SMHI

Building a OGC web map service infrastructure at SMHI

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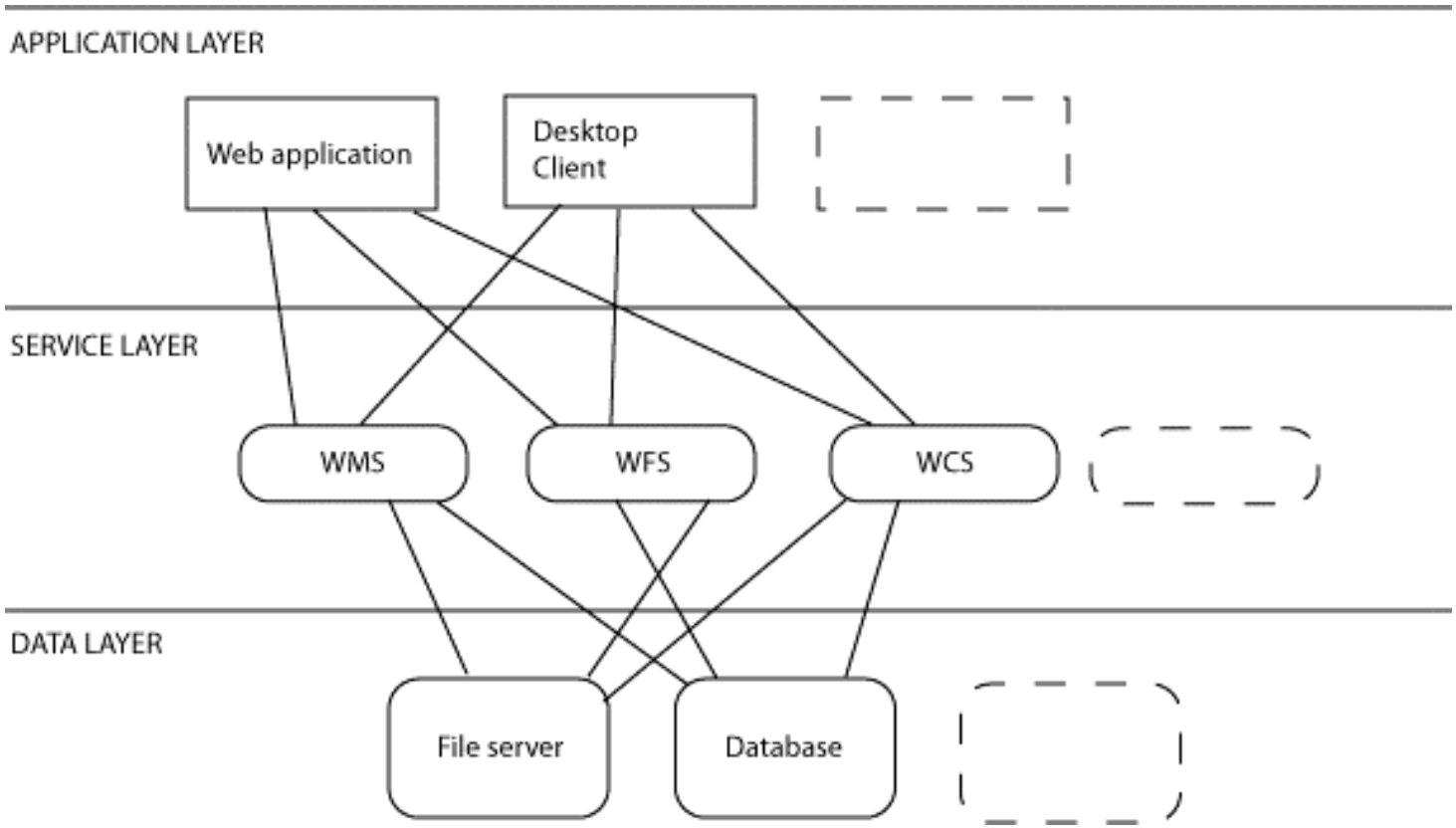
- Purpose of new infrastructure
- Which components have we chosen?
- How does the infrastructure look?
- Time handling
- Opportunities
- Future plans

Purpose of building a new infrastructure

- Meeting INSPIRE demands
- Meeting national demands – Swedish geodataportal, planning portal etc.
- A first action to catch up with the rapid development of the web applications and web services
- Other governments applications want to use services to get the data we host
- Following the global standards makes things easier
- Set up image/map deliveries for the new version of our website
- Media customers have tougher demands for better weather/water/forecast/warning visualisations and applications.
- Easier distribution of data and maps internally
- Easier distribution of satellite and radar images to all our customers
- Possibility of combining layers to create new products easily

Concept


APPLICATION LAYER
Web application
Desktop Client
SERVICE LAYER
WMS
WFS
WCS
DATA LAYER
File server
Database

Data sources / formats / systems we want as input to the services

- GRIB/GRIB2 (MATCH, ECMWF, MESAN, HIRLAM, HIROMB,…)
- Archive data – Right now migrated from Mimer to PostgreSQL
- Base map material from the national land survey (PostgreSQL/Postgis)
- Hydrology from Swedish Water Archive (PostgreSQL/Postgis)
- Radar information (HDF5)
- Satellite imagery (HDF5/GeoTiff)

The heart of the infrastructure

- **GEOSERVER** (Java, linux, version 1.7.4)
  - PostgreSQL/Postgis,
    Land survey material/Swedish Water Archive/Observations archive
  - GeoTiff (Background coverages)

- **Why not satellite imagery with geoserver**?
  - Geoserver could not easily configure new coverages automatically.
  - New images every 5 minutes
  - Geoserver could not at the time of investigation
    read satellite HDF5 out-of-the box.
    (GeoTiff could otherwise have been used)

Satellite imagery

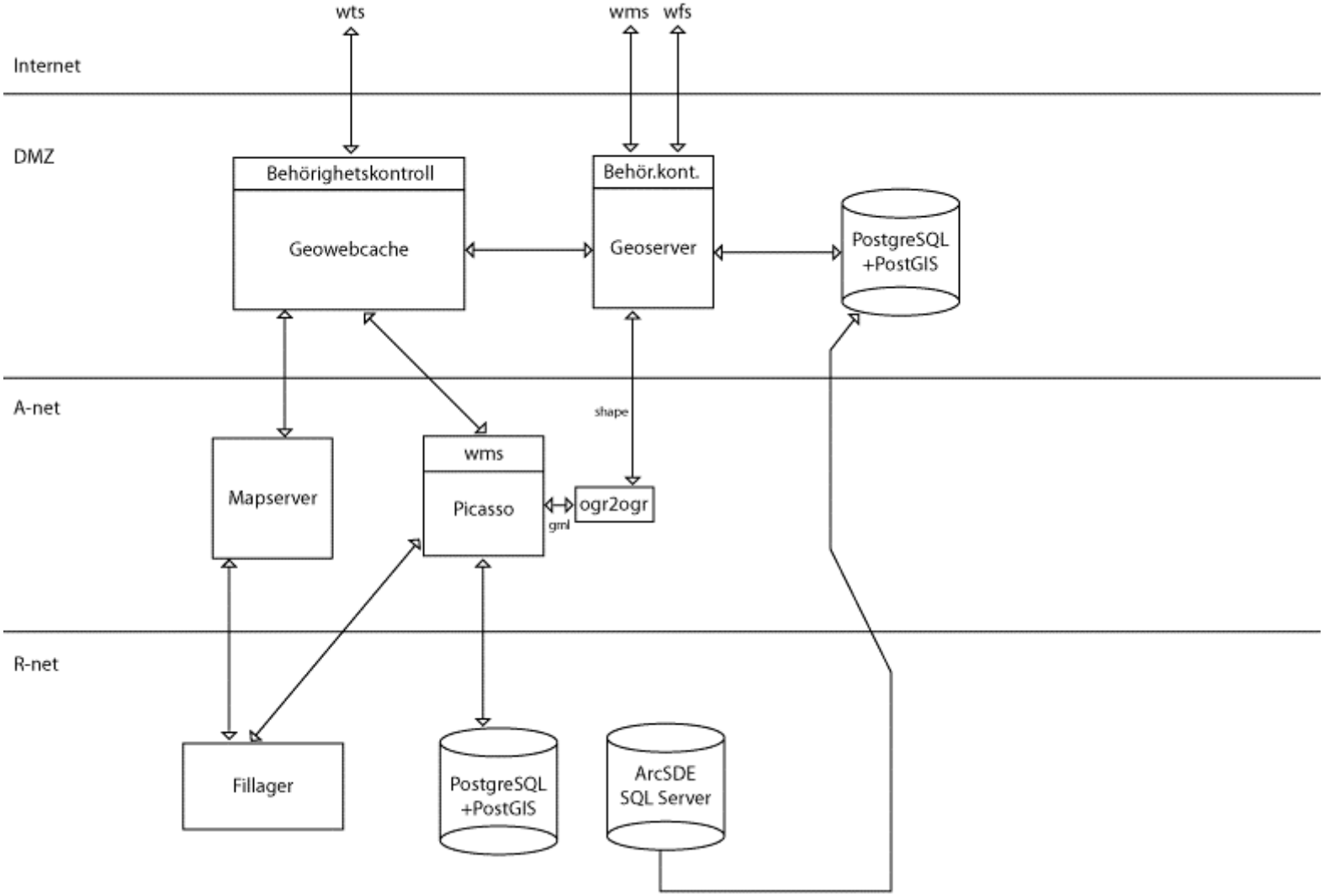
- **Mapserver**, can automatically configure coverages. Our satellite images are planned to take this way.

GRIB and Radar

- PICASSO, is the name of a visualisation system built by Logica for SMHI
  - Main purpose – make images from GRIB files
  - Picasso can read HDF5 radar files

- By adding a WMS-module to Picasso it could produce images as a reponse to WMS-requests.

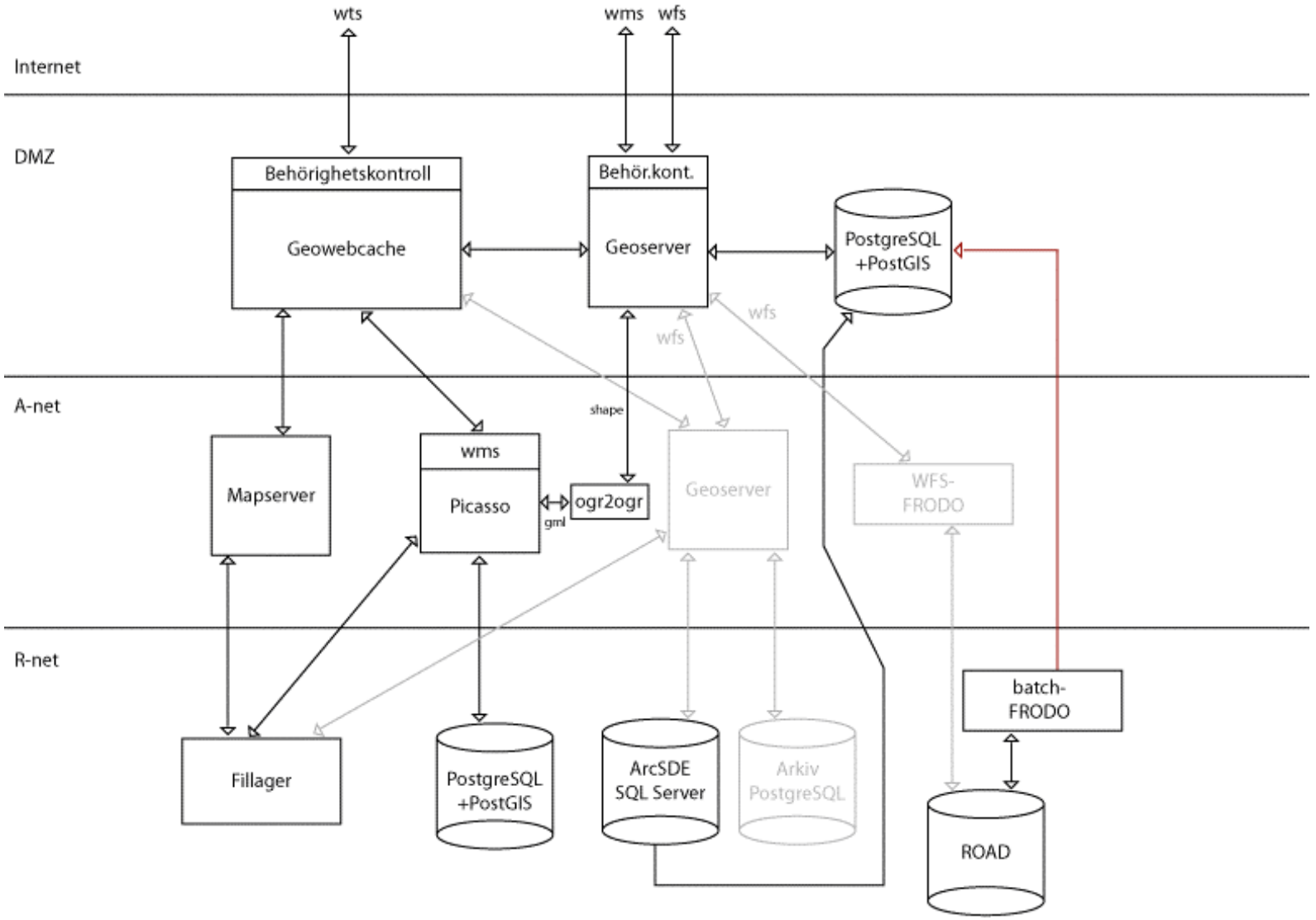
How does the infrastructure look?



Authorization

- Basic authorization – access to services (SMHI domain)
- Later we will implement an access control with authorization connected to our central LDAP-directory. This way external users will be allowed to use our services in a controlled manner.

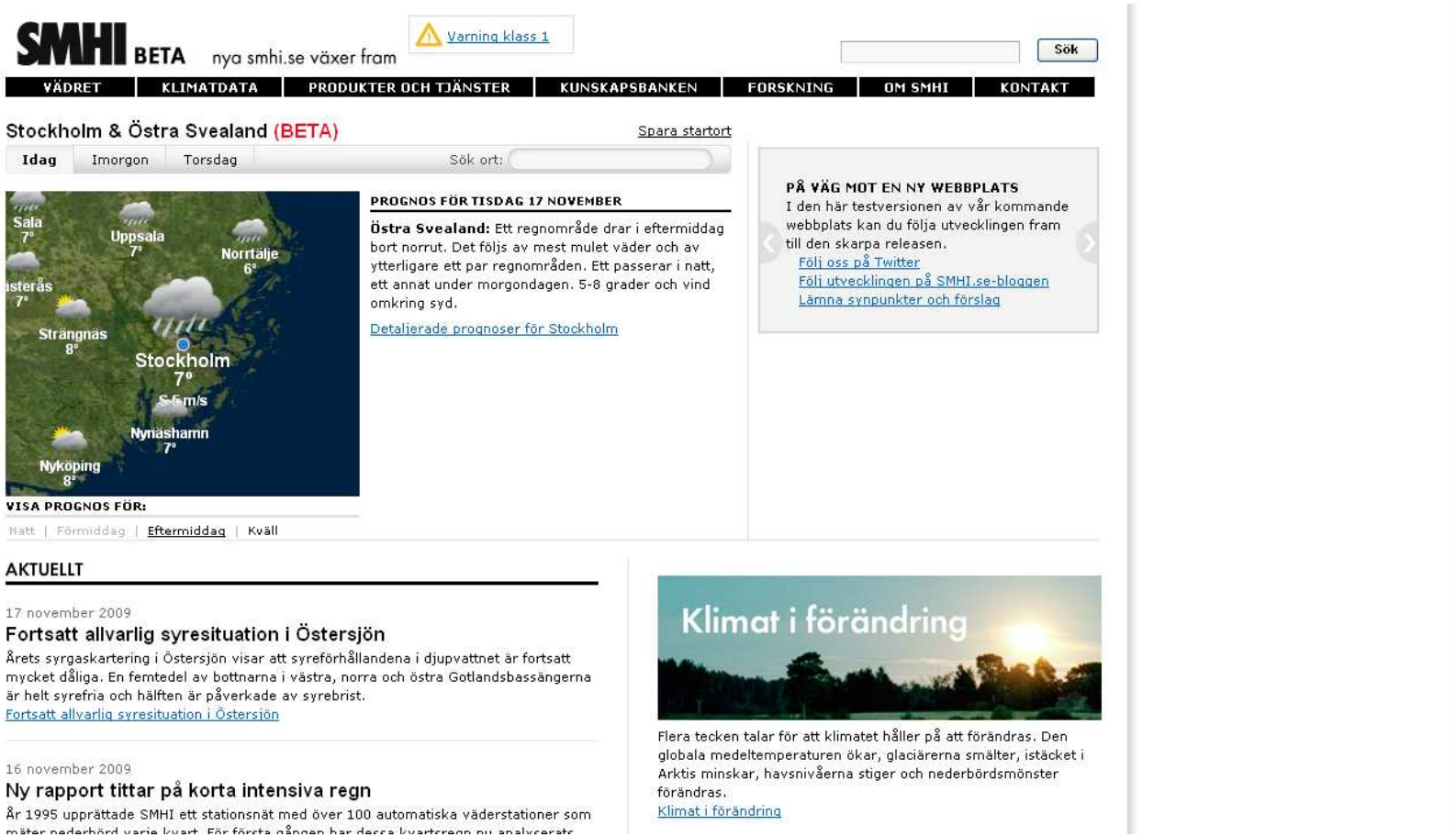
Future configuration?



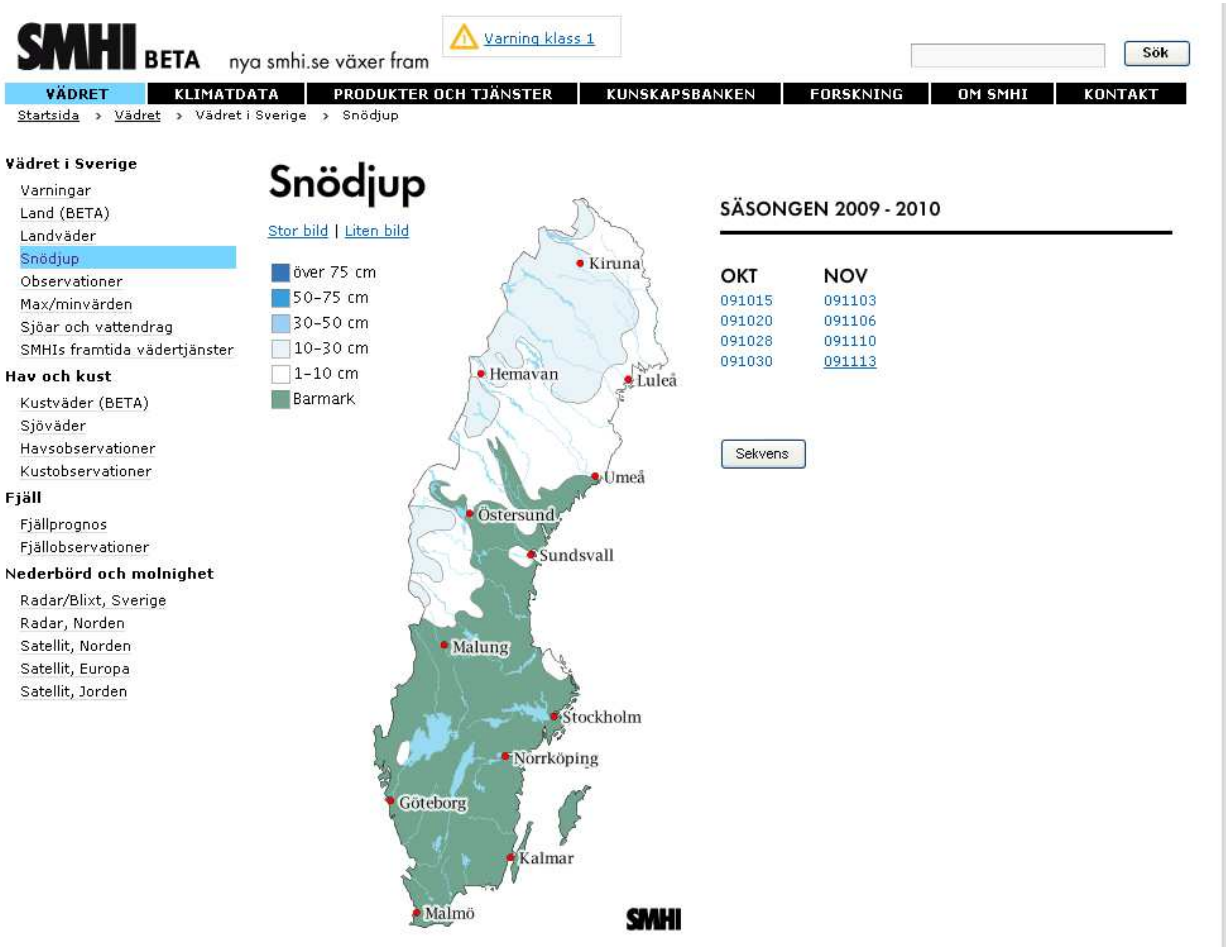
Time handling module in Geowebcache

- Consultants from SWECO built a time handling module for GWC
- GWC as well as Picasso handles the time dimension. One time parameter for when the forecast model is run and another parameter for the time when the forecast is valid.
- This was a demand since we during this coming spring will develop a viewer where users can choose to look at different layers of their choice and play a sequence of forecast images at different times
- This module was seen as a contribution and the code is submitted to the community.

Forecast map - new SMHI website (BETA)



Map of Snowcover

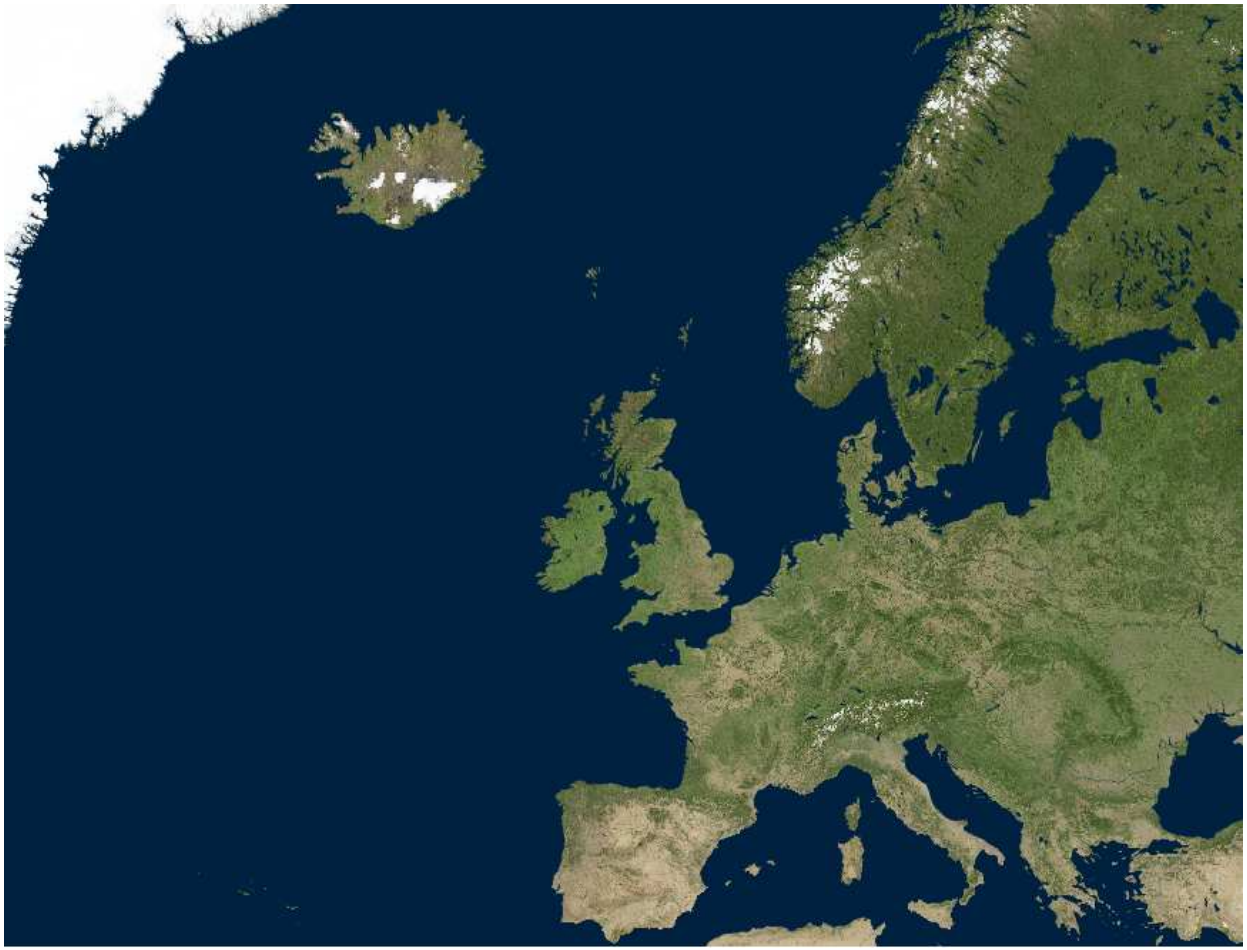


Opportunities

- With this infrastructure working we have opportunities to create powerful applications combining data from our different production systems.
- Customers that want to build their own applications can subscribe to the layers of their choice.
- Other governmental departments and agencies as well as researchers can connect to our services and request data and maps without any cost for non-commercial use.

Future plans

- Make current infrastructure stable
- Building new applications
- Investigate if its possible to use Geoserver and the GDAL-plugin to directly read and process GRIB files and HDF5 radar files. If this works the module Picasso can be replaced by a better open source alternative.
- Investigate if mapserver either can be upgraded to a newer version and thereby enhance performance or be replaced by Geoserver and some plugin

  to read, process and distribute satellite images. A very important feature is the ability to automatically configure new layers as new satellite images continuously is produced.
- Decide routines for handling metadata (parellell project)
- Setting up a metadata catalog (CS-W)

Thank you!