

Interactive comment on “The semianalytical cloud retrieval algorithm for SCIAMACHY – I. The validation” by A. A. Kokhanovsky et al.

Anonymous Referee #3

Received and published: 25 May 2005

Review of Kokhanovsky et al., "The semianalytical cloud retrieval algorithm for SCIAMACHY. I. The validation"

The topic of cloud retrieval for SCIAMACHY is certainly relevant to ACP. The title of this paper, however, is not reflecting the contents of the paper. The title suggests that the semianalytical cloud retrieval method SACURA is applied to SCIAMACHY data, and that this application is validated in this paper. This is not the case. Only the application to GOME data is shown, and is validated to a very limited set of other data. In fact, SCIAMACHY does not play a role in this paper. Since the SACURA method has been presented in other papers, as well as its application to GOME, there is too much repetition in this paper and almost nothing new. This does not warrant a full paper.

The main problem of the paper is the lack of application and validation of the SACURA method to SCIAMACHY data. This is disappointing, since SCIAMACHY is already three years in space.

Furthermore, I find it strange that a recent publication by the same first author on the application and validation of the SACURA method, which appeared in IEEE GRSL in 2004, is not cited in this paper. Another cloud detection method using the O2 A-band, the FRESCO method by Koelemeijer et al., which is widely used for GOME and SCIAMACHY, is also not referred to in the introduction. So the introduction of the paper is lacking in giving the scientific framework of the current work.

Another problem that I have with this paper is the comparison to MODIS. The abstract suggests that SACURA is validated using MODIS data. However, this is not done at all. In the start of Sect. 3.2 it is even mentioned that SACURA cannot be validated with MODIS, because MODIS is not measuring the O2 A-band. I strongly reject this point. MODIS is producing many good cloud products: cloud optical thickness, cloud particle radius, and cloud pressure. For example, the MODIS cloud pressure is retrieved from the CO2 band in the IR. This MODIS L2 or L3 cloud pressure product could have been used easily to validate SACURA.

The independent data with which the validation of SACURA applied to GOME is taking place, namely the ATS-2 data in Fig. 10, is much too limited to conclude that SACURA is validated. Cloud validation has to be performed for many more orbits, surface types, solar zenith angles, etc..

Therefore, I recommend rejection of this paper in its current form. I suggest that the authors apply SACURA to SCIAMACHY data, and validate the SACURA results with MODIS L2 results. This would in fact mean a new submission.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 1995, 2005.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)