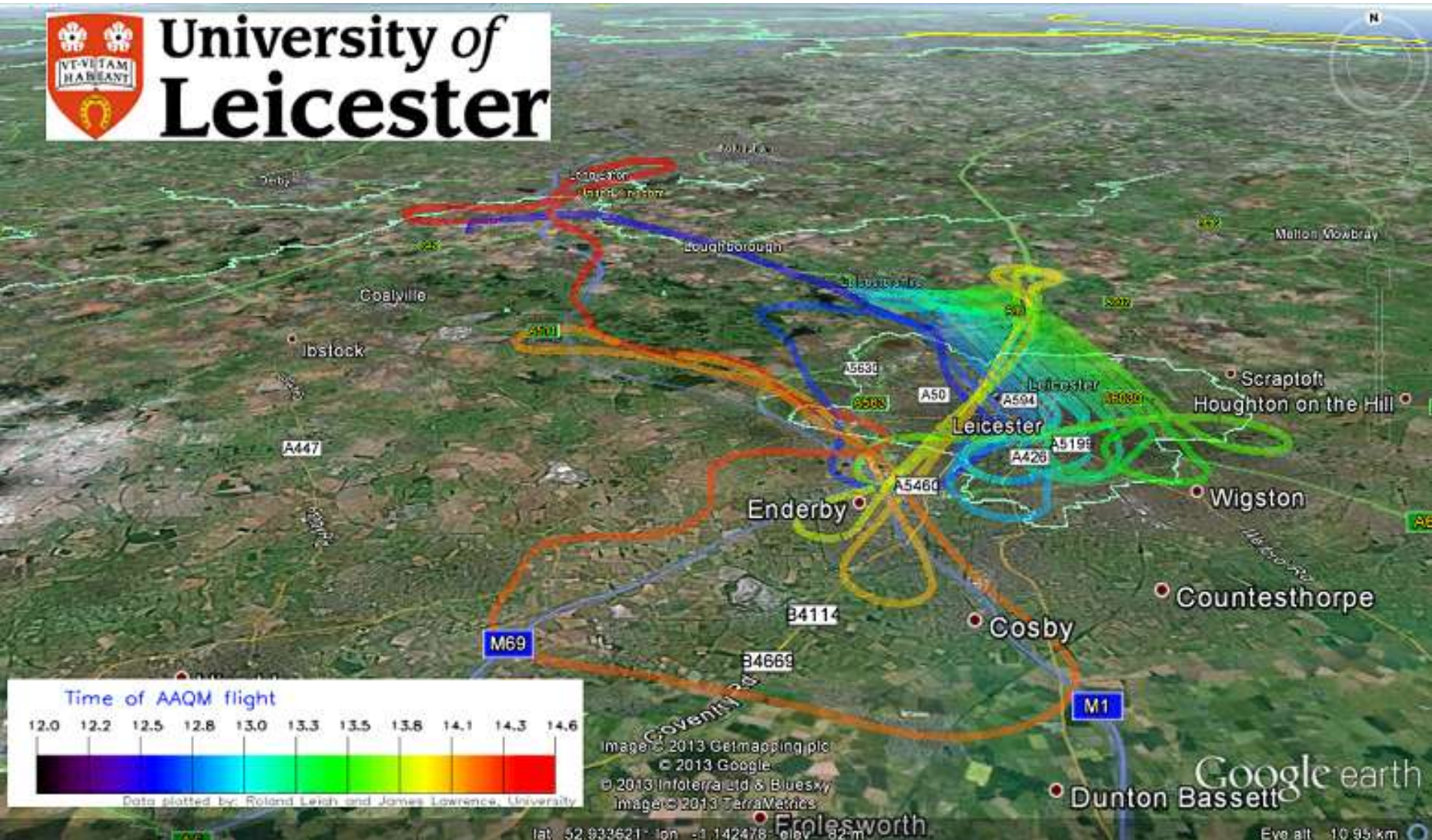
PCs

DSLR  
Camera

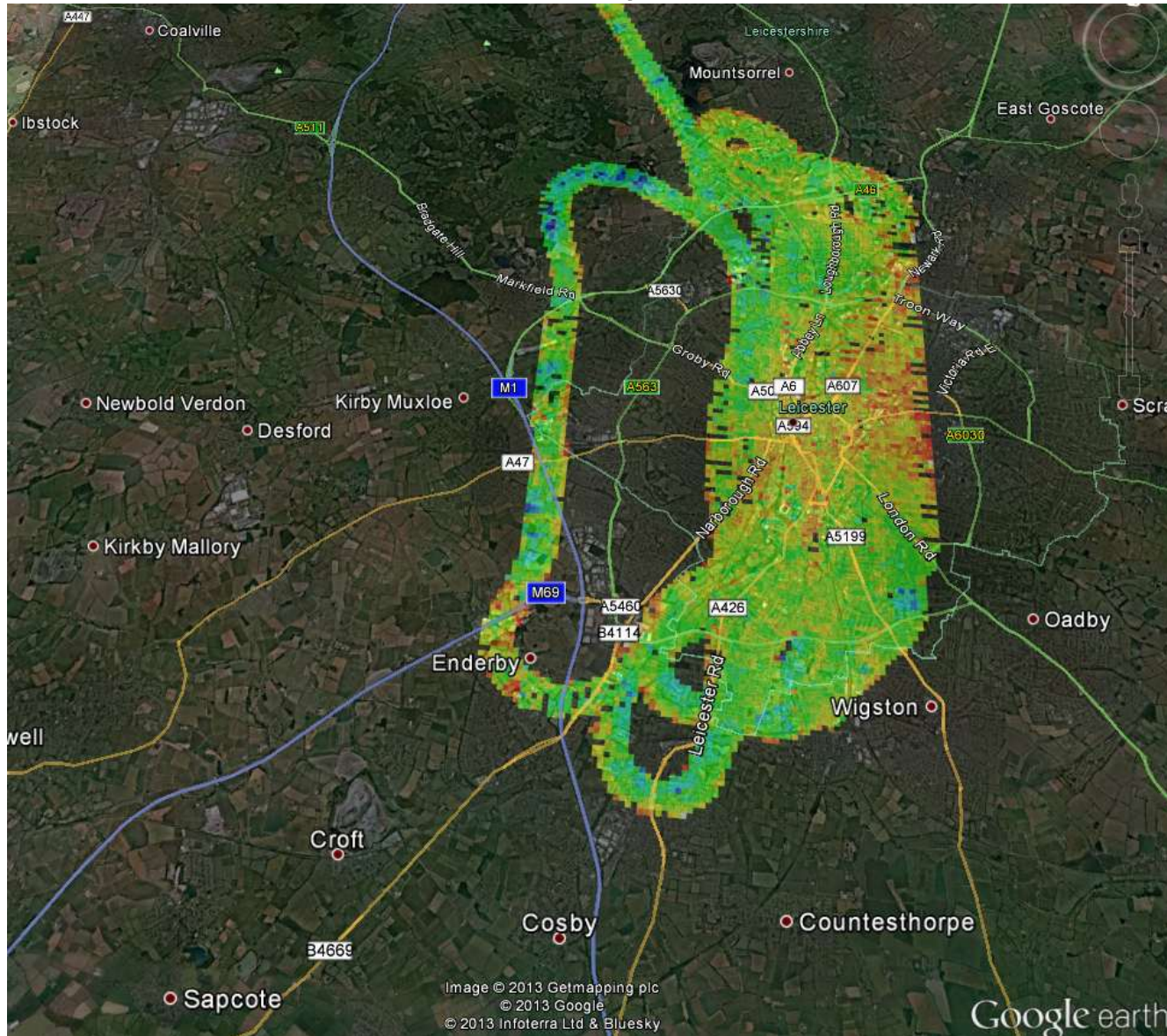


Test Flight: 28<sup>th</sup> Feb 2013 – 12:30

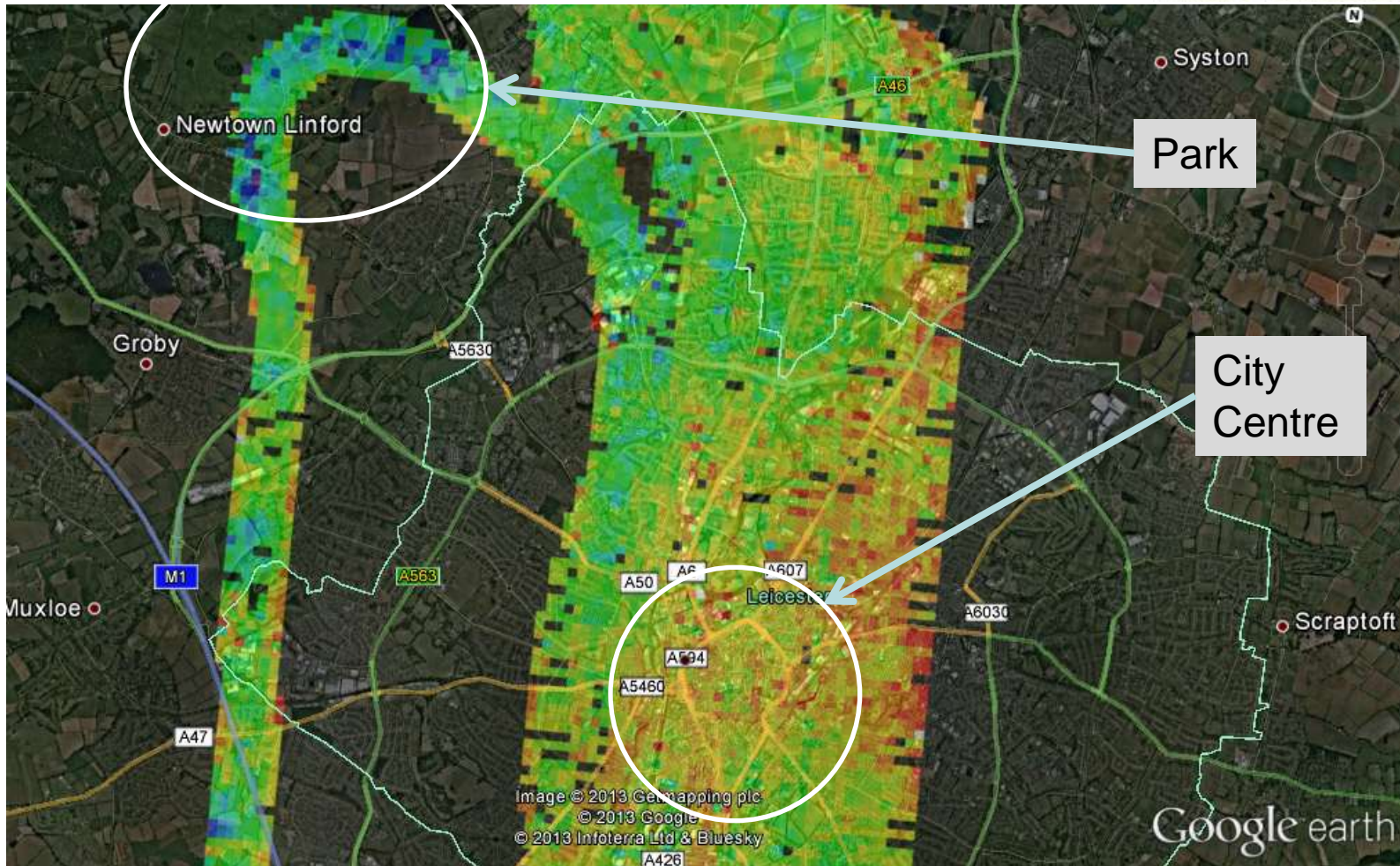
# Flight Path



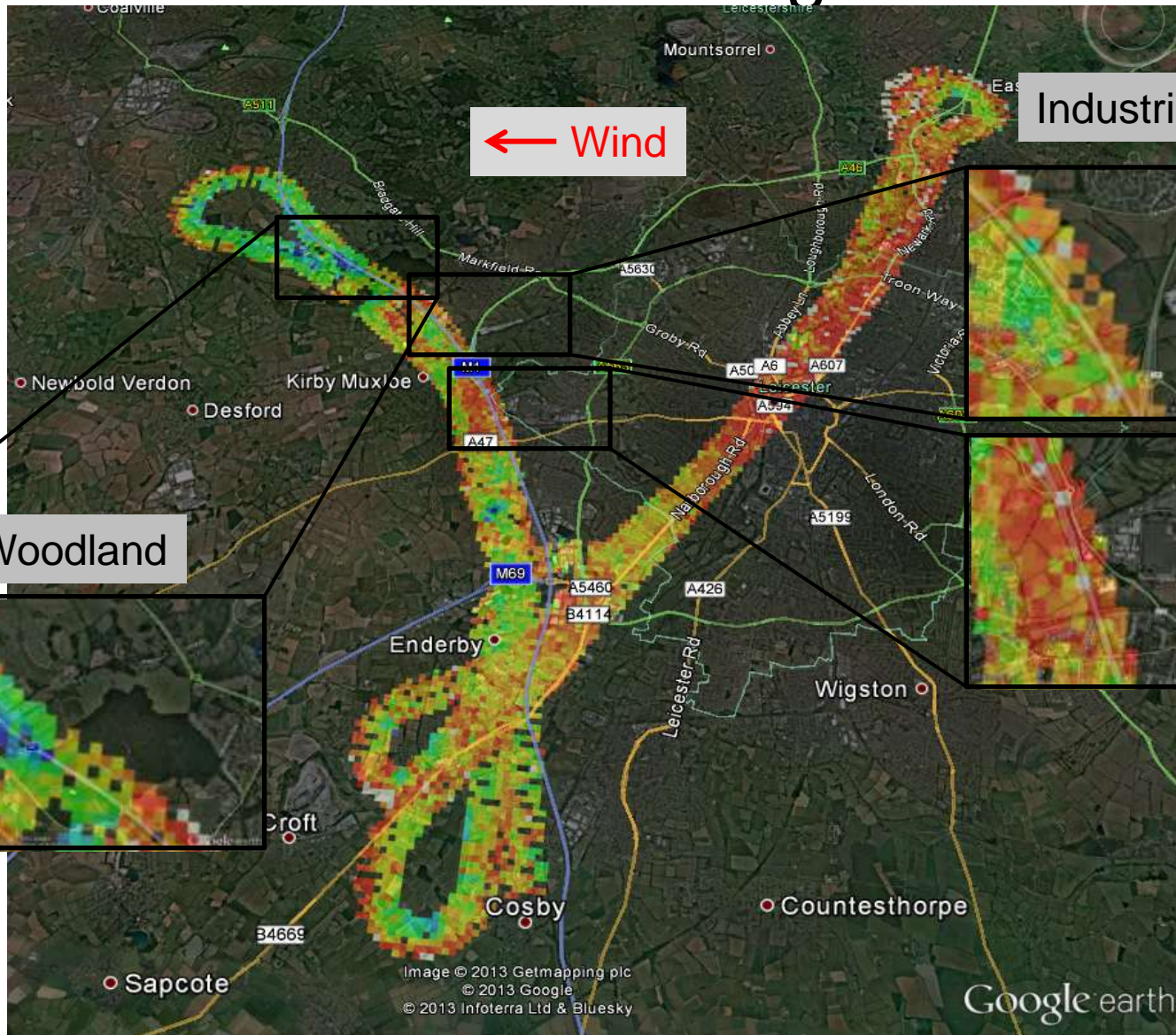
# The City Map



# Feature Identification



# More Polluted regions

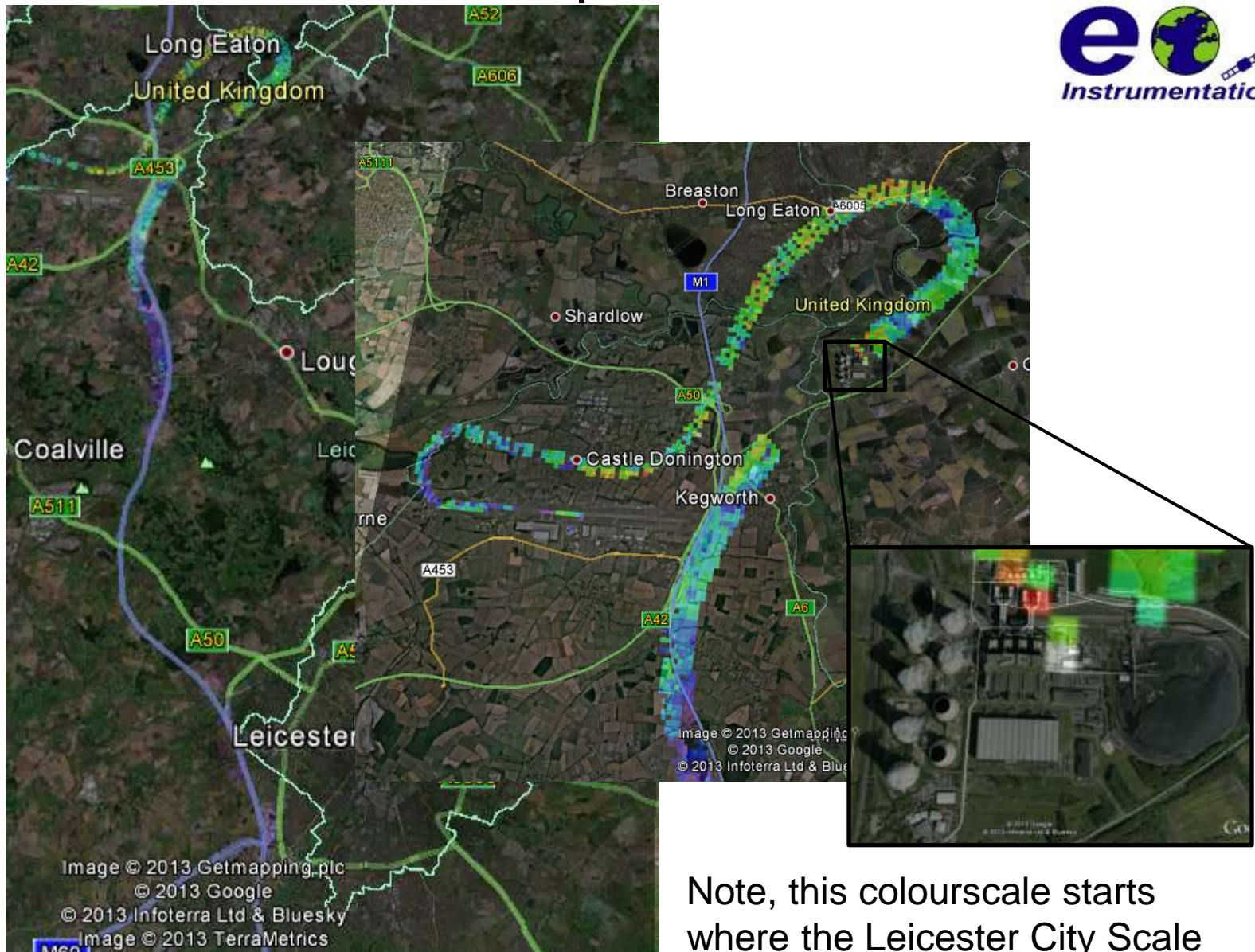


Industrial Regions

Woodland



# Home via the local power station..



Note, this colourscale starts where the Leicester City Scale finished..

# Achievements and advancements

- The First UK demonstration of an airborne pushbroom DOAS spectrometer.
- The First CEOI airborne demonstrator
- CompAQS TRL advanced through airborne demonstration.
- Leverage of other projects which have funded hardware.
- Direct use of data in ESA-IAP project – Air Quality modelling and associated services for local authorities (including Leicester).
- Potential for spin-out of airborne demonstrator.
- Knowledge gained of airborne instrumentation deployment. Relationship established with plane operator, RVL.

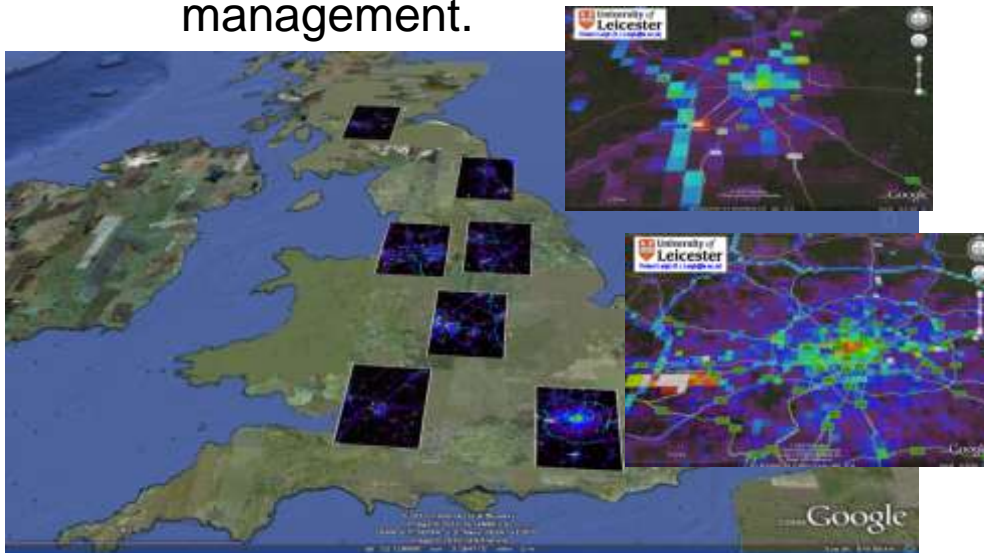
# Future Plans

- Next Steps?

- Publication: Lawrence et al. (2013)
- Refinement of Optical Bench
- Evolution or revolution of optical design to optimise for data management.
- Promotion of CompAQS concept for urban air quality mapping and management.

- Acknowledgements

- Co-Investigator: James Lawrence
- Funding: CEOI, NERC, UoL
- Partners/Collaborators: SSTL, RVL



To find out more  
Go to our website:  
[www.leos.le.ac.uk/AQ](http://www.leos.le.ac.uk/AQ)

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