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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Estimates of free-tropospheric NO_2 and HCHO mixing ratios derived from high-altitude mountain MAX-DOAS observations in the mid-latitudes and tropics" *by* S. F. Schreier et al.

Anonymous Referee #1

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Title: Estimates of free-tropospheric NO2 and HCHO mixing ratios derived from high-altitude mountain MAX-DOAS observations in the mid-latitudes and tropics Author(s): S.F. Schreier et al. MS No.: acp-2015-799 MS Type: Research article

In this work, MAX-DOAS data sets from observations at two mountain locations are analyzed to obtain NO2 and HCHO mixing ratios in the free troposphere. The analysis is based on a modified geometrical approach proposed by Gomez et al. (AMT, doi: 10.5194/amt-7-3373-2014), which assumes a single scattering geometry and a scattering point altitude close to the instrument. The manuscript is well written and provides

information on species that have been little studied. Especially the long period of time analyzed make this study interesting.

I recommend this manuscript for publication in ACP after minor revisions.

I have a few comments:

- The field of view of the instrument is not mentioned at all in the paper. This has to be taken into account specially when analyzing data from Pico Espejo.

-I think Fig. 1 does not add more information than the given in the text. It may be removed. Or, is there an estimation/equation to add?

- The symbol for degrees (°) by describing elevation angles is missing in this new version.

- Is there any reason why could be or should be BrO included in the HCHO analysis? (apart from the obvious one that BrO absorbs in this spectral range)

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 31781, 2015.