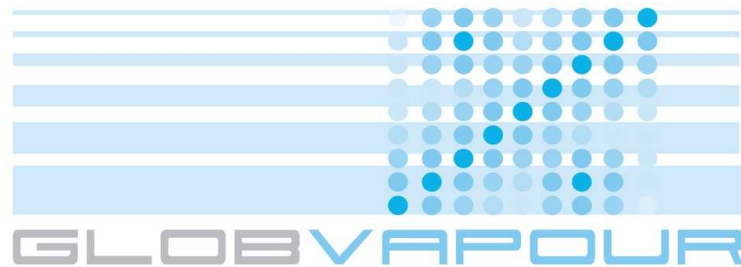




## DUE GLOBVAPOUR

### Monthly Progress Report

June 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: 01.06.2010 - 30.06.2010

**Main Actions:** Successful Progress Meeting, overview talk at ESA Living Planet Symposium, new partner for the IASI assessment, final version of Newsletter ready, largely improved web presence, start of and progress in all development WP

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

- The Requirements Baseline Document (RBD), Data Acquisition Plan (DAP), Software Development Plan (SDP), and Technical Specifications Document (TSD) are available in final version (1.0).
- Inputs on user requirements at EGU assembly were obtained which will be reflected in an update to the RBD.
- The first Progress Meeting was prepared and conducted at FUB in Berlin, Germany on 10+11 June 2010. A draft version of the minutes of meeting has been submitted to ESA. Currently comments from ESA are implemented.

**WP 010 - Promotion (M. Schröder)**

- Ann overview talk on the project was given at ESA's Living Planet Symposium in Bergen, Norway, on 29 June 2010. A new partner for the IASI assessment could be attained.
- The first issue of the GlobVapour Newsletter has been finalised. It can be downloaded from the project's webpage.
- The GlobVapour webpage was updated and revised and the new version is online now.

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

- WP completed.

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

- The draft version of the PVP as submitted to ESA for review has been reworked, following recommendations given at PM1.

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

- The draft of the documentation of different existing algorithms and validation efforts has been finalised. It was presented at PM1. Currently the comments from ESA are addressed.

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

- The draft version of the GDD as submitted to ESA for review has been renamed into VDD, as decided at PM1.

- Processing of GUAN data L2 files (water vapour extraction) has been completed for the period 2006-2008.
- The acquisition of ARM site measurements, namely radiosondes and ground-based MWR data, has been completed for the period 2006-2008. Raman Lidar data has been acquired from one ARM station (Lamont) for this period.
- Radio occultation data test files (provisional version 0.9) from CHAMP and COSMIC-4 have been checked and commented.
- Acquisition of AIRS data has been re-started for the period 2006-2008, in addition to the prototype months.

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

- Acquisition of ERA-Interim data for IASI Assessment, as well as for MERIS-SSM/I and (A)ATSR production, has been completed for the period 2006-2008.
- Following the discussions at PM1 it was decided to process MWR data for the prototype month only. In case the combined SSM/I+MERIS product will rely on MWR data a longer time period will be processed.

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

- Reading and collocation software for AIRS data has been extended (saving option for L3 files processed from L2 files on the fly).

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

- Improvements and corresponding verification have been made for the H<sub>2</sub>O retrieval in the UPAS system.

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

- Initial comparisons with the operational MERIS L2 product were performed and look promising. However, the single scattering algorithm still needs refinement. The FUB radiative transfer code MOMO is used to build look up tables of hemispherical reflectance, path radiance and transmittance, used for the approximation of the top-of-atmosphere radiance.

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

- Two more prototype months have been processed on a reduced spatial resolution. A preliminary comparison of all prototype months against ERA-Interim and a retrieval from a statistical scheme show reasonable results. The input/output modules are currently modified to make use of netcdf file formats.

**WP 340: Establishment of consistency of MERIS and SSM/I (M. Schröder)**

- At PM1 it was decided to provide monthly averages and composites. In consequence an application of Kriging is not required.

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

- Initial sensitivity studies were performed and presented at the PM in Berlin. The achievement of the required accuracy will be difficult but work is ongoing.

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

- IASI water profile retrieval code have been successfully tested with AIRS observations. Work on IASI spectra is ongoing.

- Assimilation trial commenced to extract IASI 1D-Var retrievals for July/Aug 2007 (MetOffice).
- Sample NetCDF file of IASI retrievals provided to DWD by MetOffice.
- File format and retrieval results from MetOffice are currently tested at DWD. The DWD 1D-Var has been run for a few test cases, i.e. overpasses at the ARM sites Lamont and Barrow. Corresponding comparison to ARM site measurements and EUMETSAT IASI retrieval results has started.
- The water profile retrieval code has been optimized with AIRS observations by considering the spectral window 1307...1338  $\text{cm}^{-1}$  and 12 altitude levels in the range 0...12 km. For these parameters, the computer time has been reduced by a factor of 20 (from 32:30 min to 1:30 min ).
- J. Orphal and co-workers, KIT, Karlsruhe, Germany expressed their interest in participating in the IASI assessment.

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

- First test results have been processed and compared to MODIS observations. A bias was observed which may have two reasons: First, the bias correction is based on all SEVIRI observations which might cause a bias in presence of diurnal cycles. Second, old MERIS products are used. Their quality might be reduced with the 3<sup>rd</sup> reprocessing.

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

- Starts September 2010

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

- The development of the processing environment has started and is ongoing.

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

- Finalise acquisition of data for validation and continuous development of tools for validation.
- Continuous development on all corresponding WP.
- SSM/I 1D-Var to be applied on the SSM/I full resolution for the prototype months. Improving the computational efficiency of the scheme needs to be done.
- Sensitivities studies regarding the TCWV dependence on the background values to be done.
- Bias correction for IASI brightness temperatures for the DWD 1D-Var to be derived and applied.

#### **Achievements**

- Successful review of GDD, SVR, and PVP.
- First issue of the Newsletter released.
- Largely improved webpage.
- Overview talk at ESA Living Planet Symposium.
- New partner for IASI assessment.

#### **Problems encountered and solutions proposed**

- The new partner will effectively contribute to the IASI assessment not before the end of 2010. In consequence, finalisation of the IASI assessment will be delayed.

- DWD is currently testing if a change of background data from reanalysis to climatology would be beneficial. The additional work load requires more time. However, the independency from models is considered to be advantageous.