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Title: Measurements of greenhouse gases at Beromünster tall tower station in Switzerland

Scientific significance: Excellent (1)
Scientific quality: Good (2)
Presentation quality: Good (2)

The work of Berhanu et. al. provides important experimental information at a tower site in Switzerland, and its continuous data acquisition system. It is expected to deliver needed information for the success of the overall EU tower network and subsequent data assimilation and interpretation. As part of a larger network, it serves a valuable role and their attention to details will ensure their successful contributions.

This paper provides details that ensure that their tower set-up is in keeping with the other towers in the network. They also discuss calibration results that raised concern to the authors and they suggest ways to remedy the temperature drift. Since calibration results are an important part of this paper, I recommend that such known problems be addressed. Their methane calibrations are reported to be fine but carbon dioxide calibration issues should be resolved. Calibration issues for CO may be more challenging but the remedy that they propose will also help with CO results. These improvements should be made as soon as possible. While the cell in the Picarro is maintained at a constant temperature with an internal heater, reported DAS temperature fluctuation is high and likely degrading the quality of their measurements.

Since authors experienced temperature fluctuations, they may consider introducing local environmental details such as seasonal temperature in section 2.1 (page 10796). Currently readers are referred to another publication to look up and obtain important background conditions.

On page 10798, it notes that they did not have room air conditioner for the instrument storage location. Authors are strongly encouraged to install this A/C and stabilize Picarro's working temperature. Additionally, if the humidity is high, they may consider drying the inlet air at these temperatures. Numerical water correction may not be sufficient at higher humidity. (See recent AMT paper by Kwok et al. 2015).

On page 10801, temperature effect is noted in the CO and CO2 tanks used for calibration. While on line 24, it notes that the Picarro cavity temperature is "stable", the data seems to indicate otherwise. Picarro's internal heater does not cool, only heat the cell to a set temperature. DAS temperature fluctuation from 30 C to 60 C is very large. Thus on page 10802, the high temperatures of the DAS and likely, calibration tanks in the room, are likely to have had significant impact on data. Authors are strongly encouraged to stabilize the room temperature and operating temperature of the Picarro.

The temperature effect of cylinder type and trace gas species may be significant, but with current data, it is difficult to separate out calibration tank issues and the effect of temperature on the analyzer. Once the room temperature is stable, authors are encouraged to repeat calibration measurements.

The technical corrections are as follows:

Units should follow each number given in the text. For example, on page 10794, line 14-15, all units are assumed to be ppb and not written after the values. In fact, one value is ppm as written in the original manuscript. To eliminate this type of typesetting error, I recommend that units always be provided. Thus on same page line 7, m (for meter) should append the 5 heights, as done in section 22.1 of the original manuscript. Also see pg 10796, line 19; pg. 10805 line 19;

Tower information presented in the paper is an important part of a larger network of monitoring system in the EU region. Data acquired from their instrumented tower is promising and this paper documents detailed information critical for the success of the overall CARBOCOUNT-CH project. And with temperature stability, their calibration data is likely to improve. I look forward to reading their next paper on their data analysis and interpretation.