EMS Annual Meeting Abstracts,
Vol. 6, EMS2009-375-1, 2009
9th EMS / 9th ECAM

9th EMS Annual Meeting
9th European Conference on Applications of Meteorology
High resolution meteorology
- applications and services

Operational determination of air pollution dispersion parameters

B. Hennemuth (1) and H.-J. Kirtzel (2)

(1) Consulting Meteorologist, Hamburg, Germany (barbara.hennemuth@zmaw.de), (2) METEK GmbH, Elmshorn, Germany (kirtzel@metek.de)

The assessment of air pollution dispersion conditions needs a complete capture of all parameters which determine the transport and mixing of pollutants. This includes parameters of the near-surface layer as well as profiles up to the height of the emission source and beyond. These parameters serve as input into dispersion models according to the national guidelines or international standards. Depending on the orography in the surroundings of the source of pollutants, near-surface processes and processes around the source height may be decoupled and advection may play a larger role than turbulence.
Proposals for the instrumentation for the operational survey of relevant parameters are presented. They include measurements of sensible heat flux and radiation balance and complete vertical profiles of virtual temperature and wind at least up to the source height. The near-surface measurements can be done with conventional instrumentation while the boundary layer measurements should be done by remote sensing instrumentation, namely sodar and RASS. Two examples of such measurements in a deep valley and in flat terrain are shown and discussed.