



## STRATEGIC TOOLS TOWARDS A SUSTAINABLE USE OF BIOMASS FOR LOW CARBON DOMESTIC HEATING

*Dear reader,*

*Welcome to the second edition of our BB-CLEAN newsletter!*

*Last February all Partners met in Passy, the beautiful Municipality in Haute-Savoie, France, and started an interesting discussion on Biomass Burning and the ways to reduce the pollution in mountain areas. Participants had the possibility to test the PM microsensors (Airbeam V2) that were used by citizens this winter in France.*

*Read how the BB-CLEAN project is implemented in the Alpine Space areas: in the town of Saint Marcel (Italy, Valle d'Aosta) where the citizens have been involved in the project by Arpa VdA; In Ponte di Legno (Italy, Lombardy) where UCSC started a measurement campaign to calibrate models; In Kapfenberg (Styria, Austria), where FHJ started another important campaign of wood burning fraction estimation; in the Arve valley where Atmo Auvergne-Rhône-Alpes in partnership with CCPMB started the awareness raising campaign of the CCPMB territory citizens with PM microsensors.*

*We hope you will enjoy our second edition.*

*If you would like to keep up with our latest activities and developments, please follow us on our website:*

<http://www.alpine-space.eu/projects/bb-clean/>



### IN FEBRUARY 2019, PASSY HOSTED THE 2<sup>nd</sup> BB-CLEAN PROJECT MEETING

***BB-CLEAN presented its activities and its strategies at the 2nd Project Meeting, Passy – Auvergne-Rhône-Alpes (February, 21-22, 2019).***

Passy was the premises of the 2<sup>nd</sup> BB-CLEAN Project Meeting, held last February 21<sup>st</sup> and 22<sup>nd</sup>. The small Municipality is in Haute-Savoie, in the Auvergne-Rhône-Alpes Region, in a beautiful Valley near the Mont-Blanc where the Communauté de Communes Pays du Mont-Blanc (CCPMB) has its local office.

The work started with the welcome address of the CCPMB followed by the presentation of the BB-CLEAN state of the art by the Lead Partner. Prof. Giacomo Gerosa, UCSC, shared with the Partnership some strategical tips for the technical work packages management for the next phases, since other two technical WPs will start their core activities in 2019. The Partnership cooperated very well from the beginning and Prof. Gerosa asked each Partner to guarantee the same level of interest and commitment for the next periods.

After the welcome speech, ARPA Valle d'Aosta, Atmo Auvergne-Rhône-Alpes, Econcept and UCSC, presented important updates on their work in WPT1, WPT2 and WPT3. After the technical discussion about the activities implemented during the 1RP and the strategies that must be implemented in the future, KSSENA as Communication Manager and UCSC as Project Leader talked about the common methodology to improve the management of communication, coordination and monitoring of the BB-CLEAN project activities.

The 2<sup>nd</sup> Project Meeting was also the opportunity to better understand how the PM microsensors, used in the citizen awareness campaign of WPT2, work. The Partners had the opportunity to experiment by themselves their exposure to PM concentration using the microsensors around the CCPMB premises in Passy; UCSC and FHJ

also verified the PM exposures during altitude profile trips by car from the meeting premises to the hotel and restaurant. They could clearly identify the influence of inversion layer on PM concentrations and the accumulation of wood burning emissions.

The awareness campaign in France showed interesting results (read article below) and the Partners discussed about how to use the outcomes for the next raising awareness campaigns foreseen in other countries.

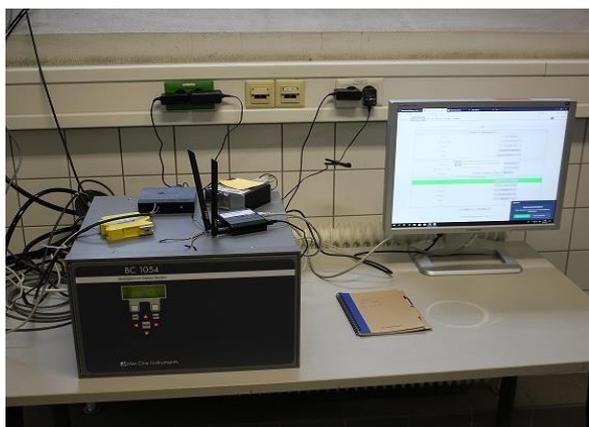
The results of those further microsensors campaigns will be known in the next months, so stay tuned!



## START OF BC MEASUREMENTS IN AUSTRIA

In March, a Black Carbon Monitor was installed in Austria for the BB-CLEAN Project.

PM<sub>2.5</sub> are deposited on a filter and the transmission across the filter is measured at ten different wavelengths, from 370 to 950 nm. With the help of this system different sources of particles can be identify.



Particles from diesel engines absorb at higher wavelengths, particles from wood burning at lower wavelengths. So, the contribution to particle pollution of different sources can be estimated.

The first measurement period was done at the University of Applied Sciences in Kapfenberg. The system was installed in the laboratory and measures the Black Carbon content.

After successful first measurements, the Black Carbon Monitor was moved to Thörl, a small alpine village in Styria, Austria. Daily, up to date measurements, can be followed at:

<http://tinyurl.com/y2erbrdb>.



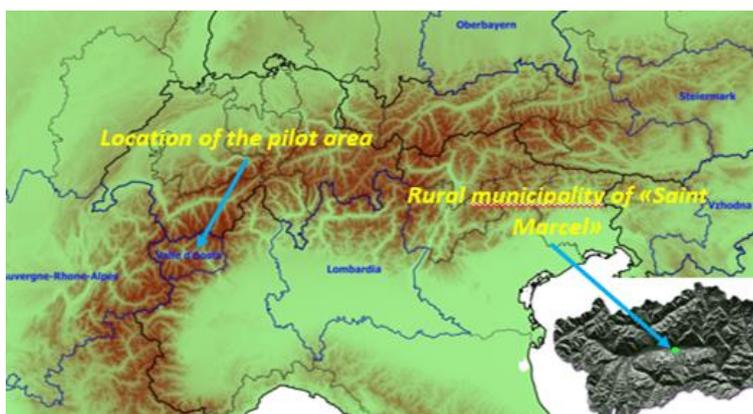
## PRESENTATION OF THE PROJECT IN SAINT MARCEL

*ARPA Aosta Valley explains to the citizens of Saint Marcel the best way to burn wood to reduce air pollution*

Wood is a renewable energy source, as well as a low carbon oxides source of emissions, but its combustion produces a lot of atmospheric pollutants: particulate matter, polycyclic aromatic hydrocarbons and volatile organic compounds. The pollution becomes more intense in the alpine areas since wood is a widely used fuel and the environmental conditions, alpine orography and the very cold winters, favor the stagnation of the pollutants emitted downstream. Improving this situation is the main goal of the European project BB-CLEAN, which led to the setting up, since October 2018, of a special monitoring station in the municipality of Saint Marcel. This is a small rural site at the bottom of the Aosta Valley, where domestic wood heating is the most significant source of air pollution. Measurements of nitrogen oxides and PM<sub>10</sub> will last until September 2019. More specifically, the chemical speciation of the PM<sub>10</sub> and the study of carbonaceous particles fraction (black and brown carbon) will be done, in order to distinguish the quota coming from the combustion of wood from the one produced by fossil fuels (mainly traffic).

A further purpose of BB-CLEAN is to raise citizen awareness about the correct use of wood and appliances for domestic heating. The objective is to explain the air quality impacts of incomplete combustion and to inform the citizens on the techniques that can be easily implemented to minimize polluting emissions. To this end, particulate measurement campaigns will be carried out using individual microsensors able to show what people breathe in their own environment.

In the coming months, Arpa will organize two workshops aimed at informing local administrators and schools about the problems connected to the use of wood for domestic heating and about what citizens can actually do in order to reduce the pollutant emissions resulting from it.





## LET'S FIRE WPT3 UP!

*WPT3 started with the monitoring campaigns in Lombardy, in the small town of Ponte di Legno (Italy).*

In the framework of WPT3 activities, UCSC has to perform different monitoring campaigns inside the Alpine Region in order to calibrate an integrated model that will evaluate, both in prognostic and diagnostic mode, the dispersion of atmospheric pollutants depending on different meteorological conditions in complex orography areas with particular reference to PM emitted by biomass combustion systems.

Two case study areas will be experimented by the project monitoring campaigns. The potential Italian sites will be in the Province of Trento and in the Province of Brescia, areas not covered by local air quality stations but characterized by the dominant use of wood biomass for domestic heating production.

On February 13<sup>th</sup> and 14<sup>th</sup> 2019, a preliminary investigation of PM concentrations took place in Val Camonica, located in the Province of Brescia (Italy). Four monitoring sites were chosen on the Edolo- Passo del Tonale axis. The first two in Ponte di Legno (one in the town and one at a higher altitude site), the third one in Temù and the last one in Vione. Particulate matter concentrations were measured with a wide range aerosol spectrometer (MiniWRAS 1371, GRIMM, DE) that counts particles, dividing them into 41 dimensional classes, and indirectly estimates PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> concentrations. Each measurement lasted 30 minutes and was repeated in 3 different time slots: morning, midday, evening. Along the Edolo-Corteno Golgi axis only one measurement of 30 minutes was made at the two monitoring sites of Santicolo and Doverio (around midday).

Unfortunately, the meteorological conditions of the days preceding the monitoring period presented high wind speeds and snow events. The PM concentrations encountered during the monitoring days were thus not so representative to understand the impact of local biomass burning on air quality.

Further measuring campaigns are then needed in the future to precisely define the local biomass emissions in this specific Alpine area. Stay tuned!

The author is Rossella Urgnani, Trento University PhD student and UCSC Research Fellow in the framework of the BB-CLEAN project.



GRIMM MiniWRAS 1371 during the measurement process in Ponte di Legno



Measurement location in Ponte di Legno



Province of Brescia, Italy (Google Maps)



## WINTER 2019 PM SOURCES EXPERIMENTATION IN FRANCE WITH MICROSENSOR KIT

*The French BB-Clean experimentation took place in Winter 2019 and allowed the CCPMB inhabitants (in the Arve valley) to experiment by themselves the PM influence in their own environment. 30 intercompared PM microsensors (Airbeam V2) linked to the Atmo Auvergne-Rhône-Alpes Captotheque<sup>®</sup> platform were lent every 15 days for four months. In addition, different workshops were organized to exchange, understand, and practice around the pollution problematics and particularly the influence of individual wood heating system.*

The Arve Valley, and more specifically the CCPMB territory, is encountering PM pollution alerts every winter. Without neglecting the multiple PM emission sources, numerous scientific studies in the area have pointed out that the air pollution was due to the combination of narrow topography, winter meteorological conditions and emissions from misused individual wood heating systems (ex: POVA, DECOMBIO, Synthesis of AQ knowledge in the Arve Valley...).

Actions have been set up by the concerned territories (CCPMB, Auvergne-Rhône-Alpes Region...) and the French environmental agencies (ADEME, METS), such as financial support for old equipment change (Fonds air bois), and communication has been performed in different ways but the acceptance by the population of the role of biomass burning in air pollution is facing ancestral practices, behaviour changes and suspicions of conspiracy.

Since 2016, Atmo Auvergne-Rhône-Alpes has been developing a Captotheque® system to meet the growing desire of citizens to be at the heart of societal issues, particularly air quality. The experiment with the microsensors that took place as part of the BB-Clean project was thus intended to test this new approach to dialogue, exchange and facilitate the appropriation of information on air quality on the CCPMB territory.



Several workshops were organized to allow the experimenters to train on the Captotheque® kit and material, discuss their results and ask questions to the air quality territorial referent. These workshops also addressed a variety of topics: how the air quality network and the pollution alert system work, how to explain air quality to children, how to operate a wood stove correctly (choosing the right wood, starting the fire from top, etc.) and how to get financial help to change old heating systems etc.

In four months, more than 150 people were involved in the experimentation (out of more than 400 candidates). Their profiles covered all of the CCPMB municipalities, their age ranging from 18 to 78 years old, women and men in almost equity, from people with low knowledge to people engaged in environmental organizations, from politics to journalists. For the large majority this has been a great experience where they came out quite often with more questions than they had at the beginning but with better understanding of the PM problematics. The air quality expertise support emerges as being of major importance to improve people's knowledge and drive behaviour changes.



## MICROSENSOR AND PARTICIPATIVE SCIENCE CONFERENCE

*Atmo Auvergne-Rhône-Alpes presented preliminary results from different winter 2019 microsensor experimentations (including the BB-CLEAN experimentation in the CCPMB territory) to the 1<sup>st</sup> Conference on "Sensors and participative science" in April 1<sup>st</sup>-4<sup>th</sup> 2019 in Paris.*



*The event was organized by the Sorbonne university in Paris with a large French scientific committee.*

[READ MORE](#)

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## PARTICIPATE AT BB-CLEAN CHALLENGES



Partner Econcept will start with online open innovation challenges via [www.innonatives.com](http://www.innonatives.com), the largest European crowdsourcing platform for sustainable innovation. They have set up four interesting challenges. First two will be transnational challenges, focusing on correct use of wood for domestic heating, new technologies and ways to promote it in more efficient way and to raise awareness. They will be intended for citizens, experts, stakeholders, etc... The following two challenges will be more specific focusing on regional questions. The best ideas at challenges will receive awards and will be promoted in the context of our BB-CLEAN project.

We would like to invite you all to register online on [www.innonatives.com](http://www.innonatives.com) to participate in the challenges. It is free, educational and you can win interesting awards.

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## NEXT ACTIVITES AND PARTICIPATION AT EVENTS



*Our partner consortium is very well aware of the problem of biomass burning so we would like to raise awareness and spread the results of the BB-CLEAN project. In the following months we are planning to participate at different events, find out more below.*

- Partner FH-JOANNEUM will participate at the IONICA forum in Zell am See. The conference topics will be related to Black Carbon measurements in Alpine regions and trends of PM development by increasing e-mobility in smart cities.
- At the beginning of June, partner Arpa VdA will organize educational workshops in Primary school of Saint Marcel, their pilot area, with the intention to make children aware of the problems, connected to the use of wood for domestic heating.

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## ABOUT US



**Interreg**  
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**Follow us on our website and social media profiles, to find out more:**

<http://www.alpine-space.eu/projects/bb-clean/>

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