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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Assimilation of TES CO into a global CTM: first results" *by* N. A. D. Richards et al.

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It seems to me that the authours show that TES measurements 'improve' the free running model, which I would imagine would be true of any measurements. In the abstract, the authors state that "the results demonstrate how assimilation can be used for non-coincident validation of TES CO profile retrievals". I do not think they have validated TES CO retrievals, they show that TES is probably nearer the truth than GEOS-CHEM. Moreover, in following sections it is not clear if they apply this technique to validate the TES measurememnts or the model GEOS-CHEM.

Also, there is no evidence of how the vertical structure of the TES CO profiles improves the model compared to a partial column measurement. Is any use being made of the TES vertical resolution here or would similar results be obtained if just the TES 'column'

was assimilated?

What does the assimilation tell us about TES versus MOPITT or TES versus MOZAIC that a conventional comparison (eg by zonal means) would not?

In general I find difficult to read sessions where there are many references and few explanations, for example a) section 2 about quality flag and filtering of the data, b) section 3 about chemistry, emissions and OH fields and c) section 4 about sub optimal Kalman filter and interpolation scheme using TES averaging kernels. I would suggest to give more explanations in order to understand the basics without reading the references.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 11727, 2006.