Geophysical Research Abstracts,
Vol. 10, EGU2008-A-03207, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-03207
EGU General Assembly 2008

Spectral Surface Reflectance Fields over Megacities

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Megacities are a major source of particulate matter in the atmosphere. These aerosol particles are important to be included in climate models and they influence the health of people living in Megacities.Therefore maps of the aerosol optical thickness (AOT) over megacities are desired. Such maps of AOT can be derived from MODIS (MODerate Resolution Imaging Spectroradiometer) satellite measurements. As the satellite cannot distinguish between surface and atmospheric signal the retrieved AOT significantly depends on the accuracy of the surface reflectance fields which are used for the retrieval.

To derive the surface reflectance, airborne and ground based measurements are performed over the city of Leipzig. The instrumental setup for the ground based measurements consists of LIDARs, radio soundings and a spatial high resoluted camera on a rotating stage. The airborne data were collected with the SMART-Albedometer (Spectral Modular Airborne Radiation Measurement sysTem) and a spectral CCD camera. The combination of these instruments finally leads to a reflectance map, which will be used to support the MODIS aerosol retrieval for heterogeneous surfaces like Megacities.