

RI-URBANS interacts with SMEs related with AQ instrumentation and management. Some of the companies approached by RI-URBANS attended the scientific meetings, most of them face-to-face. Among these, INOESY, AIRMODUS, TSI and PALAS, as well as Cocosphere became Associated Collaborators (<https://riurbans.eu/partners/#associated-collaborators>).

The following SMEs are collaborating with RI-URBANS to supply advanced instrumentation for demonstration purposes:

1. AEROSOL doo company collaborates in WPs 1-4 with CSIC. Supplied Aethalometers for measuring absorption at different size fractions at BCN sites. They provided a Carbonaceous Aerosol Speciation System (CASS), combining a TCA08 Total Carbon Analyzer, and the Magee Scientific Aethalometer® AE33. The CASS system provides measurement of TC, EC, OC and BC of suspended aerosol particles in near-Real Time. Moreover, they provide a new AE36 prototype for testing.
2. AIRMODUS Ltd supplied a new CPC for measurements in HEL, where UHEL and FMI have the RI-URBANS supersite involved in pilots from WP4. AIRMODUS collaborates with UHEL to conduct urban measurements in Helsinki and implement best practices in the urban environment.
3. Distributed Sensing Technologies LLC, supplied Observair sensors and Aethlabs micro-aethalometers (AE51, MA200 and MA350) are being tested in an urban environment (HEL supersite) where UHEL and FMI evaluate the data.
4. INOESY provided an AQmesh instrument to be tested for application in AQ measurements in the pilot on measurements around hotspots.
5. HORIBA tested in the CSIC's supersite in Barcelona the XRF online analyzer for PM. XRF measurements, performed with high time resolution were compared with chemical speciation of 24h filters. Online XRF measurements of tracers is of great interest for source apportionment studies.

Collaboration with SMEs is of great interest, given the requirements of the new Air Quality Directive 2024/2881 for the measurement of emerging pollutants, such as ultrafine particles, black carbon and elemental carbon, as well as ammonia and the oxidative potential of particles, to support the scientific understanding of their effects on human health and the environment. The implementation of new supersites and the mandatory measurement of ultrafine particles in air pollution hotspots, as required by Directive 2024/2881, will require the acquisition of reference or equivalent instruments by air quality monitoring networks.

The importance of providing reference measurement methods for these new metrics is recognized. RI-URBANS developed service tools, many using cutting-edge technologies, for measuring emerging contaminants. We provide guidance to stakeholders on how to implement them.

To contribute to the European harmonization of aerosol size distribution and concentration measurements, UHEL hosted AIRMODUS, GRIMM, and TSI to conduct instrument testing and explore ambient aerosol sampling with the new instruments. Close collaboration with these companies was maintained for the implementation of the RI-URBANS ST for the provision of NRT PNSD data.

RI-URBANS was involved in a large inter-comparison study to test the performance of Partector2PRO by NANEOS, to evaluate if mid-cost instruments might yield solid data on PNSD.

The ACTRIS real time, online XRF Instrumentation (ROXI) working group meeting, supported by the manufacturer of the Xact, Salibri Cooper, is evaluating the NRT measurement of concentration of metals in PM with high time resolution by using XRF instruments. The purpose of this group is to draft operational (SOP, data treatment QA/QC and reporting data/uncertainties) and source apportionment recommendations and guidance documents.

Identifying air pollution sources and assessing their contribution to measured pollutant levels is of great interest for monitoring air quality in urban areas, assessing their impact on health, and developing mitigation strategies. Source apportionment (SA) studies of individual or combined measurements, preferably with high temporal resolution, can be of great interest.

The CASS system provided by Aerosol doo, permits the quantification of sources of carbonaceous compounds. To this end, combination of these measurements with other online operational instruments (ACSM, AE, OCEC, XRF) is of high interest for SA and NRT-SA of PM.