MOSTRA, a new microphysical/transport model for stratospheric aerosols

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We present the recent progresses in the development of a new microphysical/transport model for stratospheric aerosols, called MOdel for STRatospheric Aerosols (MOSTRA).

This model is a 4D model based on the transport and the microphysical description of the aerosol size distribution described using a set of particle bins.

The advection model is based in the Flux-form Semi-Lagrangian scheme developed by Lin and Rood (1996), and uses zonal/meridional wind fields and surface pressures provided by the ERA 40 records from EMWF. The vertical wind is calculated online in order to satisfy the mass conservation.

The microphysical modules are developed using the PSCBOX model by Larsen. At this stage, considered microphysical processes are gravitational sedimentation and Brownian coagulation.

The purpose of this contribution is to describe of the MOSTRA model, and to illustrate the modelling capabilities by some preliminary results.

Reference:

N. Larsen, Polar Stratospheric Clouds, Microphysical and optical models, Scientific Report 00-06, Danish Meteorological Institute, 2000