World Data Centre for Aerosol: Status & News 2017

Fiebig, M.; Fjæraa, A.M.; Tørseth, K. and the EBAS-team
WDCA at the Norwegian Institute for Air Research

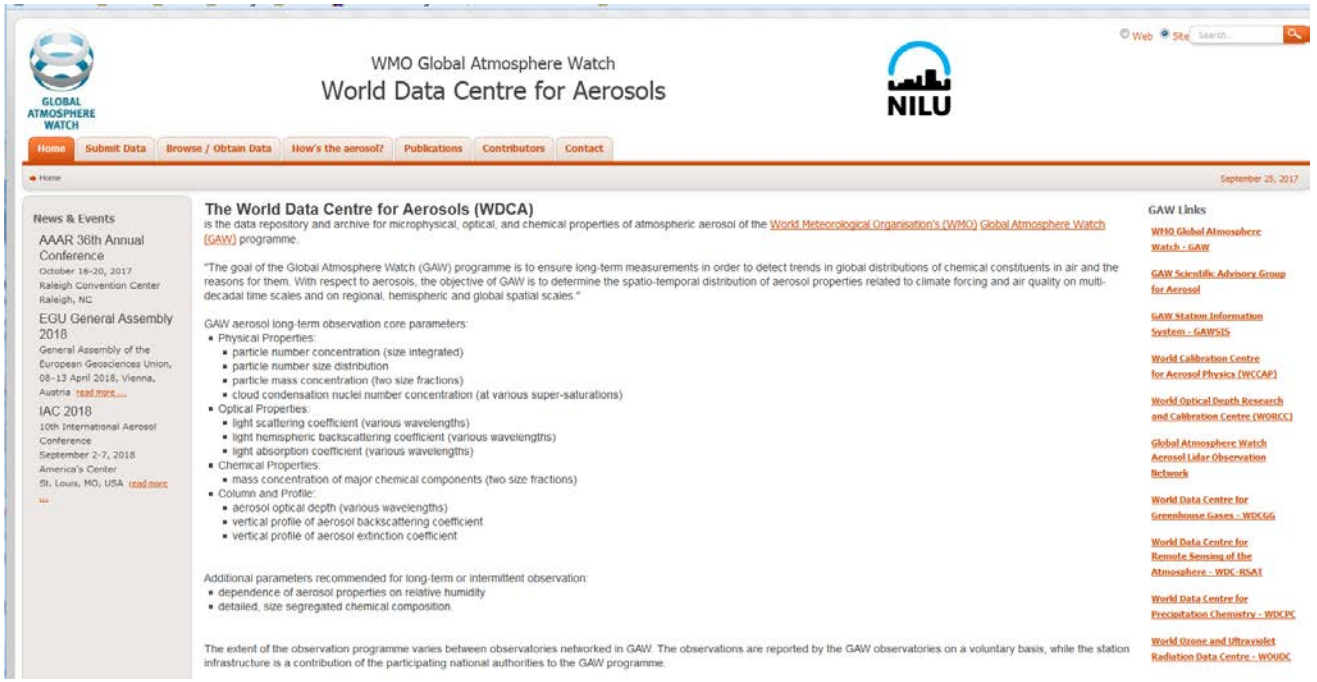
NILU Norsk institutt for luftforskning

WMO GAW

Items Covered

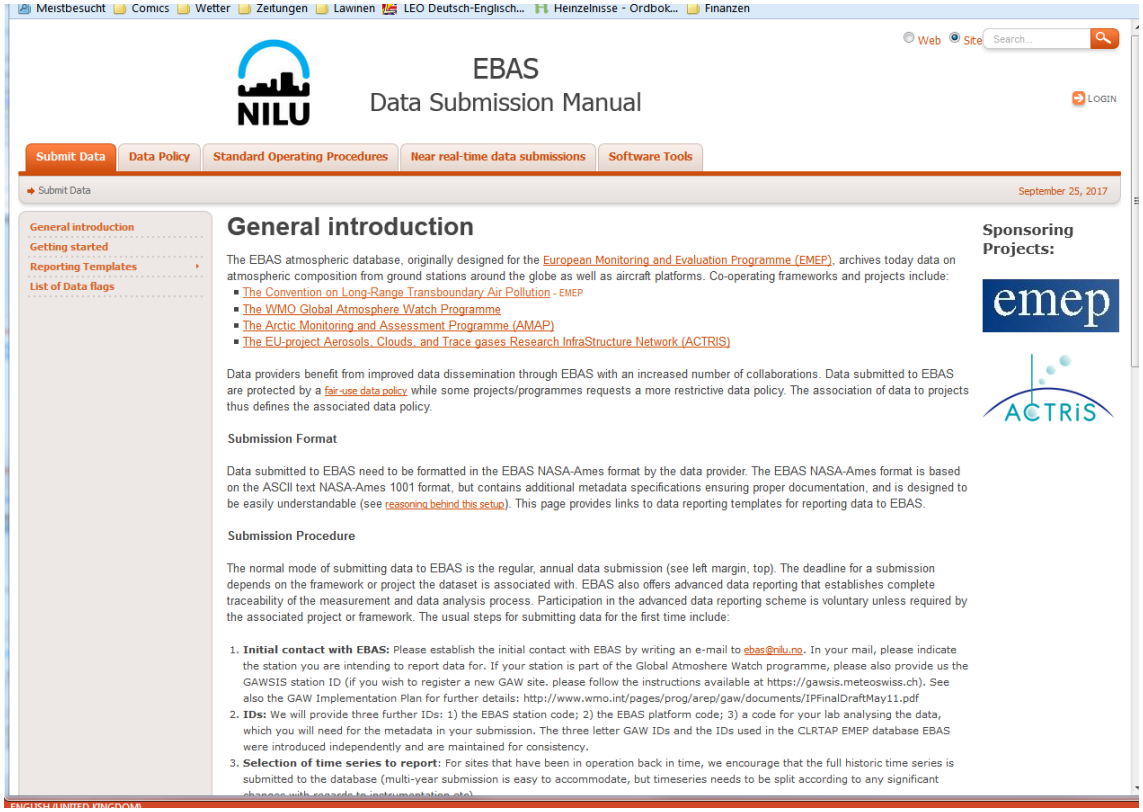
- WDCA setup: Quick Review
- WDCA Status: Key numbers and figures
  - Stations Reporting
  - Access Statistics
- Services and Ongoing WDCA Activities
  - Submission portal with instant feedback
  - Data Identification Services
  - Use of licenses in European research infrastructures
  - Interoperability: metadata and data servers
  - Feedback portal

The WDCA Homepage: www.gaw-wdca.org



- Updated «Publications» page containing relevant SOP references for stations starting new measurements.
- Links to other GAW nodes.

Instructions for Submitting Aerosol Data to EBAS, i.e. WDCA: http://ebas-submit.nilu.no/



- Information on data formats for data submitters and users, procedure of data submission and download, data policy, submission status.
- Page for software tools for data providers.

Observations with Reporting Support

Regular / Advanced (traceable):

- Particle number concentration
- Particle number size distribution (sub-micron)
- Cloud Condensation Particle Number Conc. / Size dist.
- Scattering Coefficient
- Absorption Coefficient

Regular only:

- Aerosol optical depth
- PM mass (gravimetric)
- PM mass (online)

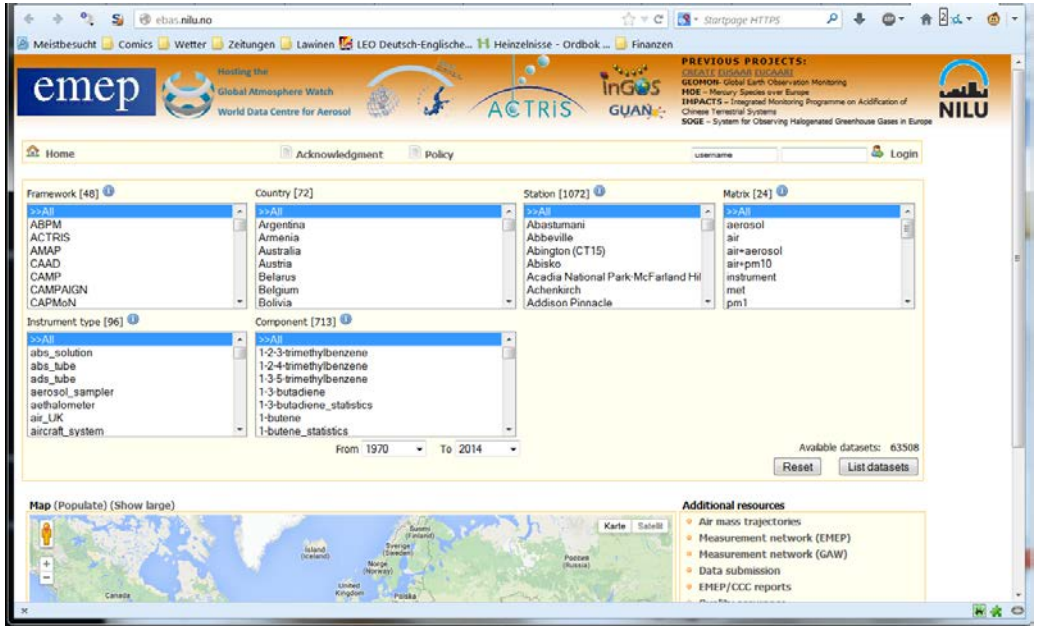
recently added:

- Aerosol Chemical Composition (GAW standard)
- Aerosol Chemical Speciation (online, AMS / ACSM)
- Particle number size distribution (super-micron, OPC, APS)
- Met. Base paramaters

WDCA Data Access – Hosted in EBAS

- Originally the data archive of the European part of the UN Convention for Long-Range Transport of Air Pollution (CLRTAP), the European Monitoring and Evaluation Programme (EMEP)
- Today's relational database used since the mid-90s on varying hardware.
- Since about year 2000 also used by other projects and frameworks.
- Web-interface since 2009, linking also other tools.

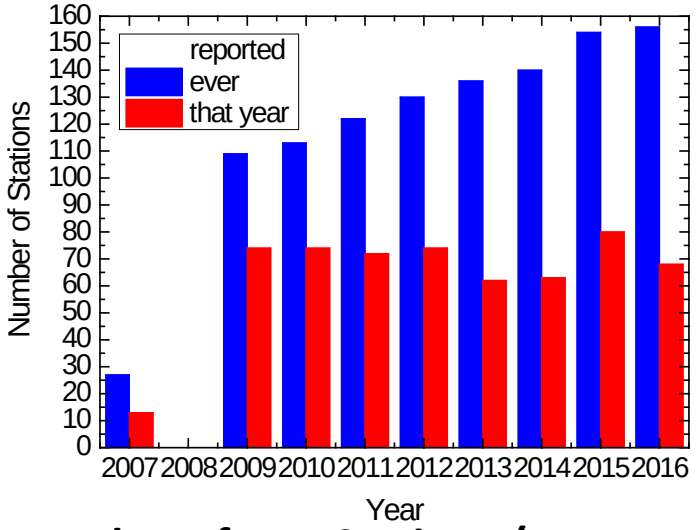
WDCA Web-Interface



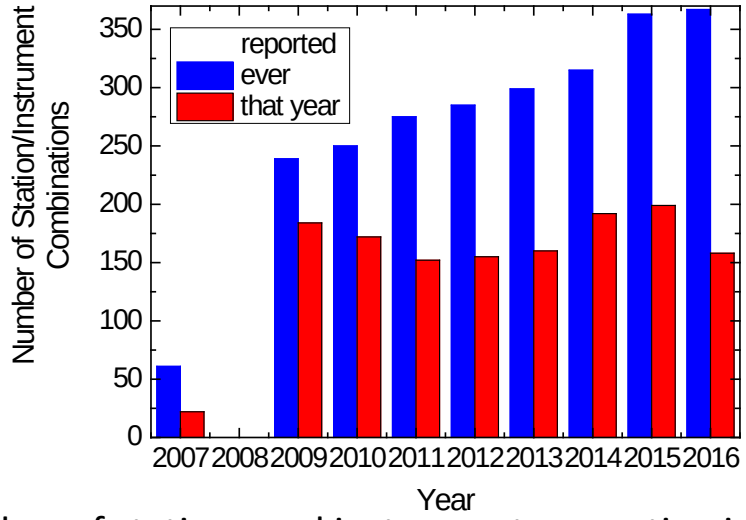
- Co-hosted with other frameworks / projects (EMEP, ACTRIS, GUAN, InGOS, …) in EBAS relational database.
- Features:
  - Revision history (prerequisite for data citation / DOI)
  - Traceable data reporting
  - Atmospheric variability, instrument uncertainty (precision, accuracy, both constant or time dependent).
  - Extensive set of metadata (SOP, calibration standards, inlet config., …, also time dependent if not constituting ruptures)

Status of Ongoing Data Collection, Key Numbers

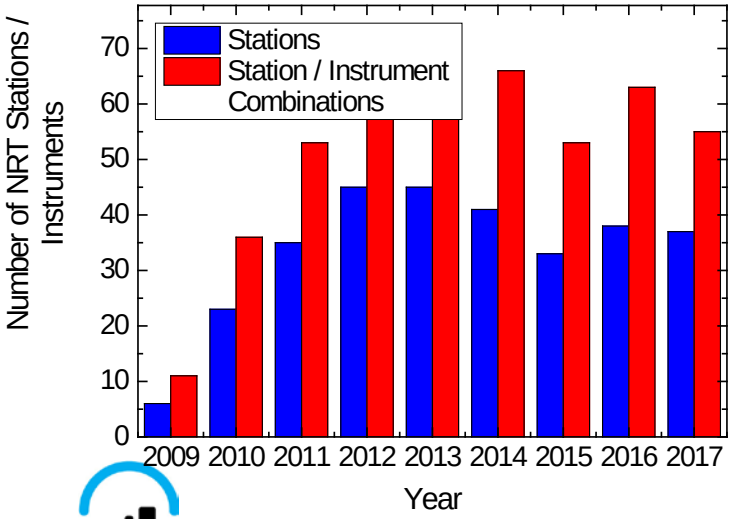
Number of Stations Reporting



Number of Station/Inst. Reported

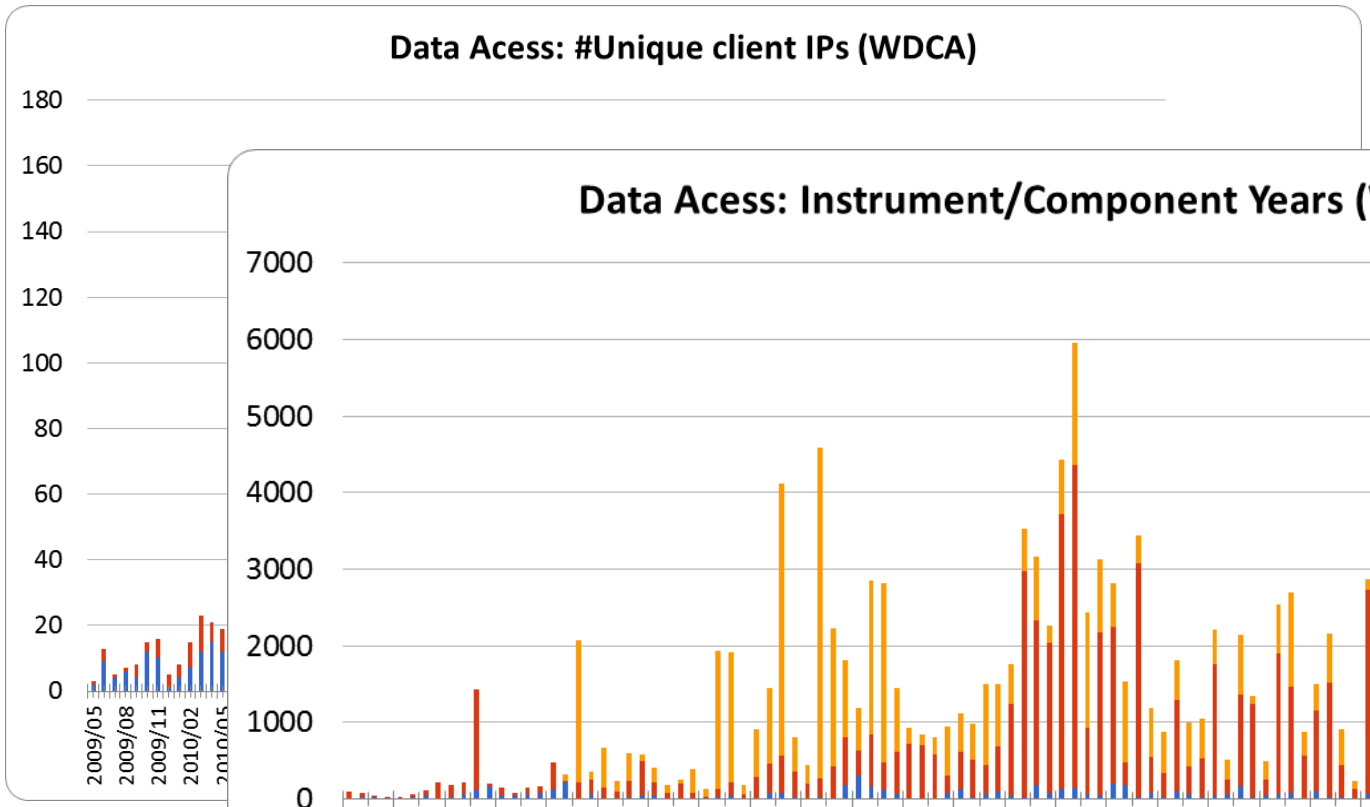


Number of NRT Stations / Instruments



- Number of stations and instruments reporting is increasing again.
- The same for NRT stations and instruments.

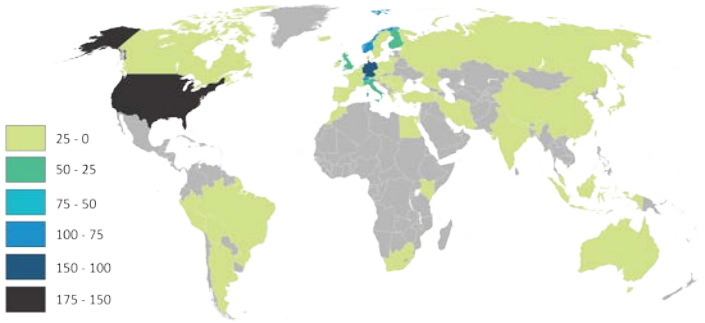
How Much Are WDCA Data Used?



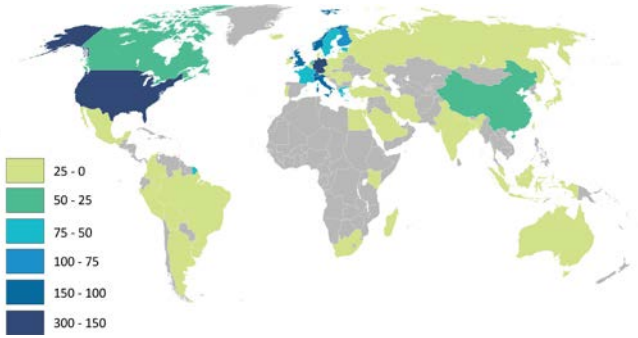
Plots by P. Eckhardt

Where Are the WDCA Users Located? Number of Unique Users (IPs) by Country (2009-2013)

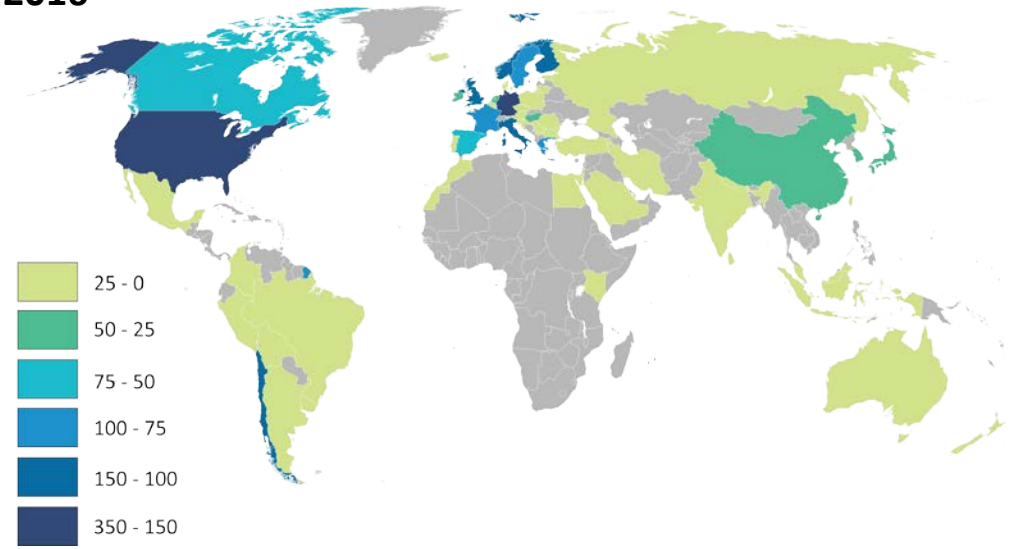
2014



2015



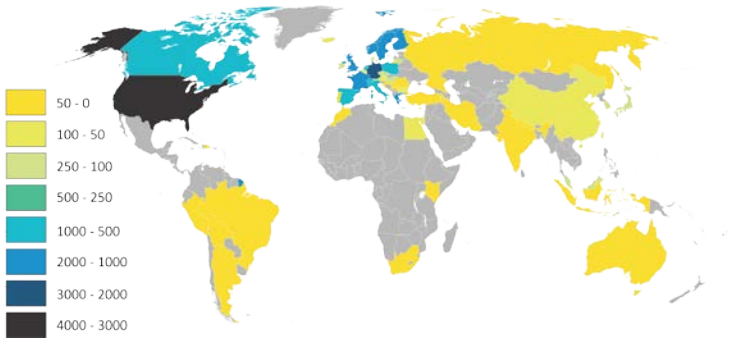
2016



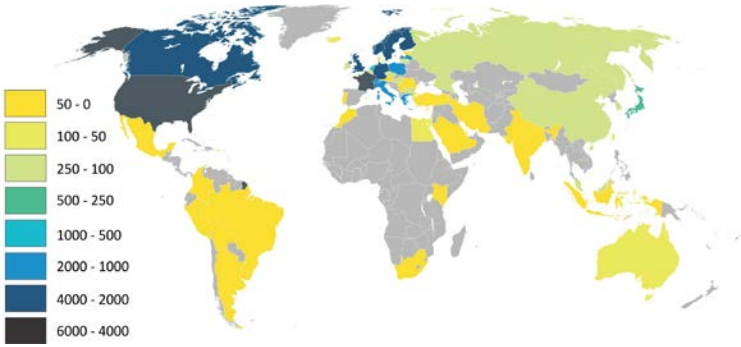
- more unique users in Canada, Europe, China.
- Distribution similar over the years
- absolute numbers are increasing.

Where Are the WDCA Users Located? Number of Annual Datasets (station / instrument) Downloaded

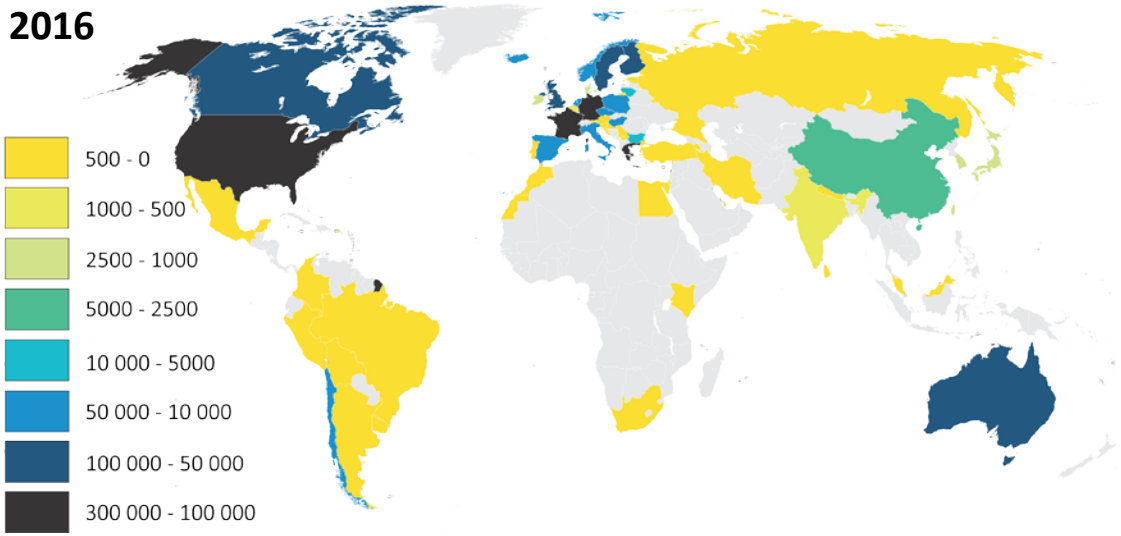
2014



2015



2016



- more download from Canada, Europe, China, Russia.
- Distribution similar over the years.
- More “heavy user” countries.
- Absolute numbers increase.

EBAS Services in the Data Life Cycle

Inspired by:

Observations with Reporting Support

Regular / Traceable:

- Particle number concentration
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- PM mass (gravimetric)
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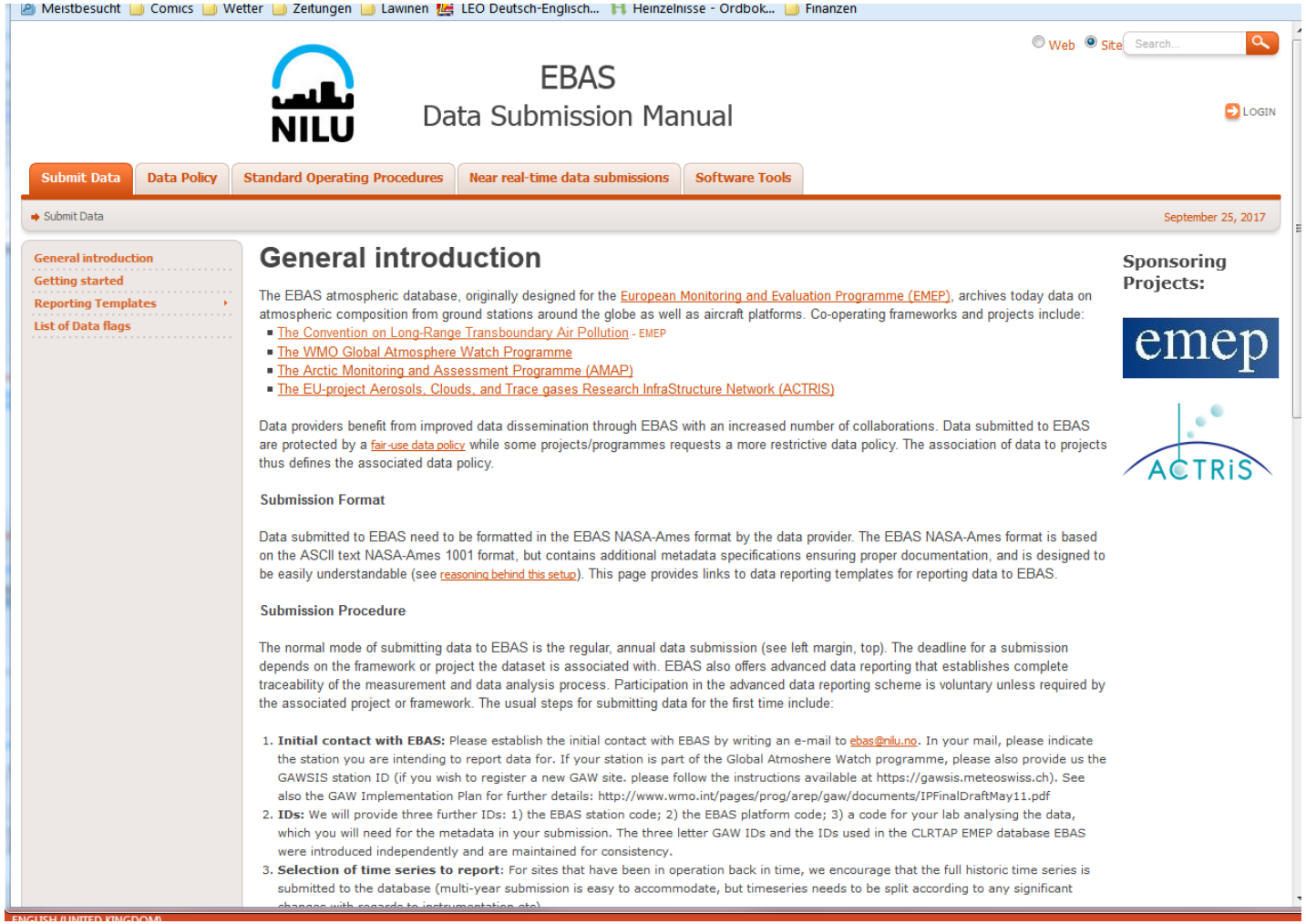
- Particle number size distribution (super-micron, OPC, APS)
- Aerosol Chemical Composition (GAW standard, co-ordinated with EMEP)
- Aerosol Chemical Speciation (online, AMS / ACSM)
- OC / EC concentration

recently added:

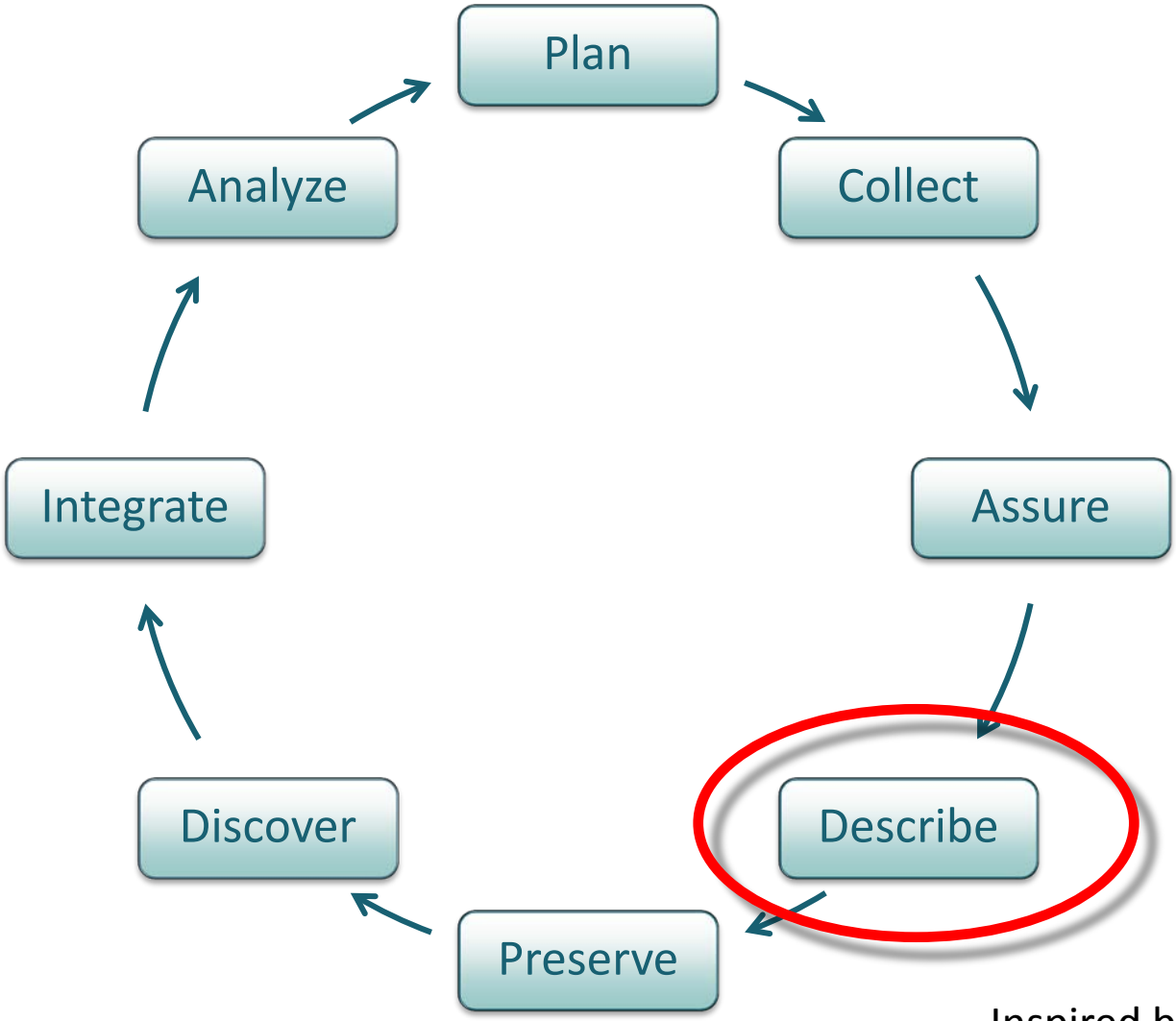
- Met. Base paramaters

DAQ Software for Use at Station to Participate in NRT Service



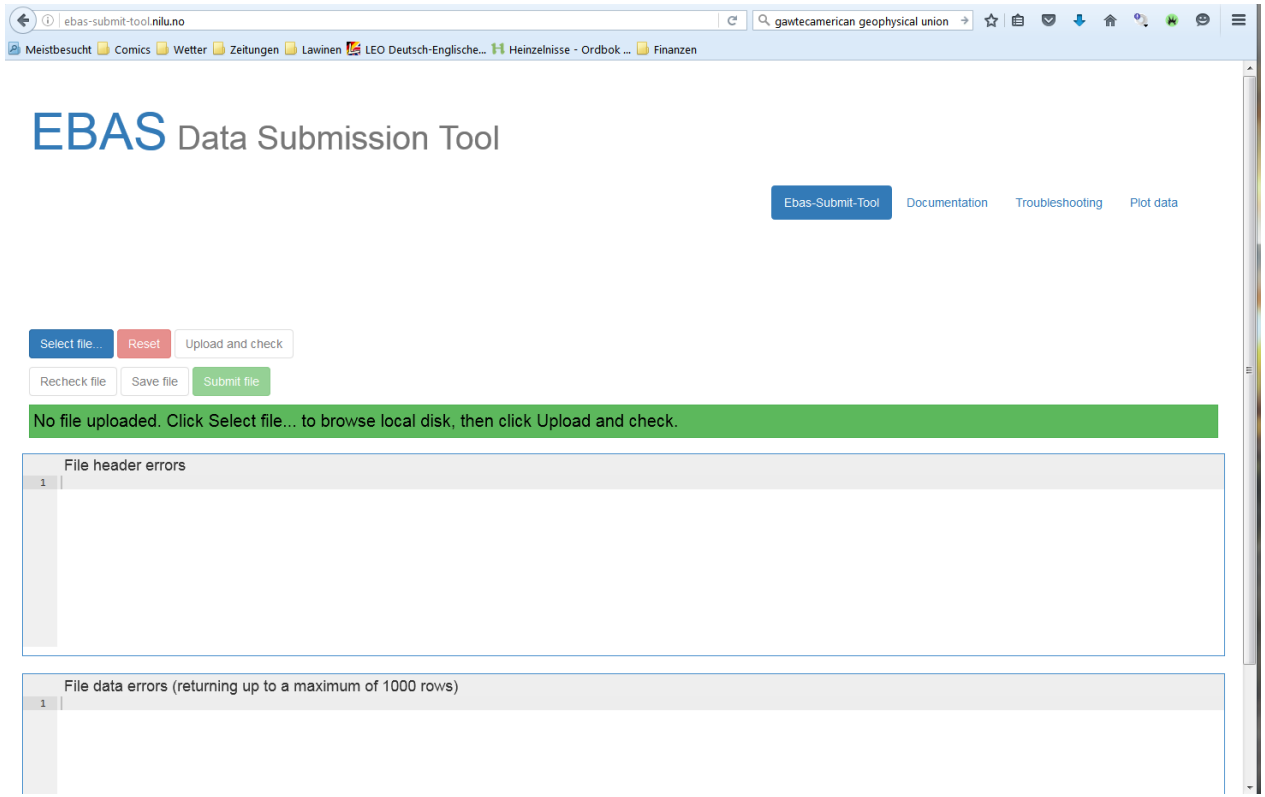
Funded by:

EBAS Services in the Data Life Cycle



Inspired by:

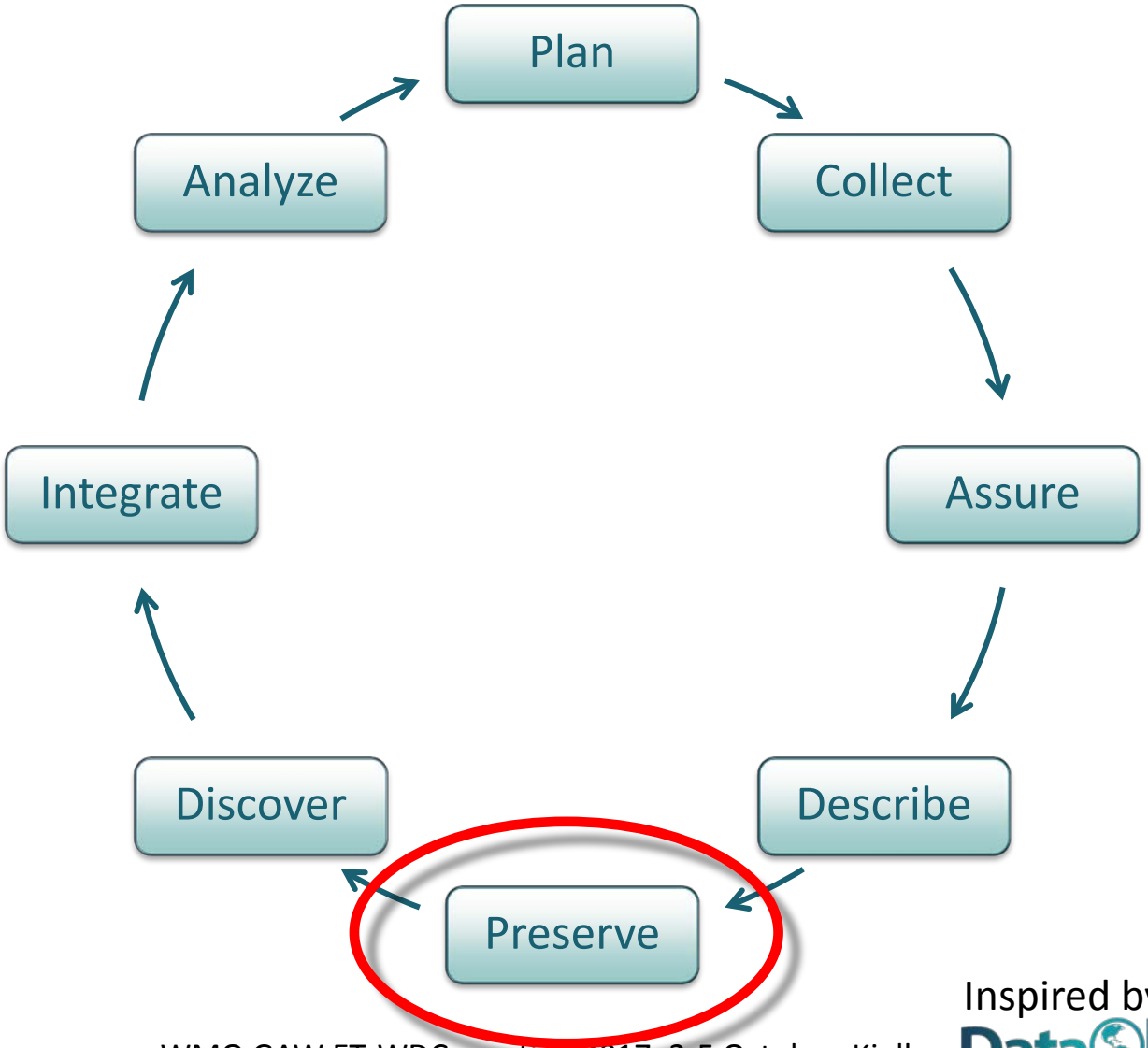
EBAS Data Submission Tool: ebas-submit-tool.nilu.no



Funded by:

- For syntax / sanity checking data submissions before submission, submission option when tests passed.
- Data provider receives direct feedback, same engine as used internally.
- Community forum for discussing submission issues.
- Funded by ACTRIS

EBAS Services in the Data Life Cycle



Inspired by:

Data Citation Services:

DIOs can be used in 2 ways (at least):

1. Identification of all data archived at fixed granularity – provides quantifiable credit to data provider
2. Identification of user selected data collections – provides ease of use of data

- Type 2 DOIs need to link correctly to type 1 DOIs to facilitate correct accounting of data use – prerequisite for open data policy!!!
- Current focus on implementing type 1 DOIs.
- Work with relevant frameworks (RDA etc.) to specify type 2 DOIs correctly.

Funded by:

EBAS Services in the Data Life Cycle

Inspired by:

The global observing system for atmospheric composition

GEO

GLOBAL ATMOSPHERE WATCH

ICOS integrated carbon observation system

IAGOS

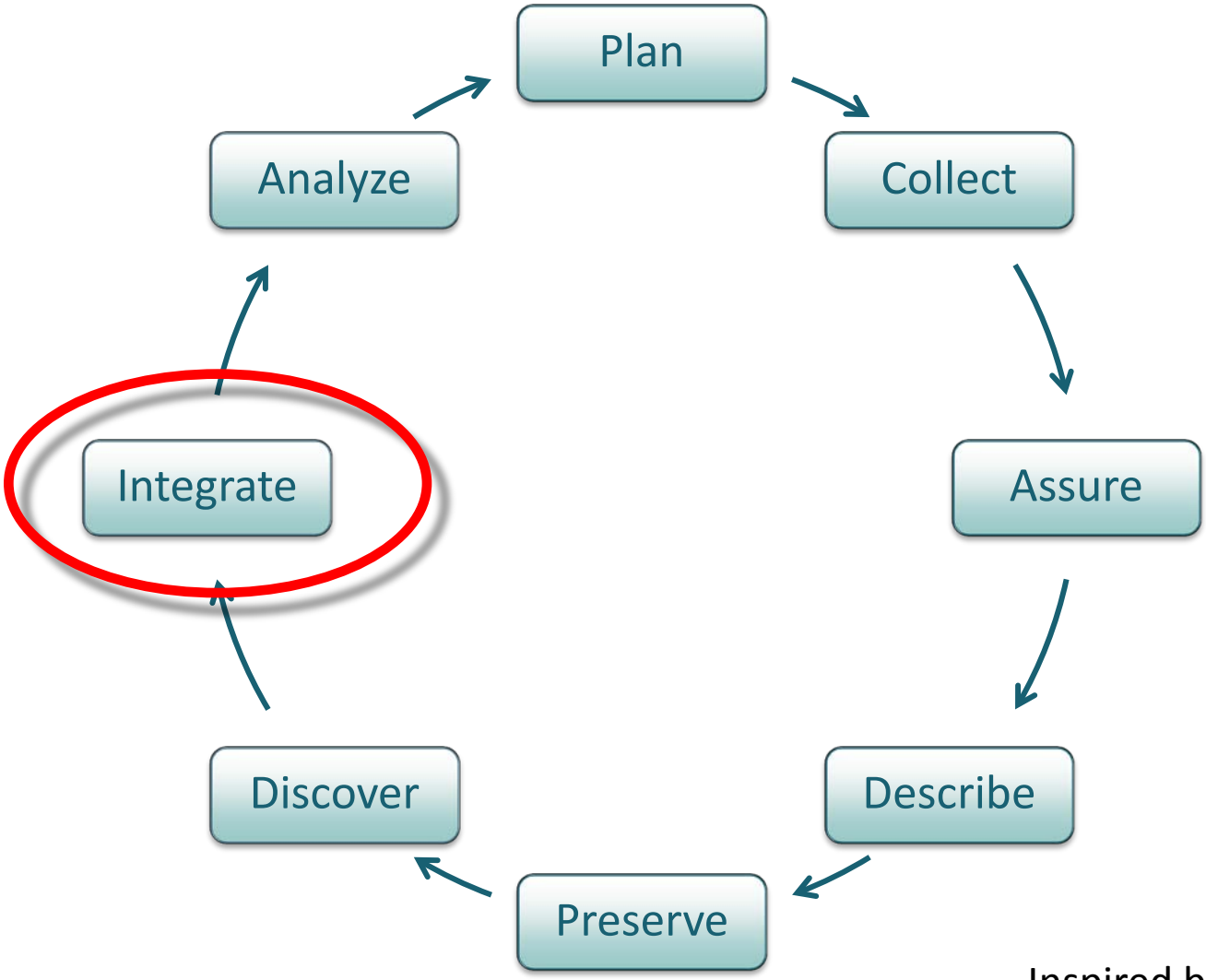
ACTRiS

EEA

AERONET Aerosol Robotic Network

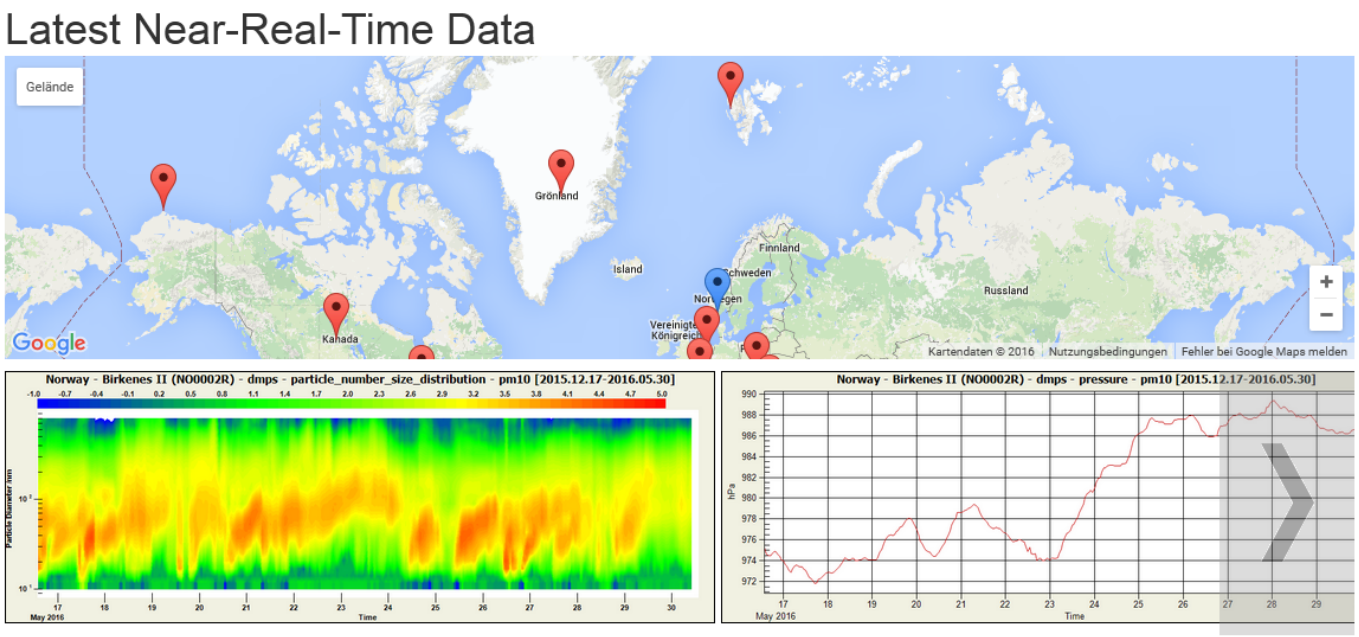
Source: Martin Schultz, FZ Jülich

EBAS Services in the Data Life Cycle



Inspired by:

NRT Showcase: ebas-nrt-showcase.nilu.no



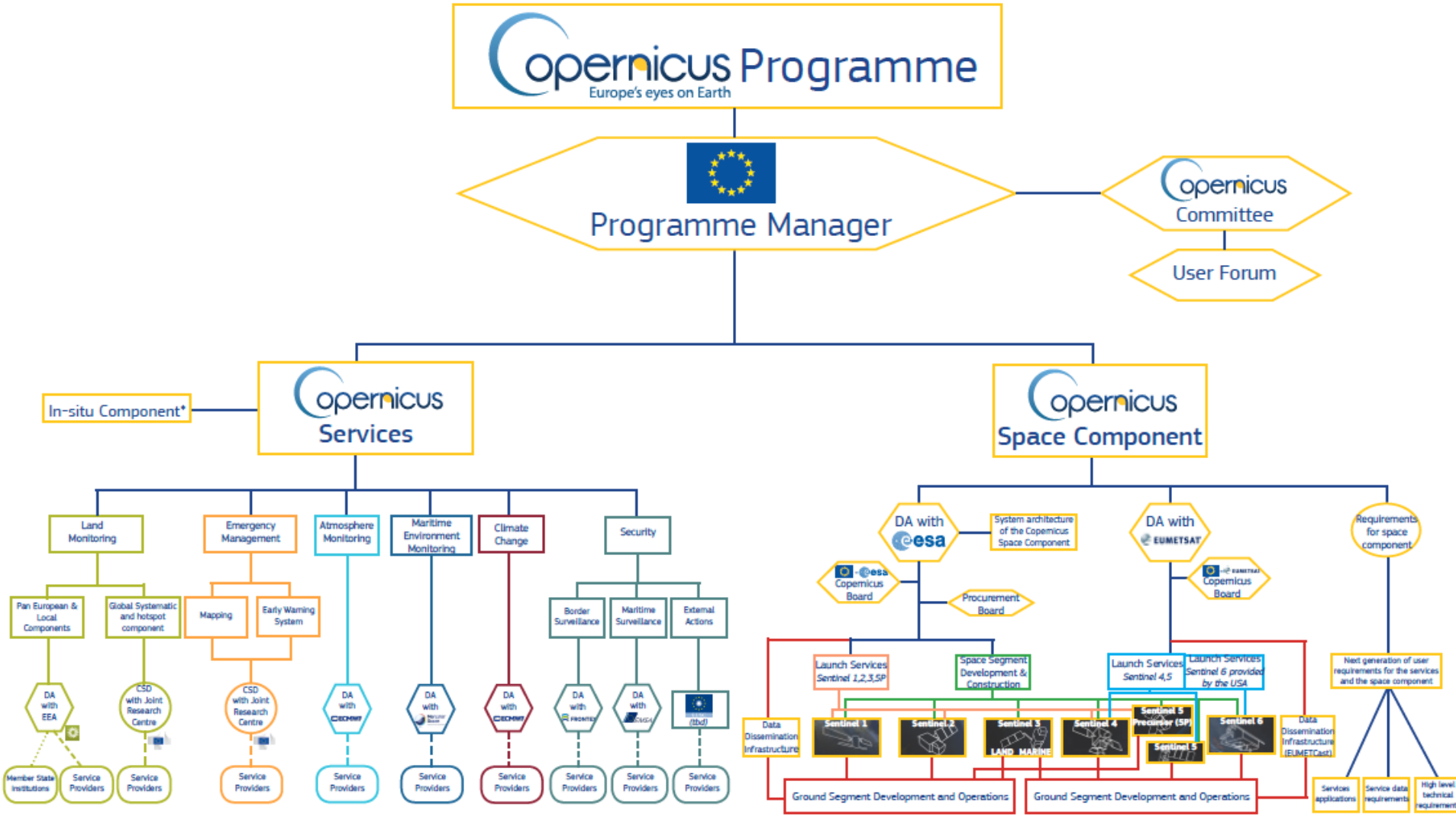
This service has been funded or supported by the Norwegian Institute for Air Research (NILU), the EU research infrastructure ACTRIS (Aerosols, Clouds, and Trace gases Research InfraStructure), the European Monitoring and Evaluation Programme (EMEP), and the WMO Global Atmosphere Watch (GAW) programme.

GLOBAL ATMOSPHERE WATCH

NILU Norsk institutt for luftforskning Norwegian Institute for Air Research

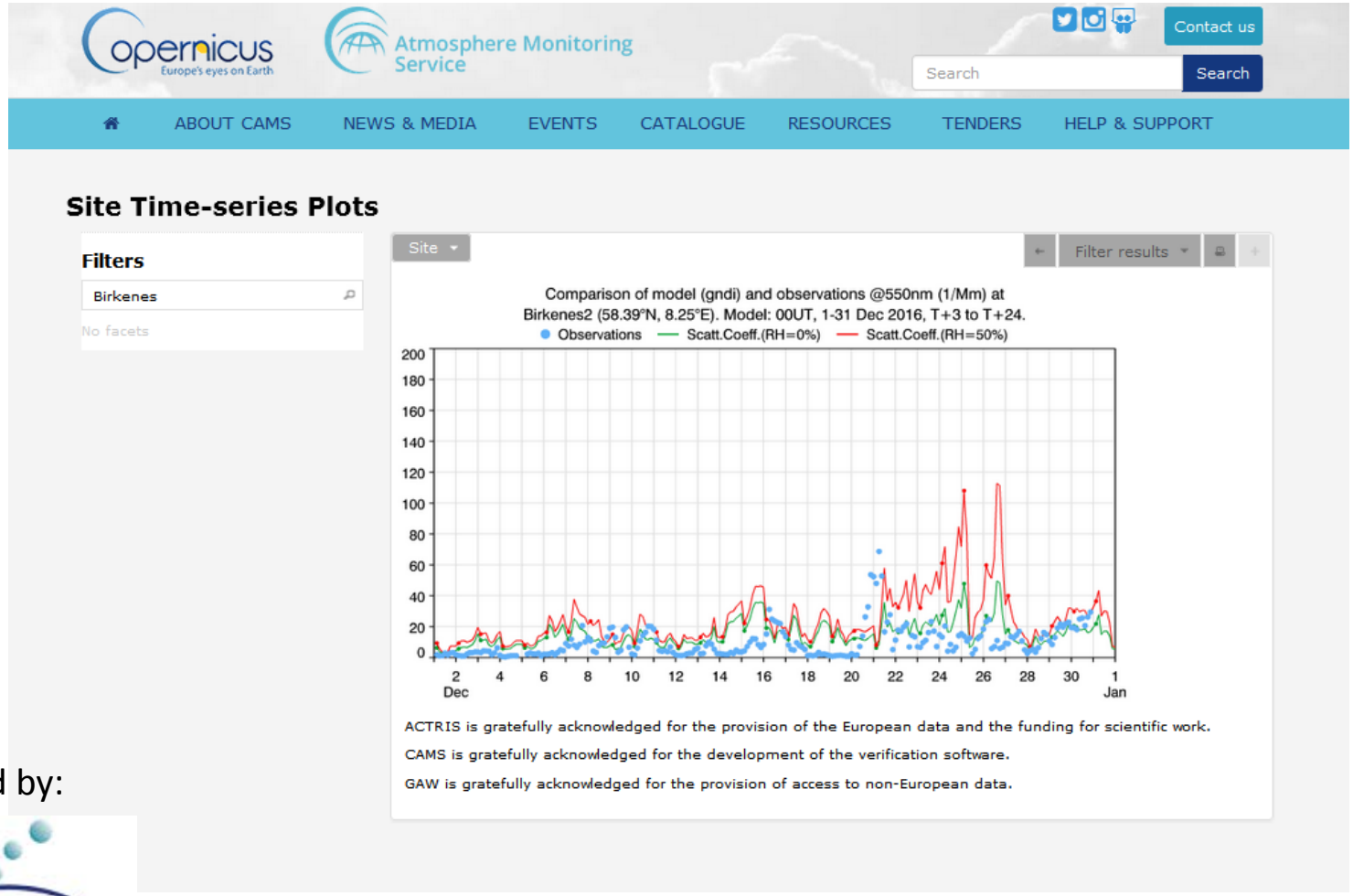
ACTRiS

- Low-treshold access to «our» NRT data.
- Demonstrate what GAW & associated infrastructures / frameworks can provide.



Source:
Copernicus.eu

Pilot: Integration with ECMWF, Validation Tool



Funded by:

ACTRiS

NILU

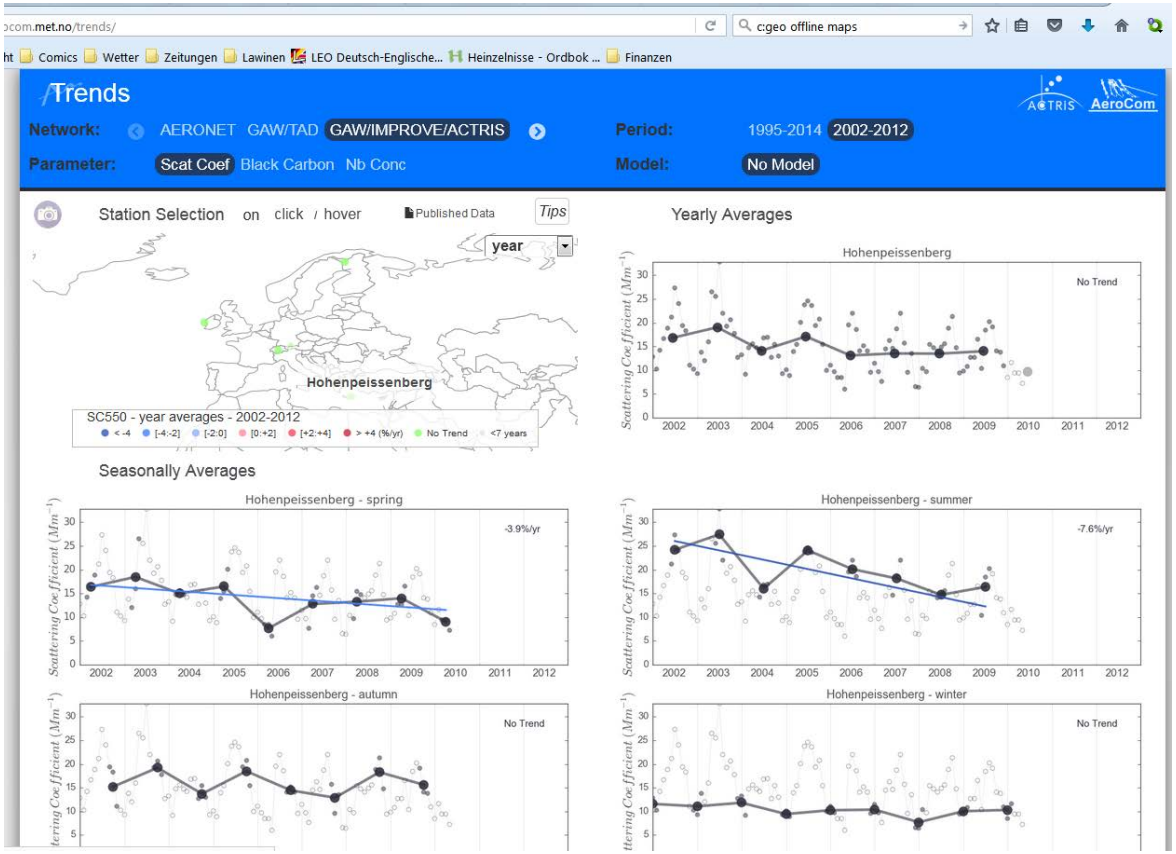
WMO

GAW

EBAS Services in the Data Life Cycle

Inspired by:

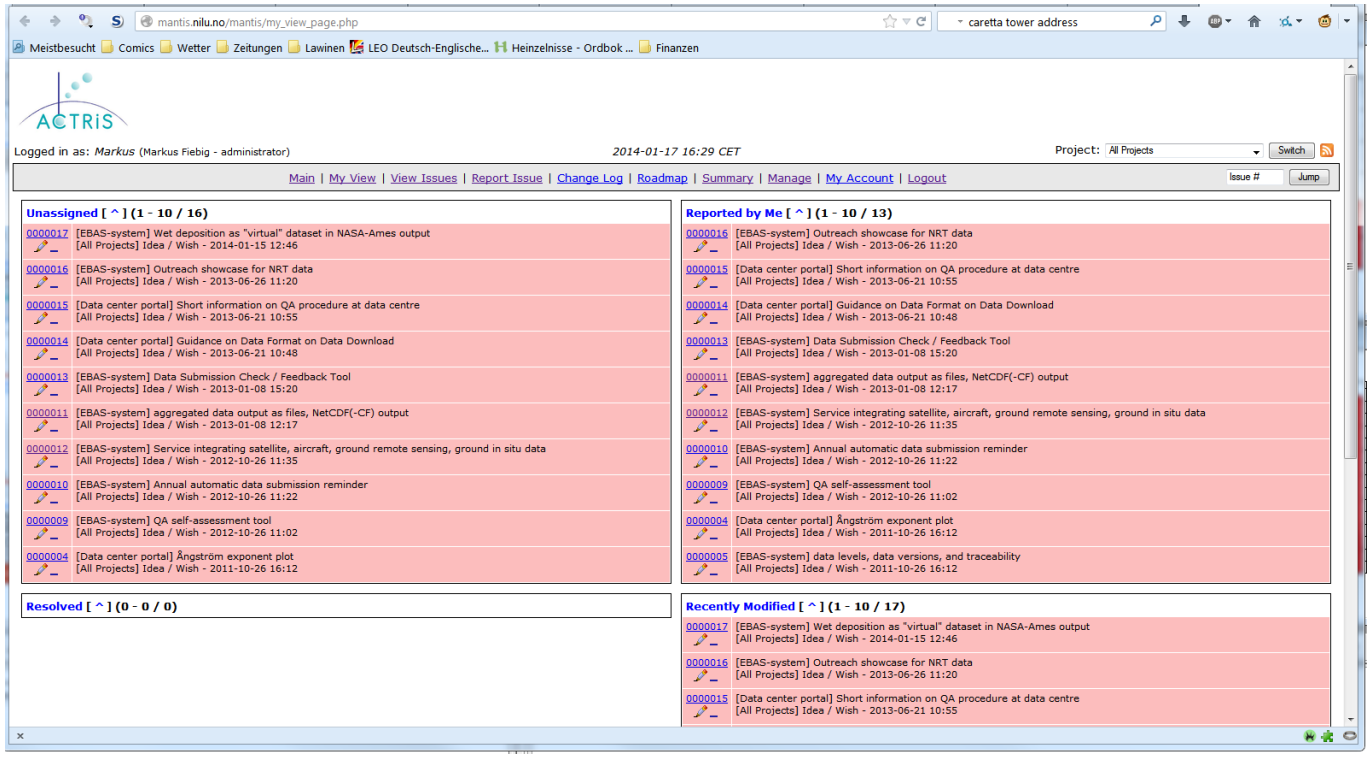
Trend Tool: aerocom.met.no/trends/



Funded by:

- Set up by AeroCom (M. Schulz) at met.no within ACTRIS.
- Selected observations are analysed for trends and plotted.
- Offline analysis, «regularly» updated.

User Feedback Portal: ebas-feedback.nilu.no



Funded by:

- 2 functions:
  - Records general user feedback and tracks fate.
  - Records data quality issues found while using the data, facilitates follow-up.

Funding Frameworks

emep

ACTRiS

NorDataNet
Norwegian Scientific Data Network

NEXTGEOSS
Contributing to the Vision of GEO

plus ENVRI
Environmental Research Infrastructures Providing Shared Solutions for Science and Society

NILU