EUROCHAMP-2020 WP2, WP3 and WP9 technical workshop - minutes

Participants: see Annexe 1

Presentations: To be downloaded at this link:

http://www.eurochamp.org/Project/Documentation/Meetingsdocuments.aspx

Content

Agenda

EUROCHAMP-2020 WP2, WP3 and WP9 technical workshop			
Day 1 – 27/09/2017			
When	**What**	**Who**	**Where**
12.00 – 13.00	CLOUD visit	CERN team	
13.00 – 13.30	Welcome and registration		
13.30 – 14.00	Workshop introduction	Amalia Muñoz (CEAM)	Conference room 6-2-024 - BE
14.00 – 15.00	Data base overview	Bénédicte Picquet-Varrault (CNRS-LISA)	Conference room 6-2-024 - BE
15.00 – 15.30	Data format and scripts to generate data for data center	Astrid Kiendler-Scharr (FZJ)	Conference room 6-2-024 - BE
15.30 – 16.00	Coffee Break		Conference room 6-2-024 - BE
16.00 – 16.30	Status toolkit for initial aerosol data analysis	Rami Alfarra (UMAN)	Conference room 6-2-024 - BE
16.30 – 17.00	Discussion of requests for visualization and QC of data on the data base	Cathy Boonne (CNRS-AERIS)	Conference room 6-2-024 - BE
17.00 - 18.30	Discussion about data provision from each group	Bénédicte Picquet-Varrault (CNRS-LISA)	Conference room 6-2-024 - BE
19.00 – 20.30	Dinner break		Conference room 6-2-024 - BE
20.30	Evening break out session: discussion on upcoming inter-comparison campaigns. Inter-comparison of instruments for measurements of small oxygenated organics	Amalia Muñoz (CEAM)	Conference room 6-2-024 - BE
Day 2 - 28/09/2017			
When	**What**	**Who**	Conference room 6-2-024 - BE
9.00 – 10.30	Session 1: Development of standard protocol for gas phase experiments - Preparation of chamber - Physical parameters and boundary conditions that need to be determined - Reference experiments to evaluate chamber status	John Wenger (UCC)	Conference room 6-2-024 - BE
10.30 – 11.00	Coffee break		Conference room 6-2-024 - BE
11.00 – 12.00	Continuation session 1:	John Wenger (UCC)	Conference room 6-2-024 - BE

	- Parameters to measure for direct or indirect quantification of actinic flux - Background measurements of chamber specific sources of VOC, OVOC, HONO,… - Measurements to quantify VOC loss - Measurements to quantify OVOC loss - Measurements to quantify SV-VOC loss		
12.00 – 13.30	Lunch break		Conference room 6-2-024 - BE
13.30 – 14.30	Harmonization of key operation procedures - Generation of reactive mixtures in chambers: injection techniques and quantification of transfer efficiency - Injection of radicals or radical precursors	Ian Barnes (BUW)	Conference room 6-2-024 - BE
15.00 – 15.30	Definition of experiments to establish "inter-operability" of chamber	Andrew Rickard (UEA)	Conference room 6-2-024 - BE
15.30 – 16.00	Coffee Break		Conference room 6-2-024 - BE
16.00 – 16.30	Discussion of experiments to perform as "multi chamber experiments"	Spyros Pandis (FORTH)	Conference room 6-2-024 - BE
16.30 – 17.30	Drafting workshop protocol and action items for session1	Amalia Muñoz (CEAM)	Conference room 6-2-024 - BE
17.30	End of day 2		Conference room 6-2-024 - BE
Day 3 – 29/09/2017			
When	**What**		Conference room 6-2-024 - BE
8.30 – 10.00	Session 2: Development of standard protocol for secondary aerosol experiments (discussion lead: NCAS-UCAM) - Preparation of chamber - Physical parameters and boundary conditions that need to be determined - Reference experiments to evaluate chamber blanks and background aerosol formation - Measurements to quantify aerosol loss	Gordon McFiggans (UMAN)	Conference room 6-2-024 - BE
10.00 – 10.30	Coffee break		Conference room 6-2-024 - BE
10.30 – 12.00	Harmonization of key operation procedures - Generation of (mono disperse) seed aerosol - Evaluation of sampling efficiency for offline techniques	Ari Leskinen (UEF)	Conference room 6-2-024 - BE
12.00 – 13.00	Drafting workshop protocol and action items for session2	John Wenger (UCC)	Conference room 6-2-024 - BE
13.00	End of Day 3		

The workshop is organised during three full day at CERN (Geneva, Switzerland), the various session have been designed to fulfil a few different milestones

- MS16 (M10) Workshop on the provision of data to the data centre
- MS17 (M10) Workshop on standard protocols and best practices in simulation chamber experiments

They also come in contribution to the preparation of other future milestones and deliverable such as

- MS 12 (M12) : Definition of experimental conditions for the multi-chamber experiments
- D3.1 (M12): Library of scripts dedicated to handling of edf data files [12]
- D3.2 (M12): Report on most highly accessed datasets in the DASCS [12]
- D3.3 (M12): Report on new additions to the data centre [12]

Three WPs are highly concerned by the workshop outcomes and were highly involved in its definition and organisation:

- WP2 : Atmospheric simulation chamber characterization and interoperability CEAM
- WP3 : Standard Protocols, Instrumentation, Quality Assurance and Data Provision
- WP9 : EUROCHAMP Data Centre

The WP leader of WP2 and WP9 are attending the workshop and are leading the discussion and debate. Unfortunately, the WP leader of WP3 was not able to participate the workshop.

Welcome address– Jean-Francois Doussin (CNRS)

The project co-ordinator is welcoming the participant and notes the very significant attendance. He recall the importance of such a workshop in providing better services to users which will be key in the future sustainability development such as the possible insertion of simulation as National Facilities in future ACTRIS-ERI. He emphasize that this characterization is not only a scientific needs to make better research and produce more extrapolable data but also, now, a key feature to better serve the scientific community (the users) and so that it will become highly strategic in the future choice of NFs.

Workshop introduction – Amalia Muñoz (CEAM)

The WP leader of WP2 is introducing the workshop and recall the contents and goal of the 3 WP primarily concerned by its success.

The objective of this workshop is to trigger a high level discussion on several milestones and deliverables which imply almost the whole consortium. Day one of the workshop is focused on the Data Centre, which is now hosted at CNRS and managed by the CNRS team AERIS. Day two will be dedicated to WP2 and WP3 advancement of work.

EUROCHAMP-2020 Data Centre – Bénédicte Picquet-Varrault (CNRS-LISA)

The team dedicated to the Data Centre has been working on it during the past months in order to be able to present it today. The reason why a new Data Centre has been foreseen, to replace the one of EUROCHAMP-2, is because this call has the goal to increase the use of simulation chambers' data, data

products, improve the data cycle (including data curation) and facilitate the use of data through new tools.

When describing it in practice, the new database is composed by three sub-sections:

- **Database of Atmospheric Simulation Chambers Studies (DASCS)** (already in place and working): Compilation of experimental and modelled data obtained from simulation chambers experiments supplied by all partners. It is led by Amalia Munoz, CEAM.
- **Library of Analytical Resources (LAR):** useful for quantitative chemical analyses. It includes IR, UV-visible and mass spectra. It is led by Mila Rodenas, CEAM.
- **Library of Advanced Data Products (LADP):** provides mature and high level products useful for model development/validation and atmospheric observations. Much discussion should focus on this third one. It is led by Wahid Mellouki, CNRS-ICARE.

Library of advanced products is a new addition of E2020, respect to the previous projects. Quality of data needs to be really high

An important subject linked to the Data Centre, is the transfer of data from the previous database, which is also a milestone (due in M9). It has involved the migration of hundreds of data records together with the proper metadata from the Spanish data centre located at CEAM to the one at CNRS. A robot has been developed to do that automatically as well as to identify incorrect/missing record.

A list of partners who have provided their old data is shown (see slide), as well as those who sent data with errors, and those who have not sent any data yet. Some institutes are not part of the consortium anymore, but for example from ISPRA and University of Copenhagen data can be still recovered.
All this work is important because it is getting standard to use professional ad-hoc databases instead of upon author requests.

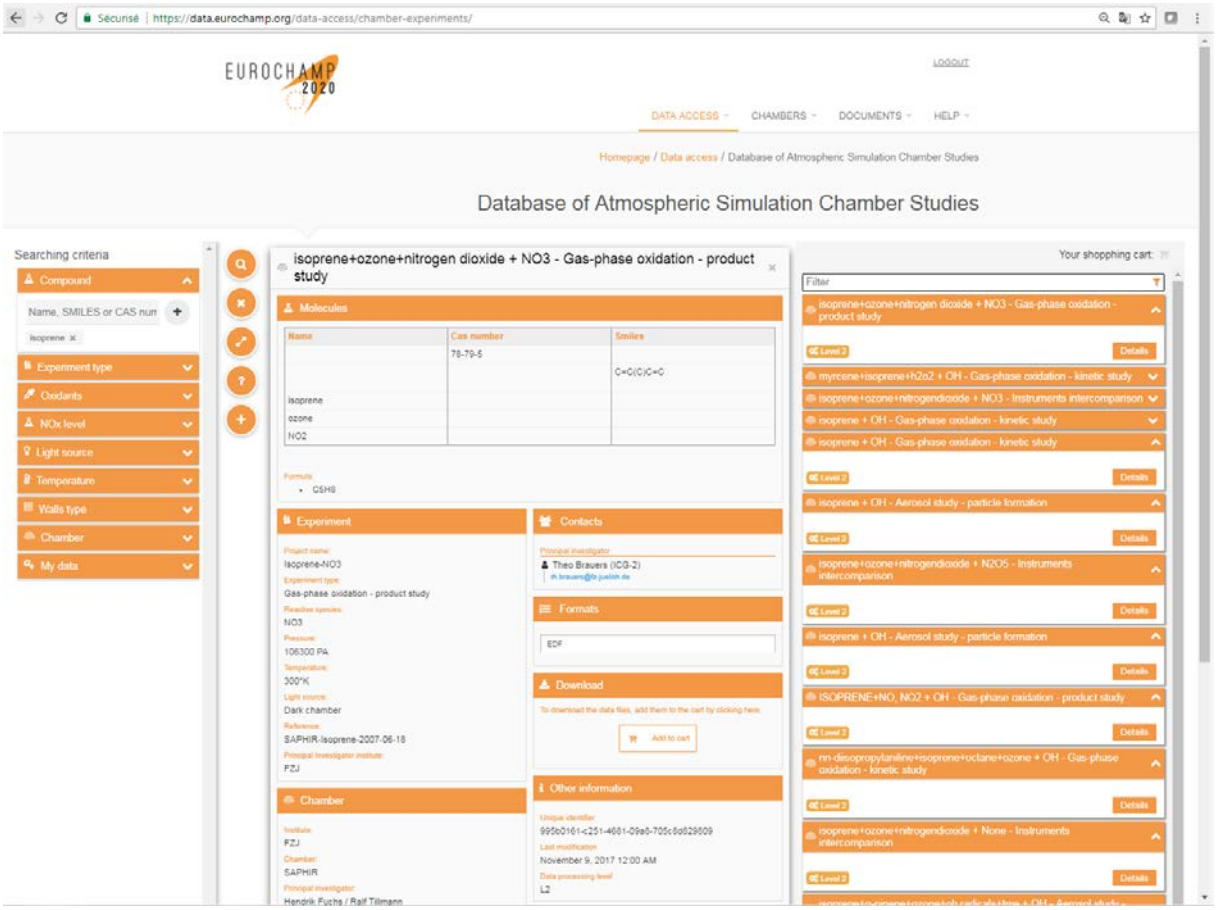
The usage of the new Data Centre is presented through a video: https://youtu.be/LRUQU-HJr9s

And it will available within a few days, through the EUROCHAMP website, at this link: www.data.eurochamp.org

The website page that allows to access to the Data Centre is the following one:
http://www.eurochamp.org/Data.aspx

At the interface level, if any partner believes some metadata/search parameters are missing, they can make a request to CNRS-AERIS. In consequence, the Data Centre is not final and is considered in permanent evolution. At the data record level, partners will have the possibility to correct record or enhanced the level of details in the metadata thank to a correction/update tools available for them only (upon proper log in).

Indeed, an authentication system has been put in place, and it is explained. The system to log in is based on the ORCID system (Open Researcher and Contributor ID) it is also used within ENVRIplus.
It will be necessary for anyone willing to upload data to get an ORCID account (free). While in order to download data, users will have to go through an even simpler authentication.



Question: How will it be possible to link an EDF file to a blank experiment or an auxiliary mechanism?
Answer: It is planned to provide a link in the form of the experiment, to the auxiliary mechanism and/or to the blank experiment. An addition option will be to use a comment field where anyone could comment and indicate that there is a related experiment.

Question: Is it possible to edit a data which has already been uploaded?
Answer: Yes (see above). Even though people who downloaded the data will not be informed that a change has been made. This last point is seen as an issue but it sound like being unavoidable if we want to keep the download free of any type of registration

In summary, the main changes in the database are:

- New searching criteria have been proposed: ex. chamber walls type
- The number of experiments type has been reduced: 10 (31 in Eurochamp-2 DC)
  Gas-phase oxidation - kinetic study / Gas-phase oxidation - product study / Gas-phase oxidation - SOA formation / Photolysis / Aerosol study - particle formation / Aerosol study - physical properties / Aerosol study - optical properties / Aerosol study – hygroscopicity / Aerosol study - heterogeneous reactivity / Instruments intercomparison
- A new authentication system

The last topic is the Data Centre in ACTRIS PPP. EUROCHAMP is involved in the definition of the Data Centre in ACTRIS after 2020, in order to ensure that the EUROCHAMP Data Centre will be able to integrate in the more general ACTRIS one in the future.

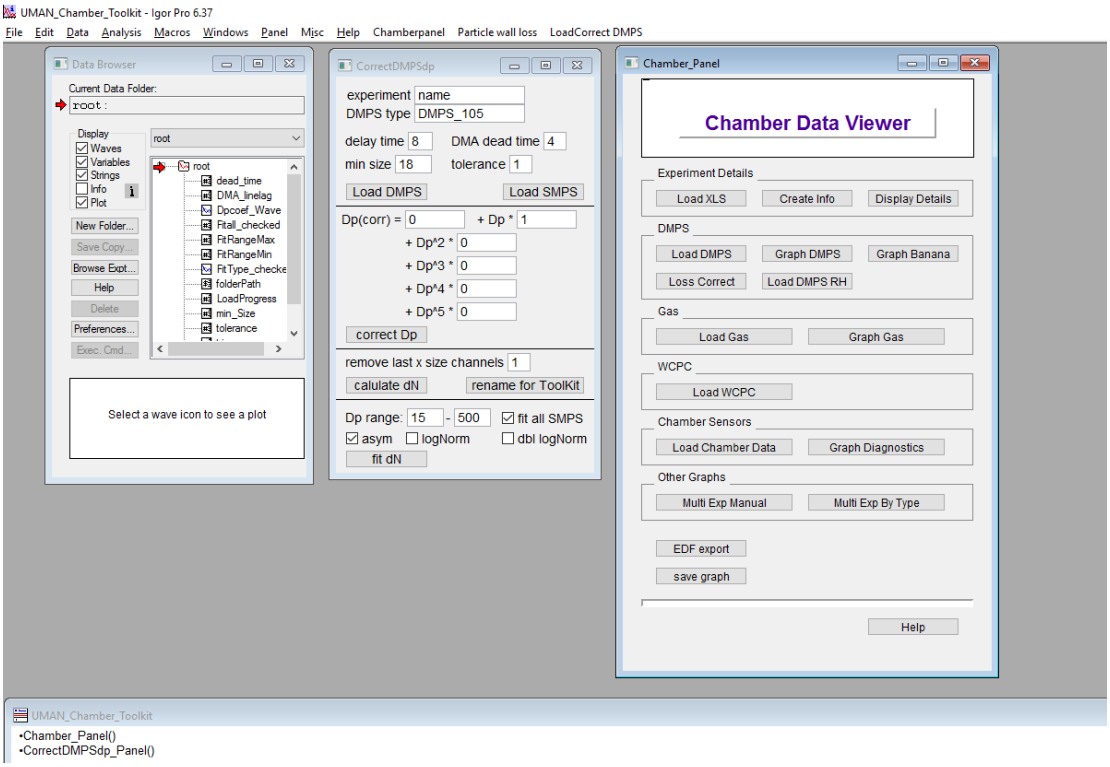
All four levels of data which are being defined in ACTRIS PPP are presented:

- Level 0 is the metadata
- Level 1 is the calibrated and quality assured data
- Level 2 is approved data
- Level 3 is the elaborated ACTRIS data products derived the processing the previous levels' data.

A Toolkit for Chamber Data Analysis & Viewing – Rami Alfarra

UMAN has developed a numerical tool for the analysis of level 0 data produce during simulation chamber run with a particular emphasis on aerosol experiment. It is designed to cover different purposes such as:

- viewing and basic analysis of *raw* data (level 0)
- Providing simple, quick and standardised tool to inspect and check data
- Production of good quality summary plots
- Comparing level 1 or 2 data from multiple experiments
- Correcting from particle wall losses
- Producing EDF files for future insertion in the Eurochamp-2020 data centre



The tool uses a click and point panel, which is used to load raw data of particle number and size distribution in addition to basic gas phase data such as NOx and O3. It can also load and plot RH and T sensor data of basic text format. The main idea behind this toolkit is to provide a very quick way of displaying core chamber data using only a few clicks, which then maximises the time available to researchers to inspect and interpret the data as well as compare data from different experiments.

Users can choose to perform higher level analysis and add additional data from other instruments during their analysis.
Previously recorded experiments analysis can be re-analysed sing an Excel-generated file formatted in a similar way to the one provided as an example by The University of Manchester, or use the manual option and create a record directly.
The tool allows to give an overview plot of the experiment, so it is a way to quality check the experiment's results. Data can be further elaborated, in order to create another level of analysis.
Other additional functions: it is possible to click on multiple experiments, and then to define which experiment by date, in order to have a plot to make a comparison.

Regarding the dilution correction, it is explained that correcting the data by providing the dilution rate of the experiment is not yet implemented. As, this feature is not part of the current toolkit, users need to account for any dilution in their chamber by adding an addition data wave to do this. Indeed, the Manchester chamber does not use dilution as it has a changing volume.

The toolkit provides aerosol data that are not wall loss corrected, but offers the option of applying a wall loss correction. Concerning semi-volatile wall loss correction, this feature is not yet implemented either but this can be done upon the will of the consortium to work on it. Marie Camredon suggests that the non-corrected data should be kept available and that it would be more useful to modellers have wall loss parameterization jointly available, it was mentioned to have both in the data file: non-corrected data and those corrected the dilution.

During the general discussion comes the question of the possibility to generalize this toolkit to whole use of the consortium. It is answered that the objective is to present the toolkit, so that everyone can test it and determine whether it may useful for them or if it is too specific to the UMAN experiments.
If a partner believes they would benefit from using it, the tool can be adapted. The colleagues from UMAN offer to everyone in the consortium to use it, if they want and if they have access to the IGOR software which is needed to use it A few partner express their will to use it and declare that they will contact UMAN directly for guidance.

➔ **The toolkit is available on partner restricted side of the website at this link (EUROCHAMP – Project – Work Packages – Work Package 3) to be tested.**

Discussion on visualization of Data on the Eurochamp data base – Cathy Boonne (CNRS-AERIS)

It has been proposed to equip the various databases of the datacentre with visualization tools in order to help users to have a better quick evaluation of the content of the data records. The AERIS team will build a library of visualization tools. These tools are foreseen to be improved and animated all along the project.

As a first step, this development concern the two first databases i.e. the Database of Atmospheric Simulation Chambers Studies (DASCS) and the Library of Analytical Resources (LAR). The third databases will be the subject of a similar effort at a later stage of the project.

The main goal of the present workshop is a better definition of the user's requests as perceived by the consortium and a tentative strategy for a quick development of the related routine.

For the DASC database, it is agreed that CNRS-AERIS will provide an on-line tool to visualize the 2D time series (such as gas phase concentration) of the data records. It will be based on the tools previously developed among the consortium (e.g."Read.idl" EDF tool written in IDL by FJZ or tools developed under R by CNRS-LISA). Possibly, providing a PDF report would be the best option
For the 3D aerosol data (such as size distribution time series) as it has already been done at UMAN with IGOR, CNRS-AERIS could take inputs from them.
The question of the suitability of the EDF data format to multiple channels data (such as SMPS data) is raised. Some technical solution are mentioned so that EDF format can remain useful for these data too and CNRS-AERIS will take care to write a recommendation to provide EDF files for SMPS data.
Spyros Pandis suggests to concentrate first on SMPS and MPS data: "Banana plot" tools will hence be developed only for SMPS and MPS, while for the rest more time and more interactions are needed.

EUROCHAMP Data Centre : Data provision – Bénédicte Picquet-Varrault (CNRS-LISA)

Concerning the content of the Data Centre, in the phase of writing the project, the consortium has agreed on a quite ambitious goal of doubling the amount of uploaded data, passing from 1000 to 2000 uploaded data.

A tentative proposal of submission by partner is made by Bénédicte Picquet-Varrault. The list of partners is shown (see slides) for each type of database (CASCS, LAR and LADP), showing how much data each of them thinks they could be able to provide in total. There are large disparities in the number but it mainly depends of types of experiments done in the different chambers.

Several points are discussed during the workshop:

1) How to improve the **quality and traceability of data**? several suggestions have been made several suggestions are made:

- **Partners have to provide uncertainties for each set of data** (mandatory)
- **Partners have to provide an auxiliary mechanism** obtained from WP2 (mandatory)
- Experiments should be performed following standardized protocols
- Partners should provide information on calibrations and data analyses procedures as defined in WP3
- When available, « blank experiment » should be provided; It is agreed that Blank experiment can differ in nature depending the objectives followed by the related experiments: for example, it can be a wall loss experiment in similar condition in support of a photolysis rate studies, an ozone generation experiment from a VOC-free chamber in support of the ozone production of a specific VOC, a SOA generation test without known precursors in support of a SOA generation studies….
- When available, partners should provide a link to the publication.

2) How to ensure data provision by partners?

It is proposed that the first database (DASCS) is mandatory for all partners: it is the showcase portal of the project, so it is important that data is uploaded in it. Two options are proposed:
- Option 1: partners who are developing chambers can provide less data than the others (5 per year) during the first 2 years and then 15 data per year. For other partners, 15 experiments per year would be required.
- Option 2: all partners provide the same amount of data (precisely 13),

Finally, option 1 is agreed by everyone and it is adopted. In order to establish those who belong to the group which needs to provide less should contact Jean-François Doussin.

Regarding the Library of Analytical Resources (LAR) and the Library of Advanced Data Products (LADP), it is suggested to leave them optional. However, in the case it is observed that the provision of these two databases is too low, it could be decided to make them mandatory.

It is finally agreed that

- **Partners have to provide uncertainties for each set of data** (mandatory)
- **Partners have to provide an auxiliary mechanism** obtained from WP2 (mandatory)
- Experiments should be performed following standardized protocols
- Partners should provide information on calibrations and data analyses procedures as defined in WP3 (optional)
- When available, « blank experiment » should be provided (optional)
- When available, partners should provide a link to the publication (optional)
- DASCS should include « multi-chamber » experiments
- Auxiliary mechanisms should be provided by the deliverable date (M18).

Standard protocols, instrumentation, quality assurance and data provision – John Wenger

Inside the WP, there is a task on which is the focus of the session. Task 3.1 is led by LISA but almost all partners (LISA, UCAM, ULEEDS, UYORK, PSI, BUW, UCC, FZJ, FORTH, UEF, UAIC, CEAM) are involved.
It is recognized that for key operation of chamber protocols various procedures co-exists in the consortium:
1/ As they are most of the time very specific to specific goal or topic they constitute a diversity of know-how that will be very useful to formalize and gather in a series of protocols
2/ When they are not specific but still diverse, it is agreed that it would be useful to converge toward “standard protocols” to be implemented as good practices.
As propose in the project; these too categories of protocols are foreseen to be united into a compendium of standard protocols.

Following the example of the EUFAR infrastructure[1], this reference documents could take the form of a book and/or one (or a series of) peer-reviewed paper(s)[2]

The following tentative table of content of this "Handbook of experimental atmospheric simulation" is also agreed to serve to organise the distribution of the work/responsibilities with respect to this task among the consortium

1. Physical and chemical characterisation of the chamber (Jean-François Doussin, Hendrik Fuchs)
- Summary of recommendations for measuring T, P, %RH **(Jean-François Doussin)**
- Protocols to determine mixing time, filling steps, dilution, and boundary layer on the wall **(Jean-François Doussin)**
- Protocols for the determination of the actinic flux and J (NO2) in outdoor and indoor chambers (by spectroradiometer and chemical actinometry) **(Hendrik Fuchs)**
- Dilution rate for whole emissions – including methodology **(Ari Leskinen)**
- Protocols for reference experiments for gas and particles
Perhaps a 2 stage reference experiments for aerosols
i) a-pinene ozonolysis & b-pinene ozonolysis (tougher, since slower); Ii) toluene photo-oxidation (if chamber has lights). All seeded (perhaps w exception of a-pinene ozonolysis**) (Rami Alfarra, Andrew Rickard)**
- Determination of VOC and OVOC wall losses. Compilation of protocols for determining wall loss for reactant VOCs and product OVOCs. Recommended protocols for evaluating wall loss of semi-volatile OVOCs. **(Mathieu Cazaunau and Marie Camredon)**
- Particle wall losses **(Gordon McFiggans)**

2. Preparation of the Chamber (Person responsible: Imad El Haddad + Markus Kalberer)
- Compilation of different cleaning protocols (removal of gases and particles, flushing, ozone photolysis, %RH, heating etc.) used by all partners **(Imad El Haddad)**
- Protocols for (active & passive) blank experiments to check the cleanliness/status of the chamber, which depends on the type of experiment (photochemistry, nucleation, SOA, clouds…) **(Sebastian Schmitt)**

3. Preparation of the Experiment (IB)
- Protocols for the addition of VOCs and lower volatility hydrocarbons, NOx, ozone, radical precursors, OH tracer etc. **(Ian Barnes)**
- Primary seed generation – how? Conditions for each type (dusts, soot, salts, spores etc…) (**Jean-François Doussin, Ari Leskinen, Dario Massabò)**
- Whole emissions – gaseous and particulate – from different sources (combustion (BB, engines, stoves); seaspray; plants; mesocosms etc…) **(Ari Leskinen, Imad El Haddad)**

4. Sampling for off-line techniques (Hartmut Herrmann)
- Gas-phase VOC **(Amalia Muñoz)**
- Particle phase SOA **(Markus Kalberer)**

[1] From a Handbook of Airborne Measurements for Environmental Research: Methods and Instruments, EUFAR published with Wiley GmBH « Airborne Measurements for Environmental Research: Methods and Instruments »(edited by M. Wendisch

[2] EUFAR also led to the publication of « Airborne instruments to measure atmospheric aerosol particles, clouds and radiation: A cook's tour of mature and emerging technology, Atmospheric Research 102 (2011) 10–29 »

5. Miscellaneous other protocols (to be defined)
- E.g. procedures for checking and fixing leaks

Harmonization of key operation procedures - Ian Barnes

The session is focused on Task 3.3.2 (Harmonization of key operation procedures), and the responsible is CNRS-LISA. The discussion concentrates on injection techniques. Many techniques are discussed, from BUW, PSI and LISA. In particular two techniques are presented from BUW:

- Generation of reactive mixtures in chambers: injection techniques and quantification of transfer efficiency
- Injection of radicals or radical precursors

Injection techniques:

- Substances: gas, liquids and solids
- Injection location: injection ports/ special inlet systems
- Injection method: the injection method depends on the volatility of the compounds, syringes (gas and liquids) / in gas flow (all compounds but in particular solids) / evaporating a known mass quantity through a gently heated glass bulb via N2 stream / a known pressure of compounds prepared in a known volume glass bulb was then introduced into the chamber by flushing with a low flow of N2.

Quantification of transfer efficiency:

- two transfer efficiencies : into chamber / from chamber to detection system (in situ techniques avoid this)
- methods for gases / liquids / solids
- transfer lines (material, parameters such as temperature, sticky compounds …)
- In many cases calibration is needed (independent way to determine the concentration)

Radicals or radical precursors: three types are presented: OH-radicals, Cl-atoms (other halogens), NO_3 Radicals.

There are different ways to produce OH radicals which depend on the chamber and the source of light used: dark source, photolytic source and UV source.

Some discussion about the different sources of OH: in particular, it is difficult to have H2O2 without EDTA, H2O2 is not compatible with stainless steel. To keep the oxidation going for long periods of time, it is possible to use a flux of NO.

➔ **Ian Barnes will be responsible for collecting inputs.**
➔ **These protocols will be added to the handbook**

Definition of experiments to establish "inter-operability" of chamber - Andrew Rickard

This session focuses on WP2, and in particular on Task 2.1.2, called "Determination of chamber dependent parameters affecting radical chemistry". The leader of the task is NCAS-UYork.
The primary focus of this task is to deliver for each chamber a specific auxiliary mechanism for inclusion into the database (WP 9). Therefore, if a chamber already has a mechanism, it is not necessary to make experiments again.
Even though it is agreed that an auxiliary mechanism cannot cover all the applications of simulation chamber, it is hence decided that the focus will be put on photo-oxidation experiments: in consequence chamber with very specific purposes where no photo-oxidation is foreseen to take place or where no photo-oxidant (ozone, NOx, HCHO…) is foreseen to be injected, are not tied to the propose work agenda.

Furthermore, it is not mandatory that all the chambers use the same initial precursor concentration it will depend on the chamber.

An issue could be to measure HONO since not all chambers can measure HONO.
For NO2 it is critical to avoid as much as possible the use of NOX analyser with Mo converter as they often take NOy as NO2. The measurement of the "real NO2" is key. Many optical techniques such as FTIR, DOAS or cavities allow this (luminol technique are a bit outdated). For this purpose: CAPS would be ideal. At PSI and CNRS_ICARE, NO_2 CAPS are available and both these partners are ready to lend it in the framework of the WP2 / WP3 to allow access to a trustable NO2 concentration for the group who have not this information.

➔ **Matilde Oliveri will set up a questionnaire about who needs it**

- Starting from the list of experiments circulated earlier in 2017, it is necessary to agree on: (for both auxiliary mechanism defining *and* multi-chamber experiments)

  - Appropriate types and range of experiments needed
  - Range of appropriate concentrations (chamber dependent?)
  - Dry vs. wet
  - Number of repeats
  - (a maximum number of feasible experiments?)

Regarding the auxiliary mechanisms, it is agreed that it has to be focussed on photo-oxidation chemistry and that it should cover processes such as:

- Wall loss of gases (ozone, VOCs, NOx)
- Recycling of photoreactive NOy (NO, NO2, HONO)
- Emission from wall of light oxidized VOCs (HCHO, HCOOH…)
- Chamber dependant radical source

This will be built thanks to a combination of

- NOx loss experiments
- Ozone loss experiment
- Blank experiments

- Simple photochemical systems

➔ **Deliverable 2.2 finally does not need to be anticipated, and is maintained at M24.**

It is recognized that, to fulfil on time this deliverable, the list of potential experiment to be performed to guide the auxiliary mechanism building has to be available by M12. So that the experiment could be performed at each site by M20.

Discussion of experiments to perform as "multi chamber experiments" – Spyros Pandis

The session is based on task 2.2: Multi-chamber studies and model tools: Radical chemistry, VOC oxidation and SOA formation. The lead for this task is FORTH. The goal of the task is to provide more structured and linked constraints for modelling studies.
It is recognized that it will be probably the first time where such an effort will be coordinated through a significant number of chamber (it will certainly lead to publication)
It is agreed that the primary goal is probably not to investigate complex unknown chemistry but rather to choose a reasonable well know chemistry so that the effect of chambers can be enlighten. At a later stage a few more complex systems could be studied.

After a long discussion about chosen systems and conditions, it is agreed to take into account the technical limitation of the various chamber to define experiments which are both interesting and feasible in a minimum number of chamber. It is hence decided to organise a poll where every partner will say which experiments they are able to perform in their chambers

➔ **Matilde will send a poll (click for the link to the list of experiments). Following the answers, the multi-chamber experiments will be chosen.**

Development of standard protocol for secondary aerosol – Gordon McFiggans

The session is based on task 3.2: development of standard protocols for secondary aerosol experiments, the task is led by UCAM.
It is agreed that this task cannot be covered in a separate way from the development of standard protocol for gas phase experiments.

The outcome of this discussion is presented above in the related section.

➔ **Gordon will ask for inputs from every partner who works on aerosols**

Harmonization of key operation procedures – Ari Leskinen

It is agreed that this task cannot be covered in a separate way from the development of standard protocol for gas phase experiments.

The outcome of this discussion is presented above in the related section

Wrap-up – Jean-François Doussin

- The Data Centre will soon be available and operational on the website, even if we need to work on the missing data; everyone is invited to start uploading data. AERIS will set up two forums, one for internal users, to guide the upload; and one for external users.
  Report has to be written on data provision before end of year, so it is fundamental to upload data in the DC.

- The toolkit presented by UMAN may be very useful. It is already on the website (http://www.eurochamp.org/Project/WorkPackages/WorkPackage3.aspx), and there will be some beta testers: Spyros Pandis, Sebastian Schmitt, Mathieu Cazaunau and Imad El Haddad.

- A handbook is due in M44 but it work has to begin now in order to deliver it at the end of the project. Protocols will be distributed for characterization and interoperability, and it is everyone's responsibility to submit them to the task leader. An editor (Ian Barnes) has been designed and a publication strategy is set up (to be submitted to AMT). If possible, the goal to publish a book should be kept in mind. In EUFAAR they managed to do so.

- Chamber characterization: two parameters about photolysis and size depending wall loss by moth 24, so experiments must be performed soon.

- The LICOR spectrometer is calibrated and available to be sent around as a travelling reference. In order to borrow it, Amalia is the contact person.

Annex 1 – List of participants

Partners		
First name	**Last name**	**Institution**
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