Atmospheric Data Access for the Geospatial User Community

European Geosciences Union
General Assembly 2007
Vienna, Austria
13 – 18 April 2008

John van de Vegte
vegtevd@knmi.nl
Royal Netherlands Meteorological Institute

This project is sponsored by
Space for Geo-Information
www.rgi.nl
Project Goals

Bridging GIS and Atmosphere

- **People**  › *workshops/conferences*
- **Knowledge**  › *website/publications*
- **Technology**  › *software/services/data*

ADAGUC @ EGU:

EGU2008-A-02157 Web service infrastructure
EGU2008-A-02095 International collaborations
EGU2008-A-02106 The gap between atmospheric and Geo community
EGU2008-A-00491 Overview of ADAGUC
EGU2008-A-03509 Web mapping service for soil moisture products
EGU2008-A-03570 From satellite data to GIS application
Who we are

Royal Netherlands Meteorological Institute
J. van de Vegte  R. van der A
R. Sluiter  P. Veefkind
M. Plieger  H. Manders
W.J. Som de Cerff  E. de Vreede

Netherlands Institute for Space Research
R.M. van Hees  S. de Witte

Wageningen University
M. Schaepman  N. Groot

Vrije Universiteit Amsterdam
R. de Jeu  N. de reus

Unidata Program Center
B. Domenico

University of Florence
S. Nativi

National Center for Atmospheric Research
O. Wilhelmi

Institute for Marine and Atmospheric Research Utrecht
J.F. Meirink -> KNMI

Harvard University
C. Sioris

University of Heidelberg
C. Frankenberg -> SRON

European Space Agency
C. Zehner

Different fields:
Earth/Atmospheric sciences
GIS knowledge
IT knowledge
Various end users
Project phases

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

Use Cases

User Requirements

Architectural / Detail Design

Implementation

Integration & test

current phase

End 2008

http://adaguc.knmi.nl
Use Cases

- **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 document can be found on the ADAGUC website
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
Data Products

- **SCIAMACHY**: O3, NO2, Fresco, CH4, CO, both in level 2 (vector) and level 3 (raster). In the level 3 case there is not only the requested for the information itself but also count, standard deviation, expected error for each cell in the raster.

- **ECMWF model**: Precipitation, Air temperature, Tropospheric Height, Boundary Layer Height, Wind speed/direction, Pressure, Soil Moisture/Temperature, Water Vapor (0-7 cm), every 6 hours in full horizontal and vertical resolution.

- **AMSR** Soil Moisture, Surface Temperature and Vegetation Index.
Product Standard I

- One standard for all products
- User friendly: many applications in various communities
- Meta data: we have to adhere to INSPIRE
- Meta data: what makes the data even more usable: Climate Forecast convention
- Self describing content
- Flexible content: raster and vector with optional time dimension
- Platform independent and stable for the coming years
- The standard is free to use by everyone

See EGU2008-A-03570 (S. de Witte, et al) for the ADAGUC data products standard
Product Standard II

- INSPIRE > ISO-19115
- NL Metadata Standard
- OGC > WMS, WFS, WCS
- Climate and Forecast metadata convention

Currently the standard only supports regular grids and polygons with 4 corners

See EGU2008-A-03570 (S. de Witte, et al) for the ADAGUC data products standard
Product Standard III

- HDF5 is selected
- Release 1.8.0: dimension scales
- NetCDF4 will use HDF5

See EGU2008-A-03570 (S. de Witte, et al) for the ADAGUC data products standard
Demonstrator
WMS/WFS/WCS

This demonstrator service can be found on the ADAGUC website
Next steps

- Finalization of data formats standard
- Implement (reusable) software components
- Assess scalability / security
- Scale this onto hardware requirements
- Integrate the developing software
- Test, test & test again
- Convert the archive datasets to the ADAGUC standard
- Promote the web services to operational status
- Integration with other GEO portals
Challenges

- WFS Time aspects
- Growing datasets
- Huge datasets
- WMS client animations
- Combining all metadata into 1 standard
- Think of a gift for the final workshop 😊
Summary

- Users know what products they want ... and how
- Product standard is converging to its first release
- Much experience gained with GDAL/OGR
- Only 8 months to go...
Questions?

Final ADAGUC Workshop
4-5 Dec 2008
Amsterdam

Hosted by VU University
Faculty of Earth and Life Sciences