

Introduction

Whatever atmospheric transport and dispersion model, simple or complicated, naive or sophisticated, is and remains a model, this means an imperfect mathematical description of the physical reality, changing continuously as a function of time and space. To derive the basic physical laws, to determine and quantify the relevant parameters as well as to test and optimise the performance of our models "field trials" will be required. As such "field trials" can be defined as "whatever systematically organized collection, analysis and interpretation of field data relevant to the atmospheric transport and dispersion phenomena".

Taking into account that pollutant dispersal is the net result of interactions between source releases, pollutant properties, atmospheric boundary layer characteristics and topographical features, it is obvious that field trials can cover one or several aspects within this complex mixture of driving forces and boundary conditions. Apart from some measuring campaigns solely aiming at the study of meteorological phenomena in general, or specifically at a given site, "pollutant dispersal field trials" do most often consider the overall space-time relationship between emission characteristics and observed ground-level concentrations as a function of actually occurring meteorological situations. As such field trials will normally require real time source monitoring, meteorological measurements, ambient concentration and/or deposition monitoring as well as model development and verification or validation.

Field trials can be entirely or partly based on existing source configurations, releasing continuously or discontinuously some specific pollutant(s), with an ambient air monitoring and meteorological measurement network already in place. Validation of single source or multiple source dispersion models is commonly undertaken in such a configuration with stationary ambient sampling or measuring stations, eventually supplemented with semi-mobile or mobile units for sample or data acquisition, treatment and interpretation.