

Interactive comment on “A joint effort to deliver satellite retrieved atmospheric CO₂ concentrations for surface flux inversions : the ensemble median algorithm EMMA” by M. Reuter et al.

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Received and published: 24 October 2012

The authors introduce the ensemble median algorithm EMMA for the retrieval of XCO₂. EMMA combines individual soundings of seven algorithms into a single, new dataset. By calculating the median of all available retrieval results in each 10x10 degree box, EMMA provides a good representation of XCO₂, taking advantage of the algorithms' independent developments, weaknesses and strengths. By comparing each contributing retrieval to independent validation data (TCCON sites, CarbonTracker), the authors show that the spread among the individual retrievals is often small (<1ppm) but can exceed 2ppm in tropical regions. One of the central assumptions of the authors is,

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that due to independent algorithm characteristics (such as instruments used, physical assumptions, pre- and post-processing filters, etc) the bias patterns of the individual retrieval results are uncorrelated overall. This means that it seems unlikely that all algorithms produce the same bias within one grid box. By using the median instead of the mean of the derived values, it is assured that outliers do not bias the EMMA result. In comparisons against TCCON and CarbonTracker results, the author demonstrate a good accuracy of EMMA.

The paper is rather short but well written and easy to comprehend. The figures are clear. With regards to content, I don't have any major points of critique. I recommend to publish the paper with only a few technical corrections (mostly typos, grammar, comma placement). See my comments in the supplement.

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/12/C8519/2012/acpd-12-C8519-2012-supplement.pdf>

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 12, 23195, 2012.

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