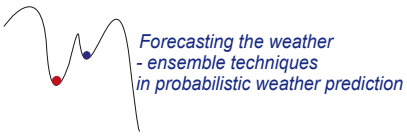
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-423, 2011
11th EMS / 10th ECAM



Reducing the impact of noise abatement practices on airport capacity by forecasting situational dependent sound propagation

R. Sharman and T. Keller

NCAR, RAL, Boulder, United States (sharman@ucar.edu)

In attempts to reduce population exposure to aircraft noise near large airports, current approach and departure routes have traditionally been developed based upon population analyses and static meteorological climatologies. However, commercial aircraft have noise “footprints” that are determined not only by the operational configuration of the aircraft but also by the highly variable atmospheric environment through which the sound is propagating. Static approach and departure routes do not reflect these dynamically changing patterns of noise dispersion and propagation.

Here quantify the influence of meteorological variability on the shape and extent of aircraft acoustic footprints by using a sound propagation model to predict the acoustic propagation patterns. Both idealized meteorological profiles and actual profiles from soundings are used in the evaluation. For the cases examined, the acoustic footprint is usually smaller than that predicted by a standard atmosphere, but can also be substantially larger in particular directions around the aircraft due to sound channeling by low level wind shears. With the combined use of a sound model and meteorological measurements and/or forecasts it may be possible to develop runway use strategies to minimize population exposure to aircraft noise while reducing the adverse effects of noise abatement procedures on airport operations.