

## ***Interactive comment on “Intercomparison of TCCON data from two Fourier transform spectrometers at Lauder, New Zealand” by David F. Pollard et al.***

### **Anonymous Referee #2**

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Review of Pollard et al “Intercomparison of TCCON data from two Fourier transform spectrometers at Lauder, New Zealand” for AMT.

The paper by Pollard et al describes the intercomparison of two collocated Bruker FTIR high resolution spectrometers. The instruments are operated within the Total Column Carbon Observing Network (TCCON). This network has well controlled analysed procedures (GFIT suite of software), as well as agreed upon instrumentation (Bruker 125HR), and measurement protocols. The NZ team is very experienced in both measurements and analysis procedures demanded by TCCON. They are actively involved in the TCCON network in terms of running their own site and contributing to the success

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of this network. On this basis this team is well placed to compare these instruments, one a new introduced FTIR, comparing the new one with an older established dataset. Their attention to detail is very good.

The text is well written, and as far as this referee can find, only one misplaced word (remove the first “of” in line 102). The authors establish that the measurement conditions are such that the comparison of the two datasets is relatively straightforward, that is, the conditions under which the data is collected is very similar in terms of instruments, collocation, and hence atmospheric conditions. They systematically consider the important nuances that have been carefully scrutinised and worked through over the years within the TCCON community, including Ghosts, airmass dependence, frequency shifts, signal to noise etc. The paper demonstrates that under normal conditions experienced at Lauder these two instruments perform at a remarkably consistent level, more than meeting various TCCON metrics.

The only suggestion here is a straightforward statistical one. Since the main product that is compared, the means of the various retrieved Xgas, a simple t-test would give a solid quantitative basis to the conclusion that both instruments are measuring the same thing.

This paper is recommended for publication in AMT.

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