

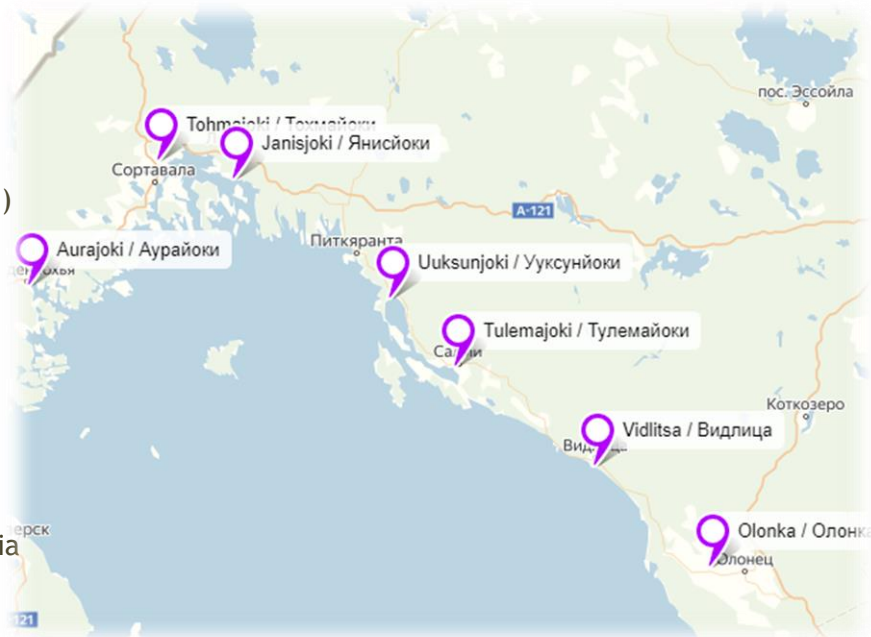
KA5016 «Joint cross-border environmental monitoring system» project news

❖ Project partners:

- ANO Energy Efficiency Center
- Karelian Centre for Hydrometeorology and Environmental Monitoring (KarChem)
- Finnish Meteorological Institute
- Arbonaut Ltd
- Finnish Environment Institute SYKE (Joensuu)

❖ Expected results:

- Automatic water and air quality monitoring stations will be installed in the Republic of Karelia and modernized in Finland.
- An on-line information system for data collection, processing and transfer of data to end users will be established.
- Staff of partner organizations will increase their professional capacity in the sphere of modern requirements, methods and technology for air and water quality monitoring.
- Common principles of environmental monitoring and recommendations for environmental monitoring and control authorities will be disseminated.



- ❖ In November 2018 field and camera work on research of the hydrological and hydrochemical state of rivers Aurajoki, Tohmajoki, Janisjoki, Tulemajoki, Uuksunjoki, Vidlitsa and Olonka took place. These rivers are the largest tributaries of Lake Ladoga in the Republic of Karelia.
- ❖ 11 primary criteria for selection of sites for installation of automatic hydrochemical complexes were developed with the help of project partners. The key ones were the presence of a land lot in permanent use of KarChem, stable GSM coverage, safety of equipment and accessways to land lots and rivers.
- ❖ Based on the results obtained, the list of places (at four rivers out of seven) for future monitoring of waterbodies with the use of AHCCs and quarterly sampling was drawn up. The list of parameters for carrying out hydrochemical monitoring was elaborated.
- ❖ Ongoing monitoring of the state of four selected waterbodies based on 34 parameters is performed on the quarterly basis (during primary hydrological seasons) in the framework of the project.
- ❖ Over summer and autumn 2019 three new AHCCs are to be installed close to permanent hydrological stations at three waterbodies. The tender for procurement of AHCCs was announced in June 2019.

Project KA5016 «Joint cross-border environmental monitoring system» was launched on October 8, 2018. During the first six months a lot of useful and important developments took place that facilitate mutual understanding among environmental monitoring experts from Finland and Karelia. Besides, a preparatory stage of installation of automatic hydrochemical complexes (AHCCs) at rivers flowing into Lake Ladoga was concluded. This newsletter presents the activities and results of the past six months in more detail.



❖ Interlaboratory comparative tests (intercalibration) were held between January 24-February 28, 2019 with participation of the Finnish partner - SYKE (Helsinki) and Savo-Karjala Environment laboratories in Kuopio and Joensuu, and the environmental pollution monitoring laboratory of KarChem.

❖ Participants analysed control (synthetic) samples and a sample collected at a hydrological station on Tohmajoki river for the following parameters: **NH₄-N**; **PO₄-P**; **NO₂-N+NO₃-N**; **Total P**; **Total N**; **Total Iron Fe**; **Total Manganese Mn**.

❖ Analysis results for control samples can be considered converging for most parameters with regard to confidence intervals and margins of error of analysis methods used, the only exception **PO₄-P**.



❖ Analysis results of Tohmajoki surface water converged less. The parties held numerous discussions and research of obtained results via email correspondence, video-calls and in the process of the study trip held in the Helsinki region.

❖ The differences in analysis methods, units of measurements, sampling preparation and equipment used were revealed. For instance, suspended solids are filtered from water with the use of filters of different types: KarChem lab uses a filter with pore diameter of 0.45 μm , while Savo-Karjala lab uses glass fiber filter that allows bigger particles (over 0.45 μm) to be washed out. Furthermore, the size of the sample filtered is different which also inevitably impacts the results.



❖ Differences in iron and manganese and presentation of data on nitrogen content were revealed as well. In Russia data on the content of **NO₂-N** and **NO₃-N** is presented separately, while in Finland one parameter (**Total N**) is used.



- ❖ In the course of the study trip to Helsinki that took place between **May 19-24, 2019**, project participants had a chance to get more detailed information on the environmental monitoring systems in Finland and Russia, proficiency tests and the EU sampling personnel assessment system under development.
- ❖ Vesinetti software developed by Arbonaut OY that allows to update and upload environmental monitoring data from different sources on-line was of particular interest.
- ❖ Accessibility of information is the key principle of environmental monitoring in Finland. A considerable share of observation stations are maintained by municipalities. Plants that affect the environment also monitor its state and submit information to the joint database.
- ❖ Considerable difference in the monitoring arrangement are observed. Most observations are automated. The choice of parameters subject to hydrochemical monitoring is based on the wide-range observation data every several years. Regular observations are only done for components requiring close attention.
- ❖ Public monitoring is on the rise in Finland. However its application is debatable as it is hard to verify obtained data. But in separate spheres such as road quality this kind of monitoring proved efficient.
- ❖ In the course of the project implementation a wide range of differences in the way environmental monitoring is carried out was revealed. Finnish positive experience of automatization of hydrochemical observations has already been used when preparing the terms of reference for procurement of similar equipment for monitoring at three waterbodies - rivers **Olonka, Tulemajoki and Uuksunjoki**. The parties agreed that it is automation of observations that will make it possible to eliminate many differences in measurements.
- ❖ As for the laboratory water quality tests, the work will be followed up with further research and selection of methods as compatible as possible with the methods used in Finnish laboratories for further observations at project waterbodies. Planned participation of KarChem lab staff in an international proficiency test will allow for another significant step towards increasing the convergence of quality control in laboratories taking part in the project.