

Interactive comment on “Nadir measurements of the Earth’s atmosphere with the ACE FTS: first results” by W. F. J. Evans et al.

Anonymous Referee #2

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The objective of this paper is to demonstrate the usefulness of the nadir measurements of the Earth’s atmosphere with ACE FTS for monitoring Earth’s atmosphere. A preliminary calibration scheme is presented. The absorption features relating ozone, methane and water vapor are demonstrated in a qualitative comparison with those calculated from HITRAN. Possible applications of these measurements to the study of global warming and air pollution monitoring are briefly discussed.

General comment: In general, this paper is well-written. However, based on results presented in this paper, authors can still speculate the significance of their findings. Need more evidences to lead to solid conclusions.

Specific comments: The idea to use the nadir measurements from ACE FTS is novel.

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However, because only qualitative comparisons are presented, although the feature of ozone is apparent in the ACE FTS radiance spectra, it is not clear if methane and water vapor features (they are relative small and overlapping with other gases) are also evident.

The calibration scheme is interesting and shall be emphasized more in this paper. The cause of the obvious low calibrated radiance shall be identified (cloud scene? optical component effect ? others ?), otherwise it is hard to justify "This could provide one of the very few experimental determinations of the increase in global warming from greenhouse gases such as carbon dioxide and methane".

After significantly smoothing the resolution of measurements (Fig. 9), even with good SNR, only very low degree freedom of the signal can be obtained, it is hard to believe that one can still resolve features of ozone in the troposphere. The conclusion "This may provide a possible method to recover the tropospheric ozone component, which would be useful for the global mapping of urban air pollution." is still based on a speculation.

Although I do not recommend the publication in ACP, I would recommend publication in another related journal when more evidences are provided.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 13355, 2008.

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