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

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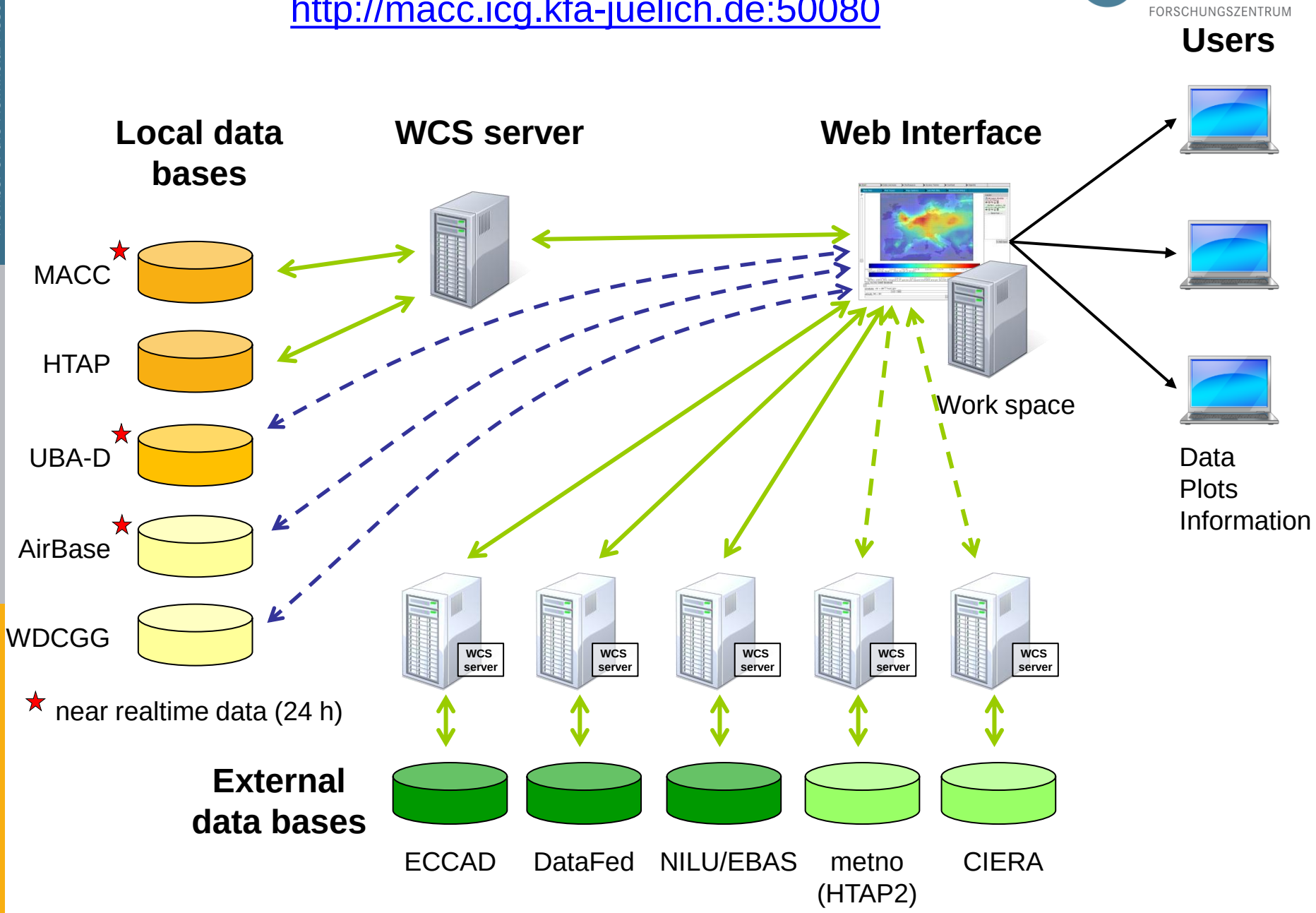
http://macc.icg.kfa-juelich.de:50080



★ near realtime data (24 h)

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 dat awith 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.icg.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

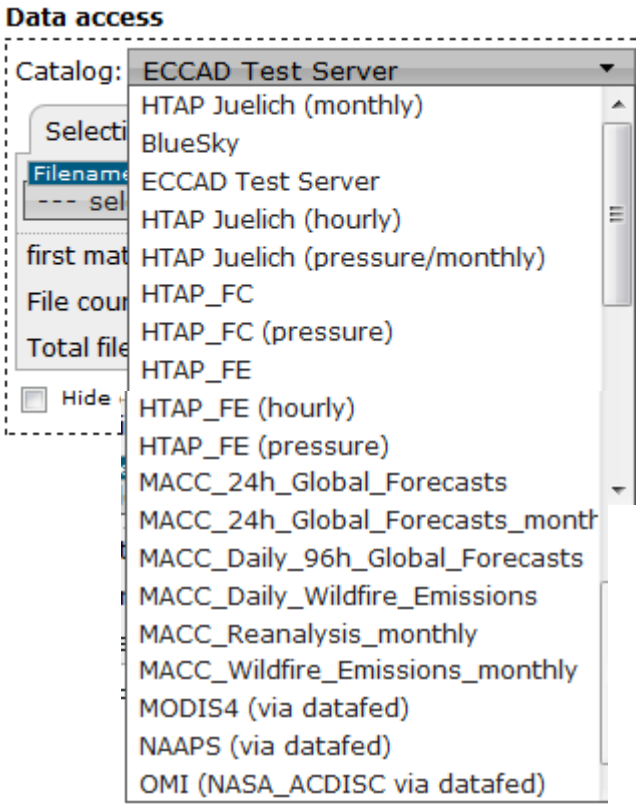
Describe Coverage:

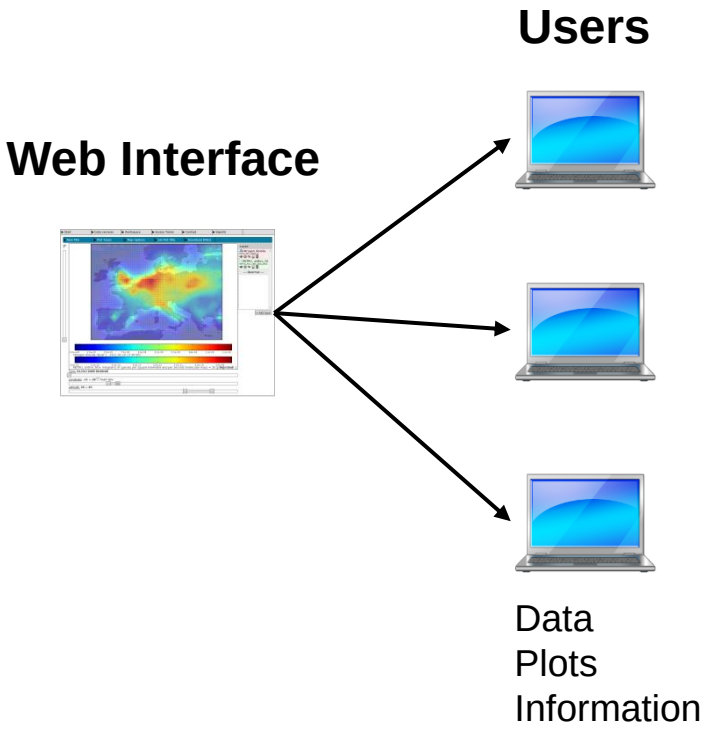
http://htap.icg.kfa-juelich.de:58080/HTAP_monthly?service=WCS&version=1.1.2&Request=DescribeCoverage&identifiers=ECHAM5-HAMMOZ-v21_SR1_metm_2001

Get Coverage:

http://htap.icg.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;orog;precip;ps;temp;&format=image/netcdf

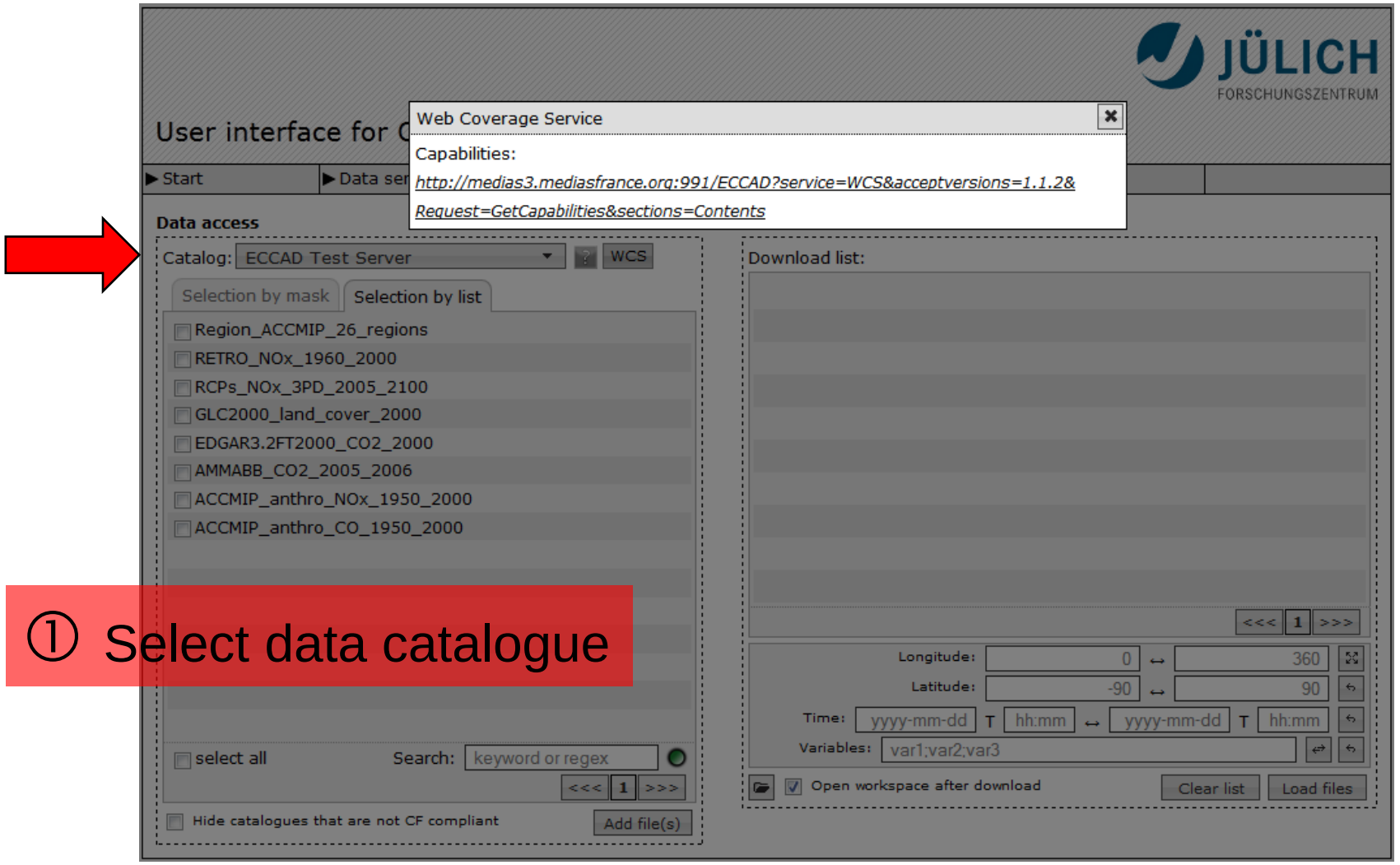
The Jülich WCS server and web interface from the user perspective



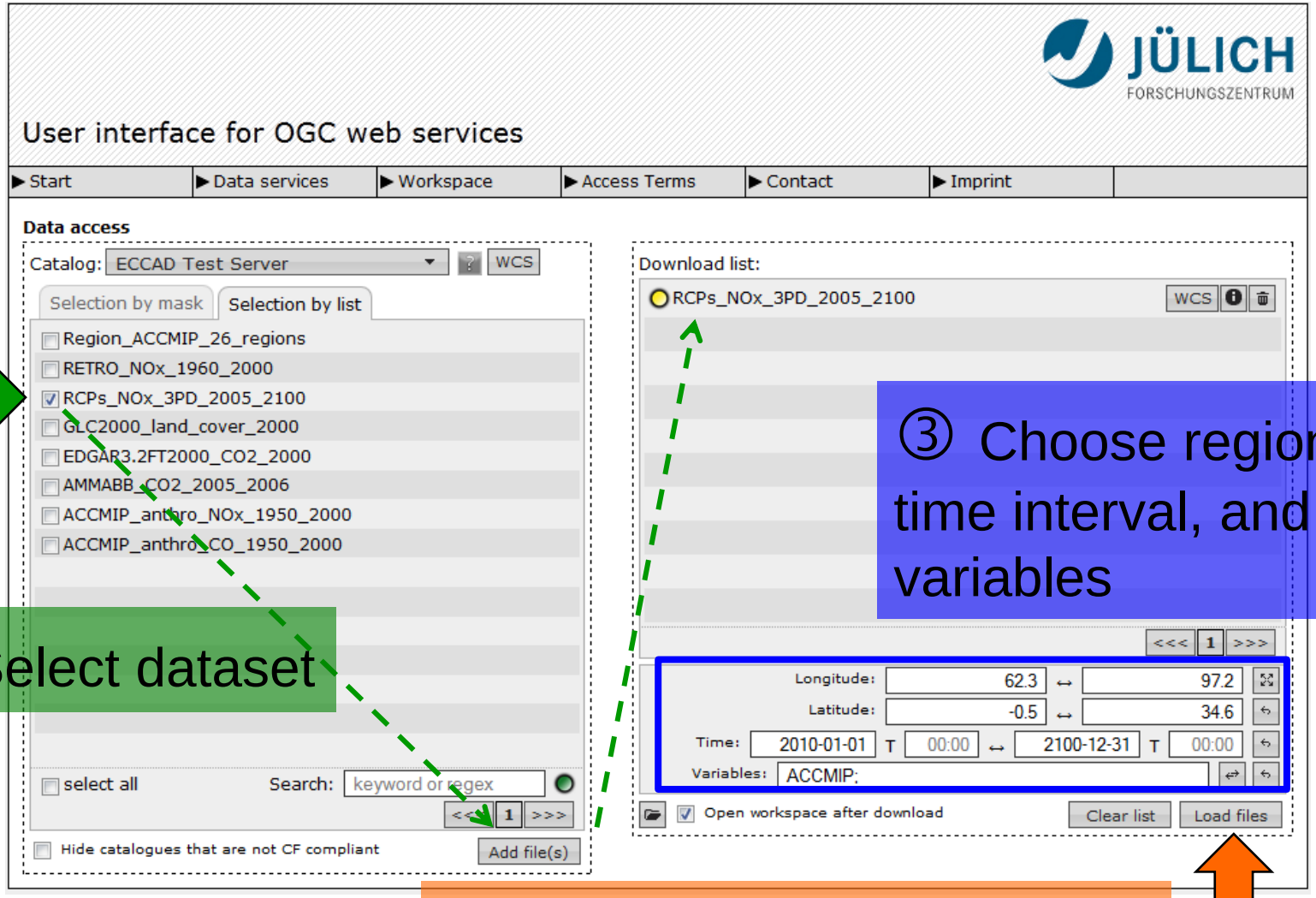


Note: We don‘t have a sophisticated interface to search for data yet
Use http://webapps.datafed.net/CORE.uFIND, http://www.eurogeoss-broker.eu/ or others to **FIND** data!

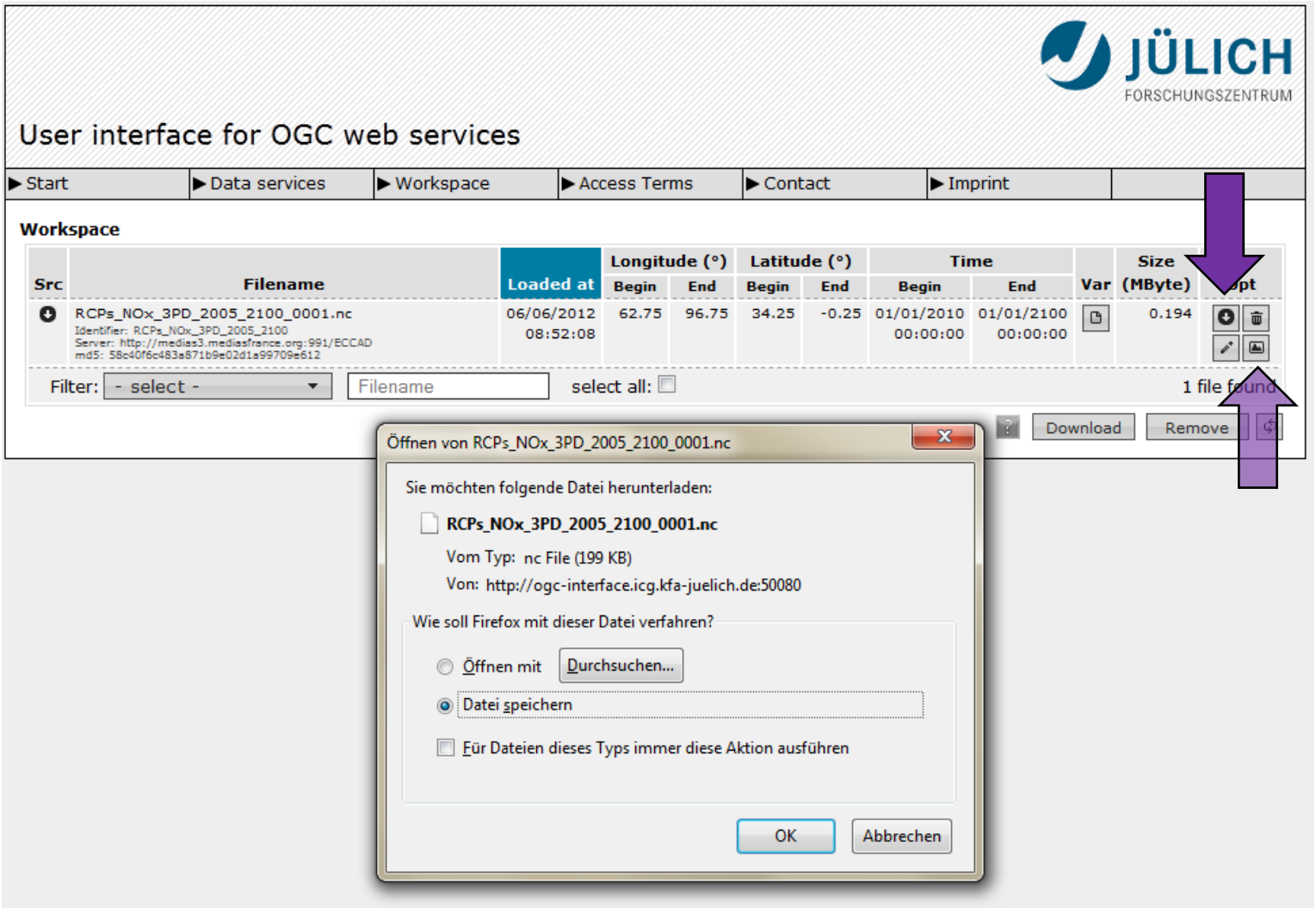
A use case: Overlay emissions from ECCAD with MACC forecast data

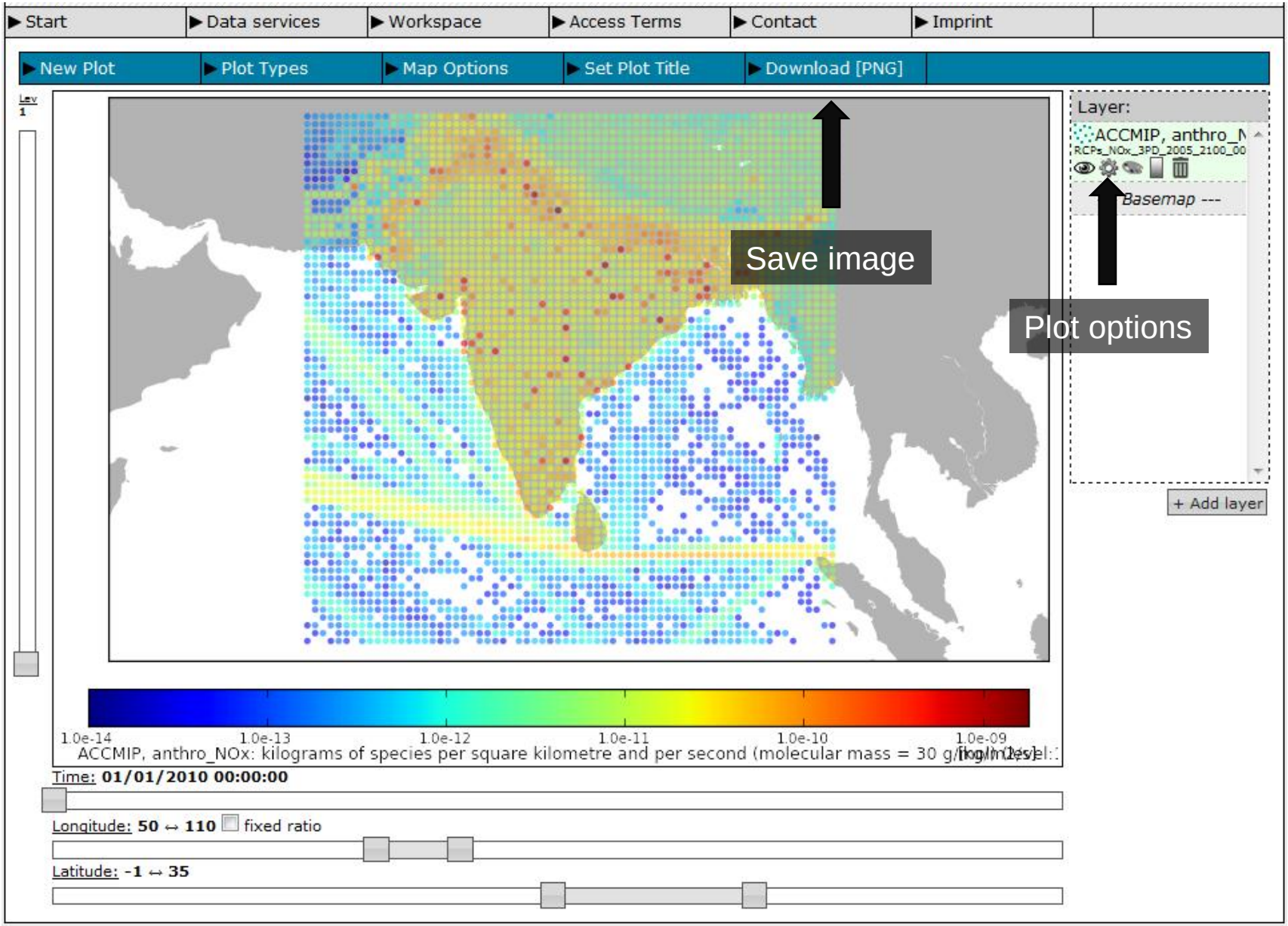


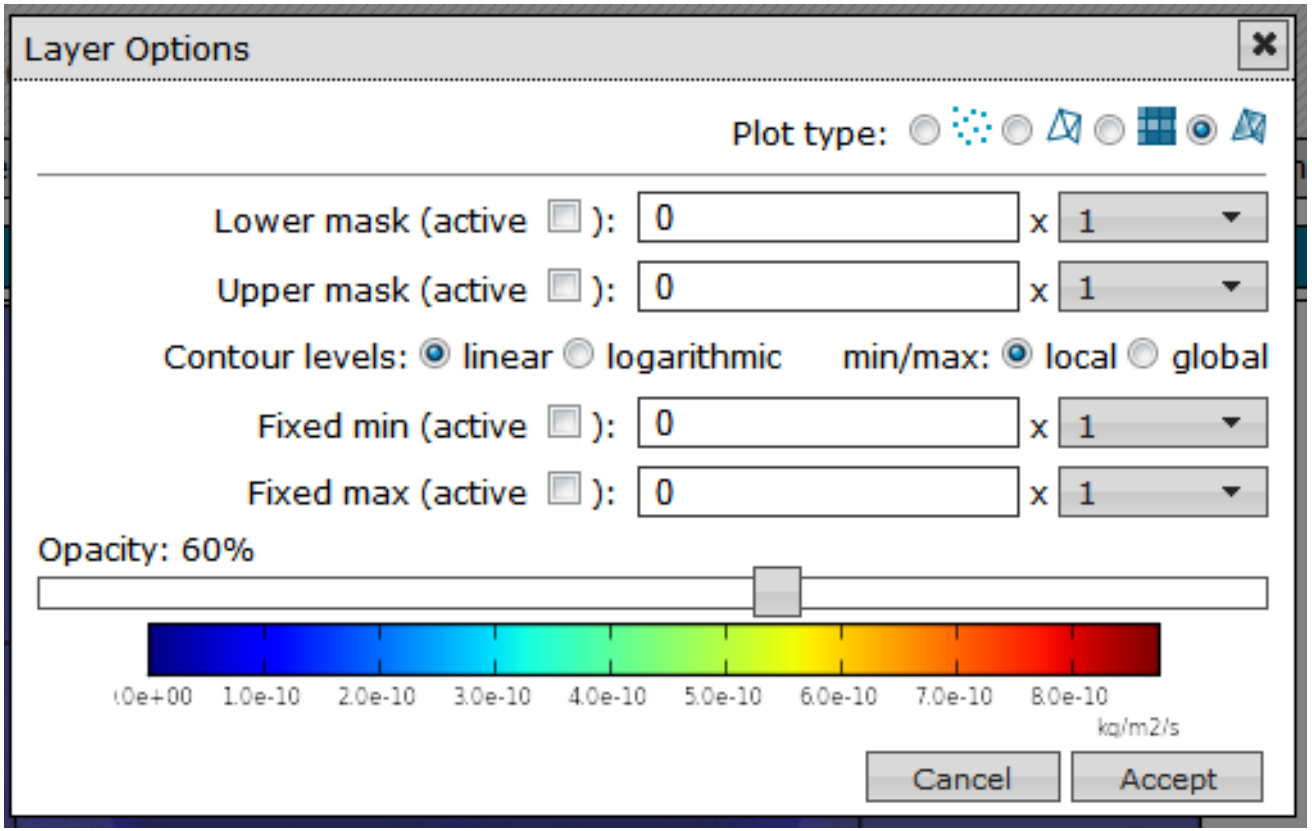
① Select data catalogue



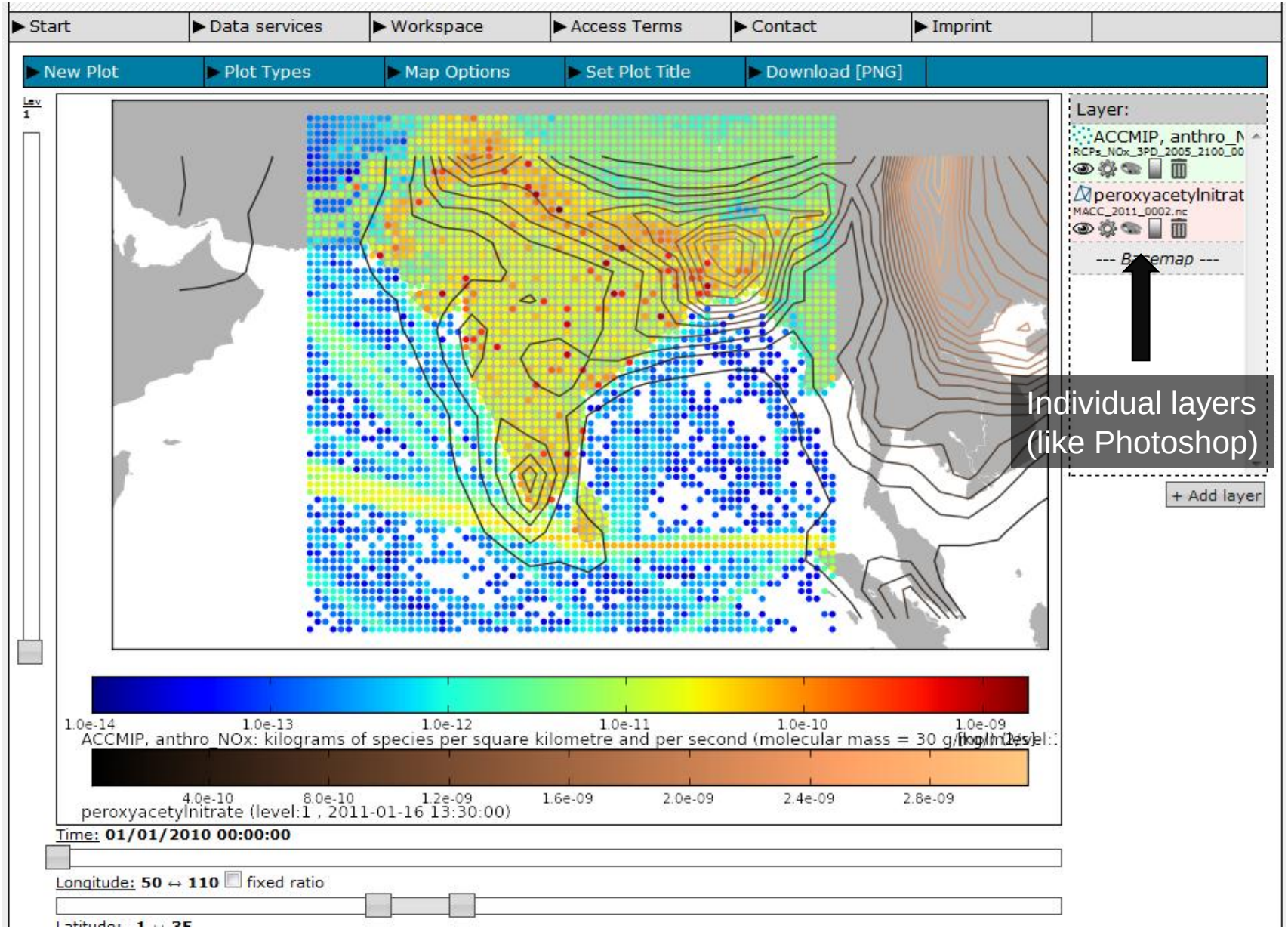
⑤ From workspace: download or plot data



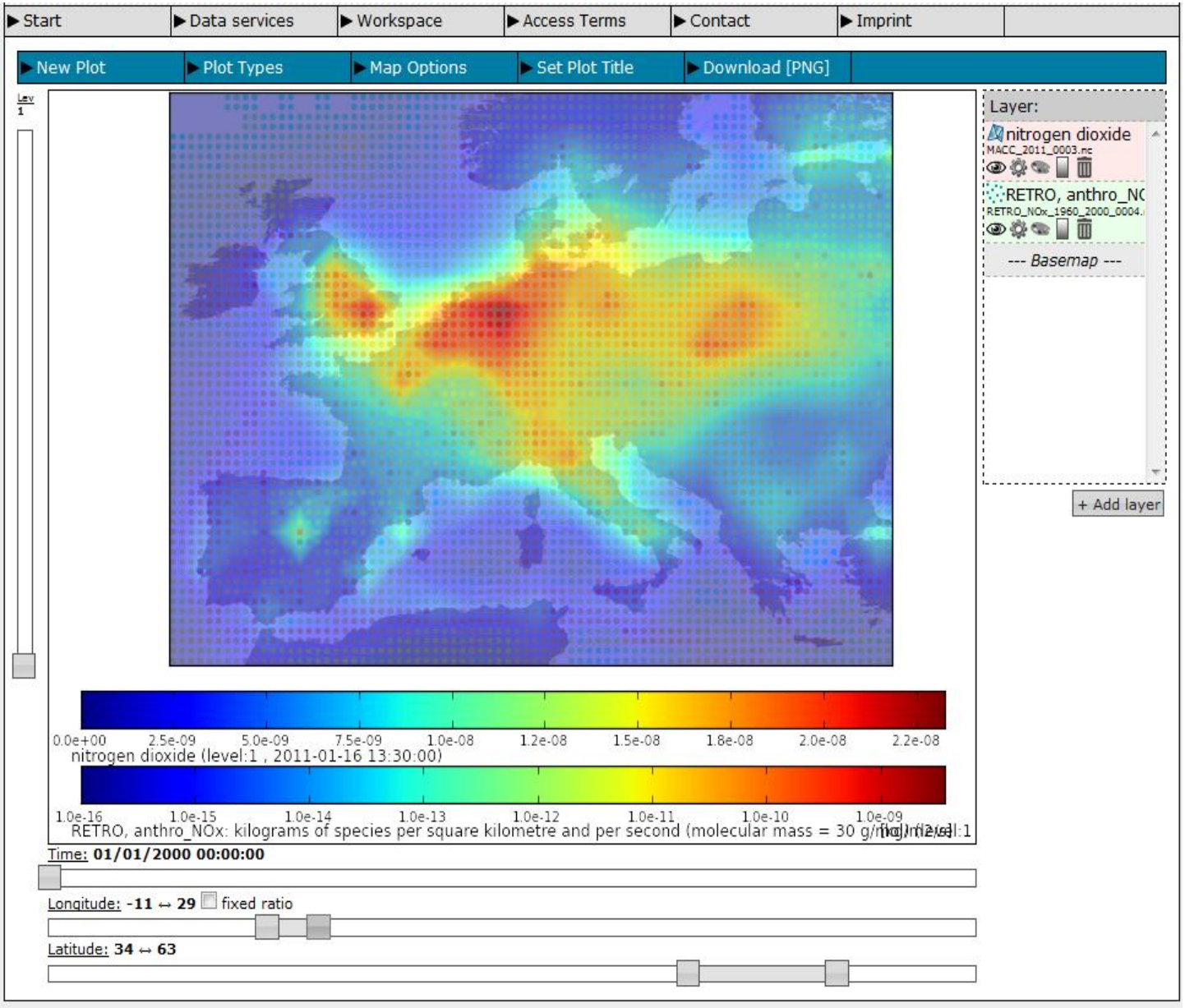

▶ Start
▶ Data services
▶ Workspace
▶ Access Terms
▶ Contact
▶ Imprint
▶ New Plot
▶ Plot Types
▶ Map Options
▶ Set Plot Title
▶ Download [PNG]
Lev
1
Layer:
ACCMIP, anthro_N
RCPs_NOx_3PD_2005_2100_00
Basemap ---
Save image
Plot options
+ Add layer
1.0e-14
1.0e-13
1.0e-12
1.0e-11
1.0e-10
1.0e-09
ACCMIP, anthro_NOx: kilograms of species per square kilometre and per second (molecular mass = 30 g/mol)
Time: 01/01/2010 00:00:00
Longitude: 50 ↔ 110 fixed ratio
Latitude: -1 ↔ 35


Layer Options
Plot type:
Lower mask (active): 0 x 1
Upper mask (active): 0 x 1
Contour levels: linear logarithmic min/max: local global
Fixed min (active): 0 x 1
Fixed max (active): 0 x 1
Opacity: 60%
0e+00 1.0e-10 2.0e-10 3.0e-10 4.0e-10 5.0e-10 6.0e-10 7.0e-10 8.0e-10
kg/m2/s
Cancel
Accept

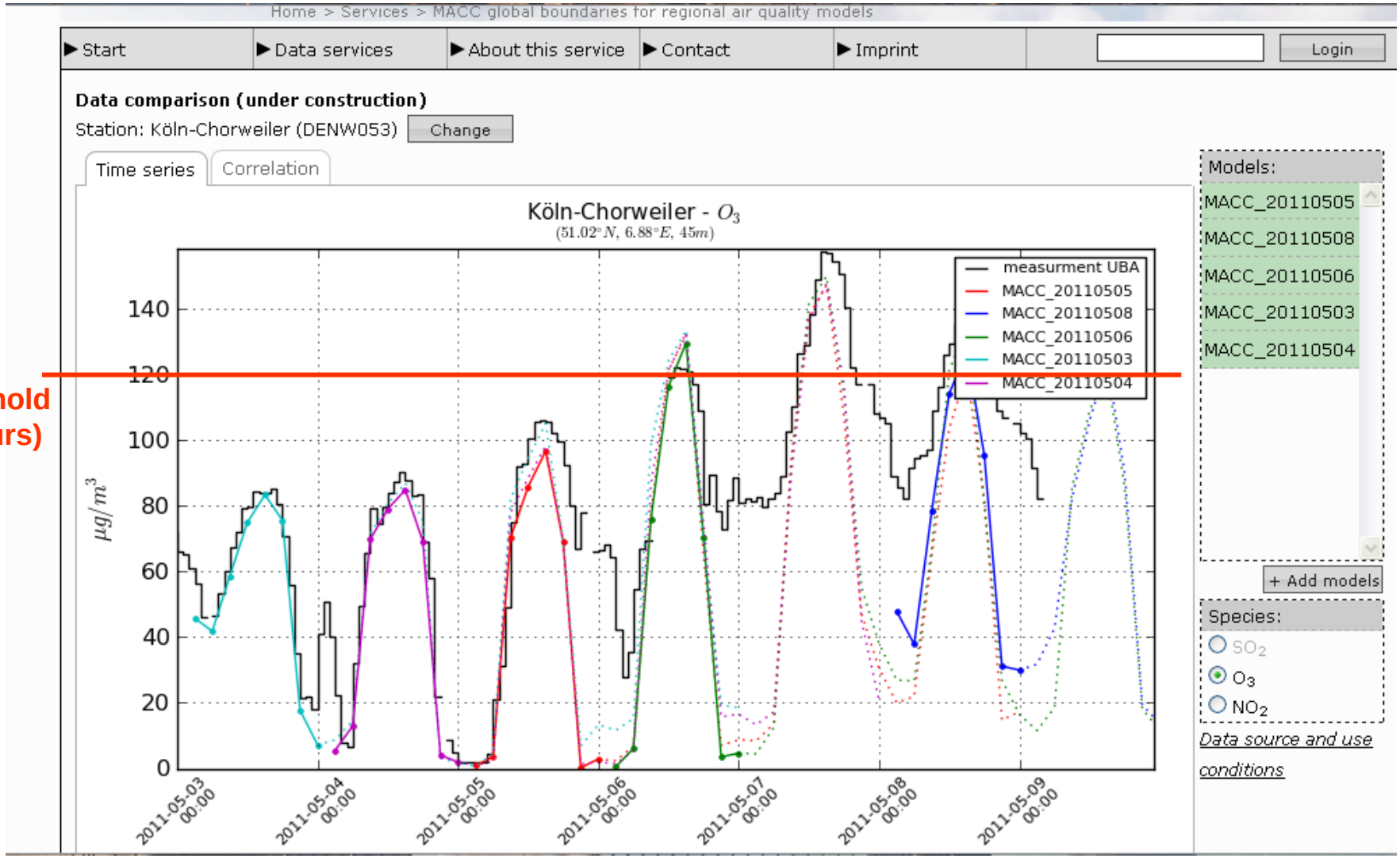
Overlay with monthly mean simulated PAN concentrations from MACC forecast (January 2011)



Overlay with monthly mean simulated NO_2 concentrations from MACC forecast (January 2011)



Example for time series plot with UBA station data



EU threshold (8 hours)