Atmos. Chem. Phys. Discuss., 6, S4033–S4035, 2006
www.atmos-chem-phys-discuss.net/6/S4033/2006/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "MIPAS Level 1B algorithms overview: operational processing and characterization" *by* A. Kleinert et al.

Anonymous Referee #1

Received and published: 24 October 2006

General Comments: The paper is well organized for presenting the algorithm, processing flow and error characterization for MIPAS L1B. The abstract should summarize the NESR and systematic errors as well as the overall approach for characterization (ground and on-orbit). To provide more relevance, the abstract should also state that accurate spectral radiance measurements are required for unbiased atmospheric retrievals.

References are mostly technical reports. Should include a reference for the basic calibration technique, e.g., Blom C.E. , M. Hopfner and C. Weddington, "Correction of Phase Anomalies of Atmopsheric Emission Spectra by the Double Differencing Method", Appl. Opt., 35, (2649), 1996.

Specific Comments: Section 1, p10675 #10 Should give a reason for filtering and decimation, such as SNR improvement and data rate reduction.

Section 2.1, p10676 Should add a description of the NESR estimation - i.e., are several spectra used? real or imaginary terms? I think they later say they use the imaginary terms, but an explicit algorithm should be given.

Section 2.4.2, p10679 #15. “The L1B processing detects and corrects for fringe lossesĚ” Are the measurements still used after this? I.e., is the correction unambiguous for phase errors?

Section 2.4.4, p10680 #10. “This meaningful parameter can be estimated... before filtering and decimation” Is this value computed for each interferogram, i.e., is it in the data stream?

Section 2.4.5, p10680 #20. “each interferogram must be scaled to accountĚ” Please clarify how the detector responsivities are obtained if they vary with time but don’t “drift out of specification” Were they determined pre-launch or computed on orbit?

Section 2.4.6, p10681. Should describe the ILS model parameters that are retrieved.

Section 4.5, p10690. Should say what type of laser is used for metrology and give a reference for why aging would affect the frequency stability in this manner.

Section 4.8.1, p10694 #5. I assume N2O and CH4 are used to look for scan direction dependence because they are very uniform in the atmosphere. I suggest this might be stated here.

Section 4.8.3, p10695 #15. Are calibration offset and scale parameters retrieved in the L2 algorithm? Could mention here that this would compensate for microvibration errors.

Technical corrections:

Section 1, p10675, “they are combined to improveĚ” could change to: “they are com-

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bined in some frequency bands to improveĚ”

Section 1, p10675, #5. “descend” should be changed to “descending”

Section 2.4.6, p10681, “convoluted with the theoretical line and iteratively fits the results onto the experimental data” should be changed to: “convolved with the theoretical line and iteratively fit to the experimental data”

Also in this section, add numbers or bullets to “The steps involvedĚ.”

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 10673, 2006.