

GIS FOR THE NEEDS OF AIR QUALITY MODELING IN BULGARIA

G. Jordanov

Extensive Air Quality (AQ) studies inspired by social needs are already carried out in Bulgaria and several projects had started to achieve a better understanding of the spatial and temporal patterns of the main atmospheric pollutants. National operational AQ forecast system is in stage of completion and the goal is to deliver informative forecast products for the various users needs. Emission input to the AQ models with high enough spatial resolution is a prerequisite for successful modeling.

At present time there is no disaggregation methodology for road and other mobile sources emissions from the national Bulgarian inventory created according to the CORINAIR methodology. To be suitable for model input, the data from different (industrial) sectors of the national inventory evaluated as annual national total has to be distributed spatially according to chosen sector specific surrogates.

The aim of this work is to investigate all related data gathered by governmental institutions and using GIS techniques to create emission surrogates for Bulgaria, which to be used for models with different domains, projection and resolution. GIS will be used to create surrogates on the base of population density, land cover and road network.

Information from observations will be used to disaggregate road emissions to roads taking in to account their type and traffic density which will make the inventory suitable for high resolution modeling (1km grid size).

Numerical experiments will be carried out to demonstrate the impact of the suggested GIS disaggregation technique on the AQ model results. The study results will show the decision making authorities the importance of utilizing statistical and geographical data to produce surrogates with higher quality.

The future plans for upgrading the used GIS technique consist of paying more attention to the spatial distribution of off-road and non-road transport and for supporting the decision making.

Georgi Jordanov

Geophysical institute, Bulgarian Academy of Sciences

str.Akad. G.Bonchev - bl.3, Sofia 1113, Bulgaria

gjordanov@geophys.bas.bg

tel: +359 897899365