

Interactive comment on “Characterization of MIPAS elevation pointing” by M. Kiefer et al.

M. Kiefer et al.

Received and published: 7 March 2007

We would like to thank the anonymous referee #1 for the comments which helped us to identify several sources of misunderstanding in the text and to hopefully improve the overall comprehensibility due to inclusion of additional information. Below we give a detailed point-by-point list of answers to the referee's comments.

***** GENERAL COMMENTS *****

Since we shall follow the recommendations of referee #1 given in the specific comments, and those with same intention of referee #2, we are confident that the revised text will be better suited for a broader readership.

The revised text (Conclusions section) will contain a discussion of the validity of the MIPAS results with respect to the other limb-viewing instruments and the platform.

*** SPECIFIC COMMENTS ***

ABSTRACT

- * Good point; Envisat will be mentioned.
- * We don't think that it is necessary to jump to conclusions already in the first sentence.
- * I.9–13: Confirmation of earlier MIPAS and SCIAMACHY work will be stated.
- * I.12: It is exactly as stated: The attitude of Envisat was (and still is!) corrected twice a day. To state it clearly: At these times the platform jumps to a new (corrected) attitude.
- * I.24: The deviation is with respect to the platform attitude information. Note that the statement you refer to belongs to the part of the abstract dealing with the results of the operational LOS calibration.
- * Change of situation after December 2003 will be mentioned.
- * The abstract will contain a hint that the several characterizations have different validity with respect to the other instruments on board Envisat and that there is a discussion of this in the text.

1 INTRODUCTION

1.1 MOTIVATION

The discussion of error propagation of line of sight errors will be extended (also because reviewer #2 was not quite happy with our original statement). Some sensitivity estimates will be given.

Trace gas mixing ratios are retrieved on an altitude grid, not on a pressure grid, both

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

by the ESA and by the IMK retrieval. The ESA retrieval retrieves tangent altitude pressure. If the related constructed pressure grid is used to sample the data, the absolute pointing error disappears. A clear statement on this will be made. This, however, is not in contradiction with the statements of our paper that LOS retrievals are crucial, because we consider “tangent pressure retrieval” just another kind of pointing retrieval.

1.2 MIPAS SETUP

* A short paragraph on MIPAS will be added in front of the Motivation Section.

1.3 RETRIEVAL METHOD

* The retrieval scheme, while published elsewhere, will be summarized in more detail.

* I.14: “sufficiently constant”: This issue has been investigated in von Clarmann et al. (2003). We shall shortly report their results.

3 TIME DEPENDENCE

* p.13082, I.1–2: What we mean is a change of the satellite attitude due to corrections of the orbit position parameters. We shall modify the text to make more clear that the satellite itself is “jumping”.

* p.13082, I.18 (we guess the referee refers to I.8): The trend of 180 m/orbit found by Kaiser et al. (2004) is based on an exceptional great jump amplitude of the platform. This will be briefly mentioned.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

3.2 SUCCESSIVE ORBITS

* The revised introduction will contain a statement about how the sunlight conditions are for ascending/descending parts of the orbit.

3.3 CORRELATION OF LOS AZIMUTH AND DELTA H

* p.13085, l.19–23: The correlation coefficients and a statement about the confidence limits will be included.

* There will be an appendix to the text on how equation (2) was derived.

3.4 LONG TERM BEHAVIOUR

* p.13087, l.16–18: A speculative item on this will be added.

4 MIPAS OPERATIONAL POINTING CHARACTERISATION

* p.13089, l.8–14: Your interpretation of the content of the respective text lines is correct. However, the meaning of Fig.12 is misinterpreted. Shown is the absolute, i.e. uncalibrated, pointing bias as a function of the orbit number We shall use the term “absolute pointing bias” and further give the information that it is uncalibrated in the revised text to avoid the misinterpretation.

* p.13090, l.1: It is the information about the platform attitude derived from Envisat’s star tracker data. A suitable definition will be added to the text.

5 RESULTS OF OTHER INSTRUMENTS OR CHARACTERISATION METHODS

5.2 GOMOS

* Actually the value of 1.4 km does not agree to good with our finding. As it is stated in the preceding paragraph, we would expect approximately 3 km. We merely see this as a hint that the roll angle error might be detectable by GOMOS too.

5.3 SCIAMACHY

* p.13092, l.3–4: Revised text will contain an according statement.

6 SUMMARY AND CONCLUSIONS

Conclusions text will contain a discussion of the relevance of our results for other limb-viewing Envisat instruments.

FIGURES

* Fig.10: Maybe the question is due to a misunderstanding based on a missing piece of information (which will be added at the end of section 1.4). The analyses of sections 2 and 3 are based on IMK retrieved data. Due to computing time limitations these data do by far not cover all available orbits.

*** TECHNICAL CORRECTIONS ***

** N_{tang} will be substituted by quantities already defined.

** D1 and D2 are two of the eight MIPAS detectors. The word channel will be changed to detector.

* Most other technical items will be implemented without explicit notice.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 13075, 2006.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper