

ALAQs-AV - A GIS BASED EMISSIONS AND DISPERSION TOOLSET

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ABSTRACT

ALAQs-AV is an airport air quality toolset based on a Geographical Information System that includes emissions inventory tool. ALAQs-AV was developed by EUROCONTROL as a test bench tool which can be used to evaluate the impact of various emission inventory and dispersion calculation methods and parameters.

The toolset is an integral part of the EUROCONTROL Airport Local Air Quality Studies (ALAQs) project which aims to promote best practice in the field of airport emission inventories and air quality modelling.

ALAQs-AV considers four categories of airport emission sources: aircraft, Ground Support Equipment used for aircraft handling, stationary sources (i.e. power / heating plants, fuel farms, etc) and road traffic (airside and landside). Each source can be represented as a point, a line, or an area. For each source category, various emission calculation methods can be applied, making it possible to compare different methods using the same input data.

ALAQs-AV is implemented using the ARCVIEW GIS (Geographical Information System). The choice of a GIS platform allows other geo-spatial data to be presented on the same map as the emissions and airport data. ALAQs-AV is implemented in such a way that it is easy to implement new emissions methods for the relevant emission sources at an airport.

The ARCVIEW GIS allows for the three dimensional modelling of the airport and its features in a very detailed way. This is useful for analysing dispersion results, as population density and other sensitive areas such as schools and hospitals. Similarly the airports emissions may be shown integrated to the wider regional or national scale.

The output of ALAQs-AV emission inventory can be used to run a dispersion study with the LASAT tool (Lagrangian dispersion model) using the transformation tool ALAQs-TRANS. In the near future, it is expected that ALAQs-AV will be fully compatible with at least one Gaussian dispersion model and possibly an Eulerian model, facilitating thereby the comparison of dispersion models using exactly the same set of input data.

EXTENDED ABSTRACT NOT SUPPLIED