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## SCIAMACHY Absorbing Aerosol Index – calibration issues and global results from 2002–2004

M. de Graaf and P. Stammes

Royal Netherlands Meteorological Institute, P.O. Box 201, 3730 AE De Bilt, The Netherlands

**Abstract.** The validity of the Absorbing Aerosol Index (AAI) product from the SCanning Imaging Absorption SpectroMeter for Atmospheric CartographY (SCIAMACHY) is discussed. The operational SCIAMACHY AAI product suffers from calibration errors in the reflectance as measured by SCIAMACHY and neglect of polarisation effects in the AAI computational algorithm. Therefore, the AAI product was recalculated, compensating for the errors, with reflectance data from the start of measurements of SCIAMACHY until December 2004. Appropriate correction factors were determined for the UV to correct for the radiometric error in the SCIAMACHY reflectances. The algorithm was provided with LookUp Tables in which a good representation of polarisation effects was incorporated, as opposed to the LookUp Tables of the operational product, in which polarisation effects were not accounted for. The results are presented, their validity discussed, and compared to the operational product and independent AAI data from the Total Ozone Mapping Spectrometer (TOMS). The AAI is very sensitive to calibration errors and can be used to monitor calibration errors and changes. The AAI is sensitive to sunglint and a correction flag used for the AAI is presented. From 2004 onwards, the new SCIAMACHY AAI is suitable to add to the continuation of the long-term AAI record. Important changes in the long-term AAI record due to instrument and algorithm changes are highlighted. Recommendations are given for improvement of the operational AAI product.

[Final Revised Paper](#) (PDF, 1443 KB) [Discussion Paper](#) (ACPD)

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