Interreg
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AIR TRITIA

Newsletter

November 2018






PROFESSIONAL ACTIVITIES

MOSS ANALYSIS

The spatial distribution of airborne origin pollutants in ecosystems can be also done using passive moss biomonitoring (collecting naturally growing moss). The monitoring is supposed to bring complementary information about pollution distribution in the region that would be detailed enough to embrace the local specifics in pollution sources. VŠB – TUO collected moss samples in the TRITIA region and analysed them using the neutron activation analysis (NAA) in cooperation with Joint Institute of Nuclear Research (JINR) in Dubna, Russia. NAA is a sensitive analytical technique performing qualitative and quantitative multi-element analysis of major, minor and trace elements in samples of almost every conceivable field of scientific interests.
Now, to meet the respective goals of performed monitoring, the results of NAA will be further processed. It will allow to define source contributions by characterizing deposition samples, using chemical elements occurring in moss samples as tracers for the presence of material from particular kind of sources.
All the further analyses and conclusion will be described and discussed in the final report.

AIR POLLUTION MODEL

Nowadays *VŠB - TUO* is realizing uniquely extensive calculations within this task. The calculations are being carried out on the parallel clusters of MetaCentrum called CESNET and the IT4Innovation computing centre at VSB - TUO (project AIR TRITIA was granted by 10 000 core hours). MetaCentrum operates the distributed computing infrastructure which enables the use of computing and data sources to solve very demanding computational tasks that overcome the possibilities of respective workplaces in the Czech Republic.
The most demanding part of the modelling regarding the computing power is the calculation of pollution from domestic boilers from the Polish part of the TRITIA region.
These results together with results of pollution modelling from domestic boilers at the Czech and Slovak part of the region, from industrial sources and car traffic will be the basis for further analysis of the air quality, health risks and remedies.

IT4 Innovation computing centre at VSB - TU Ostrava

TRAFFIC POLLUTION

University of Žilina has been measuring the amount of air pollution from the road traffic in various urban areas of Žilina. At present, the measurements have been performed at 5 monitoring stations and the measurement values are being evaluated.

Table: Measurement places, describe of FUAs, measuring devices Libelium Smart Environment

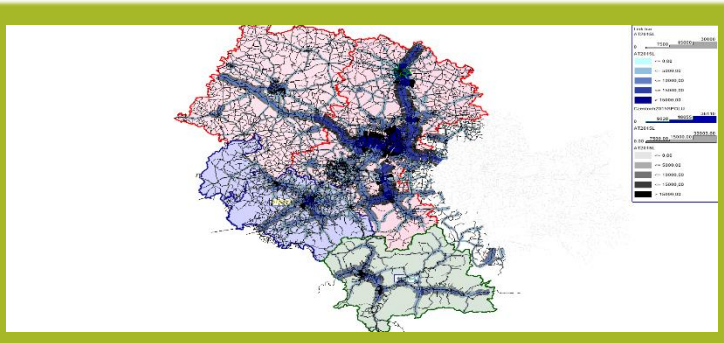
Number	Measurement place	Device	FUAs
1.	Univerzitná Street	Wifi_AQM_837	Rod traffic, education
2.	Štrková Street	Wifi_AQM_749	Light industry, road traffic
3.	Komenského Street	Wifi_AQM_743	Road traffic, habitation
4.	A. Hlinka Square	Wifi_AQM_748	Walking zone, shopping
5.	Košická Street	Wifi_AQM_709	Road traffic, industry

Air pollution measurements have demonstrated the diversity of air quality in different urban areas. The decisive factor of impaired air quality was in particular the presence of road transport as well as meteorological parameters. In terms of meteorological parameters, the air temperature and the wind speed (scattering conditions) and heavy rainfall during the measurements also played a big role.

TRAFFIC MODEL

University of Žilina processed the transport model of the whole solved territory (TRITIA region). It is the largest and most comprehensive model of transport within the monitored territory that has been processed so far. The detailed traffic model is imported from each town traffic models. The model incudes towns Opava, Ostrava, Opole, Rybnik and Žilina. Described town models are based on real traffic counts and mobility surveys. The traffic models include the towns development and the vision projects.

Using of traffic models is an important element in the detailed modelling of air quality. The traffic model covers existing traffic models for passenger and freight transport. The traffic model has been the main input for the generalized emission model.



ISOTOPE MEASURING AND PARTICLEGRANULOMETRY

Within the frame of the task, the specific measurements of particle size distribution are conducted in two sites: Racibórz (Poland and Horní Suché (Czech republic). The knowledge of particles' size distribution in air is very important due to the fact that deposition of aerosols in the respiratory tracts depends on their size. Investigation of such distribution has therefore great meaning for appropriate assessment of risk caused by hazardous pollutants that appear in environment both as a result of human activities like industry, emission from traffic, municipal emission due to house furnaces and natural phenomena. The measurements are performed with use of SMPS and APS spectrometers, enabling measurements in the range from 5nano meters to several micro meters.

The goal of this measurements is to support model of transboundary pollution transfer and to verify the origin of pollution.

Preparation for measurements

One of our measuring stations was located on the roof of Frantisek shaft of closed down coal mine. The equipment for size distribution measurements and isotopes concentration of the dust pollution collected on the filter were placed on the roof of the shaft at the height of about 86 m.

EVENTS

HEALTHY AIR INFO DAY IN ŽILINA

Healthy Air Info Day took place in Žilina on the 19th September 2018, within the AIR TRITIA project. The slogan of the event was *"How can I contribute to the healthier air."* AIR TRITIA team members introduced the project which has been monitoring the air quality not only in Žilina but also in selected cities in Poland and Czech Republic already for over a year. A representative from VŠB-TUO Ostrava also participated in Healthy Air Info Day. He contributed with created air pollution model. Colleagues from Žilina city and from SOLEZ and CityWalk projects participated in Healthy Air Info Day, as well.
Sunny weather attracted to the A. Hlinka square adults together with children. Morning program was dedicated to students, afternoon to general public.

The greatest success had educational show "Smokeman in action", in which Jiří Horák (from VŠB-TUO Ostrava) alias Smokeman showed in a playful and experimental form to the students, children and even to adults, how to heat properly. Children were directly involved in his scientific experiments. Participants could measure their lung volume, see with their own eyes, what causes combustion of waste (especially combustion of plastics), further on an illustrative example of the process of photosynthesis in the aquarium and many other experiments.

HEALTHY AIR INFO DAY IN OPOLE

On 16th of September 2018 was within the AIR TRITIA project, organized in Opole the "Healthy Air Info Day". The slogan of the event was ***"How can I contribute to the healthier air"***. The event was prepared by Central Mining Institute, supported by city Opole.

The team partners from Central Mining Institute and town Opole promoted activities to improve the air quality. The event was aimed at presenting the subjects related to air quality to the inhabitants of Opole. HAID was the part of European day without the car and European week of sustainable transport.

The educational station organized by partners of AIR TRITIA project made it possible for every resident of Opole – children and adults - to familiarize themselves with the sophisticated equipment measuring particle size distribution of air pollutants. Scientists from Central Mining Institute demonstrated how the equipment works, presenting the results of measurements of the distribution of aerosol concentrations taken close to roads with heavy traffic.

THE INTERNATIONAL CONFERENCE " AIR QUALITY MANAGEMENT – EXPERIENCES AND IDEAS"

The international conference within the AIR TRITIA project, funded by Interreg CENTRAL EUROPE Program, took place on the 10th of October 2018 in Cieszyn, Poland.

During the conference, innovative international projects related to air quality research and management were presented, in particular those from the Silesian Voivodeship (Poland), the Moravian-Silesian Region (the Czech Republic), and the Žilina Region. Among others, the following projects were presented: Clean Border, Air Silesia, SOLEZ, AWAIR, and LIFE – "Implementation of Air Quality Plan for Małopolska Region – Małopolska in a healthy atmosphere".

The goal of the conference was to present the common actions undertaken in the territory of Europe by partners from the Czech Republic, Poland, and Slovakia, aiming to reduce air pollution as well as to motivate the local people to become involved in those activities.

CONFERENCE "URBAN ENVIRONMENT"

Results of the project AIR TRITIA, achieved by now, were presented on October 2, 2018 on the Conference URBAN ENVIRONMENT **"Green town, healthy town = sustainable city"** at the New Synagogue (Center for Contemporary Art and Culture) in Žilina.
The Conference about urban environment was organized by The Slovak Environment Agency in cooperation with the Ministry of Environment of the Slovak Republic. The aim of the event was to support the effort of the cities aimed at improving the quality of the environment and transition to a green economy while respecting the principles of sustainable development.

As part of these actions will be presented information about the project AIR TRITIA

EXHIBITION INFOTHERMA 2019 **- January 2019**

HEALTHY AIR INFO DAY **in Poland - November 2018**

MORE INFORMATION YOU CAN FIND ON WEBSITE AIR TRITIA PROJECT

https://www.interreg-central.eu/Content.Node/AIR-TRITIA.html

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