*air*TEXT Air Quality Forecasting System
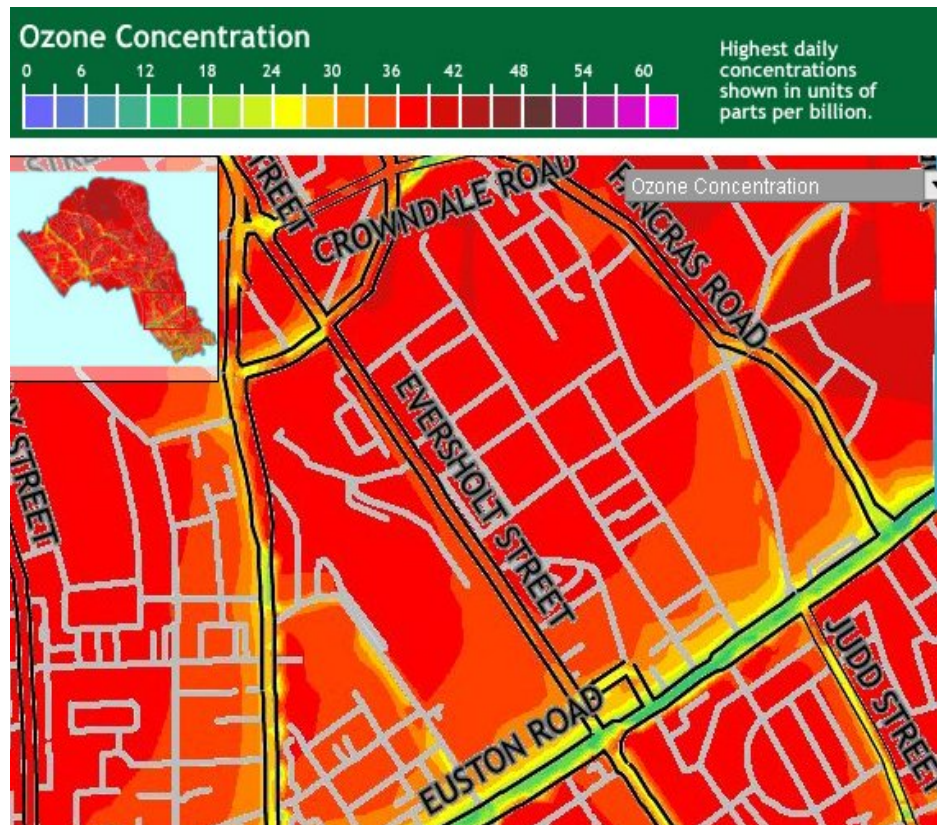
Dr. David Carruthers
CERC

TOWARDS eENVIRONMENT
GMES Meeting Prague
March 2009

*your*air

*air*TEXT

- A downstream service of GMES PROMOTE supported by ESA
- Based on expertise gained in development and implementation of CERC's high resolution *your*Air air quality forecasting system in urban/roadside locations including:
    - City of York
    - CUBA (Bristol and surrounding local authorities)
    - M4NTAIS (South Wales)
    - Budapest (DASY)
    - Strasbourg (Numtech)
    - Shenyang, China (Shenyang EPB)
    - Wakefield (Northern England)
    - **London**

- **air*TEXT is implementation of *your*Air in London**

*air*TEXT/*your*Air:
System and Data Requirements

Input	**System engine**	**Output**

Input

- Forecast meteorology
- Forecast regional (background) concentrations
- Ground based monitoring – assimilation, validation
- Emission inventory – high resolution
- Land use
- Surface topography

System engine

→ **LOCAL FORECASTS**
ADMS-Urban →

Output

- Colour contour image of forecast overlaid on image
- Text and number summaries
- Alerts to TV, the public, health professionals
- **Send alert via SMS, e-mail or voice mail**

London's *air*TEXT : the service

- Launched London-wide (& Slough) in March 2007 at London City Hall

- Supported by Greater London Authority, DEFRA, Environment Agency, Health Protection Agency, 26 London Boroughs – in addition to ESA (PROMOTE)

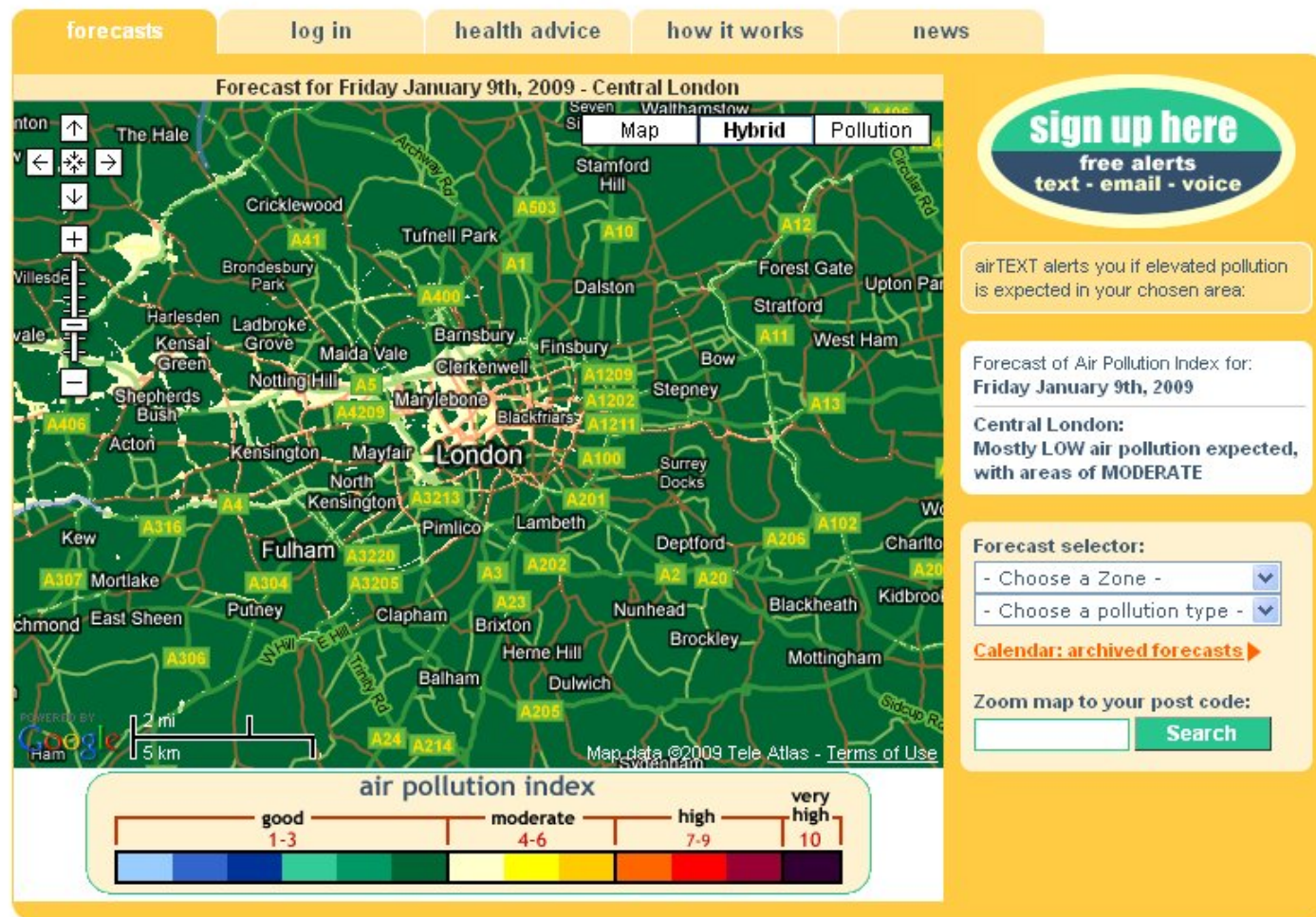PROMOTE

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London's *air*TEXT: the system
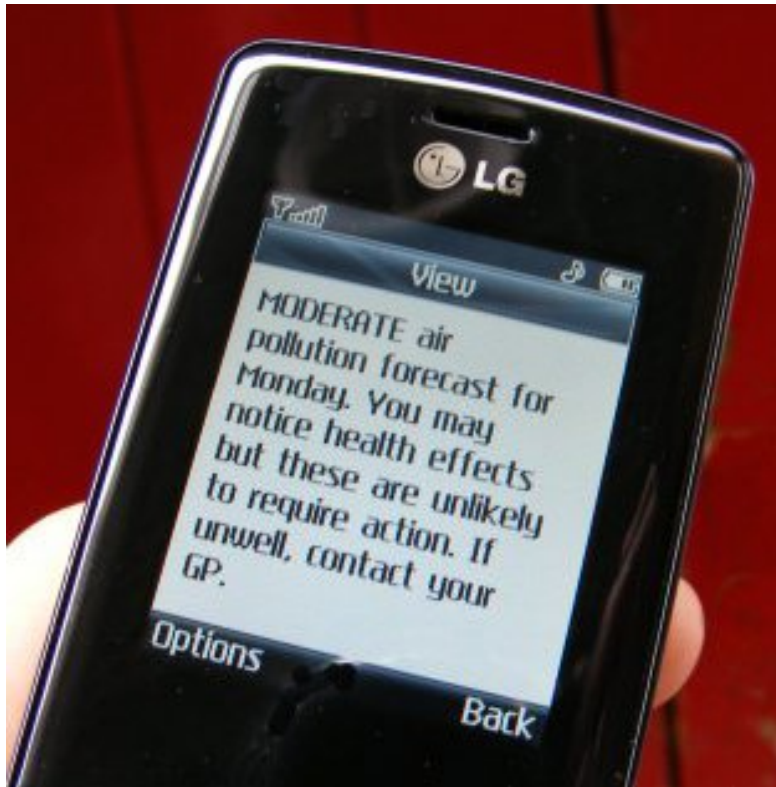
- System covers all of London
- Almost 5,000 subscribers
- Street level pollution contours posted to web - Google Maps
- Alerts sent by email, text message or voice message
- Subscribers can receive alerts the evening before or the morning of an alert
- Alert sent if MODERATE, HIGH or VERY HIGH pollution predicted
- Subscribers can login and change their details e.g. holiday periods

London's *air*TEXT: the system

*air*TEXT - User accounts

*air*TEXT

- Current advertising campaign: newspaper, tube and bus
- A study started in June 2008, being undertaken by the University of Brighton, to assess the epidemiological effects of receiving air quality forecasts and to assess the service provision

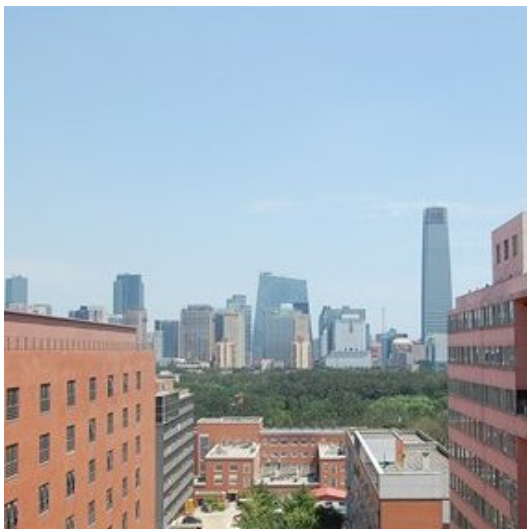*Beijing*Air: *your*Air **in Beijing**

Beijing's air quality

Caused concern in the run up to the Olympics….

Good   Worse   Bad   BBC July 2008

CERC

*Beijing*Air

- *Beijing*air air quality forecasts were created under the DRAGON project

- DRAGON is a cooperation project between
  - the European Space Agency and
  - China's Ministry of Science and Technology

- The project partners were:
  - CERC
  - Beijing Capital Normal University
  - the Dutch Met Office (KMNI)

- The launch was hosted in Beijing by Beijing Environmental Protection Bureau

PROMOTE   *your*air   CERC

*Beijing*Air

- Within 3 months the data were acquired, the system including a dual language web site set up and operational forecasting began

- The system was installed at Beijing Capital Normal University and at the offices of the Beijing Environmental Protection Bureau as well as in Cambridge, UK. Training was delivered at both venues.

- *Beijing*Air delivered forecasts throughout the Olympic and Paralympic period with great reliability

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*Beijing*Air: website (in Chinese)
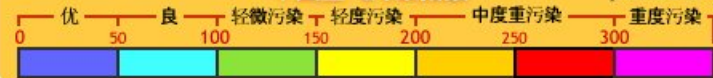
*Beijing*Air: website (zoomed in)
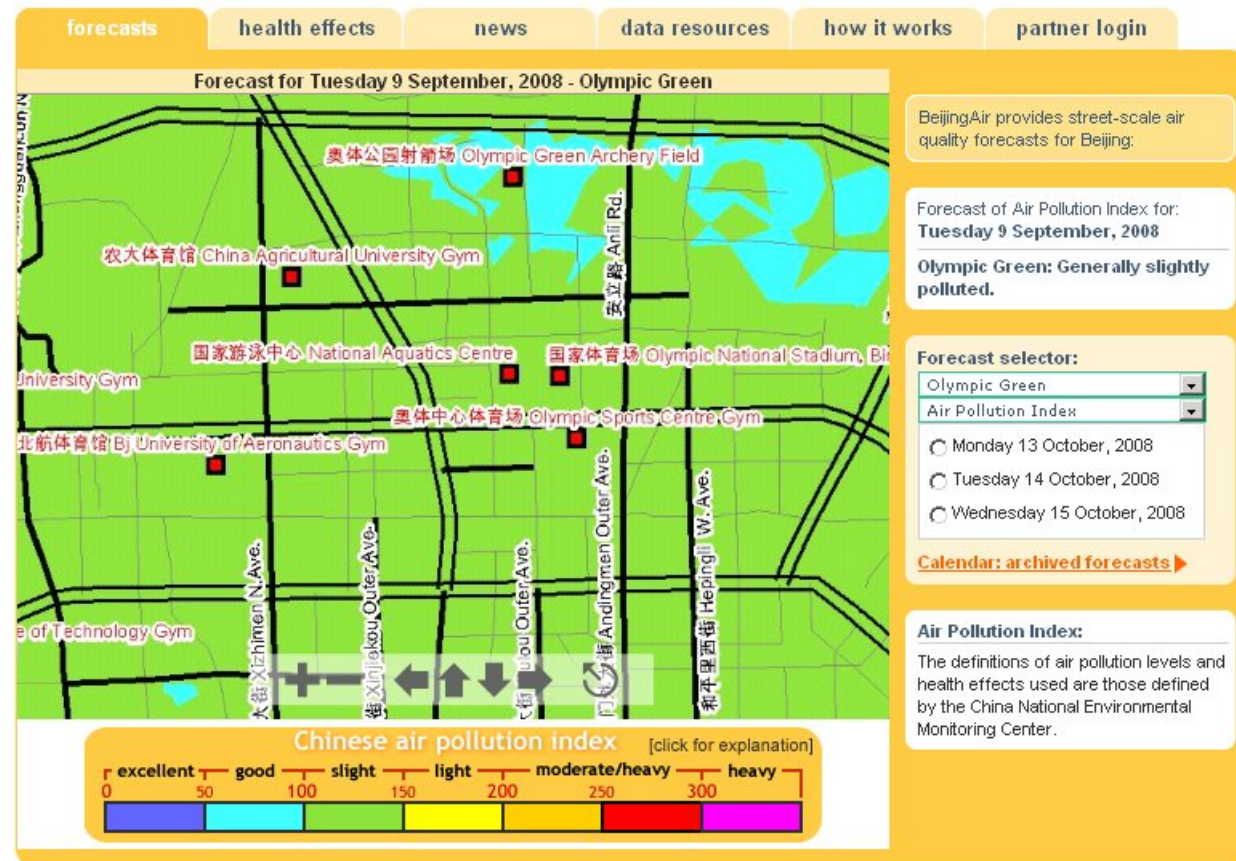
*Beijing*Air performance

- Data compared
  - ADMS-Urban (*Beijing*Air forecasts)
    - in **live mode** (published on-line)
    - in **hindcast mode** (model rerun afterwards)
  - MEP (forecasts by the Ministry of Environment Protection)
  - CHIMERE (forecast concentrations by the CHIMERE model)
  - EPB (monitor observations in Beijing)

- Period of comparison: 5 July to 19 September
  (before and after the emission cut, Olympics, Paralympics)

- Points of comparison: Beijing (average over 11 monitors)
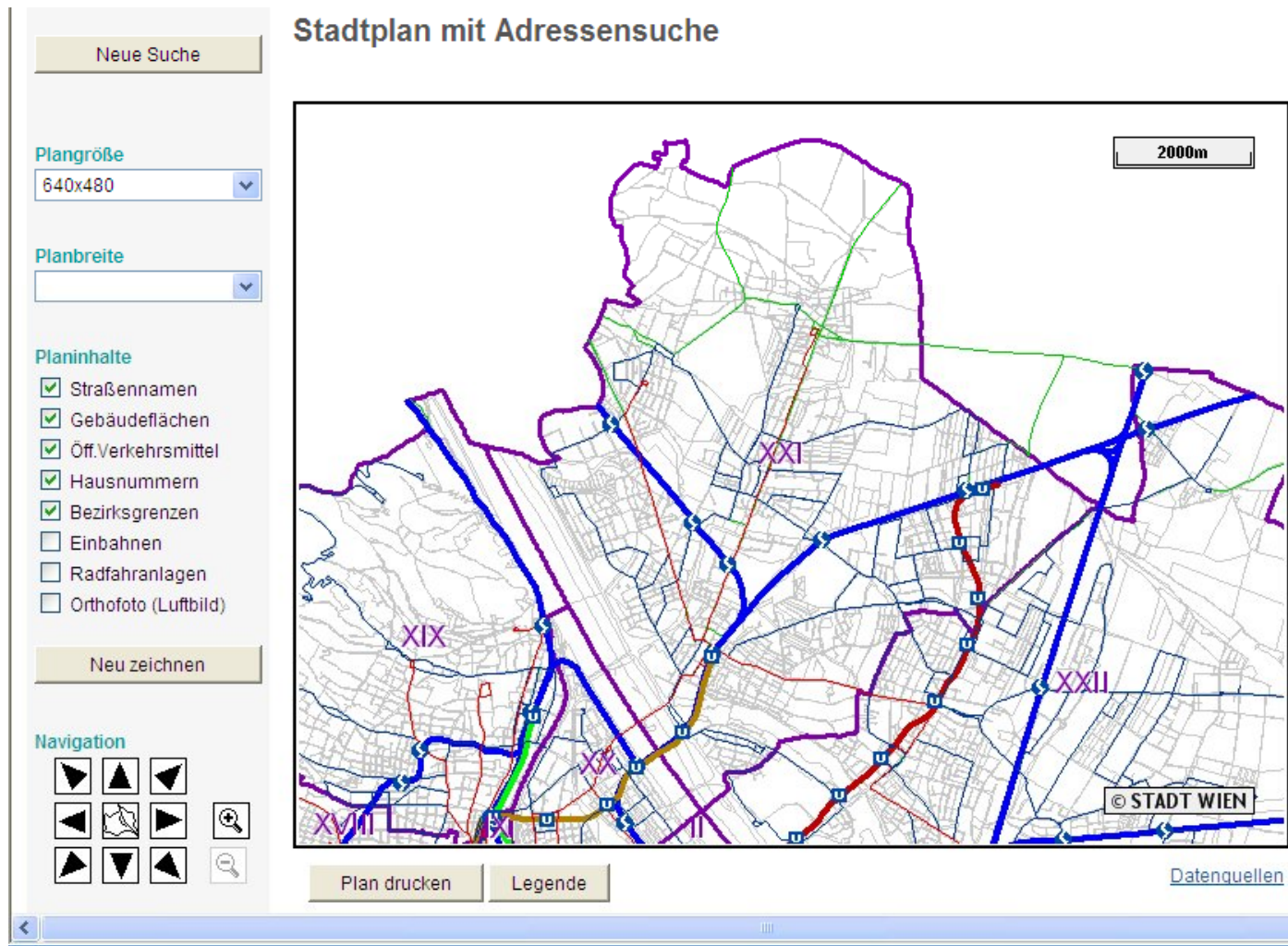
*Beijing*Air performance: live & hindcast
Daily API, ADMS-Urban forecasts, MEP forecasts, EPB observations
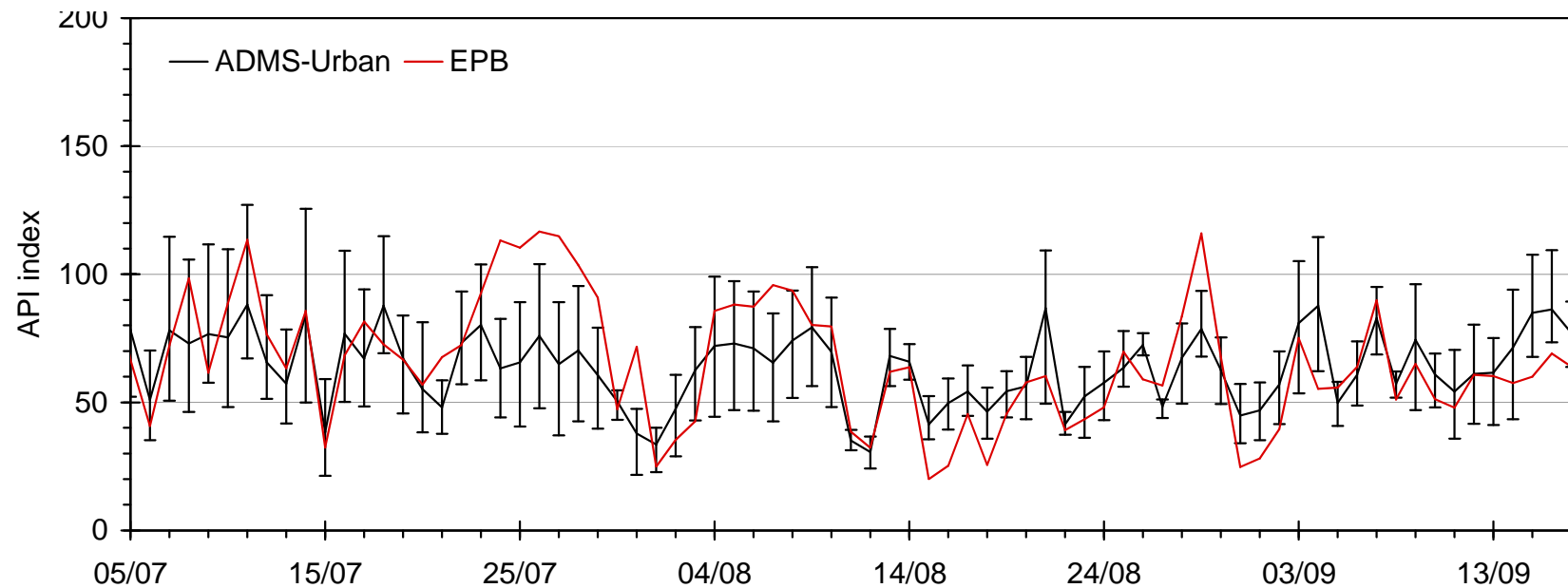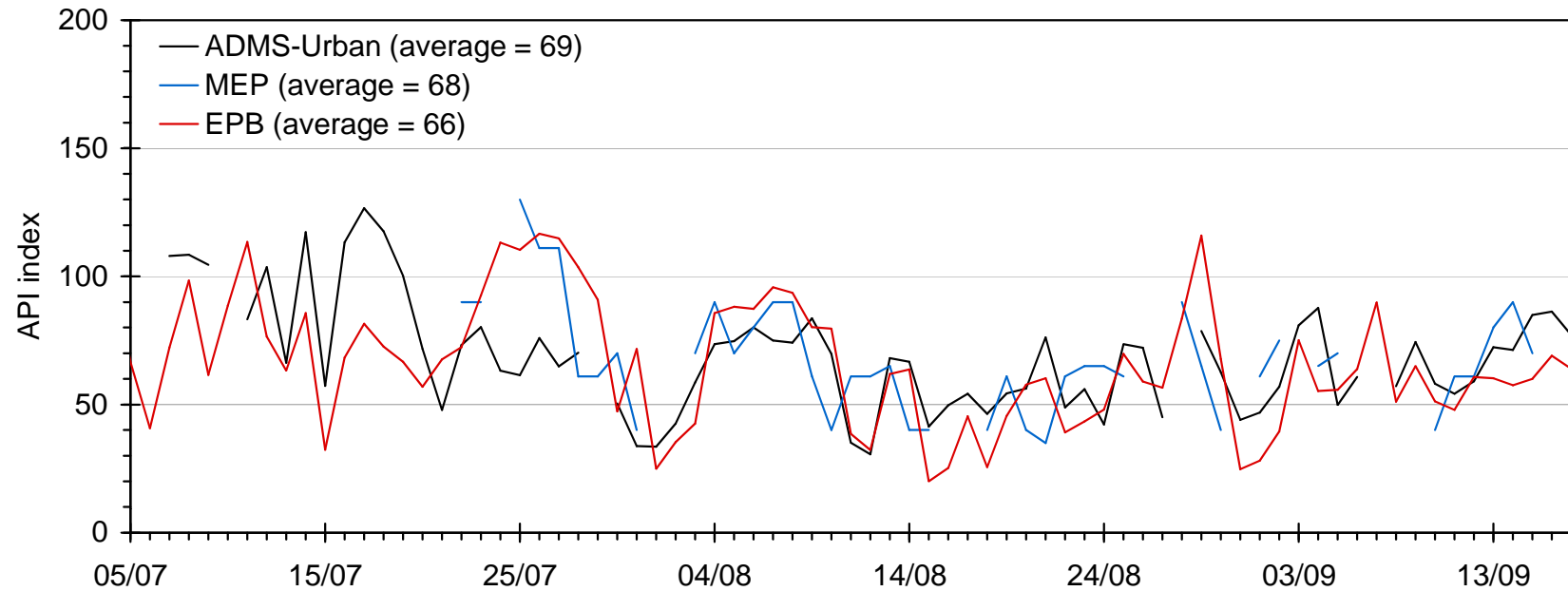
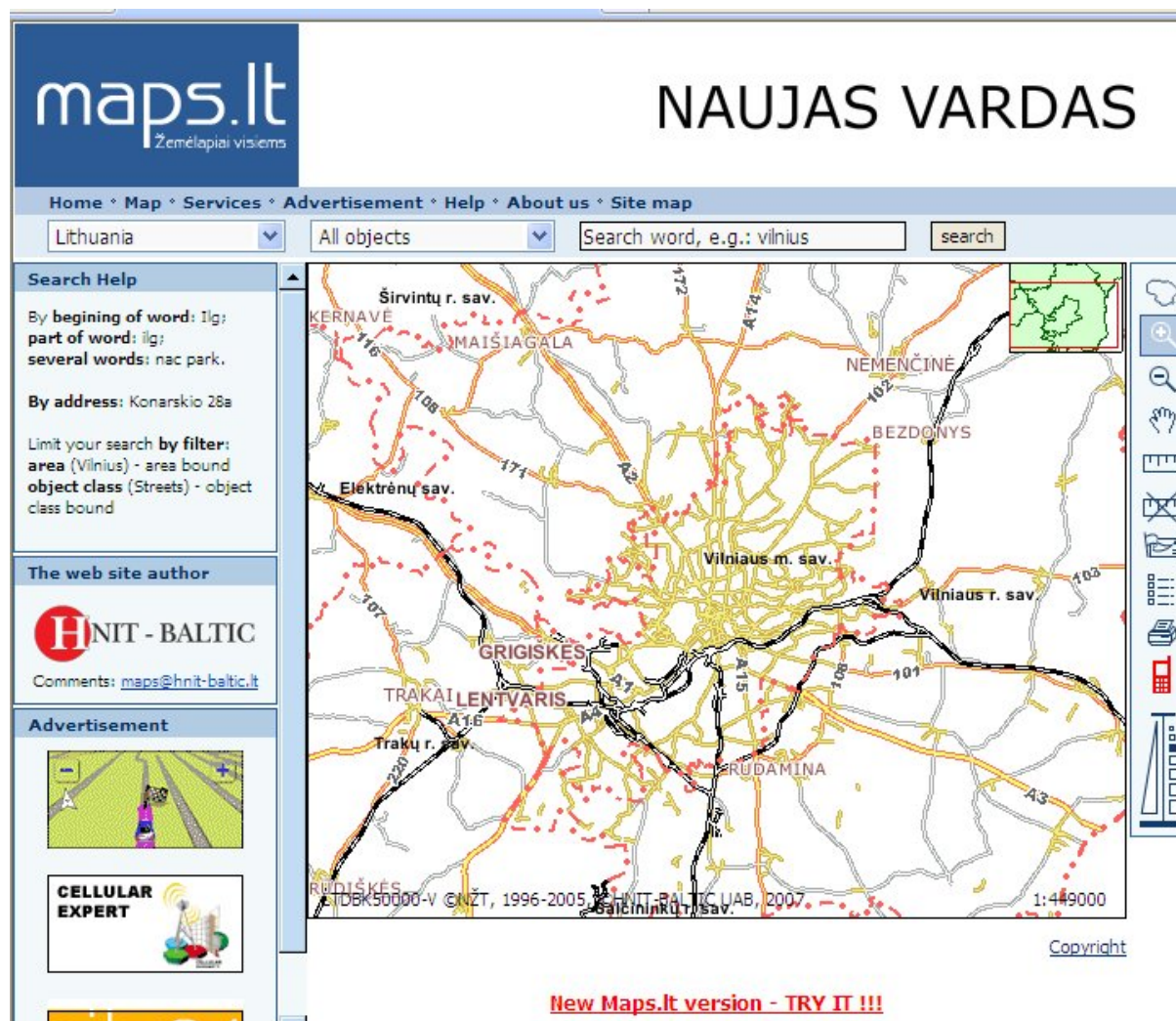*your*Air: ongoing **developments within**
PROMOTE

Vienna (Austria)

- Under development, working with UBA (Environment Agency) and City of Vienna

CERC

Vilnius (Lithuania)

- Under development, to link to Municipality web site and maps

Thank you

www.cerc.co.uk