

Interactive comment on “Long term NO₂ measurements in Hong Kong using LED based Long Path Differential Optical Absorption Spectroscopy” by K. L. Chan et al.

Anonymous Referee #2

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This paper describes long term measurements of atmospheric NO₂ using a LED based Long Path Differential Optical Absorption Spectroscopy (LP-DOAS) instrument operating in two districts of Hong Kong since December 2009. A detailed description of the experimental setup is given first, followed by comparison results between LP-DOAS measurements and NO₂ data from a nearby Hong Kong Environmental Protection Department monitoring station and from the Ozone Monitoring Instrument (OMI) on board NASA's AURA satellite. Finally weekly patterns in both LP-DOAS and OMI data sets are analyzed. Being well written and clearly structured, this paper is a valuable contribution to the DOAS research field. Therefore I recommend it for publication in AMT

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after addressing the following comments:

General comment:

My main concerns during the Quick Review process was the absence of a plot showing a typical example of DOAS fitting results and the absence of error bars on the NO₂ concentration plots. These comments have been partly taken into account in the current version of the manuscript and to my opinion, this greatly improves the overall quality of the paper. Regarding the error bars in the NO₂ concentration time series plots (Figs. 8-9), it is stated on Page 6620, lines 14-16 that the error of the LP-DOAS measurements are ignored because it is smaller than 1%. Since monthly and annual means of LP-DOAS NO₂ concentration are shown, it would be also interesting to plot and discuss their natural variability (1-sigma standard deviation).

Specific comments:

Page 6619, line 14: Is there a reference for the DOASIS software ? If not, please include a short description of it.

Pages 6626 and 6627: Regarding the discrepancy between OMI and LP-DOAS NO₂ concentrations, it would be useful to make a sensitivity study using different NO₂ vertical profiles for the conversion of the OMI tropospheric columns to ground level concentrations and investigate the impact on the agreement between OMI and LP-DOAS.

Technical corrections:

Page 6620, line 14: measurment -> measurement

Page 6626, line 7: 50vkm -> 50 km

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 6615, 2011.

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