

## ***Interactive comment on “FTS measurements of column CO<sub>2</sub> at Sodankylä” by R. Kivi and P. Heikkinen***

### **Anonymous Referee #3**

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The manuscript "FTS measurements of column CO<sub>2</sub> at Sodankylä" by Kivi and Heikkinen describes the setup of the TCCON Fourier Transform Spectrometer at the Finnish Meteorological Institute in Sodankylä, Finland. Setup and history of the instrument and site are well documented.

The paper will certainly be useful as a site reference paper for future publications. It does not contain a deep analysis of the data and only describes the XCO<sub>2</sub> time series and some - certainly interesting - quality checking parameters. In fact, it would be good to have similar publications for other TCCON sites as well.

In its current form, the article should be appropriate for the scope of Geosci. Instrum. Method. Data Syst. It would, however, be more interesting if

a) the XCO<sub>2</sub> time series was compared to some other data series - even not in very

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deep detail

b) other time series of measured trace gases like XCH<sub>4</sub>, XCO, XN<sub>2</sub>O, XH<sub>2</sub>O could at least be shown in an overview - as I do not think the authors plan to submit similar articles for these species.

General comments:

- please make sure to use CO<sub>2</sub> vs. XCO<sub>2</sub> vs. column CO<sub>2</sub> correctly throughout the text  
- the use of tense is inconsistent: very often present tense is used for descriptions of past events.

Specific comments:

Title and abstract: FTS actually measures XCO<sub>2</sub> instead of CO<sub>2</sub>

p. 1, l. 26: XCO<sub>2</sub>: "column averaged dry-air mole fraction"

p. 2, l. 14: start a new sentence after "in early 2009".

p. 3, l. 6: I guess 45 cm OPD is the typical value and not the maximum - as "up to" implies.

p. 3, l. 7: rather talk about XCO<sub>2</sub>, XCH<sub>4</sub>, ...

p. 4, l. 6: given that you have easy access to your instrument: why are there so few ILS measurements?

Fig. 1: better also label x-axis of top plot (even though it is the same as the lower)

Fig. 2: please mark the time when the laser was changed

Fig. 4: I am confused by the y axis: how can you have up to 600 spectra per day? At 10 kHz scanner velocity, a full forward-backward scan should take around 3-4 minutes.

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