

OGC Clients in Metview 4



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Graphics Section

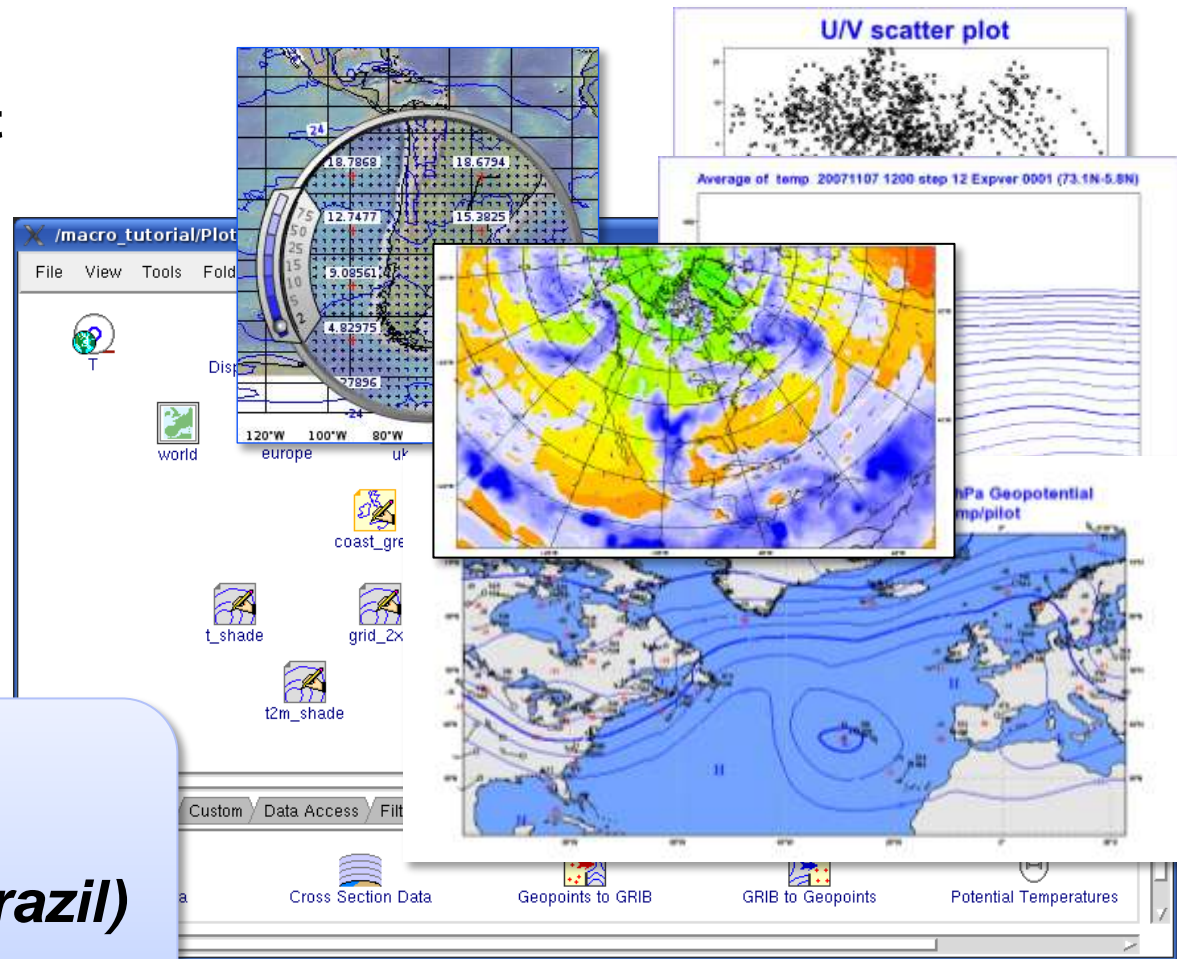
ECMWF

What is Metview?

- Working environment for Operational and Research Meteorologists
- Runs on UNIX
- Latest version: Metview 4

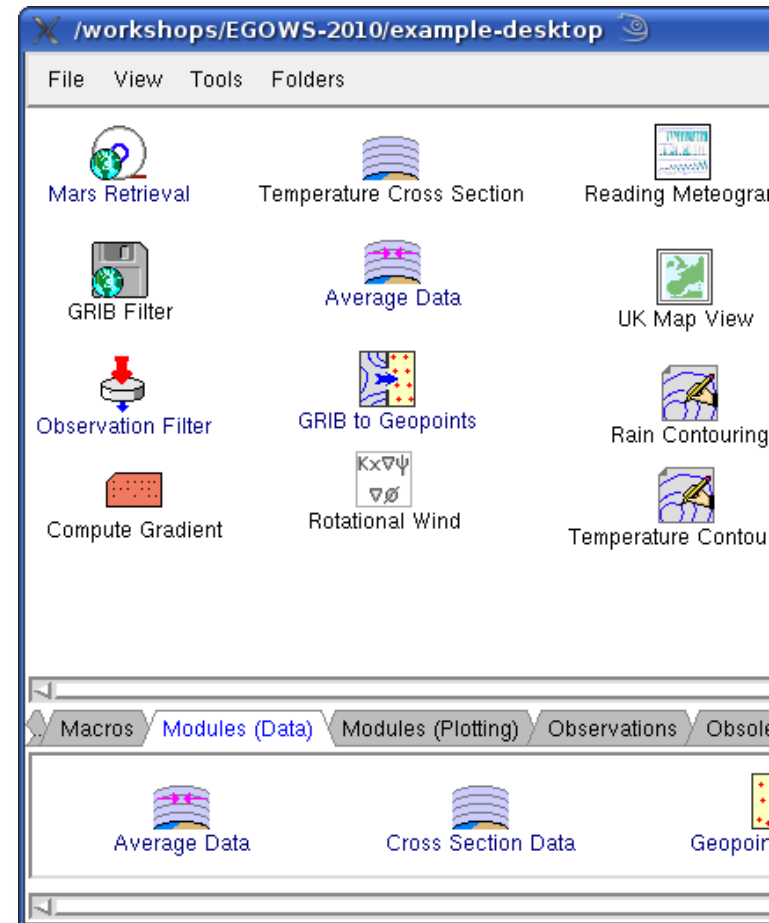
Co-operative project:

- **ECMWF**
- **INPE/CPTEC (Brazil)**
- **Météo-France**



Metview concepts – icons

- **Service oriented architecture**
- **Icons represent everything:**
 - Data files
 - Data retrieval directives
 - Data manipulation directives
 - Visualisation attributes
 - (Other files)



WMS Client icon



- It was designed to be as **generic** as possible: it simply stores the request and some layer meta-data
- Metview actions associated with this icon:



Edit: to create/edit the request



Visualise: plot and overlay with other data

- Based on Qt using (mostly) XQuery for XML parsing

WMS concept in Metview

- One request – one layer (overlay is performed by Metview)
- For all the temporal dimensions multiple values can be specified, but Metview will split it into individual requests

DIM_RUN=
2010-05-26T12Z,
2010-05-27T00Z

DIM_FORECAST=
PT0S,PT3H,PT6H



DIM_RUN=2010-05-26T12Z DIM_FORECAST=PT0S
DIM_RUN=2010-05-26T12Z DIM_FORECAST=PT3H
DIM_RUN=2010-05-26T12Z DIM_FORECAST=PT6H

DIM_RUN=2010-05-27T00Z DIM_FORECAST=PT0S
DIM_RUN=2010-05-27T00Z DIM_FORECAST=PT3H
DIM_RUN=2010-05-27T00Z DIM_FORECAST=PT6H

WMS Editor – Layer Tree

Metview - WMS Client Editor - NASA NEO

File Controls View Help

http://neowms.sci.gsfc.nasa.gov/wms/wms Version: Default

Format: image/png Extra getCap param: Extra getMap param:

Layer tree Layer settings

Layer title

- Cloud Fraction
- Cloud Optical Thickness
- Cloud Particle Radius
- Cloud Water Content
- False Color
- Global Bathymetry
- Global Topography
- Greenland / Antarctica Elevation
- Land Cover Classification
- Land Surface Temperature Anomaly [Day]
- Land Surface Temperature Anomaly [Night]
- Land Surface Temperature [Day]
- Land Surface Temperature [Night]
- Leaf Area Index
- Net Primary Productivity
- Net Radiation
- Outgoing Longwave Radiation
- Permafrost
- Population
- Reflected Shortwave Radiation
- Sea Surface Temperature 1981-2006 (AVHRR)
- Sea Surface Temperature 1981-2006 (1 month - A...
- Sea Surface Temperature 1981-2006 (8 day - AV...
- Sea Surface Temperature 2002+ (AMSR-E)
- Sea Surface Temperature 2002+ (MODIS)
- Sea Surface Temperature Anomaly (AMSR-E)
- Snow Cover
- Snow Cover & Sea Ice Extent
- Snow Water Equivalent
- Solar Insolation
- Total Rainfall
- True Color

Generate preview

Interactive

Load legend (OK)

Layer information GetMap request GetCapabilities Service

GetCapabilities

```
<OnlineResource xlink:href="http://neo.sci.gsfc.nasa.gov/FGDCMetadata?datasetId=MYDAL2_E_AER_RA"/>
</MetadataURL>
<DataURL>
<Format>text/html</Format>
<OnlineResource xlink:type="simple" xlink:href="http://neo.sci.gsfc.nasa.gov/Search.html?datasetId=MYDAL2_E_AER_I
</DataURL>
<Style>
<Name>rgb</Name>
<Title>RGB Style</Title>
<LegendURL width="200" height="35">
<Format>image/png</Format>
<OnlineResource xlink:type="simple" xlink:href="http://neo.sci.gsfc.nasa.gov/palettes/files/modis_aer_ra.png"/>
</LegendURL>
</Style>
</Layer>
<Layer>
<Name>MODAL2_D_AER_RA</Name>
<Title>Aerosol Particle Radius (1 day - Terra/MODIS)</Title>
<Dimension units="ISO8601" name="time" default="2010-10-15">2005-01-01/2006-02-26/P1D,2006-03-03/2007-07-0
<MetadataURL type="FGDC">
<OnlineResource xlink:href="http://neo.sci.gsfc.nasa.gov/FGDCMetadata?datasetId=MODAL2_D_AER_RA"/>
</MetadataURL>
<DataURL>
<Format>text/html</Format>
<OnlineResource xlink:type="simple" xlink:href="http://neo.sci.gsfc.nasa.gov/Search.html?datasetId=MODAL2_D
</DataURL>
<Style>
<Name>rgb</Name>
<Title>RGB Style</Title>
<LegendURL width="200" height="35">
<Format>image/png</Format>
<OnlineResource xlink:type="simple" xlink:href="http://neo.sci.gsfc.nasa.gov/palettes/files/modis_aer_ra.png"/>
</LegendURL>
</Style>
</Layer>
<Layer>
<Name>MYDAL2_D_AER_RA</Name>
```

Search: Previous Next

Stay open Apply Close

WMS Editor – Preview

The screenshot displays the 'Metview - WMS Client Editor - NASA NEO' application window. The interface includes a menu bar (File, Controls, View, Help), a toolbar, and a main workspace. The 'Layer tree' on the left lists various layers, with 'Sea Surface Temperature 1981-2006 (AVHRR)' selected. A red arrow points from this layer to the 'Layer information' panel on the right. This panel shows the following metadata:

Title	Sea Surface Temperature 1981-2006 (1 month - AVHRR)
Name	AVHRR_SST_M
Abstract	Sea surface temperature is the temperature of the top millimeter of the ocean's surface. Sea surface temperatures influence weather, including hurricanes, as well as plant and animal life in the ocean. Like Earth's land surface, sea surface temperatures are warmer near the equator and colder near the poles. Currents like giant rivers move warm and cold water around the world's oceans. Some of these currents flow on the surface, and they are obvious in sea surface temperature images. These data are collected by an ongoing series of National Oceanic and Atmospheric Administration (NOAA) satellites.
CRS	CRS:84
Style	RGB Style
Preview	

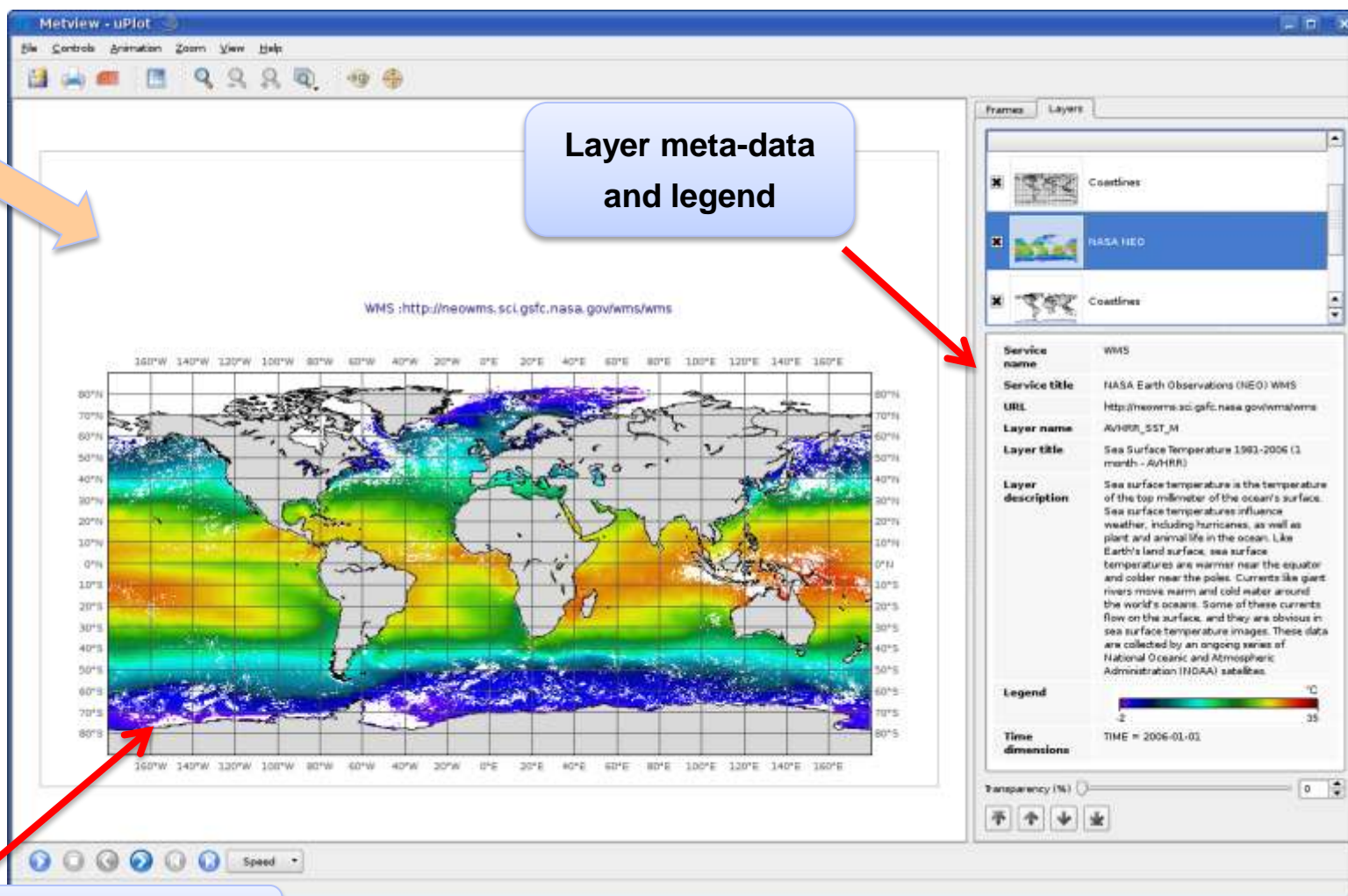
Below the 'Layer information' panel, there is a 'Generate preview' button and a 'Load legend (OK)' button. The bottom of the window shows a 'Model: Interactive' dropdown and a 'Stay open' checkbox.

Layer meta-data, preview and legend

WMS Client - Visualisation

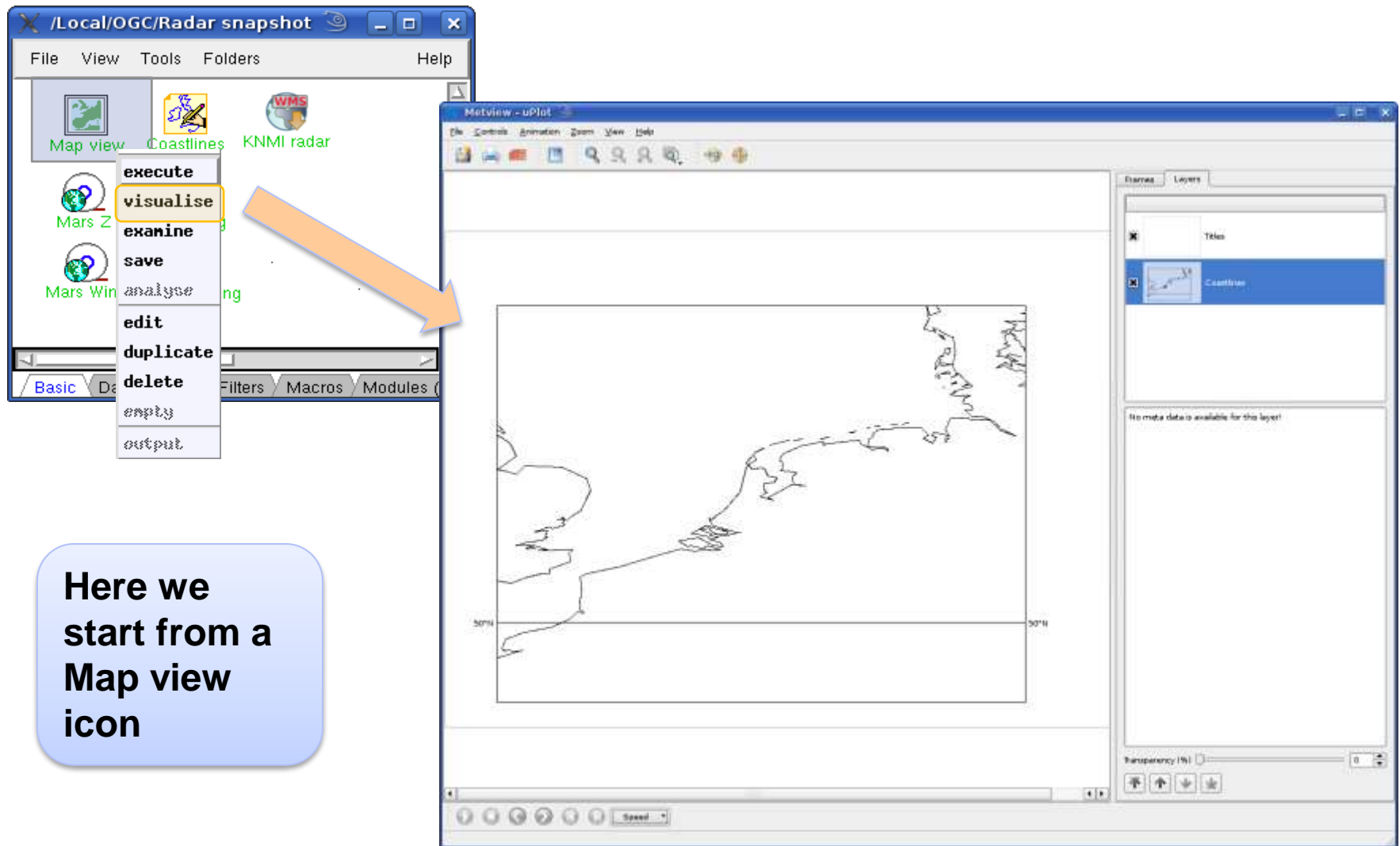


execute
visualise
examine
save
analyse
edit
duplicate
delete
empty
output



Metview coastlines + grid

How overlay works?



Here we
start from a
Map view
icon

How overlay works?

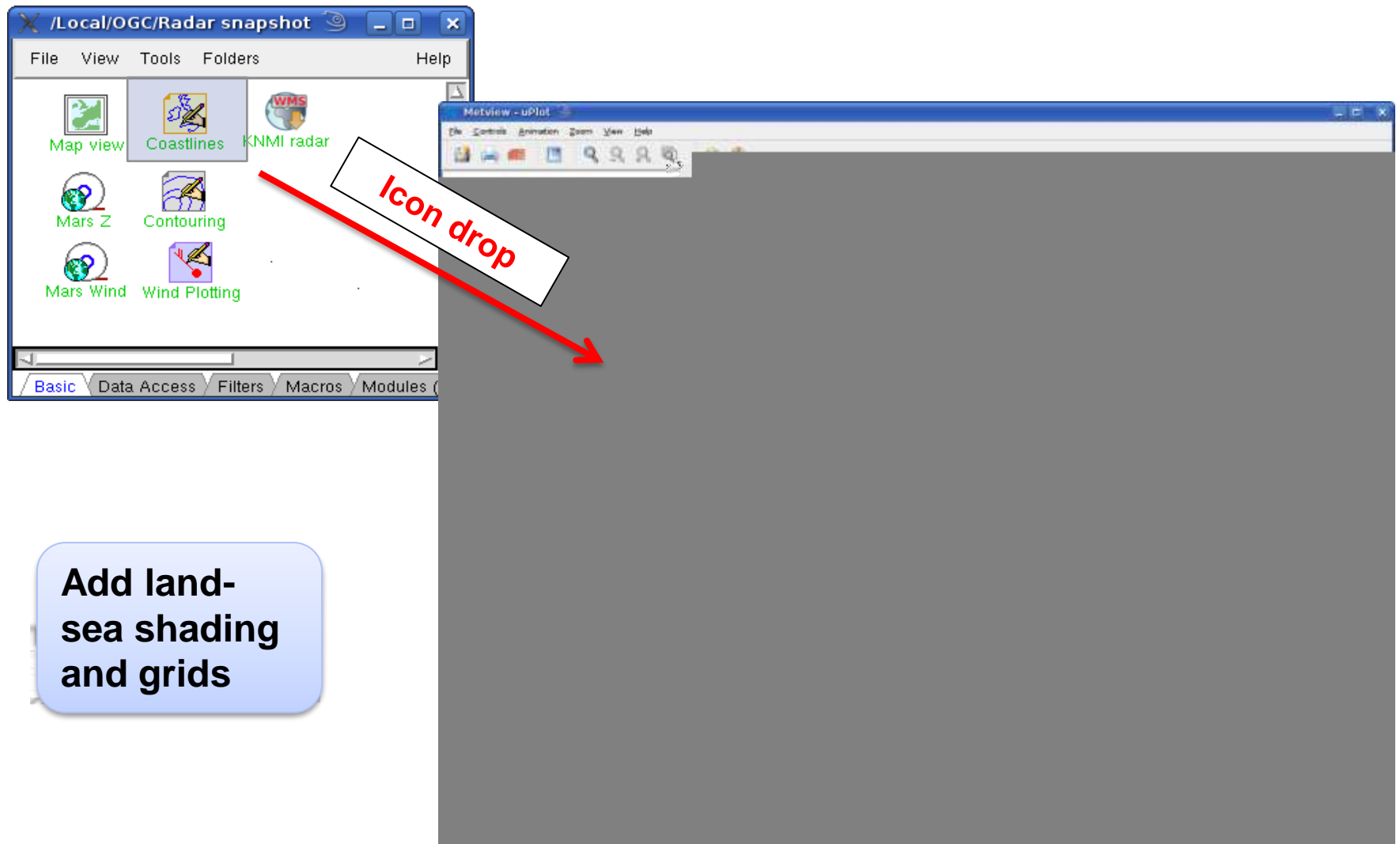
The image shows a screenshot of the Metview software interface. On the left, a window titled '/Local/OGC/Radar snapshot' displays a toolbar with icons for 'Map view', 'Coastlines', 'KNMI radar', 'Mars Z', 'Contouring', 'Mars Wind', and 'Wind Plotting'. A red arrow labeled 'Icon drop' points from the 'KNMI radar' icon to the main map area. The main map area shows a radar overlay of Europe. On the right, a 'Layers' panel lists the active layers: 'Titles', 'Coastlines', and 'KNMI radar'. Below this, a 'Service' panel displays details for the WMS service, including the URL, layer name, and a color scale legend ranging from 0.100 to 100.0 kg/m2/h. The 'Time dimension' is set to 2008-07-25T00:00:00.

Icon drop

Add WMS
KNMI
(ADAGUC)
radar data

Service name: WMS
Service title: RADNL_OPER_R_25PCPRR_L3_WMS
URL: http://geoservices.knmi.nl/cgi-bin/RADNL_OPER_R_25PCPRR_L3.cgi
Layer name: RADNL_OPER_R_25PCPRR_L3_COLOR
Layer title: RADNL_OPER_R_25PCPRR_L3_COLOR
Legend: 100.0, 31.62, 10.00, 3.162, 1.000, 0.316, 0.100 kg/m2/h
Time dimension: TIME = 2008-07-25T00:00:00

How overlay works?



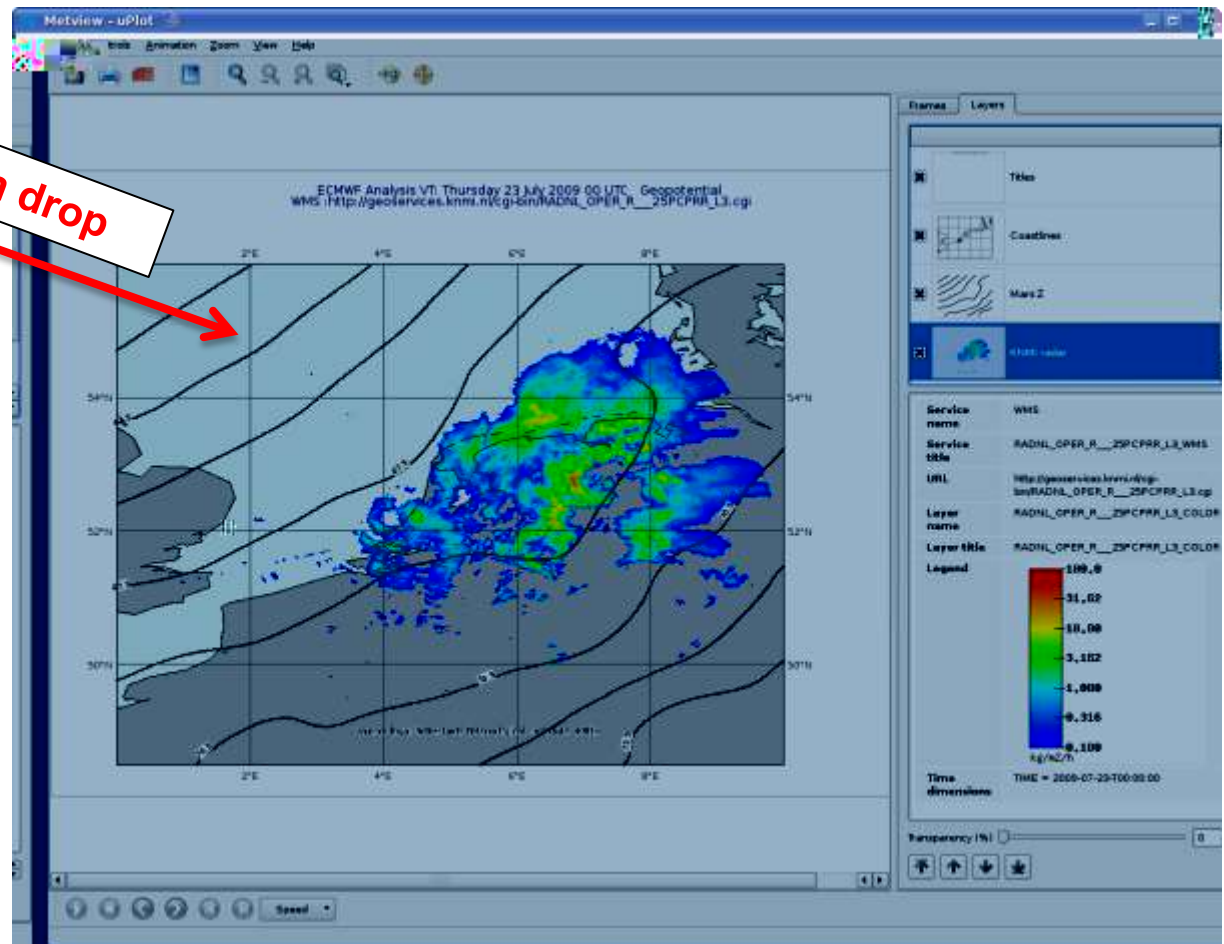
How overlay works?



Icon drop

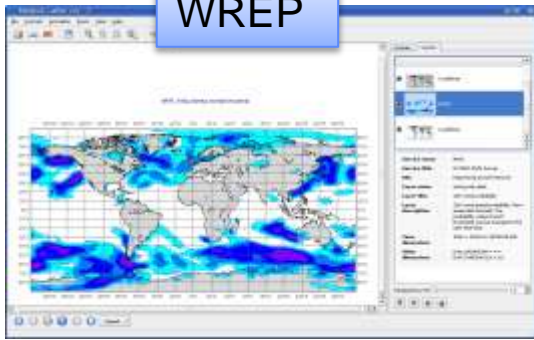


Add ECMWF
Geopotential
forecast from
MARS (GRIB)

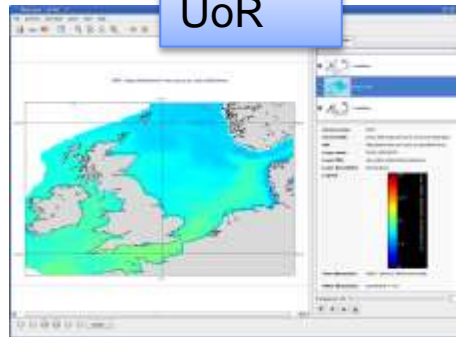


Several tested servers so far

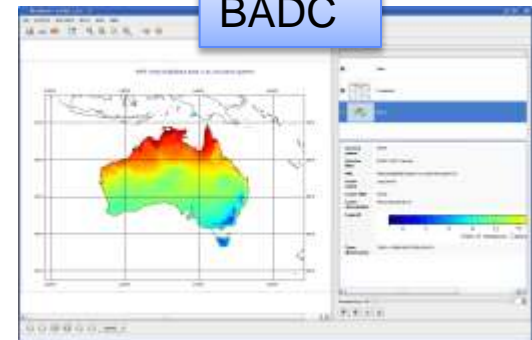
WREP



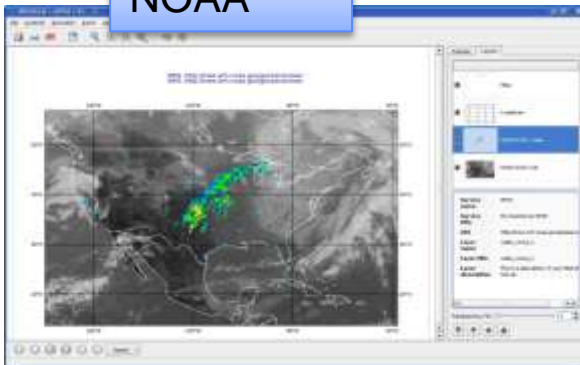
UoR



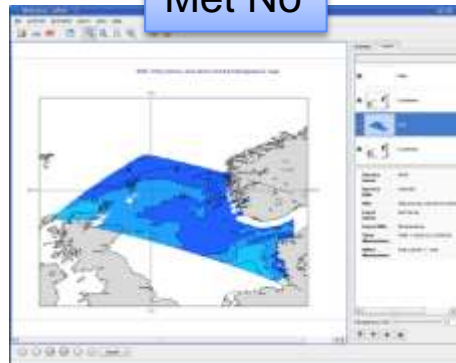
BADC



NOAA



Met No



IBL



Please send us your URL to test!

Best practices: Dimensions

- How to build a user friendly **GUI for the dimensions** (especially for time)?
 - Several dates, periods and their combinations (defining hundred thousands of individual dates)
- This style probably should be avoided (NASA SVS):

```
DIM_SEQUENCE=TIME(2005-07-16T15:45Z)  
XMIN(83.5162) YMIN(8.9033)  
XMAX(70.4808) YMAX(25.0922)  
WIDTH(1024) HEIGHT(1024)
```

Best practices: Layer Title

- Title should be short but descriptive (to be used in a layer selection menu)
 - Non-descriptive: RADNL_OPER_R___25PCPRR_L3_KNMI
 - Layers with empty Title

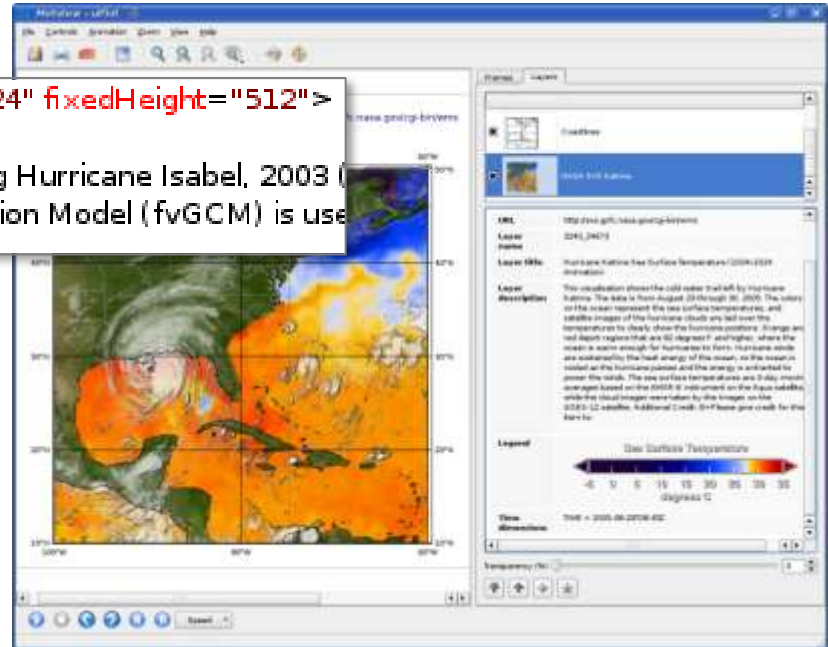
```
<Layer queryable="1">  
  <Name>nws:ir_west_4</Name>  
  <Title/>
```


Best practices: Fix-sized images

- Some servers (e.g. NASA SVS) provide fix-sized images with no sub-area selection

```
<Layer opaque="1" noSubsets="1" fixedWidth="1024" fixedHeight="512">  
  <Name>3032_19332_bg</Name>  
  <Title>Background Image for Model of Clouds during Hurricane Isabel, 2003</Title>  
  <Abstract>The NASA finite-volume General Circulation Model (fvGCM) is used to simulate the  
  evolution of Hurricane Isabel, 2003. The model output is displayed as a series of  
  images showing the evolution of the hurricane's cloud structure and intensity.  
  The images are arranged in a grid, with the first image showing the initial state  
  and subsequent images showing the progression of the hurricane's development.  
  The images are displayed in a fixed size of 1024x512 pixels, with no sub-area  
  selection available.
```

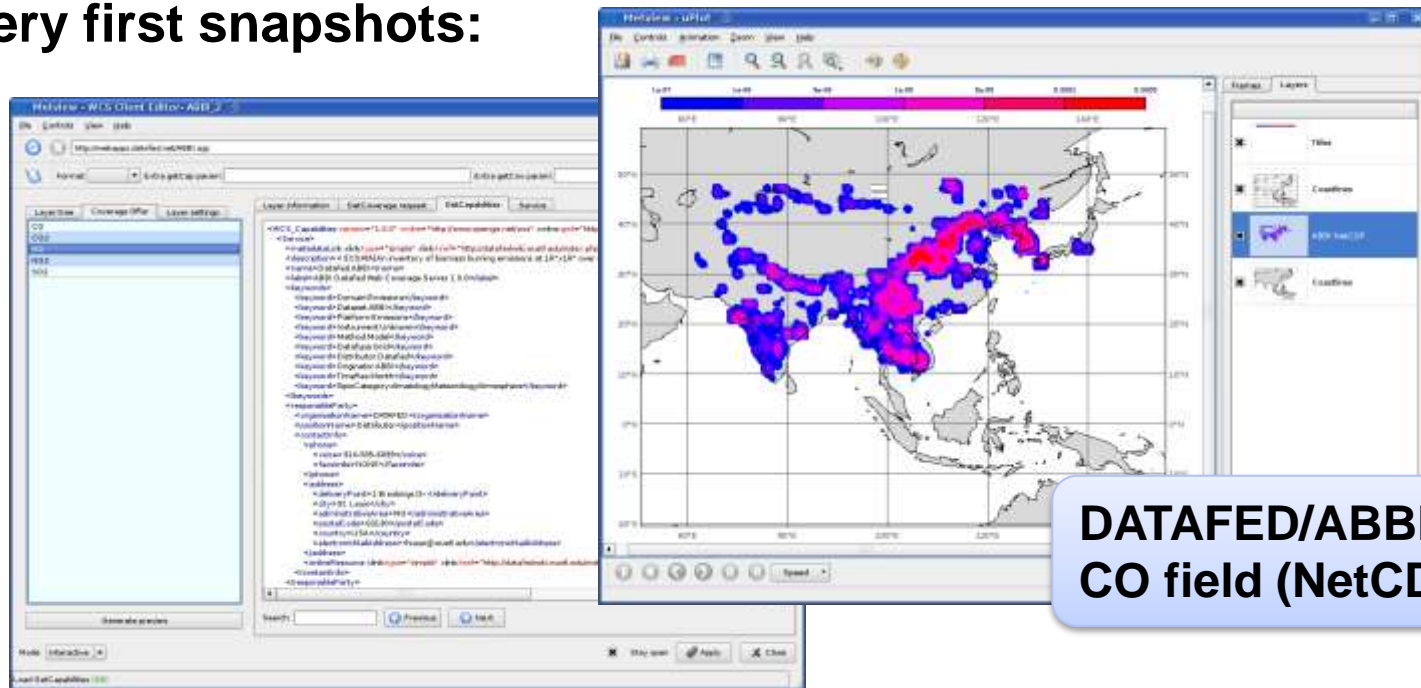
- Our client had to be modified to cope with it
- Should this kind of layer be avoided in the Met community?



WCS Client Icon



- The principle is quite similar to WMS
- GRIB and NetCDF support at the beginning (GEOTIFF later)
- Very first snapshots:



Further plans

- **WMS:**
 - User feedbacks
 - regenerate request when geometry changes in Metview plot window (zoom)
- **WCS:** first interface will be available first half of 2011 (GRIB and NetCDF)
- **CSW:** we need to look into this since the first question from our users is “where to look for nice services?”

