Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2015-1058-RC2, 2016

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Differential Column Measurements Using Compact Solar-Tracking Spectrometers" *by* J. Chen et al.

Anonymous Referee #2

Received and published: 24 March 2016

General comments:

The authors present the use of compact Fourier spectrometers for differential column measurements to estimate source and sinks of CO2 and CH4. This paper characterizes the instrumentation and gives two examples of application: one example is the emission of dairy farms and the other one of an urban area. The paper demonstrates the stability of this kind of instrumentation and its usefulness for source and sinks strength estimates. Thereby it fully supports the findings of Gisi et al, 2012, Frey et al, 2015, and Hase et al., 2015, see reference list of the paper. Therefore it will stimulate further use of this promising multi purpose method.

The subject is appropriate for publication in ACP. It might also fit to AMT. The paper is well written and I recommend publication after minor revisions as listed below.

Printer-friendly version

Discussion paper

Specific comments:

- In Fig. 2 results of different days of observation are presented. To compare results obtained with different retrieval codes the same days should be presented for both cases. Side by side measurements were conducted over many months, but just a few days are presented in this paper.

- In the time series of the upwind site a transient peak is observed (Fig. 3). When the up- and downwind site are located along the trajectory a downwind peak should be present as well? Such peaks travelling from up- to downwind site may provide a proof of sampling the same air mass.

- Table 3 lists the calibration factors for the spectrometers. I recommend to include these factors for side by side measurements performed before and after the campaign. In order to show the stability of the instruments these factors obtained before and after the campaign should be discussed and compared with those presented by Frey et al., 2015.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2015-1058, 2016.