

# CityZen

## megaCITY - Zoom for the Environment

Michael Gauss, met.no  
and the CityZen team

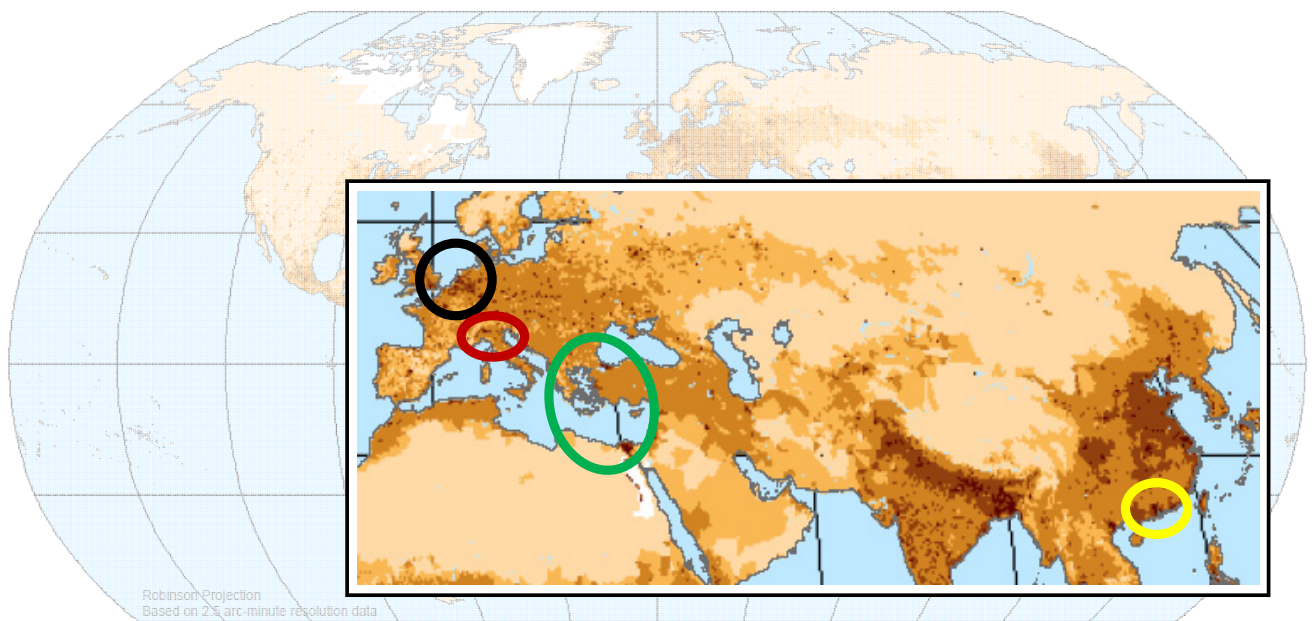


Vienna, 04 May 2010

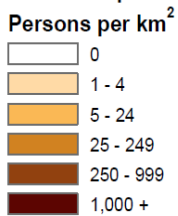


Total budget: ~ 4 m€  
(FP7 medium-scale focused research project)

Duration: 3 years (start: September 2008)

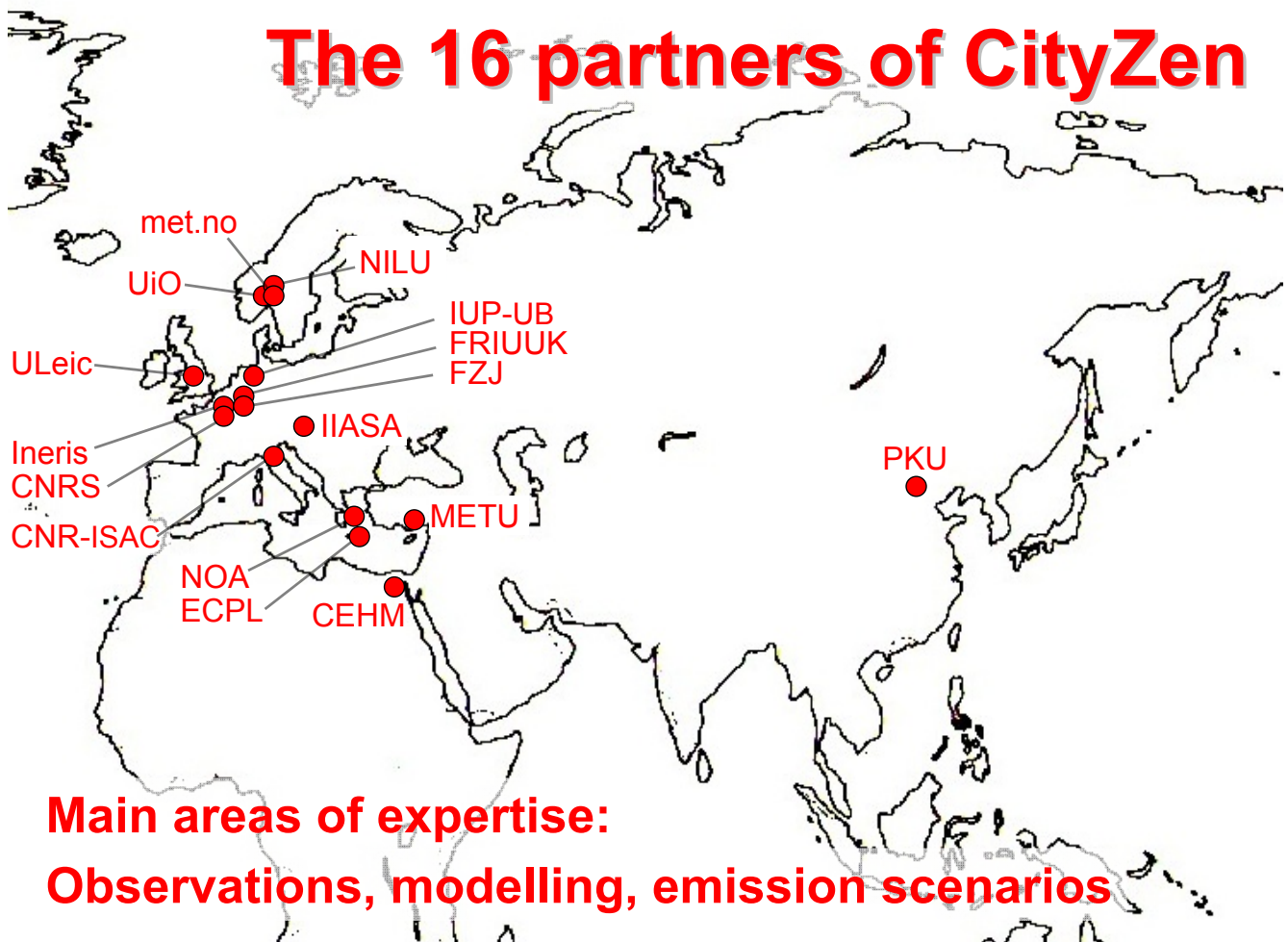


Gridded Population of the World



Copyright 2005. The Trustees of Columbia University in the City of New York. Source: Center for International Earth Science Information Network (CIESIN), Columbia University; and Centro Internacional de Agricultura Tropical (CIAT), Gridded Population of the World (GPW), Version 3. Palisades, NY: CIESIN, Columbia University. Available at: <http://sedac.ciesin.columbia.edu/gpw>.

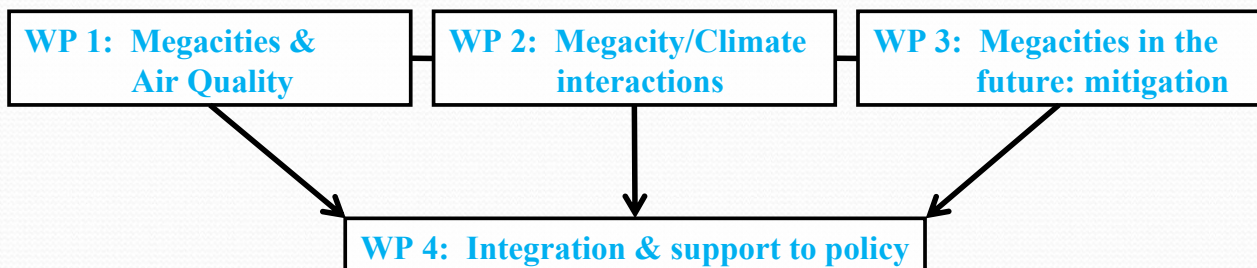
# The 16 partners of CityZen



**Main areas of expertise:  
Observations, modelling, emission scenarios**

# Objectives of CityZen

- Quantify and understand current air pollution in and around selected megacities
- Development of tools to estimate interactions between different spatial scales
- Estimate how megacities influence air quality and climate, locally and globally
- Estimate how megacities are responding to climate change
- Estimate the impact of future emission change, including mitigation options
- Provide technical underpinning of policy work



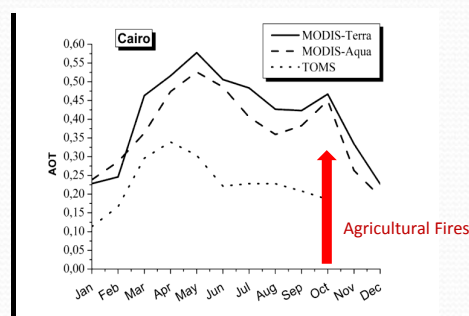
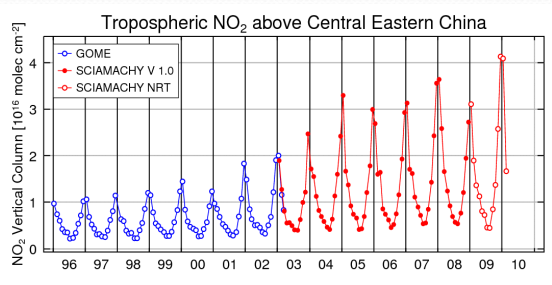
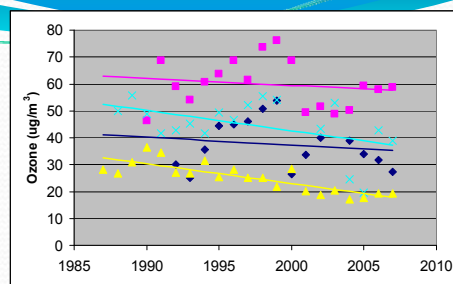


# Progress in CityZen

- Vast amount of observations: mainly from satellite, but also ground-based
- Emission data for the last decade based on emep, globcover, and RCP. (Finer scale emission data for Rhine/Ruhr and Istanbul)
- Model development regarding scale bridging
- Various focused studies, e.g. East Mediterranean, London, ...
- Coordinated model study on trends has started
- Dissemination IGAC/WMO report and publications

# Observations

- Ground-based: new network, and maintenance of existing networks
- Satellite: combining data from different instruments into consistent multi-year data set
- Data bases (EBAS)
- trends / source apportionment / megacity signals



# CityZen emission inventories (present)

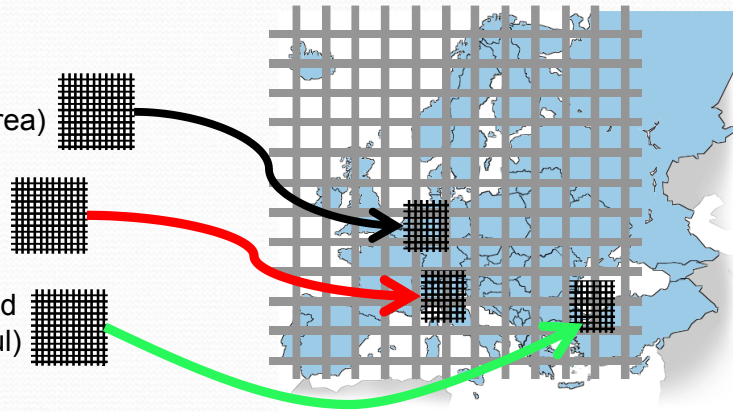
- 1998-2007 **Europe**: EMEP (50×50 km<sup>2</sup>) spatially regridded to 10×10 km<sup>2</sup> using GLOBCOVER data: INERIS (→ “INERIS-EMEP”)

- Fine-scale data sets:

- LANUV (Rhine/Ruhr area)

- ARIANET? (Po Valley)

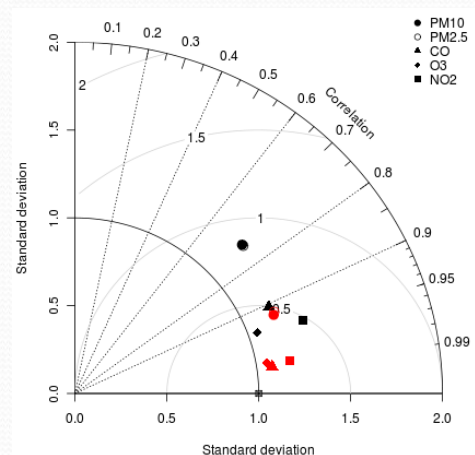
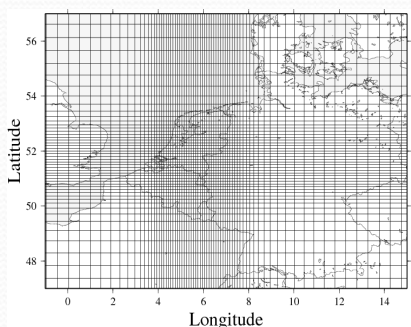
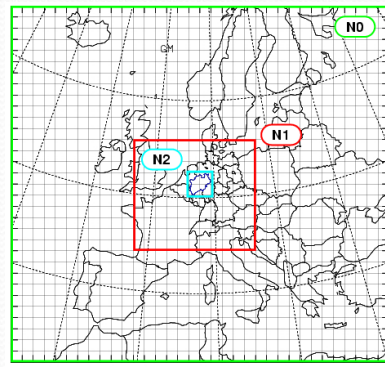
- AUTH, Istanbul TU, and Boğaziçi Univ. (Istanbul)



- 1998-2007 **global**: based on the RCP scenarios produced for IPCC-AR5 (0.5°×0.5°) and ‘INERIS-EMEP’: CNRS

# Modeling

- Nesting approaches
- Zooming approaches
- Nudging
- Improved resolution
- Model studies (individual)
- Coordinated model studies





# What's next

- Climate/chemistry interactions
  - So far only off-line coupling of GCM with CTMs
- Future scenarios and mitigation options
  - → WP3!

# External collaboration

- IGAC, Peking University, CityZen, MEGAPOLI, MILAGRO, Universidad de Chile, ...
  - IGAC Assessment on the Impacts of Megacities on Air Quality and Climate
- Joint sessions at EGU
- Considered:
  - COST ESo6o2 – MEGAPOLI – CityZen
    - Modeling Paris (measurement campaign)
  - Global modelling studies?



# Summary

- Good progress on observational data
- Emission data created for the last decade
- Modeling studies underway
- Coming soon: scenarios
- Websites:  
<http://www.cityzen-project.eu>  
<https://wiki.met.no/cityzen/start>
- More collaboration welcome