Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Milieu

GSIE

Geospatial Interpolation Environment

Onderzoek en productie omgeving

Overzicht componenten

Recepten bewerken en aansturen

OGC web services overzicht

Maarten Plieger
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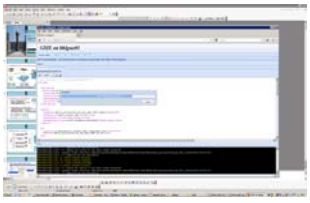
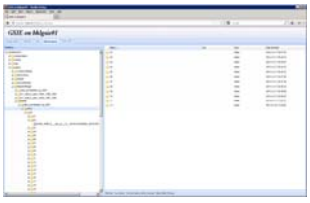
Onderzoek en productie omgeving: GSIE

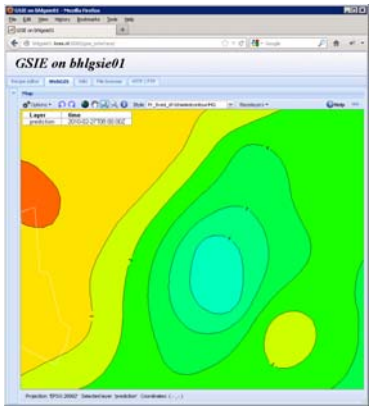
- Geospatial Interpolation Environment → GSIE

- Geautomatiseerde interpolatie van meteorologische gegevens
  - Punt metingen -> rasterdata
  - Configureerbaar via “recepten”
  - Multi threaded, maakt gebruik van meerdere rekeneenheden
    - Nu twee blades, elk 24 cores, 48 gelijktijdige interpolaties


Onderzoek en productie omgeving: GSIE

- Brondata:
  - Klimatologisch Informatie Systeem (KIS)
    - Oracle database
    - Uitbreidbaar naar andere databronnen
- Geïnterpoleerde parameters:
  - Temperatuur, neerslag, relatieve luchtvochtigheid, …
- Interpolatie:
  - R met gstat & automap
    - IDW, Kriging, etc…
- Eindproduct:
  - Raster data + kwaliteitsinformatie



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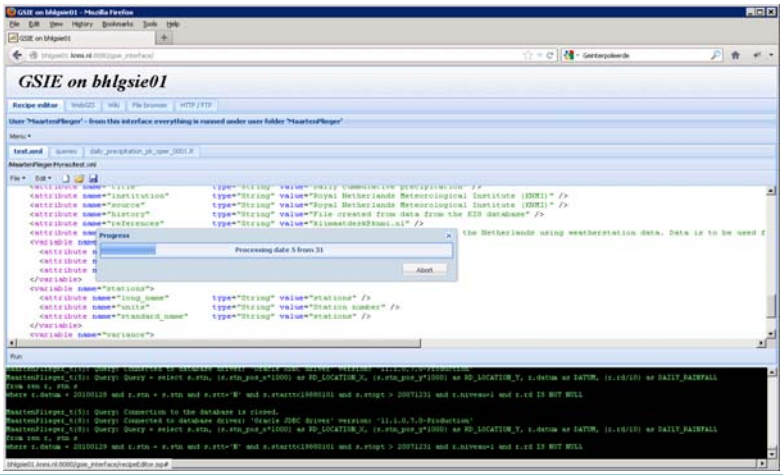
Recepten bewerken en aanroepen



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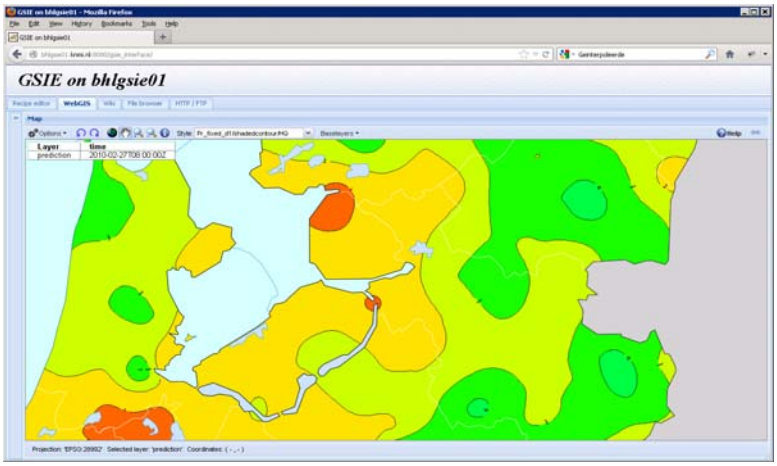
Resultaten bekijken



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GSIE - Features

In GSIE kan door middel van recepten producten worden gegenereerd vanuit de KIS database

GSIE is zowel via web als command line benaderbaar

- Authenticatie via tomcat basic authentication
- Meerder gebruikers kunnen gelijktijdig recepten runnen

Na voltooing van een recept zijn de producten direct in OGC services beschikbaar

- Via het web portaal kunnen verschillende producten worden bekeken en vergeleken
- Via de OGC service kunnen producten weer heropend worden in R
  - » Zeer handig voor validatie van producten

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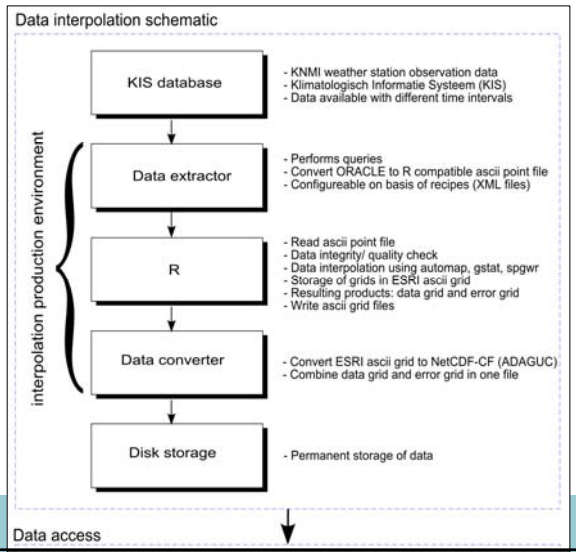
Overzicht componenten (1) - interpolatie



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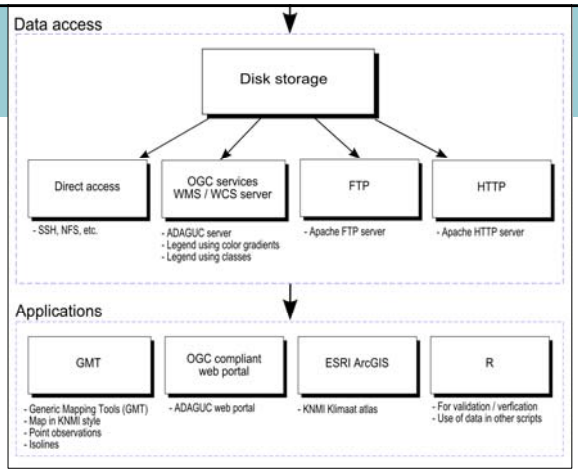

Data toegang

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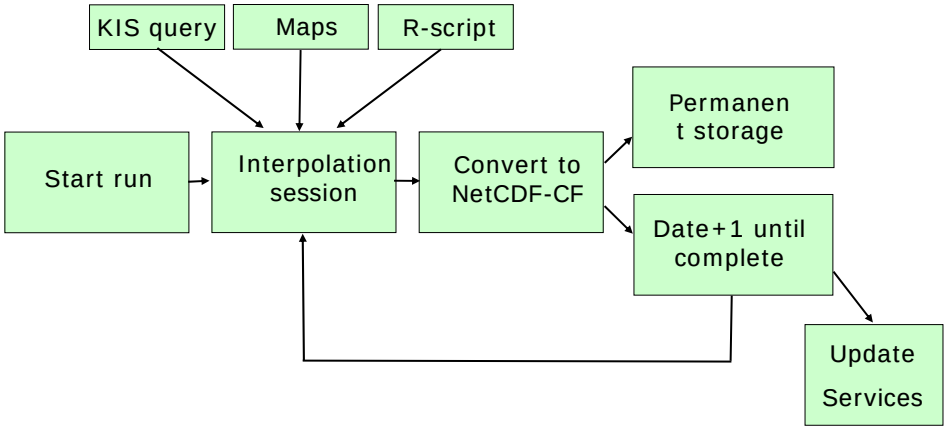
Interpolatie stappen



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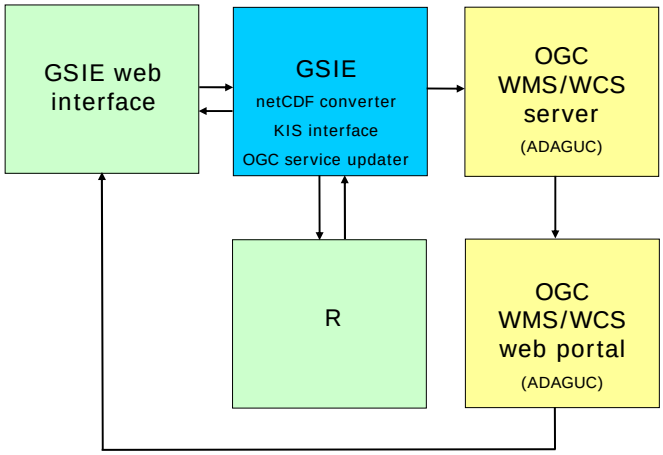
Samenhang bouwstenen



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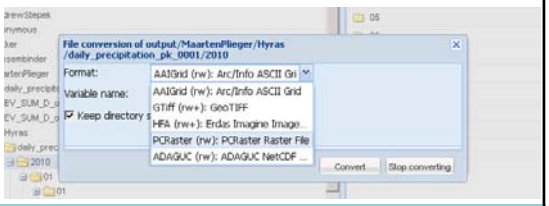
Data toegang

- Ruwe data via HTTP & FTP; Afgeleide data via OGC WMS & WCS
- Complete directories kunnen worden gezipped en gedownload
- Datasets kunnen worden omgezet in andere formaten als:
  - ESRI ASCII Grid (AAIGRID)
  - GeoTIFF
  - Erdas Imagine
  - PCRaster
  - ADAGUC NetCDF



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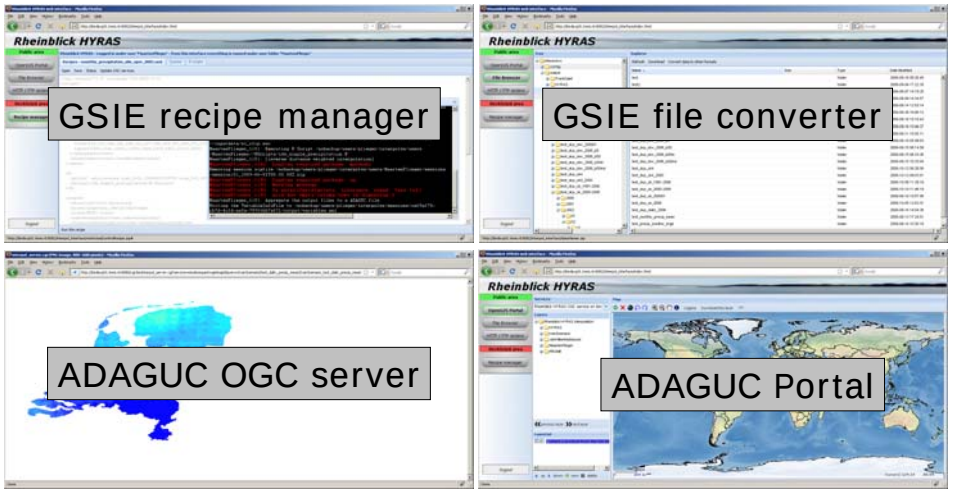
Aansturing via Web interface



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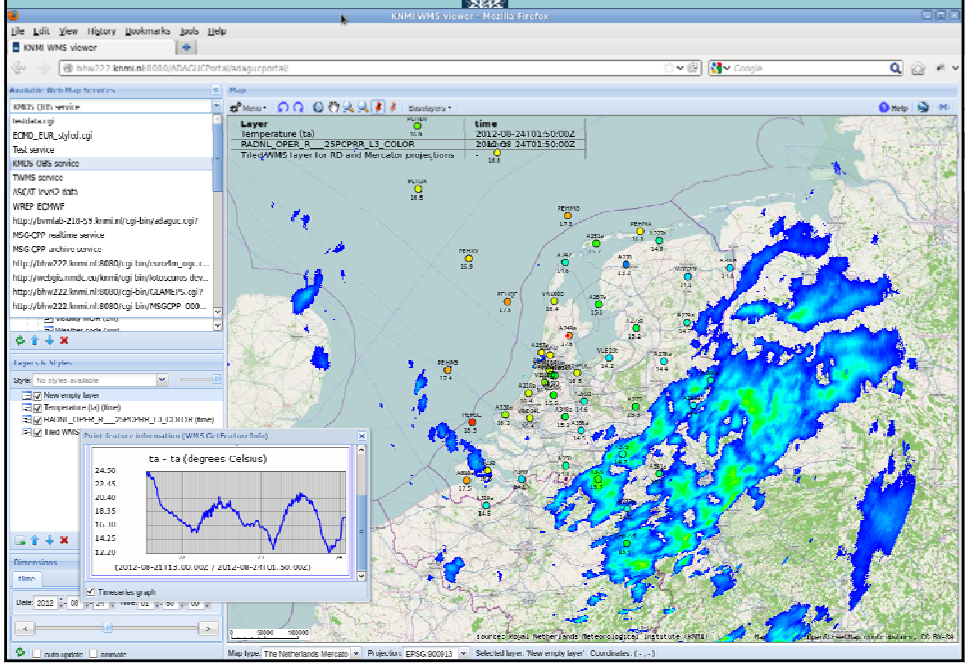
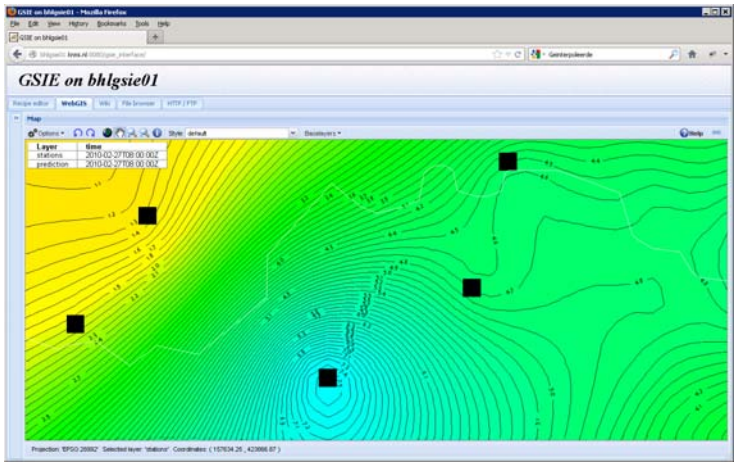
Ontwikkeling in WMS



Vragen voor GSIE?



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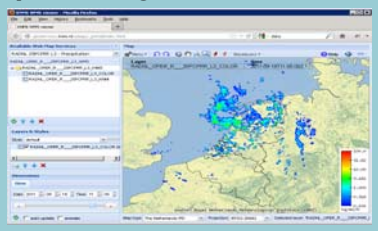
ADAGUC

Atmospheric Data Access for the Geospatial User Community

http://adaguc.knmi.nl/



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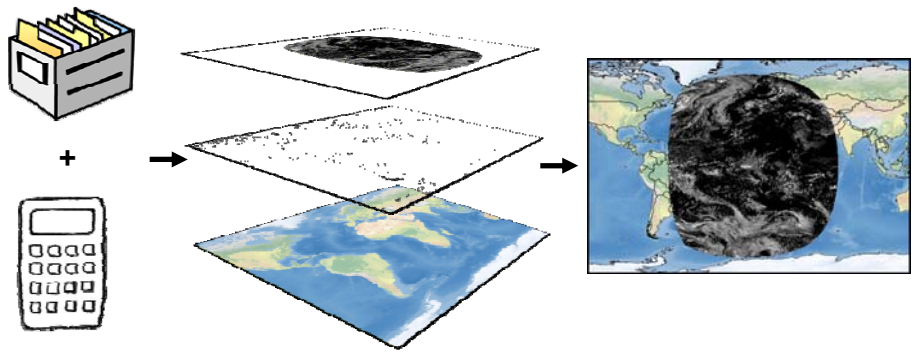
Web Map Services: From data to images



NetCDF Data (big, 5.5Gb)

PNG images (small, 180Kb)

Combined geographically

Data from MSGCPP: http://msgcpp.knmi.nl

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Introduction to OGC services

- OGC – Open Geospatial Consortium
  - currently ~450 organizations
  - standards for geospatial content and services
  - GIS data sharing and processing

OGC®
Making location count.

- Services used within the ADAGUC project:
  - ADAGUC: Atmospheric Data Access for the Geospatial User Community, finished in 2009)
  - **Web Map Service (WMS) - for images**
  - Web Feature Service (WFS) - for vector data *(features)*
  - Web Coverage Service (WCS) - for raster data *(coverages)*
- **WMS is primarily for visualization**
- WFS and WCS are for retrieval of data

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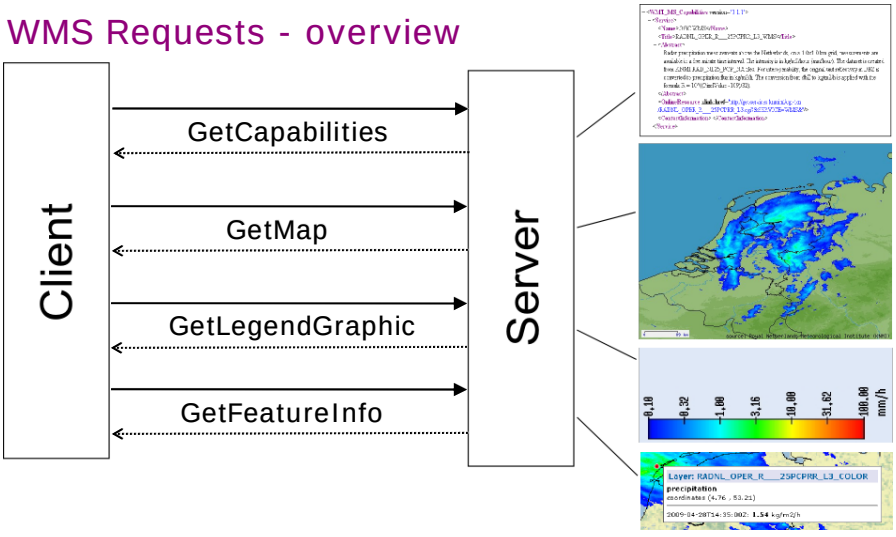
WMS Requests - overview



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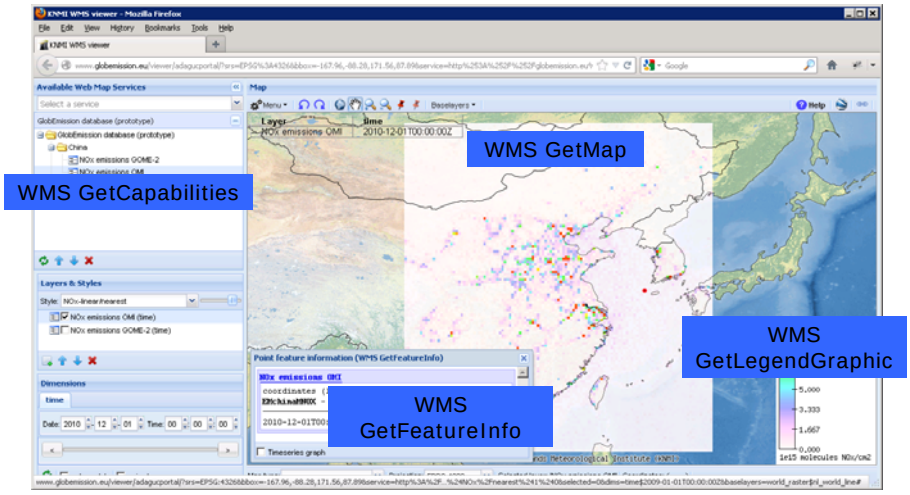
WMS Client: KNMI WMS viewer



Data from Globemission: NOx emissions from GOME-2

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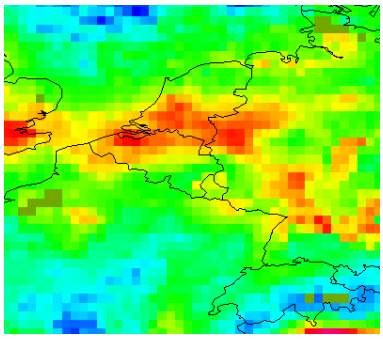
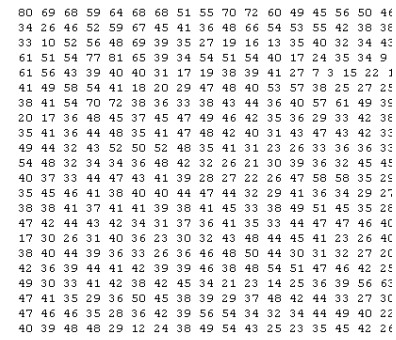
Web Coverage Service – WCS (similar to WMS)

- Similar to WMS, but returns *data* instead of images
  - Returns observations in a regular spaced grid in many projections
  - Generates data in geotiff, ascii, netcdf 3/4, HDF5, etc…



Web Map Service: *images*



Web Coverage Service: *data*

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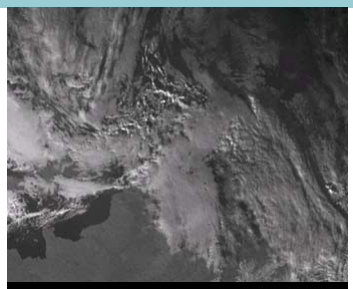
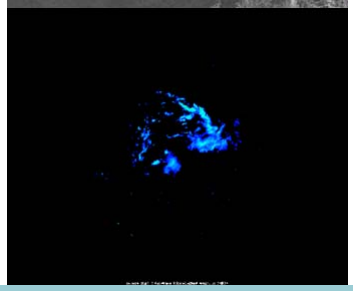
Projection, resizing & subsetting

- Meteosat HRVIS:
  - Satellite view projection
  - Resolution: 3520 x 4660



- Radar precipitation:
  - Polar stereographic projection
  - Resolution: 700 x 765



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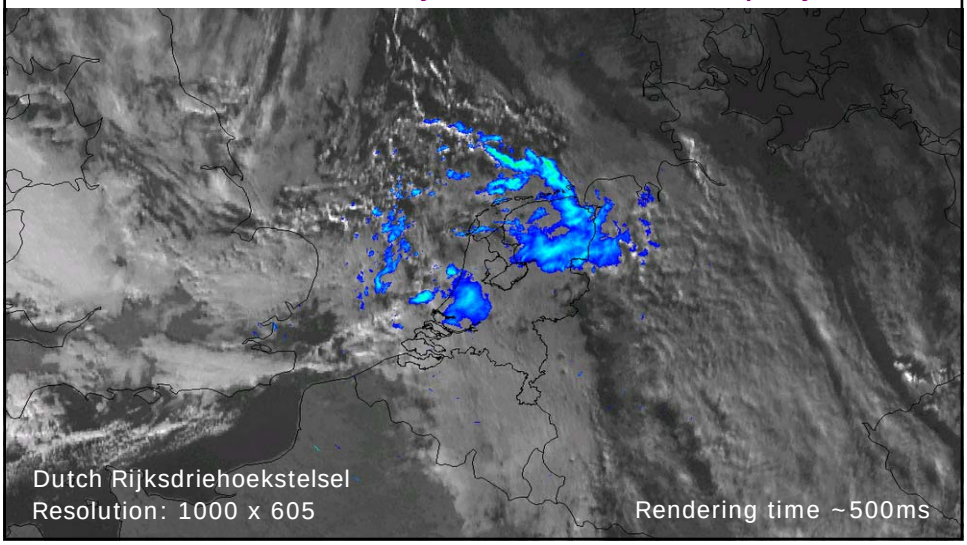
Combined in Dutch Rijksdriehoekstelsel projection



ADAGUC: OGC Server and viewer

Viewer

- Web Map Services
- Dimensions
- ExtJS GUI framework
- JavaScript (Browser based)
- Quick links / status links

Server

- Web Map Service (1.1.1)
- Web Coverage Service (1.0.0)
- Contouring, shading, vectors
- Dimensions: time, pressure, …
- PostgreSQL, GDAL, Cairo, GD, Proj, NetCDF-C
- C++ as CGI on linux server

(http)

http://adaguc.knmi.nl/

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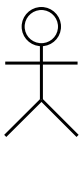
OGC WMS GetMap Request – getting images!

Users

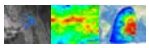
OGC® Making location count.

netCDF



images

Small PNG's



ADAGUC

data

Big data files

NetCDF files

Rendering, resizing, reprojection & styling

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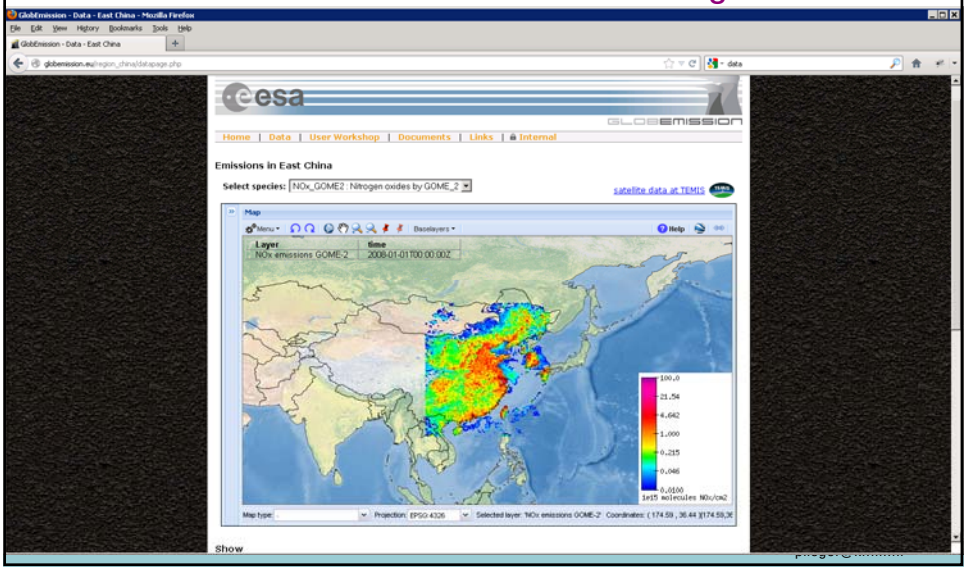
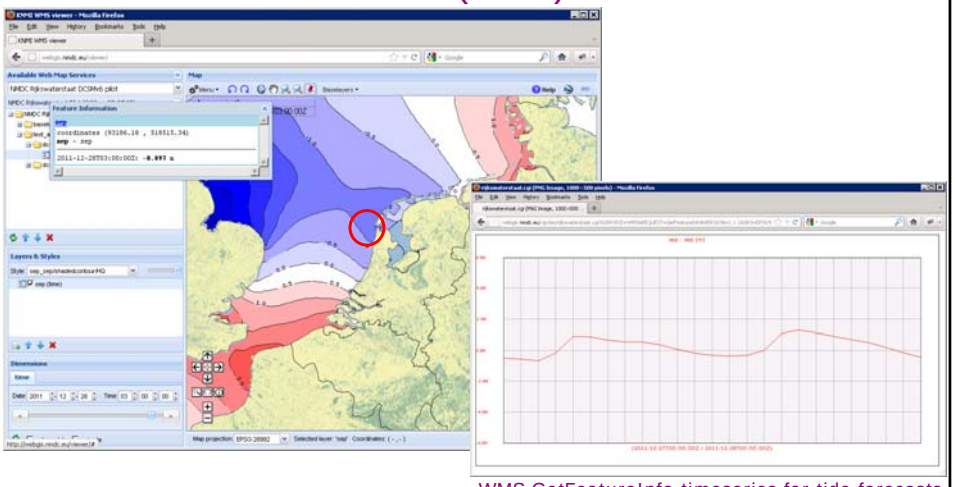
Globemission – Direct viewer embedding



Tide forecasts - DCSM v6 (RWS)



WMS GetFeatureInfo timeseries for tide forecasts

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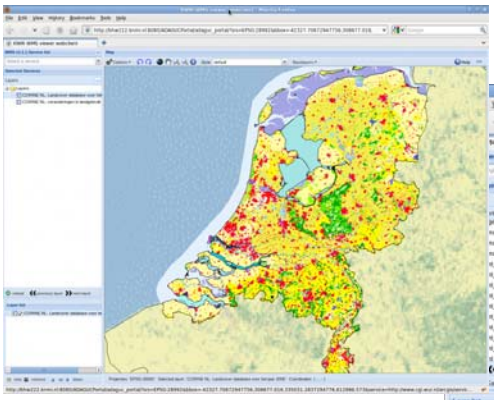
WMS services at other institutes



Corine landuse from Wageningen University

RIVM – TOP25 (WMS)

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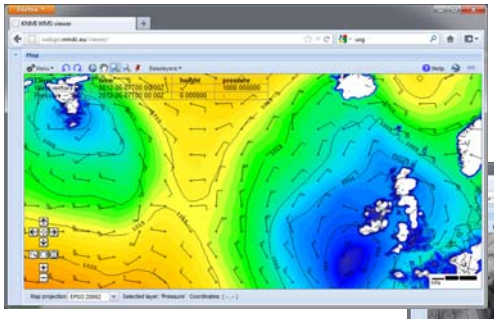
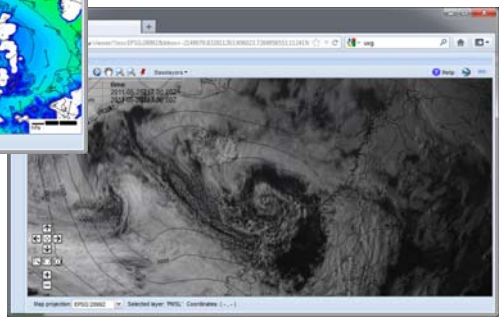
Weather models and visualization



HIRLAM – Pressure & wind



HIRLAM + Meteosat 9

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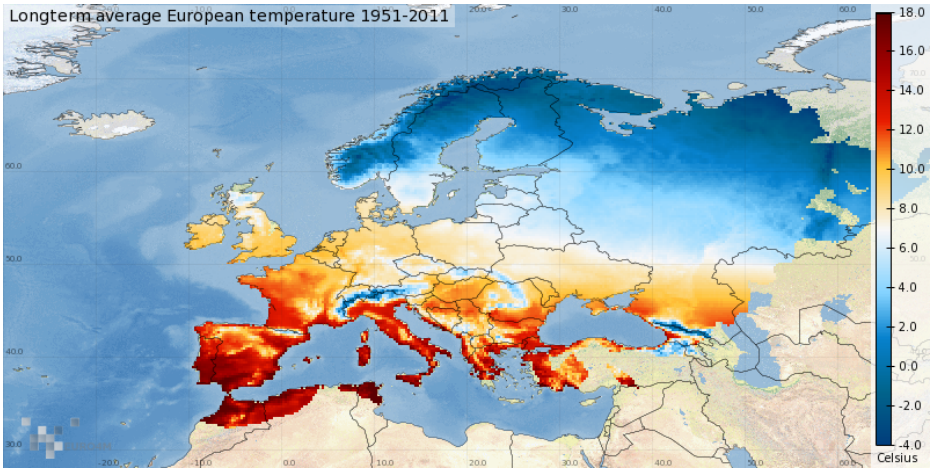
Euro4M – European Temperature



Visualization via WMS GETMAP request

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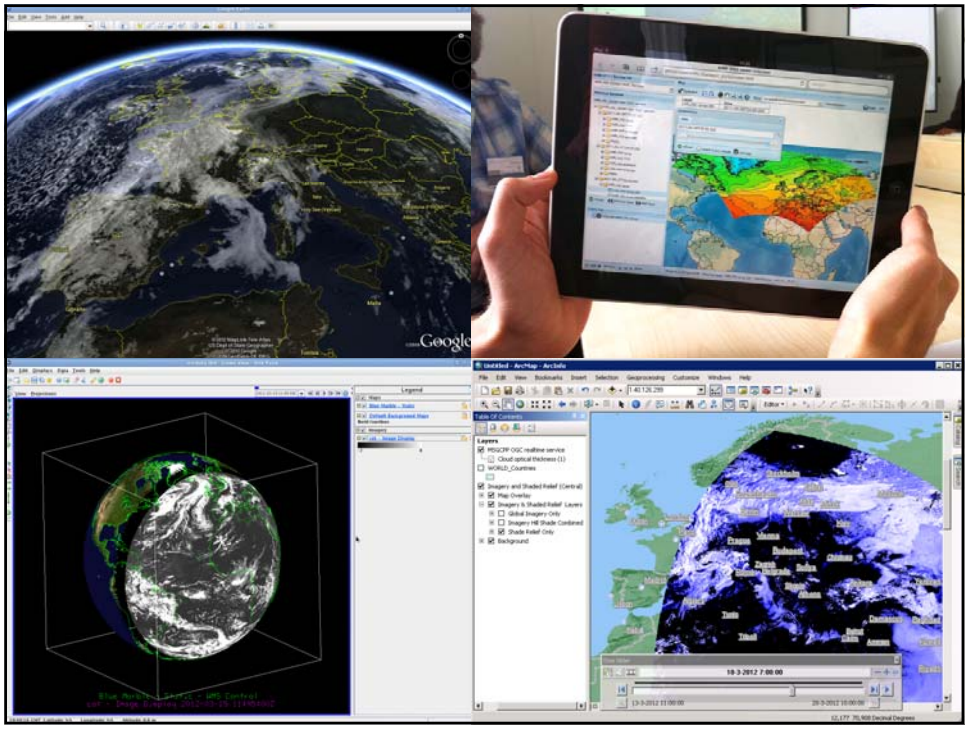


Questions?