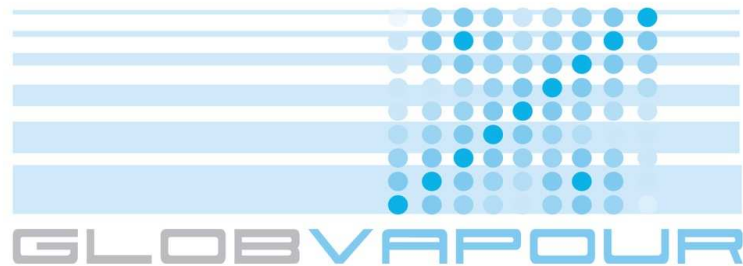




DUE GLOBVAPOUR

Monthly Progress Report

November 2011



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ESRIN/Contract No.: 22696/09/I-OL

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Monthly Progress Summary - ESA DUE GlobVapour

ESRIN/Contract No.: 22696/09/I-OL

Reporting Period: 01.11.2011 - 30.11.2011

Main Accomplished Actions:

- Level 3 validation of GOME-family products revealed shortcomings in interim version of GlobVapour products. GOME2 products are currently updated.
- All final products have been processed, and the validation of the SSM/I+MERIS product has been finalized.
- Three new GlobVapour users, in addition to those from last month.

Activities, Achievements and Status - Phase II**Management and Coordination****WP 002 - Management and Coordination (M. Schröder)**

- The planning of the final meeting has been continued. In particular, the project is in close contact with the user group and users.
- Together with partners several management aspects needed to be addressed. Among them were internal decisions on late reprocessing events, refinements of activities related to AATSR processing and the evaluation of climate models, and the drafting of FPR and SEP.
- The contract for a GlobVapour scientist at DWD could be extended to the end of January 2012.

WP 020 - Promotion (M. Schröder)

- Minor webpage updates, e.g. documents in internal section, consortium members.
- In dialogue with GV users. In particular, first results from the climate modelling group at DWD had been discussed.
- The project has new users from Belgian Institute for Space Aeronomy, Deutscher Wetterdienst and Petersburg Nuclear Physics Institute.

Creation of Diagnostic Data Set and validation tools**WP 210: Collection and procurement of validation data (M. Schröder)**

- GUAN observations now include a set of three cloud masks. First results show a strong decrease in humidity in GUAN monthly averages after application of cloud masking. The decrease is considered to be unrealistic and after some final tests it might be decided not to apply the cloud masks. Due to the several reprocessing events final decisions have not yet been made.

WP 220: Collection and procurement of satellite data (M. Schröder)

- The WP has been finalised.

WP 230: Development of validation tools (M. Schröder)

- Inter-comparison software was slightly refined.

Development of Prototype Product

WP 310: Development of GOME/SCIAMACHY/GOME-2 retrieval scheme (D. Loyola)

- The WP has been finalised.

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WP 320: Development of MERIS retrieval scheme (R. Preusker)

- The WP has been finalised.

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WP 330: Development of SSM/I - MWR retrieval scheme (M. Schröder)

- An LWP threshold of 0.03 kg/m² is applied to SSM/I observations in order to utilise clear sky products only and therefore to increase consistency with MERIS.
- WP has been finalised.

WP 340: Establishment of consistency of MERIS and SSMI (M. Schröder)

- WP has been finalised (s. WP 330).

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WP 350: Development of AATSR retrieval scheme (R. Preusker)

- The WP has been finalised.

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WP 360: Assessment of existing IASI retrieval schemes (M. Schröder)

- In order to increase the number of valid collocations the assessment has been extended to additionally include GUAN radiosondes and collocated IASI retrievals.
- Tools for the visualization of the quality of retrieved water vapour as function of the distance between the chosen IASI footprint and the reference site have been refined.
- Summarizing the main results in an IASI assessment report continued. GEWEX has been contacted to learn how a report on IASI assessment results and lessons learned can be submitted and published in a GEWEX newsletter.

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WP 370: Development of merged IASI/SEVIRI profile product (M. Schröder)

- The individual kriging error terms show exactly the expected behaviour, that is, minima at IASI overpass times. It further shows a dominance of SEVIRI information. Some remaining inconsistencies need to be clarified. This work is done outside GlobVapour.

WP 380: Production and validation of prototype data sets (M. Schröder)

- The WP has been finalised.

WP 390: Development of processing environment (U. Krämer)

- Development of concurrent processing for stand-alone processing system finished.

Processor Development and Test Product

WP 410: Development of GOME/SCIAMACHY/GOME-2 processing system (D. Loyola)

- Processor development is finalised. Final test of processing system is pending.

WP 420: Development of MERIS-SSM/I processing system (M. Schröder, R. Preusker)

- Processor development is finalised. Final test of MERIS and L2toL3 processing is pending.

WP 430: Development of AATSR processing system (R. Preusker)

- At PM4 it was demonstrated that even when using the full capacity of the instrument, also considering optimal retrieval conditions the quality of the AATSR water vapour products is very small and significantly larger than threshold requirements. Due to the instrument design and its main objective, that is, SST retrieval further improvements on quality can not be expected. The partners will most likely not consider an implementation of the AATSR retrieval and it is unlikely that other institutions will do so. Currently the project is not pursuing AATSR processing development and system implementation. Also, a processing of the full AATSR time series is not foreseen as the validation of the AATSR products does not require the full time series (see MPR for October 2011).

WP 440: Development of IASI processing system (M. Schröder, R. Saunders)

- The IASI retrieval scheme and processing has been finalised. At PM4 it was decided not to include the module into the processing system.

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WP 450: Development of IASI-SEVIRI processing system (M. Schröder)

- The development of the SEVIRI+IASI retrieval and processing has been finalised. Further processing and inclusion into the processing system is not foreseen. This was decided at PM4 on basis of missing added value relative to single sensor products.

WP 460: Production and validation of test data set (M. Schröder)

- The WP has been finalised.

WP 470: Development of stand alone processing system (U. Krämer)

- Integration of SSM/I chain finished.
- Reception, integration and test of MERIS L2 python implementation, verification mainly successful. Issue raised in one processing case.

Development of Final Product**WP 510: Production and validation of final data set (M. Schröder)**

- An interim version of the GOME-family final products, that is, the period 1996-2008, has been validated. The results exhibited a jump between SCIAMACHY and GOME2 results. MPI-C and DLR identified and corrected the root cause - using a SCIAMACHY like swath for GOME2 products reduces the jump almost completely. This required a reprocessing of GOME2 Level 3 results.
- Processing of GOME-2 L3 data from 2007 to 2008. Delivery foreseen by the end of week 50.
- Processing and delivery of SCIAMACHY L3 data from 2003 to 2006.
- Processing and delivery of GOME L3 data from 1996 to 2002.
- SSM/I+MERIS final products, that is, the period 2003-2008, have been reprocessed again in order to provide clear sky and all sky products as well as MERIS spatial averages applying classical averaging and weighted averaging.
- Validation has been finalised for SSM/I+MERIS. The PVR will contain the all-sky and weighted averages product. The project proposes to release the clear sky and non-weighted averages as additional product. This has been discussed and agreed with UKMO and U. of Wisconsin.

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WP 520: Update of PS and System Delivery and Test Application at ESRIN (U. Krämer)

- Setup of VM and test data input archive started

Scientific Exploitation**WP 610: Comparison of GlobVapour Products to Climate Model Output (M. Ringer)**

- Analysis of model-data comparisons in preparation for final report and project meeting in January 2012.

WP 620: Alternative Ways of Climate Model Evaluation (M. Ringer, R. Saunders)

- It was decided at PM4 to stop processing of profile products. The scientific value of the forward-modelling approaches really only applies to looking at the vertical distribution of the moisture. Therefore, we propose to shift resources to the following activities, that is, to WP 610: The evaluation of climate models using GV products will be extended from Hadley Centre models only to the full set of CMIP5 models. This increases the work load in terms of computing time, software development and in particular in terms of interpretation. We further discussed the potential publication of GV results in peer-reviewed journals. One idea is to have a GlobVapour overview paper which goes from requirements to applications, with a focus on the latter aspect. The overall goal is to submit a paper by July 2012 latest in order to be in time for IPCC. Other options are possible and will be discussed at the final meeting. The publication itself, the extension to CMIP5 models, and approaching IPCC will largely increase visibility of GlobVapour related activities and results and is in line with one of the major objectives of the project: the application and the link to the user community.
- At UKMO the forward modelling approach was applied to observations in the upper troposphere (John et al.). This will be presented together with CMIP5 model evaluation results at the final meeting to demonstrate what is possible in the field of forward-modelling and will be included in the SEP/FPR.

WP 630: Establishment of the Scientific Exploitation Plan (R. Saunders)

- Structure and first content of the SEP have been send to ESA for comments and have been refined by the project.

Next Steps and Schedule

- Finalisation of processing and validation of final products.
- Finalisation of implementation into processing system (GOME/SCIAMACHY/GOME2).
- Continuous development on all running WPs.
- Planning of final meeting and continued drafting of final report.
- Release of Newsletter Vol. 4.

Achievements

- Level 3 validation of GOME-family products revealed shortcomings in interim version of GlobVapour products. Updated GOME-family products will be homogenized successfully without any spurious jump.
- All final products have been processed, and the validation of the SSM/I+MERIS product has also been finalized.
- An extended abstract about the MERIS+SSM/I dataset was submitted to a lead author of IPCC.
- Three new users signed in User Group.

Problems encountered and solutions proposed

- From the two full time positions at DWD only a $\frac{3}{4}$ position is left for the period Dec 2011 - Jan 2012. A continuation beyond Jan 2012 will not be possible. Reduced man power is critical.
- Final GOME-family final products had been delivered. However, interim validation triggered reprocessing of GOME2. Updated GOME2 products are not yet available and expected end of week 50.

- Delays in reprocessing of all final products was caused to increase quality and usability of the products. However, a timely validation of final products can become critical.
- A downstream consequence is that the processing system development is delayed. The project contacted ESA to define a date and place of the Acceptance Review. A response is pending but considered uncritical at this time.
- First comparisons of the SSM/I data after cloud mask application against AIRS exhibit reduced quality and an increased difference to the MERIS bias. Following discussions with UKMO and U. of Wisconsin the project decided to consider the all sky version as official final product and to provide the clear sky version as additional product.
- Common collocations for all participants of the IASI assessment are not possible. Furthermore, the number of valid observations at GUAN stations after application of common cloud masking is very small even in view of the relatively large number of GUAN stations. These factors limit the level of comprehensiveness of the IASI assessment.
- Note the comment on AATSR under WP 430 (also stated in last MPR).
- Note the comment on alternative ways of climate model evaluation under WP 620.
- Regarding AATSR, climate model evaluation, drafting of FPR and SEP the project started to work along the lines of internal decisions in order to have deliverables ready in time for the final meeting.