

sWP 4.1.3 Modelling the interactions between aerosols/chemistry and the atmosphere

Objectives

To evaluate the capability of existing models (global and regional, coupled and off-line) to represent the 3D distribution of aerosols and trace gases over West Africa.

Description of work

Applying the different models to the AMMA region

Performing numerical experiments to generate model output for comparison with a extensive suite of observations (both satellite and in-situ), in order to investigate the performance of (1) different aerosol parameterizations (ORISAM and LM-ART), (2) the long- and short-range transport of trace gases out of the region, (3) the different chemical schemes (explicit versus lumped), (4) the descriptions of sources / sinks of aerosols and trace gases, and (5) coupling schemes of atmospheric composition with dynamics.

Comparison of the resulting model output with observed, particularly the field campaign data, aerosol and trace gas distributions and assessing model skills

The simulations for 2006 will be accomplished between months 37 and 47. The use of the meteorology for the year 2000 will also be used in conjunction with the 2006 emissions to test the influence of the meteorology on the 2006 simulations. The results from the model simulations are also used to the impact of WA emissions on global oxidant and aerosol budgets by WP1.1.2 and will be compared with observations in cooperation with WP2.4.

The remainder (from month 47 onwards) will be dedicated to performing simplified tracer experiments in conjunction and to perform additional process studies and analysis of the output for 2006.

Deliverables

D413_c Report on intercomparison of current CTMs and CCMs models for 2000–M42
KNMI, UCAM, CNRS, CNRM

D413_d Report on CTMs and CCMs inter-comparison for year 2006–M53
KNMI, CNRS, CNRM, LMU

D413_e Report on the use of the specific AMMA observational dataset for 2006 KNMI,
CNRS, CNRM, LMU

Milestones

M413_g Definition of the new runs for 2006 and idealized tracer experiments M37

M413_h Gathering of the passive tracer output for 2006 M41

M413_i Meeting in June 2008 for comparisons of chemical tracer fields from the model output for 2006 and pursue collaboration with WP 1.1.2 and 2.4. M42

M413_j Gathering of the year 2006 simulations M46

M413_k Meeting in November 2008 for comparisons of model output using the 2006 emissions and 2000 meteorology and further exploitation of results. (with representatives from WP 1.1.2 and WP 2.4) M47