

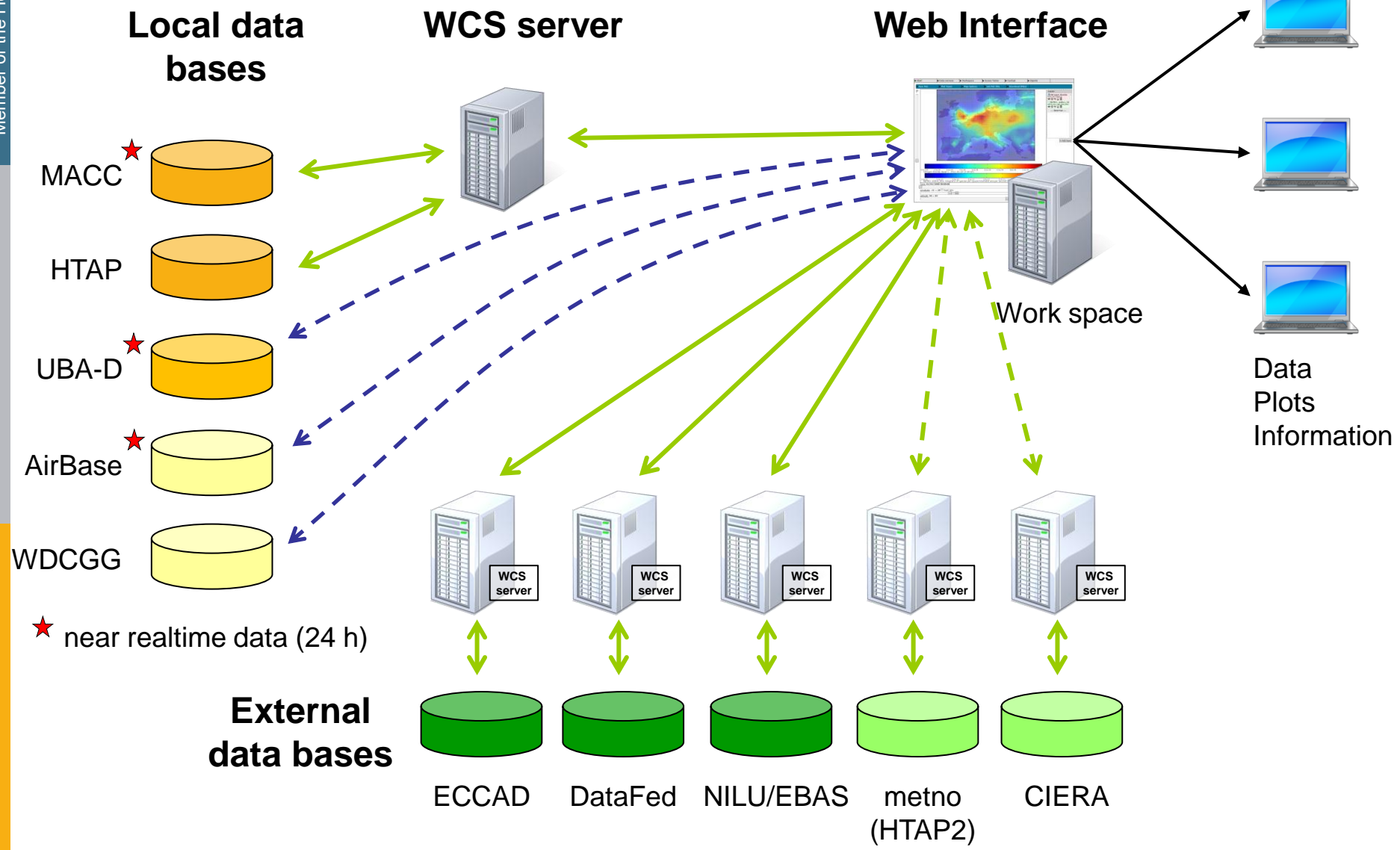
# The Jülich WCS interface for emissions, model products, and model evaluation

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<http://macc.icg.kfa-juelich.de:50080>

Users



# Purpose

- Provide a tool for data access and model evaluation over the internet
- Test implementation of interoperable data services
- Test connections and data linkages among nodes of the air quality data network

# Status

- Quasi-operational version serving MACC and HTAP data
- Allows for:
  - selective data download
  - visualisation of gridded fields (maps and vertical CS)
  - comparison of model data with surface obs (UBA)

# WCS Protocol

## **GetCapabilities (similar for WFS and WMS):**

General metadata about „catalogue“; information about catalogue members (= files)

## **DescribeCoverage:**

Content of catalogue member (variables, ...)

## **GetCoverage:**

Start data access (time range selection, slicing, variable selection, ...)

life demonstration ...

# Plans

- Allow access to more services
- Re-design data model to allow for more flexible slicing and better connections among „views“
- Add more surface data sets (Airbase, WDCGG, AirNow, ...)
- Establish standard diagnostic tools (statistics and plots) for model evaluation
- Allow user upload of model results

**EXTRA MATERIAL**



# Coverage

- „anything with a bounding box“ – normally some sort of gridded data
- originally designed for GeoTIFF images (WCS 1.0)
- netcdf as OGC standard (and included in WCS 2.0)

# Example request

Web Coverage Service



Capabilities:

[http://htap.icq.kfa-juelich.de:58080/HTAP\\_monthly?service=WCS&acceptversions=1.1.2&Request=GetCapabilities&sections=Contents](http://htap.icq.kfa-juelich.de:58080/HTAP_monthly?service=WCS&acceptversions=1.1.2&Request=GetCapabilities&sections=Contents)

returns XML ...

```
- <Capabilities version="1.1.2">
  - <Contents>
    - <CoverageSummary>
      <ows:Title>CAMCHEM-3311m13_SR1_aerosolaod_2001</ows:Title>
      <ows:Abstract/>
    - <ows:WGS84BoundingBox crs="urn:ogc:def:crs:OGC:2:84">
      <ows:LowerCorner>+0.0000 -90.0000</ows:LowerCorner>
      <ows:UpperCorner>+357.5000 +90.0000</ows:UpperCorner>
    </ows:WGS84BoundingBox>
    <SupportedCRS>urn:ogc:def:crs:EPSG::4326</SupportedCRS>
    <SupportedCRS>urn:ogc:def:crs:OGC:2:84</SupportedCRS>
    <SupportedFormat>image/netcdf</SupportedFormat>
    <SupportedFormat>application/x-netcdf</SupportedFormat>
    <Identifier>CAMCHEM-3311m13_SR1_aerosolaod_2001</Identifier>
  </CoverageSummary>
```

## Example request (2)

### Web Coverage Service

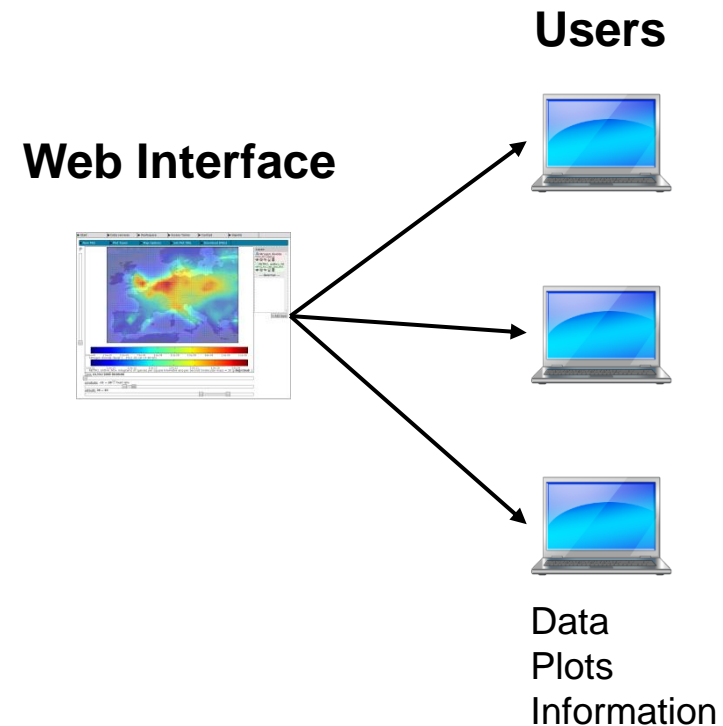
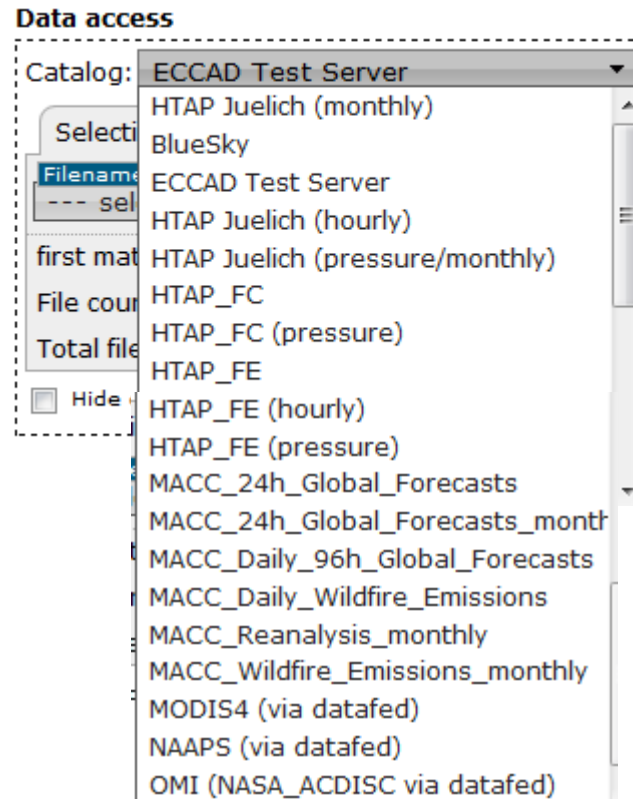
#### Describe Coverage:

[http://htap.icq.kfa-juelich.de:58080/HTAP\\_monthly?service=WCS&version=1.1.2&Request=DescribeCoverage&identifiers=ECHAM5-HAMMOZ-v21\\_SR1\\_metm\\_2001](http://htap.icq.kfa-juelich.de:58080/HTAP_monthly?service=WCS&version=1.1.2&Request=DescribeCoverage&identifiers=ECHAM5-HAMMOZ-v21_SR1_metm_2001)

#### Get Coverage:

[http://htap.icq.kfa-juelich.de:58080/HTAP\\_monthly?service=WCS&version=1.1.2&Request=GetCoverage&identifier=ECHAM5-HAMMOZ-v21\\_SR1\\_metm\\_2001&BoundingBox=343.7,26.3,45.1,77.9,urn:ogc:def:crs:OGC::84&TimeSequence=2001-07-16T12:00/2001-08-16T12:00&RangeSubset=a;b;hus;oroq;precip;ps;temp;&format=image/netcdf](http://htap.icq.kfa-juelich.de:58080/HTAP_monthly?service=WCS&version=1.1.2&Request=GetCoverage&identifier=ECHAM5-HAMMOZ-v21_SR1_metm_2001&BoundingBox=343.7,26.3,45.1,77.9,urn:ogc:def:crs:OGC::84&TimeSequence=2001-07-16T12:00/2001-08-16T12:00&RangeSubset=a;b;hus;oroq;precip;ps;temp;&format=image/netcdf)

# The Jülich WCS server and web interface from the user perspective



Note: We don't have a sophisticated interface to search for data yet  
Use <http://webapps.datafed.net/CORE.uFIND>, <http://www.eurogeoss-broker.eu/>  
or others to **FIND** data!

# A use case: Overlay emissions from ECCAD with MACC forecast data

User interface for C

Start Data set

**Data access**

Catalog: ECCAD Test Server WCS

Selection by mask Selection by list

- Region\_ACCMIP\_26\_regions
- RETRO\_NOx\_1960\_2000
- RCPs\_NOx\_3PD\_2005\_2100
- GLC2000\_land\_cover\_2000
- EDGAR3.2FT2000\_CO2\_2000
- AMMABB\_CO2\_2005\_2006
- ACCMIP\_anthro\_NOx\_1950\_2000
- ACCMIP\_anthro\_CO\_1950\_2000

select all Search: keyword or regex

Hide catalogues that are not CF compliant Add file(s)

**Web Coverage Service**

Capabilities:

<http://medias3.mediasfrance.org:991/ECCAD?service=WCS&acceptversions=1.1.2&Request=GetCapabilities&sections=Contents>

Download list:

Longitude: 0 ↔ 360

Latitude: -90 ↔ 90

Time: yyyy-mm-dd T hh:mm ↔ yyyy-mm-dd T hh:mm

Variables: var1,var2,var3

Open workspace after download Clear list Load files

① Select data catalogue

## User interface for OGC web services

► Start ► Data services ► Workspace ► Access Terms ► Contact ► Imprint

### Data access

Catalog:

- Region\_ACCMIP\_26\_regions
- RETRO\_NOx\_1960\_2000
- RCPs\_NOx\_3PD\_2005\_2100
- GLC2000\_land\_cover\_2000
- EDGAR3.2FT2000\_CO2\_2000
- AMMABB\_CO2\_2005\_2006
- ACCMIP\_anthro\_NOx\_1950\_2000
- ACCMIP\_anthro\_CO\_1950\_2000

select all

Search:

Hide catalogues that are not CF compliant

### Download list:

RCPs\_NOx\_3PD\_2005\_2100

Longitude:  ↔

Latitude:  ↔

Time:  T  ↔  T

Variables:

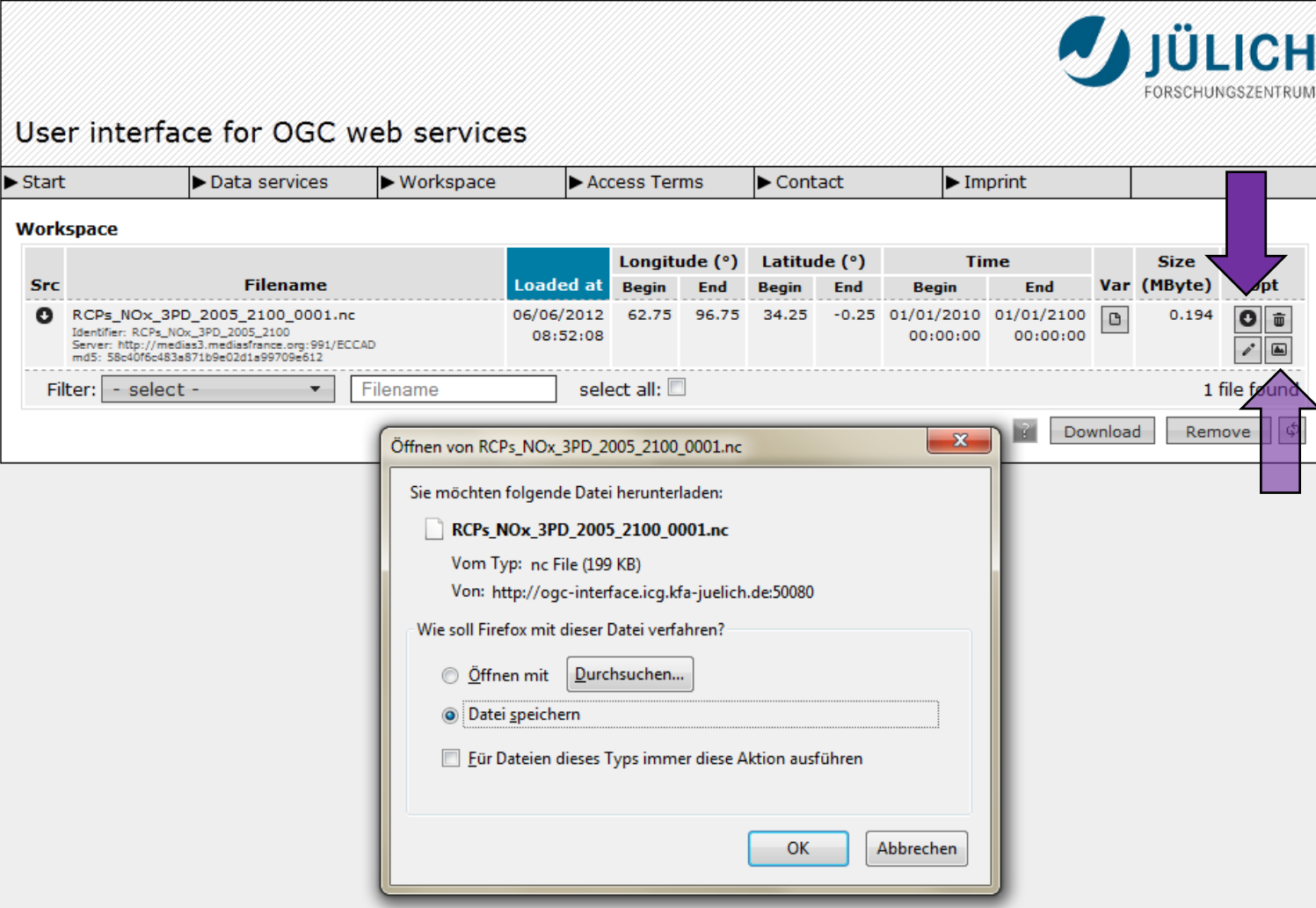
Open workspace after download

② Select dataset

③ Choose region, time interval, and variables

④ Load data into workspace

## ⑤ From workspace: download or plot data



User interface for OGC web services

Start | Data services | **Workspace** | Access Terms | Contact | Imprint

**Workspace**

Src	Filename	Loaded at	Longitude (°)		Latitude (°)		Time		Var	Size (MByte)	opt
			Begin	End	Begin	End	Begin	End			
+	RCPs_NOx_3PD_2005_2100_0001.nc <small>Identifier: RCPs_NOx_3PD_2005_2100 Server: http://medias3.mediasfrance.org:991/ECCAD md5: 58c40f6c483a871b9e02d1a99709e612</small>	06/06/2012 08:52:08	62.75	96.75	34.25	-0.25	01/01/2010 00:00:00	01/01/2100 00:00:00		0.194	

Filter: - select - | Filename | select all:  | 1 file found

Download Remove

Öffnen von RCPs\_NOx\_3PD\_2005\_2100\_0001.nc

Sie möchten folgende Datei herunterladen:

- RCPs\_NOx\_3PD\_2005\_2100\_0001.nc

Vom Typ: nc File (199 KB)  
Von: http://ogc-interface.icg.kfa-juelich.de:50080

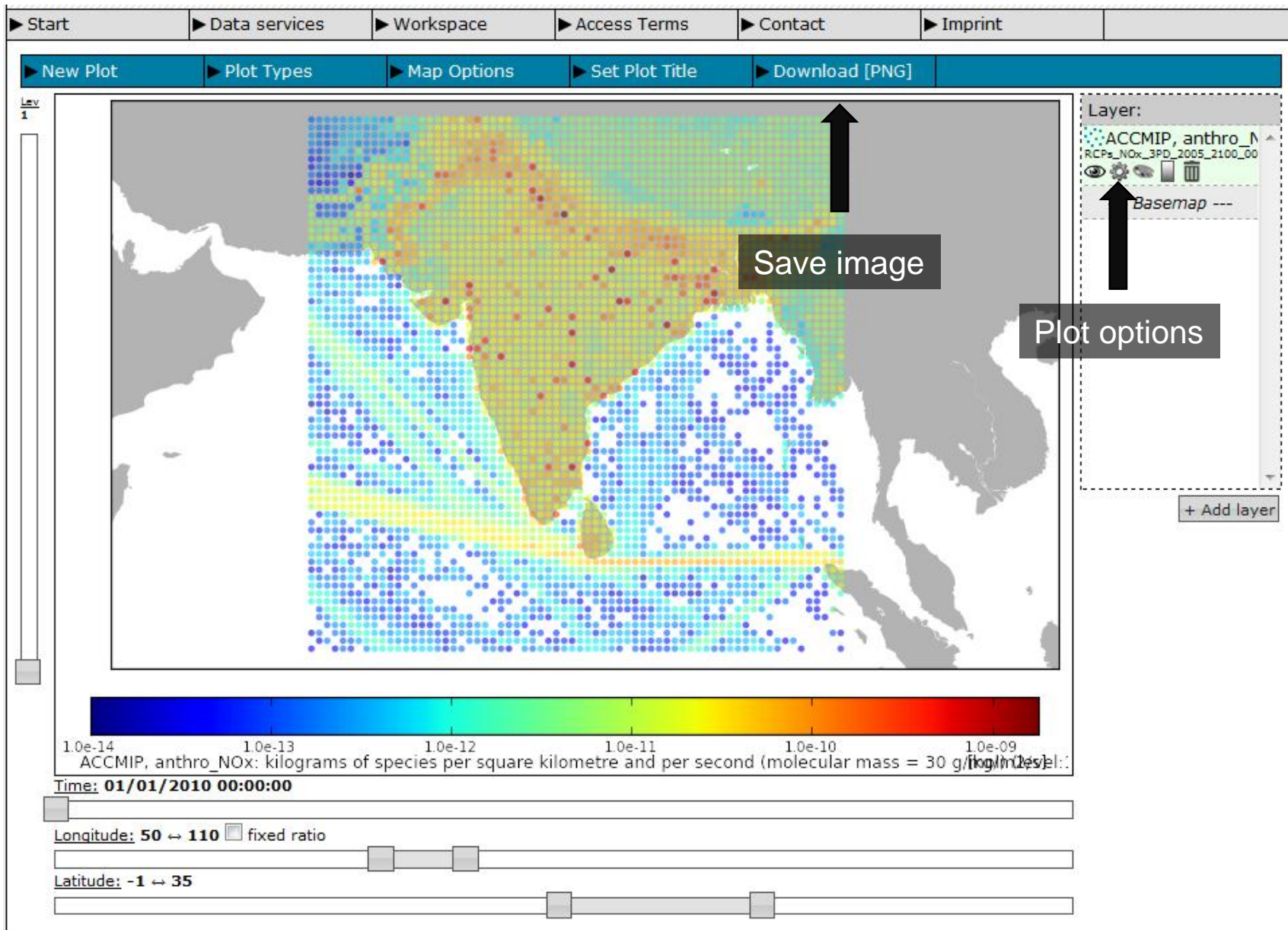
Wie soll Firefox mit dieser Datei verfahren?

Öffnen mit

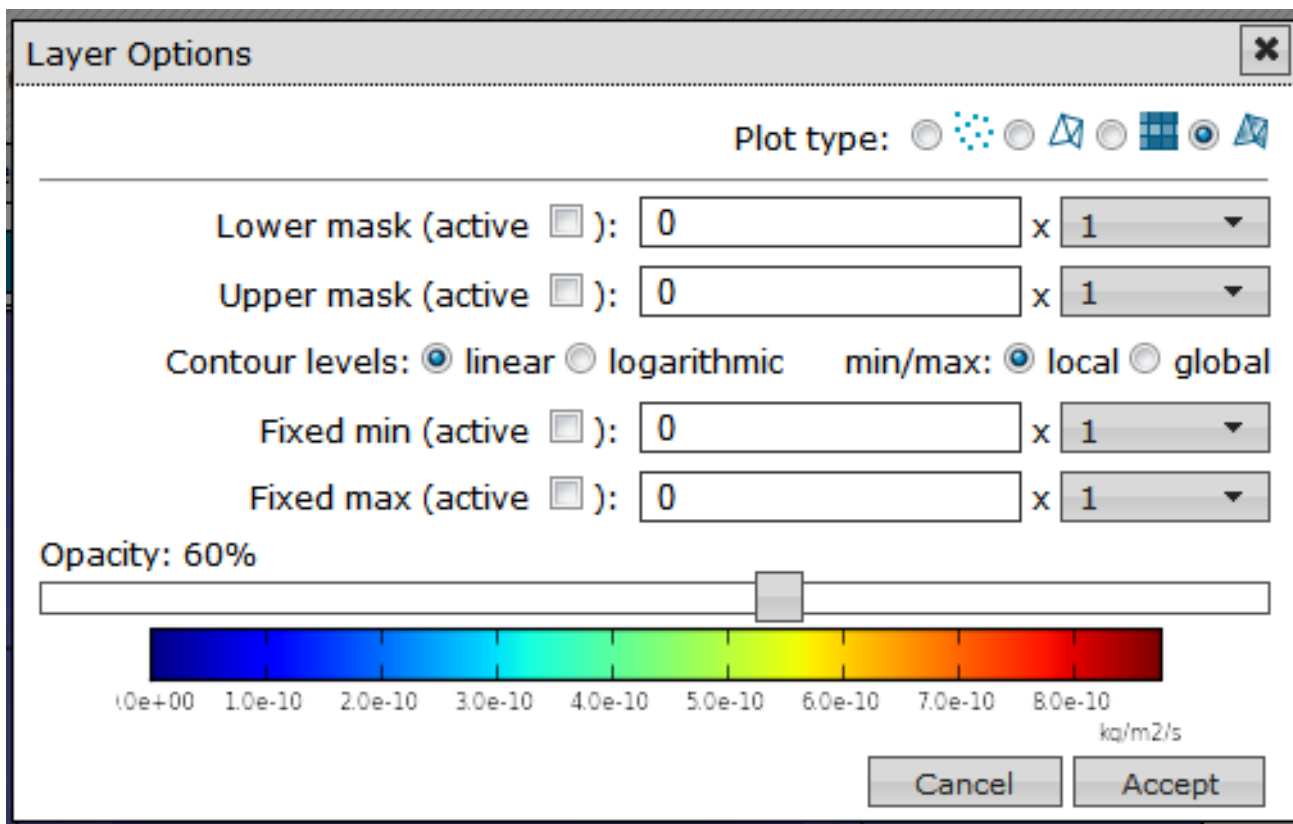
Datei speichern

Für Dateien dieses Typs immer diese Aktion ausführen

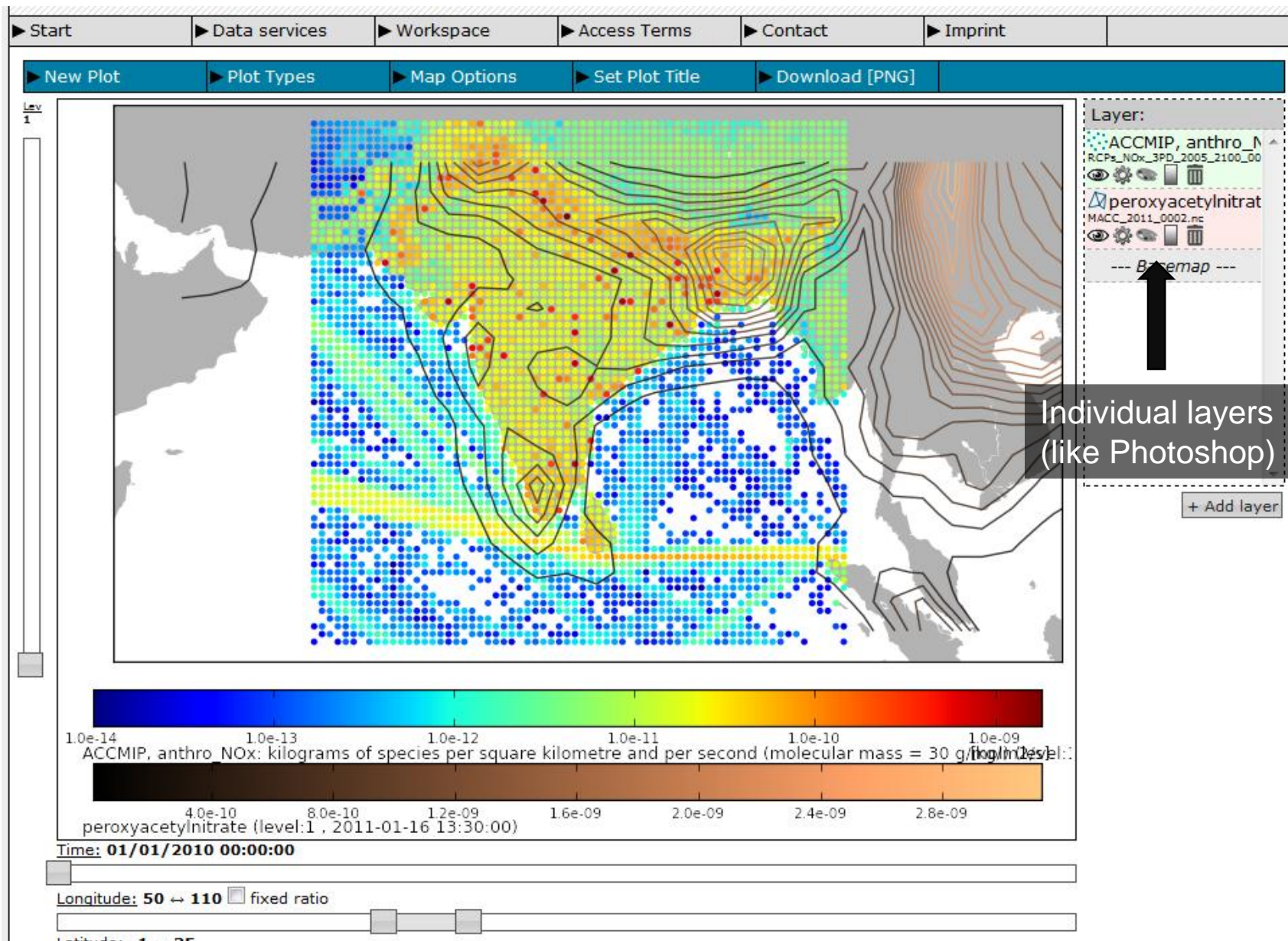
OK Abbrechen



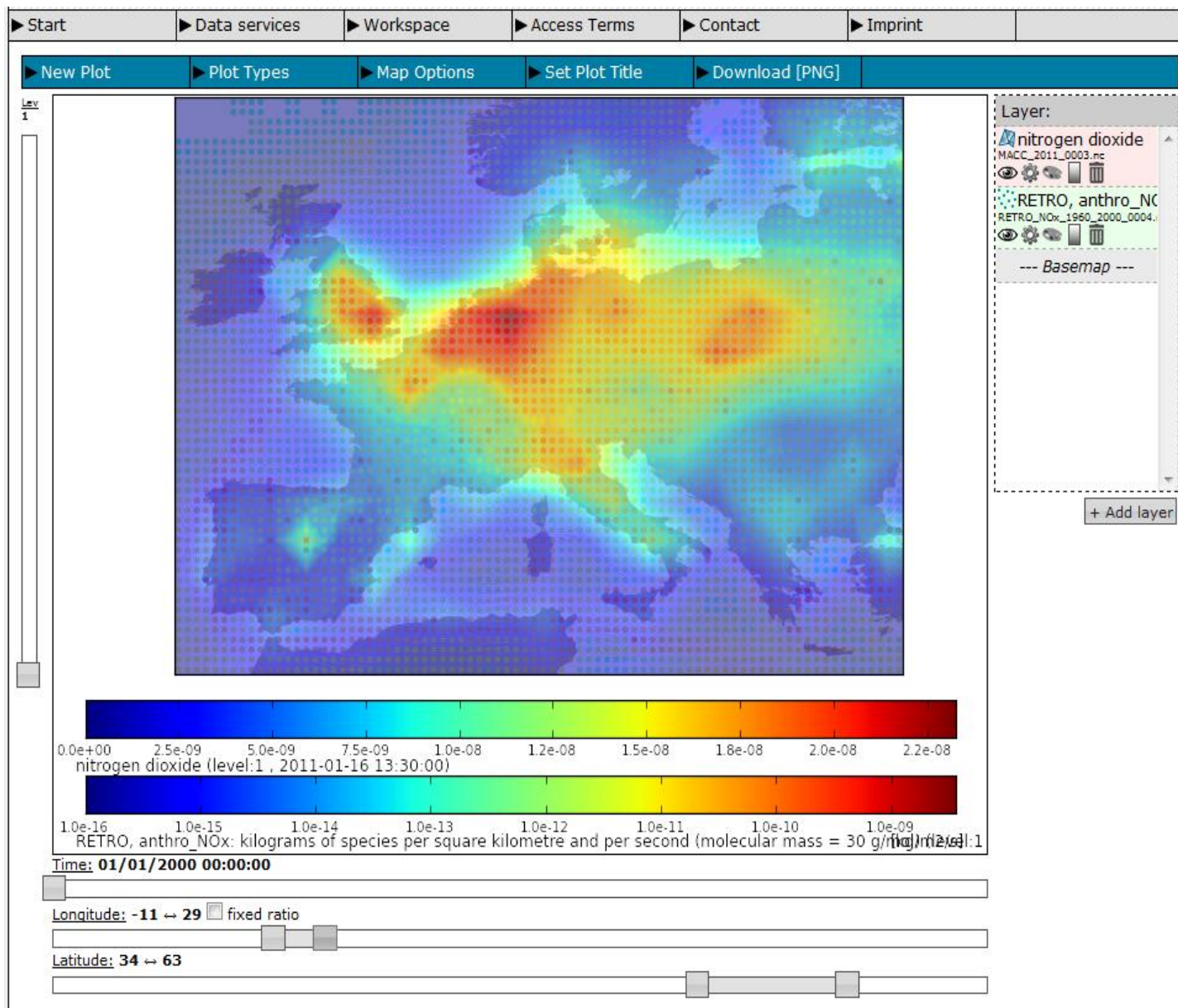




# Overlay with monthly mean simulated PAN concentrations from MACC forecast (January 2011)



# Overlay with monthly mean simulated $\text{NO}_2$ concentrations from MACC forecast (January 2011)



## Example for time series plot with UBA station data

Home > Services > MACC global boundaries for regional air quality models

Start

Data services

About this service

Contact

Imprint

Login

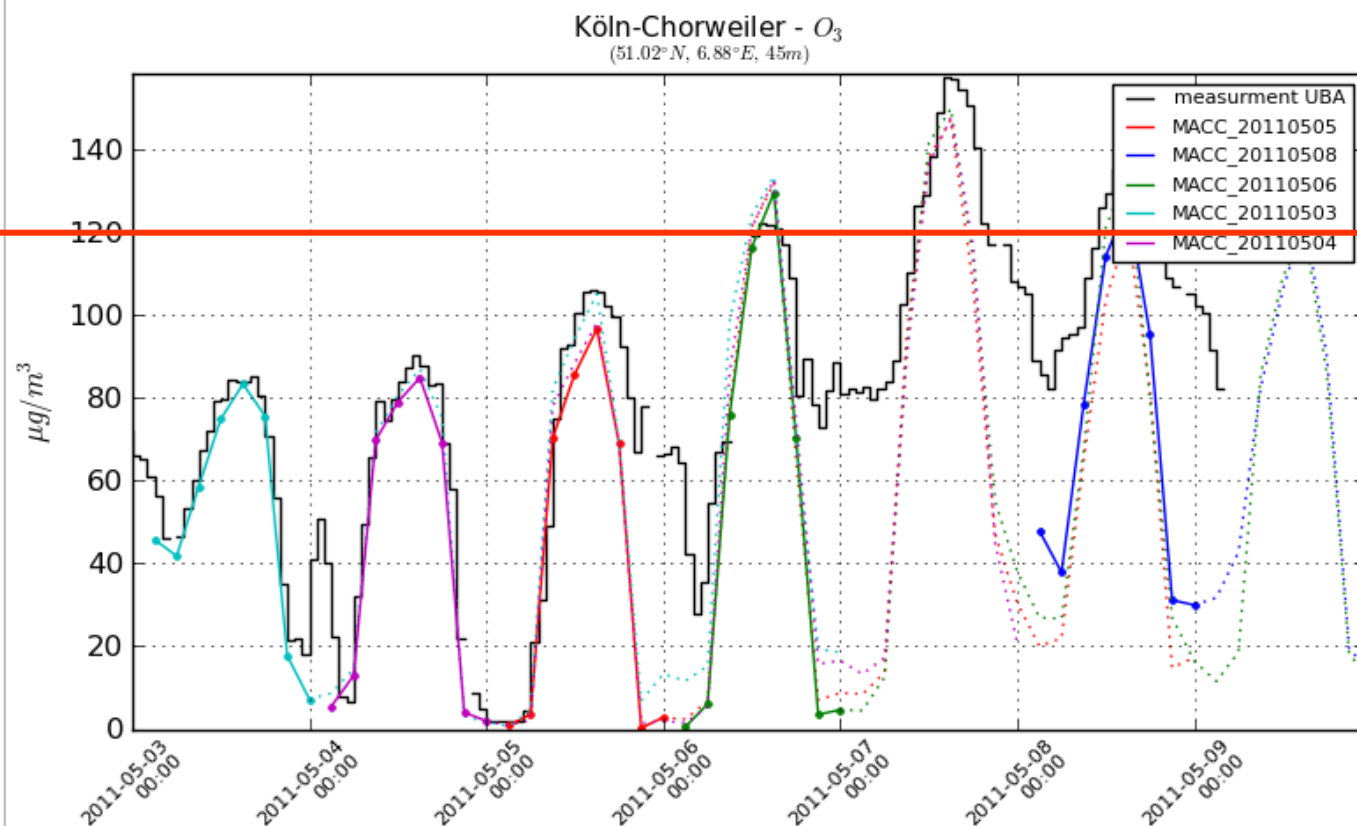
### Data comparison (under construction)

Station: Köln-Chorweiler (DENW053)

Change

Time series

Correlation



Models:

MACC\_20110505

MACC\_20110508

MACC\_20110506

MACC\_20110503

MACC\_20110504

+ Add models

Species:

SO<sub>2</sub>

O<sub>3</sub>

NO<sub>2</sub>

[Data source and use conditions](#)

EU  
threshold  
(8 hours)