

Interactive comment on “Ship-borne FTIR measurements of CO and O₃ in the Western Pacific from 43° N to 35° S: an evaluation of the sources” by T. Ridder et al.

Anonymous Referee #1

Received and published: 18 September 2011

<GENERAL COMMENTS>

Overall paper quality is good. It is worth accepting if revisions are made. The ship-borne FTS is providing excellent data set to confirm accuracy of the GEOS-Chem model. Firstly, what is newly found from measurements themselves is not clear. Secondly, relation between observation error and retrieval error of source or source region is not clearly described. Lastly, the authors have to discuss how to improve the measurements in the future.

<SPECIFIC COMMENTS>

(P22952)Abstract: (Lines 12, 21) Definition of “sources” and source “regions” is not C9050

clear. (Lines 14-20) How to distinguish between CO sources from biomass burning and from fossil fuel? (Lines 24-26) “In the Southern Hemisphere the impact of emissions from South America, South-East Africa and Oceania is important”: Expression of “important” is ambiguous. In addition, the areas are almost the same as land area of the Southern Hemisphere.

(P22956) (Line 18) “DOF is an expression for the amount of individual layers” The word of “amount” is not clear. Do the authors mean “amount of information”?

(P22960 Line 9) How do the authors determine the criteria of wind direction of >30 deg and wind speed of 5m/s? Are there any technical documents to refer?

(p22963) (Lines 11 - 13) The contribution from regions such as ASFF 40% etc are presented. How accurate is the model estimation? Is the estimation error dependent on the distance of the source regions?

(P22967) (Line 8) Conclusions “Only surface CO concentrations in the mid-latitudes were largely over estimated by the model.” This conclusion is too simple. Brief explanation of the reason has to be described.

(P22967) (Line 15) The expression of “The West Pacific” is too general. The northwest Pacific is not so remote and polluted from the Southeast Asia and China.

<TECHNICAL CORRECTIONS> (P22954) (Line 10) “Tropospheric sources of O₃ include the photochemical oxidization of CO, CH₄. . .” The word “include” is not clear.

(P22955) Section 2 is too short for section. The contents can be included in Section 1

(P22959) Lines 10-12 The sentence is not clear. “To account for the characteristics of the FTIR retrieval model profiles X_m. . .” Is “To account for the characteristics of the FTIR retrieval, model profiles X_m. . .” correct?

(P22960 Line 15) and (p22961; Line 26) “Figure 4câĂŹe show” Figure 5b-e shows” » Figures

(P22985) (Fig A1) Only this figure has X-axis of the height. The Y axis of the vertical profile is clear to see as presented in Fig2.

End of comments.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 22951, 2011.

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