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Interactive comment on "The Total Carbon Column Observing Network Site Description for Lauder, New Zealand" *by* David F. Pollard et al.

David F. Pollard et al.

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We thank the reviewer for taking the time to review our manuscript and for their considered and constructive comments.
Below we have included the full text of their review as indented text, interspersed with our responses addressing their specific comments as non-indented text and changes to the manuscript in italicised font.

> The manuscript submitted by Pollard et al., provides a comprehensive description of the retrievals of atmospheric trace gases in the near infrared using high-resolution solar absorption spectroscopy at NIWA's Lauder

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Discussion paper

atmospheric research station in New Zealand, one of the most important atmospheric research stations in the world. The Lauder dataset is submitted to the TCCON archive and represents the longest time series of TCCON data in the Southern Hemisphere. The manuscript's structure is excellent and provides a detailed description of the data and the TCCON programme at NIWA. The measurements and instrumentation at Lauder atmospheric research station are of the highest quality and serve as benchmark, as shown by the results in this manuscript and in NIWA's contribution to TCCON. This work is very important, not only to current and future TCCON stations but to the whole atmospheric science community.
I recommend the publication of this work.
Minor comments:
Consider rephrasing page 3, Chapter 3.1. line 22: "From 20th June 2004 to 30th May 2006, 10 interferograms measured at a scanner velocity of 20 kHz were co-added for each retrieval, after this period retrievals were made from individual interferograms measured at 40 kHz"
to
"From 20th June 2004 to 30th May 2006, each retrieval consisted of 10 co-added interferograms measured at a scanner velocity of 20 kHz. After this period retrievals were made from individual interferograms measured at 40 kHz."

This does make the point more succinctly, and the manuscript has been changed accordingly.

Page 8, Chapter 5.3, line 25: missing space "errorse.g." –> "errors e.g.

This has been corrected in the manuscript.

Page 9, Chapter 6, lines 8-10: consider changing to: "In order to align TCCON measurements with the accepted WMO gas standard scale, a number of in-situ airborne profile measurements have been made at many of the TCCON sites, including Lauder, to derive a network wide scaling factor for a sub-set of retrieved species (Wunch et al., 2010)." i.e. put citation to "(Wunch et al., 2010)" at the end of the sentence.

The citation has been moved to the end of the sentence.

Page 9 Chapter 6, line 19: missing comma after "In order to extend the profiles from their lowest level to the surface"

The text has been amended in the manuscript.

page 10. Chapter 7.2, line 19: "smaller than is seen" –> "smaller that what is seen"

This sentence has been changed to *"There is a seasonal cycle due to summer draw down, but it is smaller than in the northern hemisphere..."*

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