Author Comments to Referee Comments by Enting on RECCAP FFCO2 manuscript.

We appreciate the constructive comments of the reviewer (italicized below). We respond to each of his comments below.

This is a valuable (indeed vital) contribution to the RECCAP exercise and I recommend publication. Section 1 introduces the issues very well.

I would endorse a number of the points made in Glen Peters' review (Biogeosciences Discuss 9, C120–C129), in particular

• *'fossil fuel combustion' as a shorthand for a wider class of sources – others have used the term 'industrial'*

We repeat here the answer given to Peters: The suggested title change brings up an old discussion in the community. The majority of what is reported on is CO_2 from fossil fuel combustion. Most data sets (see Table 1) consider other CO_2 sources as well (e.g., cement production, gas flaring, ...). These other sources have not always been given title space because individually as they are a minor component (<10%) of the overall emissions. Additionally, by not making the title a grocery list, the title becomes shorter and more tractable.

The title has remained unchanged as not all of the data sets discussed contain process emissions.

Minor points.

1. p 1307. Typeset +/– as ±

Done for its four occurrences throughout the text to be published in BG.

2. p 1307: citation of Enting and Rayner refers to the Enting/Ryaner/Ciais paper listed in the references (now published as discussion), but probably better to reference (Enting et al, 2012 and references therein)

Done for the text to be published in BG.

3. p 1312. it is puzzling to have the variability described as a second derivative. Is 'second moment' what is really meant?

A mathematical moment describes the shape of a set of data points (e.g., mean, variance, skewness, kurtosis, ...). In this manuscript, we are not describing such a shape, per se. Instead, we are looking at the change of a variable with respect to time. For the text to be published in BG, we have added the phrase "with respect to time" to clarify this. We have also replaced some occurrence of the word "variability" with the word "acceleration" when we are referring to this second derivative.

4. p 1321/Fig 5. It would seem that figure 5 would be much clearer if the vertical (Normalized FFCO2 emissions) axis used a logarithmic scale.

In preparation of the manuscript, we did try a log y scale on Fig. 5. While it did create some separation of the curves near the bottom of the plot, the overall plot was not as intuitive in its interpretation as the linear y scale plot chosen for the manuscript.

5. p 1321 suggest 'FFCO2 emissions are held constant' becomes 'FFCO2 emissions are commonly held constant' (e.g. Enting et al, Tellus 47 B, 35–52 (1995) is an exception to the common practice).

Text to be published in BG changed to "FFCO2 emissions are usually held fixed in inversions (i.e., un-optimized, see Enting et al. (1995) for an exception to the usual practice)".

6. p 1333. suggest: 'that biospheric fluxes in Asia would shift ..' becomes 'that estimates biospheric fluxes in Asia would shift ..' —it is the estimates that (might) shift, not the fluxes.

Text to be published in BG changed to "that estimates of the biospheric fluxes in Asia would shift to a greater sink".

7. p 1354 inconsistent capitalisation of van Aardenne in Olivier et al references.

We took the capitalization from the original references. The original references have inconsistent capitalization. We did correct the capitalization in one reference for publication in BG.

8. p 355 Keeling, not Keelinf as third author of Rafelski paper.

Done for the text to be published in BG.

9. P1362: fig 2: missing comma between IEA and EIA.

Done for the text to be published in BG.

10. throughtout: inconsistency in accents for Le Quéré.

Done for the text to be published in BG, five corrections made.