

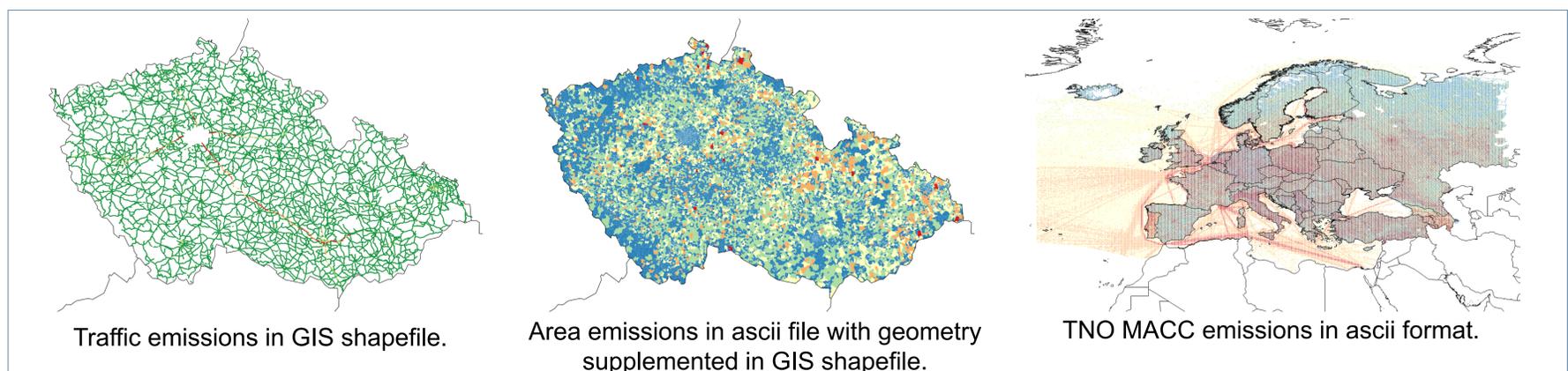
New integrated emission processor for air quality models

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Emissions are one of the key inputs needed by air quality models. Generally chemical transport models (CTM) require the most elaborated inputs – annual emissions of main species need to be disaggregated in time and space and chemical speciation has to be applied. CTMs also usually work with huge amount and various types of sources (anthropogenic point, area, and line sources, biogenic sources, etc.). The only widely used open source emission preprocessor for CTMs is SMOKE. Its main advantage is that it can be readily used with NWP model WRF and chemical transport model CMAQ. Although SMOKE has been applied for Europe many times, its application with non-US data is quite complicated since it is designed for US-specific inputs. Therefore our group decided to develop a new **emission processor, which will be flexible and easily configurable for users using different types of emission inputs and working with different NWP and CTM models**. While the processor is still under intensive development, we would like to point out its main features (current or planned) and what are its main benefits compared to the SMOKE model.

Example case and inputs to the emission processor



CORE OF THE EMISSION PROCESSOR

- **Spatial distribution** – distribution of emissions into the user-defined grid or any general polygons
- **Speciation** – emissions are recalculated into modelled species or groups based on speciation coefficients
- **Time disaggregation** – static time profiles, meteorology-dependent or mathematical models, GIS data etc., profiles based on continuous measurements
- **External submodels** – e.g. biogenic emissions calculated by the MEGAN model

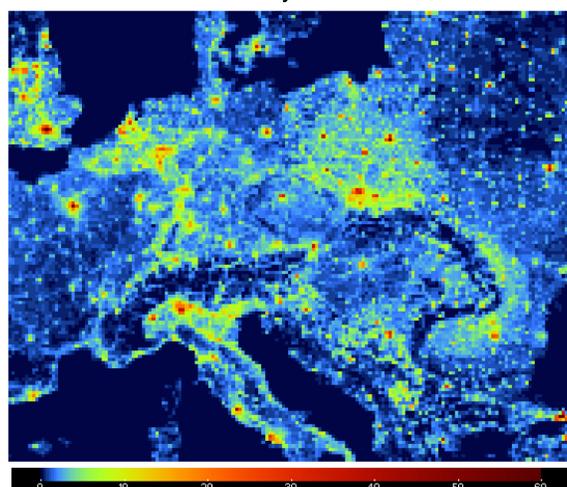
CTM-ready emissions

MAIN FEATURES

- Based on free software (PostgreSQL, PostGIS, Python)
- Modular design which allows users to add their own modules
- Source codes are not bind to any predefined format

TESTING

Emission processor has been successfully used in combination with the CAMx model.



OUTLOOK – OPEN SOURCE CODE

We plan to make the source code publicly available after the end of intensive development. If you would like to be informed about the release of the source code, please send your request to Mr. Ondřej Vlček <vlcek@chmi.cz>.

ACKNOWLEDGEMENT

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