



A series of training events addressing harmonized measurements of emerging pollutants of the new air quality directive

In November 2024 Directive (EU) 2024/2881 on ambient air quality and cleaner air for Europe has been published. This is connected to the European Union's objective towards zero pollution by 2050 facilitating prevention of premature deaths due to air pollution. The new air quality directive merges the 2004 and 2008 legislation and responds to the World Health Organization recommendations on lower guideline standards and to monitor additional air pollutants, such as Ultrafine Particle (UFP) and Black Carbon (BC) concentrations. The European Member States have two years to transpose the requirements of the new air quality directive.

The training is co-organized by the Network of Air Quality Reference Laboratories (AQUILA), Aerosols, Clouds and TRace gases Research InfraStructure (ACTRIS), Research Infrastructures Services Reinforcing Air Quality Monitoring Capacities in European Urban & Industrial AreaS (RI-URBANS) and European Environmental Agency (EEA).

The training will be organized in a series of on-line sessions concentrating on different aspects of the emerging pollutants and air quality directive requirements. The events are organized starting January 2025.

Target audience: AQUILA experts, but not restricted only to the AQUILA network.

Training #1:	23.1. 2025 09:30 – 11:30 CET	Aerosol particle number concentration
Training #2:	27.1. 2025 09:30 – 11:30 CET	Aerosol particle number size distribution
Training #3:	11.2. 2025 09:30 – 11:30 CET	Equivalent Black Carbon

Additional training events will be organized for example on data management, data quality assurance and other emerging pollutants during 2025. If you have a suggestion for a training event topic, please contact the organizing committee.

The draft agenda for each of the the training events are provided in the following pages.

On behalf of the organizing committee,

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Members of the organizing committee: Annette Borowiak, Tuukka Petäjä, Xavier Querol, Silvia Monge, Alfred Wiedensohler, Christoph Hüglin, Jean-Philippe Putaud, Marco Pandolfi, Wenche Aas, Christof Asbach, Wilma Travnicek, Brian Stacey.



Training event #1: On-line training event on aerosol particle number concentration

23.1. 2025 09:30 – 11:30 CET

Link to join the event: <https://ecconf.webex.com/ecconf-en/j.php?MTID=md6586c660fa859c08913c30f74f062c0>

Aerosol number concentration

According to the directive “2024/2881 on ambient air quality and cleaner air for Europe”, ultrafine particles or “UFP” is defined as particles with a diameter less than or equal to 100 nm, where UFP are measured as the particle number concentrations per cubic centimetre for a size range with a lower limit of 10 nm.

Ambient UFP concentrations are measured with Condensation Particle Counters following existing standards. RI-URBANS / ACTRIS has developed Service Tools that facilitate implementation of UFP measurements by air quality monitoring networks.

The aim of this training event is to provide a concise introduction to the requirements of the new air quality directive, to describe the added value of implementing UFP measurements in urban supersites, to introduce the relevant measurement standards and to summarize the current state-of-the-art in UFP measurements, harmonization, calibration, maintenance and operations.

Agenda: 23.1.2025 (all times are Central European Time, CET)

09:30 – 09:40	Annette Borowiak: Introduction to new monitoring requirements
09:40 – 09:50	Xavier Querol: Added value of pan-European UFP measurements
09:50 – 10:00	Tuukka Petäjä: Introduction to RI-URBANS / ACTRIS Service Tools
10:00 – 10:10	Christof Asbach: Standard EN 16976 (2024) Ambient air - Determination of the particle number concentration of atmospheric aerosol.
10:10 – 10:55	Alfred Wiedensohler: Ultrafine particle number concentrations: Background, measurement harmonization, list of ACTRIS compliant instruments, other sensors / instruments, types of instruments, advantages, approximate pricing, required maintenance and expertise, contact details, quality assurance / quality control, sampling and sample conditioning
10:55 – 11:05	Brian Stacey: Experiences from a monitoring network operating CPCs
11:05 – 11:30	Discussions and questions

Additional information:

ACTRIS: <https://actris.eu>

RI-URBANS Service Tools: <https://riurbans.eu/project/#service-tools>



Training event #2: On-line training event on aerosol particle number size distribution

27.1. 2025 09:30 – 11:30 CET

Link to join the event: <https://ecconf.webex.com/ecconf-en/j.php?MTID=mf377ccd06cf5f8be2a6d93aa9c09ac64>

Aerosol particle number size distribution

According to the directive “2024/2881 on ambient air quality and cleaner air for Europe”, ultrafine particles (UFP) is defined as particles with a diameter less than or equal to 100 nm. Particle number size distribution of the UFP should be measured with a lower size limit of 10 nm.

The size distribution of UFP is measured with standardized Mobility Particle Size Spectrometer (MPSS) instruments. RI-URBANS / ACTRIS has developed Service Tools that facilitate implementation of UFP particle number size distribution measurements by air quality monitoring networks.

The aim of this training event is to provide a brief introduction to the added value of aerosol number size distribution measurements, to introduce the relevant measurement standards and to summarize the current state-of-the-art in UFP number size distribution measurements, harmonization, calibration, maintenance and operations.

Agenda: 27.1.2025 (all times are Central European Time, CET)

09:30 – 09:40	Tuukka Petäjä and Annette Borowiak: Introduction
09:40 – 09:45	Xavier Querol: Added value of aerosol particle number size distribution measurements
09:45 – 09:55	Christof Asbach: Standardization: CEN/TS 17434 (2020) Ambient air - Determination of the particle number size distribution of atmospheric aerosol using a Mobility Particle Size Spectrometer (MPSS)
09:55 – 10:40	Alfred Wiedensohler: Particle number size distribution of ultrafine particles: Background, RI-URBANS / ACTRIS service tool, examples from GUAN network, instrument white-list, types of instruments, advantages, prices, maintenance, expertise, quality assurance / quality control
10:40 – 10:50	Christoph Hüglin: Experiences from air quality monitoring network in implementation of UFP particle number size distribution measurements, challenges associated with requirements of data availability
10:50 – 11:30	Discussion and questions

Additional information: ACTRIS: <https://actris.eu> RI-URBANS Service Tools: <https://riurbans.eu/project/#service-tools>



Training event #3: On-line training event on equivalent Black Carbon (BC) measurements

11.2.2025 09:30 – 11:30 CET

Link to join the event: <https://ecconf.webex.com/ecconf-en/j.php?MTID=m3068a3f074449ee4c6d8d352a0b47660>

Equivalent Black Carbon (BC)

The air quality directive (2024/2881) defines ‘black carbon’ (BC) as a carbonaceous aerosol measured by its light absorption. The directive addresses BC as an air pollutant of emerging concern and recommends BC to be measured at supersites in urban and at least half of the rural supersite locations co-located with other air pollutants.

There are no current standard methods in BC measurements. However, ACTRIS has harmonized equivalent BC measurements in their pan-European measurement network.

The definitions and methodologies for deriving atmospheric equivalent BC concentrations from optical measurements are described in RI-URBANS Service Tool 2.

Agenda: 11.2.2025 (all times are Central European Time, CET)

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| 09:30 – 09:40 | Tuukka Petäjä, Annette Borowiak: Introductions |
| 09:40 – 09:50 | Jean-Philippe Putaud: Added value of equivalent BC measurements and the bumpy road to a definition of BC |
| 09:50 – 10:55 | Marco Pandolfi: Equivalent Black carbon, background, definition of BC, obligatory measurements in supersites, RI-URBANS / ACTRIS Service Tools, ACTRIS list of compliant instruments, different instruments, advantages and disadvantages, approximate prices, maintenance and expertise needs, quality assurance / quality control, data reporting |
| 10:55 – 11:10 | David Green: Experiences from the air quality monitoring networks on equivalent BC measurements |
| 11:10 – 11:30 | Discussions and questions |

Additional information:

ACTRIS: <https://actris.eu>

RI-URBANS Service Tools: <https://riurbans.eu/project/#service-tools>
