

SCIAMACHY scientific Absorbing Aerosol Index

1. SC-AAI description

The SCIAMACHY scientific AAI (SC-AAI) is a reflectance difference in the UV, sensitive to UV-absorbing aerosols, like desert dust and biomass burning aerosols. Positive values indicate the presence of such aerosols in the scene, irrespective of the presence of clouds. The SC-AAI is retrieved once per day from calibrated SCIAMACHY L1 files for all orbits of the previous day. It is gridded to a 1.0 by 1.25 square degree grid. The SC-AAI is calculated only for solar zenith angles smaller than 85 degrees and sunglint deviation angles larger than 12 degrees. A complete description can be found in the Algorithm Document (<http://www.temis.nl/airpollution/absaai/>).

2. Product format specification

The data can be found on <http://www.temis.nl/airpollution/absaai/>. The format of the ASCII files is

longitude: 288 bins centered on 179.375 W to 179.375 E (1.25 degree steps)

latitude: 180 bins centered on 89.5 S to 89.5 N (1.00 degree steps).

The values are in 3 digit groups 111222333444555.

The format is similar to that used for GOME and the TOMS Nimbus-7 and Meteor-3 CD-ROM. Details of this format are explained in the EarthProbe Data Products User's Guide, EARTHPROBE_USERGUIDE.PDF.

The numbers have been multiplied by 10 and 450 has been added.

999 = missing or bad data.

So the numbers range from -54.9 (-99) to 54.8 (998).

449=-0.1, 450=0.0, 451=0.1, etc.

3. Software release history

Software version is 1.00, July 2004, M. de Graaf, Royal Netherlands Meteorological Institute (KNMI). Contact information: graafdem@knmi.nl

4. Implementation details

Reflectances are calculated using a one nanometer window, centered around the given wavelength. Additional reflectance corrections are 1.210 at 340 nm and 1.310 at 380 nm. The normal threshold of the SC-AAI is zero, positive values indicating absorbing aerosols.

5. List of known issues and data quality assessment

Threshold The SC-AAI is a threshold value. Averages should be calculated from the residue, and a threshold should be applied afterwards. The value of the threshold can vary.

Sunglint Sunglint is rigorously removed. A dynamic sunglint mask would be better, but is currently unavailable. Sunglint areas are easily recognized from geometrical considerations and care should be taken when aerosol plumes are interpreted from the SC-AAI in sunglint areas.