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GEMS AEROSOL WP2
refinement of aerosol emission sources
An outline of year 1

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Tasks and deliverables of WP2 (emission), 12months

- Task 2.1 Update and assimilation of the anthropogenic emission inventories of aerosol and its precursors.
  - D_AER_2.1 Global emission database of aerosol and its precursors
  - D_AER_2.1.1 An overview of the available data, their quality (where available), requirements to the instruments for the information access and merging for the real-time applications
  - D_AER_2.1.2 Prototypes of the instruments for the data management
  - D_AER_2.1.4 A completed methodology for merging the information from different inventories – with regard to their quality and completeness
- Task 2.2. Assimilation of information on the wild fires
  - D_AER_2.4.3 The GWEM model, with list of input parameters and information needed to setup the model runs
  - D_AER_2.4.2 An updated version of BUOYANT local-scale fire model for the conditions of large-scale wild fires
- Task 2.3. Quantification of the wind-blown dust emission from desert areas
  - D_AER_2.2 An improved module for wind-blown dust emission including industrial, road and arable dust
- Task 2.4. Quantification of the wind-blown sea salt emission
  - D_AER_2.3.1 A first version of the sea-salt emission module (a prototype)
  - D_AER_2.2.1 A qualitative inter-comparison of performance of the sea-salt dust emission approaches
- Task 2.5. Sources of stratospheric aerosols

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WP2 Gant chart

Time		Year 1				Year 2	
		Q1	Q2	Q3	Q4	Q1	Q2
WP_AER_2							
Task	2.1						
	2.2						
	2.3						
	2.4						
	2.5						

Task 2.1: anthropogenic emission

- An overview of the existing emission inventories (FMI, HALO paper, later additions)
  - Over 10 official and scientific inventories
  - nearly all needed species are covered
  - strongly varying coverage and resolution, overlaps and differences between the methodologies and reference periods
- Decisions of the emission task force and later tuning
  - RETRO database as a reference point
  - GEIA is next-to-take
  - RAQ: downscale EMEP emission (= GEIA over Europe)
- New info
  - Possible bug in RETRO fire emission, potential recomputations
  - New GFEDv2 database covering the re-analysis year 2003
- Anthropogenic data are being transferred
- Windows-based software for handling GEIA emission format

Task 2.2: wild fires

- Intensive discussions across several activities: GEMS, ACCENT, HALO
- Workshop on fire emission (Toulouse, December 2005)
- Emerging new product: Fire Radiative Power
  - NRT
  - Existing time series from MODIS
  - Seems to be easier transformed to emission fluxes than other products
  - Still insufficient information for plume rise
- BUOYANT model has been tested against some case study with generally positive results, areas of improvement identified

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Task 2.3 wind-blown dust

- Next talk

Task 2.4 sea-salt emission

- An approach of Monahan (1986) has been implemented to ECMWF model, 3 modes. Some tests performed (JJM)
- Alternative consideration of a more sophisticated hybrid scheme Monahan + Martensson has been considered in FMI. Model is partly implemented and some tests performed

Task 2.5stratospheric sulphates

- Main method for SO_2 from volcanoes: data assimilation (after 18 month of the project)

Next-step tasks

- Complete the transition and refinement of emission databases. Time variation coefficients remain a difficulty
- Re-analysis of 2003 will be done with ready-made fires emission database, which will give time for implementation of the assimilation system, which is to be started
- Next-step improvements and inter-comparison of the schemes for wind-blown dust and sea-salt emissions