Minutes of the 5th German SCIAMACHY validation team (GSVT) meeting

Date: 07th December 2004

Location: Guesthouse of the University Bremen, Bremen

Agenda items of the 5th German Validation Team Meeting

- Welcome by John Burrows
- Envisat Validation from the DLR standpoint
- Overview about the German Validation Activities
- Ground-based and ship-borne Measurements – Individual presentations
- Aircraft-borne and Satellite Measurements – Individual presentations
- Balloon-borne measurements – Individual presentations
- SCIAMACHY Highlights
- Final Words by John Burrows

Summary

The 5th German Validation Team (GSVT) meeting was the final meeting of the German SCIAMACHY validation community, as the German projects will run out of funding at the end of the year 2004/ beginning 2005. Each project presented its work and results, which were obtained over the entire time of funding. In summary, interesting and important results were shown by the German scientists.

Over the the first two and a half years, the German SCIAMACHY validation team has set up a unique dataset of collocated measurements for the validation of SCIAMACHY and further instruments onboard EnviSat. This dataset has also been used for interesting scientific work in atmospheric research, documented by publications in the ACP special issue “Probing the atmosphere in three dimensions for SCIAMACHY” and further publications. Despite the ongoing delays of operational SCIAMACHY products, the German scientists show important first validation results for the available products. Many validation results are shown for so-called scientific products, retrieved by several institutes (IUP Bremen and Heidelberg, KNMI, SRON, BIRA-IASB and others) from SCIAMACHY spectra, showing the capabilities of the SCIAMACHY instrument as well as the validation efforts of the German community.

The contributions made to the final meeting are given in the following list. For the balloon community, an overview presentation was given by Cornelius Schiller, because the groups were still on campaign in Brazil.

Presentations

- Welcome
  J. P. Burrows
- Envisat Validation from the DLR standpoint
  A. Friker, DLR Bonn
- Overview about the German Validation Activities
  Ulrich Platt, IUP Heidelberg

Ground-based and ship-borne Measurements

- U. Bonn Lidar at Esrange used for Sciamachy Validation
  K.H. Fricke, PI Bonn
- Determination of Aerosol Optical Thickness from Sciamachy L1 data
  Wolfgang Hoyningen-Huene, IUP Bremen
- Ground-based microwave observations of ozone in Kiruna, Mount Zugspitze and Merida
  Gerhard Kopp, FZ Karlsruhe
- Ground based atmospheric millimeterwave measurements: Availability and results of a comparison with SCIAMACHY Ozone profiles
  Mathias Palm, IUP Bremen
- SCIAMACHY Validation with Solar FTIR Spectrometry at the NDSC Primary Station Zugspitze
  Ralf Sussmann, IMK-IFU Garmisch-Partenkirchen
- Validation of SCIAMACHY products with ground-based FTIR measurements at Kiruna and on Tenerife Island
  Thomas Blumenstock, FZ Karlsruhe
- FTIR measurements in Bremen, Ny Alesund and on board Polarstern
  Thorsten Warneke, IUP Bremen
- SCIAMACHY Validation using ground-based and ship-borne observation
  Barbara Dix, IUP Heidelberg
- SCIAMACHY Validation with the BREDOM Network
  Thomas Medeke, IUP Bremen

Aircraft-borne and Satellite Measurements

- Validation of Sciamachy In-flight measured irradiances, radiances and selected tracegas products by comparison with measurements from independent Satellite instruments
  Astrid Bracher and Jochen Skupin, IUP Bremen
- Airborne Lidar measurements during SciaValue campaigns
  Andreas Fix, DLR Oberpfaffenhofen
- SCIAMACHY validation using Airborne Submillimeter Radiometer (ASUR) observations
  Jayan Kuttippurath, IUP Bremen

- The Airborne Multi AXis Differential Optical Absorption Spectroscopy instrument (AMAXDOAS) for SCIAMACHY validation
  Klaus-Peter Heue, IUP Heidelberg
- SCIAMACHY validation with the AMAXDOAS instrument
  Ping Wang, IUP Bremen

Balloon-borne Measurements

- Validation activities for SCIAMACHY based on balloon-borne observations
  Cornelius Schiller, FZ Jülich
- Sciamachy solar irradiance validation (Level-1) using radiometric calibration of Balloon-borne spectrometers
  Wolfgang Gurlit, IUP Bremen
- SCIAMACHY Highlights
  John P. Burrows, IU*P Bremen*

All presentations are available on the website of the German SCIAMACHY validation team for detailed investigation: http://www.iup.physik.uni-bremen.de/gcvos/

Schedule for operational products

The 5th GSVT meeting was embedded in the SCIAMACHY Validation workshop, which was organized by SCIAVALIG. During this workshop a representative from ESA presented the current status for the SCIAMACHY processors and a plan for delivering operational products to the validation scientists.

1) SCIAMACHY processors

- 2002, 2003, 2004 are recalibrated completely; forward calibration with IECF is operational since 8. May 2004
- Operational NRT Data Processing, done with IPF 5.04, bug-fixed version of 5.01
- Integration of Off-Line Data Processor, version 2.5, has begun
- Improvements to level 2 off-line processing are part of the current improvement cycle

2) Data dissemination

- Dissemination of level 1 and level 2 via nominal channels. Level 2 is available at:
  - NRT Kiruna: ftp-ops.pdk.envisat.esa.int
  - NRT Esrin: ftp-ops.pde.envisat.esa.int
  - (Reprocessed) Off-line: ftp-ops.de.envisat.esa.int
  - U/P: scia2usr / scia2usr

The discussions during the meeting in the validation community lead to the following

Recommendations to the Agencies:

- Level-2 OL products needs to be processed and distributed, especially profiles of ozone and NO_2.
- Switch to OL processesor requires complete new validation, e.g. comparison and analysis also for the products already available from NRT.
- For all operational products, it has to be clearly visible, which contents are retrieval results, which are derived results and which are modelled or external values (for example number density versus VMR in Level-2 OL products)
- Implementation of an up-to-date algorithm comparable to GDP 4.0 or better is recommended for SCIAMACHY nadir products, especially ozone and NO_2 columns.
- Improvement for the radiometric calibration is needed for some products (Aersosols). Recent improvements should be implemented.
- Parameters which are known to be of insufficient quality, should not be included in delivered operational product (for example current columns retrieved from the IR channels).
- The validation reference set has to be reprocessed prior to reprocessing the whole mission.
- Reprocessing speed of Level-1 and Level-2 products has to be improved, by at least one order of magnitude.
- Current big gaps of availability of data even for Level-0 and Level-1 products should be closed soon.
- Reprocessing should be based on consolidated data and performed with one processor version. Inconsistent datasets strongly hamper the validation tasks.
- Representatives of the developers of the operational processors (ESRIN/DLR) should attend major validation meetings.
- Information of the validation (and general scientific) community of the ongoing work on the operational products has to be improved, especially about schedules and changes of schedules for the delivery of data.
- An atmospheric science advisory comitte on ESA EnviSat level with members from the GOMOS, MERIS, MIPAS, and SCIAMACHY science teams is proposed.

- First reprocessed and global dataset of operational products will be available in 2005, for many anticipated atmospheric parameters even later. Detailed validation of these dataset is an extensive task. This effort has to be adequately funded.
- Longterm validation of SCIAMACHY is essential for the scientific success of instrument. This has to include the collection and usage of collocated measurement over the lifetime of the instrument to continuously monitor the instrument. This effort has to be adequately funded.

Important Web-pages:

Information about the SCIAMACHY validation workshop where the GSVT meeting was embedded in, can be found at the SCIAVALIG webpage:

http://www.sciamachy-validation.org/sv/

All presentation held on the 5. GSVT meeting are available under:

http://www.iup.physik.uni-bremen.de/gcvos/

Berit Kirchhoff and Klaus Bramstedt

List of participants in alphabetical order:

- Abolina, Liene, ASI, University of Latvia
- Blum, Ulrich, Institute of Physics, Bonn
- Blumenstock, Thomas, IMK, Research Center Karlsruhe
- Bovensmann, Heinrich, IUP, University Bremen
- Bracher, Astrid, IUP, University Bremen
- Bramstedt, Klaus, IUP, University Bremen
- Bremer, Holger, IUP, University Bremen
- Bruns, Marco, IUP, University Bremen
- Buchwitz, Michael, IUP, University Bremen
- Burrows, John, IUP, University Bremen
- Coralie De Clerq, BIRA-IASB, Brussels
- Dils, Bart, BIRA-IASB, Brussels
- Dix, Barbara, IUP, University Heidelberg
- Eskes, henk, KNMI, Utrecht
- Fietkau, Sixten, IUP, University Bremen
- Fix, Andreas, DLR, Oberpfaffenhofen
- Fricke, K.H., Institute of Physics, Bonn
- Friker, Achim, DLR, Bonn
- Gurlit, Wolfgang, IUP, University Bremen
- Heue, Klaus-Peter, IUP, University Heidelberg
- Hoyningen-Huene, ife, University Bremen
- Jourdan, Olivia, IUP, University Bremen
- Kirchhoff, Berit, IUP, University Heidelberg
- Kokhanovsky, Alexander, IUP, University Bremen
- Kopp, Gerhard, IMK, Research Center Karlsruhe
- Küllmann, Harry, IUP, University Bremen
- Kuttippurath, Jayanarayanan, IUP, University Bremen
- Ladstätter-Weißenmayer, Anette, IUP, University Bremen
- Lambert, Jean-Christopher, BIRA-IASB, Brussels
- Lolkema, Dorien, RIVM/ KNMI, Utrecht
- Marbach Thierry, IUP, University Heidelberg

- Medeke, Thomas, IUP, University Bremen
- Meijer, Yasjka, RIVM
- Mossavati, Ruzbeh, Eumetsat, Darmstadt
- Noel, Stefan, IUP, University Bremen
- Notholt, Justus, IUP, University Bremen
- Oedekoven, Lucian, PT-GSF, München
- Palm, Mathias, IUP, University Bremen
- Platt, Ulrich, IUP, University Heidelberg
- Piters, Ankie, KNMI, Utrecht
- Richter Andreas, IUP, University Bremen
- Schiller, Cornelius, Research Center Jülich
- Segers, Arjo, KNMI, Utrecht
- Skupin, Jochen, IUP, University Bremen
- Smalins, Edgar, ASI, University of Kehia, Riga
- Snoej, Paul, ESA-ESTEC, Noorwijk
- Sussmann, Ralf, IMK-IFU, Garmisch-Partenkirchen
- Valazco, Voltaire, IUP, University Bremen
- Miranda van der Broek, SRON, Utrecht
- Wagner, Thomas, IUP, University Heidelberg
- Wang, Ping, IUP, University Bremen
- Warneke, Thorsten, IUP, University Bremen
- Weber, Mark, IUP, University Bremen
- Wittrock, Folkard, IUP, University Bremen