SCIAMACHY Quality Working Group (SQWG-3)

Final Presentation

IUP Bremen, Room W1180

6 December 2019 9:00 – 13:00

Minutes

Version 1

Participants:

A. Dehn (ESA)
G. Brizzi (Serco)
A. Friker (DLR-Bonn)
G. Lichtenberg, M.Hamidouche, M. Meringer (DLR-IMF)
I. Aben (SRON)
A. Keppens (BIRA-IASB)
K. Bramstedt, S. Noël, M. Weber, K. Weigel (IUP)

Partly:
J. P. Burrows, H. Bovensmann (IUP)
T. Fehr (ESA)

Via WebEx:
D. Hubert (BIRA-IASB)
J. M. Krijger (ESS)

Agenda and presentations are provided via the SQWG web site:
http://www.iup.uni-bremen.de/~qwg/SQWG3/SQWG_meetings.htm#_SQWG-3_FP

Welcome/introduction

J.P. Burrows and A. Dehn welcomed all participants.

Project Overview

S.Noël presented the status of the SQWG-3 project.

All required work has been performed.

L1V9 and L2V7 baselines have been delivered, verified and validated.

All required deliverables have been provided; some need updates and/or final acceptance by ESA (see Conclusions below).

Validation detected an unforeseen trend in total ozone columns L2V7, which is possibly related to the new L1V9 (also O3 profiles issues, see below).

As a consequence, it was decided not to release L1V9 and L2V7 to the public. It was also emphasised by ESA that the L1b v9 data shall not be used by the SQWG institutes in scope of

other projects (e.g. CCI) – if needed for research studies then this needs to be discussed with ESA to obtain permission. The motivation is that the data that are not publically released due to quality issues shall not get distributed through other ways, and without informing involved teams about the quality impact.

Improvements of L1 (to remove the O3 trend) will be investigated in the context of the FDR4ATMOS project, where many SQWG partners are involved.

Operational products L1V9, L2V7

G. Lichtenberg presented the status of the operational products.

Recommendations from the L2 error review should be included in the Final Report.

AI-FP01 DLR: Provide input related to L2 error review recommendations for the Final Report

(Note: Done in context of update of Baseline Summary Report, which is annexed to the Final Report.)

L1V9/L2V7 ATBDs are online at DLR; ESA asks to remove them from the public, because V9 will not be released.

The contents of the SOST web site is basically now part of the new level 1B Netcdf product.

L2 Validation Results

A. Keppens and D. Hubert reported about the results from the full validation of L2V7.
No major issues were found compared to the previous product version except for:

- O3 nadir total column:
  An additional about 3%/decade negative drift in total column ozone is observed (investigated in context of FDR4ATMOS project).
- O3 limb profiles:
  Vertical oscillations in drift and bias affect the long-term stability such that the product is considered to be not suitable for long-term studies.
  Scientific products based on L1V9 may also be affected.

AI-FP02 IUP: Ask A. Rozanov to check his product (calibration steps / data range used, observed oscillations).
(Note: This is followed up in the context of the SCILOV-15 project, as discussed after the meeting)

- CH4 nadir total column:
  A systematic offset of 20-40% is observed compared to the previous product. It is recommended to perform a meridian bias correction.

Since it has been decided not to release L1V9 and L2V7 products to the public, it was discussed during the final meeting that it shall not be possible to publish results based on these data in peer reviewed papers. These data should also not be used for the generation of other official products, like in ESA CCI projects. Presentations at ESA workshops or conferences can contain these data sets, but with prior approval from ESA and disclaimer in the presentation.

For BrO profiles a-priori differences may dominate systematic differences between operational and scientific data products.

Results from L1 quality assessment / maintenance

M. Krijger reported on reflectance investigations. The main conclusions are:

- V9 removes scan angle dependence for shortest wavelengths.
- V9 shows likely overcorrection degradation at shortest wavelengths.
- V9 performs better than V8 in the later recovery phase mission.

It was noted that the Reflectance at 315nm shows a linear trend similar to the O3 trend.

K. Bramstedt reported on irradiances with the following conclusions:

- SCIAMACHY L1b V9.01 has been successfully verified by comparisons with the IUP reference implementation.
- The SMR spectrum 27 Feb 2002 has been validated with independent solar spectral irradiances. Very good agreement (within 3 % for most spectral regions) is achieved.
- The irradiance time series shows a reasonable degradation correction with some issues. Further revision of the degradation correction is foreseen within the FDR4ATMOS project.

Recommendations from Baseline Summary document

G. Lichtenberg presented the contents of the Baseline Summary Document. Especially, recommendations for further product improvements were given.

The issues identified by validation (O3 total column trends / O3 profiles) shall be included in the Baseline Summary Report.

AI-FP03 BIRA-IASB: Provide input related to validation findings to Baseline Summary Report.

(Note: Meanwhile done)

The option to use a calibrated ASM diffuser measurement as primary SCIA solar reference spectrum should be further investigated (possibly in the context of FDR4ATMOS).

New/improved L2 products need appropriate funding for development, implementation and processing.

- Statement DLR Bonn (A. Friker):
  Budgets are primarily for the three new missions. DLR agency is not against using SCIA data in preparation for the new missions, supporting ideas are welcome.
- Statement ESA:
  Currently there is no dedicated project for further development and processing of operational L2 products. Possibilities might be in the framework of CCI or similar or even within FDR4ATMOS (LTDP), but the decision will be at a later point of time.
- The current focus is to improve the Level 1b data set, so that the basis for Level 2 development/processing is available.

ESA was pointing out that for this scope the Final report with evolution recommendation is a deliverable and to be used at ESA (and other agency's) management level. The recommendations should be ordered by priorities, but priorities of recommendations are hard to define, because ranking depends on goals/effort/funding. However, since O3 total trend investigations are covered by FDRATMOS, O3 limb has major priority. Lunar reflectances are also of high interest and unique.

AI-FP04 ESS: Provide a paragraph for the Baseline Summary Report about lunar reflectance as a L2 project.

(Note: Meanwhile done)
The option to generate scientific data products should also be considered. The advantage of official operational (ESA) data products is the well established test/verification/processing chain. Transfer of scientific L2 products might include direct transfer of code.

Available SCIAMACHY products should be collected at some place, e.g. via the sciamachy.org web site, which gives a full overview of all scientific and operational products.

Conclusions

The Final Presentation is considered to be successful from all participants.

The following is missing to close the project:

- Update of Baseline Summary Report (DLR; additional inputs from BIRA-IASB, ESS).
- Update of Final Reports (IUP; additional input from DLR-IMF and alignment of references etc.).
- L2V9 Validation Report was updated shortly after the meeting.
- Contract Closure Documents (to be prepared by IUP). ESA and IUP agreed after the meeting on technical details, especially to use a reference to the final report for the list of deliverables.
- ESA comments to/acceptance of above documents (and L2 README).

Contract closure documents have priority, because contract officers are involved. Invoicing may start immediately after the first iteration of the Contract Closure Documents.

The aim is to close the project this year, latest in January 2020.

AOB

SRON strongly recommends the production/release of a public SCIAMACHY L1 product in NetCDF format (could also be L1V8). This is currently not foreseen from ESA side. Also the SciaL1c tool can in principle create netCDF L1 versions. But for previous data version (e.g. v.8) this has not been tested and is therefore not approved by ESA as "workaround solution" for science teams. If test data are needed to check the netcdf format, individual L1b v9 data products can be distributed.