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Comment

Interactive comment on “Ability of the 4-D-Var analysis of the GOSAT BESD XCO₂ retrievals to characterize atmospheric CO₂ at large and synoptic scales” by S. Massart et al.

D. G. Feist

dfeist@bgc-jena.mpg.de

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Dear referee,

I would like to add some clarifications about the time lags that users might encounter when waiting for TCCON data. The guidelines are provided in the TCCON data protocol:

https://tcon-wiki.caltech.edu/Network_Policy/Data_Protocol

- TCCON PIs are encouraged to release their data to the public as soon as possible, but no later than one year after acquisition.

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- Following release of new software versions, each site shall reprocess and deliver their data to the TCCON archive within 4 months.

So the maximum time that a user may have to wait for TCCON data should normally be no more than 12 months. However, when a new GGG release comes out, there might be an additional delay of up to 4 months for the reprocessing of the data. So this might add up to 16 months and still be within TCCON recommendations. In the current funding situation, most TCCON sites are not able to provide their data much faster than that.

For some TCCON stations, it was not possible to reprocess their data with GGG2014 within the envisaged 4-month time frame. The reason was that GGG2014 introduced a new scheme to correct Laser Sampling Errors (LSE, aka "ghosts") in the spectra that had affected earlier TCCON data (Messerschmidt et al., 2010). These LSE can be a significant source of inter-station biases. The LSE correction method employed by GGG2014 (Wunch et al., 2015) relies on measurements from the Si-detector which most - but not all - TCCON stations have. The stations in Karlsruhe, Bremen, and Ny Alesund had to implement an alternative correction scheme (Dohe et al., 2013) which caused an additional delay in the reprocessing of their data with GGG2014 until September 2015. I am not aware of the reasons for the delays with the Tsukuba and Four Corner data processing. However, technical issues or personnel shortage may have caused an additional delay.

From a user's point of view, it was certainly legitimate to select a measurement period more than 15 months ago and then ignore the sites that had not supplied data until then.

Kind regards

Dietrich Feist TCCON PI (Ascension Island)

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