



Milestone M40 (M7.3) Project kick-off meeting



RI-URBANS

**Research Infrastructures Services Reinforcing Air
Quality Monitoring Capacities in European Urban &
Industrial Areas (GA n. 101036245)**

By

CSIC & FMI



28th December 2021

Milestone M40 (M7.3): Project kick-off meeting

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1. About this document

This document summarises the Kick-off-Meeting (KoM) held on 5th – 6th October 2021 of RI-URBANS (Research Infrastructures Services Reinforcing Air Quality Monitoring Capacities in European Urban & Industrial Areas, Horizon-2020 GD project #101036245). This is a public document, available at the RI-URBANS website, <https://riurbans.eu/work-package-7/#milestones-wp7>, and distributed to all RI-URBANS partners for their use as well as submitted to European Commission as an RI-URBANS milestone 40 (M40).

2. Day 1, 5th October 2021

From 177 registered participants, the KoM meeting attended 160 participants (see Annex I. List of attendance), including delegates for the 25 Bs and the 3 ABs, the project officers, delegates from EC-JRC, DG-ENV, EMEP, WHO and WHO. With up to 134 persons being connected at the same time.

4/5 members of the Advisory Board (Lidia Morawska, UBA, R. Lombardia, WMO) were present and Phil Hopke from US excused the attendance.

Delegates from the PAUL and STORIES projects on climate issues, with which we will collaborate were also present.

Also from stakeholders and urban AQ scientists from cities out of the ones involved in pilot studies in RI-URBANS.

2.1 Agenda and short comments

1. WELCOME AND AGENDA, X.Querol & T. Petäjä	09:30-09:40
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The 25 Bs and 3 ABs were listed and delegates were listed and delegates from the 28 organizations were present in the KoM.

2. THE GD SPECIFIC ACTION– PROJECT OUTLOOK, EC Project officer, Jimena Arango-Montanez	09:40-09:50
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The location of RI-URBANS in the GD program was described, as well as the major rules to be followed, the continuous evaluation, and support was offered for the further development of RI-URBANS.

3. RI-URBANS CONCEPT, X.Querol, T.Petäjä	09:50-10:20
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Thiago Hérick de Sá: There are additional health benefits to AQ improvement related in urban areas, derived from the greening, increased pedestrian and cycling commuting, which should be considered in health evaluations. Are these considered in RI-URBANS? It would be relevant having this information.

Marion Whichmann: Ozone is a critical AQ pollutant and it is not mentioned in RI-URBANS as a pollutant to be studied, but it should be there.

Tuukka Petäjä and Xavier Querol: We included it in WP3 because to evaluate SOA and other pollutants we need data on ozone.

Marion Whichmann: ACTRIS data is not fully available.

Tuukka Petäjä and Paolo Laj: The ACTRIS data centre is very operational already, in particular the units relevant to RI-URBANS. Perhaps, we may have a capacity issue in integrating RI -URBANS but this is addressed in WP5.

Alexander Baklanov: Urban meteorology plays a key role in forecasting and interpreting pollution episodes. This should be taken into account in RI-URBANS for measurements and modelling.

Alexander Baklanov: For specific sources, such as Saharan dust, emission inventories are not enough but modelling of the transport of these emissions. This should be taken into account.

Xavier Querol: A task for 3D measurements in WP1 includes key meteo parameters in atmospheric profiles. But your comment is very relevant and will be taken into account.

4. THE SCIENTIFIC BASIS AND THE ACTIONS (WPs)

WP1: Novel AQ metrics and advanced source apportionment STs

The scientific basis and the tools: 10:20-11:30

- UFP in urban environments, [R.M. Harrison](#)
- Off & online source apportionment of PM in urban environments, [F. Amato](#), [O. Favez](#)
- Source apportionment of UFP in urban environments, [I. Rivas](#)
- VOCs in urban environments, [S. Sauvage](#), [T. Salameh](#)
- Profiling observations for urban environments, [L. Mona](#), [A. Apituley](#)

WP1: Tasks, timetable, milestones and deliverables, [A. Alastuey](#), [A. Prevot](#) 11:30-12:00

Guido Lanzani: Source apportionment information is key for cost-effective AQ policies. This will be a very valuable information from the project. For advanced AQ parameters, it is also important to receive assessment on what should be measured and for what

Jean P. Putaud: Selection of new AQ metrics is mentioned in WP1. However it looks like these new metrics have already be chosen (UFP, BC, ...). What about "primary UFP", suggested by Roy as being more relevant. We used to measure this with "volatility DMPS". Will there be really a discussion about new metrics?

Andrés Alastuey: We have these fixed because the call was requesting them, but indeed there will be a discussion on the selection of most appropriate parameters to be selected for STs.

Lunch break

12:00-13:00

WP2: Health effect assessment of PM, PM components, nanoparticles, and their source contributions

The scientific basis and the tools: 13:00-14:15

- Urban mapping of air pollutants and citizen involvement, [M. Van Poppel](#)
- Urban mapping of UFP, [G. Hoek](#)
- Health effects of PM_x, PM components and PM source contributions, [X. Basagaña](#)
- Health effects of UFP in urban environments, [I. Rivas](#)
- Oxidative potential of urban PM and PM components, [G. Uzu](#)

WP2: Tasks, timetable, milestones and deliverables, [R. Harrison](#), [G. Hoek](#) 14:15-14:45

Guido Lanzani: It is possible that health effects of specific components are found because the co-linearity with other?

André Prevot: I agree with this, in fact the health effects found for secondary nitrate and secondary sulphate sources can be due to the occurrence of secondary organic aerosols in these source contributions.

Alfred Wiedensohler: CEN guidelines for particle number concentration and size distribution are available. If we implement these results will be comparable (added by X.Querol)

Guido Lanzani: Considering the high spatial variability of UFP it would be important to have guidelines not only regarding how to measure but also where to measure.

David Simpson: Points that M. Kalberer's talk last week showed that ROS can also be formed in reactions between gases + mucus in throat/lungs. So, is it only PM that is important?

Bruce Denby: Is it the intention of WP2 to provide the modelling (WP3) with OP specific values for different sources and pollutants? Reply WP3 can probably model OP based on the results.

Marion Whichmann: The review of the AQ Directive will require to receive assessment on monitoring, mapping, citizen involvement approaches, and RI-URBANS' WP2 should consider yielding information for this end.

Alexander Baklanov: Suggests to build a few cities key stations with pairs of instruments: with HQ instruments and LC sensors to compare, evaluate and to build recommendations about applicability limitations of different LC sensors. This approach is used with WMO GAW but mostly for stations outside urban areas. However, some urban stations (e.g. Mexico, India) is also doing this approach.

André Prevot: If there are frozen PM filters stored in good conditions for OP and organic and inorganic chemistry it would be a good opportunity to provide time series to study OP and health impacts.

Guido Lanzani: Offers data series of sulphate, nitrate, OC and EC from Milano area.

WP3: Improving modelling and emission inventories for policy assessment

The scientific basis and the tools: 14:45-15:45

- Urban scale emission inventories, [M.Guevara](#)
- Regional mapping of urban AQ for health effects, [A. Colette](#)
- Characterization of urban dispersion with advanced observations & modelling, [L. Järvi](#)
- Urban/regional modelling, what is required from each in urban AQ? [M. Kanakidou](#)

WP3: Tasks, timetable, milestones and deliverables, [M. Kanakidou](#), [A. Colette](#) 15:45-16:15

Marion Whichmann: Do TNO UFP inventories cover VOCs emissions? This is important for modellers to know whether volatiles are in or out.

Jeroen Kuenen: Yes, definitely, you are right Marion. We will look into this.

André Prevot: It is very relevant the meteo conditions to model ambient UFP, not only emission inventories.

Mikhail Sofiev: How are the PN and PM inventories are connected? Will there be a unified distribution? This is very important in this WP3.

Guido Lanzani: The "condensable" fraction should be clarified. In particular, for biomass it can be very important.

Jeroen Kuenen: Correct. For residential biomass combustion this will be included (replacing the country reported data).

Alexander Baklanov: MEGAPOLI project also used this downscaling approach for urban 1x1km emission of EU cities Paris, Helsinki,.. and urban agglomerations Ruhr and Po Valley. Data can be used and approached.

Jeroen Kuenen: As Alexander mentioned, we were involved in that. We can maybe follow up on this tomorrow in the WP3 meeting.

Xavier Querol: For UFP, SOA and vehicle wear emission inventories are key issues, how do you solve this having in mind the problem. We should consider collaborating with n-Pets-H2020 and REMY-LIFE.

Alexandre Baklanov: What urban meteorology will you use?

Mikhail Sofiev: SILAM in urban environment: we run using HARMONIE, the example on the slide was made with 500m. For urban conditions, we are well in progress with PALM LES connection. For forecasting, machine learning trained with LES-SILAM is the target.

Roy Harrison: Does the LES model account for particle evaporation/condensation processes?

Leena Järvi: Yes, it takes this into account and VOCs (anthropogenic) are included.

Guido Lanzani: It would be important to be able to describe the details also for wood burning and other local sources (in Italy, for example also pizza ovens) (I mean regarding the emissions location of wood stoves and pizza ovens).

Leena Järvi: Yes, we need the major emissions in a city to be included.

Victor Gonyy: Please explain what you mean by "Exposure" in WP3.

Maria Kanakidou: Outdoor exposure

Teresa Nunes: The models exposure separate day/night periods?

Maria Kanakidou: Yes

Alexander Baklanov: Very critical in using a regional downscaling for urban air quality, because this is not taking into account the urban meteorology and the urbanisation, urban canopy, urban canyon streets.

Maria Kanakidou and several WP3 members: Yes we have to improve this issue and discuss with you how to do it.

Xavier Querol: PM2.5 speciation shows that most of it is secondary and μ -EMEP outputs shows that 80% is primary. We need to integrate results from both approaches.

David Simpson: I think SOA in the uEMEP pics is ASOA + BSOA, but the "local residential" fraction is essentially treating BB-POA as an inert pollutant; in practice this includes loads of SVOC which quickly forms BB-SOA. There are lots of issues here for all models.

Marion Wichmann: SOA-modelling is still a challenge. At UBA we try to use optimum interpolation as a kind of correction factor also for projections.

Xavier Querol: We need to overlap urban scale modelling outputs on top of the regional modelling ones to better reproduce pollutants.

Xavier Querol: Specially for modelling outputs used for the assessment of AQ policies (such as the current review of the AQ directives), we need to request validation against measurement or source receptors modelling, especially when secondary pollutants (large fraction of PM2.5 and O₃) are involved, and when the emission inventories of precursors are weak.

Break

16:15-16:30

WP4: Pilot implementations for testing and demonstrating services

WP4: Tasks, timetable, milestones and deliverables, T. Petäjä, T. Moreno 16:30-16:50

Pilot studies 16:50-18:05

- P1: NRT aerosol source apportionment for online PM and BC measurements in urban environments (ATH, HEL, MLN-BOL, PAR, ZUR), J.-E. Petit, H. Timonen
- P2: NRT data provision of nanoparticles and their size distributions (BCN, BIR, HEL), K. Lehtipalo, D. Beddows
- P3: Urban mapping of nanoparticles and other pollutants, coupled with regional modelling tools and citizen's science (BIR, BCH, PAR, ROT-AMS), K. Sartelet, G. Hoek
- P4: Health effects of novel AQ metrics and their source contributions, including PM components and nanoparticles (ATH, BCN, ZUR), A. Alastuey, K. Daellenbach
- P5: Nanoparticle contributions in and from urban hot spots: roadsides, airports, industry and harbours (BCH, MLN-BOL, ROT), A. Apituley

Alexandre Baklanov: AQ services in pilots should be implemented in cities. What services will you produce that will be implemented.

Tuukka Petäjä: Our STs are more basic than the ones you are used for climate purposes for example. We will provide harmonization, methods, data flows..... We need a second stage to widely implement this across cities in Europe.

Paolo Laj: WP5 tomorrow is showing implementation of STs and will show better what STs and what upscaling we will produce.

André Prevot: Do the online source apportionment pilot cities being synchronised? Or some can start before and other start later?

Tuukka Petäjä: The sooner the better. One can be the first city pilots and the other the replication.

Xavier Querol: The first pilot city can start as soon as possible and being used as a reference to implement this in the replicating cities, at least once the conditions are agreed in WP1.

Alfred Widensohler: For ACSM it might take time to have implemented the measurements.

Tuukka Petäjä: The online USP PSD ST is the one that can be replicated in a larger number of cities, such as Budapest, Bucharest.... with good supersites.

Doina Nicolae: Offered Bucharest as pilot for online UFP-PSD.

End of the first day

18:05

3. Day 2, 6th October 2021

3.1 Agenda and short comments

WP5: upscaling RI-URBANS' STs

The scientific basis and the tools: 09:00-09:45

- Operational patterns and needs of urban RIs and relationship with ACTRIS, [P. Laj](#)
- RI-URBANS data curation and management, [R. Rud](#)
- Strategy for upscaling, [M. Viana](#)

WP5: Tasks, timetable, milestones and deliverables, [P. Laj](#), [M. Viana](#) 09:45-10:15

Paolo Laj: It is important to bearing in mind that WP5 is requiring that STs to be upscaled in a RIs. And this will have important restrictions. Thus, not every STs will be scalable. It is required to identify who will provide the service, who will be the user, and the use conditions.

Alexander Baklanov: For modelling and detection dust episodes are already services available that we should take into account when offering new STs.

Evangelous Gersopoulos: We will be not starting from scratch on the user needs aspect ... there are many projects that have already collected this info -- and we have it ... but indeed this is the right direction and also co-design the final service and maybe adjust to a city particularity.

Valerie Touret: Relevant also the info we can provide with aviation companies able to measure pollutants.

Evangelous Gerasopoulos: We will show what benefits the cities will have if STs are implemented.

Martine Van Poppel: We have to clarify very well what is done in WP5 and WP6 concerning the contact with stakeholders to show the benefits.

Paolo Paj: there are two issues here. The connection with potential AQMNs interested to implement STs, and the other are the large organizations and administrations, the way to approach is different.

Jan Thenuis: WP5 is crucial for take up by cities and AQMN's. Therefore, actions could include: identifying potential 'early adopters' (cities/AQMNs that are already experimenting with the STs we will develop in RI-URBANS); continuous dialogue with a group of 'early adopters' cities/AQMNs; follow up with this group on the Warsaw case to compare to situations in other interested cities (representativity/applicability of lessons learnt).

Martine Van Poppel: Will data from mobile measurements and citizens taken into account in the data management plan?

Xavier Querol: We need in the next weeks individual meetings for Pilots 1 to 5 in which staff from WP1, 2, 3, 4 and 5 meet to discuss the protocols, the methods, the quality controls, the data flow, the requirements to support upscaling..... for each pilot.

WP6: Stakeholder engagement strategies

WP6: Tasks, timetable, milestones and deliverables, [X.Querol](#), [E. Juurola](#) 10:15-10:30

Jean P. Putaud: What is the expected role for JRC-AQUILA?

Xavier Querol: Thanks for this question. The role is to involve them from the beginning in developing the STs, they are the reference labs for AQ and we need to listen to them from the beginning and to receive their opinion as the STs are being developed. Also to disseminate the relevance of these STs, if they believe these are useful for AQ management.

Tuukka Petäjä: We have a Stakeholder Board that we have to build and it has to be very well connected to WP6.

WP7: Communication, dissemination and exploitation

WP7: Tasks, timetable, milestones and deliverables, [G. Saponaro](#), [A. Arroyo](#) 10:30-10:45

Xavier Querol: Need to speed up the intranet to upload documents and data.

Martine Van Poppel: Emailing lists, how many we have? **Tuukka Petäjä** replied that this will be discussed in WP8

Ksenia Tabakova: Email lists of the Project: 3 main mailing lists:

1. ri-urbans@helsinki.fi – all staff (science, legal, finance) – purpose is to reach everyone
2. ri-urbans-administration@helsinki.fi – coordinators, project office, legal and finance

3. ri-urbans-science@helsinki.fi – science

Everyone can opt out if necessary:

1. Either use instructions that came in subscription welcome message
2. Contact Ksenia.tabakova@helsinki.fi

WP8: management and coordination. This includes with the General Assembly Meeting

WP8: Tasks, timetable, milestones and deliverables, [X.Querol](#), [T. Petäjä](#), [M. Monge](#), [A. Mahura](#), [K. Tabakova](#)

10:45-11.15

See the Minutes of the General Assembly.

Alexander Mahura is proposed to be member of the Steering Committee

We need to include Project managers of different tasks, IM, DM, Gender, RM, CO in the Steering Committee,

The minutes of the meetings of the Steering Committee will be made public for all partners

We need to implement a system to include possible upscaling cities or research teams. Imre Salma from Budapest stated he is interested in.

Xavier Basagaña is in charge of the ethics and Mar Viana of the gender issues.

We need to provide templates for Milestones and deliverables.

WP9: Ethics

WP9: Tasks, timetable, milestones and deliverables, [M. Viana](#), [X. Basagaña](#)

11:15-11.25

5. RUSSIAN SISTER PROJECTS TO RI-URBANS

- RI development for assessing AQ in the Moscow megalopolis, [O. Popovicheva](#), [P. Konstantinov](#)

11:40-12:00

- RI usage for monitoring and modeling gas-aerosol atmospheric composition for improving possibilities for AQ control and evaluation of impact on public health in St Petersburg, [Y. Timofeev](#), [E. Mikhailov](#), [V. Gornyy](#)

12:00-12:20

Lunch break

13:00-13:45

6. PARALLEL SESSIONS WP1 TO WP5 FOR INDEPENDENT MEETINGS

13:45-15:15

(WP's leaders will be reporters)

Separate meetings for WP1 to WP5

7. REPORTS OF WP1-WP5 ON AGREEMENTS, PROTOCOLS, TIMINGS, MEETINGS...

15:15-16:15

WP1

We identified the need of start working asap: need to provide deliverables soon for other WPs

Need of strong interaction with WP2, WP3, WP4 & WP5

The three tasks concluded the need of having individual meetings at the beginning of November, if possible with the participation of key people from other WPs from SP1 and WP5

Discussion task by task:

Task 1.1. Data survey and compilation of non-regulated pollutants

Need to select variables: KEY for T1.2, WP2, WP3 and WP4

Compilation of existing datasets

Long term inventory 5 yrs?; 10 15 sites

Time series will depend on the objective: long term series for health related WP2 / shorter periods for WP3?

Evaluation of the requirements (CEN, ACTRIS, ACTRIS DC) for AQ purposes (AQMNs?)

Need to contact with AQMN / RIs measuring these variables. We identified responsible for starting contacts and data compilation (for some variables; not for all)

Variables identified / Responsible

1. UFP: CSIC / TROPOS / Other

1.1 UFP > 10 nm: ACTRIS recommend, following the CEN/TS 16976

1.2 UFP < 10 nm: not defined yet; similar to the above for CPC

1.3 UFP PNSD 10 to 800 nm: CEN/TS 17434 for MPSS within the ACTRIS-ERIC; TROPOS can provide data and guidance

1.4 Solid UPC? Experience / data available in AQMNs?

2. ABSORPTION/BC: Marco Pandolfi CSIC , ACTRIS WG on BC,

2.1 Particle light absorption coefficient: guidelines ready for BC (ACTRIS / COLOSSAL); ACTRIS WG on BC active on definition of "level 3 BC".

2.2 Other instruments

3. PM CHEMISTRY

3.1 OC/EC: CSIC / ? Guideline available: EN 16909:2017:

3.2 Ions / ?

3. ACSM data: PSI / INERIS /

3.5 Organic Tracers (for SA): Barend CSIC, ACTRIS, others?

3.6 Metals – tracers (for SA): offline and online; CSIC // PSI / IC?

4. GASES

4.1 VOCs: needed to define WHICH VOCs?; ACTRIS? Stefan & Stephane EMPA / IMT

4.2 NH3: ?

Task 1.2. Developing and implementing advanced source apportionment STs

Need of input from T1.1: database including metadata / uncertainties

2 main sub tasks identified:

- Offline SA on PM and novel metrics. Led by CSIC. Issues: SA of VOCs

- Development of NRT source apportionment functionalities (harmonised with CAMS21a) for non-refractory aerosols (ACSM) and BC measurements data products. Led by INERIS / PSI

Task 1.3 Developing products and methods for AQ from profiling observations (Lead CNR/KNMI)

Variables to be measured clearly identified

Two main deliverables

D1.6: Observational methodologies for horizontal and vertical profiling for urban AQ purposes (CNRS)

D1.7: Processing and experimental digital tools for AQ from 3D (CNR)

Need of meeting in November

WP2

We will have meetings in alternative month of either the full WP or the specific task groups.

We will start with task group meetings sequentially to allow people to participate in multiple meetings.

We need a list of specific persons from contributing institutes to contribute to the tasks

Task 2.1: Further definition of the contributing cities is needed, link to WP1 is needed; Xavier Basagana starts preparing a document defining the desired data on exposure and health. Health data need to be obtained by local teams

Task 2.2: We aim at setting up an intercomparison of different OP methods, starting with collecting filters. It would be useful but necessarily feasible to also compare online OP measurements. Also here link with WP1 needed

Task 2.3: Martine van Poppel has started a document to define the task further. The focus is on monitoring, including involvement of citizens. We further need discussion on the modelling tools and links to WP3.

WP3

During the WP3 discussion, we have been through specific actions in the tasks of the WP and decided to define internal – working milestones that will facilitate the continuous flow of work and keeping in track the WP towards completion. Task leaders will come back to the next WP3 meeting with a concise proposal of a much finer GANTT Chart (sub-tasks and timing).

Then the discussion focused on the general feedback to « interactions » with other WPs, while internal to WP3 questions will be addressed in follow-up WP3 internal meeting within about one month. A doodle will be set up for fixing a date that will fit most of the contributors to WP3.

Task 3.1 Characterization of urban dispersion using advanced observations-based methodologies and modelling.

Implementation requires several bilateral meetings with Pilots, especially those with synergy with PAUL because it relies on their data and joint modelling setup. In particular, information on available eddy covariance and profiles data are needed from WP1. To be mentioned is that local modelling in T3.1 is focused on emission inversion, urban dynamics improvement, while exposure modelling is handled in pilots modelling activities and in WP2.

Task 3.2 Enhancing quality and completeness of emissions inventories will provide the emission inventories needed for WP3 regional down to urban scale modeling, in 5-10km over Europe and 1kmx1km over the cities of focus in Ri-Urbans. TNO/NOA described the concept of the emission inventories for the whole of Europe at 5-10km followed by downscaling to 1km for all pilot cities, which will be used by WP3 models. This downscaling will be done using proxies specific to the emission sectors. It is expected that pilot studies will develop and use in WP4 their own more detailed urban emissions inventories. T3.2 also includes comparison with bottom-up, but the bottom -up inventories will be only used in the WP2/4 models. Using consistent inventories in WP3 is important to derive services that can be upscaled in WP5 and not dependent upon the refinement of local information available only in the pilots. T3.2 will propose a methodology to compare the top-down to some of the bottom up inventories based on state-of-the-art approaches consistent with Fairmode. Furthermore, a lot of discussion took place on the species to be represented in the inventories (especially UFP, metals), the most uncertain emission sectors and in particular emissions from road resuspension. Also the issue of temporal profiles to be used with the emission inventories was raised.

Task 3.3 Extending AQ modelling to health and policy relevant indicators down to urban scale has decided to proceed with short term actions while waiting for T3.2 to prepare the emission inventories. Thus, modelling teams will independently progress modelling (i) UFP, (ii) OP, (iii) SA. However, for SA discussions are needed with WP1/2 on the details of SA observations with regard to the species (e.g. available for OP, VOC?), the sectors and the periods to be investigated in order to use the consistent SA protocol in the models and for the observations. This information is particularly needed for models using the brute force method for SA calculation. A lot of reflexion was also made on model benchmark for validation of a base case (+sensitivity) on model performances with regard to SOA/O3/VOC simulations. The issue of VOC speciation in the models and the inventories has been discussed as an important one on which some action is needed. This will continue and insights from WP1 are welcome.

Task 3.4 Implement novel AQ indicators in tools supporting policy decision making to improve citizen health that starts later in the project, combines all models of T3.3 and faces same challenges with those in T3.3 with regard to the AQ indicators (**or components**) to focus on (e.g. SA, OC/SOA because of its relevance to OP,..). Therefore, interactions with WP1 and WP2 are needed to finalize the list of indicators to be diagnosed by the models. Because SA is key information supporting policy decision, T3.4 will focus the evaluation of the tools with regard to their ability to simulate the SA derived from observation. Long time series of AQ indicators and SA derived results from observations (present day and historical to the extent possible) are needed for T3.4 together with the SA protocol used in WP1.

Overall, WP3 interactions with WP1, WP2 and WP4 are needed to specify pathways to address challenges in air pollution mapping, secondary aerosol and UFP formation, toxic metals, VOC speciation etc defining species and proxies to be measured in the field, analyzed with statistical tools and simulated in WP3. In this respect, discussions between WP leaders and/or WP representatives will be initiated by the program coordinating team.

WP4

1) WP mailing list (Ksenia has organized this already)

ri-urbans-wp4-pilots@helsinki.fi

2) WP meetings (how often?)

To be decided in the first WP 4 meeting. Doodle for the coming two-three weeks.

3) Planning for each task

General needs:

- Confirm the primary cities and replication cities for each pilot (incl also voluntary contributions)
- Identify the people for institutes contributing to the pilots (to be part of planning and execution of the work plan)
- Identify the primary contact points for each city.
- Identify the service tools!

Task 4.1: NRT source apportionment (Hilkka Timonen, Jean-Eudes Petit)

- collect and update the information from each city, update the contributing scientists (contact points)
- Start with one-two pilot cities, expand the analysis to other cities.
- Start data transfer to ACTRIS DC
- Setup for NRT source analysis
- Tool development in WP 1 (includes sending data to a server, on-line analysis, would send back data on source contributions)
- Manual PMF analysis
- Aim is at least one full year of observations (but there is interest to have the tool operation all the time)

What is needed from other WPs:

- on-line source apportionment tool (WP1)
- Data connection to ACTRIS DC (WP 5)

Meetings: during the observation periods, once per month.

Optimal solution: ACSM with aethalometer running in parallel and in the same location. What happens, if only one instrument is available (long-term)? Source analysis tool at the moment keeps the two data streams separated.

RI-URBANS service tool (ST): ST 2, ST 3, contributing to ST 6

Task 4.2 NRT size distribution (Katrianne Lehtipalo, David Beddows)

- collect and update the information from each city, update the contributing scientists (contact points; includes instrument harmonization viewpoint)
- Start with one-two pilot cities (Helsinki), expand the analysis to other cities (Birmingham, Barcelona) + voluntary cities (Athens etc).
- Start data transfer to ACTRIS DC
- Connect to CAMS21a data provision

What is needed from other WPs:

- Data flow details
- Instrumental harmonization details
- Pathway to upscaling (WP 5)

Meetings: when needed

Optimal solution: After start of the data delivery, this would continue as long as possible.

RI-URBANS service tool (ST): ST 1, Contributes to ST 6

Task 4.3 Urban mapping (Karine Sartelet, Gerard Hoek)

- collect and update the information from each city, update the contributing scientists (contact points; includes capacity to urban mapping and existing activities)
- measurements and models, details incl selection of parameters etc.
- No clear start city
- Different focus for each pilot city
 - * Rotterdam (forerunner) + Bucharest (replicating)
 - * Rotterdam: utilization of mobile measurements, nanoparticles and BC
 - * Need to update the focus for each city
- Plan for timeline for activities in the different cities:
 - * Paris, campaign in the spring 2022
 - * Need to update the schedules for other cities
- Make a connection to hot-spot pilot (Task 4.5)
 - * Arnoud Apituley

What is needed from other WPs:

- Connect to modelling activities in WP3 (emission inventories and concentration fields)

Meetings: Sooner the better, need more planning, sampling strategies, etc best practices, blueprints, network calibrations

Optimal solution: Show added value and demonstrate the capacity to perform urban mapping. Tool? Maybe providing tool to assess exposure to pollution (with gps-location data and pollution maps).

Challenge: non-continuous data sets, no connection point to ACTRIS DC at the moment. Recruiting citizens. Difficult to replicate as such.

RI-URBANS service tool (ST): ST 7, ST 8, ST 10

Task 4.4 Health indicators (Andres Alastuey, Kaspar Dällenbach)

- collect and update the information from each city, update the contributing scientists (contact points; includes capacity to pre-existing filter collections, current filter collections)
- based on filter collections, need to rely on existing filters
- population health data has a very long lead time (up to 2 years)

What is needed from other WPs:

- NRT source apportionment (WP 1)
- NRT source apportionment tool results (Task 4.1)
- Nanoparticle data needed specifically from Barcelona, some data available also from Zurich and Athens.
- Links to modelling: pure validation (chemical compounds, concentrations), how to model OP? Derive OP contribution from each source. FMI: nanoparticle modelling available.
- Connection to Task 4.3 (development of acute personal health indicators?)

Meetings: soon with the cities + IS global. Division of work (data collection, methods to be used, who participates in which activity, data related time delays etc)

Tool? Information on parameters that are relevant for health. (a model to compute harmfulness of the particulate matter? OP as an indicator, how OP could be parameterized from other variables?) Needs input from WP 2.

RI-URBANS service tool (ST): ST 9

Task 4.5 Hotspots (Arnoud Apituley, Carlos Pérez Garcia-Pando)

Maybe together with Task 4.3 (Rotterdam – Bucharest in both, Birmingham and Paris in Task 4.3 and Milano in Task 4.5?)

(joint meeting with Task 4.3 and 4.5 needed at the beginning)

- collect and update the information from each city, update the contributing scientists (contact points; includes capacity to hot spot identification, existing activities etc)
- measurements and models, details incl selection of parameters etc.
- No clear start city
- Different focus for each pilot city
 - * Rotterdam (forerunner) + Bucharest (replicating)
 - * Rotterdam: utilization of mobile measurements, nanoparticles and BC
 - * Need to update the focus for each city
- Plan for timeline for activities in the different cities:
 - * Paris, campaign in the spring 2022
 - * Need to update the schedules for other cities

What is needed from other WPs:

- Connect to modelling activities in WP3 (emission inventories and concentration fields)
- Connection to Task 4.3 (mobile measurements)
- Connection to vertical profiling (WP1, Task 1.3)
- WP 2 (health effects)

Meetings: Sooner the better, timing and sequence of cities in the pilot.

Optimal solution: Exposure to pollution from hot spots vs regional air quality exposure? Ultrafine particles from traffic + harbor + airports + industrial hotspots, dispersion from the hotspots.

RI-URBANS service tool (ST): ST 7, ST 8, Contributes to ST 11

Service tools listed in the RI-URBANS work plan:

- ST1: Measurement of ambient concentrations of nanoParticle Number Size Distributions (PNSD), with recommendations on the instrumentation, the size spectrum to be measured, the operational conditions and data management, including NRT data access for PNSD. This will provide nanoparticle concentrations in different size ranges that can be used for evaluating their source contributions.
- ST2: Online and offline PM speciation tools, with recommendations on (i) instrumentation and (ii) analysis to be implemented for organic and inorganic PM components to allow advanced source apportionment.
- ST3: Measurements of ambient Black Carbon (BC) with instrumental and operational settings to determine the source contributions from biomass burning and road traffic.
- ST4: Measurements of ambient concentrations of Volatile Organic Compounds (VOCs), with instrumental and operational guidance and recommended species to be analysed to study O₃ and SOA precursors.

- ST5: Measurements of ambient concentrations of urban ammonia (NH₃) with instrumental and operational settings to measure this very relevant SIA PM precursor.
- ST6: A variety of advanced source apportionment tools will be provided, including those applied to PNSD for nanoparticles, offline PM speciation, online NRT PM source apportionment, and BC and VOCs source apportionment. These will include guidance on instrumentation and modelling tools, methods and protocols to follow in each case for a harmonised implementation of both analytical and source apportionment approaches.
- ST7: Measuring vertical and horizontal variability (3D measurements) of specific pollutants and key meteorological parameters (such as the atmospheric planetary boundary), using surface remote sensing instrumentation, to better support the spatial origin of the contributions to urban pollutants. This will include instrumental and operational set up and link with the modelling tools.
- ST8: Mapping urban outdoor concentrations of nanoparticles and other pollutants by using mobile measurements, urban scale modelling and citizen's science (smart sensors) to obtain the high spatial resolution variability of urban exposure.
- ST9: Evaluating the health effects of the novel AQ metrics and source contributions from ST1 to ST6 by means of epidemiological and oxidative potential approaches. Health and oxidative potential data and analysis will be used to demonstrate the added value of source apportionment and AQ new metrics. This is a key evaluation because, based on the results of these analyses, the novel AQ metrics to be implemented will be suggested and provided in SP3.
- ST10: Engaging citizens in urban AQ observatories in an efficient and sustainable way, allowing them to participate in AQ monitoring and increasing their awareness. This will include instruments, protocols (how to calibrate the instruments, monitor the reliability of measurements and integrate them with AQMNs official data) and the strategies to involve them. To this end, the experience of the most advanced EU cities on these observatories will be gathered, evaluated and tested to provide guidance.
- ST11: Improved regional scale modelling tools (1 x 1 km² in the region of the city and with some zooms over cities and 6 x 6 km² in the European domain) will be provided by assimilating the data provided from ST- 8. These are key tools to obtain data on secondary (both SOA and SIA) PM and nanoparticle components, and to provide the urban background and the regional and external contributions to their ambient urban concentrations, which cannot be obtained by urban modelling.
- ST12: Tools to improve urban emission inventories with high spatial resolution will be provided by integrating ST-ST9 data into urban modelling and implementing sensitivity analysis with experimental data.

Pathway to the first milestones and deliverables.

M4.9 Setting up links with WPs - 3 (links established), KNMI, M06

M4.6 Start of sampling in health indicator pilot cities (sampling started at pilot cities), CSIC, M07

M4.10 Detailed plan of the hotspot pilots (plan available internally), UU, M11

M4.1 Source apportionment started (measurements started, chain tested), FMI, M12

M4.3 Aerosol number size distribution measurements (Measurements started, chain tested), UHEL, M13

M4.2 Comparison NRT vs manual PMF in each pilot city (dataflow established to ACTRIS DC), CNRS, M15

M4.4 NRT data provision in operation (dataflow established to ACTRIS DC), UOB, M16

M4.11 Pilot measurements initiated (measurements initiated), KNMI, M17

M4.5 Mapping pollutants related to health effect (maps available on-line), CNRS, M24

D4.1: Monthly reports of concentration levels and PMF for each city during the pilots, FMI, M20

D4.2: Comparison of NRT source apportionment and manual PMF in the pilot cities, CNRS, M25

WP5

Starting point: DMP will require a precise table about measurements in WP1-3 and in Pilots. WP5 will prepare a template to be filled by measurement producers.

DMP and RI URBAN Data chain. Baseline is that RI-URBANS follows ACTRIS/IAGOS recommendations whenever they exist. This will permit to benefit from all RI-related features (DOI, QA/QC, etc..). Some data may not make it to the RI DC because outside the scope. Important to have consultancy with DC / TC experts before starting the measurements. It is responsibilities in WP1-4 to ensure WP5 is consulted.

Important that similar measurements are harmonized in pilots if they differ from ACTRIS – remember that data production always goes with documentation, even if not ACTRIS.

No solution for low-cost sensors or Model outputs at present in the RI. To discuss how data / output is conserved.

Task 5.3: not discussed.

Task 5.4: Work with Warsaw city managers already engaged by Iwona. It will be a challenge to motivate to go beyond strict regulatory measurements. We need, at the right moment, to organize a physical meeting to understand needs and eventually propose solutions. Imagine a group in RI-URBANS participating but need to be well-prepared.

Task 5.5: not discussed.

Meetings: mostly meetings with WP1-4 are needed.

We still have to define the work requested to partners that have limited PM in the WP.

8. OTHER ISSUES

16:15-17:30

Next meetings: Forthcoming meetings will be organised at the levels of Tasks into WPs or for Pilots 1 to 5, requiring in each meeting involvement of WP1-5. This will be decided on the SC+WP leaders meeting to be held on 13 October 2021, but the WPs should not stop and work from now and organise their own meetings.

Doina Nicolae: The subject of a meeting should be announced beforehand, and people from other WPs can decide to participate or not, depending on the subject

MILESTONES - M6

WP1: MI3 (M5): NRT aerosol number size distribution ST for RI-URBANS. TROPOS (B13): Near real time aerosol number size distribution service tool for RI-URBANS adaptation available. To be used by pilots.

WP4: MI25 (M6): Setting up links WP4 (PILOTS) with WPs - 3. KNMI (B10): Links established.

WP7: MI40 (M3): Project kick-off meeting. CSIC-UHEL (B- 2): Meeting held.

WP8: MI45 (M4): Operative project structure (Coordination, Executive, Advisory and Stakeholder Boards). CSIC-UHEL (B- 2): Project organization established, available on-line

DELIVERABLES - M6

WP5: D5.1 (D35, M6): Preliminary data management plan. NILU (B15)-PU-R: Report describing data management structure, bodies and contact persons, public and open in the website

WP7: D7.2 (D51, M3): Public & internal website launched. CSIC-UHEL (B- 2)-DEC: Websites and other dissemination material

WP8: D8.1 (D61, M3): Management structure. CSIC-UHEL (B- 2)-PU-R: Report describing management structure, bodies and contact persons, public and open in the website

WP9: D9.1 (M62, M6): Ethics requirement. CSIC (B1)-CO-R: The informed consent procedures that will be implemented for the participation of humans as well as the templates of the informed consent/assent forms and information sheets (in language and terms intelligible to the participants) must be submitted as a deliverable. Copies of opinions/approvals by ethics committees and/or competent authorities for the research with humans (if any) must be kept on file. Confidential, only for B, AB and EC.

WP8: CA (M1). CSIC (B1) in progress.

End of the meeting

16:50

Annex I. List of attendance.

List of persons connected to the Zoom during the KoM:

- 1 Aldo Amodeo
- 2 Alessandro Bigi
- 3 Alexander Baklanov (WMO)
- 4 Alexander Mahura
- 5 Alexander Polyakov
- 6 Alexandra Manvelova
- 7 Alexandre Albinet (INERIS - France)
- 8 Alfred Wiedensohler
- 9 Alicia Arroyo CSIC
- 10 Ana Vicente
- 11 Andre Prevot
- 12 Andrei Tronin SRCES (Тронин А А. НИЦЭБ РАН)
- 13 Andres
- 14 Andrey Kiselev (SRCES)
- 15 Angela
- 16 Ángeles
- 17 Angeliki Karanasiou
- 18 anna_canals
- 19 Antti Hyvärinen
- 20 Ari Karppinen
- 21 Ariane Dubost
- 22 Arnoud Apituley (KNMI) (arnoudap)
- 23 Augustin Colette (INERIS/France)
- 24 Barend van Drooge
- 25 Benjamin Chazeau
- 26 Bruce Rolstad Denby
- 27 C Di Biaggio
- 28 Caroline Kohlmann
- 29 Cathrine Lund Myhre (NILU)
- 30 cavalli fabrizia
- 31 Célia Alves
- 32 Christoph Hueglin
- 33 Christoph Mahnke
- 34 ClaudiaDiBiagio
- 35 Damien Boulanger
- 36 Dave Simpson
- 37 David Beddows NCAS UoB
- 38 David Green
- 39 Dick Heslinga TNO
- 40 Doina Nicolae

- 41 Eija Juurola# ACTRIS
- 42 Eleni Athanasopoulou (NOA)
- 43 Eleni Liakakou (NOA) (Eleni Liakakou)
- 44 Ernie Weijers
- 45 Evangelos Gerasopoulos (NOA) (Evangelos Gerasopoulos)
- 46 Ewan O'Connor
- 47 Falk Mothes
- 48 Fátima M.
- 49 Favez
- 50 Flavius
- 51 Florian Couvidat
- 52 FM
- 53 Francesca Barnaba (CNR) (Francesca Barnaba)
- 54 Fulvio Amato (CSIC) (fulvio amato)
- 55 Gaelle Uzu (IGE)
- 56 Gerard Hoek (Utrecht University)
- 57 Gilles Foret
- 58 Giulia Saponaro
- 59 Giuseppe
- 60 Giuseppe G
- 61 Guido Lanzani ARPA Lombardia
- 62 Hanna Manninen (HSY)
- 63 Hannah Clark
- 64 Hilde Fagerli
- 65 Hilikka timonen
- 66 Honey Alas (TROPOS) (Honey Alas)
- 67 Iasonas Stavroulas
- 68 Imre SALMA
- 69 Ioar Rivas
- 70 Irene Mirón
- 71 Ismael Casotti UA
- 72 Iwona Stachlewska (PL)
- 73 Jan Theunis
- 74 Jarkko Niemi
- 75 Jean-Eudes Petit
- 76 Jelle Hofman (VITO) (Jelle Hofman)
- 77 Jeni Vasilescu (INOE)
- 78 Anca Nemuc (INOE)
- 79 Jeroen Kuenen (TNO)
- 80 Jesus Damian De La Rosa Diaz
- 81 Jesús Yus
- 82 Jian Zhong
- 83 Jimena EC

- 84 Joan O. Grimalt
- 85 JP Putaud - JRC
- 86 Jules Kerckhoffs
- 87 Karine Sartelet
- 88 Kaspar Dällenbach (Kaspar Rudolf Dällenbach)
- 89 Katerina Bougiatioti (NOA)
- 90 Katrianne Lehtipalo
- 91 Kjetil Tørseth
- 92 Ksenia Tabakova (UHEL) (Ksenia Tabakova)
- 93 Kyriakos Romios (NOA) (Kyriakos Romios)
- 94 Laia Font
- 95 Leena Järvi
- 96 Lidia Morawska
- 97 Livio Belegante (INOE)
- 98 Luca
- 99 Lucia Bernal DG ENV
- 100 Iuciamona
- 101 M Hervas
- 102 Mar Viana (CSIC)
- 103 Marc Guevara
- 104 Margarita Evtyugina
- 105 Margarita Sedeeva
- 106 Maria Kanakidou
- 107 Marion Wichmann UBA
- 108 Markus Fiebig
- 109 Markus Hermann (TROPOS)
- 110 Marta Monge (IDAEA-CSIC)
- 111 Marta Via (IDAEA-CSIC)
- 112 Martial Haeffelin
- 113 MCC
- 114 Michael Gauss
- 115 Michael Klinkenberg
- 116 Mikael Ehn
- 117 Mikhail Sofiev FMI
- 118 Mikhail Vasilev
- 119 Minna Aurela
- 120 Mudway# Ian
- 121 Nasia Kakouri (NOA) (nkakouri)
- 122 Nicolas
- 123 Olga
- 124 Olga Popovicheva
- 125 Paolo Laj
- 126 Pawel Wolff

- 127 RJavao
- 128 Rosa Petracca - CNR Italy# ACTRIS
- 129 Roy Harrison
- 130 Sarah Steimer
- 131 Sébastien Payan
- 132 sebastien Payan (AERIS)
- 133 sef vd elshout
- 134 Silvia Monge
- 135 Simone Gagliardi
- 136 SPAIN-Maria José Alonso
- 137 Spyros Pandis
- 138 Stefan Reimann
- 139 Stefano Decesari
- 140 stephan de roode
- 141 Stéphane SAUVAGE
- 142 Stuart Grange
- 143 Sverre Solberg
- 144 Svetlana G. Tsyro
- 145 Teresa Arechavala (ASPB)
- 146 Teresa Moreno / CSIC
- 147 Teresa Nunes (DAO-UA) (tnunes)
- 148 Therese.salameh
- 149 Thiago H de Sa WHO-HQ
- 150 Tuukka Petäjä
- 151 Valerie Thouret (IAGOS)
- 152 Victor Gornyy
- 153 Martine van Poppel
- 154 Wenche Aas (NILU)
- 155 William Bloss
- 156 Xavier Basagaña
- 157 Xavier Querol# IDAEA-CSIC
- 158 Zoom 500
- 159 N. Kasimov
- 160 Yuriy