

## Inside an air pollution plume – first results from EUCAARI-station in South Africa

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In the framework of European Union-funded project EUCAARI (Kulmala et al., 2008) we have started extensive measurements on four locations outside Europe. These stations are located in Brazil (Manaus), India (New Delhi), China (Beijing) and South Africa (Elandsfontein). These locations are all in regions with high air pollution concentrations with potential impact on regional and global climate.

At Elandsfontein the current operational instrumentation include a SMPS-system (10-870 nm), 3-wavelength nephelometer, MAAP, PSAP, basic gases (SO<sub>2</sub>, H<sub>2</sub>S, NO<sub>x</sub> and O<sub>3</sub>) and basic meteorology (WD, WS, T, RH, solar radiation, precipitation and temperature gradient)

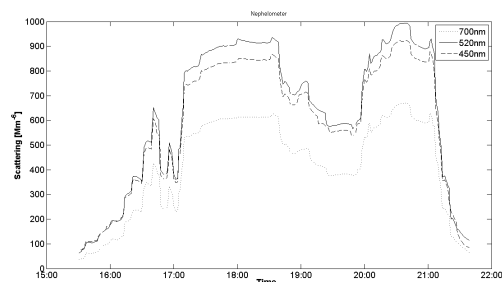
In the near future the measurements will be extended with a Partisol aerosol sampler for chemical analysis of the particles and an aerosol LIDAR.

The instrumentation at the station has been operational for a short time, thus only results from one specific plume episode on 8 February 2009 is shown here. During the late afternoon and evening (15:30 – 21:40) the measurement site was surrounded by a pollution plume due to technical problems at a petrochemical plant approximately 70 km upwind from the station (Dan Hlanyane, personal communication, 2009). The visibility inside the plume decreased to approximately one kilometre. Figure 1 show the aerosol scattering data for three different wave lengths at 700nm, 520nm and 450nm.

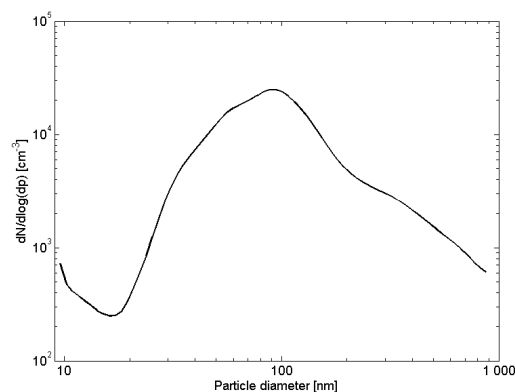
Figure 2 show the aerosol number size distribution measured during the same period, while Figure 3 represent black carbon concentrations.

Hlanyane, Dan; personal communication, 10 February 2009

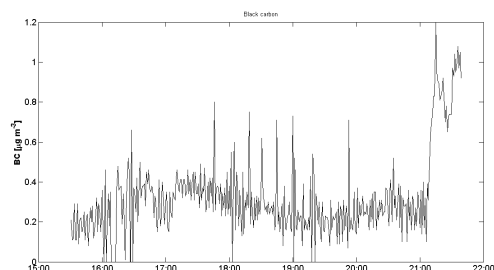
Kulmala, M., Asmi, A., Lappalainen, H. K., Carslaw, K. S., Pöschl, U., Baltensperger, U., Hov, Ø., Brenquier, J.-L., Pandis, S. N., Facchini, M. C., Hansson, H.-C., Wiedensohler, A., and O'Dowd, C. D.: Introduction: European Integrated project on Aerosol Cloud Climate and Air Quality interactions (EUCAARI) – integrating aerosol research from nano to global scales, ACP-D, 8, 19415-19455, 2008



**Figure 1: Aerosol scattering data measured with Ecotech Aurora 3000 nephelometer inside the plume on 8 February 2009.**



**Figure 2: Mean aerosol size distribution (15:30-21:40) inside the plume on 8 February 2009.**



**Figure 3: Black carbon concentration measured by a MAAP inside the plume on 8 February 2009.**