

# The GAW World Data Centres for Aerosol and Reactive Gases: on the Way to Real-Time and FAIR Data Handling by Network Involvement

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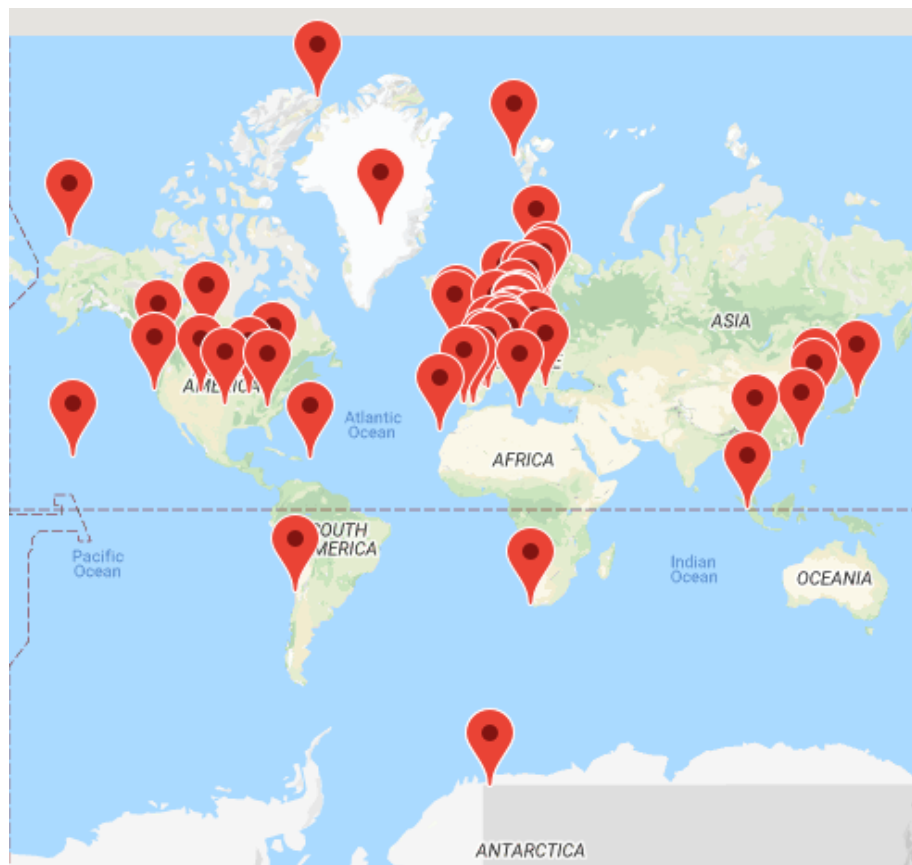
## Abstract

The GAW World Data Centres for Aerosol and Reactive Gases, WDCA and WDCRG, are hosted by the Norwegian Institute for Air Research (NILU) in NILU's EBAS database for atmospheric constituents observed at surface stations. Together, the two WDCs cover 51 countries worldwide, over 200 stations, 260 variables; altogether over 50000 datasets.

Corresponding with WMO and GAW strategies, recent focuses include: 1) real-time (RT) data collection, production, and dissemination; 2) data FAIRness (Findable, Accessible, Interoperable, Reusable) as defined by the FORCE11 initiative. Due to the GAW architecture building on voluntary contributions by WMO member countries, WDCA/WDCRG emphasise network collaboration to finance new developments. Facilitated by various EU-projects (EUSAAR, ACTRIS 1 & 2), WDCA/WDCRG have been offering RT data services for 6 variables, 55 (34) stations in 24 (18) countries (recent numbers in parenthesis) since 2010. Centralised data production ensures efficiency in costs and maintenance, implementing harmonised improvements across sites.

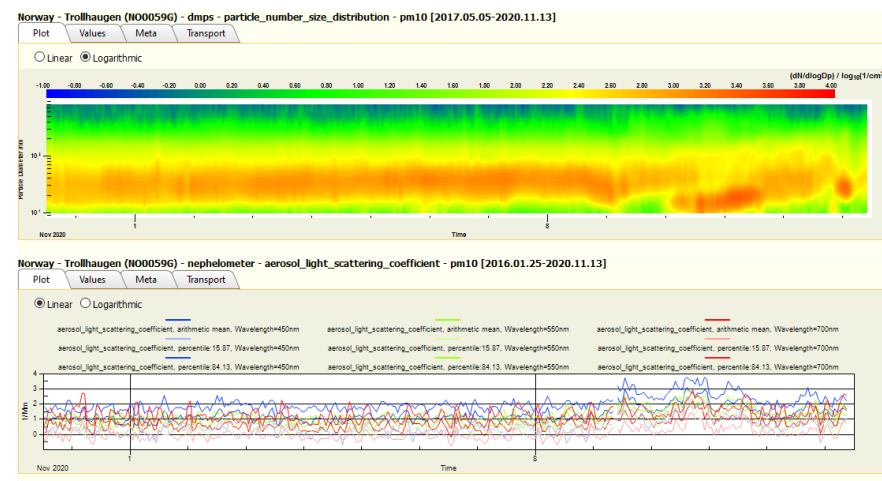
The EU project ENVRI-FAIR supports implementation of FAIRness: use of persistent identifiers (PIDs) for data products, use of standard interfaces for machine access to metadata and data, indexing data in discovery portals, defining and using common vocabulary, documenting data provenance, and use of licenses for data use. For all but the last aspect, technical solutions exist or are under development. The use of licenses for data poses the largest challenge since it requires clarification of data ownership. Many GAW datasets are contributed by non-NMHSes which are not covered by WMO resolution 40. In these cases, data ownership varies by country.

# GAW-WDCA / WDCRG Near-Real-Time Network



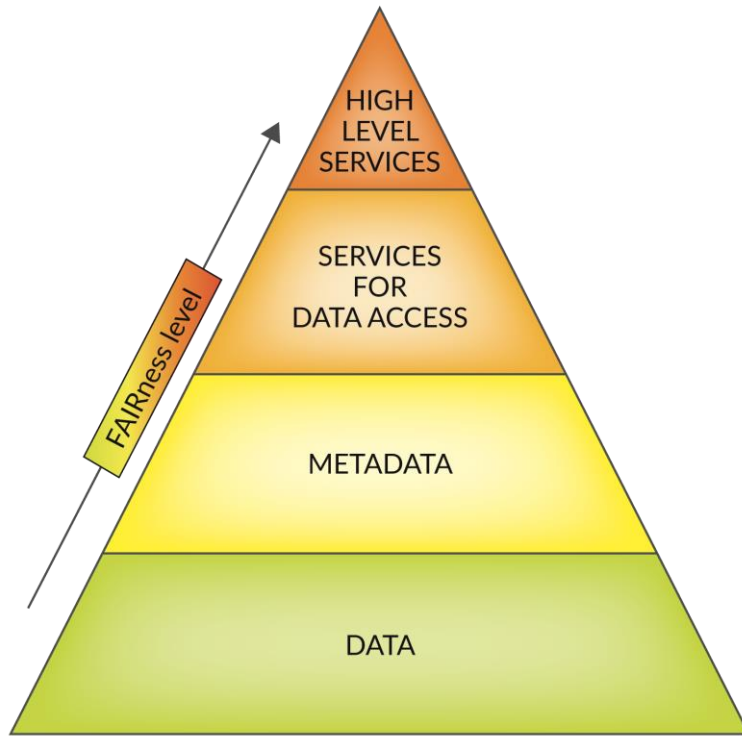
Map of real-time stations.

Real-time aerosol particle properties, from Trollhaugen station, Antarctica



- 34 stations in 18 countries worldwide currently participating.
- Real-time data collection and production streams for 6 parameters (aerosol properties).

# Data FAIRness for WDCA & WDCRG



Data FAIRness pyramid.  
Source: Daniele Bailo, EPOS

## Data FAIRness aspects targeted:

- Identification of data products (DOIs).
- Standard machine interfaces for metadata & data.
- Indexing of data in search portals (OSCAR, GEOSS).
- Standard vocabulary.
- Data provenance
- Data licenses

## Data license challenges:

- Many GAW contributors are not WMO members.
- WMO resolution 40 not applicable.
- Data ownership varies by country (owner must set license).
- License requirement may discourage data providers, but needed for data FAIRness.