Analysis of Aerosol Transports over East Germany, Poland and Czech Republic by Trajectories and CTM REM/Calgrid in 2002 und 2003

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3d backward trajectories are used to determine climatological transport pattern and source regions aerosol components over Germany. For 2002 and 2003 backward trajectories determined by fine mesh analysis are started at observational sites each 10 minute time step. The surface contacts are weighted by the special observation at the start and are integrated for a 1 km^2 grid over Europe. For each parameter the resulting contact matrices present the climatological source areas, f.e. for PM10, NH4, SO4 and EC.

The weighted contact matrices are different for each parameter and observational site caused by the changing weather pattern and regimes in combination to emissions. Along the border lines and direct comparison of these matrices for observations in East Germany, Poland , Czech and Slovakia it is possible to estimate the mean magnitude of inflow and outflow into the sub areas and countries.

By use of the Chemistry Transport Model REM/Calgrid the influence of emissions of NH3 and SO2 sources in Central Eastern Europe on the formation of PM10 and PM2.5 is determined. Scenarios demonstrate that more than 50% of PM10 concentrations is given by the secondary products NH4 and SO4 depending on the emissions of the precursors within the episodes of high PM10 concentrations.

The influence matrices demonstrate the importance of the topographic structure, like Sudeten or Karpaten, for regional transports.