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AMMA – WP2.4 Contribution LaMP

Atelier AMMA

Biarritz

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Scientific objectives

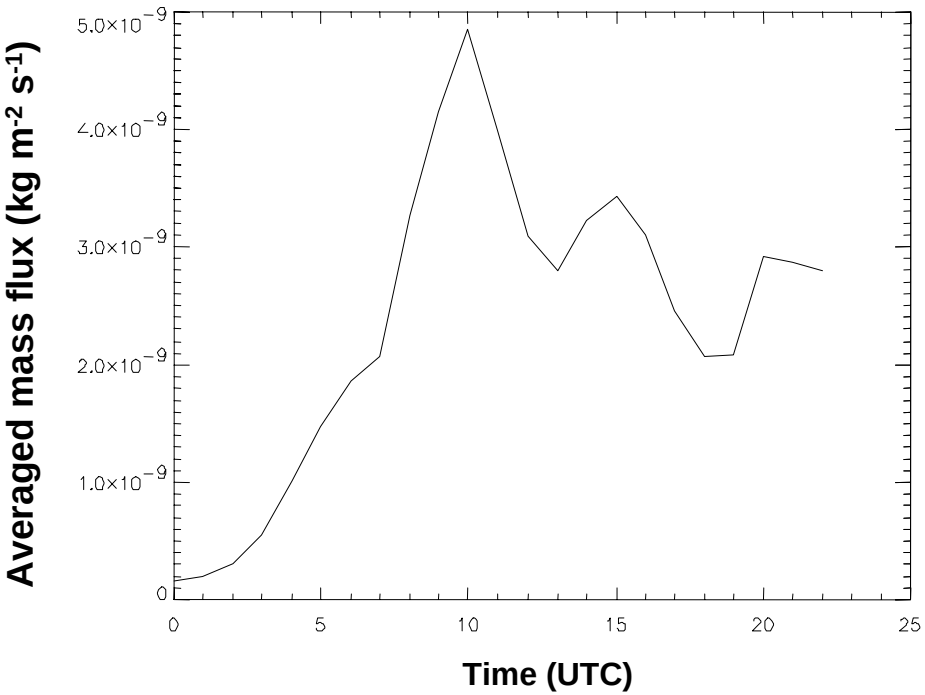
- Study of the mixing between mineral dust and biomass burning plumes (SOP0)
- Study of the mineral dust burst by squall lines (SOP1)
- Study of the role of biogenic VOCs on the chemical composition of middle and upper troposphere (SOP2): comparison between dry and wet seasons
- Study of NO_x production by lightning and its impact on UTLS chemistry (SOP2)

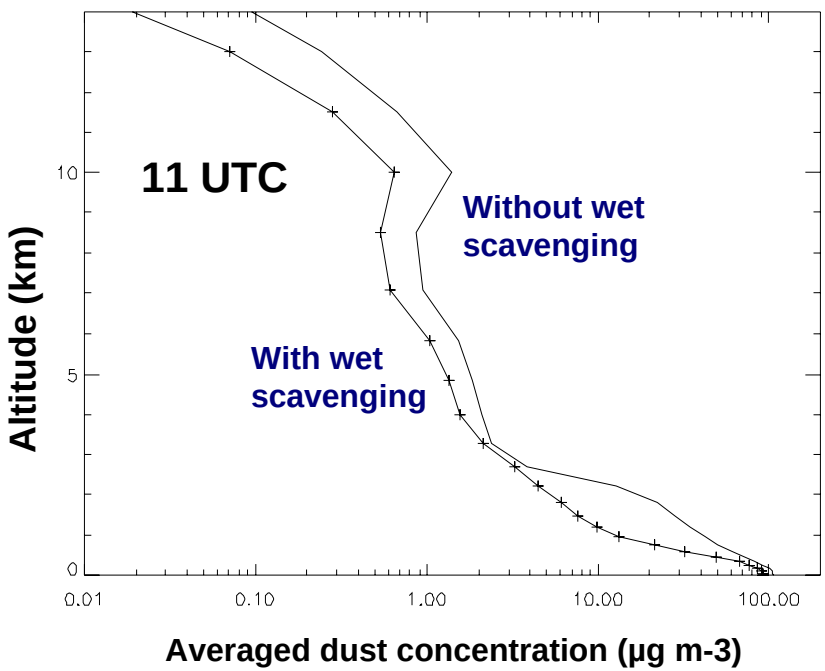
Method

- RAMS model simulations including on-line chemistry module for gas and aqueous phases (cloud and rain drops) and for uptake of gases by aerosol particles
- Comparison with ground based and airborne measurements performed during the SOP

Preliminary results

Simulation over Niger with two nested grids during the wet season where a squall line crossed the area (26th of July 1996)

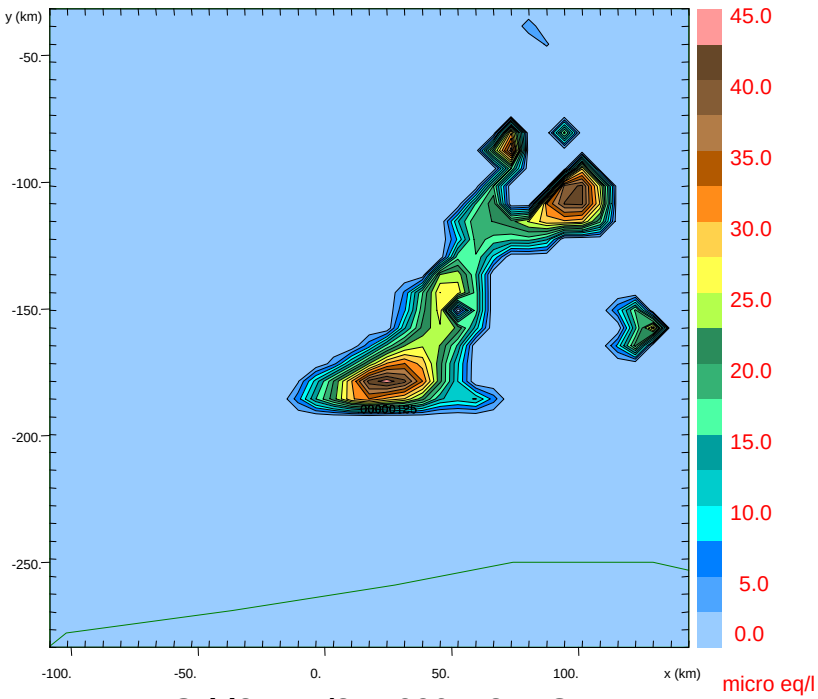




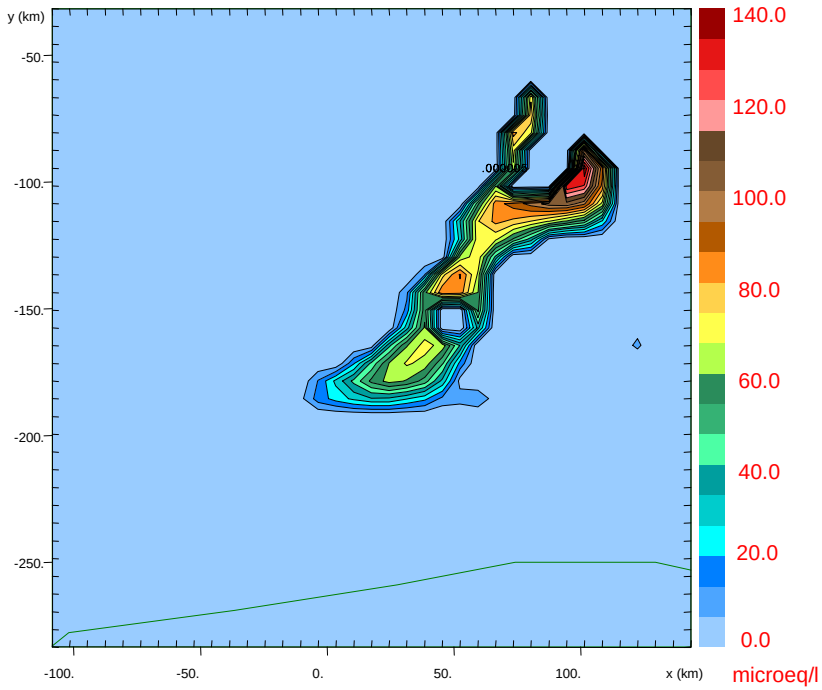
Dust mass uptake for July 26, 1996: 1.3 Mt over an area from Gulf of Guinea to 22N, and from 10°W to 14°E

Preliminary results

Simulation over Ivory Coast with 2 nested grids during dry season where was a mixing of mineral dust and biomass burning plumes



Grid2 – 11/21,1996 -12UTC –
HNO3 (dissolved in rain, μeq/l) at the ground, surface without adsorption by calcite

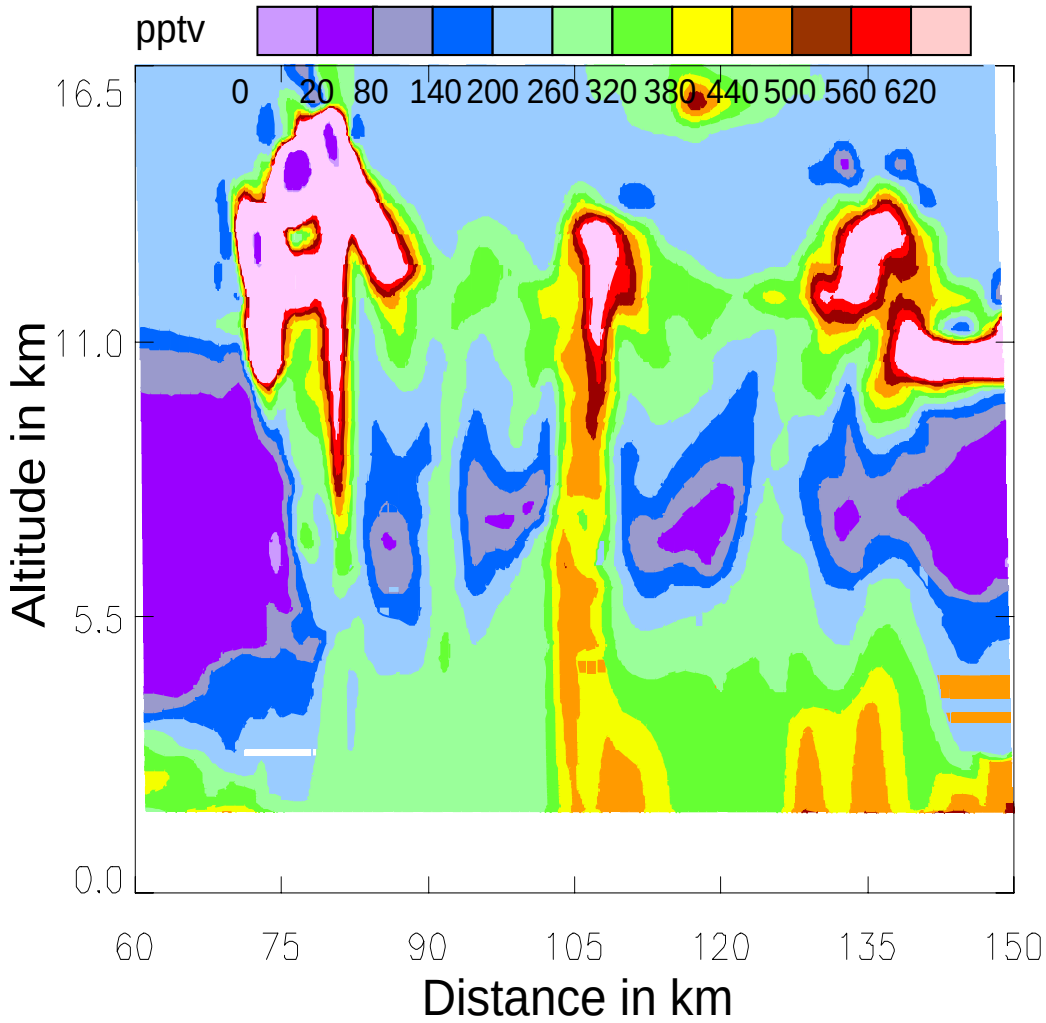


Grid2 – 11/21,1996 -12UTC –
HNO3 (dissolved in rain, μeq/l) at the ground, surface with adsorption by calcite

Sylvie Cautenet and François Bouo Bella, to be submitted to JGR

Preliminary results

- Validation of the NOx production by lightning scheme during the intercomparison WMO exercise using an academic scenarios based on STERAO campaign.



NO_x Including production by lightning

Planned action for 2006

- Preliminary simulation on CATCH area for dry and wet seasons in order to:
  - Study the impact of biogenic VOCs on oxidizing capacity
  - Comparison of dry and wet seasons
  - Estimation of mass budget of mineral dust in a squall line including vertical transport by convective tower and radiative impact