Welcome to the fourth newsletter for the MOSSCLONE project which is financed by the EU Commission’s Seventh Framework Programme. The aim of this project is to develop and implement a method to control the air quality by using a devitalized moss clone as passive contaminant sensor.

This newsletter introduces the 2nd WP leaders meeting of the MOSSCLONE project which encompasses the hard work of more than 30 experts from 11 organisations representing 5 EU countries (Spain, Italy, France, Ireland and Germany).

We are happy to report about some great work that is being done on these EU organisations. The tasks are being carried out at the appropriate time and with the expected results. We can say that Europe is halfway to have an important new tool for measuring any kind of air pollution anywhere.

The MOSSCLONE Newsletter is published twice a year by the Project Manager. If you wish to be included or taken off the distribution list, please contact him (carlosbrais.carballeira@usc.es).

What is MOSSCLONE?

Two European Directives on ambient air quality assessment (96/62/EC of 27 September 1996 and 2008/50/EC of May 2008) obliges the Member States to deliver periodically precise information about the air quality and the related health within their territories to ensure that the European population is aware of it.

For compliance to both Directives, States usually use monitoring stations, but these stations are only useful when macro-pollutants are assessed in agglomerations. For measurement of other pollutants included in the Directives there are technical difficulties and their analysis on air is too expensive. As a consequence there is a lack of representative data through Europe. In addition, data from automatic devices are accurate but too limited in number of pollutants and to describe spatio-temporal trends of pollutants. Due to the limitations of traditional methods, bio-monitoring is an adequate alternative to acquire data about the levels of pollutants that affect European citizens and makes it possible to evaluate the state of environmental parameters influenced by synergistic effects of different pollutants.

Among the available bio-monitors, terrestrial mosses are especially adequate for air quality assessment due to their high efficiency in loading both particulate and gaseous determinants of organic, inorganic, and radioactive pollutants.

However, there are some problems that can arise when using mosses for the current moss-bag technique: the absence of well-suited moss species living in urban, extra-urban, and even indoor reference environments; the bags are prepared from mosses naturally grown in unpolluted areas, so its availability and the natural variability on moss elemental composition could vary depending on natural and anthropogenic causes.

The solution to avoid these problems is to cultivate in the laboratory a moss clone to always have homogeneous material with the same initial concentrations to prepare the bags. In this way, a high degree of standardization would be reached and would allow a comparison of the exposed mosses in the same way by means of Enrichment Factor or Net Enrichment.

An additional, but highly relevant problem that usually affects the use of bio-monitors is the lack of standardized protocols and methodologies. The lack of such protocols hampers comparison of the results obtained in different studies, and sometimes limits the conclusions that can be reached. The MOSSCLONE approach would overcome all these issues, thereby improving data quality and reproducibility, and therefore usability of environmental data collected throughout Europe.
This work was carried out as part of WP1 (Management). This meeting took place on the 29th and 30th of November (2013) at the Virxe da Cerca Hotel, located in the old town of Santiago de Compostela (Spain). The meeting occurred just two months after the midterm meeting from Freiburg, therefore, it was more an overview of activities, results and conclusions that were previously discussed. Partners from UDC were invited to attend the meeting because their role on the development of the 4th Working package is essential. Partners met each other, presented the few advances obtained after the midterm meeting and clarified the doubts they had from the previous meeting. BIOVÍA was the partner in charge of this meeting. Meetings with a low numbers of attendants are easily coordinated and decisionmaking is much more effective. The meeting ended as a productive and friendly event where the finished and current activities were discussed and the expectations of all attendees were fulfilled. The meeting was one day of presentations and discussions, and one day of fieldtrip. The fieldtrip consisted on a bus trip to Ribeira Sacra, whose name is due to the presence of a high number of monasteries in that area, particularly in the riverside of the Miño River and one of its tributaries, the Sil. The schedule of the agenda was almost adjusted to perfection (see page 4 and 5).
2nd WP leaders Meeting Agenda
29th and 30th of November (2013)

Friday 29th

Morning
09:45-10:00 Registration
10:00-10:15 Welcome address
10:15-10:45 Cultivation and scaling up of the clone (ALU-FR, Biovia)
  - Progress on cultivation method and scaling up (Ralf Reski)
  - Development of scaling up task and future perspectives (Ana Rey)
10:45-11:15 Results (or preliminary results) obtained from moss exposure (AMRA)
11:15-11:45 Coffee break
11:45-12:00 Analytical optimization of PAHs (UDC)
12:00-12:05 WP1 Project management- State of art (Tasks, Reports, Time,…) (USC)
12:05-12:20 Signing of MOSSCLONE articles (USC)
12:20-12:45 Planning of WP4- Orion (Orion)
12:45-13:15 Selection of detectors and sample sites (UDC)
13:15-14:00 WP4 Discussion
14:00-15:30 Lunch Break – Hotel Virxe da Cerca

Afternoon
15:30-16:30 Discussion and General Conclusions
16:30-17:30 Tour of BIOVIA facilities
21:00-12:00 Dinner at the “Pazo de Altamira”

Saturday 30th

Morning
08:30-18:00 Fieldtrip to “Ribeira Sacra” at Orense province

ADITIONAL INFORMATION

ORGANIZING COMMITTEE
Ana I. Rey Asensio: +34 618 416 323
Julia Ramos Gómez: +34 677 658 185
Verónica Fernández González: +34 655 481 068
Carlos B. Carballeira Brata: +34 698 168 020

AIRPORT (Transfer)
http://www.empresafreire.com/html/castelan/seccion3a.php GET OFF IN PLAZA DE GALICIA

ACCOMODATION WEB (HOTEL)

ACCOMODATION LOCATION
Hotel Virxe da Cerca
Virxe da Cerca, 27
15703, Santiago de Compostela
A Coruña (Spain)
Phone +34 981 56 93 50
Fax +34 981 58 69 25
Email: vdc-cerca@pousadasdecompostela.com

MEETING LOCATION
Hotel Virxe da Cerca

RESTAURANT (Dinner)
http://www.pazodealtamira.com/ES/1/El-edificio

FIELDTRIP INFORMATION (Ribeira Sacra)
http://turismo.ribeirasacra.org/rs/es/
WP3 Tool Development

Mesh

The mesh size did not affect the accumulation of elements in moss in a significant way. The selection of the proper mesh size must thus take into account only the loss of material occurred during the exposure.

Shape

The shape of the moss-bags not always affects the accumulation performance in a significant way. In any case, the mossphere might be preferred for its assemblage readiness, and because it might secure an improve the standardization of bag preparation.

Weight

The accumulation from three different weight/surface ratios (15, 30 and 45 mg/cm²) was studied. The 15 mg/cm² mosspheres were found to be significantly more efficient than the 30 and 45 mg/cm². In particular a small amount of moss seems to ensure an improved accumulation performance.

Time exposure

Three different exposure times (3, 6 and 12 weeks) were tested for the standardization of the mossphere method. The 3 weeks exposure period is not adequate because in the most of cases this period is too short to have detectable enrichment in post-exposed mosses. The other two possibilities, 6 or 12 weeks, have both enough sensibility. As the differences between 6 and 12 weeks exposures were scarce and taking into account operational criteria (i.e. increase temporal resolution), the use of 6 week exposure period is recommended.

Optimal height

The height range investigated (4-10 m) did not show any pattern related to the enrichment of post-exposed mosses. In this way, the selection of the exposure height may depend on practical questions (e.g. avoid vandalism) or specific objectives from the study.

WP4 Detectors

The experiments from WP4 (Detectors) have already started at Italy and Spain. Samples from cloned Sphagnum palustre are exposed together with traditional techniques; standard bulk deposition collectors, particle samplers and gaseous samplers. Moss samples exposure was adapted to the conditions needed for the comparison with the results from traditional techniques. For this purpose, moss samples were be covered, sheltered or used as a passive diffuser.
FORTHCOMING EVENTS

The next WP leaders meeting (3rd) will take place the Friday 19th and Saturday 20th of September (2014) at Abano Terme (close to Padua, Italy), hosted by Orion.

Tasks

Recent

Standardization of the MOSSCLONE method: shape, weight, height, mesh and exposure time effect (see page 6)

Current

Relationships between the mosspheres and the traditional techniques (bulk deposition, particle samplers, diffusers and gaseous samplers)

Upcoming

Development of a method for the detection of an atmospheric small scale pollution focus

MOSSCLONE Dissemination

TV

The MOSSCLONE project has been mentioned in the News of two spanish TV channels (La Sexta and RTVG).

Newspapers

Three articles have been published in different newspapers; two spanish (La Voz de Galicia and El Mundo) and one german (Werkstoffe).

Conferences

Prof. Ralf Reski attend the Kyoto University Simposium and he did a oral presentation.

Internet

Four websites have shown the work developed within the MOSSCLONE project (Efe verde, Mundo ciencia, AIM digital and Berenguela).

Facebook group has 58 members

Twitter account has 43 followers

Find out more on our website

www.mossclone.eu

Find Me on Facebook
facebook.com/MOSSCLONE

Follow US on Twitter
@MOSSCLONE