Introduction

“Clean air is considered to be a basic requirement of human health and well-being. However, air pollution continues to pose a significant threat to health worldwide” (WHO, 2005)

Air quality transcends all scales with the atmosphere from the local to the global with handovers and feedbacks at each scale interaction. Air quality has effects on:

- Human Health
- Ecosystems
- Heritage
- Climate

Exposure to air pollutants is largely beyond the control of individuals and requires action by public authorities at the national, regional and even international levels.

Space based measurements in concert with ground-based measurements have the potential to augment the capability to predict and control air pollution.

Expertise

The team at the University of Leicester have extensive expertise in all areas of the measurement and interpretation of air quality data using a range of measurement solutions.

Use of Space Data

There is a range of space based data on both gaseous and particulate air pollution. The University of Leicester can derive their own products from a range of satellite platforms as well as exploit those already available. Large datasets can be handled for research and operational purposes. Value can be added to datasets by using them in a range of delivery structures e.g. air quality forecast models.

There are a number of air quality forecasting systems that merge the space data with models to provide a “chemical weather” forecast. These systems can be used to provide a range of services to vulnerable people. The Leicester team can broker these solutions.
Integrated Observations
In order to assess the impact of air pollution there is a requirement to often merge space-based data with ground-based observations. This bridging of scales has applications to a wide range of public service users who want to enhance their air quality strategies. The University of Leicester team has extensive experience of merging ground-based data with the space data to produce integrated data solutions.

Novel Technologies
The University of Leicester team are developing new observing technology to enable the quality of the air to be easily and continuously monitored across physically large urban and industrial spaces. A “pollution radar” is under development.

The work on ground-based systems is complimented by the development of the next generation of satellite observations.

Summary
Air quality remains a practical issue with legislative requirements. Integrated strategies to reduce air pollution (e.g. traffic management) require evidence of effect.

Space based data has much to offer if used properly, the University of Leicester team has wide-ranging knowledge and experience of applying novel data solutions to meet a wide range of user needs.

Linking business with space
http://www2.le.ac.uk/projects/g-step

G-STEP is a knowledge-exchange hub to support and accelerate business and policy exploitation of Earth Observation (EO) data and information services.