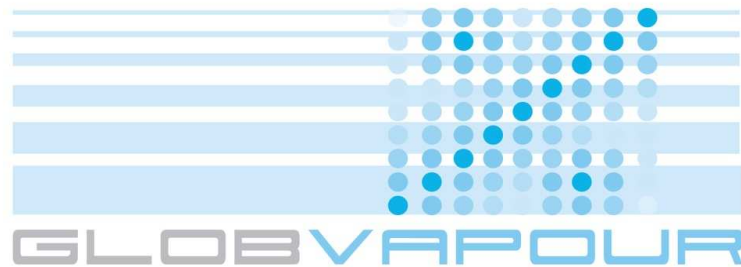




## DUE GLOBVAPOUR

### Monthly Progress Report

September 2010



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**Monthly Progress Summary - ESA DUE GlobVapour**

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

Reporting Period: 01.09.2010 - 30.09.2010

**Main Actions:** First version of 1D-Var retrieval scheme for MWR; oral representation at the EUMETSAT Users Conference; combined SSM/I and MERIS composites and monthly mean for prototype months; progress in all development WP

**Activities, Achievements and Status - Phase I****Management and Coordination****WP 001 - Management and Coordination (M. Schröder)**

- A series of management issues have been mutually agreed between ESA and the GlobVapour project. Details are given in emails from 27, 30 September and 01 October 2010.
- The ATBD for the MWR will be described in the ATBD for SSM/I. Therefore, the SSM/I ATBD can be considered as an ATBD for microwave water vapour retrieval using 1D-Var. A comparison of MWR with SSM/I and MERIS will be carried out and briefly summarised in an in-official comparison report.

**WP 010 - Promotion (M. Schröder)**

- A poster titled 'The ESA DUE GlobVapour Project' was presented on the CMSAF User Workshop in September 2010, including the project's objectives and products as well as the first results of the IASI and SSM/I 1D-Var retrieval assessment.
- The GlobVapour project was introduced on the EUMETSAT Users Conference in Cordoba, Spain, in September 2010. The presentation was well received, and the presentation has already been forwarded to interested scientists.
- A poster titled 'Das ESA DUE GlobVapour Projekt' has been designed and was presented by DWD on the DACH2010 in Bonn in September 2010
- The 'News'- section of the GlobVapour webpage was updated.
- The GlobVapour Newsletter Vol. 1/2010 was reprinted (circulation of 25 pieces) and was handed out by DWD in Rostock, Bonn, Bergen and Cordoba.

**Consolidation of Requirements and Specifications****WP 110: Requirements Baseline (R. Saunders)**

- WP completed.

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**WP 120: Technical Specifications (M. Schröder)**

- WP completed.

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**WP 130: Summary of existing algorithm comparisons (M. Schröder)**

- WP completed.

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

- Processing of L2 AIRS and MODIS data to L3 grid is ongoing, with July and August 2007 completed. For both AIRS and MODIS a consistency check with downloaded low-resolution L3 products (1° grid) has been successfully performed.
- GUAN observations were processed to L3 (monthly means) for all prototype months and all three vertical layers as well as for the total column. This extends the validation tool using temporal collocation on three-hourly basis.

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

- A bug had been identified in the IASI L1c database retrieval tool (i.e. occurring in the EUMETSAT L2 cloud products). This bug has been fixed.

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

- Reading and collocation software for AIRS and MODIS data has been extended (monthly mean processing refined, comparison function implemented, cross check with low-resolution AIRS/MODIS L3 products, bug fixes).
- Reading-, validation- and imaging-tool for comparisons of the SSMI+MERIS product against GUAN L3 data has been developed.

## Development of Prototype Product

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

- GOME-2 level 2 data, and level 3 data in ASCII format, have been processed for the whole dataset.
- Conversion of Level 3 ASCII data in the agreed NETCDF format is underway for the validation dataset.

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

- Products for the MERIS prototype months have been processed with some additional upgrades in the retrieval software.

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

- Products for the SSMI prototype months have been processed with some additional upgrades in the retrieval software.
- Sensitivities studies tackling the impact of different background information on the retrieval results were continued.
- A prototype 1D-Var retrieval scheme for MWR has been developed. A few month have been processed and are currently compared to SSM/I observations.

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

- During a side meeting at the CM-SAF Users Workshop DWD and FUB decided to include the bias information in the metadata. That means, the bias will not be applied directly.
- Products for the SSMI/MERIS prototype months have been processed.

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

- Following discussions with UKMO, FUB, DWD and ESA the GlobVapour plans on development and processing of AATSR water vapour products are currently under revision.

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

- Work continues on processing the IASI datasets for the required periods. We have provided July 2007 data to DWD as our first sample together with some basic documentation. Processing of the other months continues and preparation of more comprehensive documentation on the IASI retrievals.
- The IASI data for the validation month July 2007 were processed, and data processing for the validation month August 2007 was started.
- Final adjustments for the DWD IASI 1D-Var bias correction module are currently being done, which will be followed by extensive forward modelling experiments to derive a representative set of background minus observation brightness temperature statistics. After the derivation of proper bias correction coefficients, the DWD IASI 1D-Var experiments for all reference site will be repeated.
- Results of the new version (version 5) of EUMETSAT's IASI retrieval scheme have been downloaded and have initially been compared to the results of the former version.

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

- IASI 1D-Var development is on-going. Also, EUMETSAT updated its Level 2 processing in September 2010. First comparisons of the updated EUMETSAT Level 2 products exhibit improvements to the previous version. However, the bias among various satellite water vapour products still differs significantly.

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

- All combined SSM/I+MERIS prototype months have been processed on the final spatial resolution. The product is available for July, August 2007 and January, August 2008, including daily composites and a monthly mean with updated GlobVapour metadata information in netCDF format following the CF-1.4 standard.
- The templates for the ATBDs and PVRs (one per product type) have been generated and distributed.
- Validation of SSM/I+MERIS prototype products against GUAN radiosondes has been started.
- Inter-comparison of SSM/I+MERIS prototype products against AIRS and MODIS has been started.

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

- The development of the processing environment is ongoing.
- The GlobVapour metadata definition document (netCDF format following the CF-1.4 standard) has been updated to version 1.2.

### **Next Steps and Schedule**

- Production and validation of all prototype months.
- Drafting of ATBD and PVR of all prototype software and products.
- Planning the next Progress Meeting.
- Continue acquisition of data for validation and continuous development of tools for validation.
- Continuous development on all WP.

### **Achievements**

- First prototype 1D-Var retrieval scheme for MWR.
- Prototype month product from combined SSM/I+MERIS.
- Intense presentation of GlobVapour on various conferences and workshops

## **Problems encountered and solutions proposed**

- The IASI assessment is on-going as mutually agreed between the project and ESA.
- Merging SEVIRI and IASI products is a challenging task and computationally very expensive. Delays in development (in particular a change from EUMETSAT IASI products to the above IASI retrieval) and processing might occur.
- The updated EUMETSAT's IASI L2 product lacks the error variance information, which is needed to perform the kriging.
- First validation of a two channel retrieval scheme for AATSR exhibited low quality of the water vapour product. The project is aiming at a sound scientific analysis of utilising the full potential of AATSR in order to decide on the generation of water vapour products from AATSR. This would require a change of deliverables which is currently discussed among FUB, DWD, and ESA.