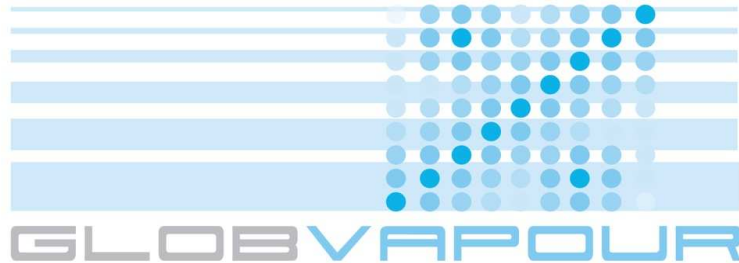




DUE GLOBVAPOUR

Monthly Progress Report

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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: 01.10.2011 - 31.10.2011

Main Accomplished Actions:

- A paper concerning the GlobVapour MERIS L2 processor was submitted to AMT and accepted for open discussion.
- An extended abstract about the MERIS+SSM/I dataset was submitted to a lead author of IPCC.
- Three new users downloaded GlobVapour products.

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

- The user group and interested scientist asked for a date change of the final meeting. In agreement with ESA the final meeting will place at ESRIN on 24 January 2012.
- The planning of the final meeting started. In particular, the project is in close contact with the user group and users.

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WP 020 - Promotion (M. Schröder)

- Minor webpage updates, e.g. dates.
- In dialogue with GV users. The climate modelling group at DWD started to compare GV products with output from their regional climate model.
- The project has new users from Deutscher Wetterdienst, Deutsche Zentrum für Luft- und Raumfahrt and Darlow Smithson Productions.
- A paper concerning the GlobVapour MERIS L2 processor was submitted to AMT and accepted for open discussion (<http://www.atmos-meas-tech-discuss.net/4/6811/2011/amtd-4-6811-2011.html>).
- An extended abstract about the MERIS-SSM/I dataset was submitted to a lead author of IPCC, an advanced version of this will be submitted to a peer review journal in the coming months.
- More than 15 GlobVapour Newsletters have been distributed at the WCRP Conference in Denver on 24-28 October 2011.

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

- Reprocessing of validation data is almost finalised. Reprocessing was needed in order to include cloud cover information into GUAN data and to consider cloud clear pixels in AIRS data only.
- A series of tests have been carried out to analyse the effect of the utilisation of different cloud masking approaches. Strict applications reduce number of valid collocations dramatically. 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.

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

- The WP has been finalised.

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

- Inter-comparison software is currently refined.
- Three different cloud mask have been implemented for cloud detection in GUAN observations. Testing is described under WP 210.

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)

- Some tests have been performed by varying the LWP threshold for cloud masking in SSM/I processing.
- After receiving Envisat/MWR L1 data from CLS, DWD adapted the reading routines of the MWR_1D-Var accordingly.

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

- The consistency of SSM/I and MERIS was analysed following three approaches: comparison of SSM/I and MERIS over sun glint regions, visual inspection in absence of coastal mountains and correlation analysis of neighbouring pixels.
- Mainly due to the implementation of a cloud mask for SSM/I the consistency checks have been repeated. Results exhibit very similar level of consistency as presented at UCM2 and in PVR.

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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.
- After the delivery of complete UKMO IASI TCWV swaths for Dec 2008, DWD performed collocation and extraction now consistently among NOAA, EUMETSAT and DWD IASI retrievals. It has become clear that IASI cloud masking in UKMO IASI retrieval is very conservative leaving only a small number of TCWV retrieval footprint over land for inclusion in the IASI assessment. This feature seems to be another limiting factor for the comprehensiveness of the IASI assessment.
- Additional evaluation tools have be developed for the evaluation of the IASI assessment, e.g. for the visualization of the quality of retrieved water vapour as function of the distance between the chosen IASI footprint and the reference site.
- Summarizing the main results in an IASI assessment report has started which will also include the lessons learned and recommendations for future water vapour assessments of this kind. This report is planned to be summarized in a GEWEX newsletter.

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

- A reprocessing of a sub period of the SEVIRI+IASI product has been finalised. 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.

- It is planned to redo some of the validation using ground-based observations from Lindenberg.

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

- The WP has been finalised.

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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)

- Further update of the netCDF format following feedback from DWD - GOME-2 data for 2007, 2008 were reformatted to the updated netCDF.
- Some issues with the earlier years and with cloud cover parameters need to be solved in SCIAMACHY processing.
- New spatially resolved H2O offsets between GOME-2 and SCIAMACHY have been generated by MPI-Mainz and were delivered to DLR.

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

- The flag definition has been changed to ease applicability through extended information content. Minor updates to the netCDF format are still needed.
- The IDL-based L2, L3 and merging processors were converted to Python and provided to BC.

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

- The processor development is slightly delayed.
- 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. At PM4 it was already decided to stop Level 3 processing and to cancel delivery of PVR for AATSR. Instead, a regional analysis of uncertainties was carried out and a comparison against MWR proposed.
- The partners will most likely not consider an implementation of the AATSR retrieval, and it is unlikely that other institutions will do so. Together with the above outline we therefore propose not to include an AATSR processing module into the processing system.

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)

- Comments to the PVRs and PUG are currently implemented.

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

- Reception, integration and test of new version 2.00 of SSMI 1dvar and l2-to-l3 processor

- Test of new delivery of MERIS L2 python implementation, setup of changed preconditions finished, verification ongoing.

Development of Final Product

WP 510: Production and validation of final data set (M. Schröder)

- SCIAMACHY data for the periods 2002-2006 was processed. Processing of the GOME-family product is ongoing.
- The MERIS L2+L3 processing was performed for period 2003-2008. After merging with SSM/I L3 products, no-data gaps were found in coastal regions, necessitating a reprocessing of the MERIS-only products. This is currently ongoing, the final products should be available at the end of the month.
- In connection with the preparation of the extended IPCC abstract detailed validation of SSM/I TCWV L2 was carried out against Nauru ARM site ground-based MWR. This validation covers the entire period of the final products. The evaluation of these results underline the very high quality of the SSM/I TCWV retrievals with RMSE around 1.8 kg/m².
- Using the new database from CLS DWD processed one year (2008) of MWR L2 TCWV data. The data has been provided to CLS to perform evaluation with respect to the operational MWR TCWV product. After an initial quality check of the data by CLS, DWD plans to process and provided the full ENVISAT/MWR timeseries, which is planned for utilisation in a comprehensive validation and intercomparison against the operational product from CLS.

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

- Not yet started.

Scientific Exploitation

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

- Continued analysis of total column water vapour in CMIP5 models against GlobVapour products.
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WP 620: Alternative Ways of Climate Model Evaluation (M. Ringer, R. Saunders)

- The WP has been started, and the evaluation is ongoing.

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

- Structure and content of the SEP are under discussion.

Next Steps and Schedule

- 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 drafting of final report.

Achievements

- The minutes of meeting from the second User Consultation Meeting have been distributed to meeting participants.

- A paper concerning the GlobVapour MERIS L2 processor was submitted to AMT and accepted for open discussion.
- An extended abstract about the MERIS+SSM/I dataset was submitted to a lead author of IPCC.
- Three new users downloaded GlobVapour products.

Problems encountered and solutions proposed

- GOME-family products are not yet available but expected any time soon.
- Due to bug fixing and changes in cloud handling the MERIS and SSM/I processing is delayed. Instead of a finalisation in early October reprocessing will likely not be finalised before mid November.
- First comparisons of the SSM/I data after cloud mask application against AIRS exhibit reduced quality and an increased difference to the MERIS bias. A comparison against ARM MWR is planned to clarify this issue.
- A downstream consequence is that also the validation of Level 3 products and the processing system development are delayed. At present, the delay is considered uncritical. Further delays will be critical to ensure delivery in time for final meeting.
- 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.
- Since August 2011 one project scientist is missing at DWD. The second DWD scientist's contract was extended by two months but on a $\frac{3}{4}$ position only. The lack of man power can not be compensated through new recruitment.
- Note the comment on AATSR under WP 430.