ACTRIS
Aerosol, Clouds and Trace Gases Research Infrastructure

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ACTRIS
IAGOS Science meeting
18-19 June 2018
ACTRIS – A world-class Research Infrastructure

ACTRIS
Aerosols, Clouds and Trace gases
Research InfraStructure

- High-quality atmospheric observations
- 21 European countries involved
- More than 120 RPOs involved
- Some services already operational
- Fully implemented by 2025
The ACTRIS Concept

An Atmospheric Research Infrastructure to provide:

• 4D variability of a multi-component system for detection of trends, source attribution and potential feedbacks processes

• capacity to understand and quantify of interactions between the atmospheric multi-phase components

• innovative approaches and methodologies for detection of atmospheric composition changes

• training capacity to operators and users
The ACTRIS Approved Structure

European level Central Facilities

Head Office

Data Centre

Centre for Aerosol In-situ measurements
Centre for Aerosol Remote sensing
Centre for Cloud In-situ measurements
Centre for Cloud Remote sensing
Centre for Reactive Trace gas In-situ measurements
Centre for Reactive Trace gas Remote sensing

National Facilities

Observational platforms

Exploratory platforms
Preparing new combined products in ACTRIS

• From in-situ to Profiles: Improving the accuracy of aerosol light absorption determinations

• The surface exchange and vertical transport of aerosol particles

• Model evaluation, assimilation and trend studies

NRT Copernicus Pilot projects
Improving the accuracy of aerosol light absorption determinations
Improving the accuracy of aerosol light absorption determinations

**Measurement procedures (extinction/Abs/Scatt.)**

**Integration during ad-hoc campaigns**

**Profiles GAARLIC/GRASP**

\[ b_{abs} = MAC \cdot m_{BC} \]

Improvement of near-surface (ground-based and airborne) \( b_{abs} \) and MAC measurement methods

**24h absorption profiling: Improvement of \( b_{abs} \) and SSA retrievals**
Improving the accuracy of aerosol light absorption determinations
IAGOS – ACTRIS intercomparison

CAPS PM\textsubscript{ex} vs. Lidar over Lindenberg observatory
Preparing new combined products in ACTRIS

- From in-situ to Profiles: Improving the accuracy of aerosol light absorption determinations
- The surface exchange and vertical transport of aerosol particles
- Model evaluation, assimilation and trend studies

NRT Copernicus Pilot projects
1. **In-situ**


   → Comparison ready for Scatt. Coeff. and abs. coeff.
   → to be implemented for other variables

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**Sites with aerosol light scattering and/or absorption**

- Fewer sites than AERONET
- Gaps in S. America, Africa, Middle East, Russia, Pacific Asia Nations
Model Validation for CAMS

2. Vertical Profiles


→ Spatial and temporal validation with EARLINET Profiles

Seasonal extinction model profiles for 2016 (ENS16) and 2017 (ENS17) against Leipzig EARLINET climatological extinction profile

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NRT Delivery for CAMS

Request for Proposals from CAMS (June 2018)

→ ACTRIS aerosol profiles for CAMS (ACTRIS-A pro CAMS) : Conditions for delivering NRT Vertical Profiles

→ ACTRIS in-situ Pilot for CAMS : Condition for delivering NRT Size, Abs. Coeff, Scatt. Coeff and Composition
Conclusions

• Space for developing joint advanced products between ACTRIS and IAGOS

• Ensure more exchanges in technical developments (including exchange of experts) – IAGOS Package 2

• Some work done with ENVRIPLUS and to be done within ENVRI-FAIR

• Need to ensure the proper support is given for these joint developments (i.e. IAGOS, ACTRIS, ICOS, INGOS 2015 consultation)