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**Short abstract. 19th International Conference on
Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes
3-6 June 2019, Bruges, Belgium**

Abstract title: Harmonizing residential emissions across borders to tackle the air quality problem in the hotspot region of Southern Poland, the Czech Republic and Slovakia

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Abstract text

Tackling the air quality problem in the hotspot region of Southern Poland, the Czech Republic and Slovakia requires collaboration and the establishment of a common air quality modelling platform between the regions. In the LIFE IP project, *Implementation of Air Quality Plan for Małopolska Region – Małopolska in a healthy atmosphere (LIFE14IPE PL 021)*, an inter-regional framework for both emissions and air quality modelling, was developed.

The emission modelling component is built on the previous LIFE+ project WEISS^[1], in which VITO developed EISS, a user-friendly and flexible emission inventory support software optimized to work with different types of emission sources and pollutants. The air quality modelling component is built upon existing expertise and tools developed inside the LIFE+ project ATMOSYS^[2], in which VITO developed a modular web based air quality management dashboard to support air quality management in any air pollution (hotspot) region. In this contribution, we focus on the emission modelling component.



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As residential heating is identified as one of the main drivers of the observed air pollution in the hotspot region, the EISS tool was adapted and applied to compile a comprehensive high resolution trans-boundary residential emission inventory. This transboundary inventory was created based on existing methodologies to compile local bottom-up residential emission inventories in the different sub-regions (Southern Poland, the Czech Republic, and Slovakia), which were harmonized to the fullest. The harmonization efforts resulted in consistent transboundary residential emissions for reference year 2015, still fulfilling the requirements of the three different sub-regions. Based on these emissions, different (regional) emission reduction scenarios were determined. All trans-boundary residential emission data sets were then complemented with trans-boundary emissions for all sectors, as required for regional air quality modelling.

Within this paper, the process to harmonize residential emissions across country borders is described in detail, the resulting high resolution residential emissions are discussed and the EISS tool is presented. Furthermore, the replicability and transferability of the project's best practices (regarding emission modelling) to other regions will be discussed.

References

- [1] WEISS, The Water Emission Inventory – A planning support system aimed at reducing the pollution of water bodies, LIFE08 ENV/B/042
- [2] ATMOSYS, Policy support system for atmospheric pollution hotspots, LIFE09 ENV/BE/000409

Motivation

The integrated emissions modelling framework enables the calculation of homogeneous emission fields without boundary effects, thus suitable for integration in regional air quality modelling applications. Adoption of the framework by each region/country involved guarantees that the development and implementation of regional/national policies aimed at improving the air quality will be done in a homogeneous way, exploiting trans-boundary benefits.