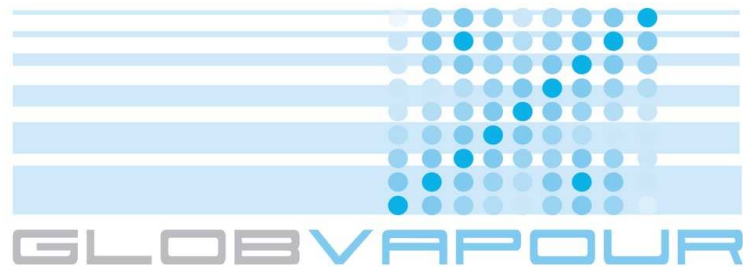




## DUE GLOBVAPOUR

### Monthly Progress Report

October 2010



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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: 01.10.2010 - 31.10.2010

**Main Actions:** Prototype months ready for the combined SSM/I and MERIS, GOME-like and SEVIRI+IASI (1 month) products; related ATBDs and validation reports drafted and submitted to ESA for revision; preliminary User Feedback gathered and compiled in a report, also submitted to ESA; progress in all development WP

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

- Preliminary user feedback on prototype products has been gathered and compiled into a User Feedback report. The report was submitted to ESA. This includes an initial example comparison of prototype TCWV products for July/Aug 2007 & Jan/Aug 2008 with HadGEM2 model and reanalyses.
- The AATSR products, processed with a retrieval scheme using two channels in the IR, seem to have low accuracies. Following phone calls and emails with partners a report was drafted on the physics of the problem, on first validation and proposed future plans. At PM2 the next steps related to AATSR will be discussed.

**WP 010 - Promotion (M. Schröder)**

- The Draft Version of GlobVapour Newsletter Vol. 2/2010 was layouted, title "Validation of Prototype Data sets".
- Proposal for webpage update drafted for presentation at upcoming PM2.
- The abstract "The ESA DUE GlobVapour project: An overview and first results" was accepted for oral presentation at the AGU Fall Meeting in the USA in December 2010.

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

- WP completed.

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

- WP completed.

**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 has been completed for the prototype months. The MODIS NIR component has been reworked on a higher resolution grid (0.05 deg).

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

Last saved by Marc Schröder on November 11, 2010

- All satellite for prototype products is available.

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

- Reading and collocation software for ATOVS data has been implemented, and extended for AIRS and MODIS data (MODIS NIR upgraded, intercomparison with GOME-2 products added, bug fixes).
- Reading-, validation- and imaging-tool for comparisons of the GOME-2 product against GUAN L3 data has been developed.

### **Development of Prototype Product**

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

- See WP 380

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

- See WP 380

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

- The MWR 1D-Var output (MWR) 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.
- Else, see WP 380

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

- See WP 380

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

- A regression-based retrieval scheme using the 11 $\mu$ m and 12 $\mu$ m bands of AATSR was developed.
- Else, see WP 380

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

- The processing for all the required months is now nearing completion and another sample dataset was provided to the team. The documentation for the Met Office IASI retrieval is also nearing completion. A comprehensive validation of the IASI T and Q retrievals has been carried out with radiosondes.
- Final adjustments for the DWD IASI 1D-Var bias correction module had been done. Extensive forward modelling experiments had been carried out to derive a representative set of background minus observation brightness temperature statistics.
- Processing of the IASI data with the updated retrieval scheme started.

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

- One prototype month (August 2008) has been processed with the DWD 1D-Var for IASI, output has been adjusted to allow implementation into the kriging routine for merging of SEVIRI+IASI data.

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

- All combined SSM/I+MERIS and GOME-2 prototype months have been processed on the final spatial resolution. The products are 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.

- GOME-2 prototype products have been processed.
- Validation of SSM/I+MERIS and GOME-2 prototype products against GUAN radiosondes and ARM radiosondes & MWR has been performed.
- Inter-comparison of SSM/I+MERIS and GOME-2 prototype products against AIRS, MODIS and ATOVS has been performed.
- A prototype month of the merged SEVIRI+IASI product has been processed and validated against GUAN radiosondes and ATOVS as well as AIRS observations.
- A first draft of the ATBDs and PVRs (one per product type) has been completed and distributed for review.
- The AATSR prototype data set (07/2007) was created and compared to the SSM/I-MERIS monthly mean product. The results including a proposed plan for future developments were compiled in a draft report.

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

- The development of the processing environment is ongoing.
- The collection of detailed processing requirements has been refined, and the GlobVapour Filename Convention document has been commented.

#### **Next Steps and Schedule**

- Conduct PM2.
- Depending on review update all documents.
- Depending on review and discussions update algorithms and reprocess.
- Start processing of test products. This might partly include (re)processing of prototype products.
- Plan next meeting and User Workshop.
- Continuous development on all WP.

#### **Achievements**

- Prototype products from combined SSM/I+MERIS, GOME-like, merged IASI+SEVIRI and preliminary results for AATSR.
- Comprehensive validation of prototype products.
- Related ATBDs and validation reports drafted.
- Preliminary User Feedback gathered and reported.

#### **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 (bias correction, a change from EUMETSAT IASI products to the above IASI retrieval and reconsideration of the assumption to use IASI as reference) and processing occurred and might occur.
- 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. FUB drafted a report with details on the retrieval scheme, first validation and an outlook on potential future activities. This might lead to change the focus from processing to scientific development.