

## ***Interactive comment on “Urban Visible/SWIR surface reflectance ratios from satellite and sun photometer measurements in Mexico City” by A. D. de Almeida Castanho et al.***

### **Anonymous Referee #2**

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The paper presents new data on the VIS(0.66micron)/SWIR(2.1micron) surface albedo ratio at MCMR site at high spatial resolution relevant to the highly heterogeneous urban areas. The ratio is estimated by combining MODIS Level 1B radiances with ground-based sun-photometer data to correct for aerosol effects. The results (Figure 4) are in general agreement with AVIRIS spectral data library (Figure 3).

Main finding is that the average (10km by 10km) albedo for MCMR (0.73) is significantly higher than for non-urban site T1 (0.55). This is expected due to different types of surfaces in urban (roofs, asphalt) and non-urban (vegetation) areas.

The finding has important practical implication for the operational MODIS aerosol data

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over land. Since the vegetation albedo ratio (0.5) is assumed in the MODIS operational aerosol algorithm, the derived aerosol optical thickness (AOT) should be systematically overestimated. This was confirmed by comparisons with AERONET sun-photometer data (Figure 5a). Re-processing MODIS aerosol algorithm with correct albedo ratio of 0.73 resulted in significant improvement in MODIS AOT data. These findings are important for refinement to the operational MODIS aerosol retrieval algorithm.

The only omission is comparison with MODIS operational surface products.

The paper is clearly written with high quality illustrations and is recommended for publishing “as is”.

Technical comments: 1) Herald et al 2003 in text and Herold in references 2) P.8123line 8 “sensor zenith angle > 40” should be < ? 3) P. 8128 1st paragraph: remove “at” after “TOA reflectance”

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 8113, 2007.

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