

Interactive comment on “An approach to retrieve information on the carbonyl fluoride (COF₂) vertical distributions above Jungfrauoch by FTIR multi-spectrum multi-window fitting” by P. Duchatelet et al.

Anonymous Referee #2

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Duchatelet and co-workers present an analysis of carbonyl fluoride (COF₂) measurements from FTIR observations above the Jungfrauoch station. Observing the long-term evolution of carbonyl fluoride is relevant, among other reasons, to evaluate our understanding of the stratospheric fluorine budget from anthropogenic CFC emissions. The paper discusses in great detail the retrieval strategy and the information content of the measurements is characterized in an exemplary way. One of the main findings of the paper is that a combined multi-window, multi-spectrum retrieval strategy can significantly increase the information content of the retrieval.

The paper is generally well written and I recommend publication after a few mostly minor issues have been considered.

Specific comments

p. 3168, l. 23: Please report in the abstract the main finding on the observed trend, rather than just describe what you have done.

p. 3137, l. 17: Could you describe in a few more words what is meant by a "fixed signal-to-noise ratio of 250"?

p. 3179, l. 26: I am a bit confused here on the use of the statistics. Are the values given here the mean difference and the standard deviation of the relative difference? The standard error for the mean difference would then be $1/\sqrt{n}$ times the standard deviation, if n is the number of common days. Has this been taken into account for the numbers given here?

p. 3182, l. 16: I can't see any error bars in Fig. 6.

p. 3182, l. 25: I find this statement on nudged ECMWF data confusing. I guess KASIMA is nudged by ECMWF data, and not "before KASIMA runs, ECMWF data are nudged to the KASIMA model". Please clarify.

p. 3183, l. 1: In which sense is the variability in KASIMA smaller? The seasonal cycle is larger. On p. 3184, l. 11 below, it is stated that there is a limited variability in SLIMCAT.

Technical correction

p. 3168, l. 20 "If we..." -> "While we ..."

p. 3171, l. 8 "models" -> "model"

p. 3172, l. 29: I don't think including private communication with a co-author of the paper is appropriate or useful. Please simply remove the private communication. This

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applies also to pages 3182 (twice), 3185 and 3186.

p. 3181, l. 21: "form" -> "from"

p. 3186, l. 18: "inverse" -> "invert" (or retrieve)

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 3167, 2009.

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