



Atmospheric Data Access for the Geospatial User Community

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www.rgi.nl



Project Goals



ADAGUC is about bridging GIS and Atmosphere

- ◆ **People** > *workshops/conferences*
- ◆ **Knowledge** > *website/publications*
- ◆ **Technology** > *software/services*

**Atmospheric Data Access for the
Geospatial User Community**



Who we are

Royal Netherlands Meteorological Institute

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University of Florence

S. Nativi

National Center for Atmospheric Research

O. Wilhelmli

Institute for Marine and Atmospheric Research Utrecht

J.F. Meirink

Harvard University

C. Sioris

University of Heidelberg

C. Frankenberg

European Space Agency

C. Zehner



Different fields:

IT knowledge

Atmospheric knowledge
(Sciamachy)

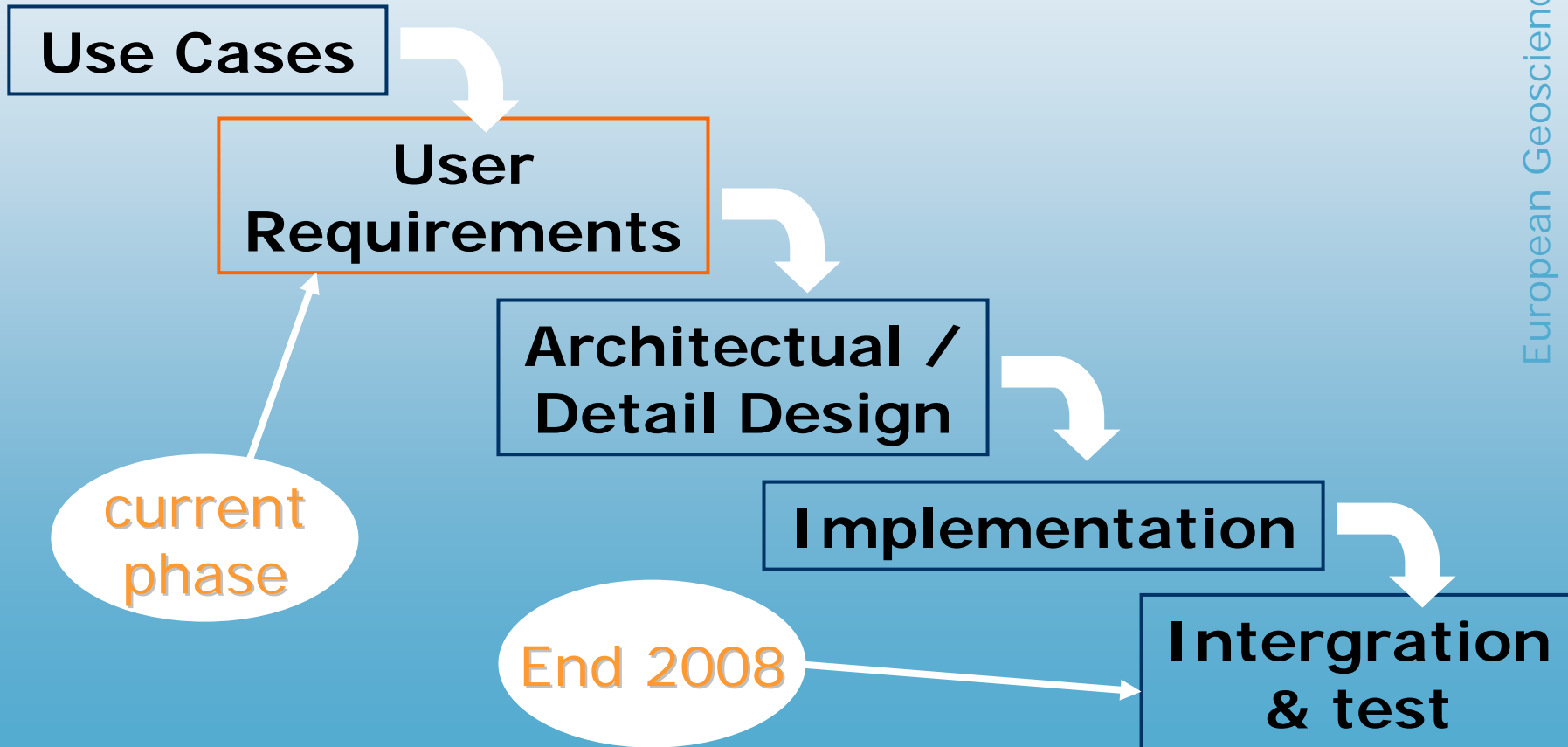
Various atmospheric users

GIS knowledge

Project phases



According to ESA's PSS-05 standard for software development



The first steps



The first ADAGUC workshop (Oct 3,4 2006) brought a diverse group of people together that are interested in the geospatial way of working

Currently the Atmospheric Community is inventing the wheel over and over again for basic functions and visualizations

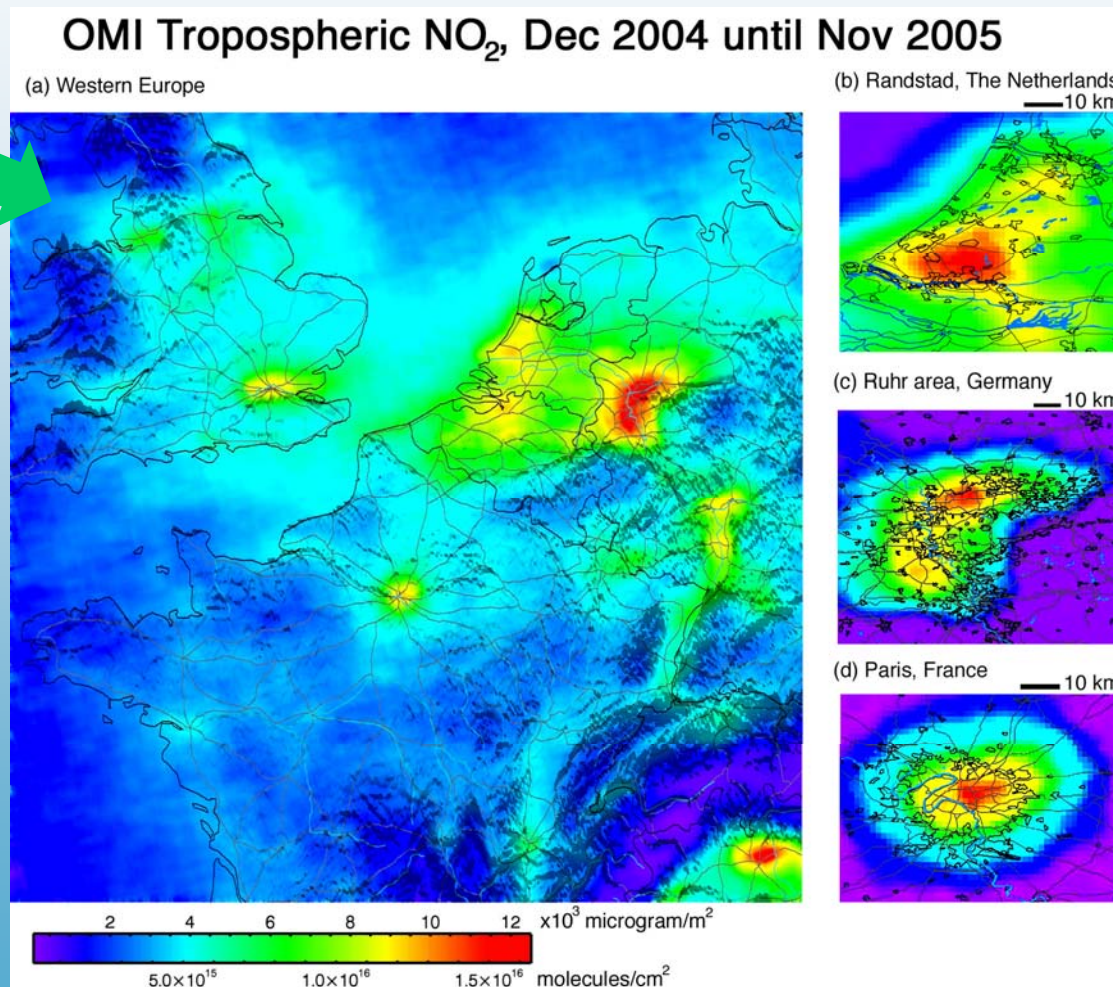
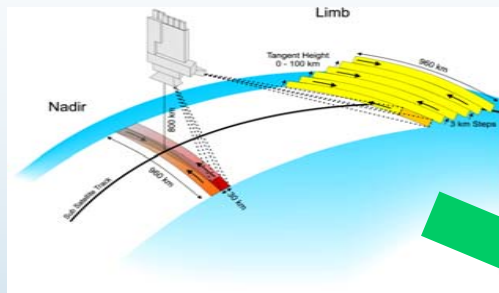
The workshop was used for acquiring use cases of real world problems

Use case classes



- ♦ **Policy Makers** – are interested in Level 3/4 products, maps, archived for easy access. Many national and international stakeholders provide atmospheric data to their governments that deal with social and political impact of climate change.
- ♦ **Earth System Scientists and Atmospheric Scientists** – are interested in Level 2/3 data, both archived and real-time. The atmospheric users are particularly interested in fast tracers like aerosols, and trace gases like NO₂ and SO₂.
- ♦ **GIS Users** – are interested in Level 2/3 data, including archived access. GIS users are characterized as being non-experts in the field of atmospheric research, their focus is more on earthbound features and earth-atmosphere interactions.
- ♦ **Risk assessment community** – is interested in mapped Level 2/3 data, preferably in (near-)real time. These users are interested in products at an urban scale that are focused on industrial calamities, like gas leakage or chemical fires. Combinations with other data sources provides input to crisis information teams.

use case: Atmospheric scientist making maps



Generation of daily L3 files from the L2 files

Generation of yearly average from the daily L3 files

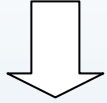
Visualizing the yearly averaged data

Adding boundaries, roads and rivers

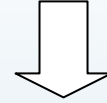
Applying topography using a ray tracer

Adding legends and enhancing the image

GIS and Atmospheric-IS

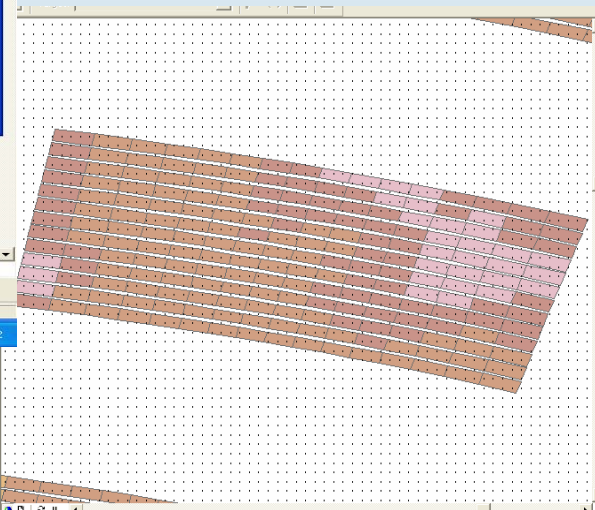
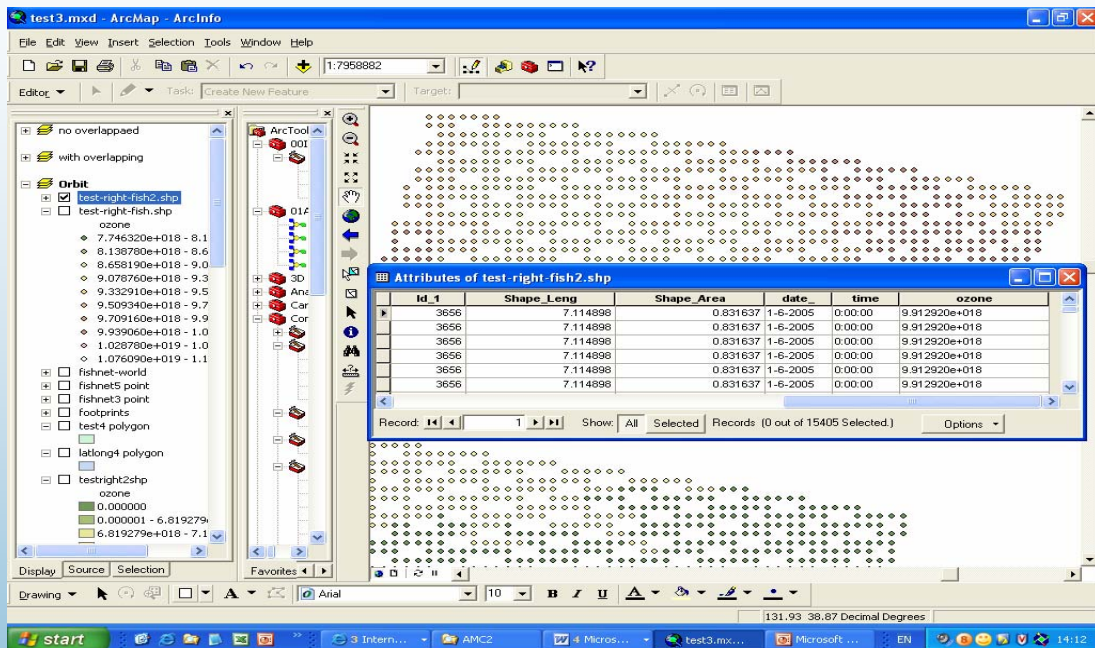


- ◆ data driven
- ◆ spatial
- ◆ mapping
- ◆ discrete/continuous
- ◆ layer paradigm
- ◆ static
- ◆ ESRI as a reference
- ◆ widely used
- ◆ out-of-the-box

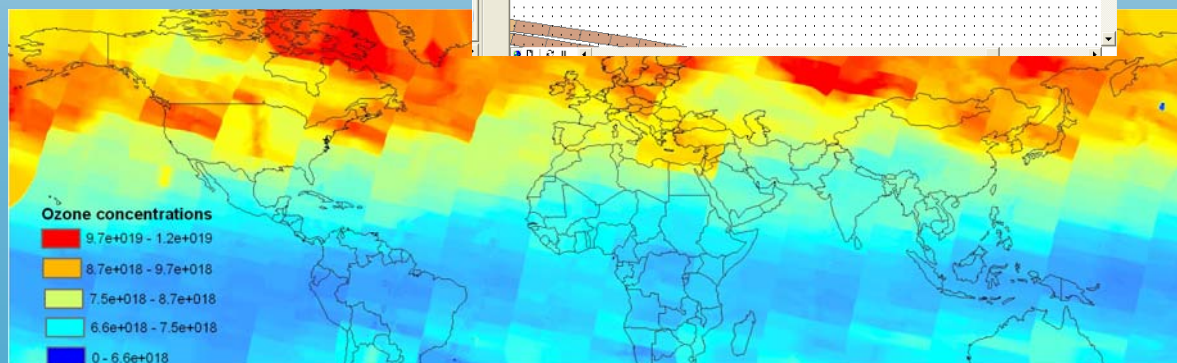


- ◆ process driven
- ◆ spatiotemporal
- ◆ visualisation
- ◆ continuous
- ◆ time series paradigm
- ◆ dynamic
- ◆ WMO as a reference
- ◆ specialists only
- ◆ dedicated

The first GIS steps



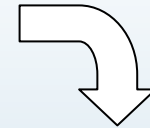
First experiments with Sciamachy data in a GIS environment by students from Wageningen University



Next steps



User Requirements



Architectural /
Detail Design

- ◆ User Requirements have to finalized
- ◆ Investigate current OGC standards
- ◆ Define the metadata (INSPIRE)
- ◆ Select data formats for Sciamachy (netcdf?)
- ◆ Translate the requirements into (reusable) software components
- ◆ Scalability / security
- ◆ Scale this onto hardware requirements
- ◆ Start developing software
- ◆ Procure hardware
- ◆ Test, test & test again
- ◆ Convert the datasets to GIS friendly format
- ◆ Initialize the web services
- ◆ Integration with other portals

Summary



- ◆ **The GEO time is right > awareness brought by Google Earth**
- ◆ **Spatial resolution of atmospheric datasets are becoming usable on urban scale**
- ◆ **Atmospheric communities have to be educated in GIS**
- ◆ **Time aspects needs to be dealt with in GIS software**

ADAGUC will bridge the gap between Atmosphere and GIS..... but we have just started

Questions?



<http://adaguc.knmi.nl>

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