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## ***Interactive comment on “A method for colocating satellite $X_{\text{CO}_2}$ data to ground-based data and its application to ACOS-GOSAT and TCCON” by H. Nguyen et al.***

### **Anonymous Referee #2**

Received and published: 28 April 2014

This article details refinements to current methods in co-locating satellite  $X_{\text{CO}_2}$  and ground-based measurements for the purpose of validation. There already exist several different techniques with increasing levels of sophistication/capability and this paper provides a further advance through the use of a geostatistical approach.

I recommend this article for publication after a few minor clarifications/adjustments as detailed below.

1) The authors choose not to apply the recommended bias correction to the ACOS data and justify the reasons for this decision. However, this results in some of the

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large difference observed in Fig. 4. It would be interesting for the authors to discuss in more detail what effect these large biases have on the approach taken and whether the conclusions are potentially sensitive to these biases (i.e. are some of the techniques more sensitive than others).

2) There is currently some uncertainty regarding the TCCON XCO<sub>2</sub> data due to errors introduced by a laser sampling issue. Consequently, the recommended corrections to the TCCON data have changed several times. Clarification of exactly which TCCON data have been used with which corrections applied should be stated. This also has implications for the statement that TCCON has a precision/accuracy of 0.8 ppm. Currently the uncertainty on the TCCON data is +/- 1 ppm for many stations.

3) Similarly to 2, clarification of exactly which CarbonTracker version has been used would be helpful. CT2011 initially had an issue, resulting in its re-release as CT2011\_oi.

4) Figure 5 is perhaps the most interesting one but it's quite difficult to read. I'd recommend making the figure larger and substantially increasing the front size.

Minor corrections:

Page 1515 Line 14: remove "of"

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Interactive comment on Atmos. Meas. Tech. Discuss., 7, 1495, 2014.

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